CORNER PARRAMATTA ROAD & PYRMONT BRIDGE ROAD
ACOUSTIC REPORT
FOR
MHA PBR ANNANDALE PTY LTD

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1.PROJECT DESCRIPTION

1.1.REPORT TO SUPPORT DEVELOPMENT APPLICATION

This Acoustic Report has been prepared for the Development Application for the property located on the corner of Parramatta Rd & Pyrmont Bridge Road for the use of the site as a mixed residential and commercial use.

The report is aimed at addressing noise from the district and noise created at site by occupant use and mechanical services plant at the closest sensitive receiver locations.

1.2.REFERENCE DOCUMENTATION

The report is based on the details given in the following set of documents:

1. BVN Drawings, Project s1611019

1.3.DESCRIPTION OF THE SITE

The proposed site consists of a commercial building with adjacent residential buildings.

The existing front of the site is shown in the photo below.

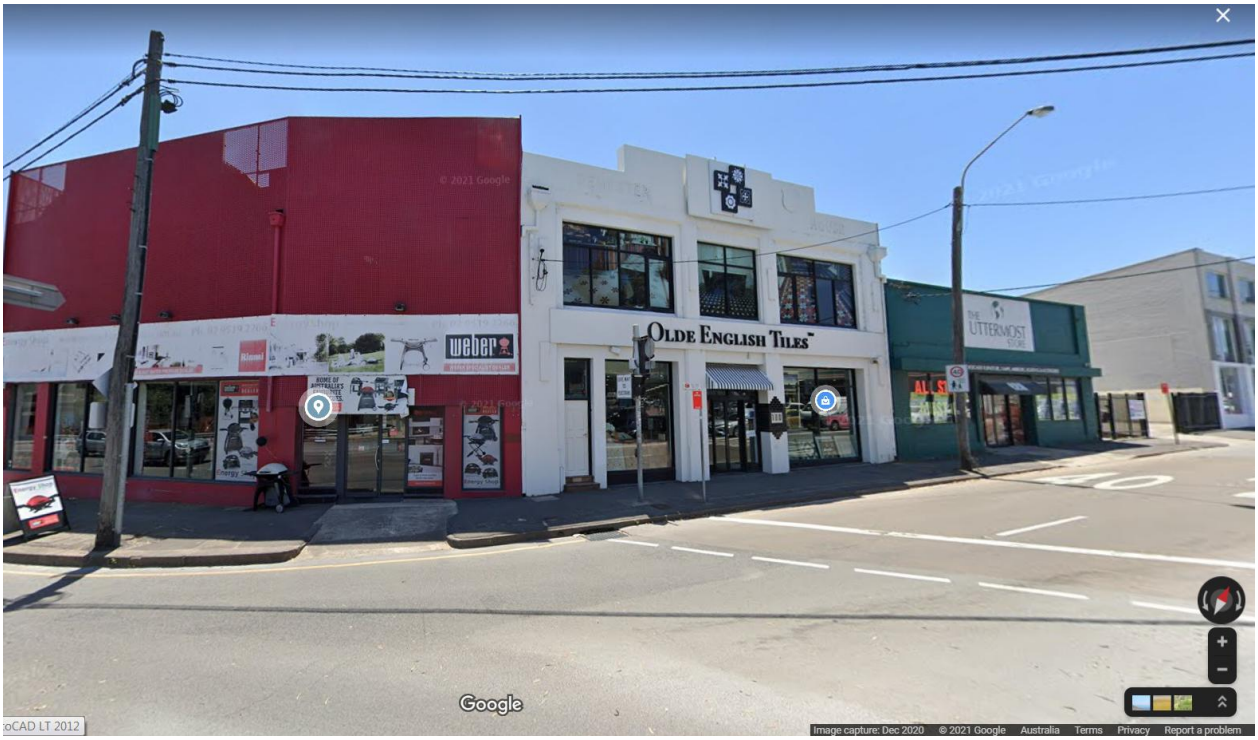

Photo of site; Cnr Parramatta Road & Pyrmont Bridge Rd

The existing site and surrounding area can be seen in the Google Aerial Photo below:

Google Aerial Photograph ,

1.4.CLOSEST SENSITIVE RECEIVERS

The site currently sits in a predominately commercial area, the closest commercial sensitive receivers have been identified below and shown on the Google aerial photo above.

The neighbouring closest sensitive receiver has been indentified below:

- Location #1, Commercial Closest Sensitive Receiver
- Location #2, Commercial Closest Sensitive Receiver
- Location #3, Commercial Closest Sensitive Receiver

1.5.DISTRICT BACKGROUND NOISE

District background noise in the immediate location of the proposed site is dominated by road traffic noise from Parramatta Road & Pyrmont Bridge Road.

The site is also within the 20-25 ANEF contour and therefore has Aircraft Noise influences.

1.6.TRAFFIC NOISE AT PROJECT LOCATON

The dominant background noise for this project is road traffic noise from Parramatta Road & Pyrmont Bridge Road on the Southern side of the property. As the site is located on a >20,000 daily vehicle road an assessment of vehicle noise must be carried out in accordance with The State Environmental Planning Policy 2007.

1.7.COMMERCIAL AREA NOISE AT PROJECT LOCATION

The site is located on Parramatta Road with commercial buildings opposite and adjacent in the immediate vicinity.

1.8.PROPOSED HOURS OF OPERATION

The project consists of a proposed commercial building which at this point in time has not nominated any operational hours.

1.9.AIRCRAFT NOISE AT PROJECT LOCATION

The proposed site falls within the 20-25 ANEF 2033 contour and therefore requires an AS2021 assessment.

2.NOISE CRITERIA

2.1.INNER WEST COUNCIL DCP

Within the Inner West Council DCP internal noise criteria has been nominated based on the following;

Buildings that are exposed to high levels of external noise are designed and constructed in accordance with AS3671 – Acoustics – Road Traffic Noise Intrusion, AS2107 – Recommended Design Sound Levels and Reverberation Times for Building Interiors, and AS 2021-2000 – Acoustics- Aircraft noise intrusion – Building siting and construction.

2.2.NOISE POLICY FOR INDUSTRY

The Noise Policy For Industry 2017 documents the requirements for determining the Noise Trigger Level and Sleep Disturbance.

2.3.CODE AS2107

The indoor mechanical services sound levels nominated in the code AS 2107, 2000, titled 'Acoustics, Recommended design sound levels and reverberation times for building interiors' is used for the areas not covered by the City's DCP as set out in the Table below:

Table 1; Recommended internal design sound levels L_{Aeq}-dB(A)

	AS 2107 Satisfactory ❶	**AS 2107 Maximum ❷**	**Selected Req.**
- Consult rooms	40 dB(A)	45 dB(A)	**40**
- Dental Clinics	40 dB(A)	45 dB(A)	**40**
- Recovery Rooms	40 dB(A)	45 dB(A)	**40**
- Ward Rooms	35 dB(A)	40 dB(A)	**35**

❶ *AS 2107 Satisfactory; regarded as appropriate in areas of major roads*

❷ *AS 2107 Maximum; regarded as level where most people become dissatisfied*

2.4.CODE AS2021 AIRCRAFT

The proposed site falls within the 20-25 ANEF 2033 contour and therefore requires an AS2021 assessment.

3.NOISE MEASUREMENTS

3.1.DISTRICT BACKGROUND NOISE MONITORING LOCATION AND TIME

The fifteen minute continuous L_{Aeq}, L_{A90}, and L_{A1} descriptor background noise monitoring was carried out at 2 meters above ground level at the monitoring location 1 between 10:00 19/05/2021 and 10:15, 26/05/2021 located at the front of the proposed site. In addition to location 2 between 10:30 26/05/2021 and 09:30, 01/06/2021.

The log of the results of background noise monitoring for the roof are shown in Appendix 1. Raw data is available upon request.

3.1.1.Monitoring Instrumentation

Noise measurement instrumentation used to log continuous district background noise in this report is an ARL, Model EL 316 (Type 1) environmental noise logger Serial No. 16-203-500. Attended site analysis of district noise was taken using a SVAN 945A sound analyser, Serial No 9418. Field calibration checks for the instruments were carried out using a Acoustic Calibrator Type Rion NC 73 Serial No. 11127967. All instruments hold current NATA calibration certificates and measurement instruments are in accordance with the requirements of AS 1259.2, Sound Level Metres, Integrating Averaging.

3.1.2.Monitoring, Calibration and Calculation Procedures

In accordance with the procedures laid out in AS 1055.1 field calibration check of the environmental noise logger was carried out immediately prior to and at completion of monitoring sessions and instrument was found to be within the specified limits.

A microphone wind-guard was in place for the full duration of the monitoring and so no correction factor required.

The 15 minute L_{Aeq} and L_{A90}, log results were down loaded and single figure L_{A90} representative values calculated using Microsoft Excel software in accordance with the procedures given in the INP for the day(7AM to 6 PM), the evening period, (6 PM to 10 PM) and the night time period, (10PM to 7 AM) and single figure L_{Aeq} over the days monitored. The Repeatable Maximum Laeq (1 Hour) day and evening log results were calculated between 6 AM to 10 PM and night log results between 10 PM and 6 AM

3.1.3.Environmental Conditions During Monitoring

Temperatures on site were between 10 to 30^{o}C for the logging period.

Wind Speed at was monitored at Sydney Airport. The results of the log indicated that at no time during the logging period did the local wind speed exceed the maximum level of 5 M/S. Metrological data including temperature, barometric pressure, wind speed at site were not outside the recommendations of AS 1055 and INP and so the L_{A90} and L_{Aeq} measurements are considered valid

The resulting L_{A90} log averages over the period monitored was then used to determine the Intrusiveness Criteria. The resulting L_{AEq} log averages over the period monitored was then calculated and used to determine the Amenity Criteria. The Project Specific Noise Level for the site was determined as the lesser of the Intrusiveness and Amenity Criteria.

3.1.4.Logger Settings

The settings of the environmental noise logger is shown in the Table below:

Table 2; Noise Logger Settings

Acoustic Research Laboratories Pty Ltd - Type 1 Environmental Noise Logger	**Logger Settings**
Frequency Weighting	A
Time Averaging	Fast
Statistical Interval	15 minute
Pre-measurement Reference	94.2
Post-measurement Reference	94.1
Engineering Units	dB SPL

3.2.BACKGROUND NOISE RESULTS

3.2.1.Background Noise Single Figure Results

Analysis of the 15 minute L_{A90} and L_{AEq} results were carried out using Microsoft EXCEL according to the requirements of the INP and the single figure RBL and the site noise from road traffic results for each period are shown in the table below:

Table 3; Single Figure RBL's and Site Noise for Project

NOISE DETAILS/Period times	**Day (0700 to 1800)**	**Evening (1800 to 2200)**	**Night (2200 to 0700)**
Location 1 RBL $L_{A90\ 15\ min}$	62.5	58.9	50.7
Location 1 Leq $_{15\ min}$ period log average Noise	68.7	66.3	65.0
Location 2 RBL $L_{A90\ 15\ min}$	48.6	46.1	41.6
Location 2 Leq $_{15\ min}$ period log average Noise	56.9	54.7	49.2

Table 4: Summary of Traffic Noise For Each Facade

Road Traffic Noise Monitored $L_{Aeq,\ -}$	**Day $L_{Aeq,\ T=15hr}$**	**Night $L_{Aeq,\ T=9hr}$**
Road Traffic Noise South Facade $L_{Aeq,}$	67.7 dB(A)	65.0 dB(A)
Road Traffic Noise North Facade $L_{Aeq,}$	55.9 dB(A)	49.2 dB(A)

4.NOISE POLICY FOR INDUSTRY

4.1.EXTERNAL NOISE LEVEL DETERMINATION IN ACCORDANCE WITH NOISE POLICY FOR INDUSTRY 2017 - NOISE TRIGGER LEVEL

4.1.1.Single Figure Results

The Noise Policy for Industry 2017(NPFI) requires:

- Intrusiveness Criteria be determined by calculating the Rated Background Levels **(RBL)** over the days monitored. We used the 5 days of 15 minute noise logging at site found in Appendix 1 to determine the background, the LA90 background

noise logged result reflected a reliable background level. Being measured adjacent to Closest Sensitive Receiver #1.

- The Project Trigger Noise Level or external noise criteria for the project is determined as the lesser of the Intrusiveness and Amenity Criteria for the site for each period of the day.

Table 5; Noise Monitoring Results

Period times	**Day (0700 to 1800)**	**Evening (1800 to 2200)**	**Night (2200 to 0700)**
Location 1 RBL $L_{A90\ 15\ min}$-❶	62.5	58.9	50.7
Location 1 Intrusiveness Criteria $L_{AEq\ 15\ min}$ RBL + 5	67.5	63.9	55.7
Location 2 RBL $L_{A90\ 15\ min}$-❶	48.6	46.1	41.6
Location 2 Intrusiveness Criteria $L_{AEq\ 15\ min}$ RBL + 5	53.6	51.1	46.6
Project Amenity Noise Level at Closest Sensitive receivers $L_{AEq\ 15\ min,\ (Suburban}$ Table 2.2 NPFI)	60	50	45
Selected Project Trigger Level	60	50	45
Project Trigger adjacent to closest residence	60	50	45
$L_{AEq\ 15\ min,}$ day period Local Road Traffic	60-5+3=58❷	50-5+3=48❷	45-5+3=43❷
Industrial Noise Trigger Level(PSNL) $L_{AEq\ 15\ min}$ =stricter of Intrusiveness and Amenity Criteria $_R$	**53**	**48**	**43**

❶ *RBL at Boundary LA90 T=15 min from Appendix 1 results*

❷ *Site Noise, Additional 3 dB added to LAEq T=15 min measured value from Appendix 1 results*

5.AS2021:2000 AIRCRAFT ASSESSMENT

5.1.ANEF 2033 CONTOUR ASSESSMENT OF THE SITE

The ANEF 2033 contour has been assessed for the projects location to determine which contour the site is located within. The sites location has been included below:

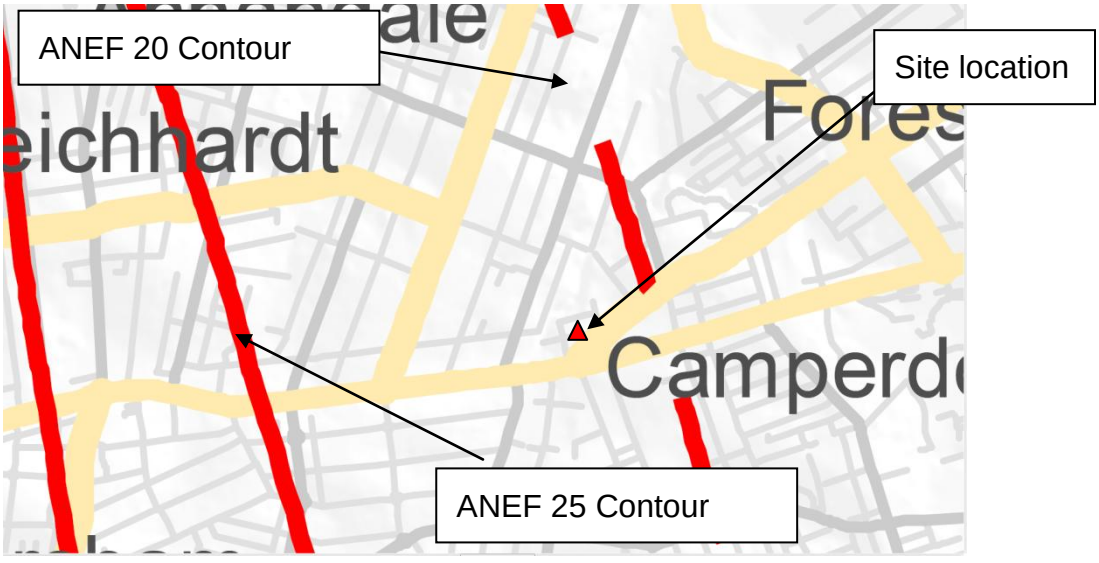

Photo of site;

5.2.ANEF 2033 ASSESSMENT WITH AS2012

We have determined that 76 High St, Mascot is located within the 25 to 30 ANEF contour.

The indoor sound levels has been determined using AS2021-2015 Aircraft Noise Reduction in accordance to Note 4 of Table 2.1.

The ANR is based off Table 3.3: Indoor Design Sound Levels for Determination Of Aircraft Noise Reduction which has been included in the table below:

Table 7; Indoor Design Sound Levels for Determination Of ANR L $_{Aeq}$-dB(A)

Type of Building: ***Houses, Home Units, Flats, Caravan Parks***	**Indoor Design Sound Level dB(A)**
Sleeping Areas, Dedicated Lounges	**50**
Other Habitable Spaces	**55**
Bathrooms, Toilets Laundries	**60**

Type of Building: ***Commercial Buildings, offices and shops***	**Indoor Design Sound Level dB(A)**
Conference Rooms	**55**
Open offices	**65**
Showrooms	**75**

Type of Building: ***Hospitals, nursing homes***	**Indoor Design Sound Level dB(A)**
Wards	**50**
Laboratories	**65**
Service areas	**75**

5.3.DISTANCE & RELEVANT AIRCRAFT NOISE LEVELS TO SITE

The difference of height of top floor compared with the runway is calculated to be less than 10 metres therefore there are no distance corrections for the site as nominated in Table 3.2 of AS 2021 which is shown in the table below:

Table 8: Land Height Correction for of Receiving Location

Difference in Elevation	**Landing (Corr. To DL)**	**Takeoff (Corr. To DT-)**
+15 M	-290 M	-110 M

Sydney Airport Master Plan, 2033 ANEF Map shows the relative location of the site to Sydney Airport runways ad from this chart we have determined the relevant distance for take off (DT), for landing(DL) and sideline from flight path (DS) for this site and

distances, incorporating the nominated land height corrections are shown in the table below:

We have also included is this table, the nominated noise levels of the loudest relevant planes for each of the runways affecting this site based on information given in AS 2021 Tables 3.4(A) to 3.58(B).

Table 9: Relevant Aircraft to this site

Runway	Landing/ Takeoff	DS	DL	DT	Table No._ Aircraft	Max Noise level dB(A)
16R/34L	L/T	1160m	4670-290= 4380m	8530-110=8420m	A330	61/70

The code requires the selection of the loudest predicted maximum aircraft noise level, being **70 dB(A)** on departures.

6.DETERMINATION OF CONSTRUCTION REQUIREMENTS

6.1.CALCULATIONS OF BUILDING ATTENUATION WORKS USING AS 3671

The calculation method to determine the attenuation of facade elements is given in AS 3671; 1989 which uses the 9 hour log average for the night period.

Code AS 3671 defines Road Traffic Noise Reduction(TNR) as the difference between the appropriate $L_{Aeq,\ T}$ monitored and the appropriate internal or "receiving" room background level L_{Arec} and values for this site are shown in the Table below:

Table 10; Noise Reduction Determination L $_{Aeq}$-dB(A)

Face, Location & Use of Space in the Building	$L_{Aeq,\ T}$ ❶	L_{Arec} ❷	TNR (❶-❷)	Construction Category ❸
South Facade Bedrooms (Ward Overnight) L-3	62 dB(A)	35 dB(A)	**27**	Category 3
South Facade Bedrooms (Ward Overnight) L-4	61 dB(A)	35 dB(A)	**26**	Category 3
South Facade Bedrooms (Ward Overnight) L-5	60 dB(A)	35 dB(A)	**25**	Category 3
South Facade Bedrooms (Ward Overnight) L-6	58 dB(A)	35 dB(A)	**23**	Category 3
South Facade Habitable Rooms (Dental, Consult, Recovery)	65.0 dB(A)	40 dB(A)	**25**	Category 3
North Facade Bedrooms (Ward Overnight)	49.2 dB(A)	35 dB(A)	**14.2**	Category 2
North Facade Habitable Rooms (Dental, Consult, Recovery)	49.2 dB(A)	40 dB(A)	**9.2**	Category 1

❶ *Night period 9Hr LAeq value*

❷ *Recommended internal level from DCP*

❸ *Construction 1, 2, & 3 Categories defined in AS 3671 as, Category 1 is TRN=< 10, Category 2 is TRN>10 ,<=25 and Category 3 TNR >25, <=35, Category 4 > 36*

6.2.CALCULATIONS OF BUILDING ATTENUATION WORKS USING AS2021

In accordance with Code AS 2021, the overall building Aircraft Noise Reduction (ANR) is the difference between the loudest predicted aircraft noise and indoor aircraft design sound level. In each of the various locations, the results are as follows:

Table 11; Recommended background Aircraft design sound levels L_{Aeq}-dB(A)

Building Type	**Room Type**	***Aircraft Noise-Criteria Requirement***	***ANA Requirement***
Commercial	Conference Rooms	70-55	15 dB(A)
	Open offices	70-65	5 dB(A)
Hospital	Wards	70-50	20 dB(A)
	Laboratories	70-65	5 dB(A)
	Service areas	70-75	0 dB(A)

6.3.EXTERNAL BUILDING DESIGN REQUIREMENTS

The construction requirements to satisfy the Acoustic Criteria is the stricter of the above determinations. When the stricter criteria is met all others will also be met therefore we have determined the requirements in the below table for rooms.

Table 12; Calculated Traffic Noise Wall Attenuation for each Facade

Face, Location all levels & Use of Space in the Building	**NR**	***NAc Requirement***	***Rw equivalent***
Level Ground South Facade Retail	25❶	11	14
Level 1 & 2 South Facade	25❶	11	14
Level 1 & 2 North Facade	20❷	6	9
Level 3 & 4 South Facade	26❶	18	21
Level 3 & 4 North Facade	20❷	12	15
Level 5 & 6 South Facade	25❶	15	18
Level 5 & 6 North Facade	20❷	12	15
Level 7 South Facade	25❶	15	18
Level 7 North Facade	20❷	12	15

❶ *Traffic Noise Reduction*

❷ *Aircraft Noise Reduction*

We note that a simple wall with a single layer of plasterboard either side of a stud with no insulation achieves 30Rw as documented within the CSR Redbook, due to this and the low Rw nominated above any building combination should achieve compliance for the required wall attenuation.

Table 13; Calculated Traffic Noise Window & Sliding Door Attenuation

Face, Location all levels & Use of Space in the Building	**NR**	***NAc Requirement***	***Rw equivalent***
Level Ground South Facade Retail	25❶	22	25
Level 1 & 2 South Facade	27❶	24	27
Level 1 & 2 North Facade	20❷	17	20

Level 3 & 4 South Facade	26❶	27	30
Level 3 & 4 North Facade	20❷	21	24
Level 5 & 6 South Facade	23❶	24	27
Level 5 & 6 North Facade	20❷	21	24
Level 7 South Facade	25❶	26	29
Level 7 North Facade	20❷	21	24

❶ *Traffic Noise Reduction*

❷ *Aircraft Noise Reduction*

Note: Attenuation results must be recalculated once exact final window dimensions are confirmed typically during CC stage.

Using the above calculated required attenuation figures we have nominated possible complying construction combinations. We note that the below combinations have been prepared as an example and the project is not required to use the exact nominated combinations. The only criteria for construction combinations is the calculated Rw attenuation addressed above.

Table 14; Example Complying Combinations

Item	Combination	Combination Attenuation	Required Attenuation
All Glazing	6mm Monolithic Glass in frame.	~32Rw	30Rw
Walls	CSR900(a)	36Rw	21Rw
Roof	CSR 862 (a)	37Rw	33Rw

We recommend that during the construction stage our acoustic report is provided to the window manufacturer to ensure that the installed products meet the calculated attenuation.

7.NOISE FROM PROPOSED DEVELOPMENT

7.1.SOURCES OF NOISE FROM SITE

7.1.1.Commercial Noise

The site consists of multiple commercial locations which is expected to consist of people arriving and leaving in addition to a cafe with seating for eating and dining.

7.1.2.Mechanical Services Noise

Mechanical Services that may be generated at site will include the following:

- Kitchen Exhaust
- Air Conditioning with outdoor air /ventilation

7.2.MECHANICAL SERVICES NOISE LEVELS

7.2.1.Internal Noise levels from Building Plant

The DA drawings do not include any details of the proposed mechanical Services proposed to be installed. Therefore the internal noise levels produced by the mechanical services plant on site that includes the bathroom exhaust fans, air

conditioning units /ventilation fans shall comply with the levels given for the nominated spaces as listed in Table 1.

7.2.2.External Noise levels from Building Plant

The DA drawings do not include any details of the proposed Mechanical Services proposed to be installed. Therefore the external noise levels produced by the mechanical services plant on site that includes the bathroom exhaust fans, air conditioning units /ventilation fans shall comply with the Project Specific Noise level requirement for the building which is given in Table 5.

8.COMPLAINTS RESOLUTION

Should complaints be received regarding noise from the sensitive receivers, we recommend the following action be taken:

1. Identify the source of the noise complaint and subjectively assess relative level of noise in question
2. If noise complaints do not stop, an Acoustic Consultant should be involved to assist in determining a quantitative level of the noise in question, assessing compliance with the relevant requirements of Council, and NSW Government and making suggestions to resolve the noise issue

9.CONCLUSION

In conclusion the site is located on a busy road being Parramatta Road. Due to this there is a high level of traffic noise that impacts on the site. In order to achieve appropriate internal noise levels attenuation calculations have been carried out to determine the final recommended attenuation which have been listed within table 12 & 13. We would expect that with the final construction consisting of the recommended attenuation figures at a bare minimum internal noise levels will be within that required by Australian standards.

End of Report

Report prepared by Joel West.