DA ACOUSTIC REPORT

Australian Christian College, Singleton

ID: 12412 R01v3

24 October 2023

Prepared For:
Darryl Sweetman

Suite 304, 200 Central Coast Highway
Erina NSW 2250

Email: darrylsweetman@acc.edu.au

DOCUMENT INFORMATION

Author: Sri Harsha Eati

Issue: R01

Version: 3

Date	Version	To	Email
1/06/2023	A DRAFT	Darryl Sweetman	darrylsweetman@acc.edu.au
2/06/2023	1	Darryl Sweetman	darrylsweetman@acc.edu.au
26/06/2023	2	Darryl Sweetman	darrylsweetman@acc.edu.au
24/10/2023	3	Darryl Sweetman	darrylsweetman@acc.edu.au

Prepared By:
PJ Knowland Pty. Ltd.
t/a PKA Acoustic Consulting

PO Box 345, Lane Cove NSW 1595

ABN 87 256 407 546, ACN 621 896 204

T (02) 9460 6824 · **E** admin@pka.com.au

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

PKA Acoustic Consulting (PKA) has been engaged to conduct an acoustic assessment of the proposed multi-level classroom building, change in student and staff numbers, and two new carparks at the existing school premises of Australian Christian College, Singleton, located at 23 Maitland Road, Singleton.

This acoustic report will form a part of the DA documentation to be submitted to the council/certifier addressing the noise breakout from the proposed development and provide recommendations in the form of relevant acoustic treatment and management measures that will need to be incorporated to meet the relevant acoustic criteria during the development and the operation of the premises.

2.0 SUMMARY

An acoustic assessment has been conducted in accordance with the acoustic requirements of the Singleton Shire Council and NSW EPA Noise Policy for Industry (NPfI) to assess the noise breakout for the proposed development and to set noise goals for future operation and mechanical plant.

Existing background noise was measured for 7 days to establish background noise levels. Following the measurement results, the noise impact was calculated to the nearest sensitive receivers based on architectural and operational plans provided to PKA.

Based on the survey conducted and calculations performed, the proposed development will comply with the *Noise Policy for Industry* (2017) and Singleton City Council if the recommendations made in Section 7.0 of this report are implemented.

3.0 SITE DESCRIPTION

The proposed primary classroom building, principal, and staff parking are a part of the existing Singleton Australian Christian College at works at the existing Australian Christian College located at 23 Maitland Road, Singleton. The school is bound by Kelso Street to the north, New England Highway to the east, Waddells Lane to the south, and residential receivers to the east.

The site of the proposed classroom building is located on an existing carpark premises located in the southern area of the college. The proposed new principal carparking is to be relocated to the northern boundary of the college.

The site location is shown in Figure 3-1 (Source Google Maps).

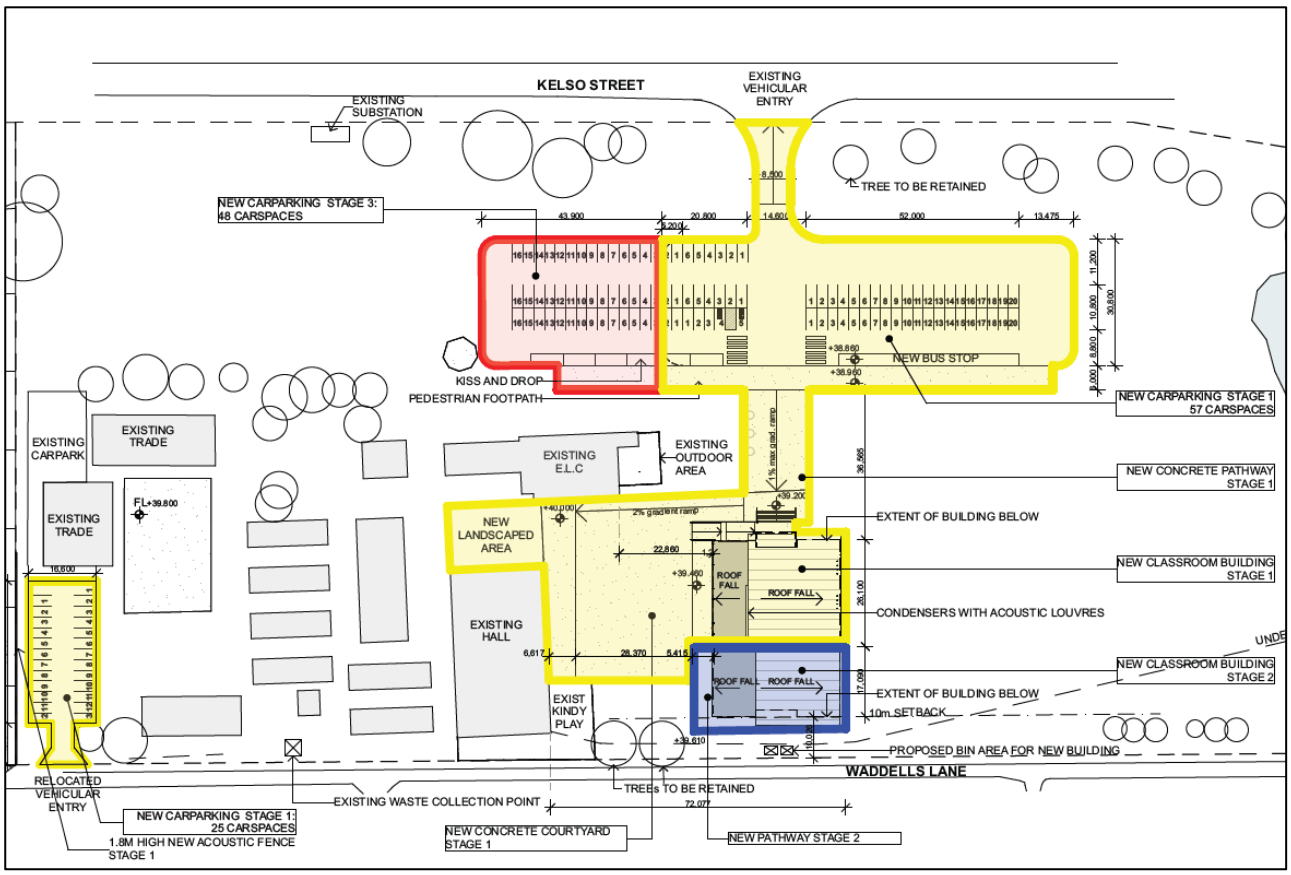
Figure 3-1 Site Location

The receivers have been clustered for the purpose of this assessment based on common school noise sources that they are potentially exposed to and their general ambient quality.

The following Figure 3-2 shows the layout of the proposed site plan from the architectural plans that provides more context to the proposed works.

Figure 3-2 Site Plan of Proposed Layout

(Extract From Proposed Architectural Plans)



The proposed development of this site involves three stages with the collective works comprising of:

- Development of a new classroom building, and increasing student capacity from 304 to 400 students, and staff numbers from 32 to 50.
- Installation of a new carpark with vehicular access from Kelso Street with a capacity for 57 car spaces.
- New carparking to accommodate TAFE students with vehicular access from Waddells Lane, with a capacity for 25 car spaces.
- Expanding of the new classroom building, increasing student capacity from 400 to 700, and staff numbers from 50 to 88.
- Further expansion of the carpark off of Kelso Street to accommodate an additional 48 car parking spaces.

4.0 ACOUSTIC CRITERIA

4.1 NSW EPA Noise Policy for Industry (NPfI)

Noise generated from noise generating premises and from mechanical noise 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.

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 4-1 of the policy for the specified time of the day. The NPfI recommends the following Amenity Noise Levels for various receiver premises.

Table 4-1 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).**

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 $L_{Aeq\ 15\ minute} < RBL+5$.

4.2 EPA NSW Interim Construction Noise Guidelines (ICNG)

The *NSW EPA Interim Construction Noise Guideline* (ICNG) is used for the assessment. The document aims at managing noise from construction works regulated by the EPA. Details of noise limits are presented in the following Table 4-2.

Table 4-2 Noise Levels Residential Receivers (Extract from EPA ICNG)

Time of day	Management level $L_{Aeq(15\ min)}$	Application
Recommended standard hours: Monday to Friday 7 am to 6 pm	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details. *(Continued on next page)*
Saturday 8 am to 1 pm No work on Sundays or public holidays	Highly noise affected 75 dB	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

4.3 Construction Vibration Criteria

As demolition and excavation are proposed, there is the potential for vibration impact on the neighbouring buildings' amenity and on structures. The EPA ICNG states that human comfort (amenity) vibration is to be measured and assessed in accordance with *Assessing Vibration – a technical guideline* (DECC 2006).

In general, structural damage due to vibration can be of concern when hammering, blasting, vibration rolling, crushing, piling and other vibration inducing construction works are carried out.

The EPA ICNG does not have specific structural vibration damage criteria however the RTA Environmental Noise Management Manual (2001) recommends the use of the following Standards:

- British Standard BS 7385: Part 2: Evaluation and Measurement for Vibrations in Buildings – Part 2 Guide to Damage Levels from Ground-Borne Vibration
- AS 2187.2 Explosives-Storage, transport and use, Part 2: Use of Explosives
- German Standard DIN 4150, Part 3: Structural Vibration in Buildings: Effects on Structures

5.0 NOISE SURVEY

Unattended noise monitoring was conducted on site between 31st January and 8th February 2023 to record 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.

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. The assessment periods are defined by the NSW NPfI are as Daytime: 7 am to 6 pm, Evening: 6 pm to 10 pm and Night: 10 pm to 7 am.

The noise monitor was positioned at a location (close to R2) that was shielded from the traffic activity on the main roads providing a conservative measurements of the background noise that was used to establish the intrusiveness criteria for both residential receiver locations. The receivers at R1 are more exposed and will be expected to measure a higher background noise level and therefore, the lower background noise level and a more stringent intrusiveness criteria was adopted for both receivers.

5.1 Instrumentation

Noise measurements were conducted using the following equipment:

- Sound analyser NTi XL2 Type Approved, Serial No. A2A-15295 -E0.
- Sound calibrator B&K 4230, Serial number 830447.

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.

5.2 Project Noise Criteria

Data from the noise monitors were processed to obtain background noise levels and noise criteria. The noise criteria defined in the Noise Policy for Industry (NPfI) is listed below. The assessment periods are defined by the NSW NPfI are:

Daytime – 7am to 6pm,.

Evening – 6pm to 10pm.

Night – 10pm to 7am.

Table 5-1 NPfI Project Noise Trigger Levels – Operational and Mechanical Noise Goals

All values in dB(A)

Receiver Type	Period	Measured RBL (L_{A90})	Acceptable Noise Levels $L_{Aeq(period)}$	NSW Noise Policy for Industry Criteria		Project Trigger Levels $L_{Aeq15min}$
				Amenity $L_{Aeq15min}$	Intrusiveness $L_{Aeq15min}$	
Residential (Sub-Urban)	Day	39	55	53	44	44
	Evening	39	45	43	44	43*
	Night	37	40	38	42	38*

*The evening and night-time criteria have been presented for informational purposes as the school is proposed to be operating only during the daytime.

Assuming the construction is proposed during normal daytime working hours 7am to 6 pm, the noise criteria are presented in the following table.

Table 5-2 EPA NSW Interim Construction Noise Guidelines Criteria for Site

Receivers	Measured Daytime Background	Noise affected level (Criterion)	Highly Noise Affected (Criterion)
Residential	39 dB(A)	49 dB(A)	75 dB(A)

6.0 ASSESSMENT

6.1 Assumptions

- Calculations from the internal areas of the buildings on sound pressure levels associated with the children noise derived from extensive measurements conducted by PKA in the past. For this assessment, PKA is considering a spatial sound pressure level of LAeq15min of 62 dB(A) within each GLA and study rooms. Although when measured in smaller periods, the noise may be more transient and louder. However, a 15-minute average is being considered as the criteria is based on this averaged timeframe.
- Calculations from the external areas of the building considered the sound pressure level of each student at 64dB(A) at 1m (based on a typical male raised voice spectrum) for a conservative approach. The students all assumed to be in the existing play areas and the proposed outdoor courtyard area simultaneously.

6.2 Student Capacity Increase

Based on the above assumptions made in Section 6.1, the following table presents the results of the calculations that were performed to estimate the noise impact at the nearest sensitive residential receivers. The calculations include the effects of distance loss, directivity, and the effect of the existing barriers of property boundaries and the recommended barriers in Section 7.0.

Table 6-1 Noise impact from the Children in the Outside Areas of the School

Calculated noise at sensitive receivers	Project Trigger Levels $L_{Aeq\text{-}15min}$	Complies?
$L_{eq\text{-}15min}$ <35 dB(A) at adjacent receiver (R1)	44 dB(A)	Yes
$L_{eq\text{-}15min}$ 42 dB(A) at adjacent receiver (R2)		

The calculations show compliance is achieved based on the existing shielding offered by the school buildings and the proposed acoustic barrier in in Section 7.0.

6.3 Carpark and Vehicular Movement Increase and Access

The $L_{Aeq\ 15\text{-}minute}$ value from carpark activity was calculated based on various activities of vehicles. Typical time frames for events and their corresponding sound pressure levels were considered. The assumptions made for the events are listed in table below. The levels are based on extensive measurements conducted by PKA.

Table 6-2 Time Frames and Typical Sound Pressure Levels – Carpark activity

Event Description	Sound Pressure Levels (10m)	Duration of each Event
Car Entering and driving into the car park	61 dB(A)	5 seconds
Cars stopping and parking	55 dB(A)	5 seconds
Door slams (Assuming 2 per car)	56 dB(A)	1 second

Event Description	Sound Pressure Levels (10m)	Duration of each Event
Cars starting – Engine Activity	63 dB(A)	1 seconds
Cars driving out of the car park	61 dB(A)	5 seconds

PKA reviewed the Traffic Impact Assessment prepared by SCT Consulting, dated 18th April 2023 for the proposed development which details the following proposed traffic movements during the peak hours.

- 157 vehicles per hour in AM peak hour.
- 123 vehicles per hour in PM peak hour.

Based on the AM peak activity of 157 vehicles per hour, PKA has considered an activity of 39 cars entering and leaving every 15 minutes during the peak hour for cars for arriving on Kelso Street. PKA is assuming, that all staff enter and leave within a 30-minute period of AM and PM respectively. The calculations consider acoustic effects of distance loss and any potential shielding from the existing fence on the site boundary.

The results of the traffic noise impact from the proposed peak car park activity for both Kelso Street, and Waddels Lane is shown below in Table 6-3. The calculations consider the effects of distance loss and the recommended acoustic barriers to achieve compliance (see Section 7.0).

Table 6-3 Traffic Noise Impact from Car Park Operation – All Carparks Combined

Calculated noise at sensitive receivers	Period of Day	Project Trigger Levels $L_{Aeq-15min}$	Complies?
$L_{eq-15min}$ 45 dB(A) at adjacent receiver (R1)*	Day	44 dB(A)	Yes*
$L_{eq-15min}$ 43 dB(A) at adjacent receiver (R2)			

*An exceedance of 1dB(A) is generally accepted to be acoustically compliant as it is within allowable measurement tolerances. Furthermore, a difference of 1 dB(A) is not perceptible and considering that this is an occurrence based on the worst-case scenario considered above, the practical noise impacts are expected to be quieter.

7.0 RECOMMENDATIONS

Based on the calculations performed above, the following acoustic treatment recommended by PKA must be implemented to achieve and retain acoustic compliance.

General Disclaimer

The acoustic recommendations made are ones that satisfies the acoustic requirements only. No representation is given that it is fit for any other purpose. The build-up 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.

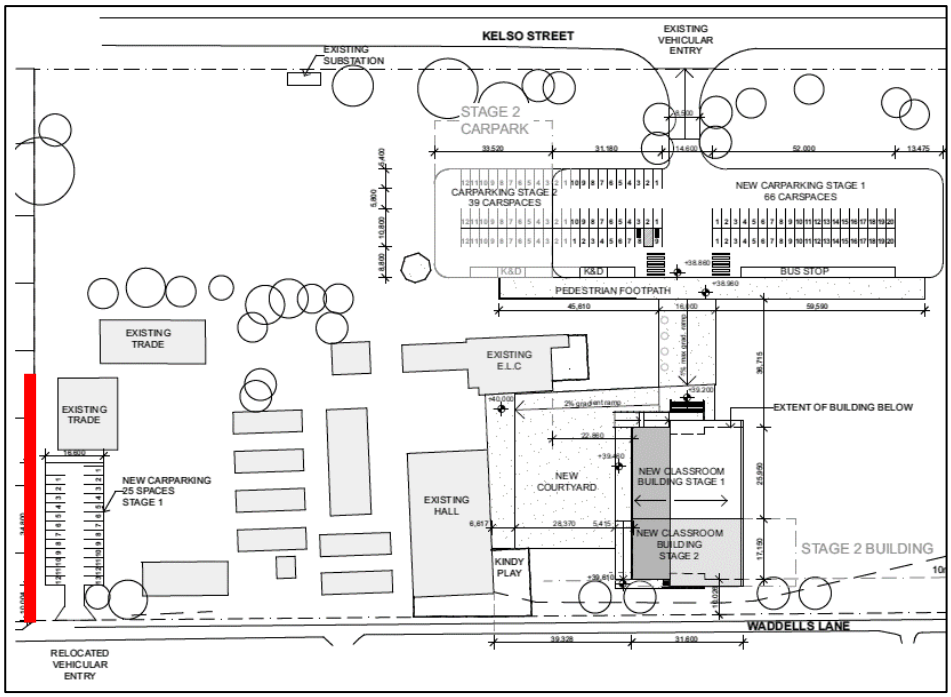
7.1 Acoustic Barriers (section to be viewed in colour)

Acoustic fences (either at the boundary or the retaining wall line) of the following minimum heights are required to be installed at the boundary as shown in below. The acoustic fences must have a minimum acoustic performance of R_w25. The acoustic barrier must be of solid construction (with no air gaps or penetrations including the connections and structural bases) such as:

- Polycarbonate Transparent Sheeting (selection must ensure the R_w rating is met)
- Timber fence with double lapped boards of standard 15mm thickness, allowing a continuous thickness of 30mm.
- Aerated Concrete panels such as Hebel.
- Masonry or Precast concrete panels
- Any combination of the above

	min. 1.8m high acoustic fence (red)

Figure 7-1 Acoustic Treatment Recommendations (Barriers)



7.2 Mechanical Noise Mitigation

The selection and placement of any outdoor mechanical equipment such as condenser units, exhausts serving toilets etc. must be designed to acoustically comply with the criteria established in Section 5.2 of this report.

7.3 Construction Noise & Vibration

If the preparation of a Construction Noise & Vibration Management Plan or general adherence to construction noise and vibration limits is required by the certifying authority, the noise criteria established in Sections 4.2, 4.3 and Table 5-2 must be considered.

APPENDIX A DRAWINGS USED TO PREPARE REPORT

This report was prepared using drawings provided by Christian Education Ministries, Project no. 18120-02-ACC-2010

No.	Rev.	Title	Date
DA000	-	Cover Page	23-10-2023
DA001	-	Demolition Site Plan	23-10-2023
DA002	-	Proposed Site Plan Stage 1	23-10-2023
DA003	-	Proposed Site Plan Stage 2	23-10-2023
DA004	-	Proposed Site Plan Stage 3	23-10-2023
DA005	-	Proposed Staged Site Plan	23-10-2023
DA100	-	Ground Floor Plan	23-10-2023
DA101	-	First Floor Plan	23-10-2023
DA200	-	Elevations	23-10-2023
DA201	-	Elevations	23-10-2023
DA301	-	Sections	23-10-2023
DA400	-	Materials Palette	23-10-2023
DA500	-	Perspectives	23-10-2023

APPENDIX B NOISE MEASUREMENTS (GRAPHICAL)

12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

		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
Tuesday	31/01/2023			39.0	39.0	38.2	38.2
Wednesday	1/02/2023	37.1	37.1	39.5	39.5	37.6	37.6
Thursday	2/02/2023	38.6	38.6	38.0	38.0	39.8	39.8
Friday	3/02/2023	43.4	43.4	38.3	38.3	35.9	35.9
Saturday	4/02/2023	40.6	40.6	37.2	37.2	34.7	34.7
Sunday	5/02/2023	34.9	34.9	39.1	39.1	35.7	35.7
Monday	6/02/2023	36.5	36.5	40.0	40.0	36.9	36.9
Tuesday	7/02/2023	39.1	39.1	40.5	40.5	37.3	37.3
Wednesday	8/02/2023						
Rating Background Level (RBL)		**39**	**39**	**39**	**39**	**37**	**37**

		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
Tuesday	31/01/2023			61.7	61.7	44.7	44.7
Wednesday	1/02/2023	49.9	49.9	50.6	50.6	46.7	46.7
Thursday	2/02/2023	48.9	48.9	55.9	55.9	45.9	45.9
Friday	3/02/2023	48.9	48.9	45.6	45.6	44.1	44.1
Saturday	4/02/2023	48.5	48.5	48.2	48.2	45.4	45.4
Sunday	5/02/2023	48.9	48.9	47.7	47.7	45.3	45.3
Monday	6/02/2023	46.0	46.0	58.2	58.2	44.5	44.5
Tuesday	7/02/2023	49.7	49.7	49.4	49.4	44.7	44.7
Wednesday	8/02/2023						
Average Noise Level (L_{Aeq})		**49**	**49**	**56**	**56**	**45**	**45**

12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

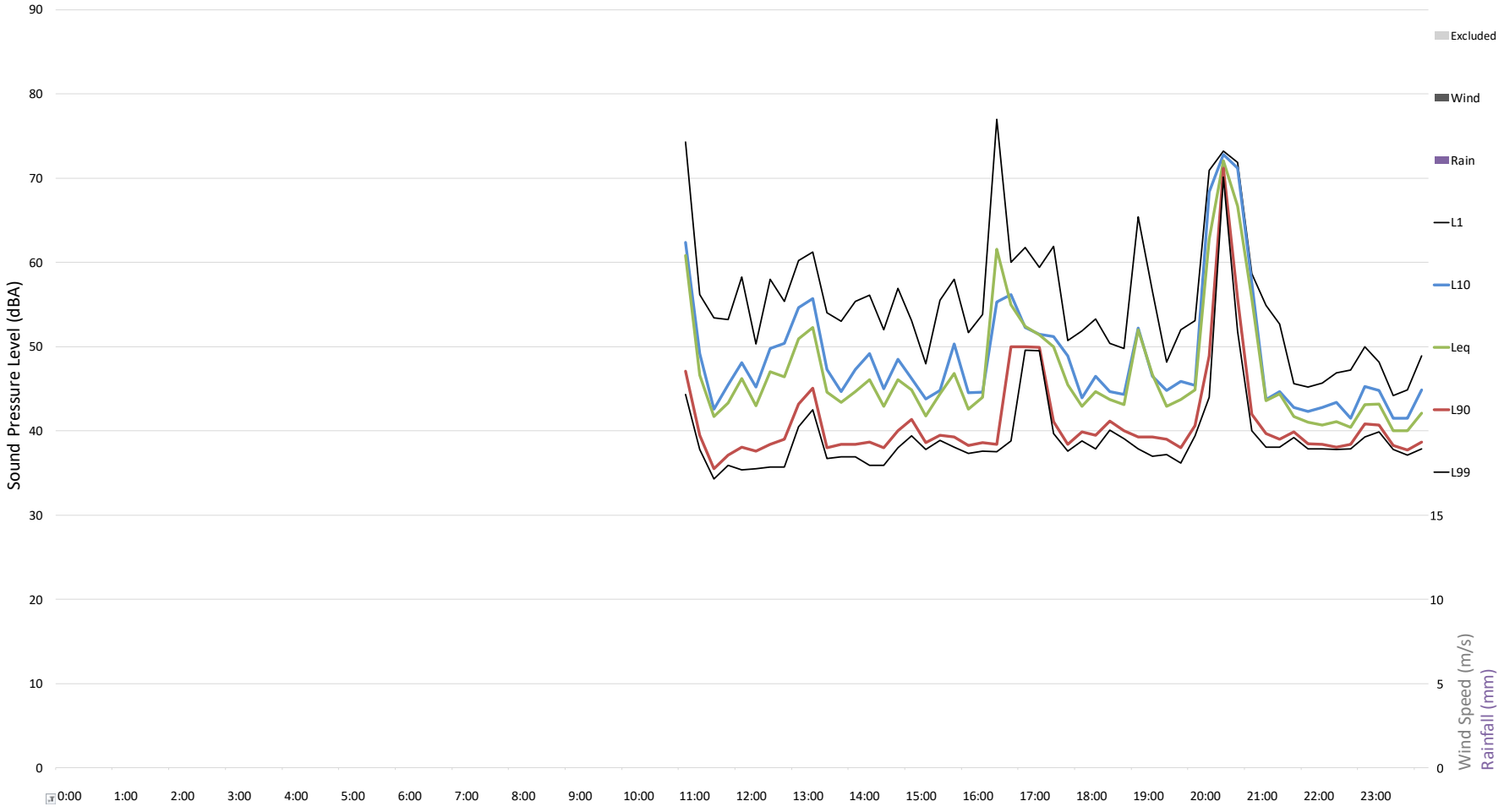
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB			61.7	61.7	44.7	44.7
L_{A90} dB			39.0	39.0	38.2	38.2

31/01/2023 Tuesday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

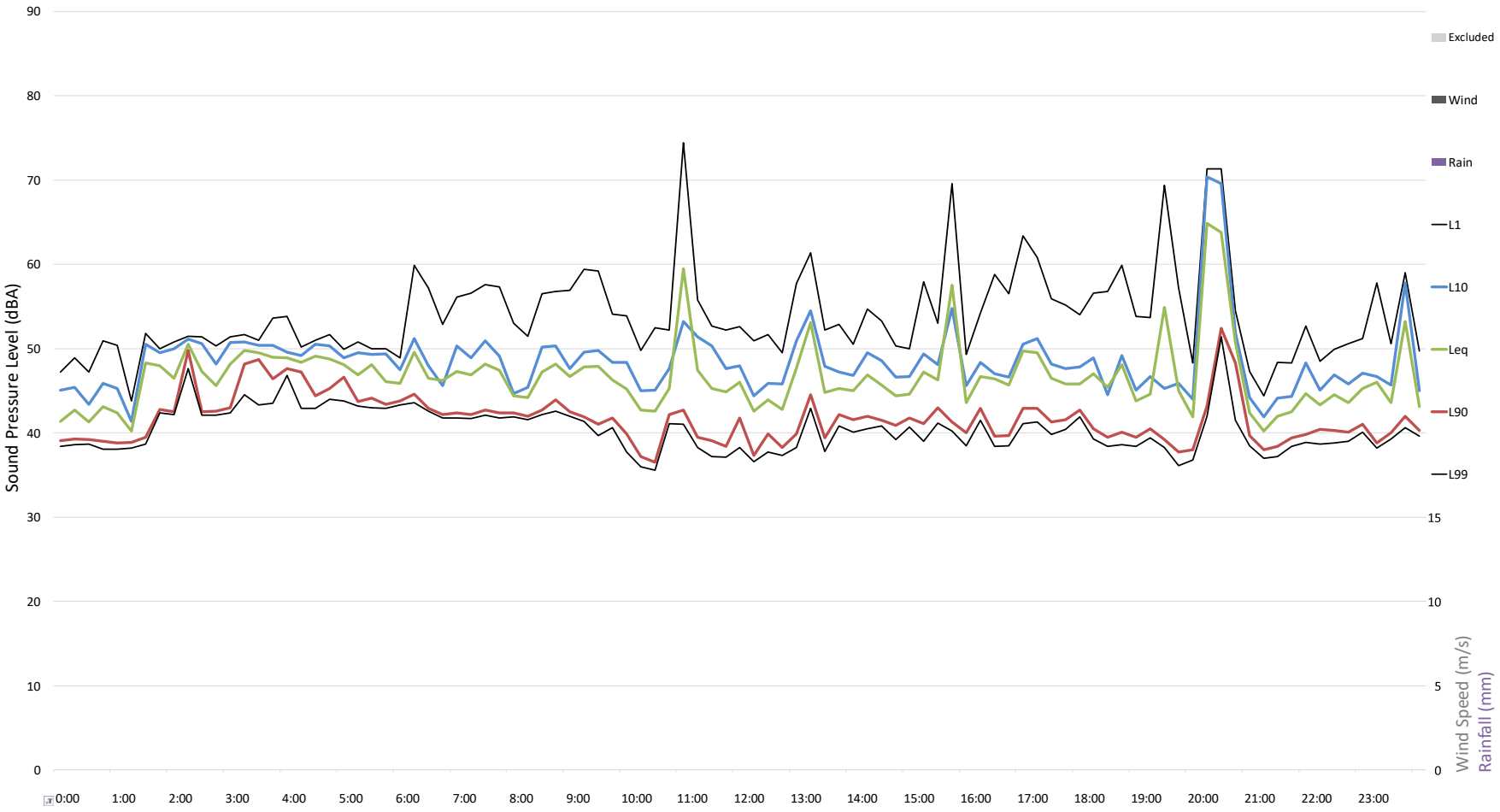
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	48.9	48.9	55.9	55.9	45.9	45.9
L_{A90} dB	38.6	38.6	38.0	38.0	39.8	39.8

2/02/2023 Thursday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

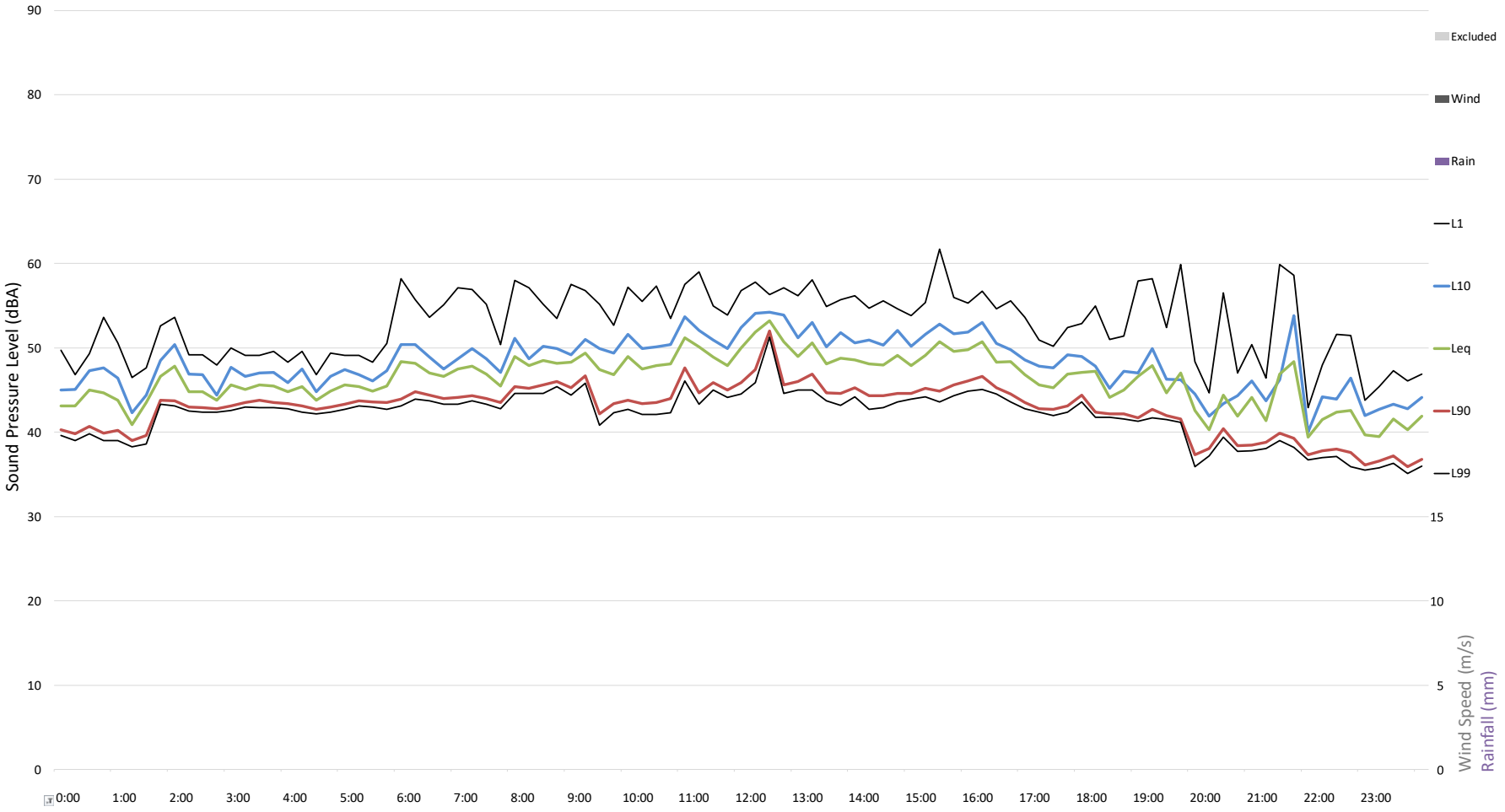
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	48.9	48.9	45.6	45.6	44.1	44.1
L_{A90} dB	43.4	43.4	38.3	38.3	35.9	35.9

3/02/2023 Friday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

Project Address: 109-129 Kelso Street, Singleton

Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

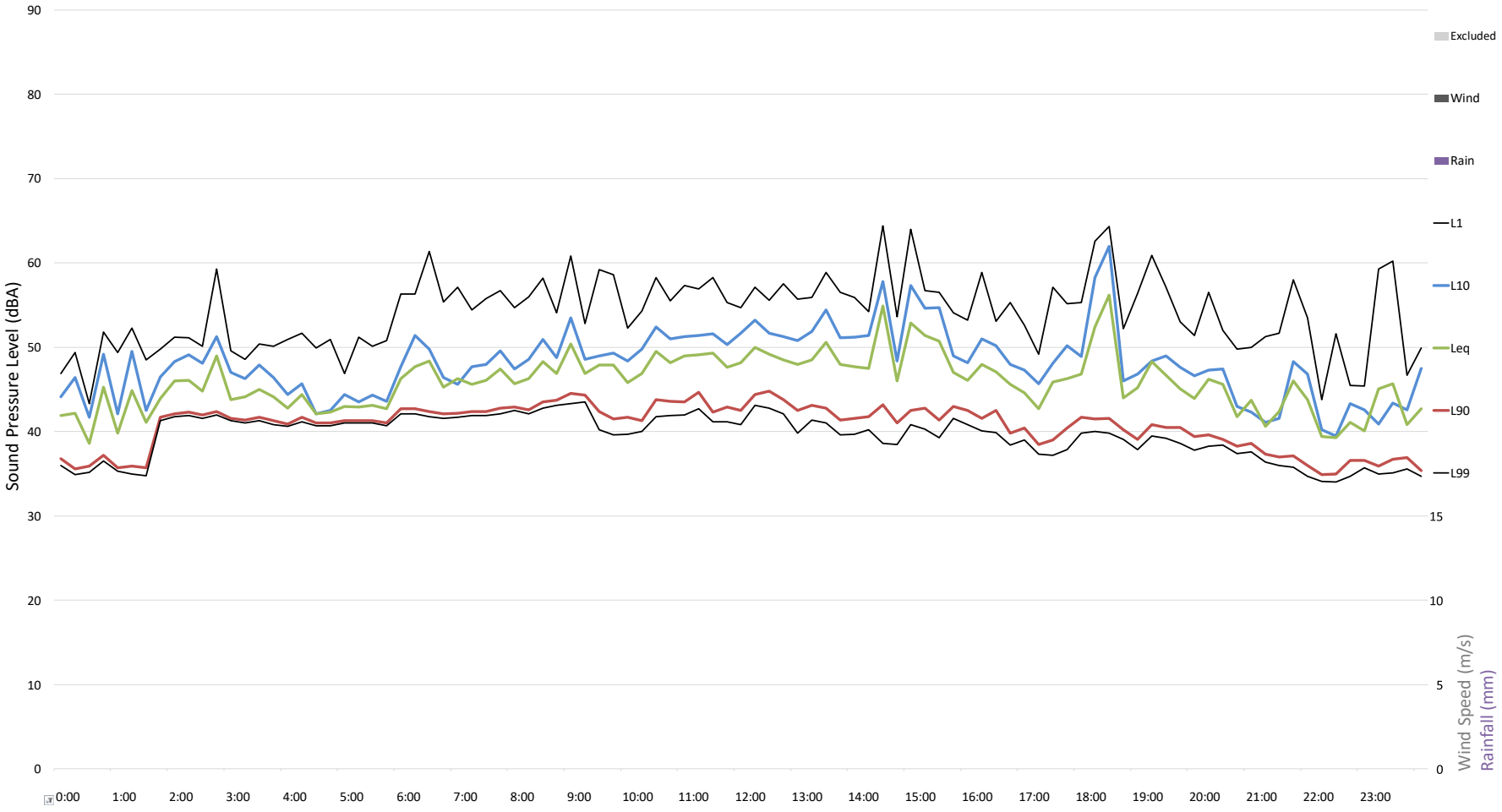
BOM weather data:

PKA Acoustic Consulting

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	48.5	48.5	48.2	48.2	45.4	45.4
L_{A90} dB	40.6	40.6	37.2	37.2	34.7	34.7

4/02/2023 Saturday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

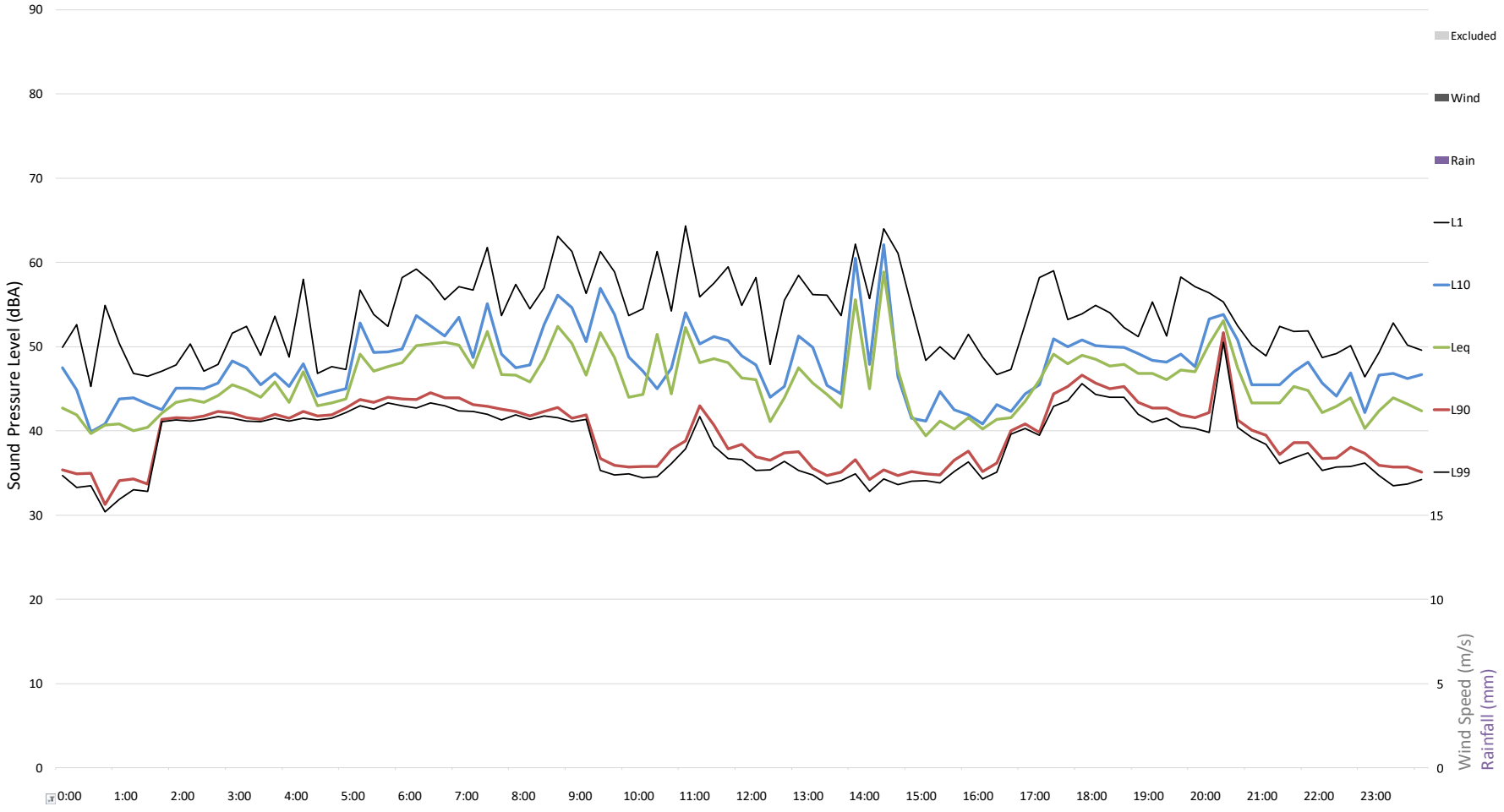
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	Daytime 08:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 08:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	48.9	48.9	47.7	47.7	45.3	45.3
L_{A90} dB	34.9	34.9	39.1	39.1	35.7	35.7

5/02/2023 Sunday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

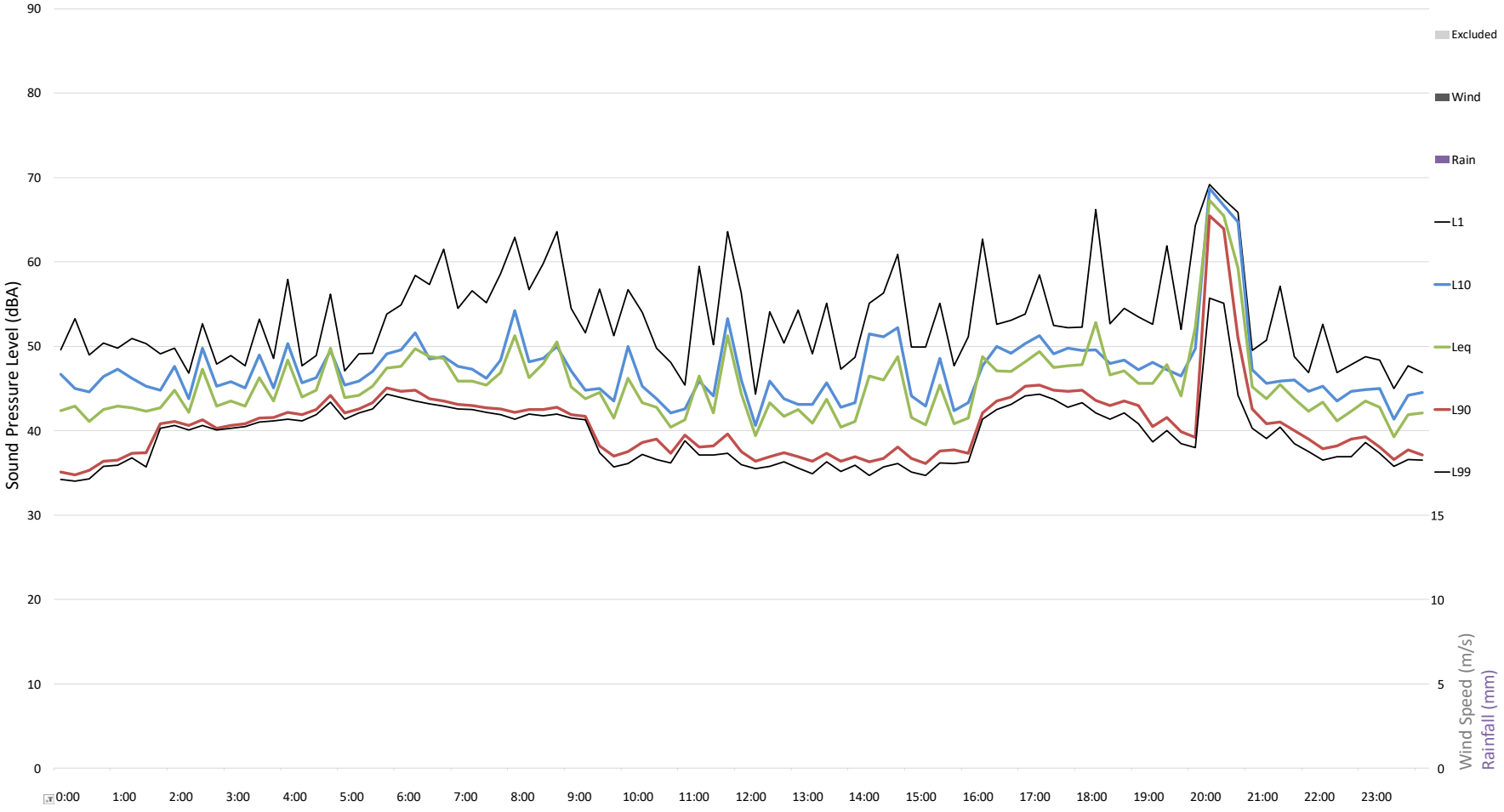
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	46.0	46.0	58.2	58.2	44.5	44.5
L_{A90} dB	36.5	36.5	40.0	40.0	36.9	36.9

6/02/2023 Monday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

Project Address: 109-129 Kelso Street, Singleton

Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

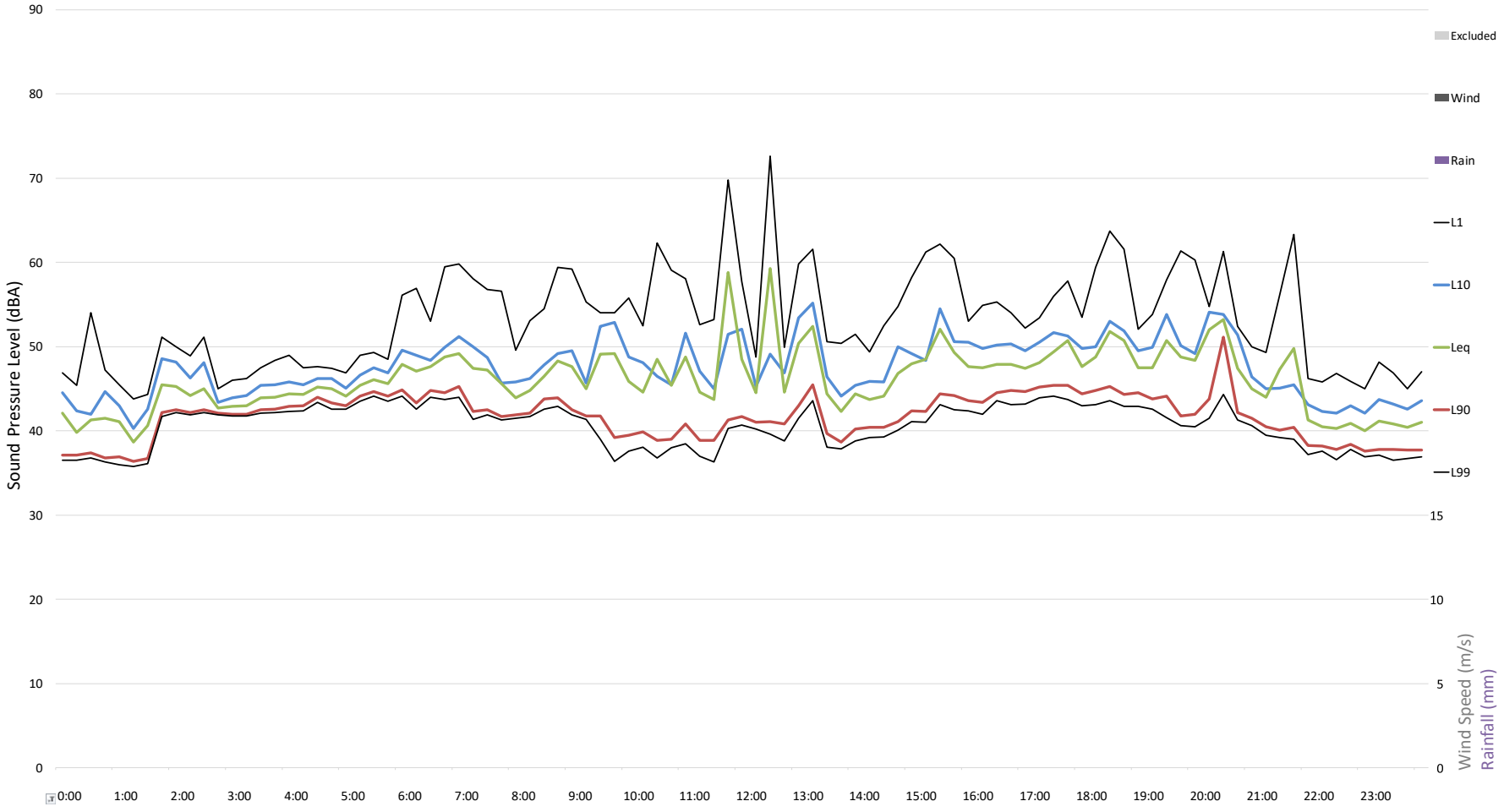
BOM weather data:

PKA Acoustic Consulting

	Daytime 07:00 - 18:00		Evening 18:00 - 22:00		Nighttime 22:00 - 07:00	
	Measured	Corrected	Measured	Corrected	Measured	Corrected
L_{Aeq} dB	49.7	49.7	49.4	49.4	44.7	44.7
L_{A90} dB	39.1	39.1	40.5	40.5	37.3	37.3

7/02/2023 Tuesday

Existing Ambient Noise Levels (dBA)



12412 Kelso Street (109-129), Singleton

PKA Acoustic Consulting

Project Address: 109-129 Kelso Street, Singleton

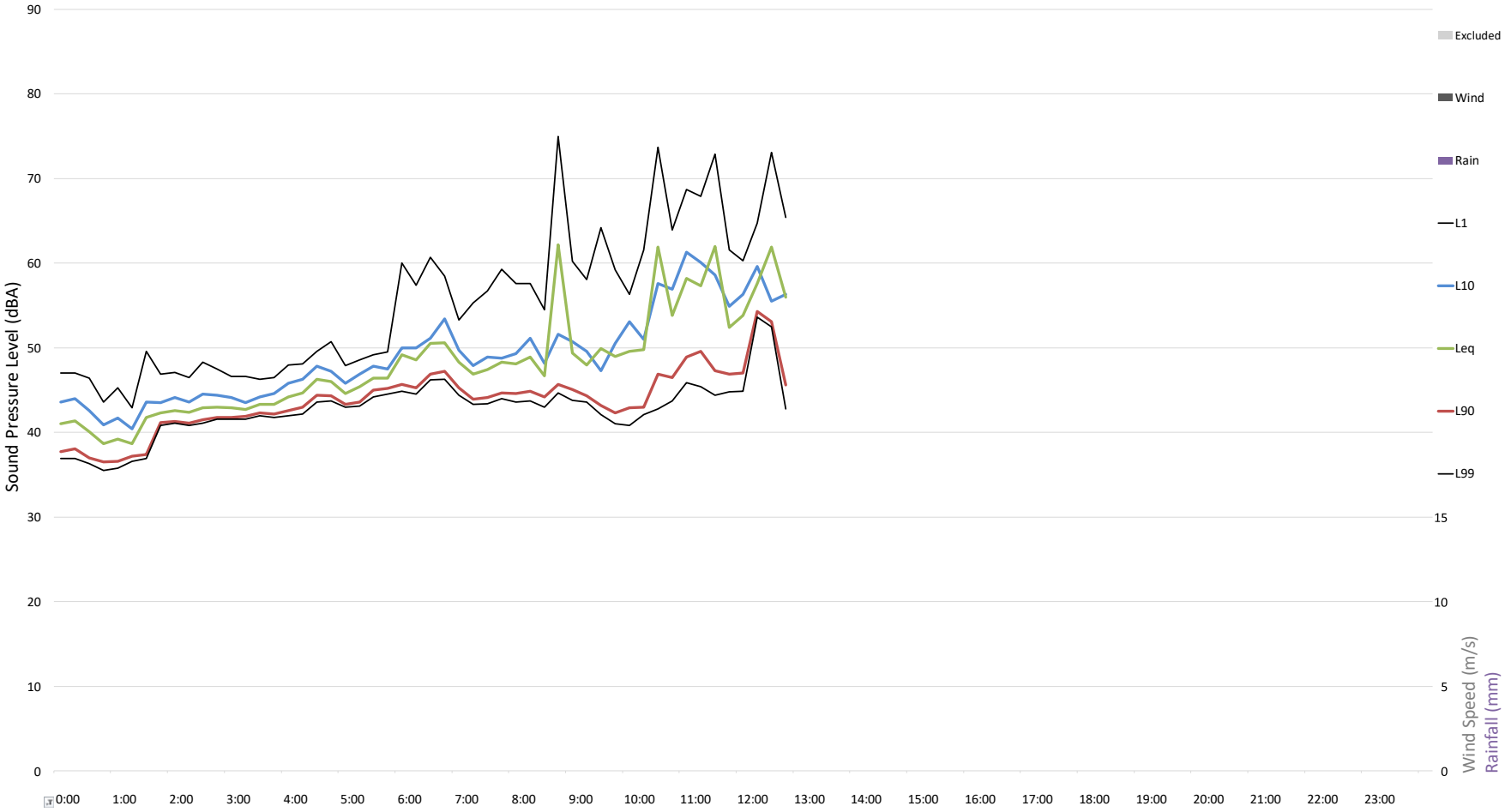
Logger Location: On Exisitng School Boundary Measuring Existing Ambient Noise Levels

BOM weather data:

	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						

8/02/2023 Wednesday

Existing Ambient Noise Levels (dBA)



PO Box 345, Lane Cove 1595

+612 9460 6824 — admin@pka.com.au