



Operational Noise Emission Assessment

Proposed Meditation Studio

56 Pringle Ave, Bankstown, NSW



Client:
Truc Lam Zen Inc
C/o- Artiva Architects Pty Ltd

2 April 2025


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Document	Rev	Date	Prepared	Reviewed	Authorised	Approved
6682R001.DK.250314	0	2 April 2025	DK	RH	RH	

CONTENTS

Glossary	3
1 Introduction.....	4
1.1 Executive Summary.....	4
1.2 Project Description	4
1.3 Scope of Works	4
2 Assessment Criteria and Standards.....	5
2.1 Local Government and Council Criteria	5
2.2 State Government Policies and Legislation.....	5
2.3 NSW Environment Protection Authority	7
2.4 Australian Standards	10
3 Noise Measurement Equipment and Standards.....	10
4 Assessment Methodology.....	11
4.1 Project Criteria.....	11
4.2 Operational Assumptions.....	12
4.3 Noise Sources	14
4.4 Receivers	14
5 Operational Noise Emission Assessment	15
5.1 External Noise Emission.....	15
5.2 Internal Noise Emission.....	17
5.3 Road Traffic Noise.....	18
5.4 Sleep Disturbance	18
6 Discussion.....	19
7 Recommendations and Design Advice	19
7.1 Best Management Practice and Noise Management Plan	19
7.2 Mechanical Equipment	20
7.3 Air Condenser Units	20
8 Conclusion.....	20
Appendix A – Location Map, Aerial Image, Plans & Mark-Up.....	6 pages
Appendix B – Unattended Noise Monitoring Data.....	4 pages

GLOSSARY

NOISE

Noise is produced through rapid variations in air pressure at audible frequencies (20 Hz – 20 kHz). Most noise sources vary with time. The measurement of a variable noise source requires the ability to describe the sound over a particular duration of time. A series of industry standard statistical descriptors have been developed to describe variable noise, as outlined below.

NOISE DESCRIPTORS

L_{eq} – The sound pressure level averaged over the measurement period. It can be considered as the equivalent continuous steady-state sound pressure level, which would have the same total acoustic energy as the real fluctuating noise over the same time period.

L_{Aeq(15min)} – The A-weighted average equivalent sound level over a 15-minute period.

L_{A10} – The A-weighted noise level that has been exceeded for 10% of the measurement duration.

L_{A90} – The A-weighted noise level that has been exceeded for 90% of the measurement duration. This descriptor is used to describe the background noise level.

RBL – Rating Background Level. The overall, single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24-hour period used for assessment background level). This is the level used for assessment purposes.

dB – Decibels. The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB (SPL) is relative to 20 micropascals (μPa) = 2×10^{-5} Pa, the quietest sound a human can hear.

R_w – Weighted Sound Reduction Index. A measure of sound insulation performance of a building element. The higher the number, the better the insulation performance.

A-WEIGHTING

"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements to represent the frequency response of the human ear. Simply, the human ear is less sensitive to noise at some frequencies and more sensitive to noise at other frequencies. A-weighting is a method to present a measurement or calculation result with a number representing how humans subjectively hear different frequencies at different levels.

NOISE CHARACTER, NOISE LEVEL AND ANNOYANCE

The perception of a given sound to be deemed annoying or acceptable is greatly influenced by the character of the sound and how it contrasts with the character of the background noise. A noise source may be measured to have only a marginal difference to the background noise level but may be perceived as annoying due to the character of the noise. Acoustic Dynamics' analysis of noise considers both the noise level and sound character in the assessment of annoyance and impact on amenity.

1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Acoustic Dynamics is engaged by **Truc Lam Zen Inc** to conduct an acoustic assessment of operational noise emission associated with the proposed development located at 56 Pringle Ave, Bankstown, NSW.

This document provides an assessment of noise emission resulting from various noise sources associated with the operation of the proposed development at the potentially most affected sensitive receiver locations.

This assessment is prepared in accordance with the various acoustic requirements of:

- (a) Canterbury-Bankstown Council;
- (b) NSW Environment Protection Authority; and
- (c) Australian Standards.

1.2 PROJECT DESCRIPTION

The project site is located at 56 Pringle Ave, Bankstown, situated within a Low-Density Residential (R2) land zone within the Canterbury-Bankstown Council area of NSW. The site is bounded by Pringle Avenue to the west. The nearest receivers include residences on all directions.

Various noise sources and operations associated with the proposal are predicted to include:

- Operations/ activities specific to the site;
- Mechanical plant and equipment;
- Vehicle movements; and
- Staff and patron movements.

The project site, adjacent receivers and surrounding area are shown in the Location Map and Aerial Image presented within **Appendix A**.

1.3 SCOPE OF WORKS

Acoustic Dynamics has been engaged to provide an acoustic assessment suitable for submission to the relevant authorities.

The scope of the assessment is to include the following:

- Review local planning and development control instruments, state guidelines, federal legislation, standards and guidelines applicable to the proposal;
- Conduct unattended noise monitoring measurements at the development site to determine the existing noise environment and establish relevant noise criteria;

- Perform relevant calculations and noise modelling associated with the proposal to determine noise emission at nearby receiver locations; and
- Provide recommendations for design measures to be incorporated to achieve compliance with the relevant criteria and minimise potential noise impacts at nearby receiver locations.

2 ASSESSMENT CRITERIA AND STANDARDS

Acoustic Dynamics has reviewed local planning and development control instruments, government policies and legislation, standards and guidelines that are applicable to the proposal. The relevant sections of this review and the most stringent criteria applicable to this assessment are presented below.

2.1 LOCAL GOVERNMENT AND COUNCIL CRITERIA

2.1.1 LOCAL PLANNING AND DEVELOPMENT CONTROL INSTRUMENTS

Acoustic Dynamics has reviewed the relevant local planning and development control instruments, including the following documents:

- *Canterbury-Bankstown Local Environmental Plan 2023* (LEP); and
- *Canterbury-Bankstown Development Control Plan 2023* (DCP).

Acoustic Dynamics' review of the Canterbury-Bankstown LEP did not yield specific acoustic criteria or information relevant to this assessment.

Acoustic Dynamics' review of the Canterbury-Bankstown DCP did not yield specific acoustic criteria or information relevant to this assessment.

2.2 STATE GOVERNMENT POLICIES AND LEGISLATION

Acoustic Dynamics has conducted a review of the relevant state environmental planning policies, legislative acts and statutory instruments, including the following documents:

- *State Environmental Planning Policy (Transport and Infrastructure) 2021*; and
- *Protection of the Environment Operations Act 1997*.

References to various acoustic requirements applicable to this assessment are summarised below.

2.2.1 STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT AND INFRASTRUCTURE) 2021

The TI SEPP provides information and criteria for the assessment of infrastructure development within NSW and identifies matters to be considered for development adjacent to various infrastructure projects.

The policy details the following issues to be considered when assessing the impact of road traffic and vibration on residential developments:

“2.120 Impact of road noise or vibration on non-road development

- (1) *This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—*
 - (a) *residential accommodation,*
 - (b) *a place of public worship,*
 - (c) *a hospital,*
 - (d) *an educational establishment or centre-based child care facility.*
- (2) *Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.*
- (3) *If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—*
 - (a) *in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,*
 - (b) *anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.*
- (3A) *Subsection (3) does not apply to a building to which State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 7 applies.*
- (4) *In this section, **freeway**, **tollway** and **transitway** have the same meanings as they have in the Roads Act 1993.”*

2.2.2 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The POEO Act provides generic regulatory instruments that can be applied to manage noise emission from a development site. Acoustic Dynamics advises that the operation of building services and other sources associated with the development not generate “*offensive noise*”, as defined within the Act:

“offensive noise means noise—

(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:

(i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or

(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

(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 regulations.”

2.3 NSW ENVIRONMENT PROTECTION AUTHORITY

Acoustic Dynamics has reviewed various assessment guidelines and criteria published by the NSW Environment Protection Authority (EPA), including the following documents:

- *Noise Policy for Industry 2017 (NPfI);*
- *Road Noise Policy 2011 (RNP); and*
- *Noise Guide for Local Government 2013 (NGLG).*

References to applicable acoustic guidelines and requirements are summarised below.

2.3.1 NOISE POLICY FOR INDUSTRY 2017

The NPfI outlines and establishes noise criteria for industrial and other noise sources in various zoning areas. The following criteria have been applied for the assessment of noise emission associated with the use and operation of the development.

PROJECT INTRUSIVENESS NOISE LEVEL

The intrusiveness noise level is determined as follows:

$L_{Aeq, 15min}$ = rating background noise level + 5 dB	
where:	
$L_{Aeq, 15min}$	represents the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes.
and	
Rating background noise level	represents the background level to be used for assessment purposes, as determined by the method outlined in Fact Sheets A and B.

PROJECT AMENITY NOISE LEVEL

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 a noise from a **single** industrial development at a receiver location.

To ensure 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 level (Table 2.2) minus 5 dB(A)**

Acoustic Dynamics advises that achieving compliance with the NPfI's noise emission objectives applicable at the boundaries of the nearest sensitive receivers will adequately protect the acoustic amenity of these receivers.

2.3.2 ROAD NOISE POLICY 2011

The RNP document provides road traffic noise criteria for proposed roads as well as other developments with the potential to have an impact in relation to traffic noise generation.

The noise criteria applicable to the subject site is presented below.

Table 2.1 Road Traffic Noise Assessment Criteria for Residential Land Uses

Road category	Type of project / land use	Assessment Criteria [dB]	
		Day (7am – 10pm)	Night (10pm – 7am)
Local roads	6. Existing residences affected by additional traffic on existing local roads generated by land use developments	L _{Aeq} , (1 hour) 55 (external)	L _{Aeq} , (1 hour) 50 (external)

Accepted application of the Section 2.4 of the RNP is that where road traffic noise levels already exceed the assessment criteria, an increase of less than 2 dB represents a minor impact that is barely perceptible to the average person.

2.3.3 SLEEP DISTURBANCE CRITERION

Acoustic Dynamics advises that sleep disturbance is a complex issue, and the potential for sleep disturbance to occur depends on both the level of noise at a residential receiver, and the number of events that occur.

The NSW EPA has investigated overseas and Australian research on sleep disturbance. The assessment of noise for sleep disturbance relies on the application of a screening that indicates the potential for this to occur. The EPA's NGLG provides the following guidance for such a screening test:

"Currently, there is no definitive guideline to indicate a noise level that causes sleep disturbance and more research is needed to better define this relationship. Where likely disturbance to sleep is being assessed, a screening test can be applied that indicates the potential for this to occur. For example, this could be where the subject noise exceeds the background noise level by more than 15 dB(A). The most appropriate descriptors for a source relating to sleep disturbance would be $L_{A1(1 \text{ minute})}$ (the level exceeded for 1% of the specified time period of 1 minute) or L_{Amax} (the maximum level during the specified time period) with measurement outside the bedroom window."

Additionally, the guidelines of the NPfl provide the following additional information:

"Where the subject development/premises night-time noise levels at a residential location exceed:

- $L_{Aeq, 15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater; and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is greater".

Further to the above information, the following summarises the sleep disturbance criterion for external noise levels:

$$L_{Aeq, 15min} \leq 40 \text{ dB or } L_{Aeq, 15min} \leq (RBL + 5 \text{ dB}), \text{ whichever is greater}$$

AND

$$L_{Amax} \text{ or } L_{A1(1 \text{ minute})} \leq L_{A90} + 15 \text{ dB or } 52 \text{ dB(A)}, \text{ whichever is greater}$$

The RNP references other publications for consideration:

"The World Health Organisation guidelines (WHO 1999) recommended that:

'where noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided'."

In addition to the above, the EPA has previously published the following additional information relating to findings of significant research carried out for sleep disturbance:

"Maximum internal noise levels below 50-55 dBA are unlikely to cause awakening reactions... One or more noise events per night, with maximum internal noise levels of 65-70 dBA, are not likely to affect health and wellbeing significantly."

2.4 AUSTRALIAN STANDARDS

Acoustic Dynamics has conducted a review of relevant Australian Standards in relation to the acoustic design of the development, including the following standards:

- AS 2107:2016 “Acoustics – Recommended design sound levels and reverberation times for building interiors”.

References to various applicable acoustic standards are summarised below.

2.4.1 AS 2107:2016 “ACOUSTICS – RECOMMENDED DESIGN SOUND LEVELS AND REVERBERATION TIMES FOR BUILDING INTERIORS”

Australian Standard 2107:2016 recommends satisfactory and maximum design sound levels for various types of occupancy within buildings. AS 2107 recommends the following satisfactory and maximum design sound levels for the relevant types of occupancies and areas which are located within close proximity to the subject development.

Table 2.2 Recommended Design Sound Levels for Different Areas of Occupancy in Buildings
(Extract from Australian Standard 2107 Table 1)

Type of occupancy / activity	Design sound level, ($L_{Aeq,t}$) range [dB (A)]
7 RESIDENTIAL BUILDINGS	
<i>Houses and apartments in suburban areas or near minor roads –</i>	
Living areas	30 to 40
Sleeping areas	30 to 35
Work areas	35 to 40

Acoustic Dynamics advises that any levels of airborne noise transmitted into the tenancies adjacent or within close proximity to the subject development should not exceed the relevant design sound levels presented in **Table 2.4** above.

By ensuring the noise levels associated with the use of the subject development received within the adjacent and nearby tenancies do not exceed the recommended internal design levels, it is likely to ensure occupants of the adjacent and nearby tenancies are not adversely affected by the use of the development.

3 NOISE MEASUREMENT EQUIPMENT AND STANDARDS

All measurements were conducted in general accordance with AS 1055.1:2018 *Acoustics – Description and Measurement of Environmental Noise Part 1: General Procedures*. Sound measurements were carried out using precision sound level meters conforming to the requirements of IEC 61672.1:2002 *Electroacoustics: Sound Level Meters – Part 1: Specifications*. The instrumentation used during the survey is set out in **Table 3.1**.

Table 3.1 Noise Survey Instrumentation

Type	Serial Number	Instrument Description
EL-315	15-203-501	ARL Environmental Noise Logger
4230	782124	Brüel & Kjaer Acoustic Calibrator

The reference sound pressure level was checked prior to and after the measurements using the acoustic calibrator and remained within acceptable limits.

4 ASSESSMENT METHODOLOGY

Acoustic modelling was undertaken using noise modelling software (*CadnaA Version 2020*) to predict operational noise levels generated by the development. CadnaA calculates environmental noise propagation according to the applicable international and ISO standards, including the ISO 9613 algorithm.

Within our calculations and acoustic modelling, noise emission contributions from the development have been considered taking the following factors into account:

- Airborne noise losses due to distance and ground topography;
- Losses due to direction and diffraction;
- Increases due to reflections; and
- Acoustic shielding.

4.1 PROJECT CRITERIA

To establish the acoustic environment at the subject site in accordance with the criteria outlined in **Section 2**, unattended noise monitoring was conducted between 4 March 2025 and 11 March 2025. The noise logger was shielded from direct noise associated with vehicular traffic or mechanical plant associated with the development.

Acoustic Dynamics advises the measurement location is representative of the existing noise environment of the nearest sensitive receivers. The measurement location is shown within **Appendix A**. Results from the long-term noise monitoring are presented in **Appendix B**.

Following the general procedures outlined in **Section 2**, a summary of the established noise environment and project noise objectives at the nearest residential receivers is presented below.

Table 4.1 Measured External Noise Levels and Project Noise Objectives – Residential Receivers

Location	Assessment Period	L _{A90} Rating Background Noise Level (RBL) [dB]	Measured L _{Aeq} Noise Level [dB]	Project Intrusiveness Noise Level L _{Aeq,15min} [dB]	Project Amenity Noise Level L _{Aeq,15min} [dB] ²	Project Noise Trigger Level L _{Aeq,15min} [dB] ³
Nearest Residential Receivers	Day (7am ¹ to 6pm)	38	49	43	53	43
	Evening (6pm to 10pm)	39	50	44	43	43
	Night (10pm to 7am ¹)	38	46	43	38	38

Note:

- 1) 8:00am on Sundays and public holidays.
- 2) Amenity adjustment based on “Suburban” residential receiver type (NPfI Table 2.2). The noise emission objective has been modified in accordance with the recommendations detailed within the NPfI Section 2.2, for time standardisation of the intrusiveness and amenity noise levels (L_{Aeq,15min} will be taken to be equal to the L_{Aeq, period} + 3 dB).
- 3) Project Noise Trigger Level is the lowest value of Project Intrusiveness of Project Amenity Noise Level after conversion to the L_{Aeq} equivalent value.

4.2 OPERATIONAL ASSUMPTIONS

Based on our site visit, previous experience, and the drawings and information provided by the proponent, the following noise sources and activities were identified and have been assessed as part of the operational noise emission assessment. The noise emission data has been provided by manufacturers, our short-term measurements or from our database of nearfield measurements within similar types of developments.

4.2.1 SCENARIO 1 – TYPICAL OPERATIONS

Acoustic Dynamics has conservatively undertaken modelling and calculations to predict the likely **maximum** noise levels at the nearest sensitive receivers during the **quietest time** of operation, resulting from the following assumed noise sources and activities:

- 1) The provision of group classes operating at maximum capacity (approximately 15 patrons, including the provision of background music and staff providing verbal instruction within any 15-minute assessment period (reverberant L_{Aeq(15minute)} **70 dB(A)**);
- 2) The ingress/egress of patrons (calculations based on the conservative assumption of a maximum number of 15 patrons entering or exiting through the main entrance within any 15- minute assessment period (typical patron ingress/egress is expected to be lower);
- 3) The operation of 3 proposed air-conditioning condenser units located on the ground of the premise on the north facade (maximum assumed individual sound power level of L_w **70 dB(A)**);

- 4) Should patrons arrive via private vehicle, the arrival and departure of these patrons along surrounding local roads, utilising designated parking spaces and street parking available within the vicinity of the premise (15 vehicle events within any 15-minute assessment period);
- 5) The development will operate between the hours of 7:00am and 10:00pm;
- 6) Mechanical plant will service the development between 7:00am and 10:00pm; and
- 7) Staff members (approximately 4 staff) will arrive and leave approximately 30 minutes prior to opening and closing.

4.2.2 SCENARIO 2 – SMALL RETREATS

The proposed development intends to host up to five (5) retreats annually “*comprising 1 weeklong retreat and 4 weekend retreats. A total of 16 days each year will be dedicated to these retreats*” as stated in the Operational Plan of Management.

Acoustic Dynamics has conservatively undertaken modelling and calculations to predict the likely **maximum** noise levels at the nearest sensitive receivers during the **quietest time** of operation, resulting from the following assumed noise sources and activities:

- 1) The provision of group classes operating at maximum capacity (approximately 25 patrons, including the provision of background music and staff providing verbal instruction within any 15-minute assessment period (reverberant $L_{Aeq(15minute)}$ **70 dB(A)**);
- 2) The ingress/egress of patrons (calculations based on the conservative assumption of a maximum number of 25 patrons entering or exiting through the main entrance within any 15-minute assessment period (typical patron ingress/egress is expected to be lower);
- 3) The operation of three (3) proposed air-conditioning condenser units located on the ground of the premise (maximum assumed individual sound power level of L_w **70 dB(A)**);
- 4) Should patrons arrive via private vehicle, the arrival and departure of these patrons along surrounding local roads, utilising designated parking spaces and street parking available within the vicinity of the premise (15 vehicle events within any 15-minute assessment period);
- 5) The development will operate during any 24-hour period;
- 6) Mechanical plant will service the development during any 24-hour period; and
- 7) Staff members (approximately 4 staff) will arrive and leave approximately 30 minutes prior to opening and closing.

4.3 NOISE SOURCES

Acoustic Dynamics has established and assessed the following noise sources and operations associated with the development.

The noise data presented in **Table 4.1** has been established based on information provided by the proponent, short-term measurements and inspections conducted on-site, or referenced from our database of nearfield measurements at similar developments.

Table 4.1 Associated Noise Sources and Operations

Source	Quantity	Sound Power Level L_w [dBA]
Development Operations		
Internal operations (background music, staff providing instructions and conversations at normal volume)	1	80
Patron Movements		
Eight patrons, walking at a speed of 5km/h	3	64
Mechanical Equipment		
Single fan air conditioning condenser unit	4	70
Kitchen exhaust	2	70
Bathroom exhaust	2	63
Vehicle Movements		
Staff and patron cars onsite, driving at a speed of 5km/h	7	70

4.4 RECEIVERS

The cumulative noise impact has been assessed to the potentially most affected point at the adjacent sensitive receiver properties and presented in **Table 4.2** below.

Table 4.2 Nearest Sensitive Receiver Locations

Source	Location	Direction
Residential Receivers		
R ₁	54 Pringle Ave, Bankstown	North
R ₂	55 Oxford Ave, Bankstown	East
R ₃	58 Pringle Ave, Bankstown	South
R ₄	53 Pringle Ave, Bankstown	West

Acoustic Dynamics advises that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other sensitive receiver locations further away.

5 OPERATIONAL NOISE EMISSION ASSESSMENT

The calculated maximum noise emission levels at the nearest receiver locations against the relevant criteria are presented below. It is advised that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other receiver locations.

The assessment location for **external noise emission** is defined as the most affected point on or within any sensitive receiver property boundary. Examples of this location may be:

- 1.5m above ground level;
- On a balcony at 1.5m above floor level; and
- Outside a window on the ground or higher floors, at a height of 300mm below the head of the window.

The assessment location for **internal noise emission** is defined as the most affected point within the nearest room of any sensitive receiver property, assuming windows are closed.

5.1 EXTERNAL NOISE EMISSION

The calculated maximum **external** noise emission levels at the nearest receiver locations are presented against the relevant noise emission criteria below.

Table 5.1 Calculated External Noise Emission Levels & Relevant Noise Criteria (Scenario 1)

Receiver	Assessment Period	Noise Source ¹	Maximum L _{Aeq} (1hr/15min) Noise Emission Level [dB] ^{2,3}	Noise Emission L _{Aeq} Criterion [dB]	Complies ?
R ₁	Evening ⁴ (6:00pm to 10:00pm)	Development Operations	32	43	Yes
		Mechanical Plant	36		
		Patron Movements	<10		
		Vehicle Movements	28		
		Cumulative Total	38		
R ₂		Development Operations	<10	43	Yes
		Mechanical Plant	38		
		Patron Movements	<10		
		Vehicle Movements	14		
		Cumulative Total	38		
R ₃		Development Operations	21	43	Yes
		Mechanical Plant	37		
		Patron Movements	<10		
		Vehicle Movements	15		
		Cumulative Total	38		

Receiver	Assessment Period	Noise Source ¹	Maximum $L_{Aeq}(1hr/15min)$ Noise Emission Level [dB] ^{2,3}	Noise Emission L_{Aeq} Criterion [dB]	Complies ?
R ₄	Evening ⁴ (6:00pm to 10:00pm)	Development Operations	25	43	Yes
		Mechanical Plant	30		
		Patron Movements	<10		
		Vehicle Movements	27		
		Cumulative Total	33		

- Note:
- 1) Scenario operations and noise sources are detailed in **Section 4**.
 - 2) Acoustic Dynamics assumes noise sources will operate continuously over the assessment period.
 - 3) Includes the benefits of recommendations outlined in **Section 7**.
 - 4) Compliance with this assessment period criterion ensures compliance during daytime period.

Table 5.2 Calculated External Noise Emission Levels & Relevant Noise Criteria (Scenario 2)

Receiver	Assessment Period	Noise Source ¹	Maximum L _{Aeq} (1hr/15min) Noise Emission Level [dB] ^{2,3}	Noise Emission L _{Aeq} Criterion [dB]	Complies ?
R ₁	Night ^{4,5} (10:00pm to 7:00am)	Development Operations	32	38	Yes
		Mechanical Plant	36		
		Patron Movements	<10		
		Vehicle Movements	28		
		Cumulative Total	38		
R ₂		Development Operations	<10	38	Yes
		Mechanical Plant	38		
		Patron Movements	<10		
		Vehicle Movements	14		
		Cumulative Total	38		
R ₃		Development Operations	21	38	Yes
		Mechanical Plant	37		
		Patron Movements	<10		
		Vehicle Movements	15		
		Cumulative Total	38		

Receiver	Assessment Period	Noise Source ¹	Maximum L _{Aeq} (1hr/15min) Noise Emission Level [dB] ^{2,3}	Noise Emission L _{Aeq} Criterion [dB]	Complies ?
R ₄	Night ^{4,5} (10:00pm to 7:00am)	Development Operations	25	38	Yes
		Mechanical Plant	30		
		Patron Movements	<10		
		Vehicle Movements	27		
		Cumulative Total	33		

- Note:
- 1) Scenario operations and noise sources are detailed in **Section 4**.
 - 2) Acoustic Dynamics assumes noise sources will operate continuously over the assessment period.
 - 3) Includes the benefits of recommendations outlined in **Section 7**.
 - 4) Compliance with this most sensitive assessment period criterion ensures compliance during all other less stringent assessment periods.
 - 5) 8:00am on weekends and public holidays.

Acoustic Dynamics advises the calculated **external** noise emission levels are conservatively based on **maximum capacity** operations at the development. Acoustic Dynamics advises that such a scenario is unlikely to occur and noise levels are likely to be below those calculated for the majority of the time.

5.2 INTERNAL NOISE EMISSION

The calculated maximum **internal** noise emission levels at the nearest receiver locations are presented against the relevant noise emission criteria below.

Table 5.3 Calculated Internal Noise Emission Levels to Adjacent Areas of Occupancy & Relevant Criteria

Receiver Location	Assessment Period	Noise Source	Maximum Cumulative L _{Aeq} (15min) Noise Level [dB] ³	AS2107 L _{Aeq} (15min) Criterion [dB]	Complies?
R ₁	When in use ¹	Combined Development Operations ²	28	< 35	Yes
R ₂			14		Yes
R ₃			25		Yes
R ₄			23		Yes

- Note:
- 1) Compliance with this most sensitive assessment period criterion ensures compliance during all other less stringent assessment periods.
 - 2) Combined maximum cumulative development operations assume an internal reverberant sound pressure level of L_{Aeq}(15min) ≤ 70 dB, which is considered a conservative assumption.
 - 3) Includes the benefits of recommendations outlined in **Section 7**.

5.3 ROAD TRAFFIC NOISE

Acoustic Dynamics understands that patrons and staff who drive will access the development via surrounding local roads. Vehicles utilising local roads are assessed in consideration of the NSW EPA's RNP criteria outlined in **Section 2**.

The calculated maximum noise emission levels at the nearest residential receivers, due to the vehicles utilising surrounding local roads, are presented below. Acoustic Dynamics advises that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other sensitive receiver locations further away.

Table 5.4 Calculated Road Traffic Noise Emission Levels & Relevant Noise Criteria

Sensitive Receiver	Predicted Maximum $L_{eq,1hr}$ Sound Pressure Level [dB] ¹	Relevant $L_{Aeq,1hr}$ Criterion [dB] ^{2,3}	Complies?
Residential receivers Pringle Avenue	38	50	Yes

Note: 1) Predicted L_{Aeq} noise level is the maximum noise level measured within a 1-hour period.
 2) Measured noise level within a 1-hour period during the night-time assessment period (10:00pm until 7:00am on weekdays, or 8:00am on weekends and public holidays).
 3) Compliance with this most sensitive assessment period criterion ensures compliance during all other less stringent assessment periods.

5.4 SLEEP DISTURBANCE

Acoustic Dynamics has determined the potential maximum L_{Amax} **external** noise emission level from the development resulting from car door slams, when measured at the nearest residential receivers during the night-time assessment period.

Table 5.5 Calculated Maximum Instantaneous External Noise Levels & Relevant Noise Criteria

Sensitive Receiver	Source	Predicted Maximum L_{Amax} Sound Pressure Level [dB] ¹	L_{Amax} Sleep Disturbance Criterion [dB] ²	Complies?
Residential Receivers along Pringle Avenue	Car Door Slam	47	50	Yes

Note: 1) Predicted $L_{A1(60 Sec)}$ noise level is the maximum noise level measured within a 60-second period.
 2) Maximum instantaneous noise level measured during the night-time assessment period (10:00pm until 7:00am on weekdays, or 8:00am on weekends and public holidays).

6 DISCUSSION

The calculations indicate the following:

- 1) Noise emission resulting from the use and operations of the proposed meditation studio at 56 Pringle Ave, Bankstown will **comply** with the noise emission criteria of Canterbury-Bankstown Council and the NSW EPA between the hours of 7:00am and 10:00pm when assessed at the nearest affected receiver boundaries;
- 2) Noise emission resulting from the use and operations of the proposed fitness studio at 56 Pringle Ave, Bankstown will **comply** with the noise emission criteria of Canterbury-Bankstown Council and the NSW EPA between the hours of 10:00pm and 7:00am when assessed within the nearest habitable rooms of the nearest residential receivers;
- 3) With the implementation of an appropriate mitigation strategy, there is low risk of acoustic disturbance (inclusive of sleep disturbance) to all nearby residential receiver properties during the night-time and early morning assessment period; and
- 4) To ensure the assessment is conducted in a conservative manner, noise emission has been assessed as a **worst-case** scenario (i.e. all noise generating activities and noise sources occurring simultaneously and at maximum capacity). Generally, noise emission associated with the proposal is **predicted to be lower** than the calculations presented; and
- 5) The noise calculations and operational assumptions should not be considered prescriptive. They are modelling assumptions that have been used to demonstrate typical noise sources and operations associated with the facility **can be designed to achieve compliance** with the relevant criteria.

7 RECOMMENDATIONS AND DESIGN ADVICE

The following recommendations are provided to ensure noise associated with the proposal is adequately managed and minimised.

7.1 BEST MANAGEMENT PRACTICE AND NOISE MANAGEMENT PLAN

Acoustic Dynamics recommends the adoption of a management plan incorporating best management practice procedures to protect the acoustic amenity of the surrounding area. Such a management plan should outline policies and procedures to ensure noise emission from the development are kept to a minimum, including:

- 1) Ensuring the glass windows/doors of the development are kept closed at all times (other than when patrons enter and exit the premises);
- 2) The erection of clear signage at all studio entries and exits advising patrons that they must not generate excessive noise when entering and leaving the premises; and

- 3) Staff monitoring the behaviour of patrons within the subject premises and as patrons egress to ensure noise emission of patrons is kept to a minimum when entering and leaving the premises.

7.2 MECHANICAL EQUIPMENT

Acoustic Dynamics understands that specific items of mechanical plant have not yet been selected. To achieve compliance with the relevant noise emission criteria, Acoustic Dynamics advises that mechanical plant should be selected such that the overall sound power levels of items do not exceed the levels specified below:

Table 8.3 Recommended Maximum Sound Power Levels for Mechanical Plant

Source	Recommended Maximum Sound Power Level L_w [dB(A)]
Residential kitchen exhaust fan	70
Residential toilet exhaust fan	63
Small (single fan) residential condenser unit	70

7.3 AIR CONDENSER UNITS

The following recommendations apply to all proposed condenser units:

1. All condenser units shall be isolated from the wall and supporting structure with rubber pads to prevent the transmission of vibration from the condenser units to the structure; and
2. All condenser units that service the main building should be installed at the north facade, as indicated in **Appendix A**. The condenser unit that will service the secondary building can be installed at either the north, east or south façade.

Acoustic Dynamics advises that incorporation of the above recommendations will ensure that noise emission associated from the use and operation of the proposed development is likely to comply with the relevant noise emission criteria and not adversely impact nearby receivers.

8 CONCLUSION

Acoustic Dynamics has conducted an acoustic assessment of operational noise associated with the development located at 56 Pringle Ave, Bankstown, NSW.

A review of the applicable local council, state government, federal legislation and international standards was conducted. Noise levels were assessed in accordance with the requirements of:

- (a) Canterbury-Bankstown Council;
- (b) NSW Environment Protection Authority; and
- (c) Australian Standards.

The assessment predicted noise impacts at nearby sensitive receiver locations. Noise modelling was conducted using assumed **worst-case** operational scenarios in **Section 5**. Recommendations are provided in **Section 7** detailing best management practices and design strategies minimise the impacts on the surrounding acoustic environment.

Acoustic Opinion

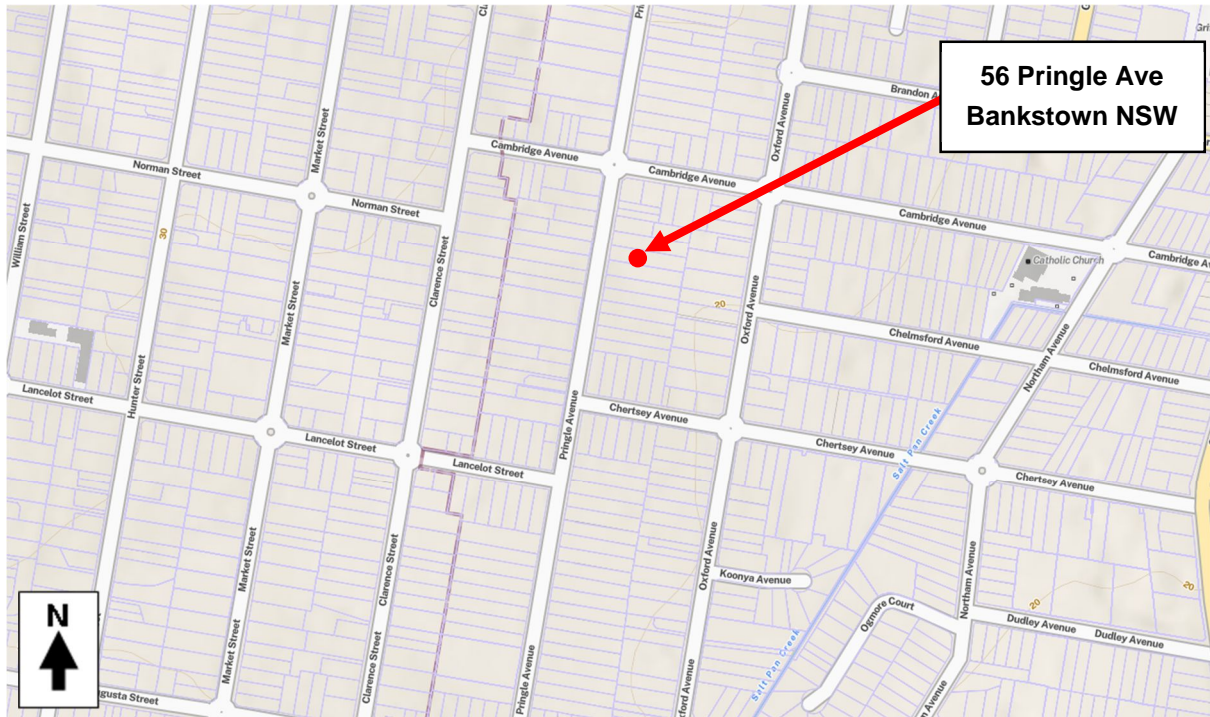
Further to our site survey, noise monitoring and measurements, our review of the relevant acoustic criteria and requirements, and our calculations, Acoustic Dynamics advises that the proposal can be designed to comply with the relevant acoustic criteria of Canterbury-Bankstown Council, the NSW POEO Act 1997 and the NSW EPA, with the incorporation of our recommendations detailed within this report.

It is our opinion that the acoustic risks associated with the proposal can be adequately controlled and the amenity of neighbouring properties and residents can be satisfactorily protected.

We trust that the above information meets with your present requirements and expectations. Please do not hesitate to contact us on 02 9908 1270 should you require more information.

APPENDIX A – LOCATION MAP, AERIAL IMAGE, PLANS & MARK-UP

A.1 LOCATION MAP (COURTESY OF SDT EXPLORER)

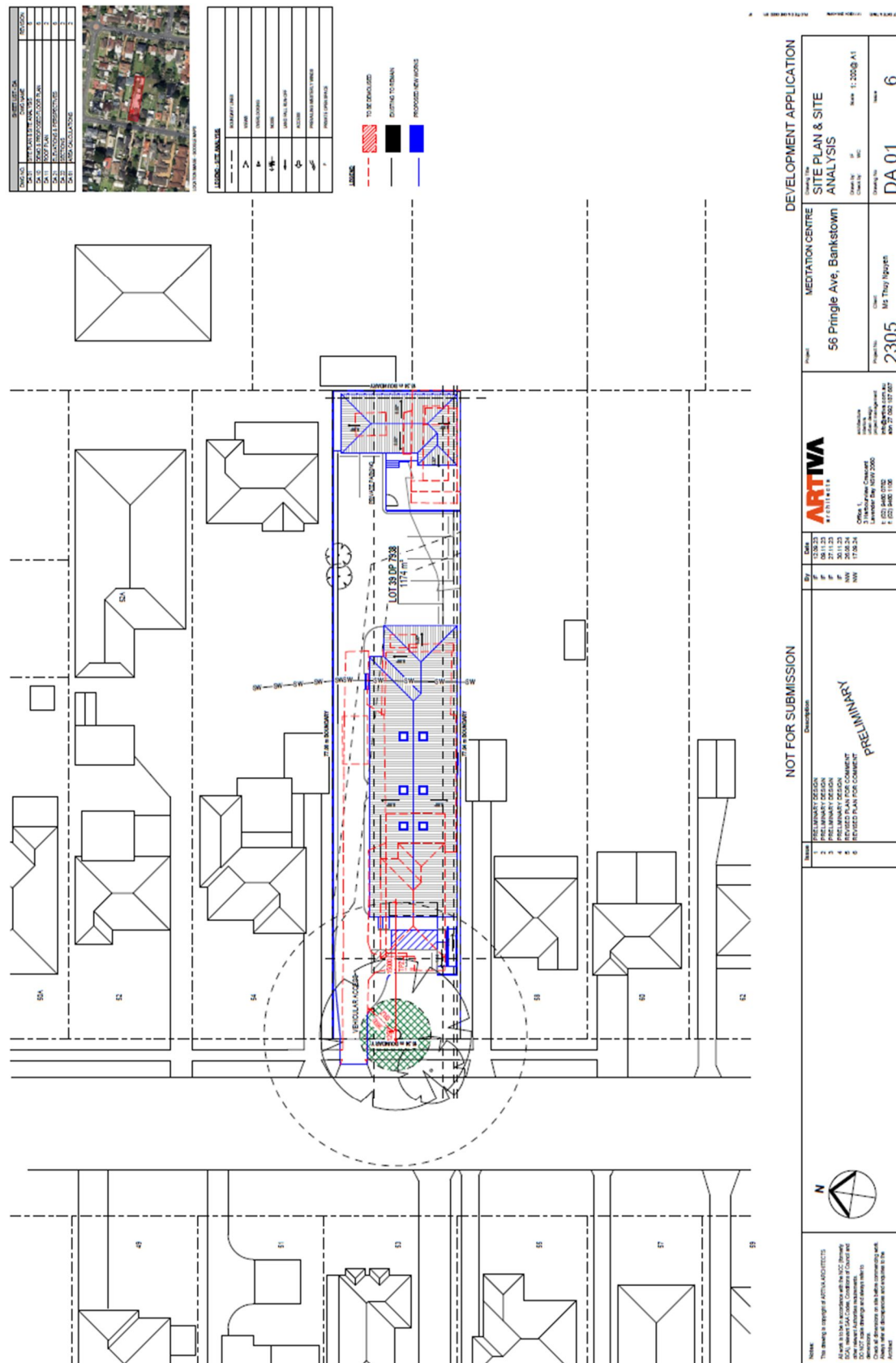


A.2 AERIAL IMAGE (COURTESY OF SDT EXPLORER)

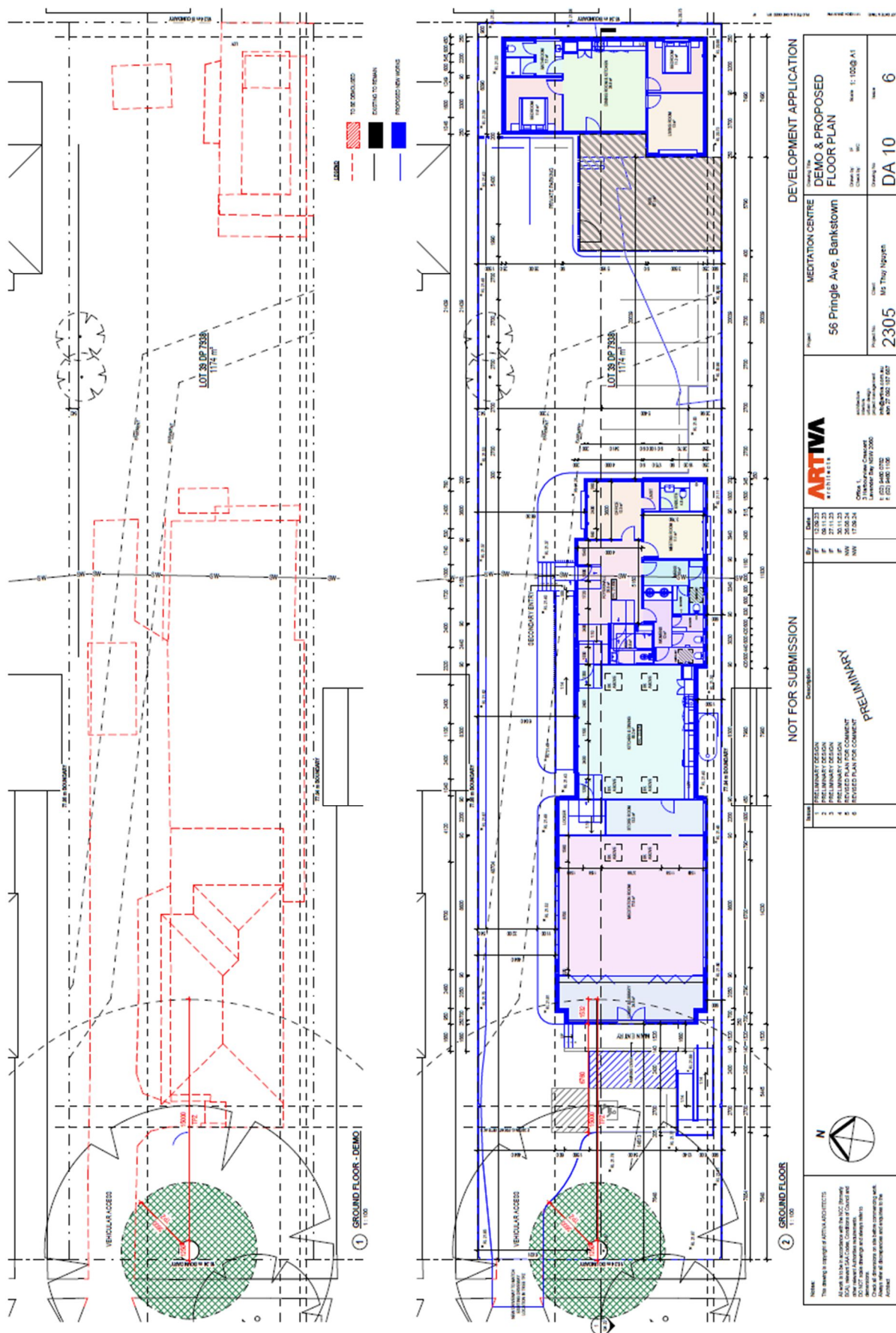


A.3 ARCHITECTURAL PLANS

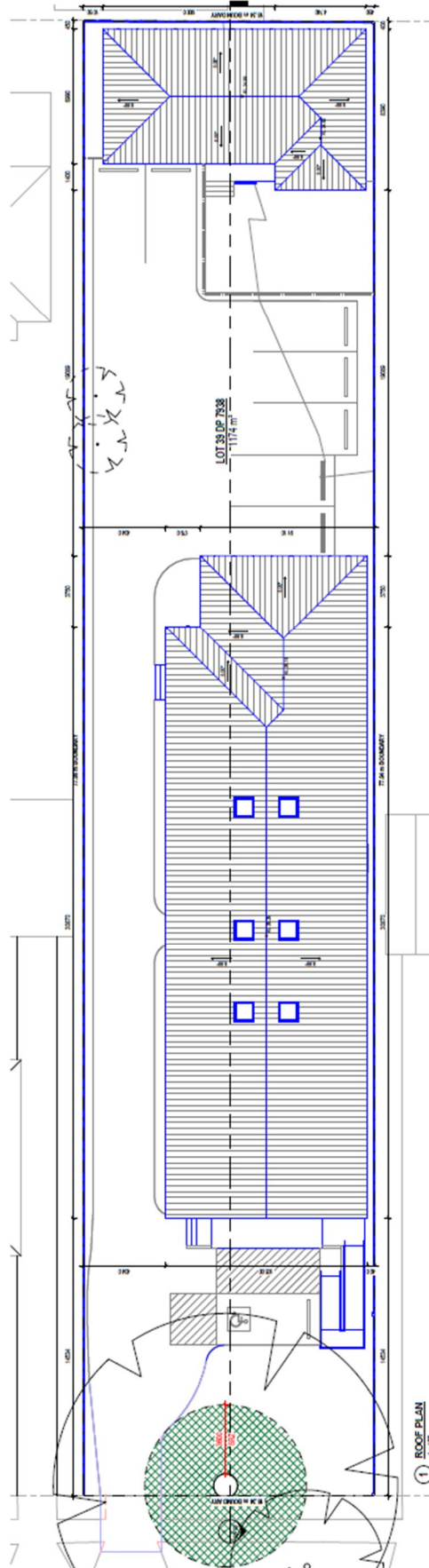
A.3.1 SITE PLAN



A.3.2 GROUND FLOOR PLAN

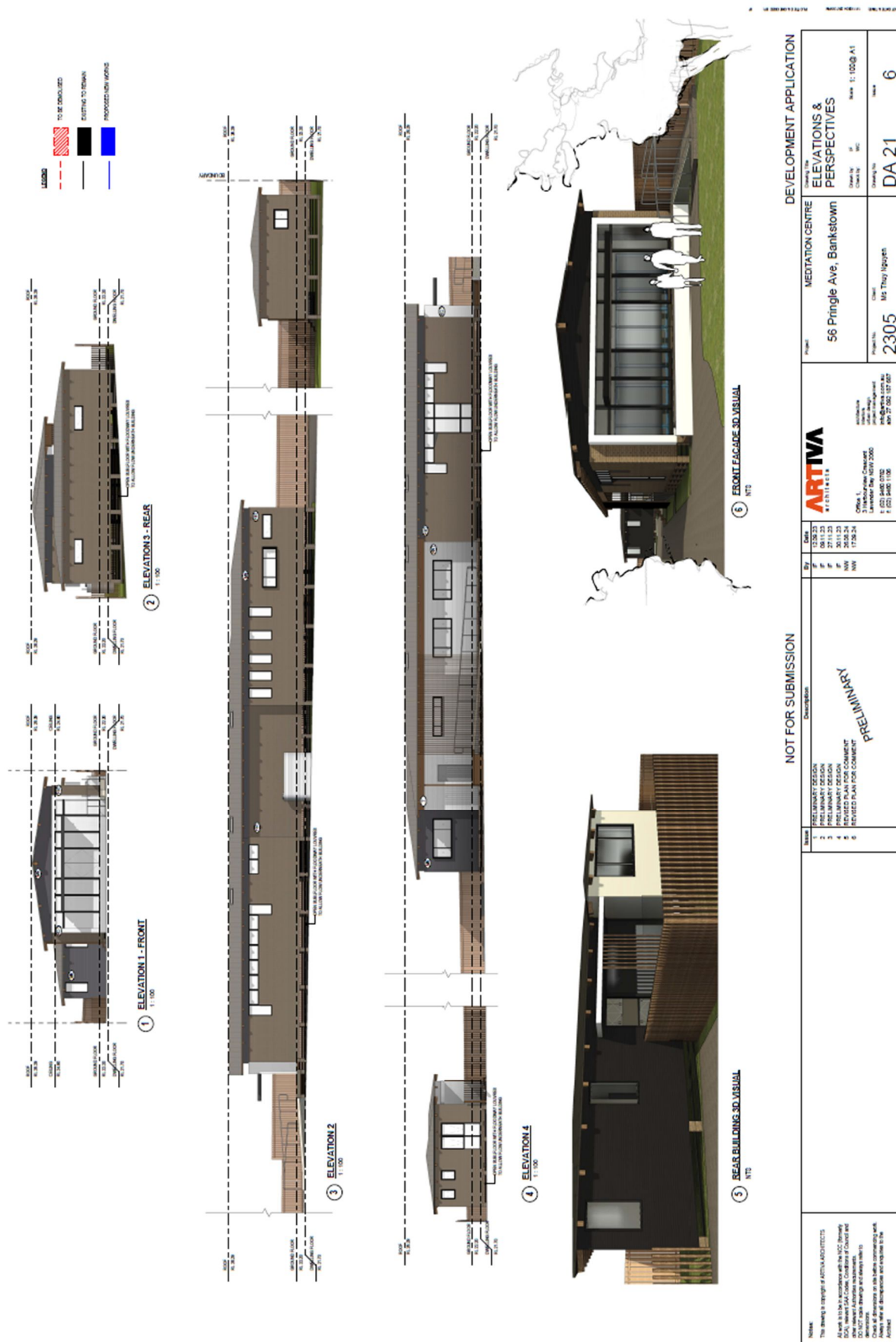


A.3.3 ROOF PLAN

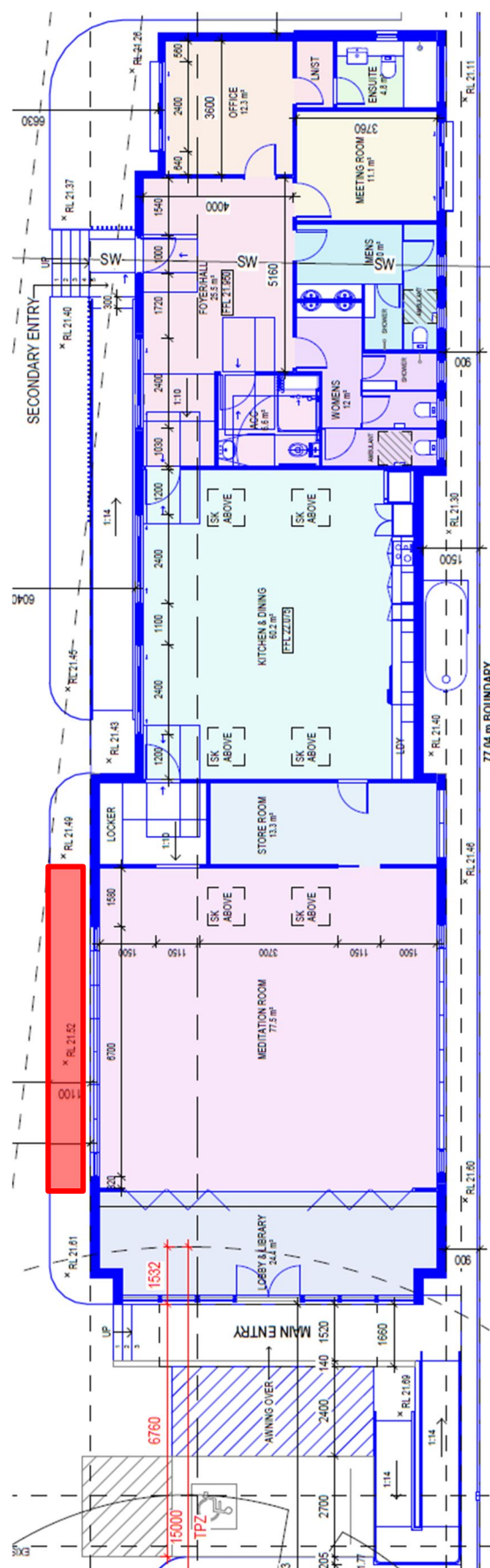


NOT FOR SUBMISSION		DEVELOPMENT APPLICATION	
<p>Notes:</p> <p>This drawing is a preparation of ARTIVA ARCHITECTS</p> <p>ARTIVA ARCHITECTS is a registered architectural firm under the Architectural Act 2004 and is a member of the Australian Institute of Architects (AIA) and the New South Wales Council of Architects (NSWCA).</p> <p>ARTIVA ARCHITECTS is not responsible for the accuracy of the information provided in this drawing unless it is specifically stated otherwise.</p> <p>ARTIVA ARCHITECTS is not responsible for the accuracy of the information provided in this drawing unless it is specifically stated otherwise.</p> <p>ARTIVA ARCHITECTS is not responsible for the accuracy of the information provided in this drawing unless it is specifically stated otherwise.</p> <p>ARTIVA ARCHITECTS is not responsible for the accuracy of the information provided in this drawing unless it is specifically stated otherwise.</p>	<p>Project:</p> <p>56 Pringle Ave, Bankstown</p> <p>DA 11</p> <p>2</p>	<p>Client:</p> <p>Ms Thuy Nguyen</p> <p>2305</p>	<p>ARTIVA</p> <p>ARTIVA ARCHITECTS</p> <p>Office 1:</p> <p>1/100-110 Pringle Ave, Bankstown NSW 2220</p> <p>Phone: (02) 9440 1100</p> <p>Mobile: (02) 9440 1100</p> <p>Website: www.artiva.com.au</p>
			<p>Scale:</p> <p>1:100 @ A1</p>

A.3.4 ELEVATIONS



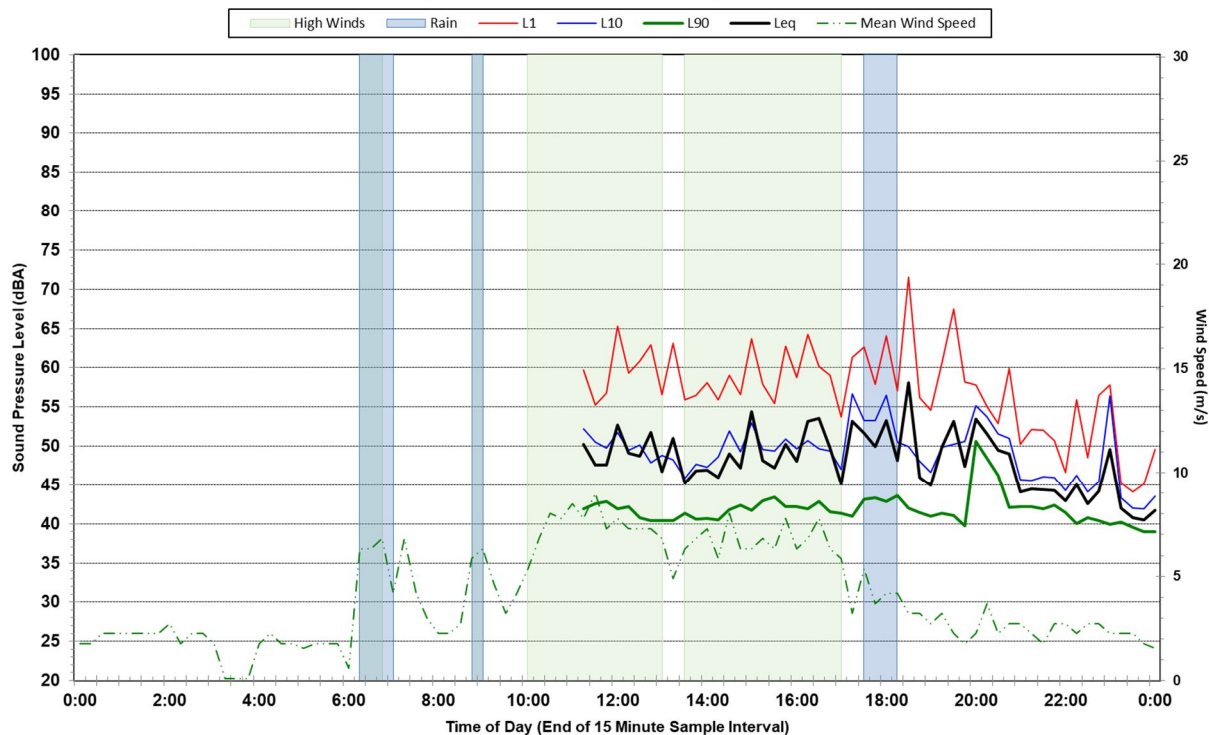
A.4 MARK-UP



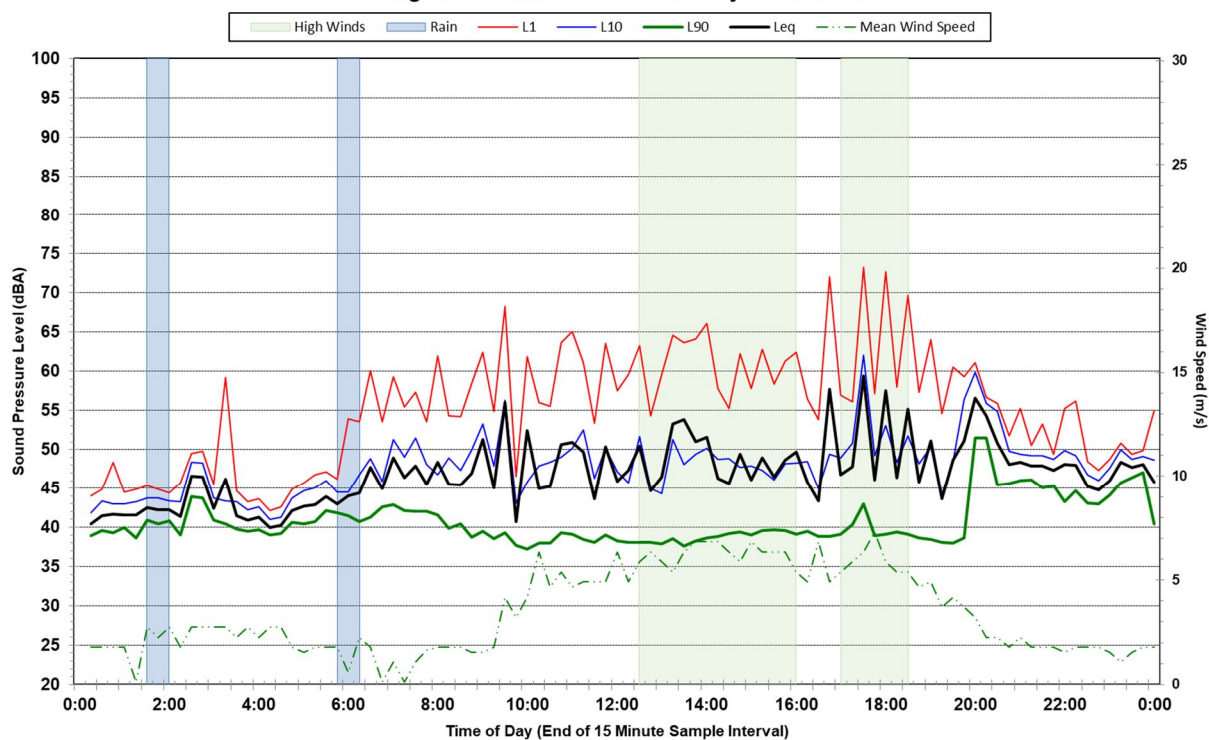
AC Condenser Units

APPENDIX B – UNATTENDED NOISE LOGGING STATISTICAL GRAPHS

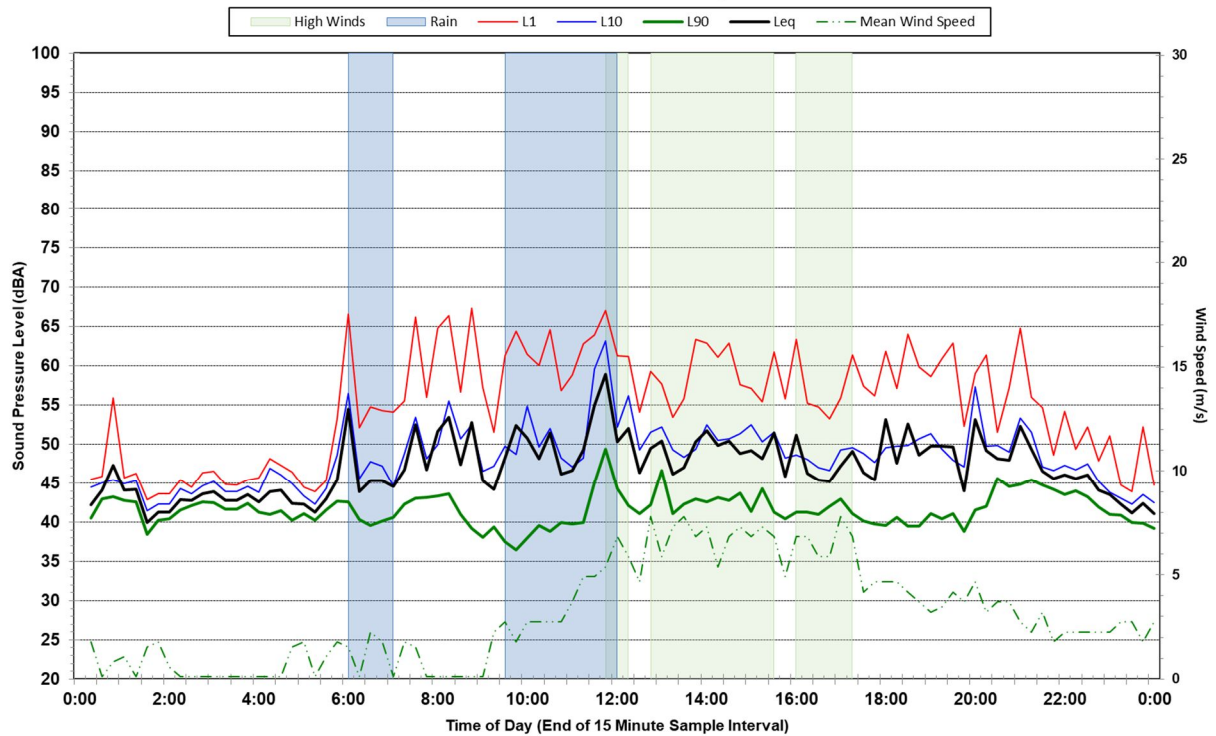
**Statistical Ambient Noise Levels
56 Pringle Ave Bankstown - Tuesday 4 March 2025**



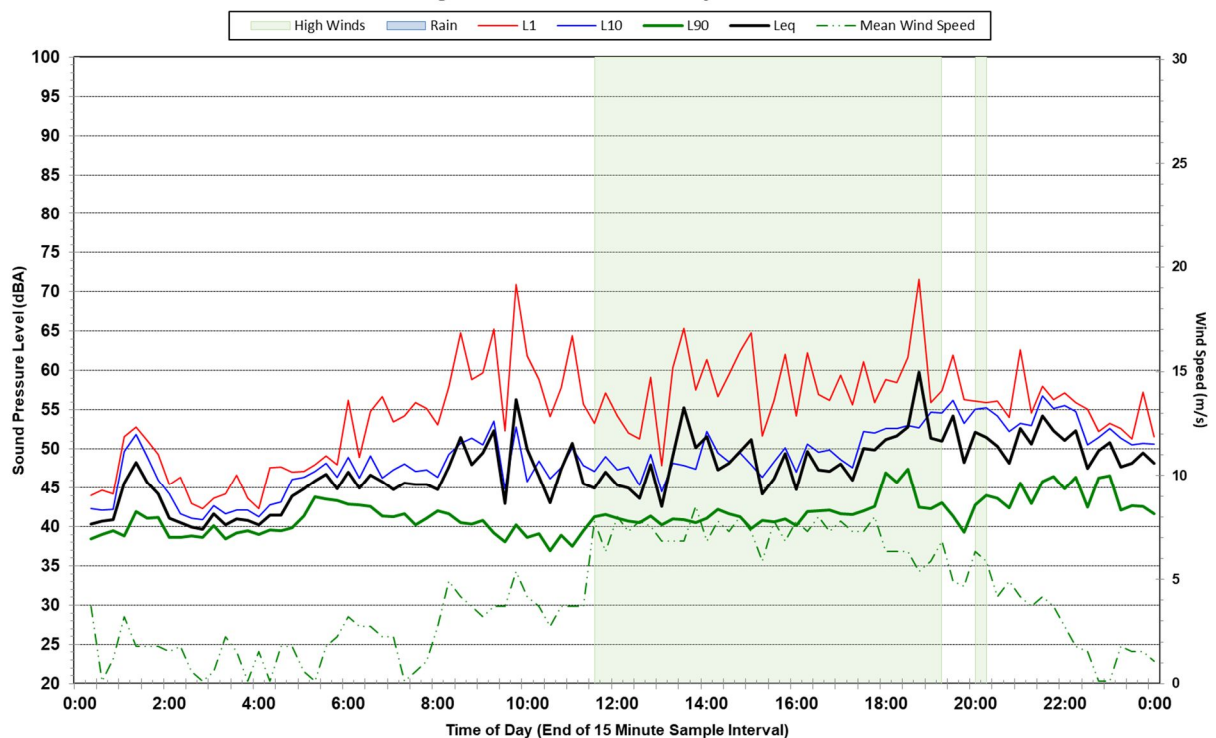
**Statistical Ambient Noise Levels
56 Pringle Ave Bankstown - Wednesday 5 March 2025**



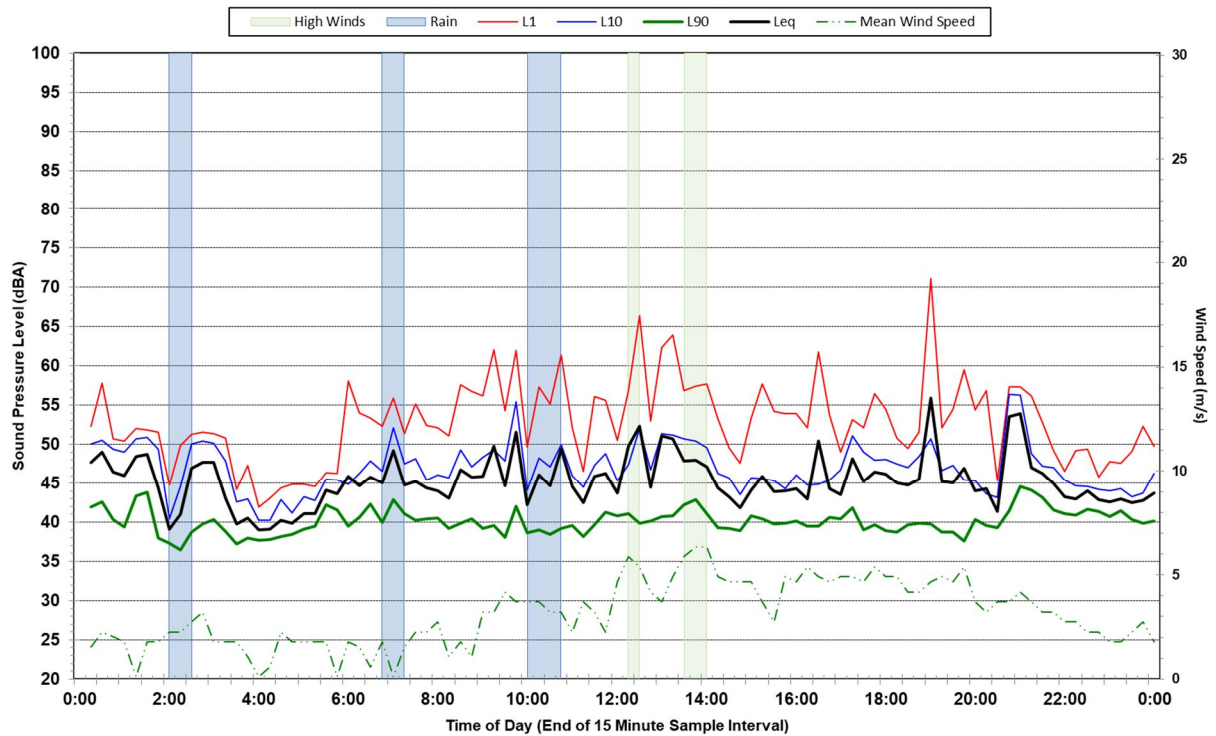
**Statistical Ambient Noise Levels
56 Pringle Ave Bankstown - Thursday 6 March 2025**



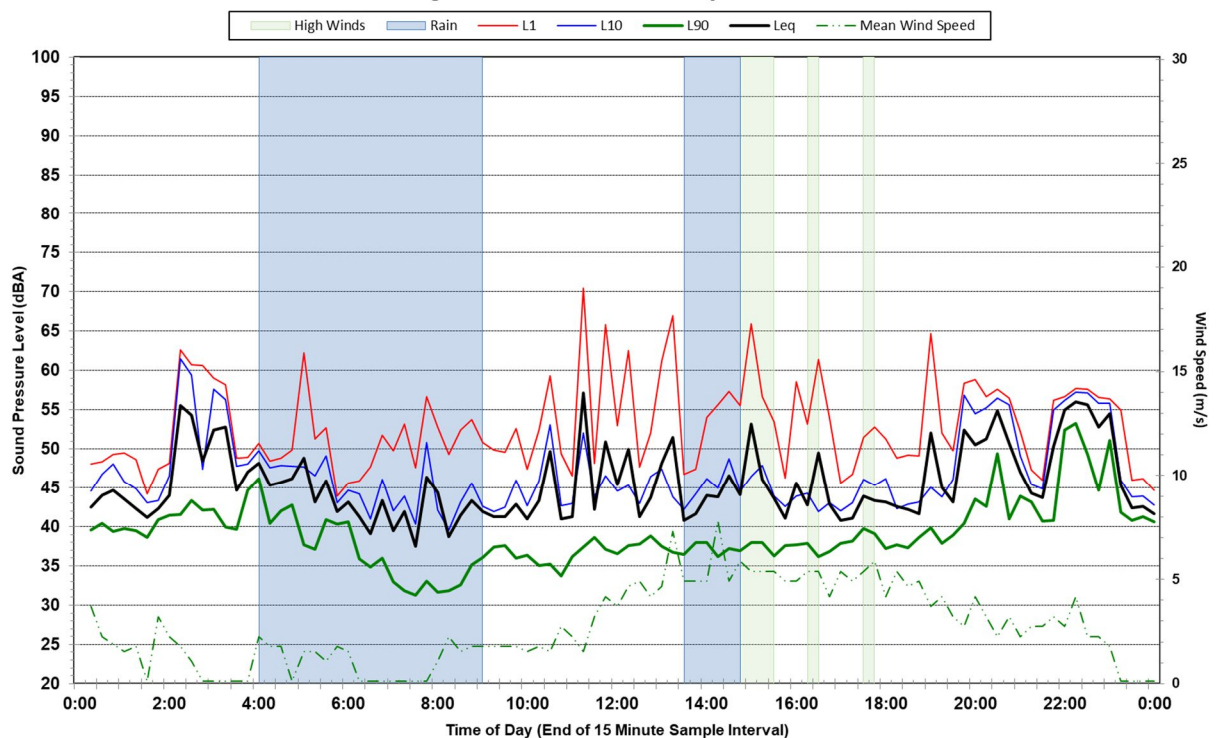
**Statistical Ambient Noise Levels
56 Pringle Ave Bankstown - Friday 7 March 2025**



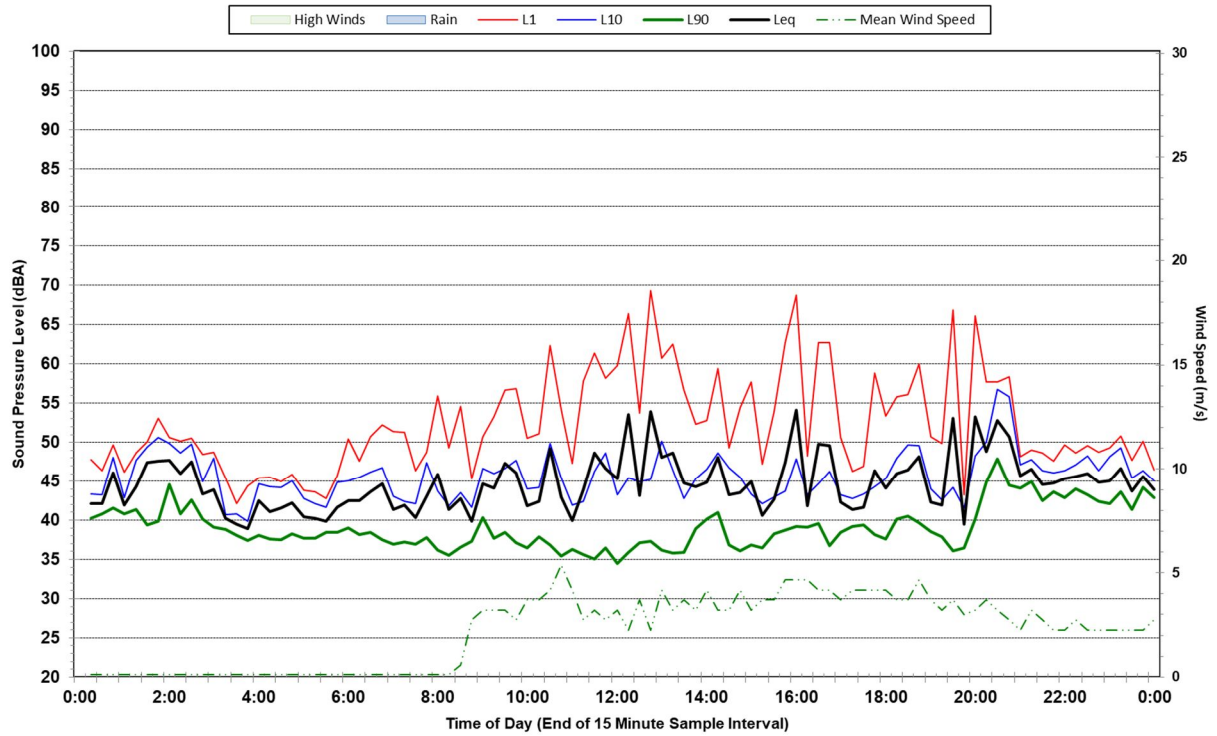
Statistical Ambient Noise Levels 56 Pringle Ave Bankstown - Saturday 8 March 2025



Statistical Ambient Noise Levels 56 Pringle Ave Bankstown - Sunday 9 March 2025



Statistical Ambient Noise Levels 56 Pringle Ave Bankstown - Monday 10 March 2025



Statistical Ambient Noise Levels 56 Pringle Ave Bankstown - Tuesday 11 March 2025

