ACOUSTIC DA REPORT

Phillip Street (31-37), Raymond Terrace

ID: 12587 R01v2

19 July 2024

Prepared For:
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CONTENTS

LIST OF FIGURES

LIST OF TABLES

This firm is a member of the Association of Australian Acoustical Consultants.

The work reported herein has been carried out in accordance with the terms of membership. We stress that the advice given herein is for acoustic purposes only, and that the relevant authorities should be consulted with regard to compliance with regulations governing areas other than acoustics.

1.0 INTRODUCTION

PKA has been engaged by Stanton Dahl Architects to provide an acoustic DA report for the proposed development at 31 – 37 Phillips Street, Raymond Terrace. The development is to be a low income / community housing, comprising of a series of townhouses.

This report has been prepared for support of the DA submission to address acoustic issues that may relate to this development. This report also includes BCA/NCC acoustic criteria and advice.

2.0 SUMMARY

An acoustic assessment has been conducted in accordance with the acoustic requirements of NSW EPA Noise Policy for Industry 2017 and the Building Code of Australia, to set plant noise goals for the development, and to set noise design goals for internal walls and floors separating sole occupancy units.

Unattended noise measurements were conducted on site to obtain the existing background noise levels. Providing our recommendations are implemented as detailed in Section 7.0, the proposed development will comply with the relevant acoustic requirements.

3.0 SITE DESCRIPTION

The site is located within a suburban area and is bound by residential lots on all sides of the property. The site and noise monitor locations are shown in Figure 3-1. The acoustic environment is mostly natural ambient, with distant traffic barely audible.

Figure 3-1 Site Location

Figure 3-2 Proposed Site Plan

4.0 NOISE CRITERIA

4.1 BCA Sound Insulation Requirements – Class 1 Buildings

The National Construction Code (NCC) 2022, in Volume Two Part H4 "Health and Amenity" includes provision for sound insulation; stated in H4O6 Sound Insulation "*The Objective is to safeguard occupants from illness or loss of amenity as a result of undue sound being transmitted between adjoining dwellings*". The following table summarises the BCA sound insulation requirements, brevity necessitates detail in the BCA taking precedence over the tables below.

Table 4-1 Performance Requirements - Sound Insulation [H4P6]

Clause Description	Acoustic Performance	
	Airborne	Impact
(1) Walls separating dwellings	$D_{nT,w} + C_{tr} \geq 45$	-
(2) Walls separating dwelling habitable area with bathroom, sanitary compartment, laundry or kitchen from adjoining dwelling	$D_{nT,w} + C_{tr} \geq 45$	Discontinuous Construction
(3) Walls must not be compromised by incorporation of penetration of pipe of other service element	-	-

NSW EPA Noise Policy for Industry

Noise generated from a premises is generally assessed against the requirements of the *NSW EPA Noise Policy for Industry 2017* (NPfI).

The policy sets out two separate criteria to ensure environmental noise objectives are met. The first criterion considers intrusive noise to residential properties and the second is set to ensure the amenity of the land use is protected. The lower value of both criteria is considered to be the Project noise trigger level, which is the limit of the $L_{Aeq\ 15min}$ noise level that must not be exceeded for the corresponding period of the day.

Intrusiveness Criterion

The intrusiveness of a stationary noise source may be considered acceptable if the average of the maximum A-weighted levels of noise, $L_{Aeq\ 15\ minute}$ from the source do not exceed by more than 5dB the Rating Background Level (RBL) measured in the absence of the source. This applies during all times of the day and night. There also exists an adjustment factor to be applied as per the character of the noise source. This includes factors such as tonal, fluctuating, low frequency, impulsive, intermittent etc. qualities of noise. The RBL is determined in accordance with Section 2.3 of the NSW EPA NPfI. The intrusiveness criterion is $L_{Aeq\ 15\ minute} < RBL+5$.

Amenity Criterion

To limit continuing increases in noise levels, the maximum ambient noise level within an area from commercial noise sources should not normally exceed the levels as specified in Table 2.2 of the policy for the specified time of the day. The NPfI recommends the following Amenity Noise Levels for various receiver premises.

Table 4-2 Noise Criteria - Amenity for Receiver Buildings

Type of receiver	Time of day	Recommended Amenity Noise Level $L_{Aeq\ (period)}$
Residential (Suburban)	Day	55 dB(A)
	Evening	45 dB(A)
	Night	40 dB(A)

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

Project amenity noise level for development = recommended amenity noise level **minus 5 dB(A).**

To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the Amenity **$L_{Aeq,15min}$** will be taken to be equal to the **$L_{Aeq,\ period}$ + 3 decibels (dB).**

Amenity noise levels in areas of high traffic noise

The level of transport noise, road traffic noise in particular, may be high enough to make noise from an industrial source effectively inaudible, even though the L_{Aeq} noise level from that industrial noise source may exceed the project amenity noise level. In such cases the project amenity noise level may be derived from the L_{Aeq}, period(traffic) minus 15 dB(A).

High traffic project amenity noise level for developments = $L_{Aeq,\ period(traffic)}$ minus 15 dB(A)

The high traffic project amenity noise level may be applied only if all of the following apply:

- Traffic noise is identified as the dominant noise source at site.
- The existing traffic level is 10dB or more above the recommended amenity noise level for the area.
- It is highly unlikely traffic noise levels will decrease in the future.

The applicability of these traffic noise provisions needs to be determined for each assessment period (that is, day, evening and night).

Maximum Noise Level Event Assessment

To protect the receivers from potential sleep disturbance from maximum noise level event from the premises, the following noise criteria is applicable.

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

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

5.0 NOISE SURVEY AND PROJECT NOISE GOALS

5.1 Methodology

Unattended noise monitoring was conducted on site between 22nd and 29th May 2024 to measure the existing ambient noise levels. The noise monitor was programmed to store the L_n percentile noise levels for each 15-minute sampling period. Measurements were made of L_{min}, L_{max}, L_{90}, and L_{eq} and were later retrieved for analysis. Noise data from monitors were used to obtain the ambient noise levels and corrected appropriately for bad weather. The position of the noise monitor is shown in Figure 3-1. The results and summary of the noise monitoring are listed in graphical form in Appendix B of this report.

5.2 Instrumentation

Noise measurements were conducted using the following equipment:

- Sound analyser NTi XL2 Type Approved, Serial No. A2A-16434-E0.
- Sound calibrator Larson Davis Calibrator CAL200, Serial number 11419.

The instruments were calibrated before and after the noise measurements and there were no adverse deviations between the two. The analysers are type 1 and comply with AS IEC 61672.2-2004. The instruments carry traceable calibration certificates.

5.3 Project Noise Criteria

The table below presents the results of the ambient noise monitor measurements and noise goals for noise breakout from the ongoing use of the proposed premises. The assessment periods are generally defined by the NSW NPfI as daytime - 7 am to 6 pm, evening - 6 pm to 10 pm and night - 10 pm to 7 am.

Table 5-1 Project Noise Trigger Levels at Residential Boundaries Facing the Main Road (

Receiver Type	Period	Measured RBL (L_{A90})	Acceptable Noise Levels $L_{Aeq(period)}$	NSW Noise Policy for Industry Criteria		Project Noise Trigger Levels $L_{Aeq15min}$
				Amenity $L_{Aeq15min}$	Intrusiveness $L_{Aeq15min}$	
Residential (Sub-urban)	Day	34 dB(A)	55 dB(A)	53 dB(A)	39 dB(A)	**39 dB(A)**
	Evening	37 dB(A)	50 dB(A)	48 dB(A)	42 dB(A)	**42 dB(A)**
	Night	33 dB(A)	40 dB(A)	38 dB(A)	38 dB(A)	**38 dB(A)**

Sleep Disturbance Criteria (Maximum Noise Level Event)

The following table presents the sleep disturbance criteria for the use of the premises during night-time hours based on the criteria discussed in Section 0.

Table 5-2 Sleep Disturbance Criteria

Time	Receiver Location	Measured Background L_{A90}	Noise Criteria	
			$L_{Aeq15min}$ at receiver boundary	L_{AFmax} at receiver boundary
Night-time	Residential Receivers	33 dB(A)	38 dB(A)	48 dB(A)

6.0 ASSESSMENT

6.1 Plant Noise Breakout

An equipment schedule was not available at this stage. This is typically only available following the commissioning of a contractor prior to the Construction Certification stage. Therefore, as detailed in Section 7.0 the final selections and their locations must be made ensure that the project trigger levels established in Section 5.3 of this report are not exceeded.

7.0 RECOMMENDATIONS

All recommendations must be checked by respective assessing representatives to ensure compliance with other non-acoustic requirements.

1. The acoustic systems shown in the descriptions is one that satisfies the acoustic requirements only. No representation is given that it is fit for any other purpose. The construction must be checked and designed by others to verify that it complies with all necessary fire rating, structural, waterproofing, durability, and any other non-acoustic requirements.
2. Any additional construction or fixtures must be acoustically detailed to seal to the room and ceiling construction without degrading the sound insulation rating (R_w) required in either instance.

1. BCA Part H4P6 Sound Insulation requirements

- Due to the classification of this development being Class 1, this project only features walls as separating elements between dwellings, and therefore it will be necessary to ensure that all separating partitions, and services where applicable, are be designed to comply with the requirements listed in Section 4.1 of this report.

2. Outdoor Plant and Equipment

- At the time of preparation of this report, a detailed mechanical schedule was unavailable. The selection of any future outdoor mechanical and plant equipment must be checked by a qualified acoustic consultant so that the rated sound power/pressure levels will comply at the boundary of the sensitive residences with the NSW EPA *Noise Policy for Industry 2017* criteria listed in Sections 5.3.

APPENDIX A DRAWINGS USED TO PREPARE REPORT

This report was prepared using drawings provided by Stanton Dahl Architects (Project ID: 2881.23)

No.	Rev.	Title	Date
DA00	P15	Cover Sheet & Location Plan	27/06/2024
DA01	P15	Site & Block Analysis Plan	27/06/2024
DA04	P15	Proposed Subdivision Plan	27/06/2024
DA05	P15	Site & External Works Plan	27/06/2024
DA07	P15	Ground Floor Plans	27/06/2024
DA08	P15	Level 1 Plans	27/06/2024
DA09	P15	Roof Plans	27/06/2024
DA10	P15	Elevations 1	27/06/2024
DA11	P15	Elevations 2	27/06/2024
DA12	P15	Sections 1	27/06/2024
DA13	P15	Section 2	27/06/2024

APPENDIX B NOISE MEASUREMENTS (GRAPHICAL)

12587 Phillip Street (31-37), Raymond Terrace

PKA Acoustic Consulting

Project Address: 31-37 Phillip Street, Raymond Terrace

Logger Location: Within backyard of 37 Phillip Street

		Background Noise Levels L_{A90} dB					
		Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
		Measured	Corrected	Measured	Corrected	Measured	Corrected
Wednesday	22/05/2024			38.5	38.5	34.9	34.9
Thursday	23/05/2024	33.6	33.6	37.2	37.2	32.8	32.8
Friday	24/05/2024	35.7	35.7	37.1	37.1	30.9	30.9
Saturday	25/05/2024	34.7	34.7	33.9	33.9	28.3	28.3
Sunday	26/05/2024	33.9	33.9	39.5	39.5	29.6	29.6
Monday	27/05/2024	35.3	35.3	36.7	36.7	32.9	32.9
Tuesday	28/05/2024	33.9	33.9	43.0	43.0	33.3	33.3
Wednesday	29/05/2024						
Rating Background Level (RBL)		**34**	**34**	**37**	**37**	**33**	**33**

		Existing Noise Levels L_{Aeq} dB					
		Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
		Measured	Corrected	Measured	Corrected	Measured	Corrected
Wednesday	22/05/2024			48.8	48.8	43.8	43.8
Thursday	23/05/2024	57.6	57.6	47.9	47.9	43.4	43.4
Friday	24/05/2024	61.5	61.5	56.0	56.0	42.6	42.6
Saturday	25/05/2024	52.0	52.0	44.6	44.6	38.1	38.1
Sunday	26/05/2024	52.4	52.4	46.6	46.6	43.9	43.9
Monday	27/05/2024	55.4	55.4	48.0	48.0	42.3	42.3
Tuesday	28/05/2024	55.2	55.2	48.9	48.9	44.6	44.6
Wednesday	29/05/2024						
Average Noise Level (L_{Aeq})		**57**	**57**	**50**	**50**	**43**	**43**

12587 Phillip Street (31-37), Raymond Terrace

PKA Acoustic Consulting

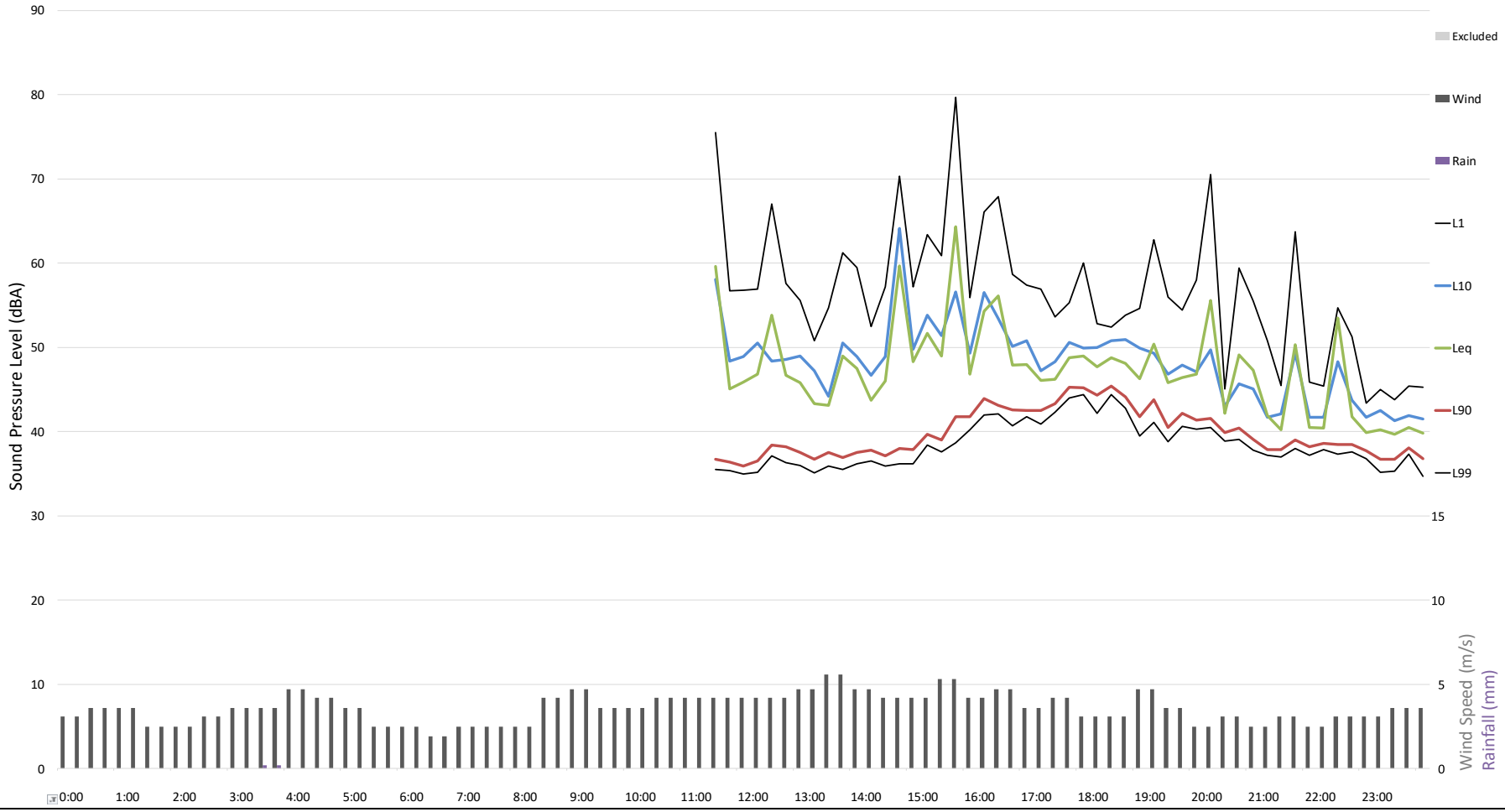
Project Address: 31-37 Phillip Street, Raymond Terrace
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB			48.8	48.8	43.8	43.8
L_{A90} dB			38.5	38.5	34.9	34.9

22/05/2024 Wednesday

Existing Ambient Noise Levels (dBA)



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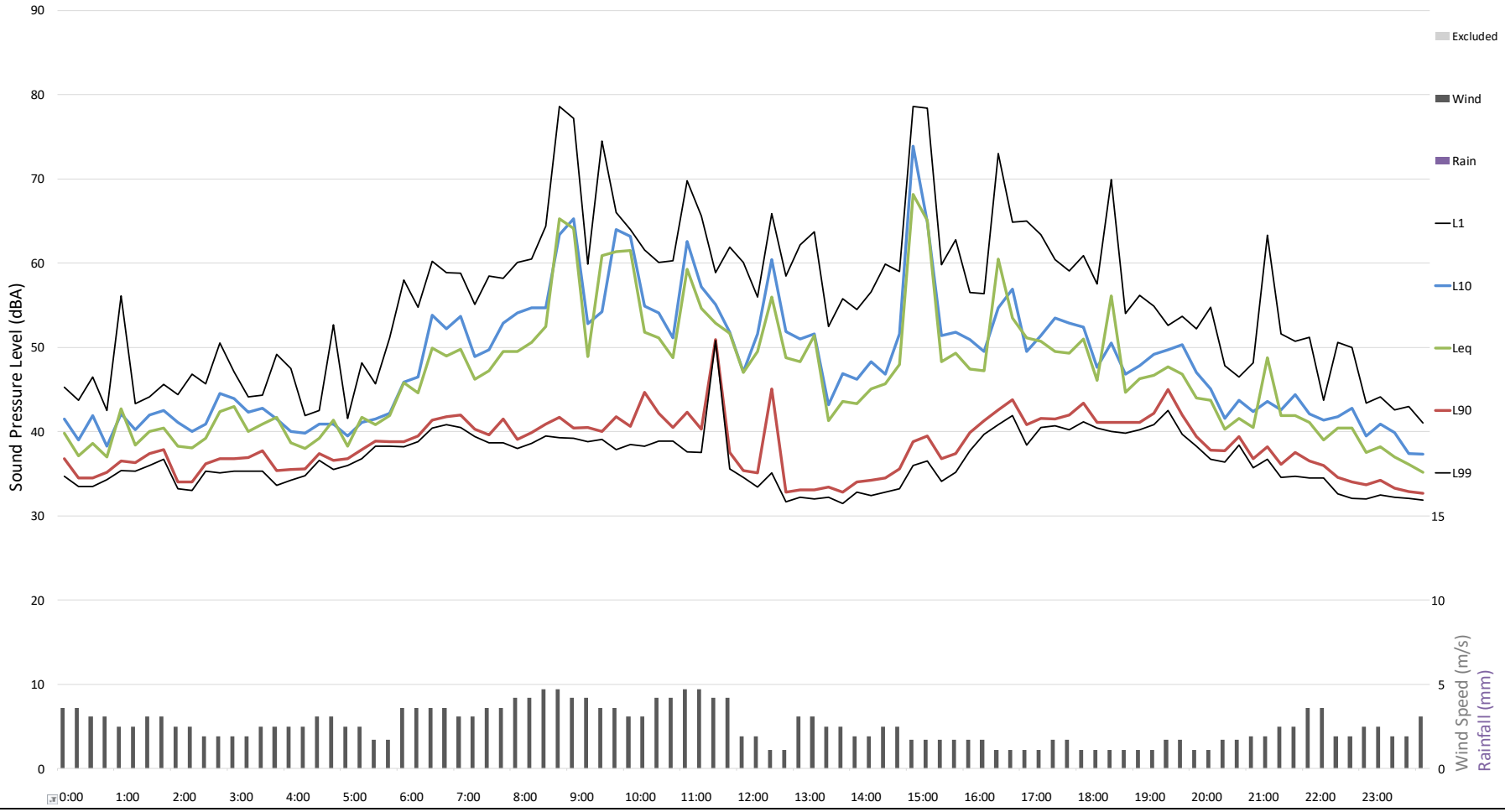
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	57.6	57.6	47.9	47.9	43.4	43.4
L_{A90} dB	33.6	33.6	37.2	37.2	32.8	32.8

23/05/2024 Thursday

Existing Ambient Noise Levels (dBA)



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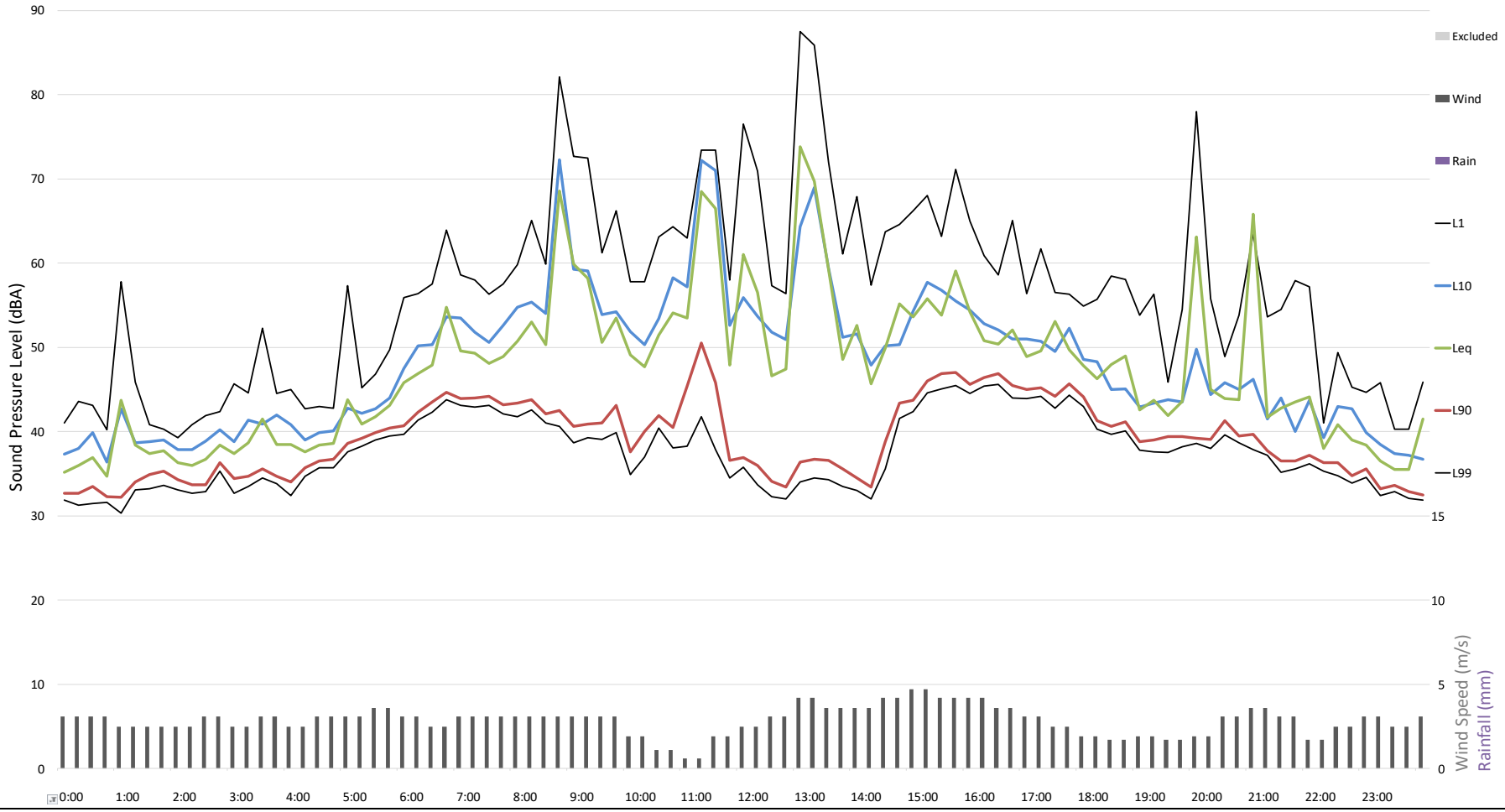
PKA Acoustic Consulting

Project Address: 31-37 Phillip Street, Raymond Terrace
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	61.5	61.5	56.0	56.0	42.6	42.6
L_{A90} dB	35.7	35.7	37.1	37.1	30.9	30.9

24/05/2024 Friday
Existing Ambient Noise Levels (dBA)



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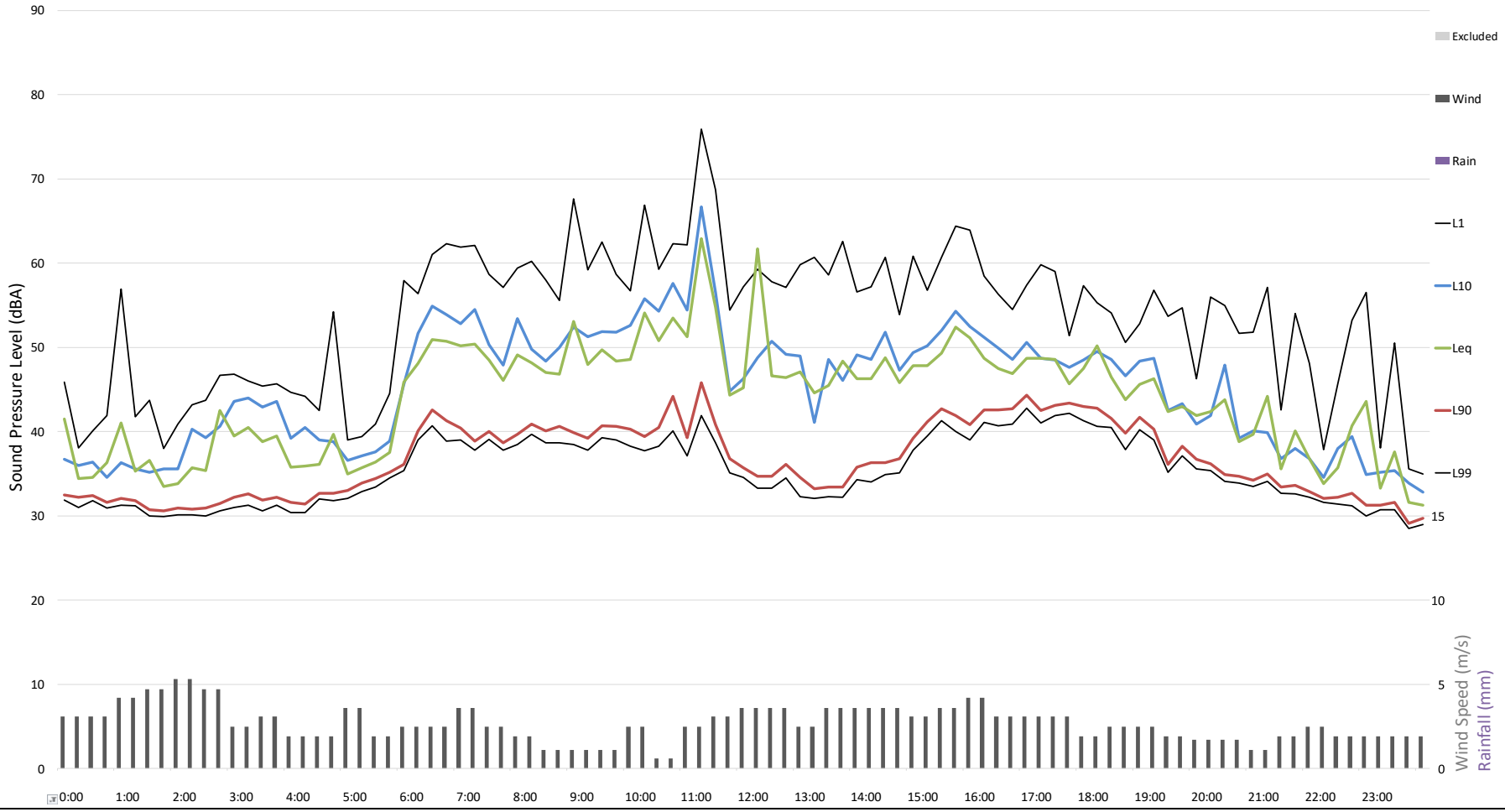
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	52.0	52.0	44.6	44.6	38.1	38.1
L_{A90} dB	34.7	34.7	33.9	33.9	28.3	28.3

25/05/2024 Saturday
Existing Ambient Noise Levels (dBA)



12587 Phillip Street (31-37), Raymond Terrace

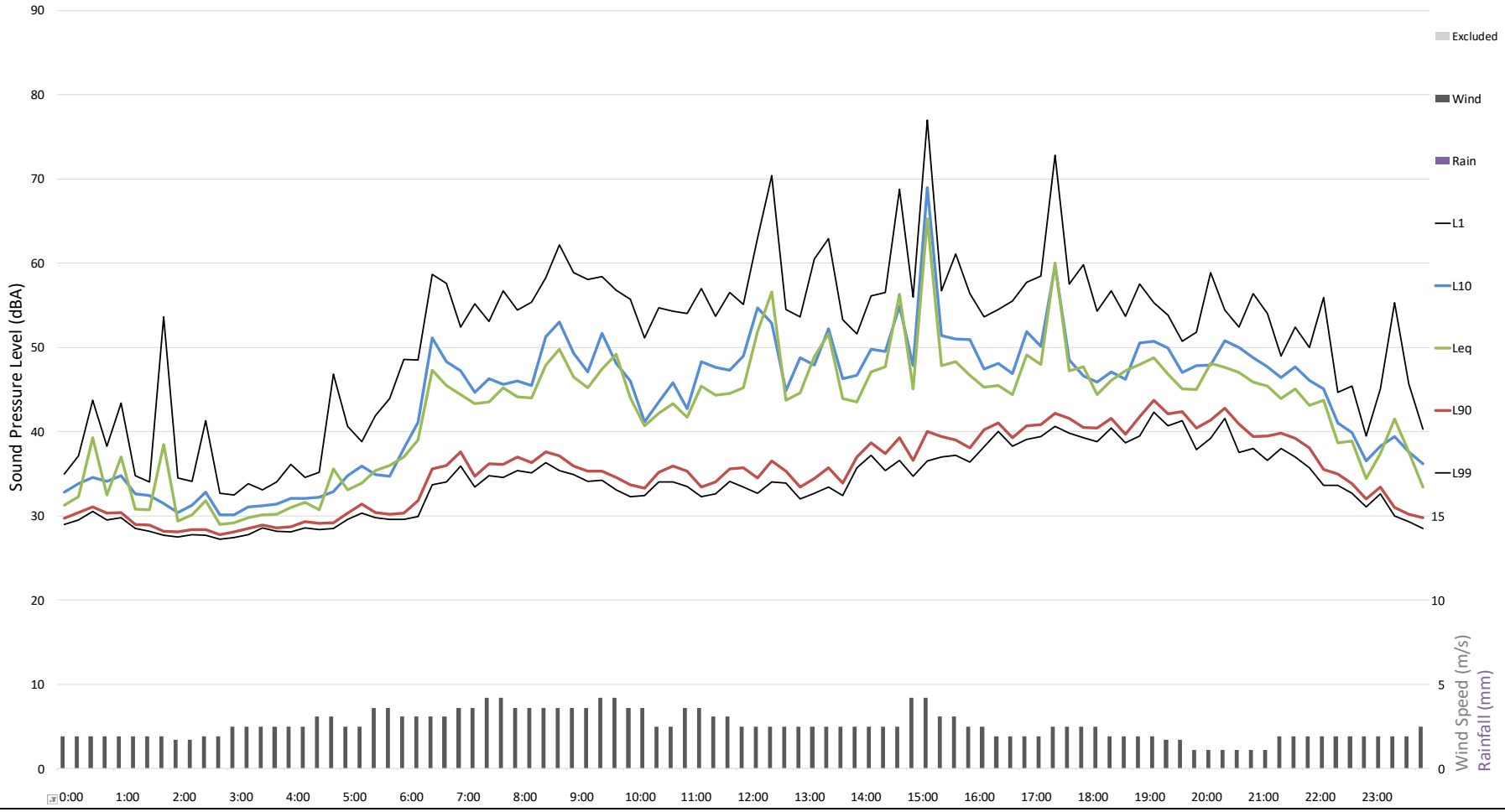
PKA Acoustic Consulting

Project Address: 31-37 Phillip Street, Raymond Terrace
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 08:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 08:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	52.4	52.4	46.6	46.6	43.9	43.9
L_{A90} dB	33.9	33.9	39.5	39.5	29.6	29.6

26/05/2024 Sunday
Existing Ambient Noise Levels (dBA)



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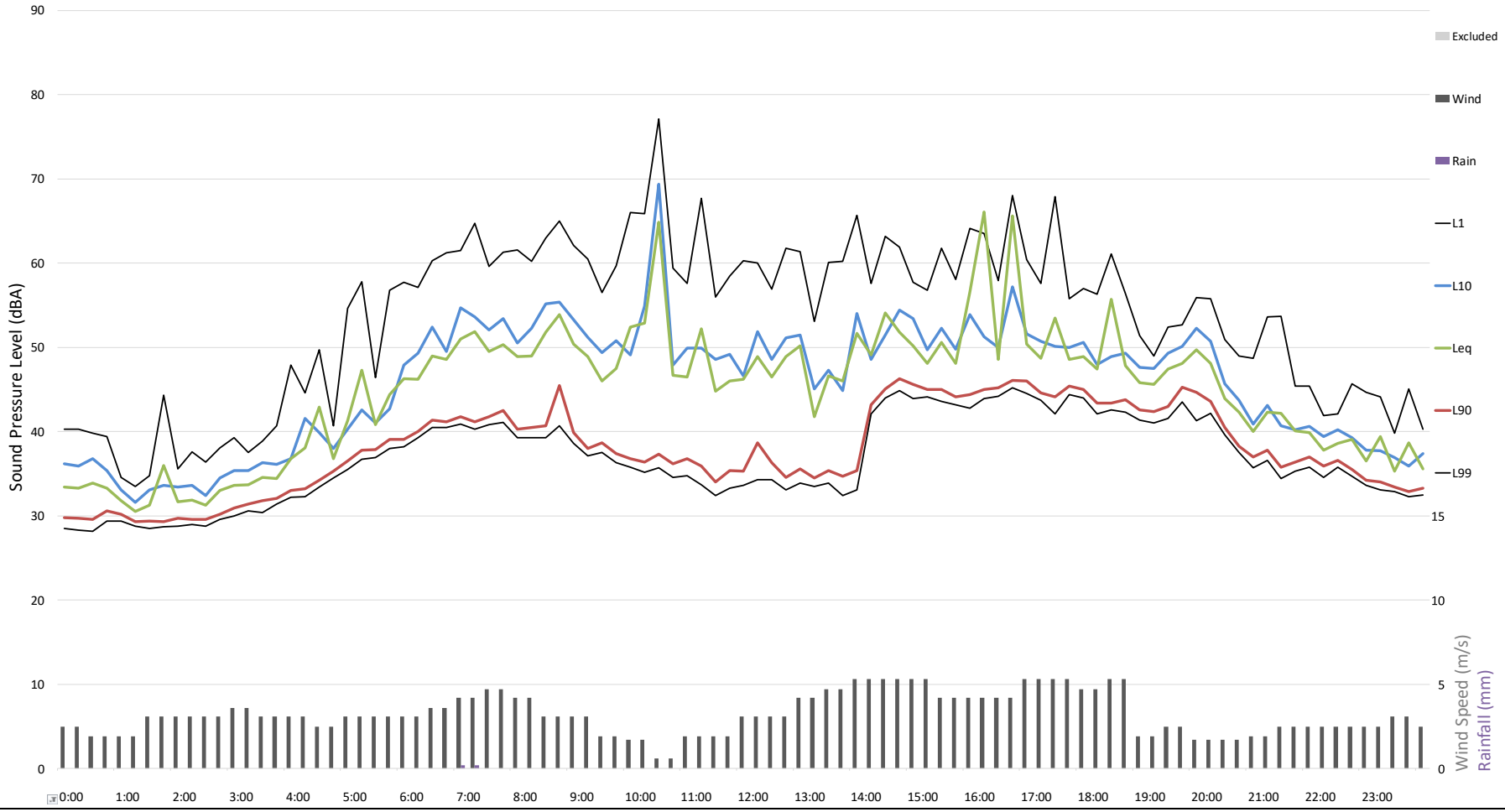
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	55.4	55.4	48.0	48.0	42.3	42.3
L_{A90} dB	35.3	35.3	36.7	36.7	32.9	32.9

27/05/2024 Monday
Existing Ambient Noise Levels (dBA)



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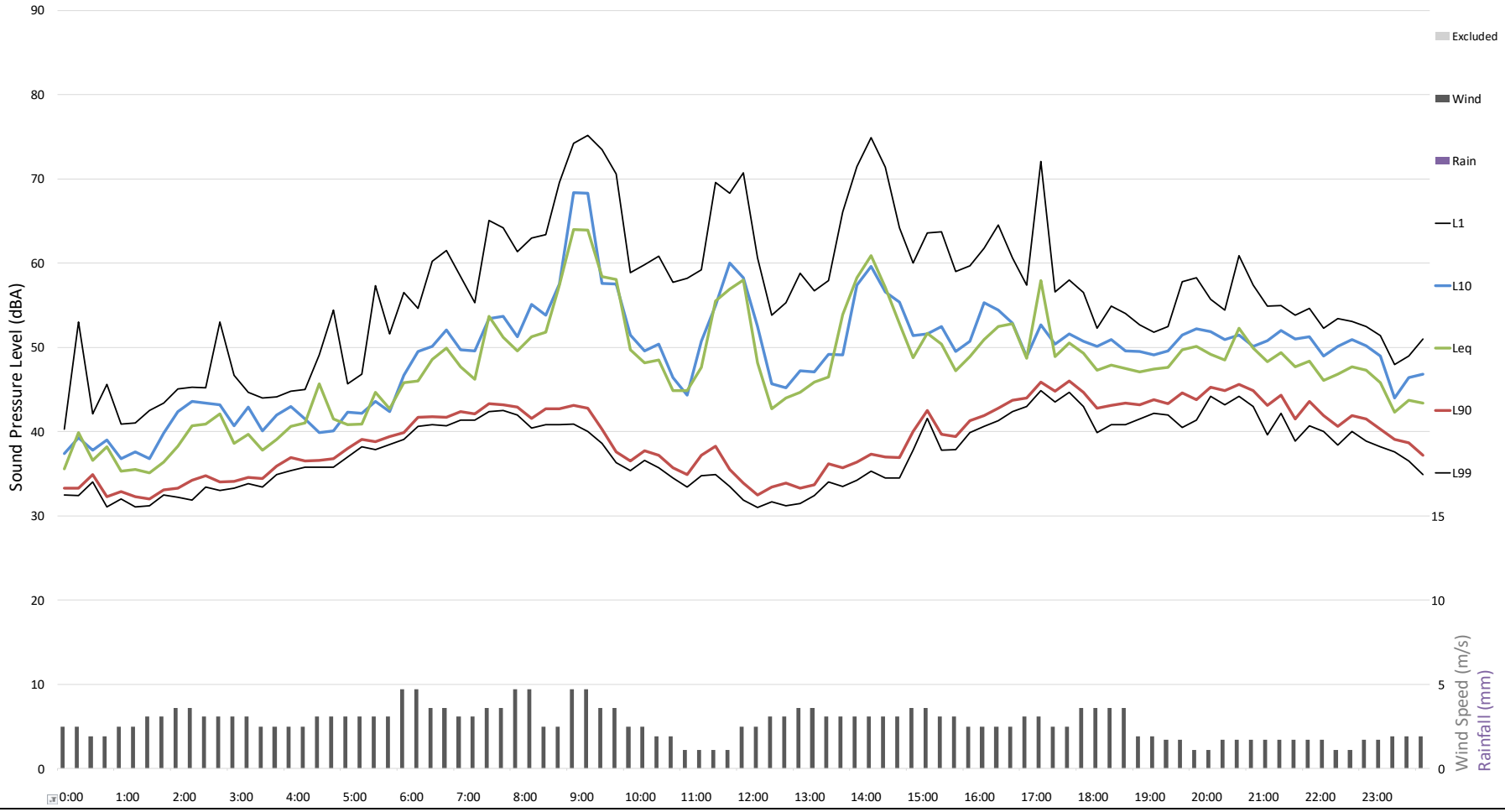
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	55.2	55.2	48.9	48.9	44.6	44.6
L_{A90} dB	33.9	33.9	43.0	43.0	33.3	33.3

28/05/2024 Tuesday

Existing Ambient Noise Levels (dBA)



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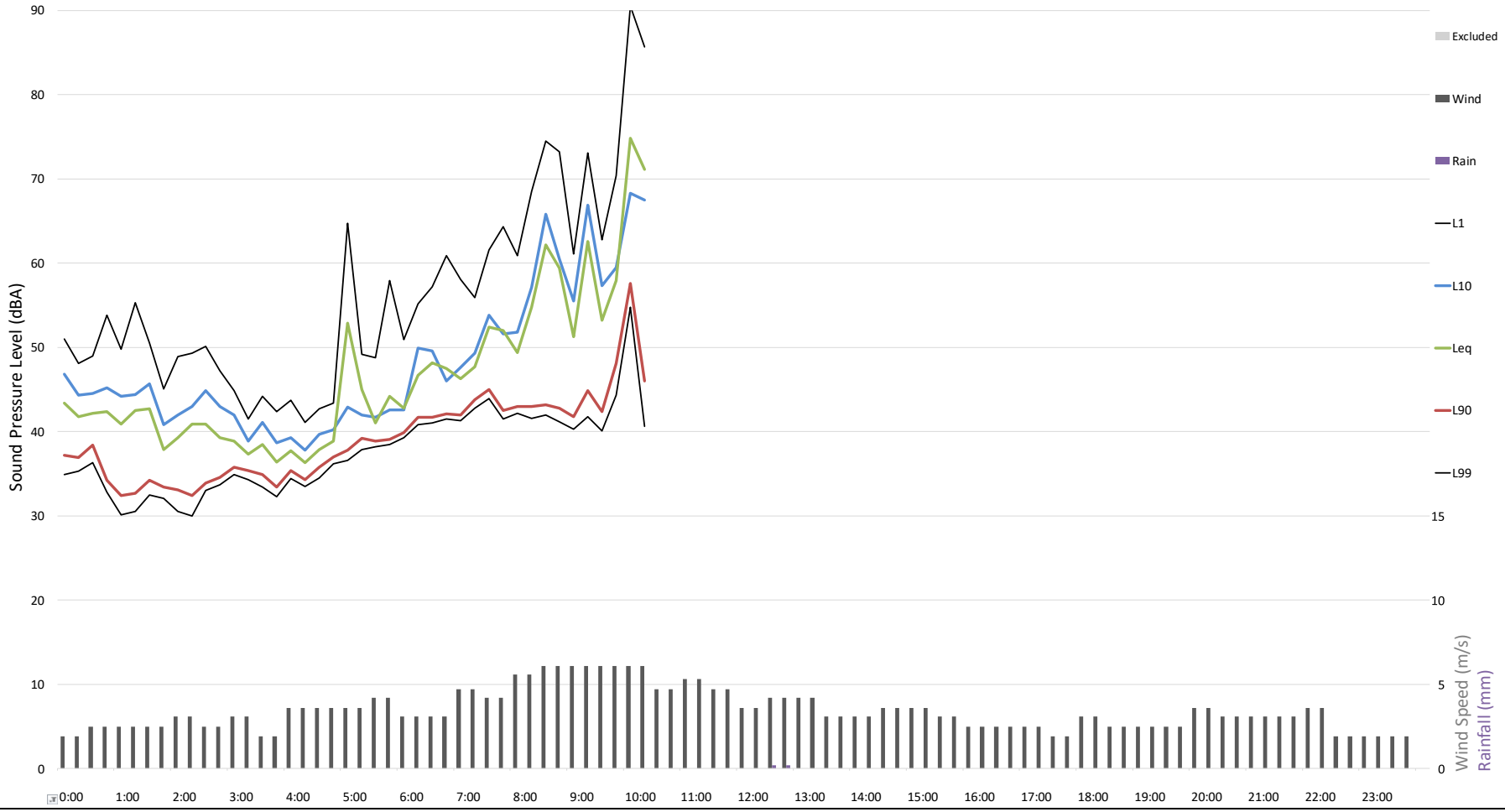
Project Address: 31-37 Phillip Street, Raymond Terrace
Logger Location: Within backyard of 37 Phillip Street

BOM weather data: Newcastle Nobbys IDN60901

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB						
L_{A90} dB						

29/05/2024 Wednesday

Existing Ambient Noise Levels (dBA)



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