ACOUSTIC, VIBRATION & NOISE Pty Ltd
Suite 2B, 34 Macmahon St, Hurstville NSW 2220 ABN: 22 615 582 002
Phone: 9793 1393 Email: info@acousticsolutions.com.au

Acoustic Report

- Traffic & Environmental Noise -

For proposed development at

No. 125 Parramatta Road &No. 52-54 Powell Street, Homebush

Prepared By: Domeniki Tsagaris (M.I.E. Aust), B.E.(UNSW)
Australian Acoustical Society (Sub).
Approved By: Moussa Zaioor (M.I.E. Aust), CPENG,
Australian Acoustical Society (Member).

Date: November 4, 2019
Amended Date: April 20, 2020
Reference No.: 2019-347 Rev 1

DOCUMENT CONTROL

Date	***Revision History***	***Prepared By:***	***Reviewed and Authorised by:***
21/10/2019	Initial Report	Domeniki Tsagaris	Moussa Zaioor
04/11/2019	Final Report	Domeniki Tsagaris	Moussa Zaioor
20/04/2020	Revision 1	Moussa Zaioor	Moussa Zaioor

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1.0 SCOPE OF WORK

The aim of this report is to determine the building materials to be used and the construction methods to be adopted such that the proposed development at No. 125 Parramatta Rd & No. 52-54 Powell St Homebush is built to achieve acceptable internal noise levels as per Strathfield Municipal Council Conditions/ Requirements.

Noise intrusion levels are to be within the limits adopted by the Building Code of Australia, NSW Road Noise Policy, AS 3671 'Road Traffic Noise Intrusion – Building Siting and Construction', AS 2107 'Acoustics – Recommended Design Sound Levels and Reverberation Times', Clause 102 of the State Environmental Planning Policy – (Infrastructure) 2007 and Strathfield Municipal City Council requirements, such that all habitable rooms in the proposed development shall be designed to limit internal noise levels.

The site is located on Parramatta Road in the suburb of Homebush (Figure 1 – Site Location). The architectural plans by Urban Link Architecture dated the 2nd April, 2020 are for the proposed construction of a nine (9) storey mixed used development with two (2) levels of basement parking.

Figure 1 - Site Location

2.0 ACOUSTIC DESCRIPTORS

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.

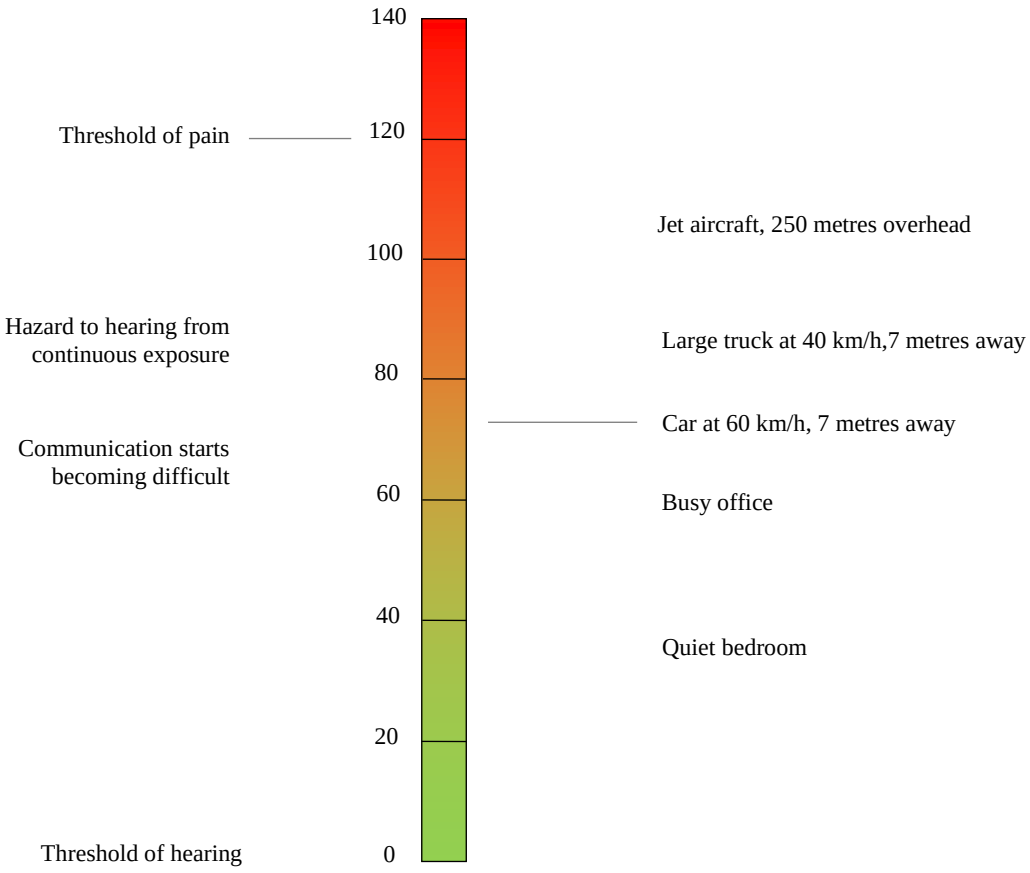
L_{A50} – The L_{A50} level is the noise level which is exceeded for 50% of the sample period. During the sample period, the noise level is below the L_{A50} level for 50% of the time.

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 nighttime) 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 nighttime.

The level of common sounds on the dB(A) scale as the figure below:



3.0 ACOUSTICAL STUDY

3.1 AUSTRALIAN STANDARD 2107:2016 & CLAUSE 102 OF THE SEPP

The above standard has formulated the criteria for developments situated in urban areas. The levels have been derived from relevant Australian Standards, the measurements and analysis of noise conditions in other similar developments and standards established in completed projects.

As traffic noise levels are not constant, a L_{eq} noise level descriptor is used when assessing this type of noise source. The L_{eq} is the mean energy level of noise being measured and has been found to accurately describe the level of annoyance caused by traffic noise.

It is usual practice, when we find it necessary to recommend internal sound levels in buildings to refer to Australian/New Zealand Standard AS/NZS 2107:2016 "Acoustics – Recommended Design Sound Levels and Reverberations times for Building Interiors".
The above standard has formulated the criteria for developments situated in urban areas. The levels have been derived from relevant Australian Standards, the measurements and analysis of noise conditions in other similar developments and standards established in completed projects.

AS/NZS 2107:2016 sets out design internal noise levels and reverberation times for different buildings depending on the use of these structures. The noise levels recommended in AS/NZS 2107:2016 take into account the function of the area and apply that to the sound level measured within the space unoccupied although ready for occupancy.

By taking in to consideration that the proposed development is considered to be "sensitive to traffic noise or vehicle emissions", it must be "appropriately located and designed, or include measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development" arising from Parramatta Road & Western Motorway

In Table 1, Page 13, the standard recommends the following noise levels for residential buildings.

Item	Type of occupancy/activity	Design sound level ($L_{Aeq,t}$) range	Design reverberation time (T) range, s
7	RESIDENTIAL BUILDINGS (see Note 5 and Clause 5.2)		
	Houses and apartments in inner city areas or entertainment districts or near major roads—		
	Apartment common areas (e.g. foyer, lift lobby)	45 to 50	—
	Living areas	35 to 45	—
	Sleeping areas (night time)	35 to 40	—
	Work areas	35 to 45	—
	Houses and apartments in suburban areas or near minor roads—		
	Apartment common areas (e.g. foyer, lift lobby)	45 to 50	—
	Living areas	30 to 40	
	Sleeping areas (night time)	30 to 35	
	Work areas	35 to 40	—

Similarly, Clause 102 of the SEPP states that where the development is for residential use and is located in or adjacent to a relevant road corridor, a consent authority must not grant consent unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:

- in any bedroom in the building – 35dB(A) at any time between 10.00p.m. and 7.00a.m.
- anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40dB(A) at any time.

3.2 SLEEP AROUSAL

Section 5.4 of the NSW Road Noise Policy mentions the Environment Protection Authority NSW 1999 guideline which aims at limiting the level of sleep disturbance due to environmental noise. It states that the $L_{A1,\ 1\text{-minute}}$ level of any noise should not exceed the ambient L_{AF90} noise level by more than 15dB. This guideline takes into account the emergence of noise events but does not directly limit the number of such events or their highest level, which are also found to affect sleep disturbance.

Applying the above thus the sleep disturbance criteria for the above project is $L_{A1,\ 1\ minute}$ and should not be exceeded by [L_{A90} =49 dB(A) plus 15]= 64dB(A) on the Parramatta Road façade and **[L_{A90}=43 dB(A) plus 15] = 58 dB(A)** outside the residential windows on the northwestern façade..

There are other studies on sleep disturbance like the one carried the enHealth Council (2004) and the guidelines published by the World Health Organisation (1999) were reviewed and analysed in terms of the guidance on noise exposure and sleep disturbance. The enHealth report states that:

'as a rule for planning for short-term or transient noise events, for good sleep over 8 hours the indoor sound pressure level measured as a maximum instantaneous value not exceed; approximately 45 dB(A) $L_{A,(Max)}$ more than 10 or 15 times per night'.

4.0 NOISE SURVEY. INSTRUMENTATION & RESULTS

On the 25th October, 2019 an engineer from this office went to the above address and carried out unattended noise measurements at the proposed building line facing Parramatta Road, in order to determine existing noise levels (Figure 2 - Point A).

Unattended noise measurements were also carried out on the southern boundary of the site (Figure 2 - Point B) in order to determine existing background noise levels.

Both unattended noise monitoring's were conducted for a period of seven (7) days from 25th October to Friday 1st November, 2019. All measurements were taken in accordance with the Australian Standards AS 1055 "*Acoustics- Description and Measurements of Environmental Noise*".

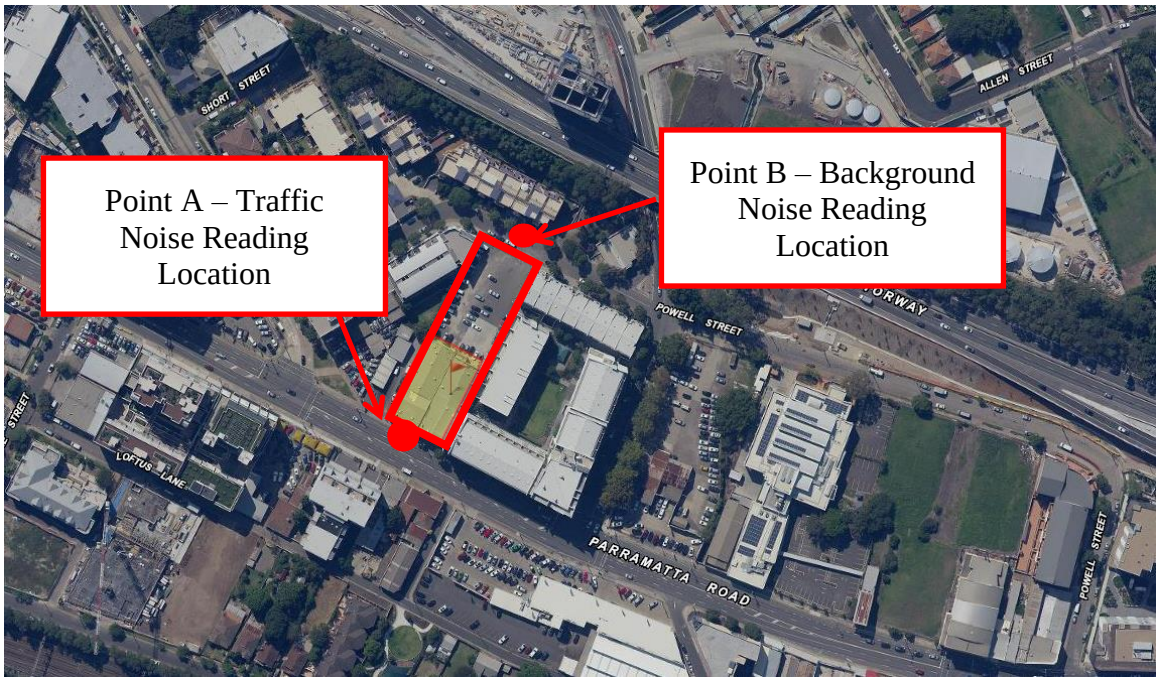


Figure 2 - Noise Reading Location

The noise surveys were conducted to determine a conservative reading of the existing day and evening noise levels [15hrs- 7:00 -22:00] $L_{(A90,\ 15\ minutes\ [1hr])}$ and $L_{(Aeq,\ 15\ minutes\ [1\ hr])}$ and to determine a conservative reading of existing night and early morning noise levels [9hrs- 22:00-7:00] $L_{(A90,\ 15\ minutes\ [1hr])}$ and $L_{(Aeq,\ 15\ minutes\ [1\ hr])}$.

The measurement procedure and the equipment used for the noise survey are described below. All sound pressure levels are rounded to the nearest whole decibel. All sound level measurements and analysis carried throughout this report are carried with Svantek 957 Noise and vibration level meter (Figure 3- Calibration Certificate) which has the following features:

- Type 1 sound level measurements meeting IEC 61672:2002
- General vibration measurements (acceleration, velocity and displacement) and HVM meeting ISO 8041:2005 standard
- Three parallel independent profiles
- 1/1 and 1/3 octave real time analysis
- Acoustic dose meter function
- FFT real time analysis (1920 lines in up to 22.4 kHz band)
- Reverberation Time measurements (RT 60)
- Advanced Data Logger including spectra logging
- USB Memory Stick providing almost unlimited logging capacity
- Time domain signal recording
- Advanced trigger and alarm functions
- USB 1.1 Host & Client interfaces (real time PC "front end" application supported)
- RS 232 and IrDA interfaces
- Modbus protocol

The noise logger was positioned at a maximum height of 1.5m from the ground. The machine was calibrated prior and after reading using our Svantek SV 33A S/N: 90200 class 1 Calibrator. Any readings affected by strong wind or rain have been disregarded.

The Full Average Statistical Noise Parameters charts $\mathbf{L_{(Aeq,\ 15\ minutes)}}$, $\mathbf{L_{(A90,\ 15\ minutes)}}$, $\mathbf{L_{(A10,\ 15\ minutes)}}$, $\mathbf{L_{(A1,\ 15\ minutes)}}$ for readings at Point A are presented in Figure 4 – Noise Survey. A Summary of those readings at Point A is presented in the table below:

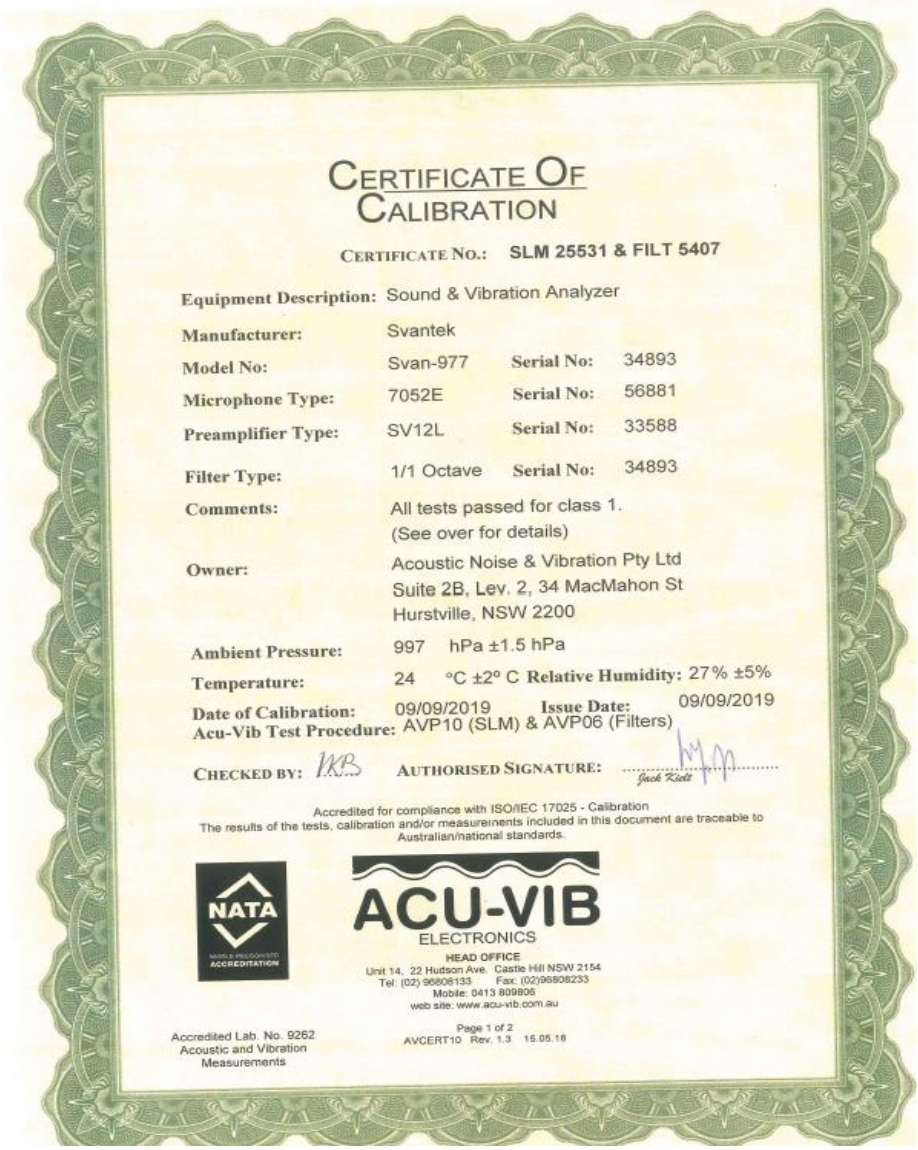
Table 4.1- Acoustic Arithmetic Average Between 25th October, 2019 – 1st November, 2019 (Point A)

At Point A	$L_{(Aeq, 15\ minutes)}$	$L_{(A90, 15\ minutes)}$
Day & Evening Time – 7:00am-10:00pm	70 dB(A)	59dB(A)
Night & Early Morning Time – 10:00pm-7:00am	64 dB(A)	49dB(A)

A Summary of the noise readings carried out at Point B are presented in Tables 4.2 below:

Table 4.2- Summary of Noise Readings between 25th October, 2019 – 1st November, 2019 (Point B)

Time periods	Rating Background Level (RBL)		
	Day (7:00 am-6 pm) dB(A)	Evening (6:00 pm-10:00 pm) dB(A)	Night (10:00 pm-7:00 am) dB(A)
Friday 25/10/2019	55	50	45
Saturday 26/10/2019	56	51	41
Sunday 27/10/2019	52	48	40
Monday 28/10/2019	56	49	43
Tuesday 29/10/2019	51	49	42
Wednesday 30/10/2019	53	51	44
Thursday 31/10/2019	53	48	43
Friday 01/10/2019	54	-	-
Median	**53**	**49**	**43**



CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 25531 & FILT 5407

Equipment Description:	Sound & Vibration Analyzer		
Manufacturer:	Svantek		
Model No:	Svan-977	**Serial No:**	34893
Microphone Type:	7052E	**Serial No:**	56881
Preamplifier Type:	SV12L	**Serial No:**	33588
Filter Type:	1/1 Octave	**Serial No:**	34893
Comments:	All tests passed for class 1. (See over for details)		
Owner:	Acoustic Noise & Vibration Pty Ltd Suite 2B, Lev. 2, 34 MacMahon St Hurstville, NSW 2200		
Ambient Pressure:	997 hPa ±1.5 hPa		
Temperature:	24 °C ±2° C	**Relative Humidity:**	27% ±5%
Date of Calibration:	09/09/2019	**Issue Date:**	09/09/2019
Acu-Vib Test Procedure:	AVP10 (SLM) & AVP06 (Filters)		

CHECKED BY: MB **AUTHORISED SIGNATURE:** Jack Kelt

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

NATA ACCREDITATION

ACU-VIB ELECTRONICS
HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

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Figure 3 - Calibration Certificate

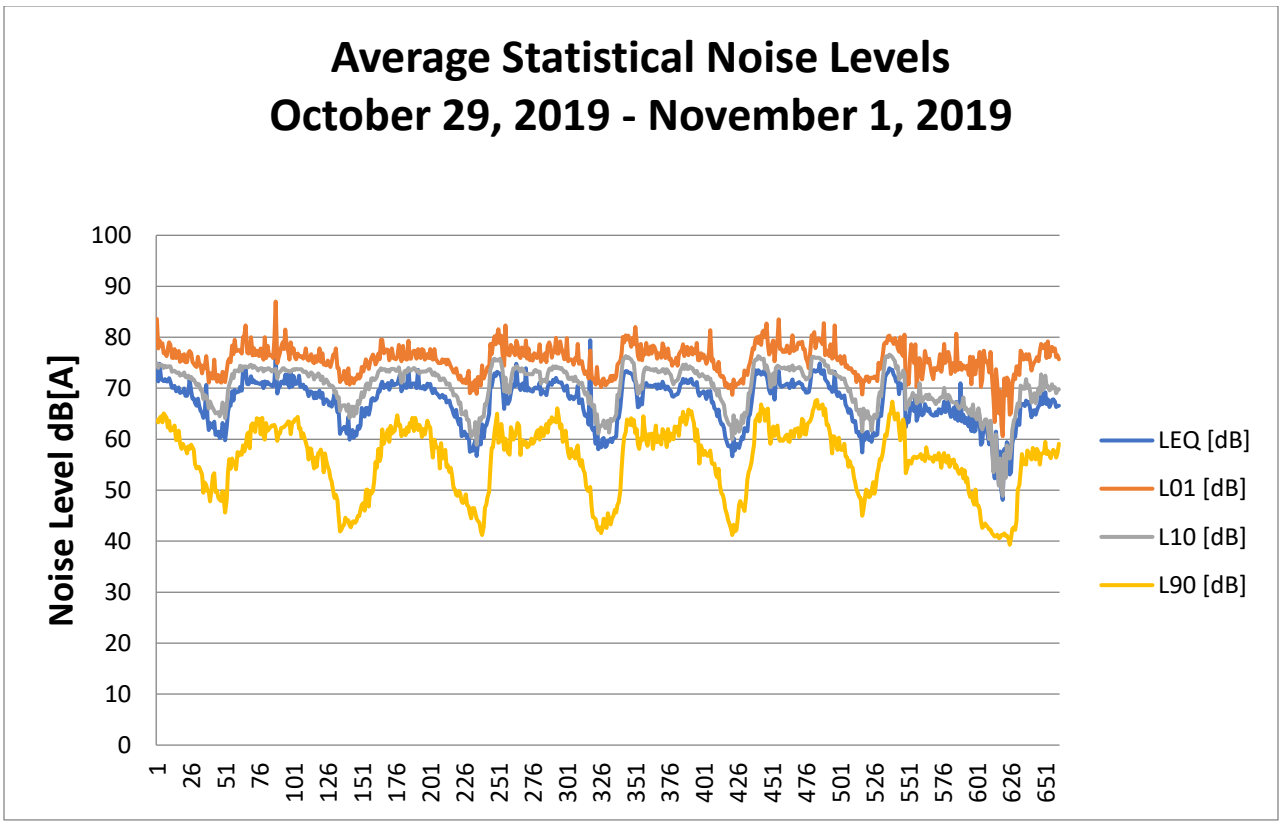


Figure 4 - Noise Survey Point A

5.0 RECOMMENDATIONS

5.1 WINDOWS/SLIDERS, EXTERNAL WALLS, DOORS & ROOF

Building Component	Rw Rating to be Achieved
Windows & Sliding Doors in All Bedrooms of Units *facing Parramatta Road (including corner units)* are to be 12.38 mm laminated with full perimeter Schlegel Q-Lon acoustic seals (1).	38
Windows & Sliding Doors in Living/Dining/Kitchen Area of all Units *facing Parramatta Road (including corner units)* are to be 12.38 mm laminated with full perimeter Schlegel Q-Lon acoustic seals (1).	38
Windows & Sliding Doors in Living/Dining/Kitchen Area and Bedrooms of all other units are to be 6.38mm laminated with full perimeter Schlegel Q-Lon acoustic seals (1).	30-32
Windows in Bathrooms/Ensuites/Laundries etc in all Units are to be unrestricted and to be in accordance with AS 2047 (Windows in Buildings). (1)	-
External Walls are to be are to be External Walls are to be Double skin cavity brick walls minimum 270/250 mm double brick/brick veneer façade construction or any other method of wall construction with an Rw of 44.	44
Roof is to be Minimum 150mm Concrete Roof, on 10 gypsum plaster board ceiling with 75mm thick, 11kg/m³ insulation (2).	39-41

NB: This report is to be read in conjunction with the BASIX certificate and any other related building specification. (1). No Through weep holes in windows/sliders. All gaps between window & door frames and the masonry alls are to be sealed using acoustic foam Hilti CP620 or similar. Glass wool batts can be applied prior to the application of the foam to seal larger gaps. (2). All gaps are to be acoustically sealed.

*****Glazing Notes -Leaks & Glazing Attenuation-**

- The Acoustic performance of a glazing system highly depends on the leaks around and within the glazing frame and façade. A double-glazing system with Rw of 40 will have its acoustic performance dropped to Rw of 30 (less than that of 6.38 mm glass) at a leak of 0.1 %. Moreover, a double-glazing system with Rw of 40 will have its acoustic performance dropped to Rw of 20 (less than that of 3.0 mm float glass) at a leak of 1 % of the glazing area.

- A 10.38mm laminated glazing system with Rw of 35 will have its acoustic performance dropped to Rw of 29 (less than that of 6.38 mm glass) at a leak of 0.1 %. Moreover, 10.38m mm laminated glazing system with Rw of 35 will have its acoustic performance dropped to Rw of 20 (less than that of 3.0 mm float glass) at a leak of 1 % of the glazing area.

- A double-glazing system with Rw of 40, a 10.38m mm laminated glazing system with Rw of 35, and a 6.38 mm laminated glazing system with Rw of 32 will all attain almost the same Rw of around 20 (less than that of 3.0 mm float glass) at a leak of 1 % in the façade or a within/around the glazing system.

The graph below shows the actual transmission loss achieved inside a room with different glazing thicknesses relative to small leaks occurring along the window frame and façade.

- A test report is to be provided from a recognized acoustic laboratory, verifying that the glazing system (glass, frame and seals) will meet the nominated sound rating required.

6.0 MECHANICAL VENTILATION FOR RESIDENTIAL UNITS

To achieve the indoor design sound levels required to habitable areas, it is assumed that the windows and doors are closed to avoid noise intrusion. Habitable Areas should not exceed 40 dB(A) during day the while bedrooms are not to exceed 35 dB(A) during the night.

Windows openable by 20% cause a 10 dB(A) reduction between the internal and external noise levels. The "Development near Rail Corridors and Busy Roads – Interim Guideline" page 19, Section 3.6.1 states that "If internal noise levels with windows or doors open exceed the criteria by more than **10 dB(A)**, the design of the ventilation for these rooms should be such that occupants can leave windows closed, and also to meet the ventilation requirements of the Building Code of Australia."

Applying the above for the proposed development, an open window during the day time gives an internal level (LAeq, 1 hour) of 60 dBA (i.e. 70 dBA – 10dB). This exceeds the day criterion of 50 dBA (i.e. 40 dBA + 10dB) as stated above. The night time criterion of 45 dBA (i.e. 35 dBA + 10 dB) will also be exceeded.

Therefore, we recommend that mechanical ventilation is required for all residential units ***facing Parramatta Rd*** for the proposed development at No. 125 Parramatta Rd & 52-54 Powell St, Homebush.

Specific ventilation requirements are outside of our scope of expertise; however an acoustically insulated building must be kept virtually air tight to exclude external noise. Therefore mechanical ventilation, noise absorbing ventilators or air-conditioning are needed to provide fresh air and to control odours.

Requirements for ventilation are given in the Building Code of Australia (BCA) under Section 3.8.5. Indoor air quality is given in Australian Standard AS 1668.2 - 2002, *"The use of ventilation and air-conditioning in buildings - Ventilation design for indoor air contaminant control".*

Preliminary ventilation details provided by RMJ Engineering dated the 3rd April, 2020 and architectural plans by Urbanlink Architecture dated the 2nd April, 2020 have shown the provision of Silenceair Acoustic Wall Ventilators (240mm) for all residential units *facing Parramatta Rd*. This will allow compliance with Part 4J of the Apartment Design Guide (ADG) and Strathfield Council requirements.

7.0 ACCEPTABLE NOISE LEVEL FROM PROPOSED DEVELOPMENT

7.1 NOISE GUIDE FOR LOCAL GOVERNMENT

The Department of Environment and Conservation (NSW) published the amended *Noise Guide for Local Government* in October 2010. The policy is specifically aimed at assessing noise from light industry, shops, entertainment, public buildings, air conditioners, pool pumps and other noise sources in residential areas.

The appropriate regulatory authority (Local Council) may, by notice in writing given to such a person, prohibit the person from causing, permitting or allowing:

1. any specified activity to be carried on at the premises, or
2. any specified article to be used or operated at the premises.

or both, in such a manner as to cause the emission from the premises, at all times or on specified days, or between specified times on all days or on specified days, of noise that, when measured at any specified point (whether within or outside the premises,) is in excess of a specified level.

It is an offence to contravene a noise control notice. Prior to being issued with a noise control notice, no offence has been committed.

The Protection of the Environment Operations Act 1997 defines "Offensive Noise" as noise:

1. (a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
2. (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
3. (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
2. (b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulation.

7.2 NSW NOISE POLICY FOR INDUSTRY (2017)

The above policy seeks to promote environmental well-being through preventing and minimizing noise by providing a framework and process for deriving noise limits conditions for consent and licenses.

The Noise Policy for Industry 2017 recommends two separate noise criteria to be considered, the Intrusive Noise Criteria and the Amenity Noise Criteria. A project noise trigger level being the lowest of the amenity and the intrusiveness noise level is then determined.

If the predicted noise level L_{Aeq} from the proposed project exceeds the noise trigger level, then noise mitigation is required. The extent of any 'reasonable and feasible' noise mitigation required whether at the source or along the noise path is to ensure that the predicted noise level L_{Aeq} from the project at the boundary of most affected residential receiver is not greater than the noise trigger level.

7.2.1 AMENITY NOISE CRITERIA

The amenity noise levels presented for different residential categories are presented in Table 2.2 of the Noise Policy for Industry 2017. These levels are introduced as guidance for appropriate noise levels in residential areas surrounding industrial areas.

For the proposed development at No.125 Parramatta Rd & 52-54 Powell St Homebush the recommended amenity noise levels are presented in table 7.2.1.1 below:

Table 7.2.1.1- Recommended Amenity Noise levels

Type of Receiver	Area	Time of Day	Recommended L_{Aeq} Noise Level, dB(A)
Residence	Urban	Day	60
		Evening	50
		Night	45

Where a noise source contains certain characteristics such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content, a correction is to be applied which is to be added to the measured or predicted noise levels at the receiver, before comparison with the criteria. Shown below are the correction factors that are to be applied:

Table 7.2.1.2 – Modifying Factor Corrections as per Fact Sheet C (Noise Policy for Industry 2017)

FACTOR	CORRECTION
Tonal Noise	+ 5 dB
Low Frequency Noise	+ 5 dB
Impulsive Noise	Apply difference in measured fast and impulse response levels, as the correction, up to a maximum of 5 dB.
Intermittent Noise	+ 5 dB

According to Section 2.4 of the above policy, the project amenity noise level is determined as follows:

Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)

To convert from a period level to a 15-minute level, a plus 3 is added as per section 2.2 of the policy.

Therefore, the project amenity noise level for the proposed development at No.125 Parramatta Rd & 52-54 Powell St Homebush is as follows:

Daytime: **60 – 5 + 3 = 58 dB(A)**
Evening: **50 – 5 + 3 = 48 dB(A)**
Night-time: **45 – 5 + 3 = 43 dB(A)**

7.2.2 INTRUSIVENESS NOISE CRITERIA

Section 2.2.1 of the Noise Guide for Local Government states that a noise source is generally considered to be intrusive if the noise from the source when measured over a 15-minute period exceeds the background noise by more than 5 dB(A). Similarly, The Noise Policy for Industry in Section 2.3 summarizes the intrusive criteria as below:

$L_{Aeq,\,15\,minute} \leq$ rating background level plus 5

While the background noise level known as $LA_{90,15\ minutes}$ is the Noise exceeded 90% percent of a time period over which annoyance reactions may occur (taken to be 15 minutes). The RBL is defined as the overall single-figure $L_{A90,15\ minutes}$ background level representing each assessment period (day/evening/night) over the whole monitoring period.

For the short-term method, the rating background noise level is simply the lowest measured LAF90,15min level. For the long-term method, the rating background noise level is defined as the median value of:

- all the day assessment background levels over the monitoring period for the day
- all the evening assessment background levels over the monitoring period for the evening, or
- all the night assessment background levels over the monitoring period for the night.

Therefore, the acceptable L_{eq} noise intrusiveness criterion for the proposed development during the day & night is as follows:

- **53 + 5 = 58 dB (A)** during the day
- **49 + 5 = 54 dB (A)** during the evening
- **43 + 5 = 48 dB (A)** during the night

7.2.3 PROJECT NOISE TRIGGER LEVEL

A summary of intrusiveness and amenity noise levels as determined in sections 7.2.1 & 7.2.2 are shown in table 7.2.3 below:

Table 7.2.3 - Summary of Intrusiveness and project amenity noise levels

Period	Intrusiveness Noise Level	Project Amenity Noise level
Day Time (7:00am-6:00pm)	58	58
Evening Time (6:00pm-10:00pm)	54	48
Night & Early Morning (10:00pm – 7:00am)	48	43

The project noise trigger level is the lower (that is, the most stringent) value of the amenity and intrusiveness noise levels for the day, evening and nighttime. Therefore, the project noise trigger levels for the proposed development are as shown below

Daytime: $L_{Aeq,15\ min}$ **58 dB(A)**
Evening: $L_{Aeq,15\ min}$ **48 dB(A)**
Night-time: $L_{Aeq,15\ min}$ **43 dB(A)**

The proposed development and its activities including all mechanical plant will not exceed the project noise trigger level at the most sensitive location, provided all noise sources associated with development and listed in Section 8 below are properly mitigated.

8 NOISE LEVELS FROM CARS, TRUCKS & MECHANICAL PLANT

The noise associated with the use of the proposed building and its retail/commercial stores, will be the combination of all the following major noise activities:

- Cars entering and exiting the residential basement,
- Cars entering and exiting the commercial basement,
- Delivery trucks
- Unloading of all trucks including the use of forklifts and compactors
- Refrigeration units servicing the commercial shops,
- AC units servicing the commercial shops,
- People talking,
- Garbage collection,
- Car Park exhaust fans servicing the basements,
- Car Park air supply fans servicing the basements,
- Other small fans servicing the building like the garbage Shute, lobby, hydrant room

The following table is a summary of noise levels associated with the above listed activities.

Table 8.1– Expected Sound Power Levels from different Noise Sources

Noise Sources Servicing Proposed Development	Sound Power Level Leq dB(A)
Trucks	**100**
Small trucks	**87**
Garbage trucks	**114**
Cars entering and existing the basement	**85**
Forklift	**95**
Compactor – with tonality added-	**95**
Refrigeration condensers & Compressors	**84**
Air condition unit	**86**
Unloading from trucks	**78**
Roller door - Noisy-	**85**
Car park Exhaust fan	**89**
Car park air supply fan	**83**
Other fans - combined	**70**
10 people talking loudly	**85**

In regard to the above noise sources, the following is noted:

- Noise from mechanical plant and equipment is based on file data of pervious similar projects.
- The data calculated by our office ranged widely and is dependent on whether quieter and well-maintained equipment is used or not.
- The refrigeration mechanical plant will operate at all times, irrespective of whether the restaurants are operating or not. However, when the restaurants are closed, the ambient temperature is lower, thus the refrigeration condensers will operate on low speed.
- The air-condition equipment for commercial/retail properties will only operate during operating hours.

We recommend acoustic assessment of all proposed Mechanical Plant & Equipment once the development has been approved and Mechanical Services Plans have been prepared.

In general, we recommend that all new external air-conditioning units are to be acoustically enclosed or set away by more than 3.0m from any boundary. The assessment of the Mechanical Plans once available will recommend proper silencer/(s) and duct lagging such that noise levels emitted from the mechanical plant servicing the proposed development at

No. 125 Parramatta Rd & No. 52-54 Powell St Homebush, meets the requirements of section 7.0 of this report.

9 NOISE FROM PROPOSED COMMERCIAL PREMISES

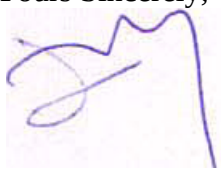
The Acoustic design for the proposed development is only for the base building design. Noise from any commercial space (Restaurant, Office, Super Market, Other Shopping outlets (if any) ,..) is not covered in this report as it will be subject to a separate DA once the base building is approved . Future Reports/Plans accompanying the DA for these commercial spaces should ensure that the combined noise levels from these facilities including their mechanical plant is below the noise trigger level described in section 6.2.3 of this report.

10 DISCUSSION & CONCLUSION

The construction of the proposed development at No.125 Parramatta Rd & 52-54 Powell St Homebush if carried out as recommended in the plans and specifications and including the acoustic recommendations in this report, will meet the required noise reduction levels as required in Clause 102 of the State Environmental Planning Policy – (Infrastructure) 2007, NSW Road Noise Policy, Australian Standards AS 3671 'Traffic Noise Intrusion Building Siting and Construction', AS 2107 'Acoustics – Recommended Design Sound Levels and Reverberation Times' and Strathfield Municipal Council Conditions/Requirements.

Should you require further explanations, please do not hesitate to contact us.

Yours Sincerely,



M. Zaioor
M.S. Eng'g Sci. (UNSW).
M.I.E.(Aust), CPEng
Australian Acoustical Society (Member)