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Collaroy Veterinary Hospital

Development Application Acoustic Assessment

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1 INTRODUCTION

This development application acoustic assessment report has been prepared by Acoustic Logic to accompany a development application for the proposed veterinary hospital to be located at 1121 Pittwater Road, Collaroy.

This document addresses noise impacts associated with the following:

- Noise intrusion to the project site from adjacent roadways.
- Noise emissions from mechanical plant to service the project site.
- Noise emissions from animals within the veterinary hospital.

Acoustic Logic has utilised the following documents and regulations in the noise assessment of the development.

- Warringah Development Control Plan 2011.
- Australian Standard AS2107:2016 – 'Recommended Design Sound Levels and Reverberation Times for Building Interiors.
- NSW Department of Environment and Heritage, Environmental Protection Agency document – '*Noise Policy for Industry*' (NPI) 2017.

This assessment has been conducted using the architectural drawings provided by Big City Design.

2 SITE DESCRIPTION

The development application seeks approval for the renovation of the existing veterinary hospital, located at 1121 Pittwater Road, Collaroy.

Investigations have been conducted in regards to existing properties and noise impacts surrounding the proposed development, which is detailed below:

- Pittwater Road bounding the development to the east of the site comprising of high levels of vehicle traffic.
- Collaroy Street bounding the development to the south of the site comprising of low to moderate levels of vehicle traffic.
- Existing mixed use buildings to the north, south and west of the project site.

The nearest sensitive noise receivers around the site include:

- **R1:** Existing multi-storey residential building above commercial tenancies to the north of the site, located at 1125-1127 Pittwater Road, Collaroy.
- **R2:** Existing multi-storey residential building above commercial tenancies to the south of the site, located at 1119 Pittwater Road, Collaroy.
- **R3:** Existing multi-storey residential building to the west of the site, located at 1-5 Collaroy Street, Collaroy.

A site map has been presented in the figure below indicating measurement locations and surrounding receivers.

Figure 1 – Site Map

Unattended Noise Monitoring Location

Attended Noise Measurement Location

3 NOISE DESCRIPTORS

Environmental noise constantly varies. Accordingly, it is not possible to accurately determine prevailing environmental noise conditions by measuring a single, instantaneous noise level.

To accurately determine the environmental noise a 15 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In analysing environmental noise, three-principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}. The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the 15 minute period. L_{eq} is important in the assessment of environmental noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of environmental noise.

4 AMBIENT NOISE SURVEY

NSW EPA's Rating Background Noise Level (RBL) assessment procedure requires determination of background noise level for each day (the ABL) then the median of the individual days as set out for the entire monitoring period.

Appendices in this report present results of unattended noise monitoring conducted at the project site. Weather affected data was excluded from the assessment. The processed RBL (lowest 10th percentile noise levels during operation time period) are presented in Table 4-1.

Measurement Position

One unattended noise monitor was located at the northern boundary on ground level. See Figure 1 for detailed location. See the following figure showing the noise monitor installed on site.

Figure 2 – Noise Monitor Installed on Site

Measurement Period

Unattended noise monitoring was conducted from Friday 12th of February 2021 to Thursday 25th of February 2021. Attended noise measurements were undertaken between the hours of 10:00am and 11:00am on the 17th of February 2021.

Measurement Equipment

Equipment used consisted of an Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise logger data is provided in Appendix 2.

Summarised rating background noise levels for the project site and immediate surroundings are presented below.

Table 4-1 – Measured Noise Levels

Monitor	Time of day	Rating Background Noise Level $dB(A)_{L90(Period)}$
1121 Pittwater Road, Collaroy	Day (7am – 6pm)	48
	Evening (6pm – 10pm)	47
	Night (10pm – 7am)	45

5 EXTERNAL NOISE INTRUSION ASSESSMENT

Site investigation indicates that the major external noise sources impacting the project site are from traffic movements along Pittwater Road along the eastern boundary of the site.

5.1 NOISE INTRUSION CRITERIA

A noise intrusion assessment has been conducted based on the requirements of the following acoustic noise criteria and standards:

- Warringah Development Control Plan 2011.
- Australian Standard AS2107:2016 – 'Recommended Design Sound Levels and Reverberation Times for Building Interiors.

5.1.1 Warringah Development Control Plan (DCP) 2011

There are no specific noise intrusion criteria for commercial premises required by Warringah Development Control Plan (DCP) 2011.

5.1.2 Australian/New Zealand Standard AS/NZS 2107-2016

In absence of acoustic criteria from the Warringah Development Control Plan, Australian/New Zealand Standard AS/NZS 2107:2016 document "Acoustics – Recommended design sound levels and reverberation times for building interiors will be used to establish the internal noise goals for the proposed development. The internal noise goals are presented in Table below.

Table 5-1 – Recommended Internal Noise Design Levels for Proposed Development

Space /Activity Type	Recommended Design Sound Level dB(A)L_{eq} Range
Waiting Rooms, Reception Areas	40-50
Post-Op, Pre-Op, Recovery Rooms	40-45
Operating Theatres	40-50
Office Areas	35-45
Consulting Rooms	40-45

5.1.3 Summarised External Noise Intrusion Criteria

The internal noise criteria adopted for each internal space is summarised below based on AS/NZS 2107:2016 detailed above.

Table 5-2 – Adopted Internal Noise Levels

Space / Activity Type	Required Internal Noise Level dB(A)$L_{eq(anytime)}$
Waiting Rooms, Reception Areas	45
Post-Op, Pre-Op, Recovery Rooms	45
Operating Theatres	40
Office Areas	45
Consulting Rooms	45

5.2 RECOMMENDED CONSTRUCTIONS

Assessment of façade requirements to achieve required indoor noise levels has been undertaken. Dimensions of spaces, setbacks from roadways, window openings and floor areas have been used.

5.2.1 Glazed Façade (Windows and Doors)

The following constructions are recommended to comply with the project noise objectives. Aluminium framed/sliding glass doors and windows will be satisfactory provided they meet the following criteria. All external windows and doors listed are required to be fitted with Q-lon type acoustic seals. (Mohair Seals are unacceptable).

Thicker glazing may be required for structural, safety or other purposes. Where it is required to use thicker glazing than scheduled, this will also be acoustically acceptable. The recommended external glazing constructions to mitigate potential noise impacts are detailed in Appendix 1.

Internal design noise levels will be achieved along the Pittwater Road facades provided that an additional 'jockey-sash' glazing layer is installed internally as indicated in Appendix 1. In addition to the construction of a 'jockey-sash' system, any existing heritage window systems should be upgraded to create an effective air-tight seal to limit the transfer of noise through the system. This may require installation of additional full perimeter acoustic seals to the glazed areas and sealing of existing frames/brick-work with a flexible sealant. Additionally, 'jockey-sash' window systems are to meet the required R_w ratings as shown in Table 5-3.

It is recommended that only window systems having test results indicating compliance with the required ratings obtained in a certified laboratory be used where windows with acoustic seals have been recommended.

In addition to complying with the minimum scheduled glazing thickness, the R_w rating of the glazing fitted into operable frames and fixed into the building opening should not be lower than the values listed in Table 5-3 for all rooms. In all cases, this will require the use of acoustic seals around the full perimeter of operable frames and the frame will need to be sealed into the building opening using a flexible sealant. Note: **mohair seals in windows and doors are not acceptable where acoustic seals are required**.

Table 5-3 – Minimum R_w of Glazing Assembly (with Acoustic Seals)

Glazing Assembly	Minimum R_w of Installed Window
4mm Float	27
6.38mm Laminated	31
10.38mm Laminated	35
6.38mm Laminated/100mm Air-gap/4mm	40

5.2.2 External Wall Construction

External wall construction to be of concrete or masonry elements require no further acoustic upgrading. This applies to all existing spaces and the ground floor of the new building addition. External walls that are proposed to be constructed from light weight cladding systems will need acoustic attenuation to achieve compliance with the nominated internal noise criteria. The following light weight cladding systems are recommended to adopt the construction which is shown below.

Table 2-4 – Recommended Light Weight External Wall Construction

Space	Internal Lining	Stud System	External Lining
All First Floor Spaces With Metal Sheet Cladding	1 x 13mm Standard Plasterboard	92mm Steel Stud with 75mm thick 11kg/m^3 glasswool insulation in cavity	1 x 9mm FC Sheet and Metal Sheet

If any penetrations are required through any of the external lining of any of the systems above for other building services, all gaps should be filled with acoustic sealant to ensure compliance with the nominated internal noise level criteria.

5.2.3 External Roof and Ceiling Construction

The new external roof is proposed to be constructed from metal sheet and the existing roof is concrete tiled. Roofs which are constructed from concrete will not require any additional acoustic treatments to be installed. The recommended roof construction is shown below.

Table 5-5 – Recommended Light Weight Roof Construction

Space	Internal Lining	Stud System	External Lining
All First Floor Spaces With Existing Roof	1 x 13mm Standard Plasterboard OR Minimum CAC 40 Ceiling Tiles	Min. 250mm Timber Truss with 75mm thick 11kg/m^3 glasswool insulation in truss cavity	Existing concrete tiles
All First Floor Spaces With New Metal Sheet Roof	1 x 13mm Standard Plasterboard OR Minimum CAC 40 Ceiling Tiles		Metal Sheet

6 NOISE EMISSIONS ASSESSMENT

6.1 ACOUSTIC CRITERIA

Noise emissions from the site have been assessed for noise emitted from mechanical plant and dogs barking within the development.

The noise emission from the site shall comply with the requirements of the following documents:

- Warringah Development Control Plan 2011.
- NSW Department of Environment and Heritage, Environment Protection Authority (EPA) – *Noise Policy for Industry (NPfI) 2017*.

6.1.1 Warringah Development Control Plan (DCP) 2011

There are no specific noise emission criteria for commercial premises required by Warringah Development Control Plan (DCP) 2011.

6.1.2 NSW EPA Noise Policy for Industry (NPI) 2017

The EPA NPI has two criteria which both are required to be satisfied, namely Intrusiveness and amenity. The NPI sets out acceptable noise levels for various localities. The policy indicates four categories to assess the appropriate noise level at a site. They are rural, suburban, urban and urban/industrial interface. Under the policy the nearest residential receivers would be assessed against the urban criteria.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

6.1.2.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

Background noise levels adopted are presented in Table 4-1. Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

6.1.2.2 Project Amenity Criterion

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The EPA's NPI sets out acceptable noise levels for various localities. The recommended noise amenity area is based upon the measured background noise levels at the sensitive receiver. Based on the measured background noise levels detailed in Table 4-1, the Noise Policy for Industry suggests the adoption of the 'rural' categorisation.

The NPI requires project amenity noise levels to be calculated in the following manner;

$$L_{Aeq,15min} = \textit{Recommended Amenity Noise Level} - 5\ dB(A) + 3\ dB(A)$$

The amenity levels appropriate for the receivers surrounding the project site are presented in Table

Table 6-1 – EPA Amenity Noise Levels

Type of Receiver	Time of day	Recommended Noise Level dB(A)$L_{eq(period)}$	Project Amenity Noise Level dB(A)$L_{eq(period)}$
Residential – Urban	Day	60	58
	Evening	50	48
	Night	45	43

The NSW EPA Noise Policy for Industry (2017) defines;

- Day as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening as the period from 6pm to 10pm.
- Night as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays

6.1.2.3 Sleep Arousal Criteria

The Noise Policy for Industry recommends the following noise limits to mitigate sleeping disturbance:

> *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 the greater,*
>
> *a detailed maximum noise level even assessment should be undertaken.*

The following sleep emergence noise objectives then apply.

Table 6-2 - Sleep Arousal Criteria for Residential Receivers

Receiver	Rating Background Noise Level (Night) dB(A)L_{90}	Emergence Level
Residential Dwellings to the East	45	50 dB(A)$L_{eq,\ 15min}$; 60 dB(A)L_{AFmax}

If there are noise events that could exceed the emergence levels detailed in the table above, then an assessment of sleep arousal impact is required to be carried out, taking into account the level and frequency of noise events during the night, existing noise sources, etc. This more detailed sleep arousal test is conducted using the guidelines in the EPA Road Noise Policy. Most relevantly, the Road Noise Policy states:

> *For the research on sleep disturbance to date it can be concluded that:*
>
> - *Maximum internal noise levels below 50-55dB(A) are unlikely to awaken people from sleep.*
> - *One to two noise events per night with maximum internal noise levels of 65-70dB(A) are not likely to affect health and wellbeing significantly.*

6.1.3 Summarised Noise Emission Criteria

Table 3-3 – EPA NPI Noise Emission Criteria (Residents Surrounding)

Time Period	Assessment Background Noise Level dB(A)L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq(15min)}$	NPI Criteria for Sleep Disturbance
Day	48	58	**53**	N/A
Evening	47	**48**	52	N/A
Night	45	**43**	50	50 dB(A)$L_{eq,\ 15min}$; 60 dB(A)L_{AFmax}

6.2 NOISE EMISSION ASSESSMENT OF DOGS BARKING

Noise associated with dogs staying within the clinic during the night time period have been assessed using noise levels previously measured by this office for the assessment of veterinary hospitals.

Noise from the clinic has been assessed for noise breaking out of the facility during the night time period due to dogs barking.

Noise from internal spaces in the clinic will potentially be generated at any time of day. Noise impacts will therefore be assessed against the night time acoustic criteria (the strictest acoustic criteria).

Noise emission levels for dogs located internally within the clinic have been assessed based on the following:

- The noise levels in the proposed (enclosed) runs and wards will be similar to the noise levels measured within an existing operating commercial boarding facility located at Kingsford Smith Airport. Measured noise levels recorded during operation were 89dB(A) L_{eq} (based on the top 10 percent of events) with maximum noise events of 103dB(A) $L_{1(1min)}$. These levels are based on long term noise monitoring. It is noted that the monitoring indicated that night time noise levels are significantly lower than daytime noise levels, so the use of this highest 10^{th} percentile noise level to predict night time noise impacts (as we have conducted) produces a conservative assessment.
- All animals will be housed internally, no external facilities for animals to the project site.
- The stated noise levels presented above will, in addition be penalised (increased) to account for annoying characteristics (tonality and impulsiveness). Refer below.

6.2.1 Corrections for Annoying Characteristics

Noise from dogs barking have been assessed for potentially annoying characteristics including impulsiveness and tonality.

Overall, the noise source data presented will be increased a further 5dB(A) to account for irritating noise qualities (impulsiveness) as is consistent with EPA guidelines.

6.2.2 Predicted Noise Levels

Predicted noise emissions from the development have been determined based on dogs barking within the project site.

In relation to the building facade, the following has been assumed:

- The existing building shell is to be retained and recommended constructions detailed in Section 5.2 are implemented.
- Windows remain closed during operation of the project site.

Noise emissions have been assessed against the night time noise level for residential receivers as a worst case.

Table 4-4 – Predicted Activity Noise Levels At Nearest Noise Sensitive Receiver

Source	Receiver	Predicted Noise Level L_{eq}	Noise Level Criteria dB(A) $L_{eq\ (period)}$	Complies
Dogs barking	**R1**	40	43	Yes
	R2	38	43	Yes
	R3	37	43	Yes

6.2.3 Sleep Disturbance Assessment

Given the site will be used after 10pm and before 7am, a sleep disturbance assessment has been conducted. Sleep disturbance to residences directly adjacent to the project site on Pittwater Road has been assessed for dogs barking.

Noise levels are predicted to the façade of the nearest residential dwelling, with each source of the noise at the worst case location relative to the receiver (i.e. each receiver location assessed for worst case noise source location).

Table 6-5 – Predicted Noise Levels (Sleep Disturbance)

Noise Source	Receiver	Predicted Noise Level, dB(A) L_1	Emergence Level dB(A) $L_{max,}$ f BG+15dB(A)
Dog's Barking	**R1**	50	60

6.3 MECHANICAL NOISE EMISSION ASSESSMENT

The development will be serviced by two additional condenser units to the existing already installed. The proposed condenser units are detailed below:

- Daikin VRV Condenser Unit – REYQ6TAY1 with a sound pressure level of 56 dB(A) at 1m.
- Daikin VRV Condenser Unit – REYQ12TAY1 with a sound pressure level of 59 dB(A) at 1m.

The location of the condenser units have been illustrated in the figure below marked in red.

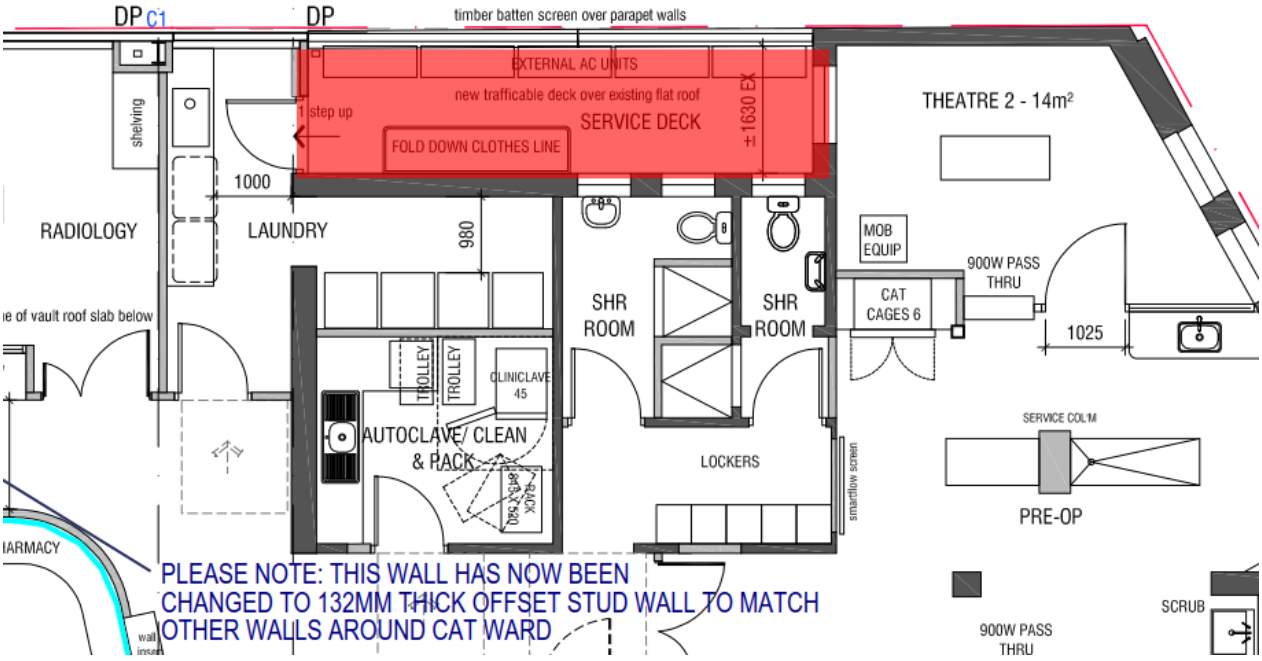


Figure 3 – New VRV Condenser Unit Location

6.3.1 Predicted Noise Levels

The following predicted noise levels have taken into account the recommendations outlined in Section 7. As the condenser units are directly opposite to **R1** to the north, noise levels have been predicted to this receiver as this will be the worst-case scenario. Compliance at this location will assure compliance with all other receivers.

Table 5-6 – Predicted Mechanical Noise Levels At Nearest Noise Sensitive Receiver

Source	Receiver	Predicted Noise Level L_{eq}	Night Time Noise Level Criteria dB(A) L_{eq} (period)	Complies
New Condenser Units	**R1**	41	43	Yes

7 RECOMMENDATIONS

The following recommendations have been formulated to ensure compliance with the project noise objectives.

7.1 RECOMMENDED MANAGEMENT CONDITIONS

- External doors must be kept closed apart from access into and out of the building is required and shut at night to comply with the night time criteria.

7.2 RECOMMENDED ACOUSTIC TREATMENTS

- Primary entry / exit doors into the dog wards are to be constructed from 35mm solid core construction or 6mm glazing with acoustic seals.
- Ensure all penetrations/ gaps in the building façade to the dog ward areas are acoustically sealed.
- Glazing of facade shall be as detailed in the glazing mark-up in Appendix 1.

7.3 MECHANICAL PLANT

- Vibration isolate the condenser unit from the building structure with 3mm static deflection mounts.
- An imperforate barrier from the floor of the roof level shall be constructed minimum 200mm above the condenser unit. This barrier may be constructed of lapped and capped timber, glass, plexiglass, 4mm Perspex, colorbond, 9mm fibrous cement sheet or equivalent, installed with no gaps between the panels. The proposed location is marked in Figure 4 below marked in red.

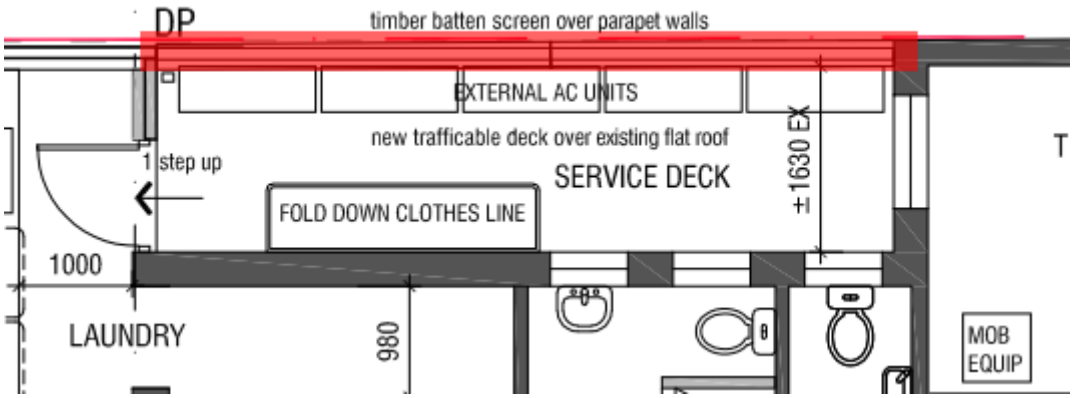


Figure 4 – Service Deck Barrier Location

8 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the proposed veterinary hospital to be located at 1121 Pittwater Road, Collaroy.

Provided that the recommendations presented in Section 5.2 are implemented, internal noise levels for the development will comply with the acoustic requirements of the following documents:

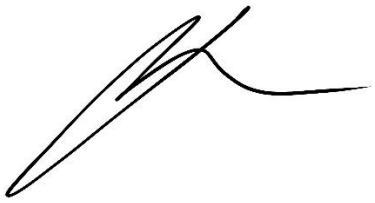
- Australian Standard AS2107:2016 – 'Recommended Design Sound Levels and Reverberation Times for Building Interiors.'

External noise emissions criteria have been established and recommendations have been provided in Section 7 of this report to satisfy the requirements from the following documents:

- NSW EPA Noise Policy for Industry.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



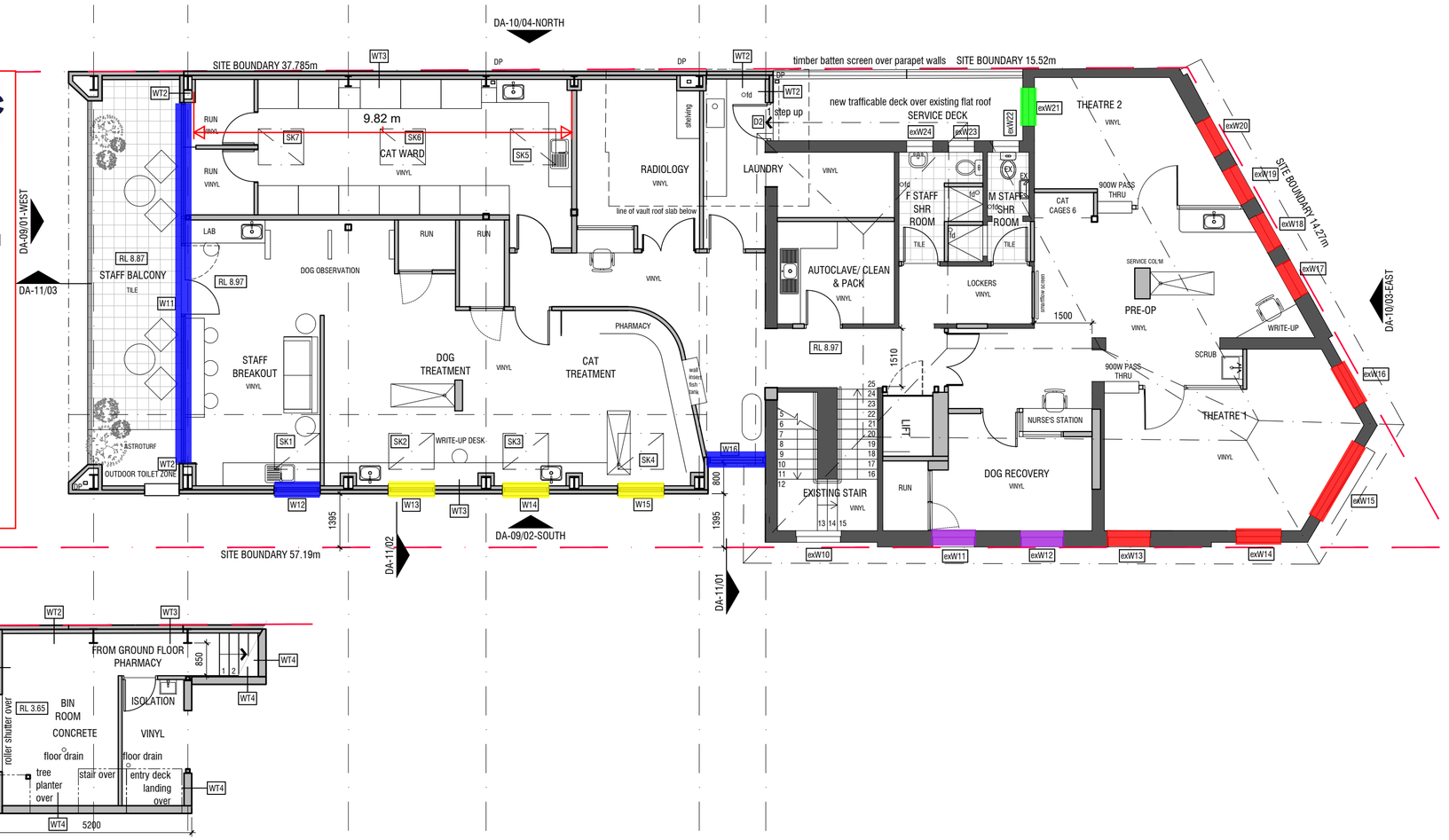
Acoustic Logic Pty Ltd
Myck Bambalan

APPEDIX 1 – GLAZING MARK-UP

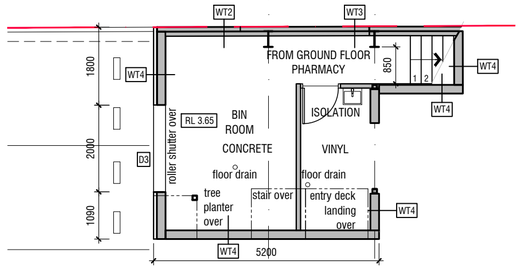
Glazing Schedule

ACOUSTIC LOGIC

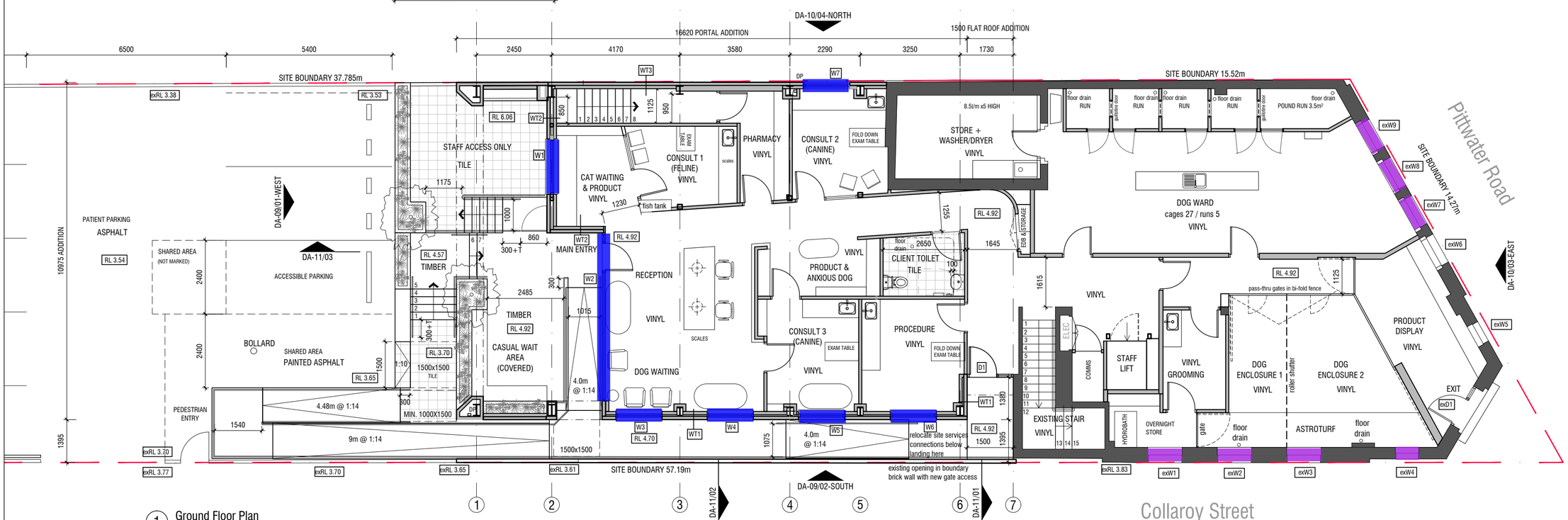
- Existing Glazing/Min 100mm Air-gap/10mm Float (Jockey-Sash) Rw 40
- Existing Glazing/Min 100mm Air-gap/6.38mm Laminated (Jockey-Sash) Rw 38
- Existing glazing/frame to meet acoustic performance of 4mm (Rw 27)
- New 6.38mm Laminated Rw 31
- New 10.38mm Laminated Rw 35



3 First Floor Plan
Scale: 1:100



2 Sub-Floor Plan
Scale: 1:100



1 Ground Floor Plan
Scale: 1:100

CONTRACTORS MUST VERIFY AND CHECK ALL SITE CONDITIONS, DIMENSIONS AND CEILING HEIGHTS BEFORE COMMENCING ANY WORK ON SITE OR PREPARING ANY SHOP DRAWINGS. ANY DISCREPANCIES ARE TO BE REFFERED IMMEDIATELY TO THE DESIGNER FOR CO-ORDINATION.

HEAD CONTRACTOR TO ENSURE ALL WORKS COMPLY WITH CURRENT BCA, ALL RELEVANT AS, DDA AND ALL OTHER STATUTORY REQUIREMENTS.

Rev	Description	Date
P1	PRELIMINARY ISSUE FOR REVIEW	30.10.20
P2	PRELIMINARY ISSUE FOR HERITAGE REVIEW	09.11.20
P3	PRELIMINARY ISSUE FOR STRUCUTRAL REVIEW	25.11.20
P4	PRELIMINARY ISSUE FOR COSTING	27.11.20
P5	PRELIMINARY ISSUE FOR ACCESS REVIEW	03.12.20
P6	PRELIMINARY ISSUE FOR ACCESS REVIEW	13.12.20
A	DEVELOPMENT APPLICATION	16.12.20

Services Engineer:

IGS INTEGRATED GROUP SERVICES

Structural Engineer:

TTW Taylor Thomson Whitting

BigCity Design

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Client:

Project:

COLLAROY VET HOSPITAL
1121 PITTWATER RD
COLLAROY NSW 2097
LOT 1 DP 528546

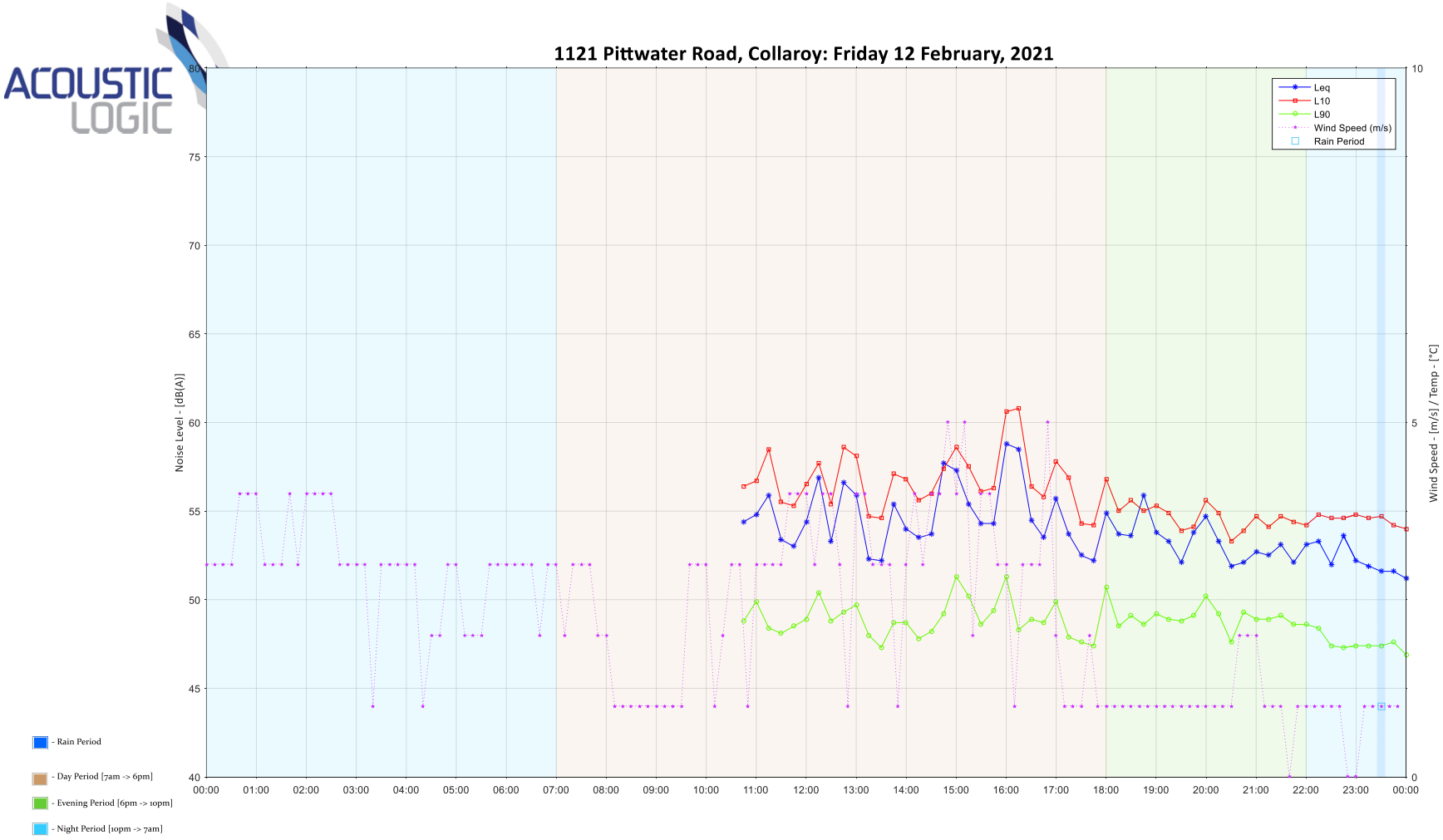
Drawing Title:

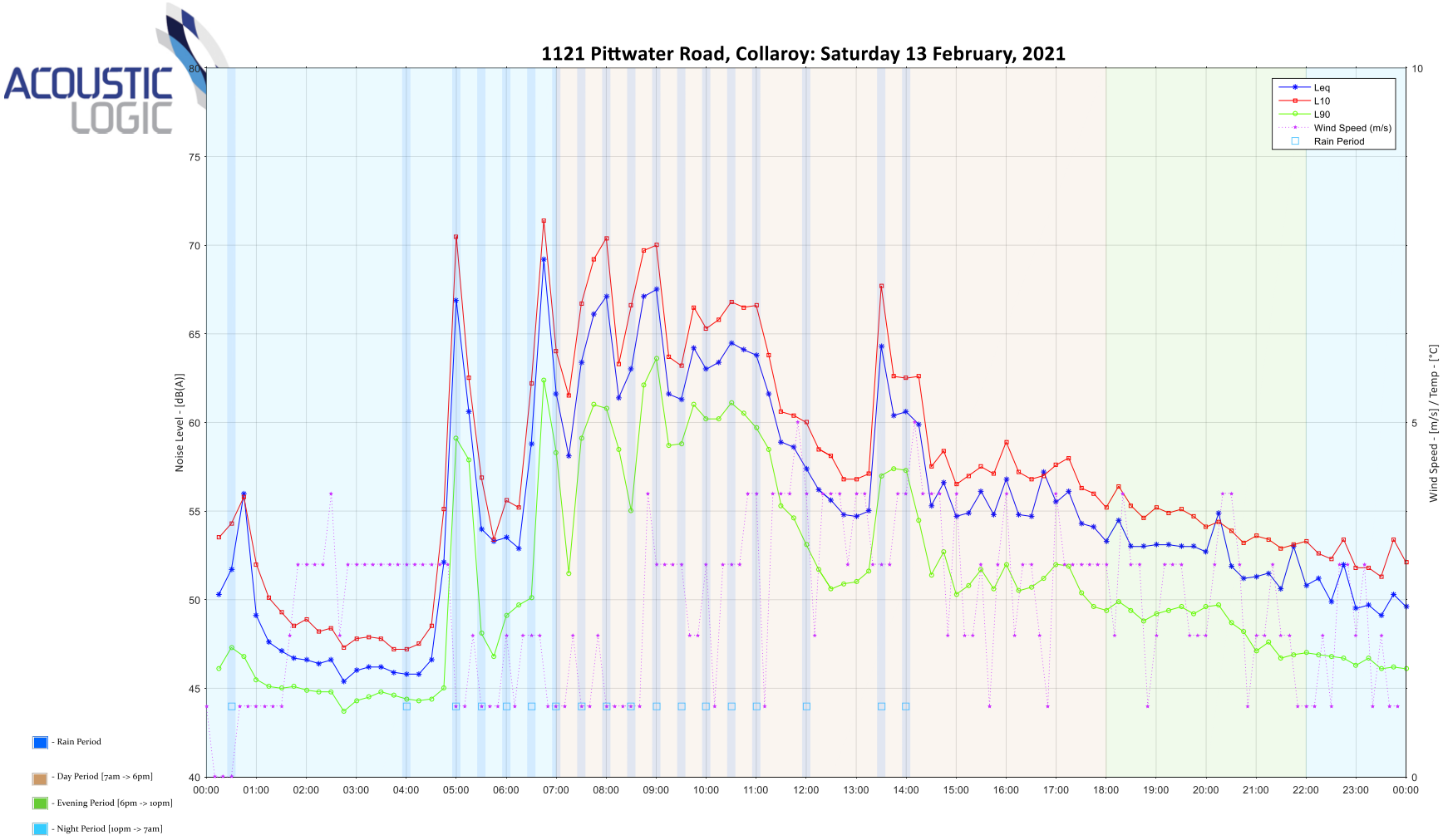
PROPOSED FLOOR PLANS

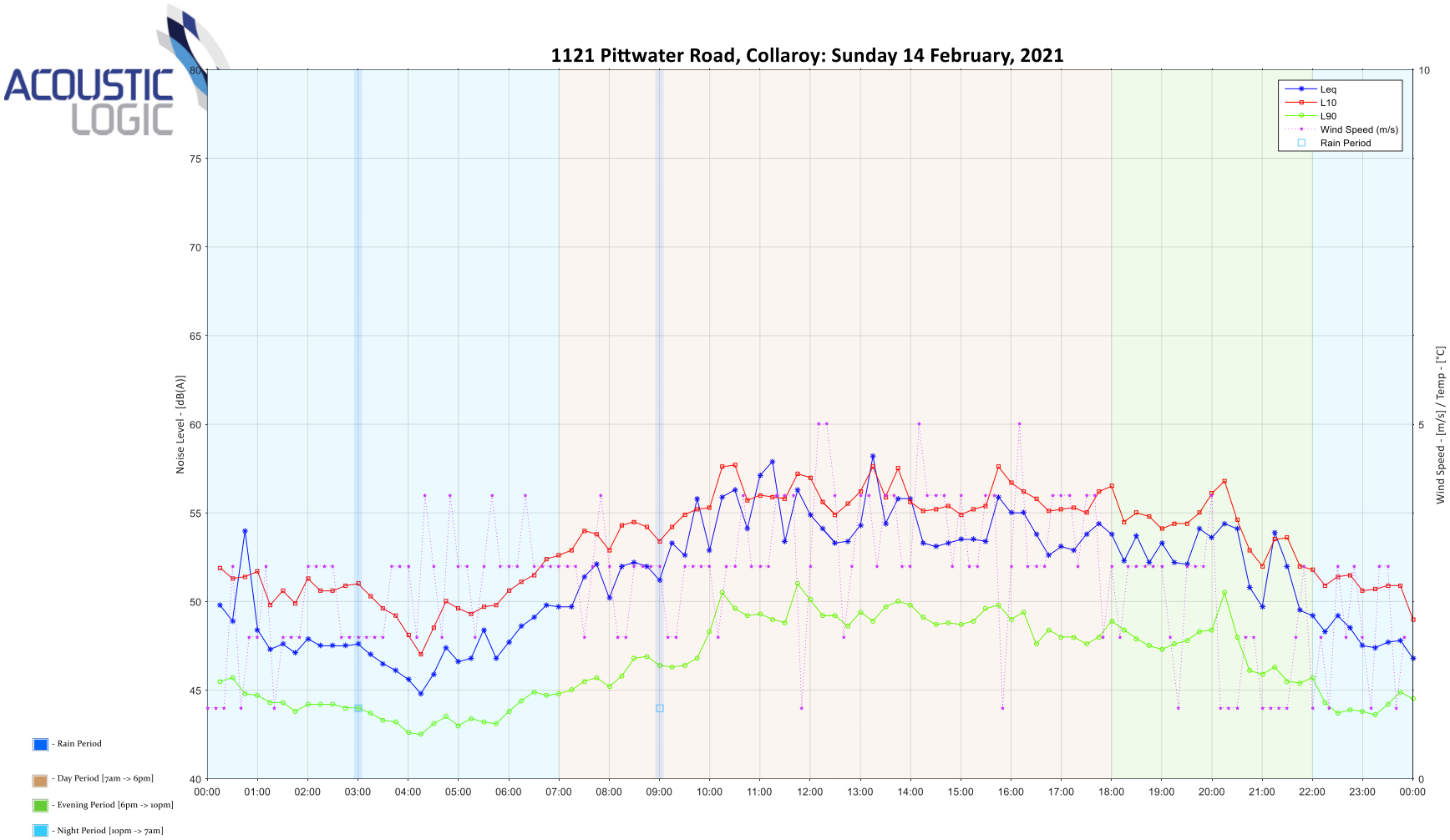
Date:	Scale:	Drawn:	North:
22.10.20	1:100@A2	CS	

Project No:	Dwg No:	Revision:
C07-20328	DA-05	A

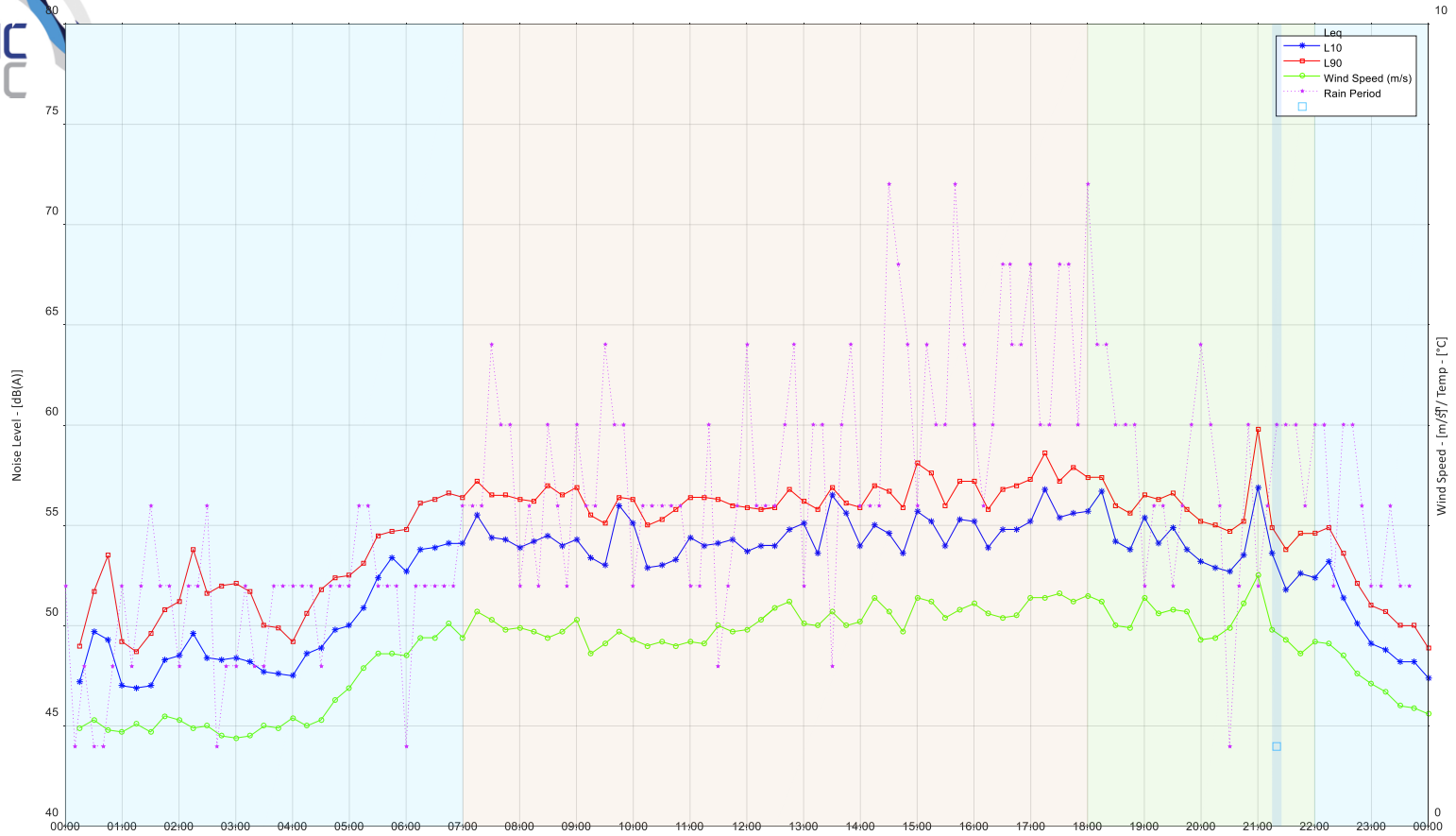
APPENDIX 2 – UNATTENDED NOISE MONITORING DATA

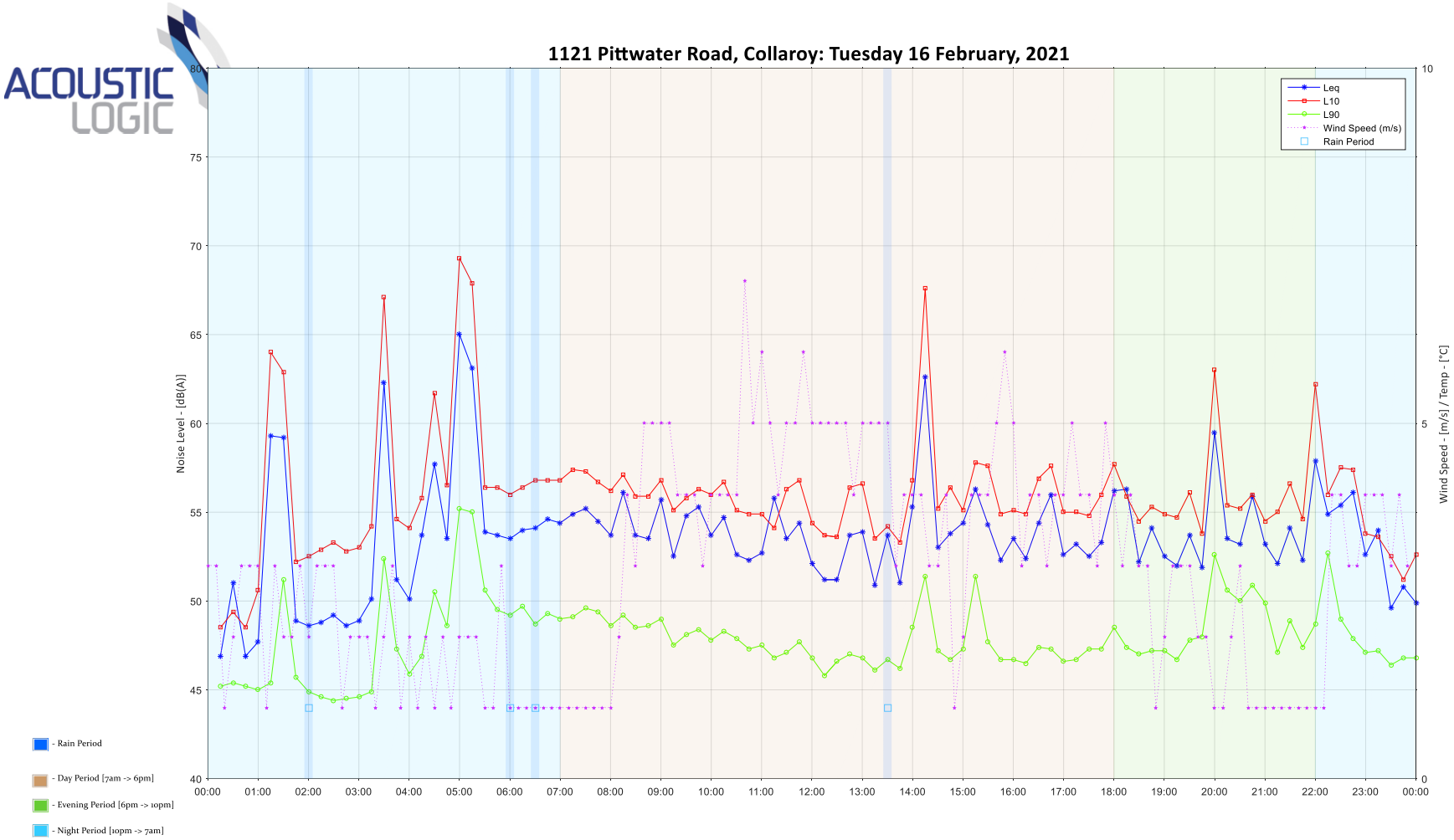

1121 Pittwater Road, Collaroy: Friday 12 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
80
75
70
65
60
55
50
45
40
10
5
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

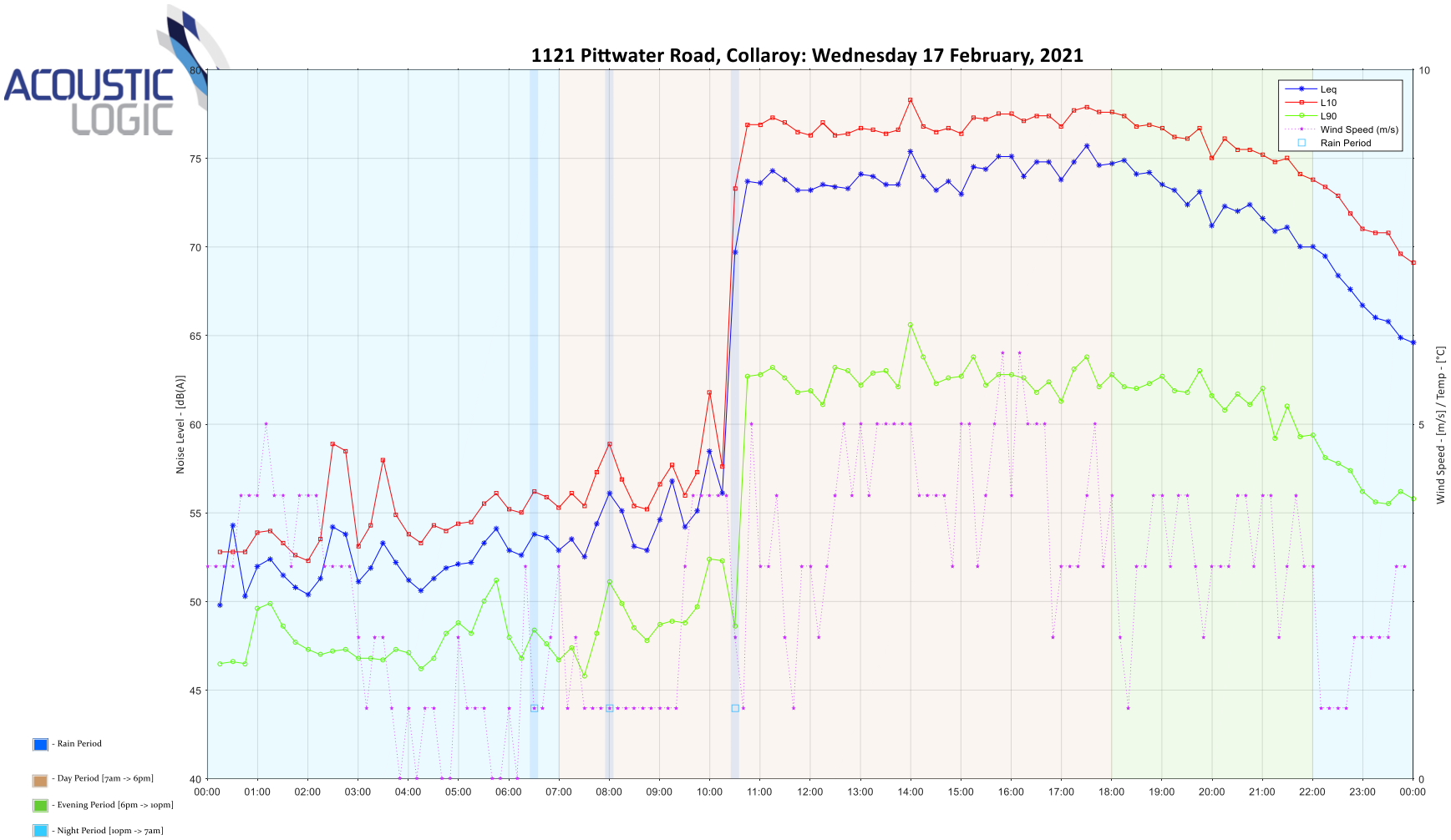

1121 Pittwater Road, Collaroy: Saturday 13 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

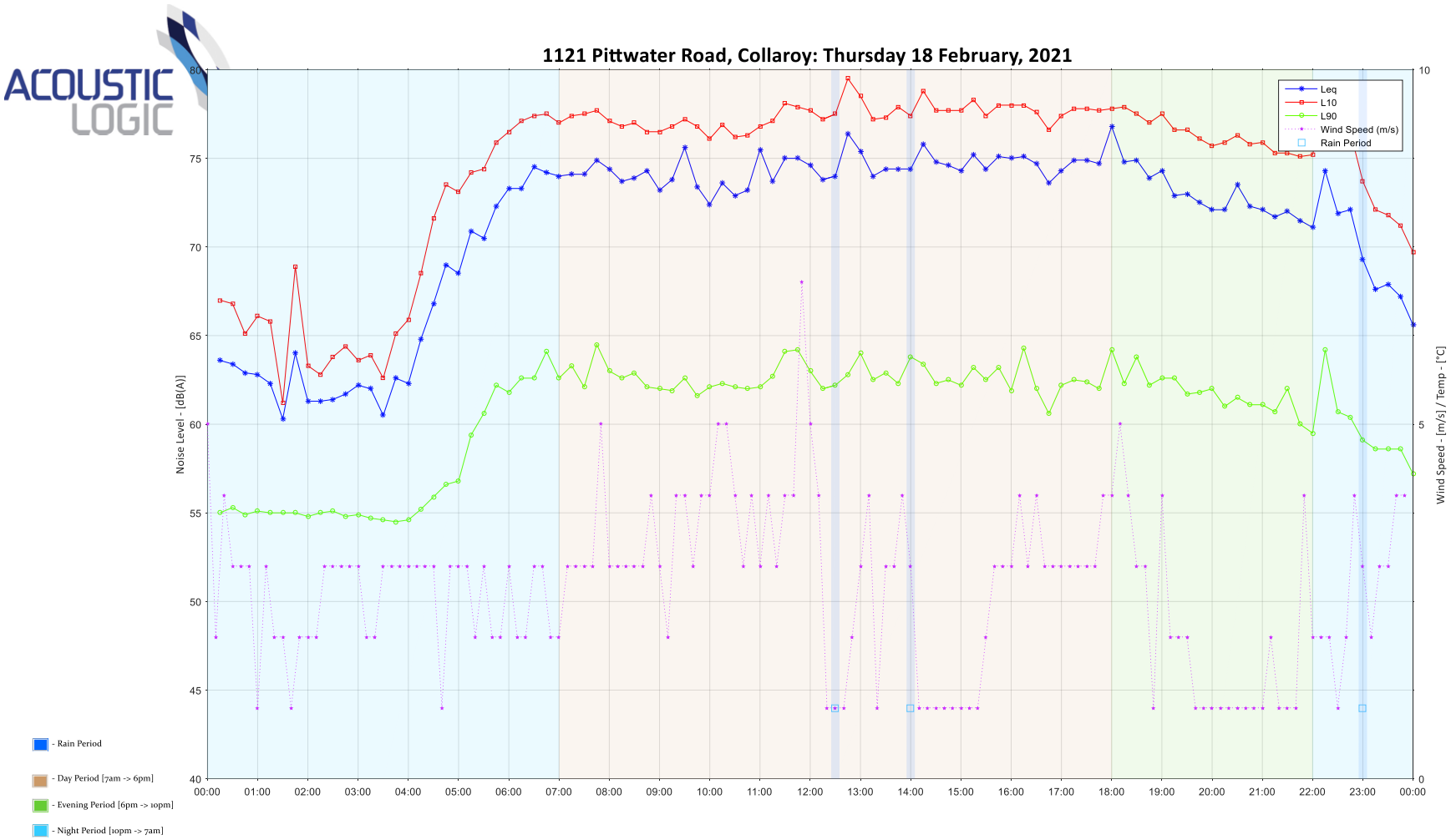

1121 Pittwater Road, Collaroy: Sunday 14 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
80
75
70
65
60
55
50
45
40
10
5
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

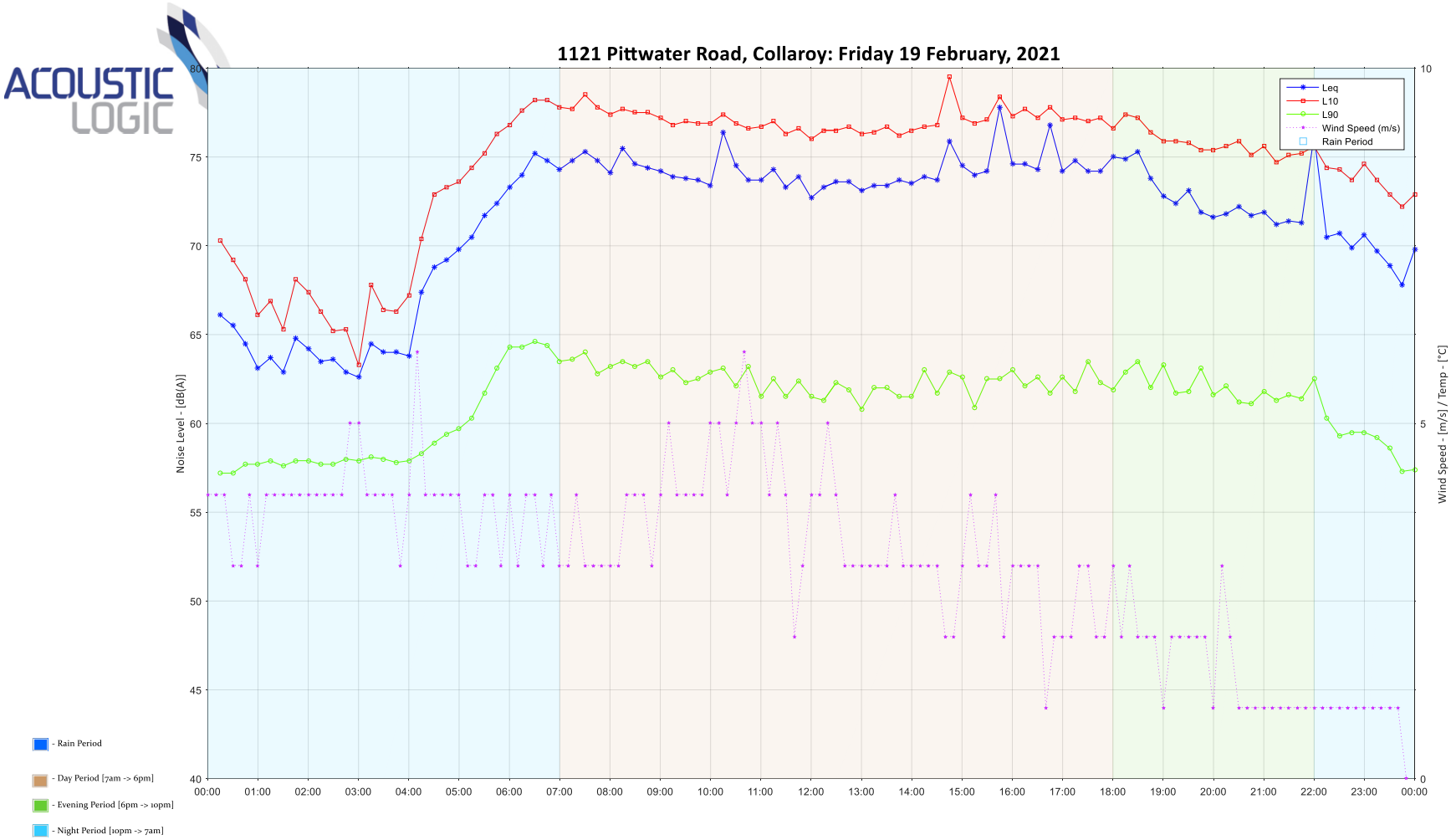
1121 Pittwater Road, Collaroy: Monday 15 February, 2021

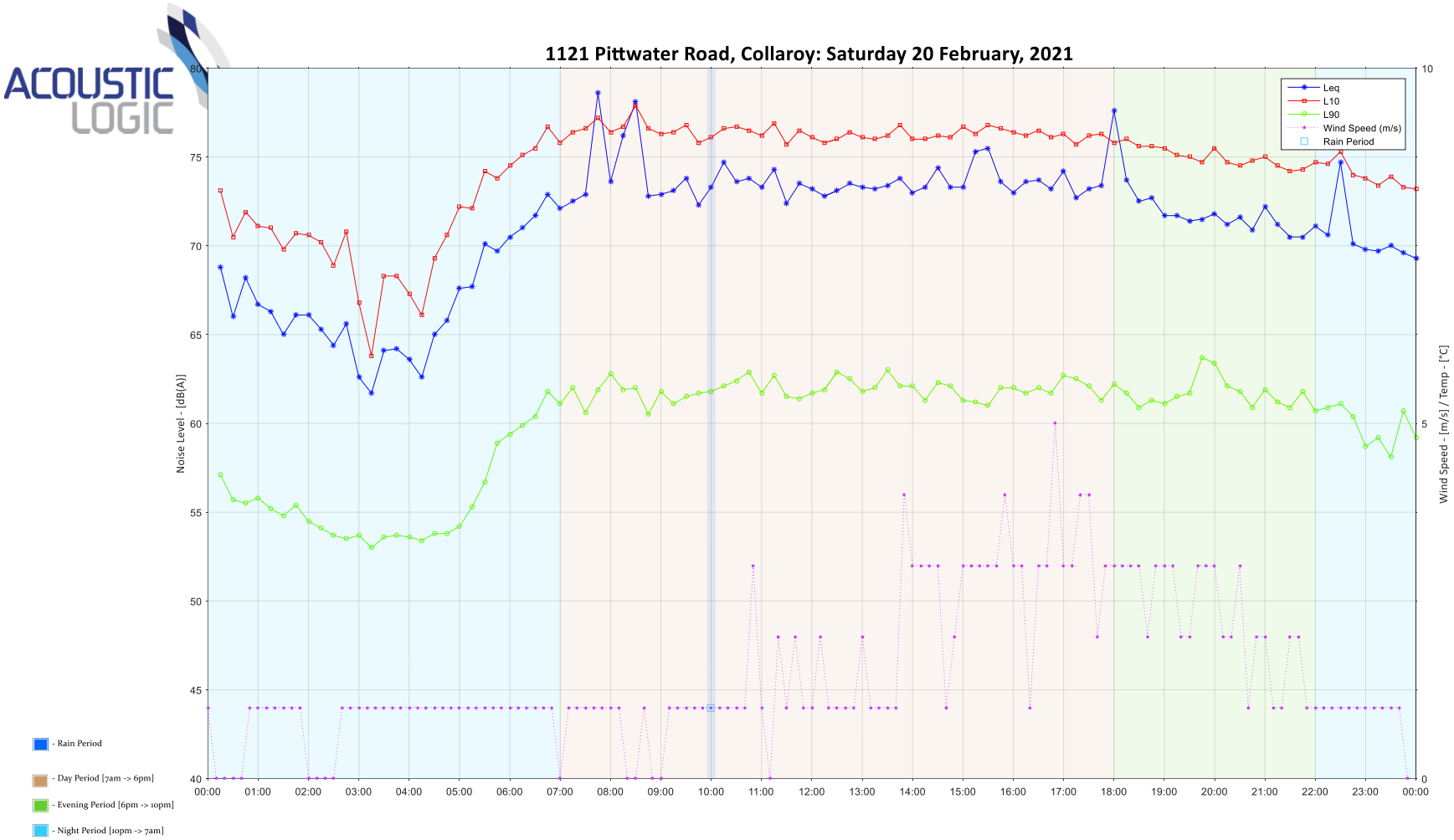


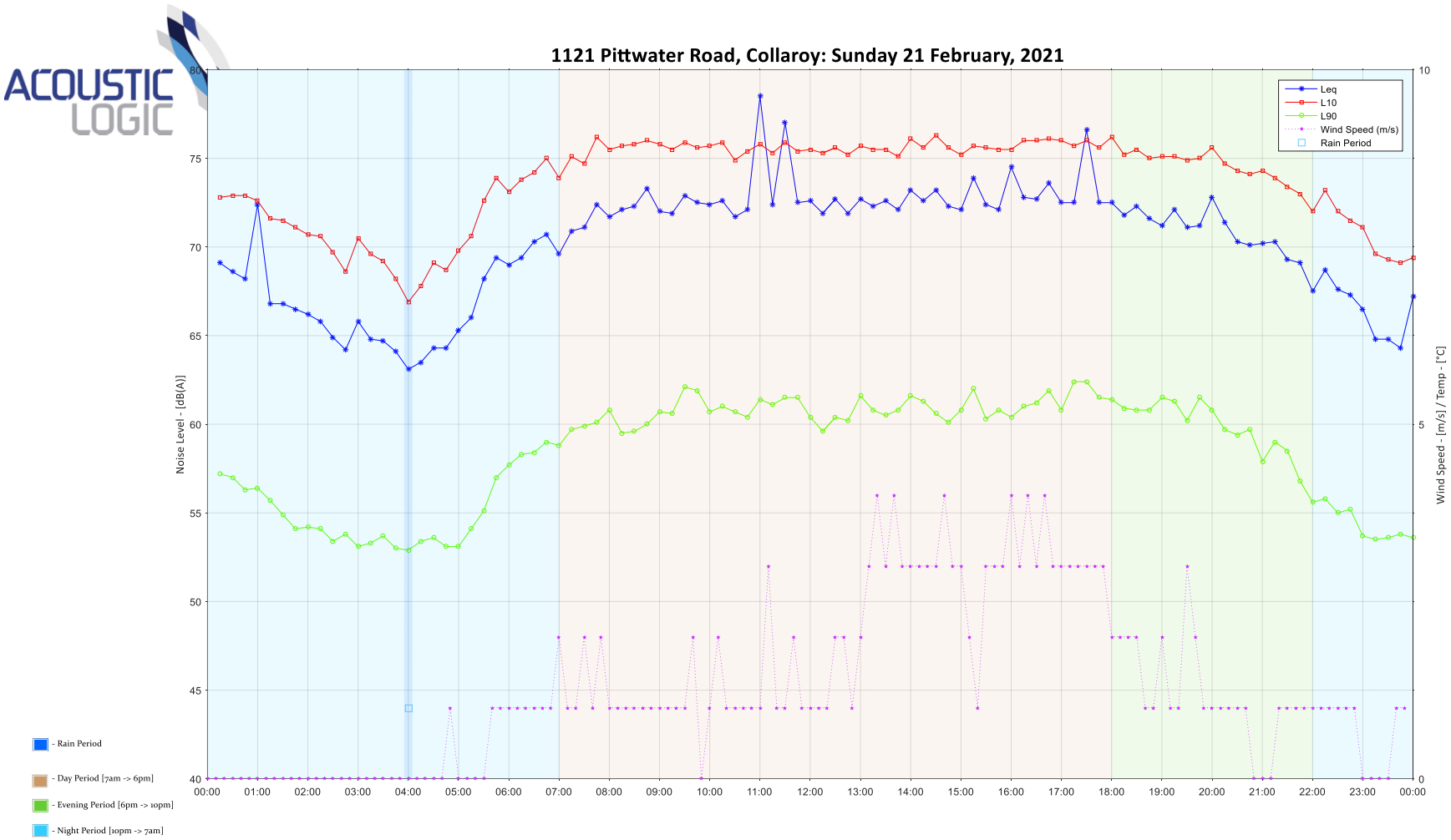

1121 Pittwater Road, Collaroy: Tuesday 16 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

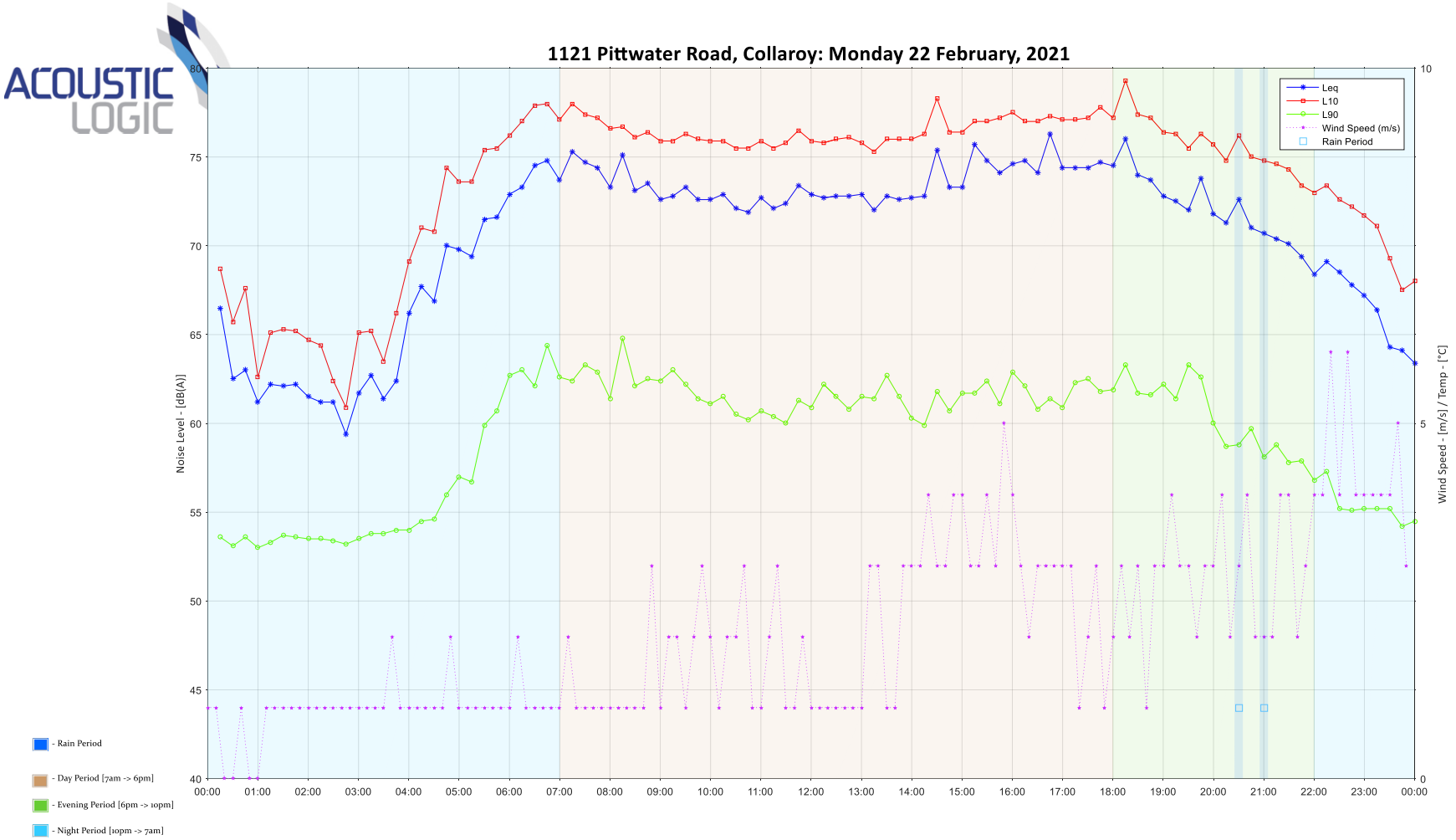

1121 Pittwater Road, Collaroy: Wednesday 17 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

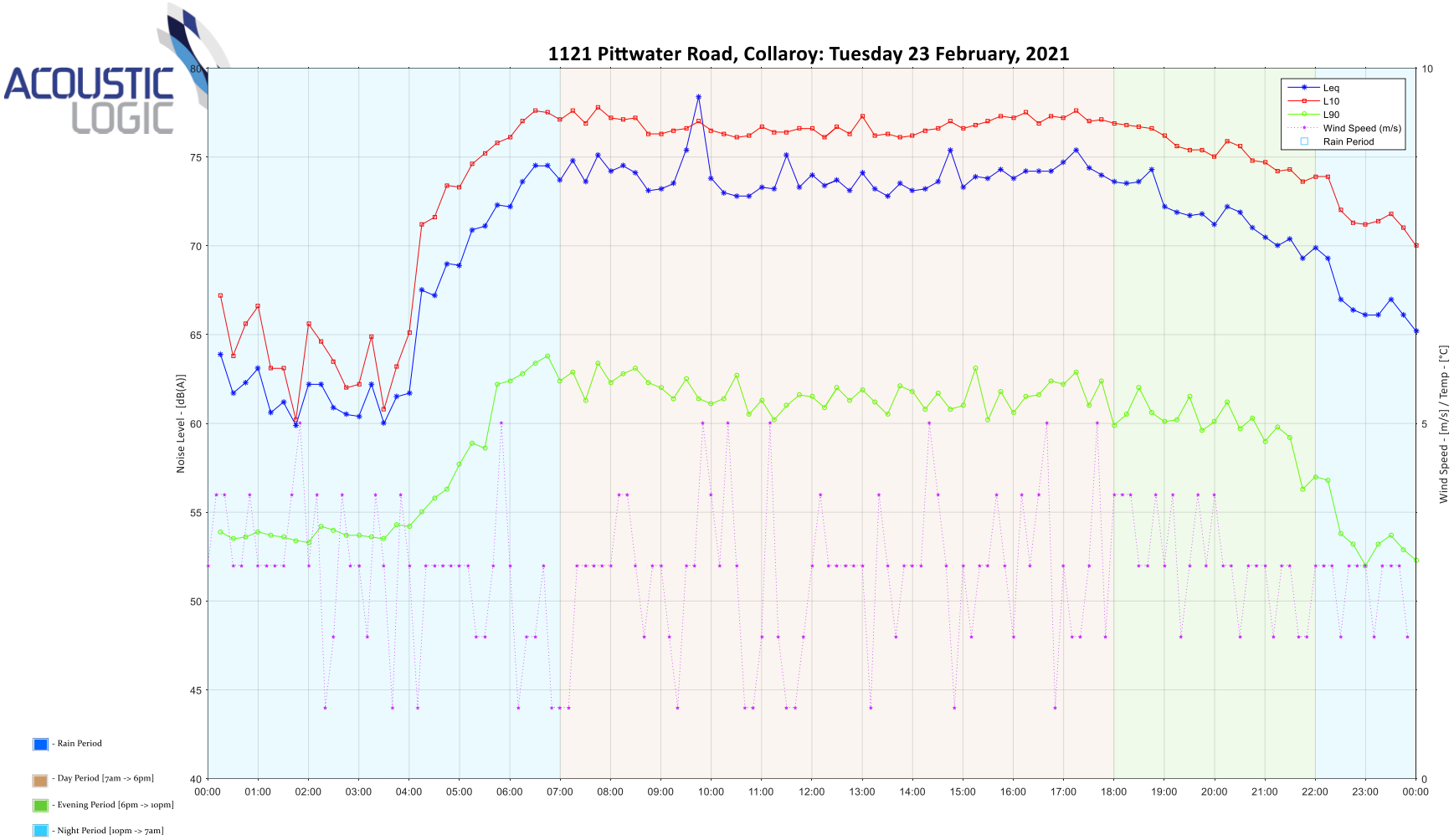

1121 Pittwater Road, Collaroy: Thursday 18 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

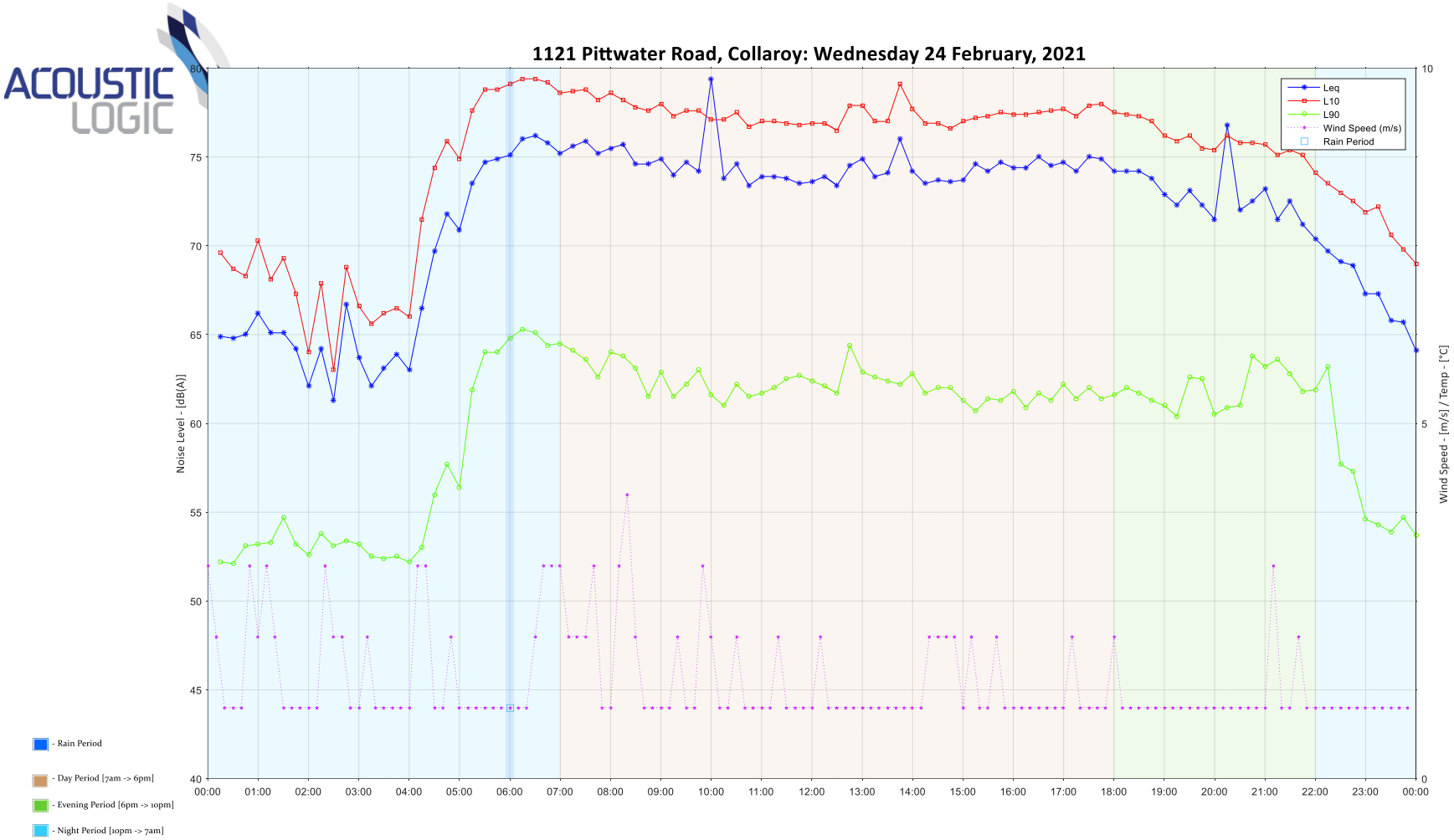

1121 Pittwater Road, Collaroy: Friday 19 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


1121 Pittwater Road, Collaroy: Saturday 20 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


1121 Pittwater Road, Collaroy: Sunday 21 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
80
75
70
65
60
55
50
45
40
10
5
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


1121 Pittwater Road, Collaroy: Monday 22 February, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
L10
L90
Wind Speed (m/s)
Rain Period
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


1121 Pittwater Road, Collaroy: Tuesday 23 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
80
75
70
65
60
55
50
45
40
10
5
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


1121 Pittwater Road, Collaroy: Wednesday 24 February, 2021
Leq
L10
L90
Wind Speed (m/s)
Rain Period
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
80
75
70
65
60
55
50
45
40
10
5
0
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
- Rain Period
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

1121 Pittwater Road, Collaroy: Thursday 25 February, 2021