



Blackett Acoustics

Noise & Vibration Consultants

**635 WARRINGAH ROAD, FORESTVILLE
DEVELOPMENT APPLICATION (DA)
ACOUSTIC ASSESSMENT**

Report No BA200114
Version A

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Prepared for

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Studio 4.1, 105 Kippax Street
Surry Hills, NSW 2010



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SGLOSSARY

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are defined below.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

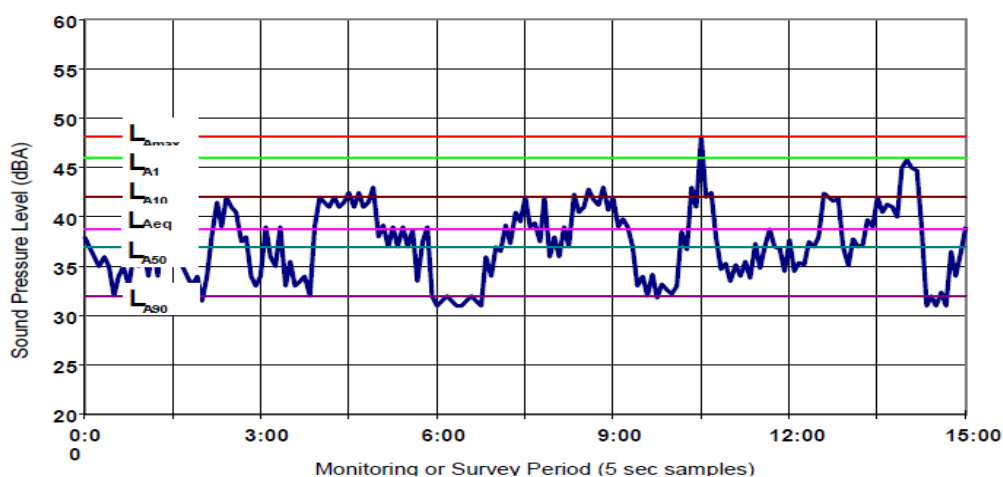
L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.



1 INTRODUCTION

Blackett Acoustics has been engaged to conduct a Development Application (DA) Acoustic Assessment for the proposed 26 rooms boarding house development in Forestville.

This report addresses the following acoustic issues:

- Traffic noise intrusion assessment to investigate the degree of traffic noise exposure and recommends construction to reduce traffic noise ingress for the development.
- Noise emission from outdoor areas of the boarding house to the surrounding.
- Establish noise criteria for mechanical plant associated with air conditioning units.
- Recommendations to be included in the Plan of Management to minimise noise impact to the residents within the boarding house.
- Establish acoustic requirements for separation between sole occupancy units as required under Part F5 (Sound Insulation) of the Building Code of Australia (BCA).

2 SITE AND PROJECT DESCRIPTION

The Project Site location is situated at 635 Warringah Road, Forestville. The Project Site is primarily surrounded by residential receivers with the nearest identified residential receivers as shown in Figure 2-1.

Figure 2-1 Aerial of Project Site



At the time of assessment, a decision has yet to be made if the proposed boarding house will be naturally ventilated or with mechanical ventilation such as air-conditioning. It is recommended that further acoustic assessment is to be conducted when a decision is made. It is recommended that the noise emission level associated with mechanical plant to adhere to the project specific noise trigger levels in Section 4.2.3 of this report ensure compliance.

The windows and doors within the common areas such as kitchen, dining room and living room are to remain closed during any of the noisier internal activities. On this assumption, noise from the within the boarding house is unlikely to be audible at the surrounding residential receivers all times.

The proposed internal layouts are shown in Figure 2-2 and Figure 2-3. Further details can be found in drawing package (Job No. 18.25) provided by Macphail & Sproul Architects Pty Ltd dated 31 January 2020.

Figure 2-2 Ground Level Floor Plan

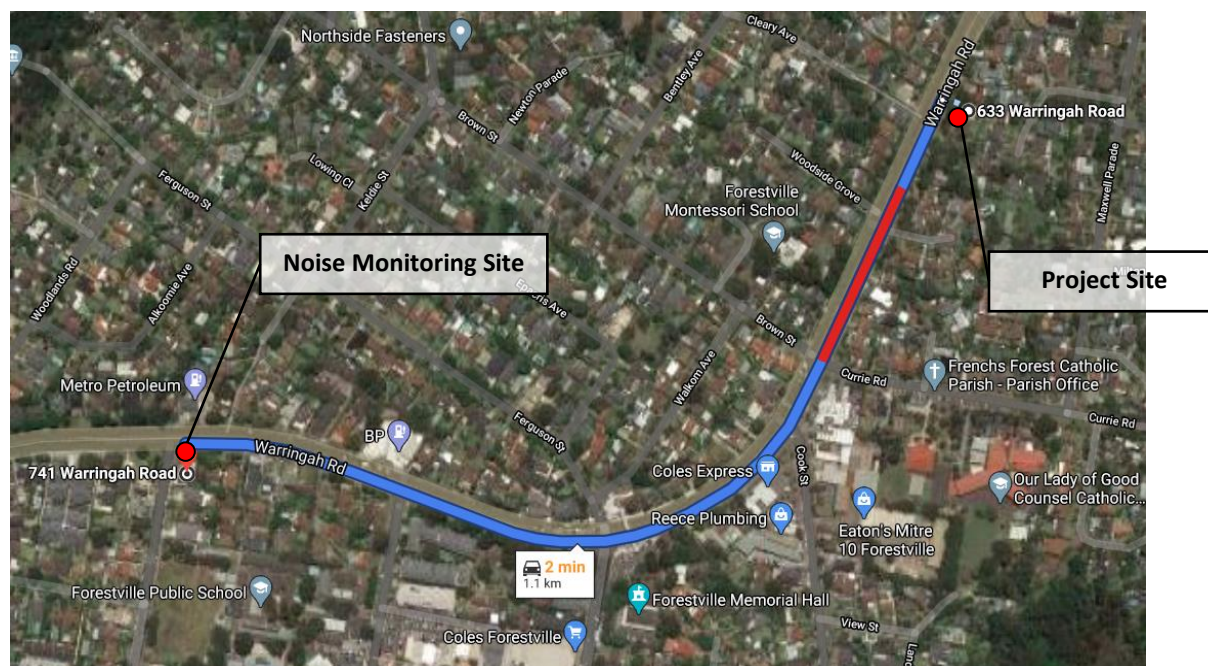


Figure 2-3 First Level Floor Plan

3 EXISTING ACOUSTIC ENVIRONMENT

Existing background noise and traffic noise impact associated with Warringah Road was previously established at 741 Warringah Road, Forestville. The noise monitoring location is located approximately 1km south of the Project Site and the noise logging was conducted in a free-field position. Figure 3-1 presents an aerial showing the Project Site relative to the noise logging location.

Figure 3-1 Project Site Relative to Noise Logging Location



Unattended noise monitoring equipment consisted of an Infobyte Environmental Noise Logger. This was previously deployed by Blackett Acoustics at a development site located 1km south of the Project Site at 741 Warringah Road, Forestville. The logger was setup in an elevated position within the backyard of the above-mentioned address.

Due to the close proximity of the Project Site at 633-635 Warringah Road and the unattended noise monitoring location, the measured noise levels can be used for the purposes of this assessment.

The monitoring period was from Tuesday, 28 May 2019 to Monday, 3 June 2019. The calibration of the logger was checked prior to and following the measurement period and the variation in calibration was found not to exceed 0.5dB. The noise logger was set to record statistical noise descriptors in continuous 15-minute sampling periods for the duration of its deployment.

Table 3-1 presents a summary of recorded noise levels from the unattended noise measurements.

Table 3-2 presents the measured Rating Background Level (RBL).

Table 3-1 Measured RBL Noise Levels – dBA

Time Period	RBL
Daytime (7.00am-6.00pm)	54
Evening (6.00pm-10.00pm)	52
Night Time (10.00pm-7.00am)	32

Based on the monitoring data, it has been established that the traffic noise level recorded during daytime and night time hours are as follows:

Front Yard of 741 Warringah Road, Forestville

- Daytime $L_{Aeq,15hr}$ (7.00am - 10.00pm) : 72dBA
- Night time $L_{Aeq,9hr}$ (10.00pm - 7.00am) : 68dBA

These established noise levels will be used for the purpose of this assessment. The unattended noise monitoring data are graphically presented in Appendix A.

4 NOISE REQUIREMENTS

This Section presents relevant noise requirements.

4.1 Traffic Noise Ingress Requirements

The Department of Planning and Infrastructure's (DoPI) document entitled *"Development near Rail Corridors and Busy Roads – Interim Guideline"* (DRCBR) provides guidance in relation to mitigation of noise sensitive developments in order to provide a minimum deemed acceptable level of acoustic amenity near road and rail.

The DRCBR Guideline provides guidance in relation to mitigation of noise sensitive developments to achieve acceptable acoustic amenity by meeting the internal noise criteria specified in Clause 102 of the NSW Infrastructure SEPP.

Extracted from DRCBR, Table 4-1 provides a summary of the recommended internal noise levels under Clause 102 of the NSW Infrastructure SEPP, where noise sensitive spaces are likely to be impacted by traffic noise ingress.

Table 4-1 NSW Infrastructure SEPP Recommended Internal Noise Levels

Residential Buildings		
Type of occupancy	Internal L_{Aeq} Noise Level (dBA)	Applicable time period
Sleeping areas (bedroom)	35	Night time 10.00pm to 7.00am
Other habitable rooms (excluding garages, kitchens, bathrooms & hallways)	40	At any time

Note: Airborne noise is calculated as L_{Aeq,15hr(day)} and L_{Aeq,9hr(night)}.

In referenced to the established daytime and night time traffic noise levels presented in Section 3; For design purposes, the maximum traffic noise levels impacting the project site will be used. Accordingly, the reductions required for each space are shown in Table 4-2 below.

Table 4-2 Required Noise Reductions for Each Space – dBA

Type of occupancy	Internal L_{Aeq} Noise Level (dBA)	Traffic Noise Reduction (TNR) Required
Sleeping areas (bedroom)	35	33
Other habitable rooms (excluding garages, kitchens, bathrooms & hallways)	40	32

4.2 Operational Noise Requirement

The NSW Industrial Noise Policy (2000) has now been withdrawn and is replaced by the Noise Policy for Industry (NPfI) in October 2017.

The NPfI provides a process for in determining the “project noise trigger levels” which provides a benchmark or objective for assessing a proposal or site. It is not intended for use as a mandatory requirement. The project noise trigger level is a level that, if exceeded, would indicate a potential noise impact on the community, and so ‘trigger’ a management response; for example, further investigation of mitigation measures.

The project noise trigger level, feasible and reasonable mitigation, and consideration of residual noise impacts are used together to assess noise impact and manage the noise from a proposal or site.

The project noise trigger levels are the more stringent of the “project intrusiveness noise levels” and the “project amenity noise levels”. The project noise trigger levels

are assessed at a height of 1.5 metres above ground, at the most affected point within the receiver boundary within 30 metres of a dwelling.

4.2.1 Project Intrusiveness Noise Levels

The intrusiveness of a noise source may generally be considered acceptable if the level of noise from the source (represented by the L_{Aeq} descriptor), measured over a 15-minute period, does not exceed the RBL by more than 5dBA when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.

Based on the established background noise levels in Section 3, Table 4-3 presents the project intrusiveness noise levels.

Table 4-3 Project Intrusiveness Noise Level – dBA

Established $L_{Aeq,15min}$ Intrusiveness Noise Levels		
Daytime	Evening	Night Time
59	57	37

Note: Daytime (7.00am-6.00pm), Evening (6.00pm-10.00pm) and Night time (10.00pm-7.00am).

The noise criteria in presented Table 4-3 is only applicable to residential receiver locations.

4.2.2 Project Amenity Noise Levels

To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise level within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in NPfl where feasible and reasonable.

The NPfl recommend amenity noise levels for various receiver types and times of day to protect against noise impacts such as speech interference, community annoyance and some sleep disturbance. The recommended amenity noise levels represent the objective for total industrial noise at a receiver location, whereas the project amenity noise level represents the objective for noise from a single industrial development at a receiver location. Table 4-4 presents the NPfl amenity noise levels.

Table 4-4 NPfl Amenity Noise Levels

Receiver	Noise Amenity Area	Time of Day	Recommended Amenity Noise Level $L_{Aeq,period}$ (dBA)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	See column 4	See column 4	5dBA above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School classroom – internal	All	Noisiest 1-hour period when in use	35
Hospital ward - Internal	All	Noisiest 1-hour period when in use	35
Hospital ward - External	All		50
Place of worship – internal	All	When in use	40
Areas specifically reserved for passive recreation (e.g. national park)	All	When in use	50
Active recreation area (e.g. school playground)	All	When in use	55
Commercial premises	All	When in use	65
Industrial premises	All	When in use	70
Industrial interface (applicable only to residential noise amenity areas)	All	All	Add 5dBA to recommended noise amenity area

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a **project amenity noise level** applies for each new source of industrial noise as follows:

Project amenity noise level for industrial developments = recommended amenity noise levels (outlined in Table 4-2) minus 5dBA.

Due to the different averaging periods for the $L_{Aeq,15min}$ and $L_{Aeq,period}$ noise descriptors, the numerical values of project intrusiveness and amenity noise levels cannot be directly compared when assessing the amount of noise incident upon a receiver, or to identify which noise levels are more stringent.

To standardise the time periods for the intrusiveness and amenity noise levels, NPfI assumed that the $L_{Aeq,15min}$ will be taken to be equal to the project amenity noise level of $L_{Aeq,period}$ plus 3dB.

The surrounding receiver locations will be under the category of “urban” residential receivers and the established project amenity noise levels for the surrounding residential receiver locations are presented in Table 4-5.

Table 4-5 Project Amenity Noise Levels (Residential Receivers) – dBA

Established $L_{Aeq,15min}$ Amenity Noise Levels		
Daytime	Evening	Night Time
58	48	43

Note: Daytime (7.00am-6.00pm), Evening (6.00pm-10.00pm) and Night time (10.00pm-7.00am).

4.2.3 Project Noise Trigger Levels

Based on intrusiveness and project amenity noise levels determined in Table 4-3 and Table 4-5 respectively, the project noise trigger level is the lower (that is, the most stringent) value of the intrusiveness and amenity noise levels. Therefore, the project trigger noise levels are presented in Table 4-6.

Table 4-6 Project Noise Trigger Levels (Residential Receivers) – dBA

Established $L_{Aeq,15min}$ Project Noise Trigger Levels		
Daytime	Evening	Night Time
58	48	37

Note: Daytime (7.00am-6.00pm), Evening (6.00pm-10.00pm) and Night time (10.00pm-7.00am).

4.3 BCA Part F5 Requirement

The BCA requirements outlined in Part F5 are based on laboratory ratings of sound insulation (i.e. R_w and $L_{n,w}$). The relevant Sections and performance requirements of the BCA for the proposed boarding house (Class 3) at 633-635 Warringah Road, Forestville are presented in Table 4-7.

Table 4-7 Summary of BCA Acoustic Requirements

BCA	Acoustic Item	Sound Insulation Requirement*
F5.5	Airborne sound insulation across the Party Wall	$R_w + C_{tr} \geq 50$
F5.5	Impact sound insulation across the Party Wall in situations where the Wall provides acoustic separation between a habitable room on one side and a wet area or kitchen on the other side.	$R_w + C_{tr} \geq 50$ Discontinuous construction
F5.4	Airborne sound insulation across the floor-ceiling dividing apartments	$R_w + C_{tr} \geq 50$
F5.4	Impact sound insulation across the floor-ceiling dividing apartments. This is particularly applicable where hard floor coverings are used.	$L_{n,w} \leq 62$
F5.5	Entry Doors from common area (lobby) into apartment	$R_w \geq 30$
F5.6	Soil/waste pipes, ducts and stormwater pipes that serve or pass through more than one apartment	$R_w + C_{tr} \geq 40$ if the adjacent room is a habitable room $R_w + C_{tr} \geq 25$ if the adjacent room is a non-habitable room
F5.7	Requires flexible couplings	-

5 NOISE ASSESSMENT

5.1 Traffic Noise Assessment

Acoustic calculation, taking into account the low frequency characteristic of noise, has been carried out to determine the building construction requirements of the external building envelope for different space types when fully furnished. The following sections detail the construction necessary to achieve the desired TNR values. Note that external windows and doors must be kept closed and all gaps must be sealed airtight, otherwise the TNR of the building envelope will be significantly reduced.

Wall system

The following provide 2 options for the proposed wall construction on all levels.

- **Option 1 – Brick Veneer Construction:**

110mm brick, 90mm timber stud frame or 92mm metal stud, minimum 50mm clearance between masonry and stud frame, 10mm standard plasterboard internally.

- **Option 2 – Double Brick Cavity Construction:**

2 leaves of 110mm brickwork separated by 50mm gap.

Entry door

All entry doors must be solid-core doors with a minimum thickness of 35mm and must be fitted with acoustic perimeter/astragal seals as well as threshold/drop seals. Door seals equivalent to Raven RP47 (door frame) and RP38 (door bottom) are recommended. Where there is glazed area within a door, it is recommended that the minimum R_w rating for the glazing is 35. This can typically achieve with 10.38mm laminated glass.

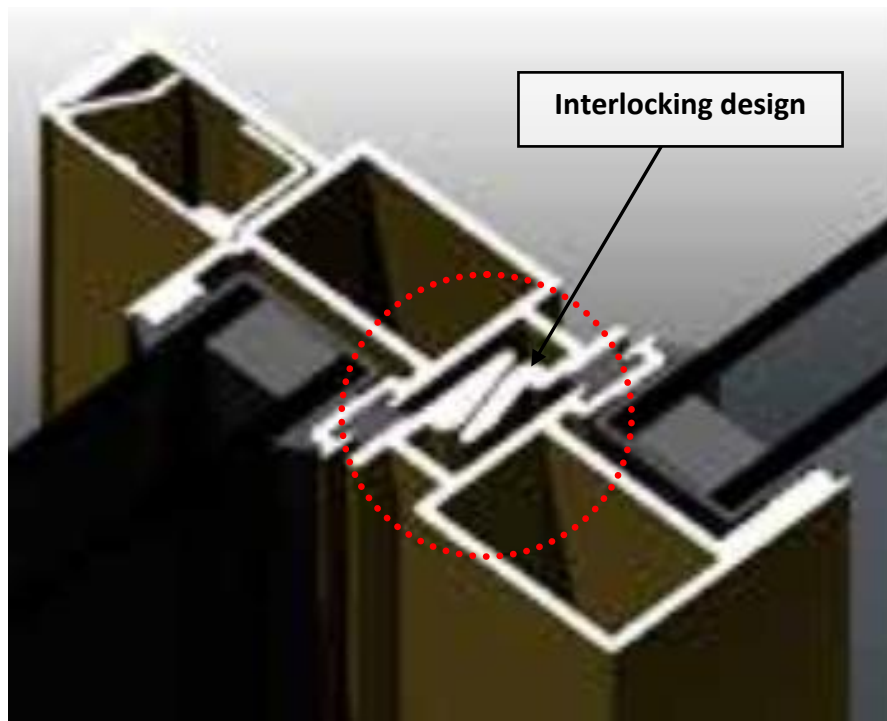
It should be noted that the acoustic performance of a closed door is a result of the combination of door, seals and frame. The performance of the frame depends on the air tightness provided by the seals and the construction of the frame itself. The gap between the door jamb casing and timber frame need to be filled with oversized backing rod and silicone sealant (1:1 depth to width ratio for joint widths less than 12mm and 2:1 ratio for joint widths greater than 12mm). Where void is larger than the 30mm, install timber packer to take up void around door jamb and timber frame instead of using backing rod and seal remaining gap with silicone sealant.

Window / Sliding Door

It is recommended that the selected window frames to have the panels with an interlocking design feature between each sash. This feature is typically designed to improve the water penetration resistance; However, it will also provide benefits to

the acoustic properties of the overall window frame system. The design feature is graphically illustrated in Figure 5-1.

Figure 5-1 Interlocking Design Between Each Sash



Acoustic seals only provide suitable performance if they are fitted properly. Seals should be selected based on their acoustic performance, simplicity of use, life cycle and maintenance requirements. Generally, Q-lon seals are more effective than brush seals. Standard mohair seals should be avoided where possible.

Table 5-1 and Table 5-2 present summaries of recommended glazing for the window system in the proposed development.

Table 5-1 Recommended Glazing for Window System – 633 Warringah Rd, Forestville

Room	Recommended Construction
Room 1, Room 2, Communal Room (First Level) Room 9, Room 10, Room 11 & Room 12	6.38mm laminated glass with a minimum rating of R_w 32.
Entry, Communal Room (Ground Level), Manager, Room 7 & Room 8	10.38mm laminated glass with a minimum rating of R_w 35.
Room 3, Room 4, Room 5 & Room 6	10.5mm VLam Hush glazing by Viridian Glass with a minimum rating of R_w 39.

Table 5-2 Recommended Glazing for Window System – 635 Warringah Rd, Forestville

Room	Recommended Construction
Room 1, Room 9, Room 10, Room 11 & Room 12	6.38mm laminated glass with a minimum rating of R_w 32.
Communal Room (Ground & First Level), Room 2, Room 7 & Room 8	10.38mm laminated glass with a minimum rating of R_w 35.
Manager, Room 3, Room 4, Room 5 & Room 6	10.5mm VLam Hush glazing by Viridian Glass with a minimum rating of R_w 39.

Please note that the acoustic performance of 10.38mm laminated glass is not the same as the 10.5mm VLam Hush which is a proprietary system by Viridian Glass.

5.2 Operational Noise Assessment

Outdoor events such as gatherings or BBQ amongst the residents of the boarding house may happen at times. This section assesses the noise emission levels to the surrounding associated with such activities which may occur at the common terrace and common open space on Ground Level.

It has been identified that the main potential noise sources emanating from such activities is conversational noise from the residents. Table 5-2 presents a summary of the noise level of each of these sources.

Table 5-2 Typical Sound Power Level (SWL) of Vocal Effort - dBA

Noise Source	L_{Aeq} Sound Power Level (SWL)
Male Speech Level (Casual)	61
Female Speech Level (Casual)	58
Male Speech Level (Normal)	66
Female Speech Level (Normal)	63
Male Speech Level (Raised)	73
Female Speech Level (Raised)	70
Male Speech Level (Loud)	83
Female Speech Level (Loud)	79

Predictions of resident's conversational noise have been conducted based on the following typical worst-case assumptions within a 15-minute period:

- Outdoor area will not be in used between 10.00pm and 7.00am.
- Male normal vocal effort has been considered as a typical worst case for normal conversation within a small social gathering environment.
- A maximum of 26 residents are allowed at any time in the common open space. One in two residents in conversation in the outdoor (50% of 26 residents) area.
- Restriction of playing loud music.
- Shielding provided by 2.1m high acoustically non-transparent boundary fence.

Some of the construction materials suitable for use in noise barriers are summarised below:

- Solid brick masonry
- Aerated concrete masonry
- Fibre cement sheet at least 6mm thick
- 20mm thick solid plywood for lapped and capped configuration
- Minimum 15mm thick acrylic
- Minimum 6mm thick glass
- Other material with a mass-per-unit-area of at least 10kg/m²
- Any of the combination above.

It should be noted that the above assumptions are conservative and are higher than an actual casual conversation in a small social gathering. Figure 5-2 presents a 3D view showing the relative position of social activity noise source to the surrounds.

Figure 5-6 3D View of Noise Source to the Surrounds

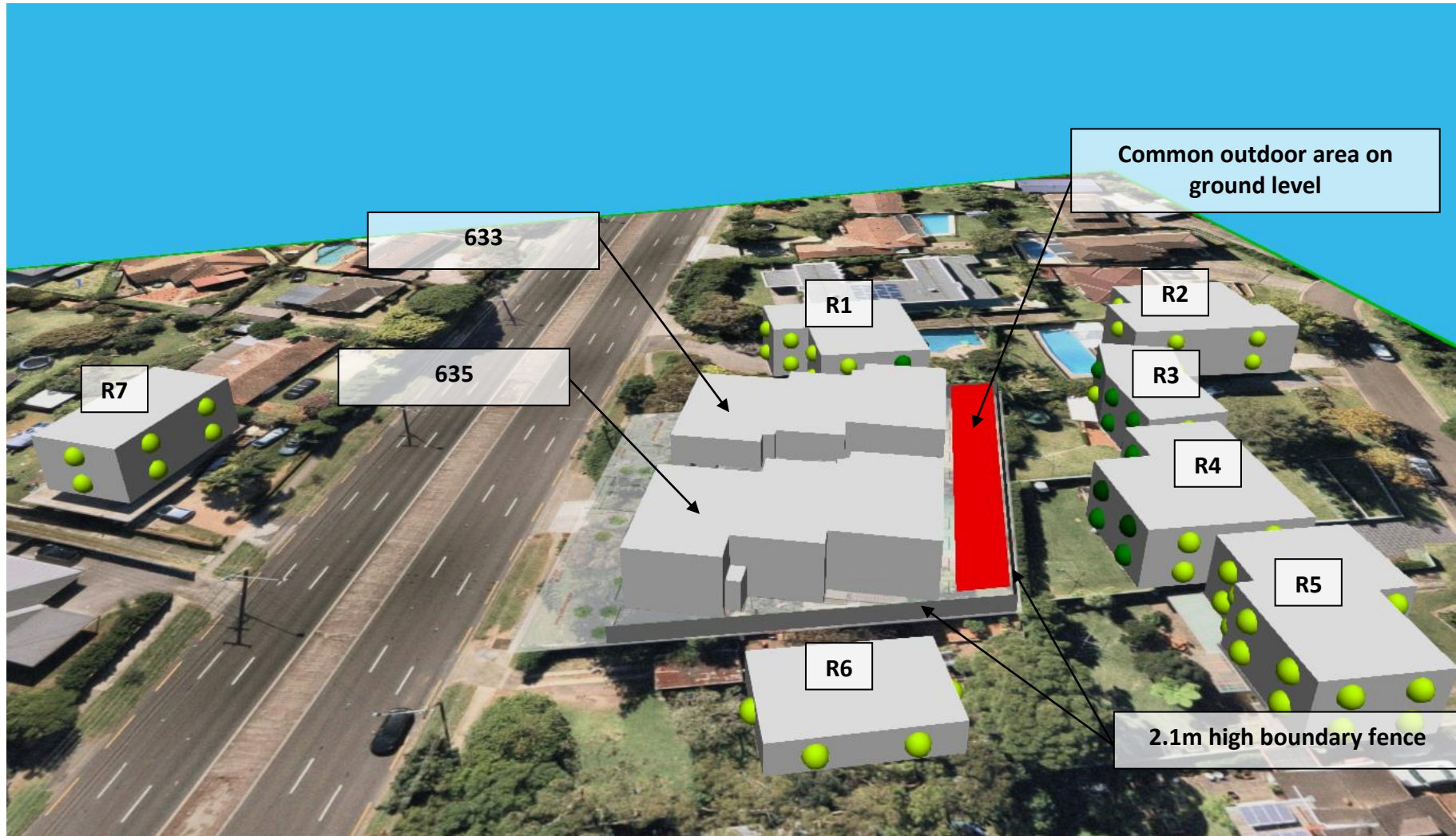


Table 5-3 presents the predicted $L_{Aeq,15min}$ noise levels at the surrounding identified residential receivers without the implementation of any noise mitigation measures.

Table 5-3 Predicted $L_{Aeq,15min}$ Noise Levels (dBA) – Without Mitigation

Identified Receivers	Project $L_{Aeq,15min}$ Project Noise Trigger Levels			Predicted $L_{Aeq,15min}$ Noise Level
	Daytime (7.00am-6.00pm)	Evening (6.00pm-10.00pm)	Night Time (10.00pm-7.00am)	
R1	58	48	37*	41
R2				33
R3				39
R4				42
R5				34
R6				33
R7				16

*Note: Project noise trigger level for night time period is not applicable as it is proposed that the communal outdoor area is not to be used during the period of 10.00pm to 7.00am.

Based on the predicted $L_{Aeq,15min}$ noise levels presented in Table 5-3, it can be established that compliance is achieved at all identified receiver locations.

5.3 Parking Area Noise Assessment

The noise level associated with car movements within the carpark area comprises cars at slow speed, car doors closing and engines starting.

The Bavarian State Office for the Environment (BayLfU) parking area noise study which presents a method for calculating the noise emissions associated with various traffic situations. The BayLfU method uses a 30 second L_{Aeq} SWL of 88dBA per vehicle movement.

In order to establish the typical worst-case car park movement scenario, reference was made to the Roads and Maritime Services document entitled “Guide to Traffic Generating Developments” dated October 2002. This document provides guidance in establishing the number of vehicle movements during a weekday peak hour based on the following relationship.

Rates.

Smaller units and flats (up to two bedrooms):

Daily vehicle trips = 4-5 per dwelling

Weekday peak hour vehicle trips = 0.4-0.5 per dwelling.

Larger units and town houses (three or more bedrooms):

Daily vehicle trips = 5.0-6.5 per dwelling

Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

The proposed buildings primarily consist of single bedroom units only and the established number of vehicle movements during a typical worst case 15-minute period is 4 vehicle movements which represents when tenants leave for and arrive home from work. The SWL expressed as an L_{Aeq} over a 15-minute period is assumed to be **79dBA** for the 2 cars arriving and then 2 cars departing.

Table 5-4 presents the predicted $L_{Aeq,15min}$ noise levels associated car movements within the carpark area to surrounding receivers.

Table 5-4 Carpark Area – Predicted $L_{Aeq,15min}$ Noise Levels (dBA)

Identified Receivers	Project $L_{Aeq,15min}$ Project Noise Trigger Levels			Predicted $L_{Aeq,15min}$ Noise Level
	Daytime (7.00am-6.00pm)	Evening (6.00pm-10.00pm)	Night Time (10.00pm-7.00am)	
R1	58	48	37	25
R2				19
R3				29
R4				32
R5				24
R6				22
R7				26

Based on the predicted noise level presented in Table 5-4, compliance is achieved at all residential receiver locations have been predicted.

5.4 Mechanical Plant Noise

The total number of air-conditioning units is yet to be determined at the time of this assessment. The recommended noise goals will be based on the established daytime and evening time noise criteria of 58dBA and 48dBA respectively.

The Protection of the Environmental Operations (POEO) Act (2008) Part 4 Clause 52 of the has the following legislative requirements:

- 1) *A person must not cause or permit an air conditioner or heat pump water heater to be used on residential premises in such a manner that it emits noise that can be heard within a habitable room in any other residential premises (regardless whether any door or window to that room is open):*
 - a) *before 8am or after 10pm on any Saturday, Sunday or public holiday, or*
 - b) *before 7am or after 10pm on any other day.*

In order to comply with the POEO Act (2008) inaudibility requirements, it is recommended that the noise emission levels associated with mechanical plant must comply with measured night time background noise levels minus 10dBA. The established night time $L_{Aeq,15min}$ noise criterion for this project is 22dBA.

Based on experiences from similar projects, noise emanating from mechanical plant can be controlled by appropriate equipment selected based on siting and implementation of noise controls.

5.5 BCA Part F5 Assessment

The proposed building components during detail design or Construction Certificate Stage will be required to achieve compliance with the acoustic performance requirements presented in Section 4.3.

6 PLAN OF MANAGEMENT

In order to maintain the residential amenity within the boarding house and the surrounding residential receivers, it is recommended that the outdoor communal area cease use after 10:00 pm on a daily basis. Additional house rules/ management procedures required to address potential noise emission from the boarders include the following items:

1. Consideration must be shown to other lodgers and neighbouring premises by keeping the noise to a minimum. Television and radio volumes must be kept low. No excessive noise is permitted in the communal areas.
2. All rooms are for residential purposes only and must not be used of any other purpose and house rules have a NO PARTY POLICY.
3. Lodgers are not permitted to keep any animals.

4. Any problem or complains must be reported to the manager immediately to ensure timely response and resolution.
5. Lodgers are not to interfere with the reasonable peace, comfort or privacy of neighbours, or other lodgers or any other person lawfully on the premises. Nor to cause or permit any nuisance with will destroy the harmony of the house.
6. The manager reserves the right to evict any lodger instantly who fails to abide by the House Rules and such action is enforceable at law.
7. The external areas should not be used for gathering after 10:00 pm.
8. Communal areas will be further passively controlled by signage and actively managed by the manager of the boarding house who will monitor and ensure that residents are made aware of the house rules and behave in a reasonable and considerate manner.

7 CONCLUSION

Blackett Acoustics has been engaged to conduct DA acoustic assessment of the proposed 26 rooms boarding house development located 635 Warringah Road, Forestville.

Assessment of traffic noise ingress has been conducted in accordance with the requirements of The Department of Planning and Infrastructure's (DoPI) document entitled *"Development near Rail Corridors and Busy Roads – Interim Guideline"*. To ensure compliance with the guideline, recommendations have been made for building elements to control noise ingress to within design levels recommended.

Operational noise emission levels associated with outdoor spaces such as communal areas and carpark has been conducted in accordance with the requirements of the NSW Noise Policy for Industry (NPfI). Compliance is predicted on all occasions.

House rule and management procedures are established in the Plan of Management to maintain the residential amenity within the boarding house and the surrounding residential receivers.

Acoustic privacy between sole occupancies is to be reviewed during Construction Certificate (CC) Stage to ensure BCA acoustic requirements are achieved.

Note

All materials specified by Blackett Acoustics have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose.

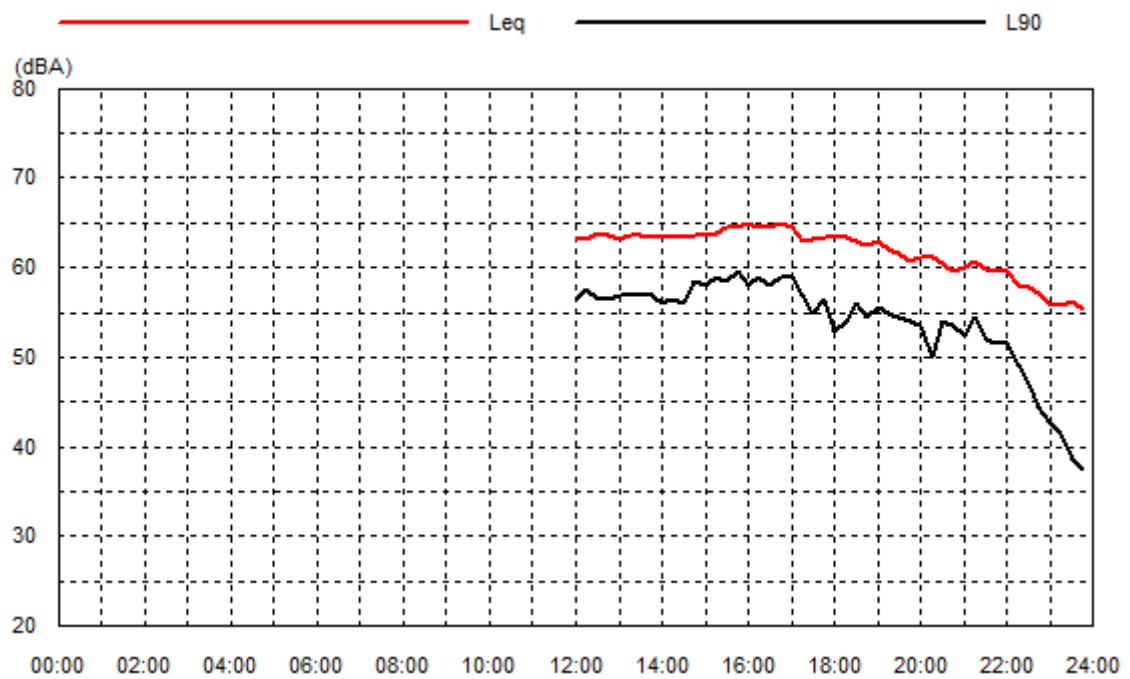
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A	Final	11 May 2020	Jimi Ang

Appendix A

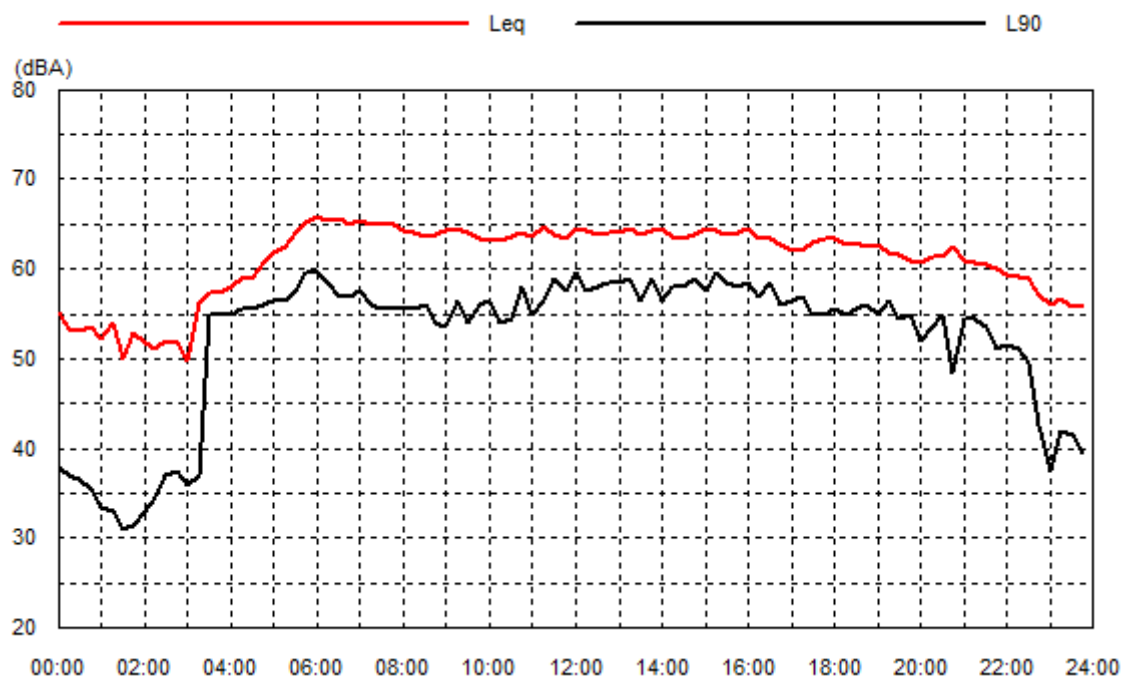
Noise Logger Graphs

Location: 741 Warringah Rd, Forestville

Tue 28 May 19

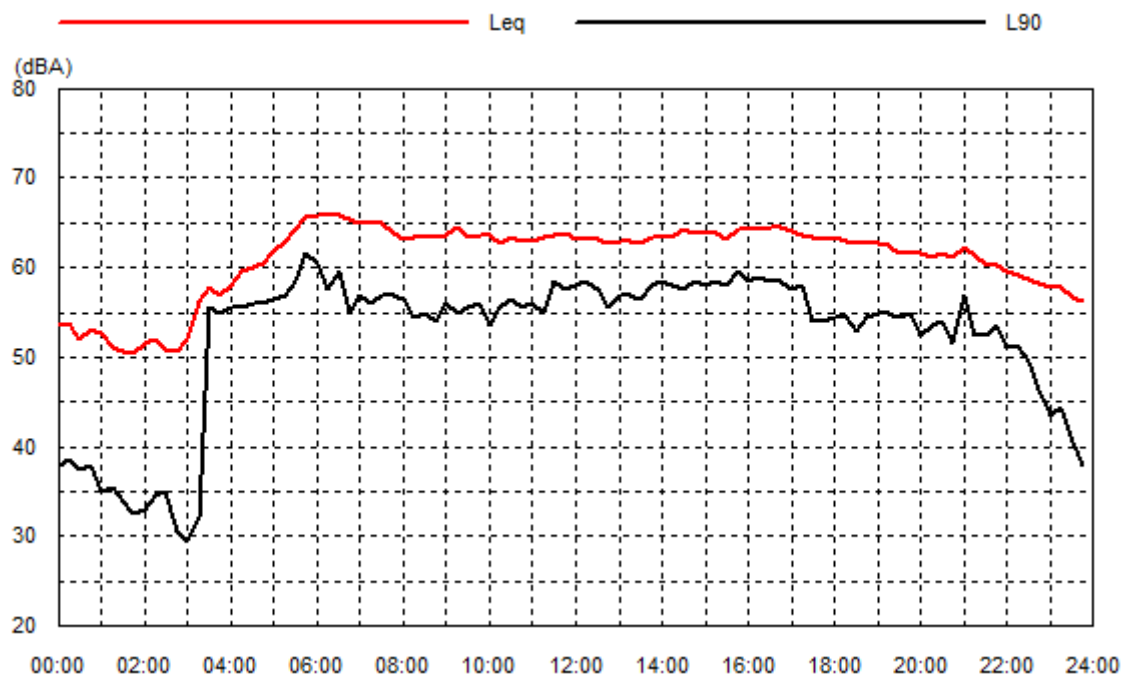


Wed 29 May 19

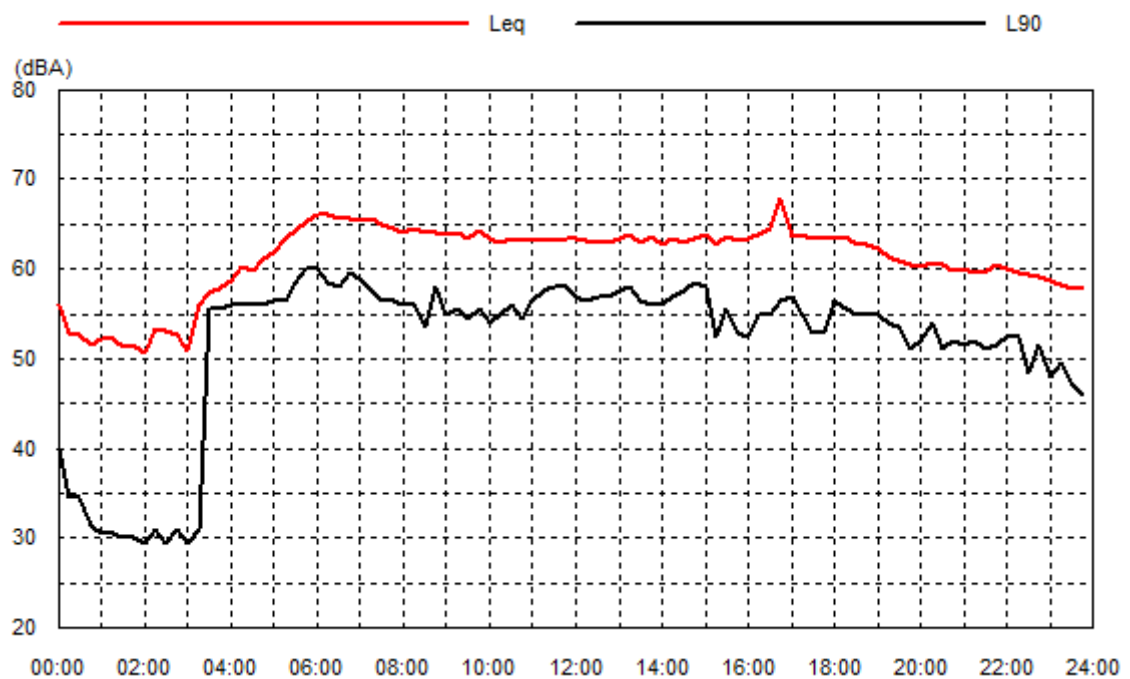


Location: 741 Warringah Rd, Forestville

Thu 30 May 19

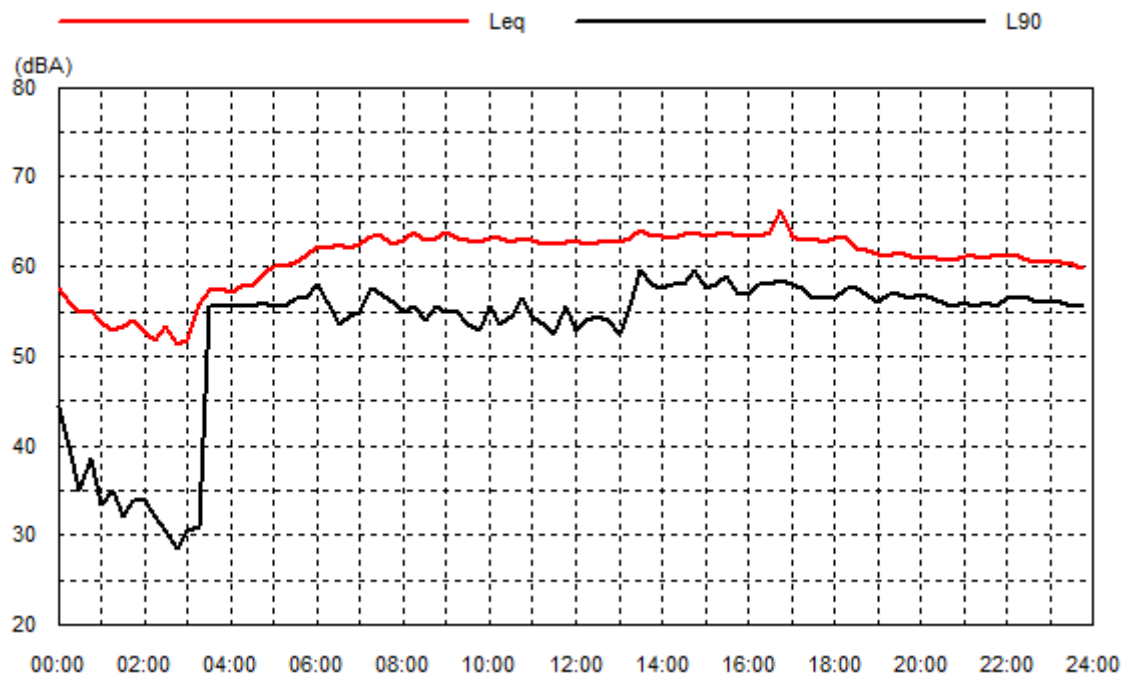


Fri 31 May 19

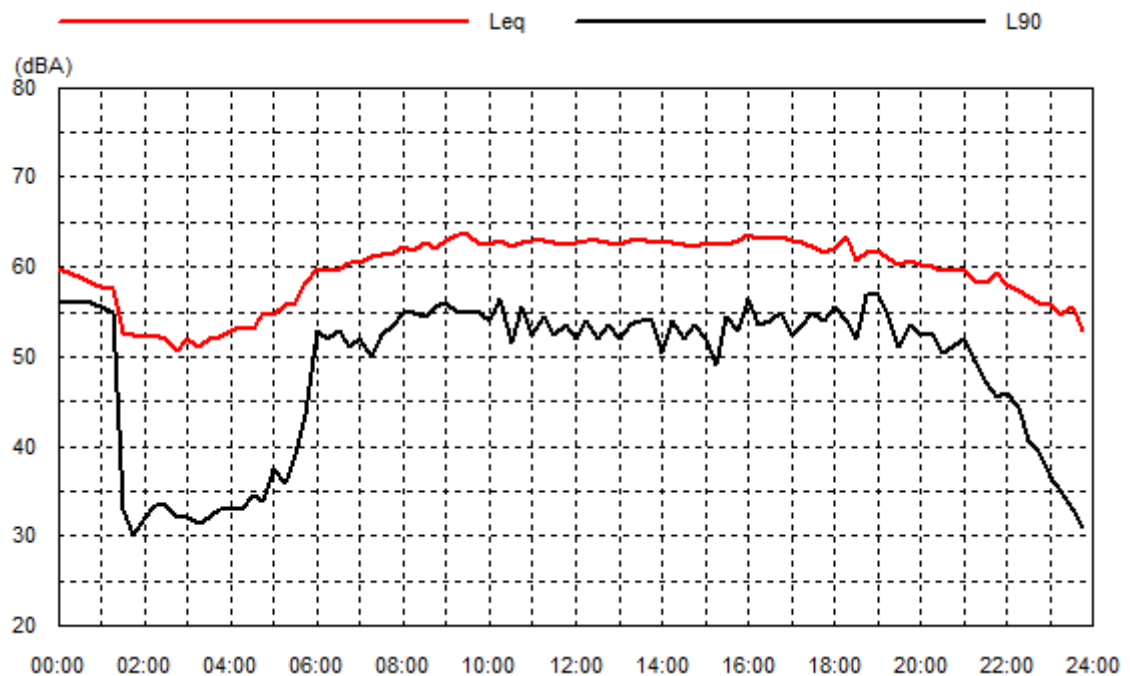


Location: 741 Warringah Rd, Forestville

Sat 01 Jun 19



Sun 02 Jun 19



Location: 741 Warringah Rd, Forestville

Mon 03 Jun 19

