



# Operational Noise Emission Assessment

Dad & Dave's Brewing – Tasting Room  
45 Mitchell Rd, Brookvale NSW



Client:  
Dad & Dave's  
Brewing Pty Ltd

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## 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 in Section 2 below.

### NOISE DESCRIPTORS

**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 ( $\mu\text{Pa}$ ) =  $2 \times 10^{-5}$  Pa, the quietest sound a human can hear.

**L<sub>Aeq</sub>** – The A-weighted 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. Measured in dB.

**L<sub>Amax</sub>** – The maximum or peak A-weighted noise level that occurs over the measurement period. Measured in dB.

**Indoor Design Level** – The recommended maximum level in dB(A) inside a building from external noise sources.

### A-WEIGHTING

"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements in order 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. The 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 SUMMARY & BACKGROUND INFORMATION

Acoustic Dynamics is engaged by **Dad & Dave's Brewing Pty Ltd** to assess the impact of noise emission at nearby receiver locations resulting from the proposed brewery and tasting room at 45 Mitchell Road, Brookvale NSW.

Acoustic Dynamics understands that the proposal is to operate during the following hours:

Industry:

Industrial operations for Brewery and Distillery:

- 6am to 5pm Monday to Friday;
- 8am to 12pm Saturday

Loading of trucks/deliveries:

- 6am to 12pm Monday to Friday;
- 8am to 12pm Saturday

Ancillary Use:

Tasting Area:

- 4pm to 10pm Monday to Friday;
- 12pm to 10pm Saturday and Sunday

Accordingly, an assessment of the predicted noise emission levels against the acoustic requirements of relevant authorities have been undertaken for the operations of the brewery. This assessment is based on the inspections and noise measurements undertaken by Acoustic Dynamics at the subject site. As a part of this assessment, recommendations are provided to enable compliance with the relevant noise emission criteria.

This document provides an assessment of the measured noise emission associated with the use and operation of the venue when assessed at nearby receivers and is prepared in accordance with acoustic requirements of the Northern Beaches Council, the NSW Environment Protection Authority (EPA), the NSW Office of Liquor and Gaming (OLG) and other relevant Australian Standards.

### 1.2 LOCATION & DESCRIPTION OF COMMERCIAL PREMISES

The subject brewery is located at 45 Mitchell Rd, Brookvale NSW. Acoustic Dynamics understands that the subject site is zoned IN1 General Industrial. The subject site includes a small outdoor area for patrons.

The nearest receivers have been identified as:

- Residential receivers on Wattle Rd, approximately 190m to the south.

The site is shown in the location map and aerial photo presented within **Appendix A**.

### 1.3 SCOPE

Acoustic Dynamics has been engaged to provide a noise assessment of the subject development. A summary of the scope is provided below:

- Review of criteria from Council, NSW EPA, OLG, and other relevant documents relating to acoustics;
- Travel to site to conduct inspections of the proposed site, and the location of the adjacent receivers;
- Conduct unattended noise monitoring at a representative location to determine existing emission noise levels;
- Establish relevant project specific noise emission criteria; and
- Conduct modelling to determine noise emission levels from the proposed extension of trading hours.

## 2 RELEVANT ACOUSTIC CRITERIA AND STANDARDS

Responsibility for the control of noise emission at the subject site is vested in Local Council. Guidelines for the assessment of noise emission from a licensed premises is contained within the NSW Office of Liquor and Gaming conditions and NSW EPA's Noise Policy for Industry (NPI). In addition to these guidelines, some Councils have specific noise criteria, against which, certain noise sources must be assessed.

### 2.1 NORTHERN BEACHES COUNCIL REQUIREMENTS

Acoustic Dynamics understands that the newly created Northern Beaches Council is temporarily maintaining the previous planning controls for the given areas. The relevant area for the subject site is Warringah

#### 2.1.1 LOCAL ENVIRONMENT PLAN

A review of the Warringah Local Environment Plan (LEP) 2011 was conducted. No relevant acoustic requirements and relevant noise criteria were presented within the LEP.

#### 2.1.2 DEVELOPMENT CONTROL PLANS

A review of the Warringah Development Control Plan (DCP) 2011 was conducted. The following acoustic requirements and relevant noise criteria were found to be relevant to the subject development:

##### ***"D3 Noise***

##### ***Requirements***

1. *Noise from combined operation of all mechanical plant and equipment must not generate Noise levels that exceed the ambient background Noise by more than*

*5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other Noise sensitive land uses.*

*See also NSW Industrial Noise Policy Appendices*

- 2. Development near existing Noise generating activities, such as industry and roads, is to be designed to mitigate the effect of that Noise.*
- 3. Waste collection and delivery vehicles are not to operate in the vicinity of residential uses between 10pm and 6am.*
- 4. Where possible, locate Noise sensitive rooms such as bedrooms and private open space away from Noise sources. For example, locate kitchens or service areas closer to busy road frontages and bedrooms away from road frontages.*
- 5. Where possible, locate noise sources away from the bedroom areas of adjoining dwellings/properties to minimise impact."*

Council can enforce the above planning controls under the Environmental Planning and Assessment Act of 1979.

## 2.2 NSW ENVIRONMENT PROTECTION AUTHORITY (EPA)

### 2.2.1 PROTECTION OF THE ENVIRONMENT OPERATIONS (POEO) ACT

We advise that noise emission from the brewery must also comply with the requirements of the relevant legislation, being the *Protection of the Environment Operations (POEO) Act 1997*. The POEO Act 1997 requires that the subject plant and equipment must not generate "offensive noise". Offensive noise is defined as follows:

**"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."*

Council can enforce the above planning controls under the Environmental Planning and Assessment Act of 1979.

### 2.2.2 NOISE POLICY FOR INDUSTRY (2007)

Acoustic Dynamics advises that noise emission assessment at nearby and adjacent noise sensitive receivers has been conducted with reference to the NSW EPA's Noise Policy for Industry (NPFI, 2017), and has yielded the following information.

#### **Project Intrusiveness Noise Level**

The intrusiveness noise level is determined as follows:

$$L_{Aeq, 15min} = \text{rating background noise level} + 5 \text{ dB}$$

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

$$\text{Project amenity noise level for industrial developments} = \text{recommended amenity noise level (Table 2.2) minus 5 dB(A)}$$

The **Project Noise Trigger Level** is the lowest value of Project Intrusiveness Noise Level or Project Amenity Noise Level after conversion to  $L_{Aeq}$  equivalent value.

Based on the above information from the NPFI, Acoustic Dynamics has undertaken short-term attended measurements and long term unattended measurements of the existing ambient acoustic environment within the area and used the data to establish the relevant project specific noise emission criteria and is summarised below in **Table 2.1**.

The prevailing weather conditions during the short-term operator attended noise monitoring were generally calm and did not influence the noise measurements taken.

**Table 2.1 Measured Noise Levels and Project Noise Objectives – External Residential Receiver**

Location	Assessment Period	$L_{A90}$ Rating Background Noise Level (RBL) [dB]	Measured $L_{Aeq}$ [dB]	Project Intrusiveness Noise Level [dB]	Project Amenity Noise Level $L_{Aeq}$ [dB] <sup>1</sup>	Project Noise Trigger Level $L_{Aeq}$ [dB]
Nearest residential receiver(s)	Morning Shoulder (6am – 7am)	45	61	50	-	<b>50</b>
	Day (7am – 6pm)	50	62	55	58	<b>55</b>
	Evening (6pm – 10pm)	41	58	46	48	<b>46</b>

Note: 1) Amenity adjustment based on “Industrial Interface - Suburban” receiver type. The noise emission objective has been modified in accordance with the recommendations detailed within the NPFI Section 2.2, for time



period standardising of the intrusiveness and amenity noise levels ( $L_{Aeq,15min}$  will be taken to be equal to the  $L_{Aeq,period} + 3 \text{ dB}$ ).

2) Acoustic Dynamics advises that by achieving compliance with the more stringent evening criteria, compliance will also be achieved with the less stringent daytime criteria.

The EPA's NPFI specifies additional noise emission level corrections that should be applied when a noise source is determined to include "modifying factors" that can vary the perceived intrusiveness of a noise source. Such modifying factors include tonal, low frequency, or intermittent noise.

## 2.3 NSW OFFICE OF LIQUOR AND GAMING (OLG)

Prior to the *Liquor Act 2007* being gazetted by the NSW State Parliament, and establishment of the *Liquor Regulation 2008*, noise emission from licensed premises had to comply with the Office of Liquor and Gaming noise emission criteria, detailed below. Acoustic Dynamics advises that many NSW liquor licenses still specify the following noise emission criteria:

The OLG conditions required that:

*"The  $L_{A10}$  noise emitted from the licensed premises shall not exceed the background noise level in any octave band frequency (31.5 Hz to 8 kHz inclusive) by more than 5 dB(A) between 7.00am and midnight at the boundary at any affected residence.*

*The  $L_{A10}$  noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5 Hz to 8 kHz inclusive) between midnight and 7.00am at the boundary of any affected residence.*

*Notwithstanding compliance of the above, noise from the licensed premises shall not be audible in any habitable room in any residential premises between the hours of midnight and 7.00am."*

To determine the appropriate intrusive noise emission criteria in accordance with the assessment guidelines of the OLG, Acoustic Dynamics conducted operator attended measurements on Wednesday 4 December 2019, and deployed an unattended noise logger between Wednesday 4 December 2019 and Wednesday 11 December 2019.

Note is made that in accordance with the NSW Office of Liquor and Gaming (OLG) noise emission requirements, an octave band  $L_{A90}$  external background noise level has also been determined, and is presented in **Table 2.2**.

**Table 2.2 Summary of Adjusted Background  $L_{A90}$  Octave Band Noise Level**

Location	Assessment Period	Method for Calculation of Criteria	L <sub>A90</sub> + 5 dB Rating Background Noise Level (Octave Band Centre Frequencies in Hz)									
			32	63	125	250	500	1K	2K	4K	8K	O/A
Residential Receivers - External	Morning Shoulder (6am – 7am)	Octave Band L <sub>A10</sub> ≤ RBL	15	28	31	33	37	40	38	31	18	45
	Day (7am – 6pm)	Octave Band L <sub>A10</sub> ≤ RBL + 5 dB	33	48	51	53	58	61	58	52	42	65
	Evening (6pm to 10pm)		25	41	44	47	52	56	53	45	35	59

Notes: 1) Acoustic Dynamics advises that by achieving compliance with the more stringent evening criterion, compliance will also be achieved with the less stringent daytime criteria.

### 3 NOISE MEASUREMENT EQUIPMENT & STANDARDS

All measurements were conducted in general accordance with Australian Standard 1055.1-1997, “Acoustics - Description and Measurement of Environmental Noise Part 1: General Procedures”. Acoustic Dynamics’ sound measurements were carried out using precision sound level meters conforming to the requirements of IEC 61672-2002 “Electroacoustics: Sound Level Meters – Part 1: Specifications”. The survey instrumentation used during the survey is set out in **Table 3.1**.

**Table 3.1 Noise Survey Instrumentation**

Type	Serial Number	Instrument Description
2270	2664115	Brüel & Kjaer Modular Precision Sound Level Meter
4189	2670479	Brüel & Kjaer 12.5 mm Prepolarised Condenser Microphone
4231	909240	Brüel & Kjaer Acoustic Calibrator
XL2	A2A-05048-E0	NTi XL2 Type 1 Environmental Noise Logger

The reference sound pressure level was checked prior to and after the measurements using the acoustic calibrator and with negligible drift.

### 4 NOISE EMISSION LEVELS & ASSESSMENT

#### 4.1 NOISE EMISSION ASSESSMENT (GENERAL & ENTERTAINMENT)

Acoustic Dynamics advises that the  $L_{A10}$  noise emission levels from the proposed operation of Dad and Dave’s Brewing have been determined based upon the results of short term operator-attended measurements conducted at the subject site on Wednesday 4 December and also results from logging during the period Wednesday 4 December 2019 and Wednesday 11 December 2019.

The following section provides an assessment of the noise emission associated with the brewery against the various noise criteria and objectives outlined in **Section 2** above.

Accordingly, Acoustic Dynamics has undertaken calculations and modelling to assess compliance.

The maximum noise emission levels measured at the nearest effected receiver neighbouring brewery, resulting from the operation of the brewery are presented against the most stringent noise criteria in **Table 4.1** and **Table 4.2** are presented below.

**Table 4.1 External Octave Band Noise Emission Criteria at Nearby Receivers**

Location	Assessment Period	Method for Calculation of Criteria	Relevant LA10, 15minute External Noise Emission Criteria [dB] Octave Band Centre Frequency [Hz]									
			32	63	125	250	500	1K	2K	4K	8K	A/P
Deliveries and Brewery Operations – Morning Shoulder Period (6am to 7am)												
Residential Receiver (External)	Morning Shoulder (6am – 7am)	Octave Band LA10 ≤ RBL	15	28	31	33	37	40	38	31	18	45
	Determined LA10 Emission Levels [dB(A)]		0	20	24	22	25	38	30	23	14	40
	Exceedance [dB]		0	0	0	0	0	0	0	0	0	0
Tasting Room Operations (including live music) – Most Stringent Period (6pm to 10pm) <sup>1,2,3</sup>												
Residential Receiver (External)	Evening <sup>1,2</sup> (6pm to 10pm)	Octave Band LA10 ≤ RBL + 5dB	25	41	44	47	52	56	53	45	35	59
	Determined LA10 Emission Levels [dB(A)]		0	17	29	32	36	37	33	29	22	42
	Exceedance [dB]		0	0	0	0	0	0	0	0	0	0

Notes: 1) Acoustic Dynamics advises that by achieving compliance with the more stringent evening criterion, compliance will also be achieved with the less stringent daytime criteria.

2) Note is made that the proposed operations of the subject premise is to cease between the hours of 10:00pm and 7:00 am.

3) Includes the use of amplified music, at a maximum internal level of 85 dB (A)

**Table 4.2 Noise Emission Criteria at Nearby Sensitive Receivers**

Receiver Location	Activity / Noise Source	Relevant Assessment Period <sup>1</sup>	Measured & Calculated L <sub>Aeq</sub> Noise Level [dB]	Project Noise Trigger Level L <sub>Aeq</sub> [dB]	Complies?
Residential Receiver (External)	Ongoing Brewery Operations	Evening <sup>2,3</sup> (6pm – 10pm)	42	<b>46</b>	<b>Yes</b>
Commercial Premises		When in use	54	<b>65</b>	<b>Yes</b>
Industrial Premises		When in use	54	<b>70</b>	<b>Yes</b>

Notes: 1) Acoustic Dynamics advises that by achieving compliance with the more stringent evening criterion, compliance will also be achieved with the less stringent daytime criteria.  
 2) Note is made that the proposed operations of the subject premise is to cease between the hours of 10:00pm and 7:00 am.  
 3) Includes the use of amplified music, at a maximum internal level of 85 dB (A)

The determined external L<sub>A10</sub> and external L<sub>Aeq</sub> levels are compliant with criteria set out in the office of Liquor and Gaming and the EPA Noise Policy for Industry (NPfI 2017).

## 5 RECOMMENDATIONS & ADVICE

Acoustic Dynamics' analysis and prediction calculations indicate the following recommendations are required to be incorporated into the development, to ensure compliance with the relevant noise emission criteria and requirements.

### 5.1 AMPLIFIED MUSIC AND LIVE BANDS

Acoustic Dynamics advises that the internal Sound Pressure Level (SPL) resulting from bands and/or amplified music must not exceed 85 dB(A).

## 6 DISCUSSION

The measured and calculated noise levels presented in **Table 4.1** and **Table 4.2** above indicate:

- Acoustic Dynamics has determined the maximum L<sub>A10 (15 minute)</sub> noise emission levels of the operations of Dad and Dave's Brewing to be 42 dB at the nearest residential receiver located directly adjacent to the subject brewery. This all-pass L<sub>A10</sub> level **achieves compliance** with the EPA Noise Policy for Industry and the OLG. The octave band L<sub>A10</sub> spectral data **achieves compliance**; and

- Acoustic Dynamics advise that the calculated  $L_{Aeq}$  noise emission levels **achieves compliance** with the external noise emission objectives of the EPA Noise Policy for Industry and the OLG.

## 7 CONCLUSION AND ACOUSTIC OPINION

Acoustic Dynamics has conducted an acoustic assessment of the noise emission resulting from the proposed use and operation of Dad and Dave's Brewing located at 45 Mitchell Road, Brookvale, NSW.

### **Acoustic Opinion**

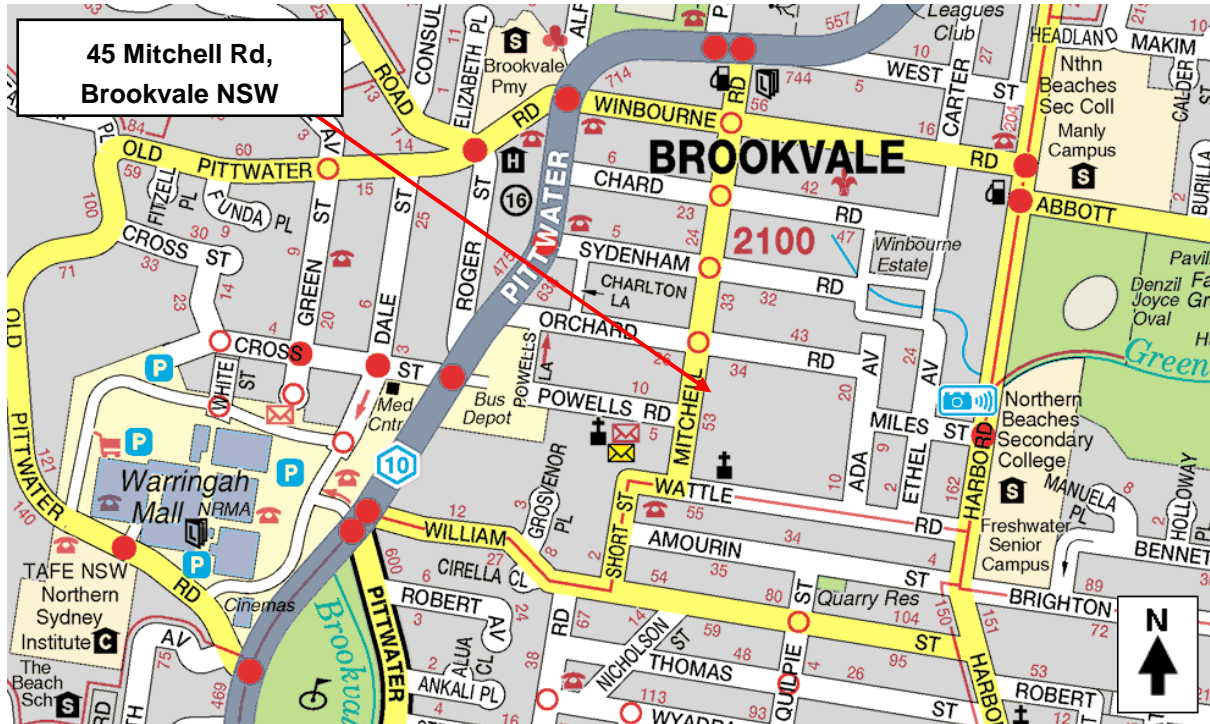
**Further to the noise monitoring and measurements conducted, our review of the relevant acoustic criteria, requirements and our calculations, the proposed operation is compliant with relevant noise emission criteria of the Northern Beaches Council , NSW EPA, the POEO Act 1997, and the OLG for the proposed hours of operation.**

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



## APPENDIX A – LOCATION MAP & AERIAL PHOTO

### A.1 LOCATION MAP

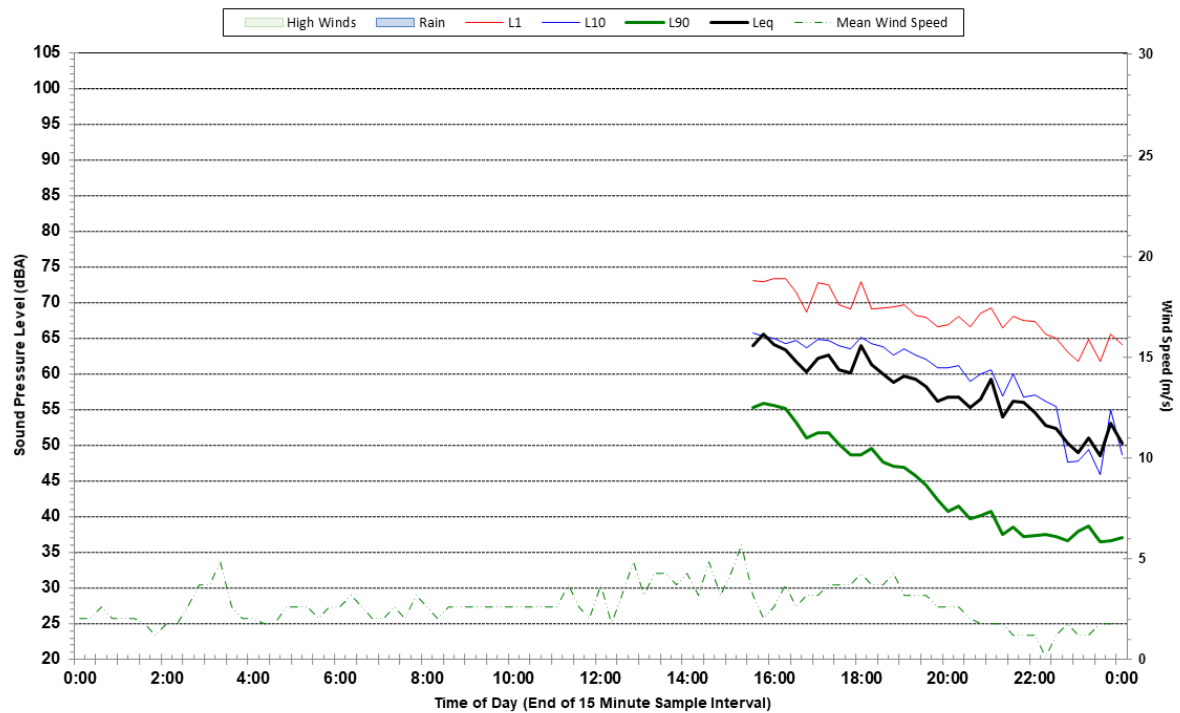


### A.2 AERIAL PHOTO

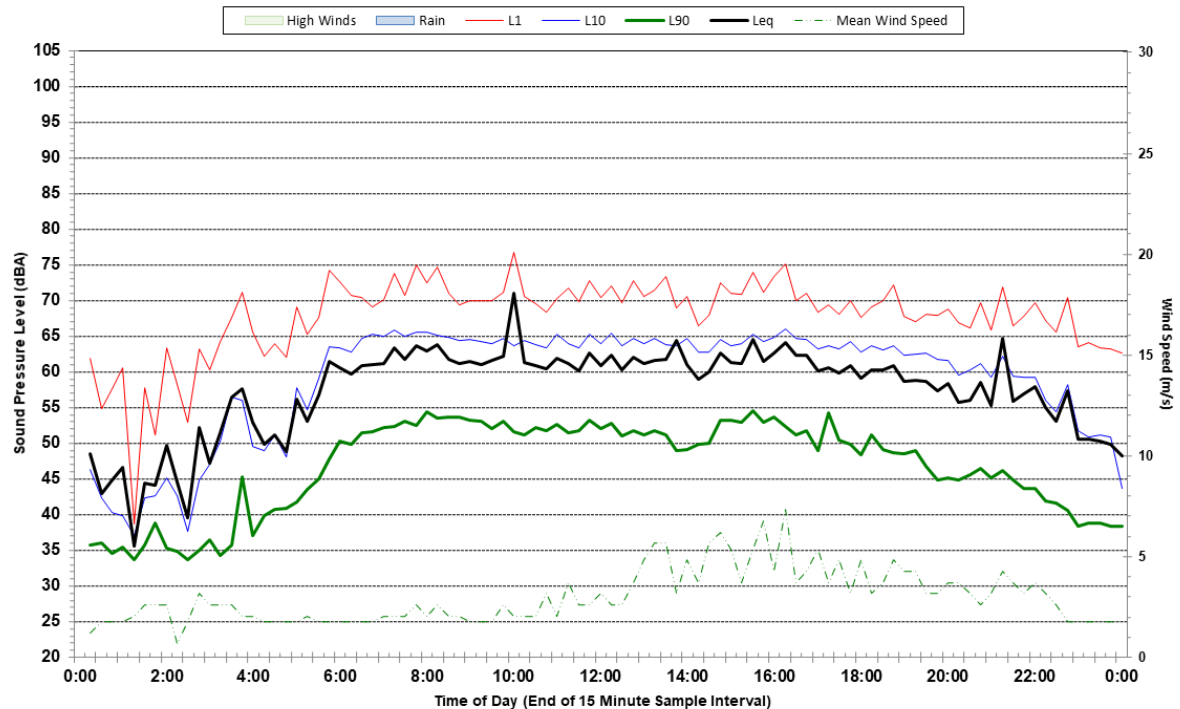


## APPENDIX B – UNATTENDED NOISE LOGGER DATA

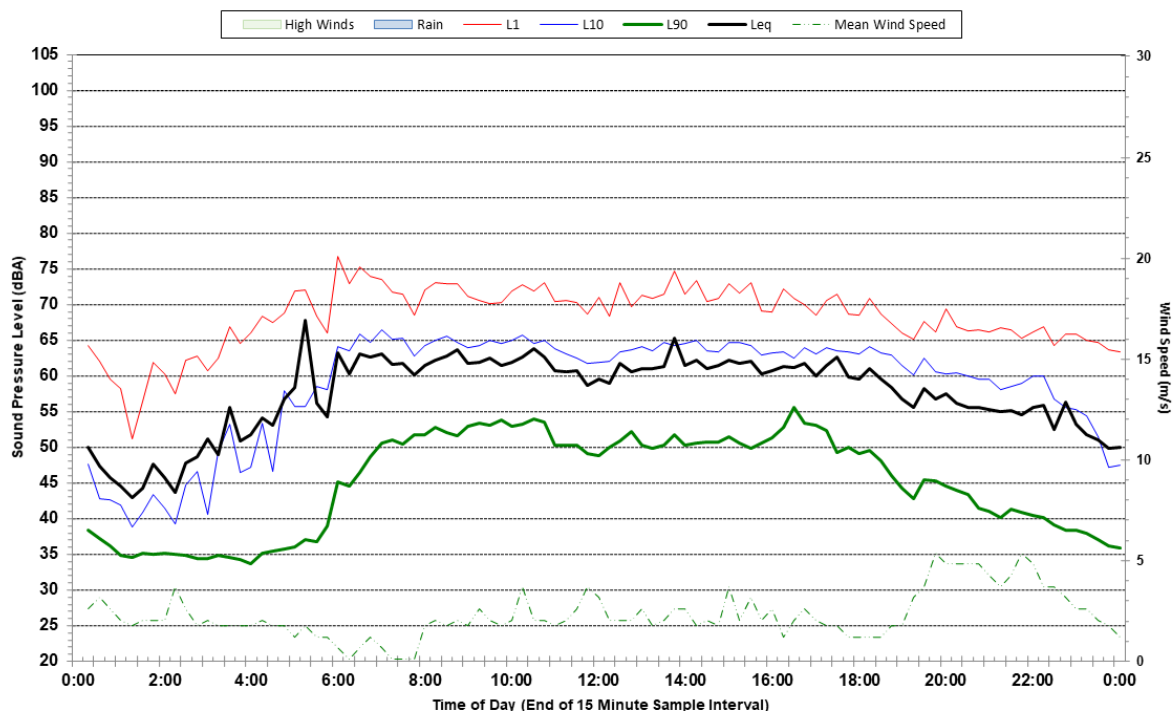
**Statistical Ambient Noise Levels  
45 Mitchell Rd Brookvale - Wednesday 4 December 2019**



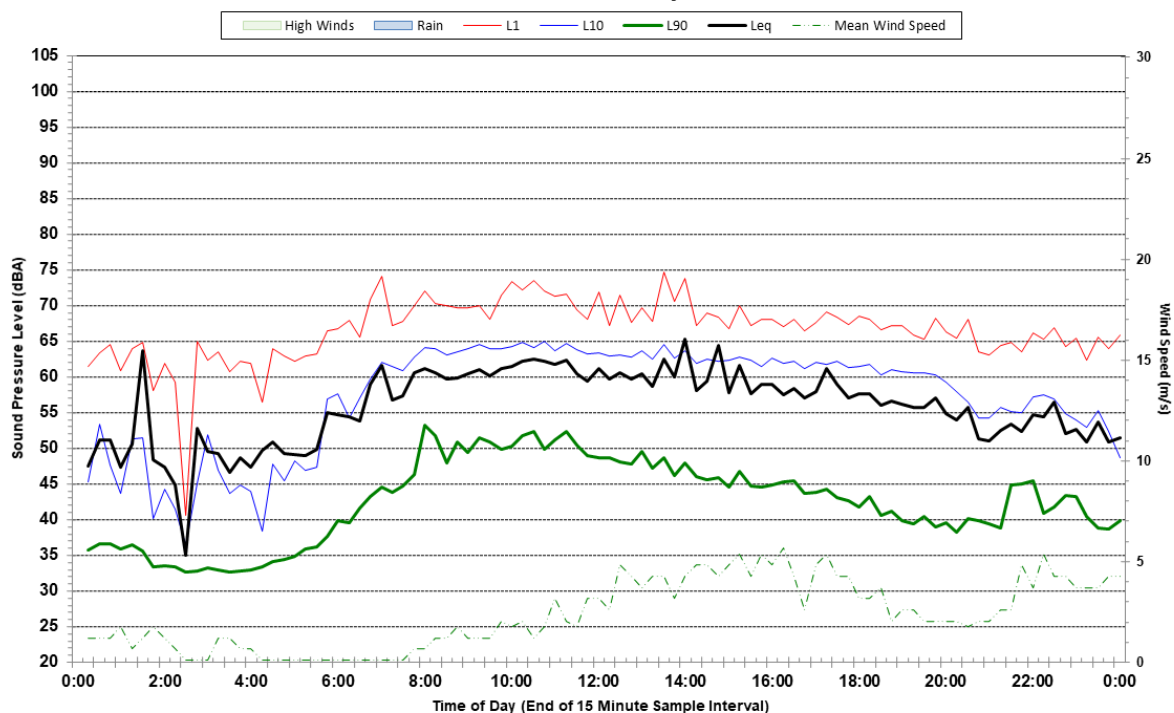
**Statistical Ambient Noise Levels  
45 Mitchell Rd Brookvale - Thursday 5 December 2019**



### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Friday 6 December 2019

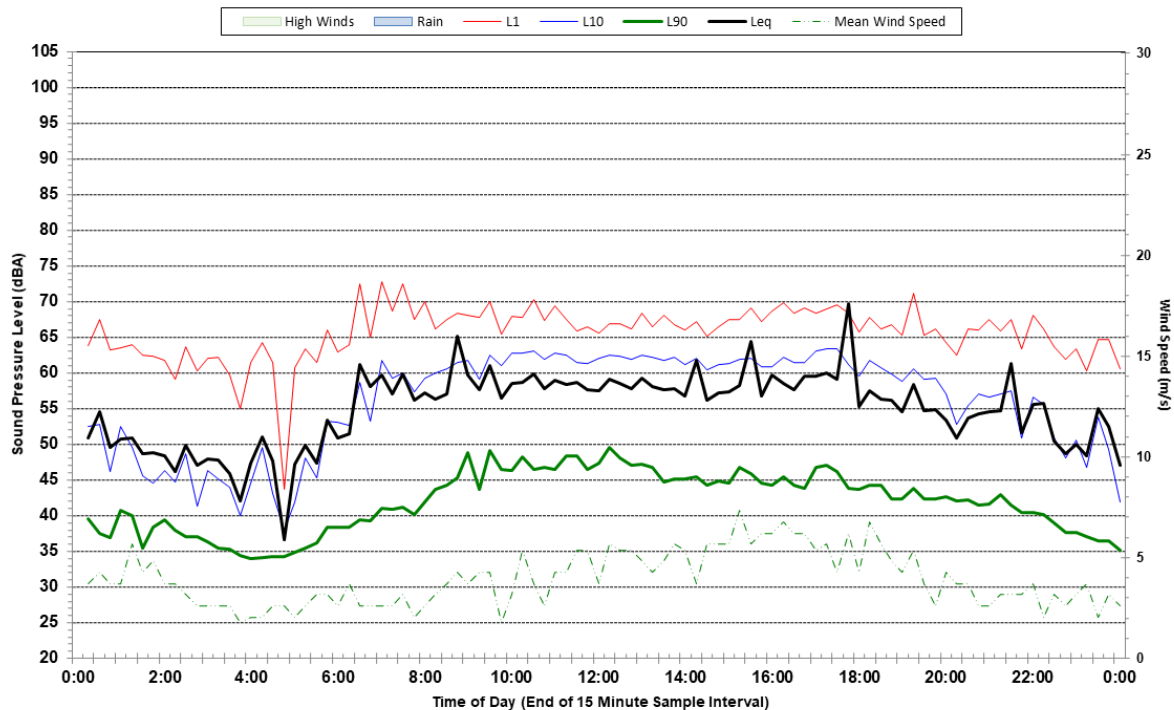


### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Saturday 7 December 2019

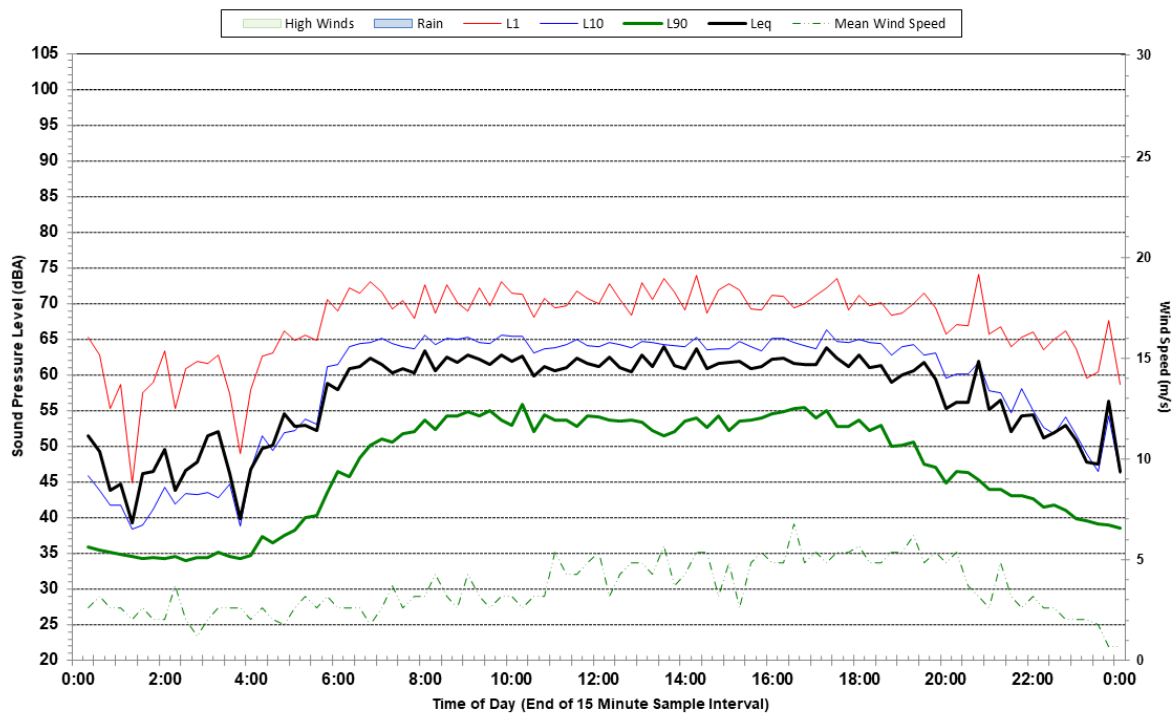




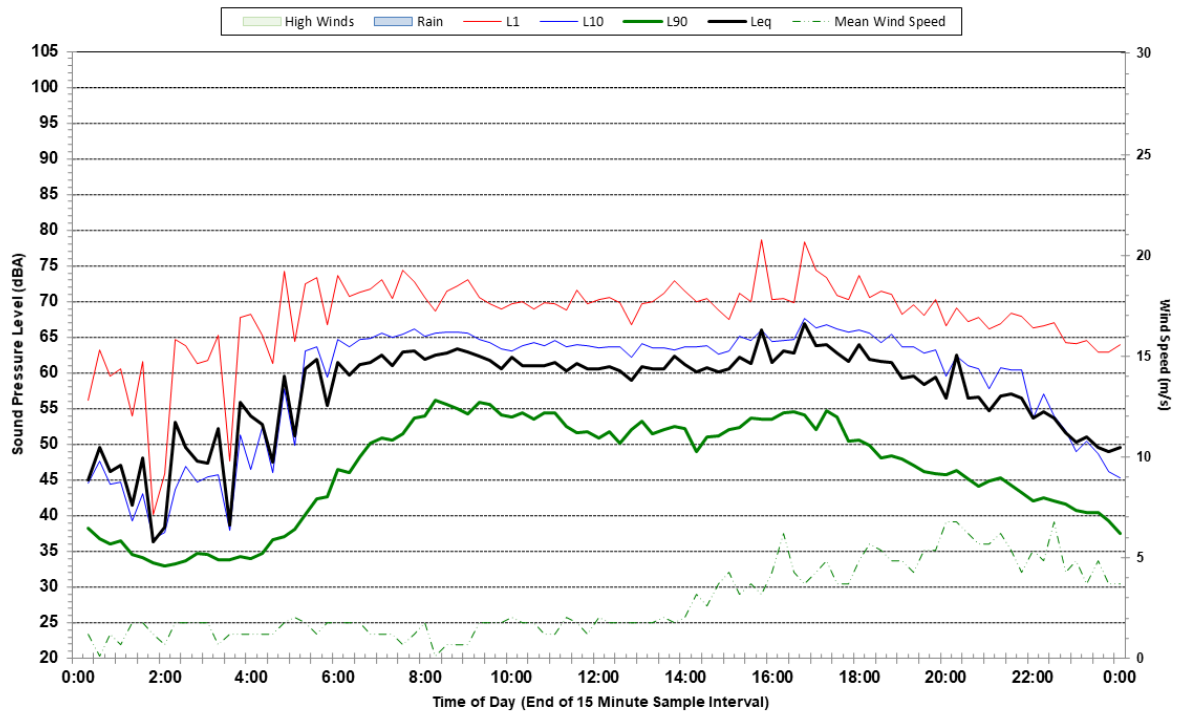
### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Sunday 8 December 2019



### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Monday 9 December 2019



### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Tuesday 10 December 2019



### Statistical Ambient Noise Levels 45 Mitchell Rd Brookvale - Wednesday 11 December 2019

