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136-148 New South Head Road, Edgecliff

DA Acoustic Assessment

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1 INTRODUCTION

This Acoustic Assessment report has been prepared by Acoustic Logic (AL) to accompany a development application (DA) for proposed alterations and additions to the existing commercial building located at 136-148 New South Head Road, Edgecliff (the Site).

This document addresses noise impacts associated with the following:

- Noise intrusion to project site from adjacent roadways, and
- Noise emissions from mechanical plant to service the project site (in principle).

AL have utilised the following documents and regulations in the noise assessment of the development:

- Woollahra Council Development Control Plan (DCP) 2015
- NSW Department of Planning *State Environmental Planning Policy (SEPP) Infrastructure* 2007
- NSW Department of Planning *Developments near Rail Corridors or Busy Roads – Interim Guideline,* and
- NSW Environmental Protection Authority (EPA) *Noise Policy for Industry* (NPI) 2017

This preliminary assessment is to be iterated once architectural plans have progressed further to provide complying constructions for the external façade. In the current form, this document is only used to provide preliminary acoustic documentation for acoustic items related to the DA.

2 SITE DESCRIPTION

The proposed development results in three storeys of basement parking, ground floor to level three commercial and retail spaces , and level 4-11 residential units.

Investigation has been carried out by this office in regard to the existing properties and noise impacts surrounding the proposed development, which is detailed below:

- Existing residential and mixed-use receivers to the north, east and west, and
- Existing commercial buildings to the south, south west and west.

The nearest noise receivers around the site include:

- **R1:** Residential Receiver 1 – Multi-storey residential receiver to the north at 3 Darling Point Road
- **R2:** Residential Receiver 2 – Multi-storey mixed-use receiver to the east 164-180 New South Head Road
- **R3:** Residential Receiver 3 – Multi- storey mixed-use receiver to the west at 2B Darling Point Road
- **C1:** Commercial Receiver 1 – Multi-storey commercial receivers (Edgecliff Centre) at 203-233 New South Head Road
- **C2:** Commercial Receiver 2 – Multi-storey commercial receivers at 1-2 Mclean Street and179-191 New South Head Road, and
- **C3:** Commercial Receiver 3 – Multi-storey commercial receivers at 130 New South Head Road.

A site map, measurement description and surrounding receivers are presented in Figure 1 below.

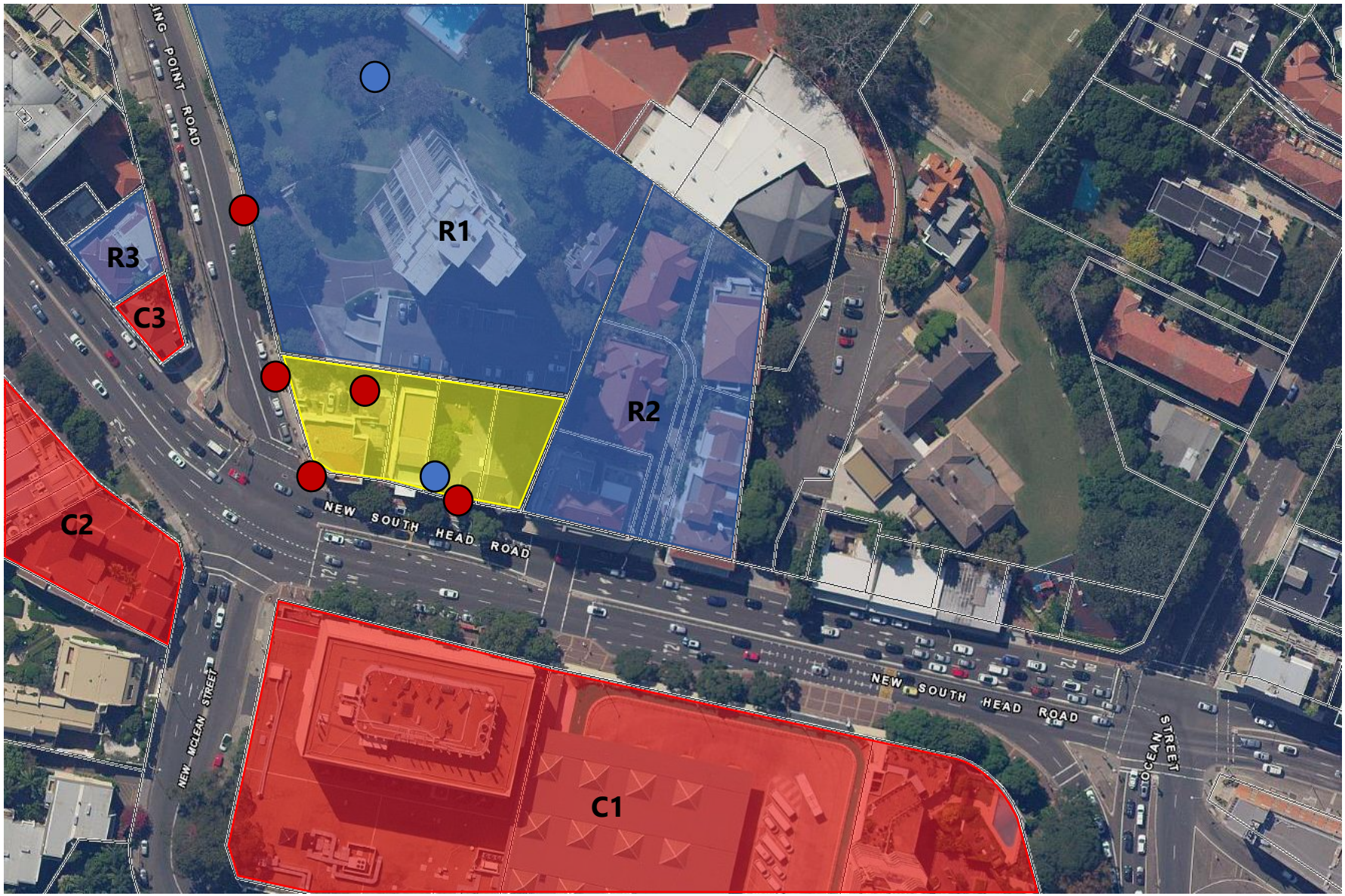

Figure 1 – Project Site
Source: NSW Six Maps

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 principal 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 ENVIRONMENTAL 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 Site. Weather affected data was excluded from the assessment. The processed RBL (lowest 10th percentile noise levels during operation time period) are presented in Summarised rating background noise levels for residents surrounding the proposed development are presented below. Periods of adverse weather that were determined to have affected the noise data have been eliminated when determining the rating background noise level at the site in accordance with Fact Sheets A & B of the NPI.

Table 4-1.

Measurement Position

One unattended noise monitor was located in the southern courtyard of the current building at 148 New South Head Road. Previous unattended noise monitoring has been conducted by this office for 3 Darling Point Road, Darling Point. Attended measurements were taken around the site. The sound level meter had an unobstructed view of traffic and was approximately 3m from the kerb at all measurement locations along New South Head Road and Darling Point Road. Refer to Figure 1 for detailed location.

Measurement Period

Unattended noise monitoring was conducted from Monday 26th of April 2021 to Monday 3rd of May 2021 for the monitor at 148 New South Head Road. Attended noise measurements were undertaken between the hours of 4:00pm and 5:00pm on Monday 26th of April 2021 to supplement the noise monitoring data.

Previous unattended noise monitoring was conducted from Monday 25th of November 2019 to Thursday 5th of December 2019 for the monitor at 3 Darling Point Road. Attended noise measurements were undertaken between the hours of 9:00am and 10:00am on Monday 25th of November 2019.

Measurement Equipment

Equipment used consisted of Acoustic Research Laboratories Pty Ltd noise loggers. The loggers were set to A-weighted fast response and were programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitors were 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 One – Unattended Noise Monitoring.

Attended short term measurements were conducted using a Norsonic 140 Sound Analyser. The analyser was set to fast response and calibrated before and after the measurements using a Norsonic Sound Calibrator type 1251. No significant drift was noted.

4.1 SUMMARISED MEASURED NOISE LEVELS

Summarised rating background noise levels for residents surrounding the proposed development are presented below. Periods of adverse weather that were determined to have affected the noise data have been eliminated when determining the rating background noise level at the site in accordance with Fact Sheets A & B of the NPI.

Table 4-1 – Measured Rating Background Noise Levels (RBL)

Monitor	Time of day	Rating Background Noise Level $dB(A)_{L90(Period)}$
R2 & R3 148 New South Head Road	Day (7am – 6pm)	52
	Evening (6pm – 10pm)	51
	Night (10pm – 7am)	32
R1 3 Darling Point Road	Day (7am – 6pm)	45
	Evening (6pm – 10pm)	45
	Night (10pm – 7am)	38

Table 4-2 – Measured Traffic Noise Levels

Location	Time of day	Traffic Noise Level $dB(A)_{Leq(Period)}$
Project Site Facing New South Head Road	Day & Evening (7am – 10pm)	67
	Night (10pm – 7am)	59

The measured traffic noise levels above are based on measurements conducted at 1.5m above ground level corrected to a façade noise level (presented noise level are without façade reflections, i.e., the noise level incident on the facade) All measurements were conducted at least 3m away from any façades.

5 EXTERNAL NOISE INTRUSION ASSESSMENT

Site investigation indicates that the major external noise sources around the site are from traffic movements along New South Head Road.

5.1 NOISE INTRUSION CRITERIA

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

- Woollahra Council Development Control Plan (DCP) 2015
- NSW Department of Planning *State Environmental Planning Policy (SEPP) Infrastructure* 2007, and
- NSW Department of Planning *Developments near Rail Corridors or Busy Roads – Interim Guideline*.

5.1.1 Woollahra Council Development Control Plan (DCP) 2015

Chapter D3 – General Controls for Neighbourhood and Mixed Use Centres

D3.7 Acoustic and Visual Privacy

C2. The building is sited and designed to minimise the transmission of external noise to other buildings on the site and on adjacent land.

C3. The internal layout of rooms, courtyards, terraces and balconies, the use of openings, screens and blade walls, and choice of materials, is designed to minimise the transmission of noise externally.

C4. The bedroom areas are separated, by way of barriers or distance, from on-site noise sources such as active recreation areas, car parks, vehicle access-ways and service equipment areas.

C5. Noise impact associated with goods delivery and garbage collection, particularly early morning, is minimised.

C6. For a restaurant or café, the design and operation minimises the impact of noise associated with late night operation on nearby residents.

C7. A rear courtyard is only permitted for restaurant or café use if Council is satisfied that the use and hours of operation will not a have an unreasonable impact on residential amenity.

Note: Council may require a Noise Impact Assessment as part of the development application.

5.1.2 NSW Department of Planning *State Environmental Planning Policy (SEPP) Infrastructure* 2007

RMS Map No. 16 of the traffic volume maps referenced by the SEPP (Infrastructure) on the RMS website (see below), classifies the section of Richmond Road where the development is located adjacent to as a road where a noise intrusion assessment is mandatory under clause 102 of the SEPP Infrastructure 2007. See RMS average annual daily road traffic volume map number 10 and the approximate location of the site below.

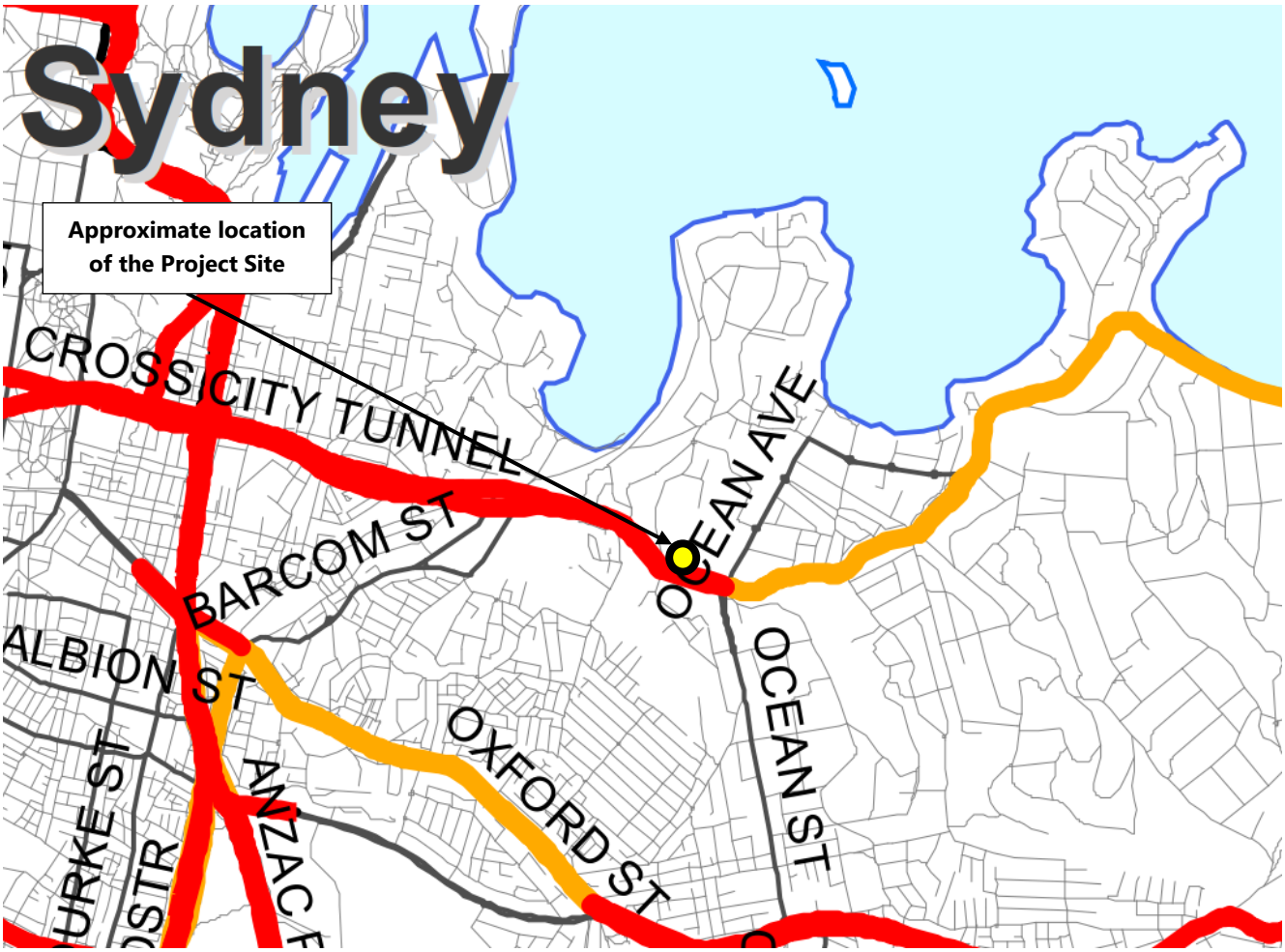

Figure 2 – RMS Map No. 16 and Approximate Location of Proposed Development

Clause 102: Impact of road noise or vibration on non-road development

(3) If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:

a) in any bedroom in the building--35 dB(A) at any time between 10 pm and 7 am,

b) anywhere else in the building (other than a garage, kitchen, bathroom or hallway) --40 dB(A) at any time.

5.1.3 NSW Department of Planning *Development near Rail Corridors or Busy Roads – Interim Guideline*

Section 3.5 of the NSW Department of Planning's 'Development near Rail Corridors and Busy Roads (Interim Guideline)' states:

> *"The following provides an overall summary of the assessment procedure to meet the requirements of clauses 87 and 102 of the Infrastructure SEPP. The procedure covers noise at developments for both Road and Rail.*
>
> - *If the development is for the purpose of a building for residential use, the consent authority must be satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:*
>
> - *in any bedroom in the building: 35dB(A) at any time 10pm-7am*
> - *anywhere else in the building (other than a garage, kitchen, bathroom or hallway): 40dB(A) at any time."*

Section 3.6.1 of the document dictates the following with respect to natural ventilation of a dwelling:

> *"If internal noise levels with windows or doors open exceed the criteria by more than 10dB(A), the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia."*

With windows open, the allowable internal noise goal is permitted to be 10dB(A) higher than when the windows are closed (i.e. – allowable level in bedrooms becomes 45dB(A) $L_{eq(9hr)}$ and 50dB(A) $L_{eq(anytime)}$for living rooms) with respect to the document's internal noise criteria.

5.1.4 Summarised External Noise Intrusion Criteria

The internal noise criteria adopted for each internal space is therefore summarised below based on the relevant State requirements.

Table 5-1 – Adopted Internal Noise Criteria (Alternative Ventilation, Windows Closed)

Space / Activity Type	Required Internal Noise Level
Sleeping Areas	35 dB(A)$L_{eq(9hr)}$
Living Areas	40 dB(A)$L_{eq(anytime)}$

6 NOISE EMISSION CRITERIA

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

- Woollahra Council Development Control Plan (DCP) 2015, and
- NSW Department of Environment and Heritage, Environmental Protection Agency document – Noise Policy for Industry (NPI) 2017.

6.1 WOOLLAHRA COUNDCIL DEVELOPMENT CONTROL PLAN (DCP) 2015

Chapter D3 – General Controls for Neighbourhood and Mixed-Use Centres

D3.10 Site Facilities

C9. Mechanical plant equipment (including lift overruns and air conditioners) must be located internally within the principal building in a suitably designed plant room or the like.

C10. Mechanical plant equipment (including lift overruns and air conditioners) must be wholly contained within the permissible building envelope and must not be located externally or on the roof unless Council is satisfied that it:

a) cannot be reasonably located elsewhere; and

b) is thoughtfully located, sized, enclosed, concealed and integrated into the building design (including when viewed from above) and roof form so it:

i. is not visible from the streetscape or public domain;

ii. is consistent with the overall building design, roof form and materials;

iii. is visually discreet and unobtrusive when viewed from adjoining properties; and

iv. minimises acoustic impacts to adjoining properties.

Note: Noise emissions from mechanical plant equipment must not exceed the background noise levels when measured at the boundary of the development site. The provisions of the Protection of the Environment Operations Act 1997 apply.

C11. Screening will only be considered where the screening is suitably located, integrated with the building design and materials and will have no impact on views or result in overshadowing of adjoining properties.

Note: Screening alone may not be an acceptable solution for ensuring that mechanical plant equipment is not visible from the streetscape or the public domain.

It is noted that the DCP recommends noise emission controls that are much more stringent than the noise emissions criteria presented in the industry standard EPA *Noise Policy for Industry* 2017 and does not take into account the highly traffic noise affected location of the site. The NPI has therefore been provided below for information.

6.2 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.

6.2.1 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 Summarised rating background noise levels for residents surrounding the proposed development are presented below. Periods of adverse weather that were determined to have affected the noise data have been eliminated when determining the rating background noise level at the site in accordance with Fact Sheets A & B of the NPI.

Table 4-1. Noise emissions from the Site should comply with the noise levels presented below when measured at nearby property boundaries.

6.2.2 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 Summarised rating background noise levels for residents surrounding the proposed development are presented below. Periods of adverse weather that were determined to have affected the noise data have been eliminated when determining the rating background noise level at the site in accordance with Fact Sheets A & B of the NPI.

Table 4-1, the Noise Policy for Industry suggests the adoption of the 'urban' categorisation for residential receivers that are not highly traffic noise affected.

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 non-highly traffic noise affected residential receivers surrounding the site are presented in Table 6-1.

Table 6-1 – EPA Amenity Noise Levels (Residential Receivers)

Type of Receiver	Time of day	Recommended Noise Level dB(A)$L_{eq(period)}$	Project Amenity Noise Level dB(A)$L_{eq(15\ minute)}$
Residential – Urban (Not Highly Traffic Noise Affected)	Day	60	58
	Evening	50	48
	Night	45	43

Table 6-2 – EPA NPI Noise Emission Criteria (Non-Residents Surrounding Project Site)

Type of Receiver	Time of day	Recommended Noise Level dB(A)$L_{eq(period)}$	Recommended Noise Level dB(A)$L_{eq(15\ minute)}$
Commercial premises	When in use	65	63

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

6.2.3 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:

- *$L_{eq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or*
- *L_{Fmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,*

a detailed maximum noise level even assessment should be undertaken.

Table 6-3 – Sleep Arousal Criteria for Residential Receivers

Receiver	Rating Background Noise Level (Night) dB(A)L_{90}	Emergence Level
R2/R3 Residents Surrounding Site Night (10pm – 7am)	32 dB(A) L_{90}	40 dB(A)$L_{eq,\ 15min}$; 52 dB(A)L_{Fmax}
R1 Residents Surrounding Site Night (10pm – 7am)	38 dB(A) L_{90}	43 dB(A)$L_{eq,\ 15min}$; 53 dB(A)L_{Fmax}

6.3 SUMMARISED NOISE EMISSION CRITERIA

Table 6-4 – EPA NPI Noise Emission Criteria (R1 Receiver)

Time Period	Assessment Background Noise Level dB(A)L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq(15min)}$	Woollahra Council DCP 2015	NPI Criteria for Sleep Disturbance
Day	45	58	**50**	45	N/A
Evening	45	**48**	50	45	N/A
Night	38	43	**43**	38 & condensers inaudible	**43 dB(A)$L_{eq,\ 15min}$; 53 dB(A)L_{Fmax}**

Table 6-5 – EPA NPI Noise Emission Criteria (R2 & R3 Receiver)

Time Period	Assessment Background Noise Level dB(A)L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq(15min)}$	Woollahra Council DCP 2015	NPI Criteria for Sleep Disturbance
Day	52	58	**57**	52	N/A
Evening	51	**48**	56	51	N/A
Night	32	43	**37**	32 & condensers inaudible	**40 dB(A)$L_{eq,\ 15min}$; 52 dB(A)L_{Fmax}**

The NPI project noise trigger levels are indicated by the bolded values in the table above.

Table 6-6 – EPA NPI Noise Emission Criteria (Non-Residences Surrounding Project Site)

Type of Receiver	Time of day	Recommended Noise Level
Commercial premises	When in use	63 dB(A)$L_{eq(15\ min,\ when\ in\ use)}$

7 NOISE EMISSIONS ASSESSMENT

7.1 NOISE FROM MECHANICAL PLANT WITHIN PROPOSED SITE GENERALLY

Detailed plant selection and location has not been undertaken at this stage. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services to the closest residential and commercial receivers should comply with the requirements of Section 6.3.

Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels. Indicative treatments to be reviewed and/ or iterated at CC stage are shown below.

8 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the proposed mixed-use development at 136-148 New South Head Road, Edgecliff.

Internal noise levels for the development shall comply with the acoustic requirements of the following documents:

- Woollahra Council Development Control Plan (DCP) 2015
- NSW Department of Planning *State Environmental Planning Policy (SEPP) Infrastructure* 2007, and
- NSW Department of Planning *Developments near Rail Corridors or Busy Roads – Interim Guideline*.

External noise emissions criteria have been established in this report to satisfy the requirements of the following documents:

- Woollahra Council Development Control Plan (DCP) 2015, and
- NSW Department of Environment and Heritage, Environmental Protection Agency document – '*Noise Policy for Industry'* (NPI) 2017.

A detailed acoustic review of mechanical plant will be undertaken during CC Stage.

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

Yours faithfully,

Acoustic Logic Pty Ltd
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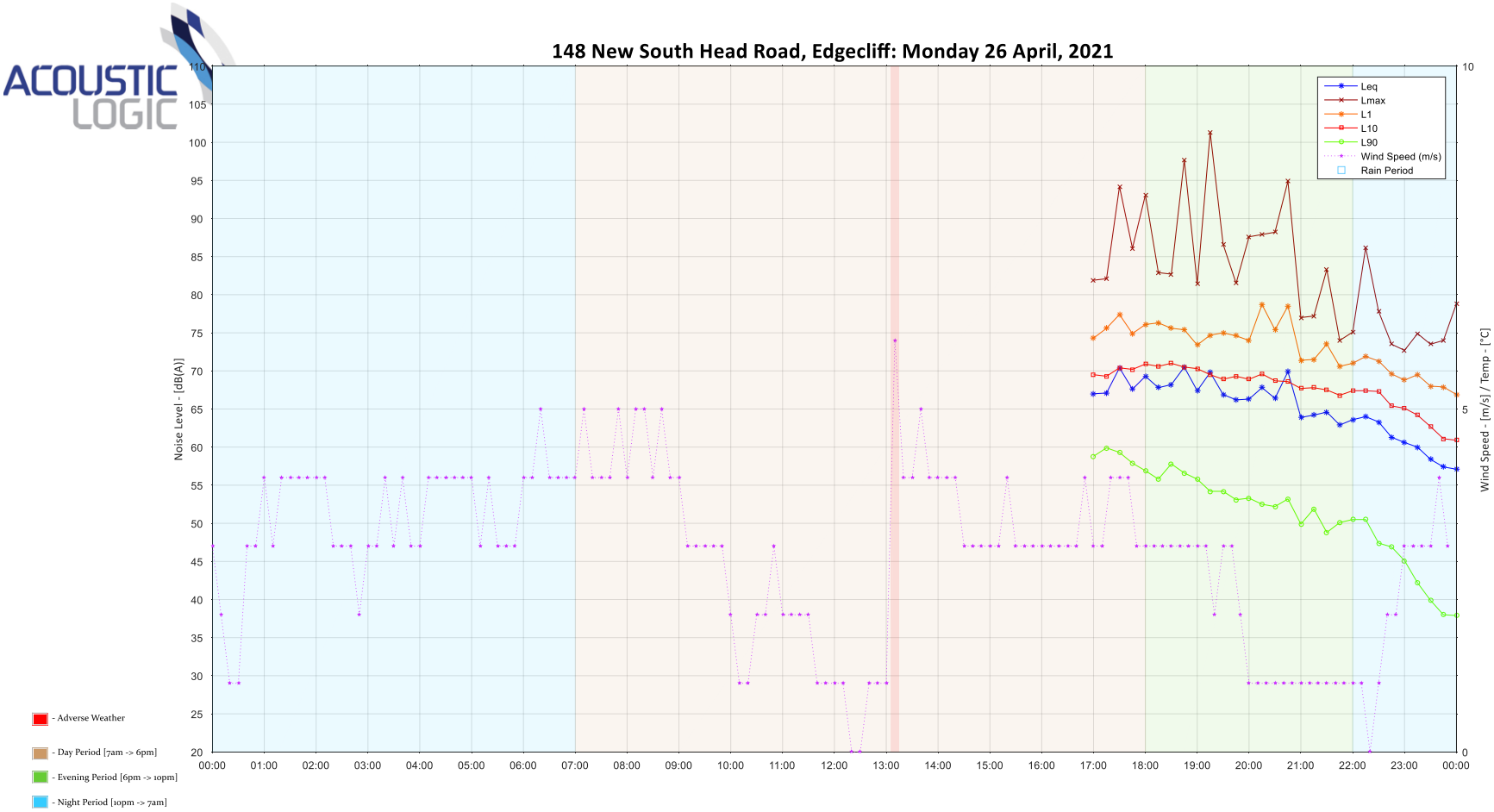
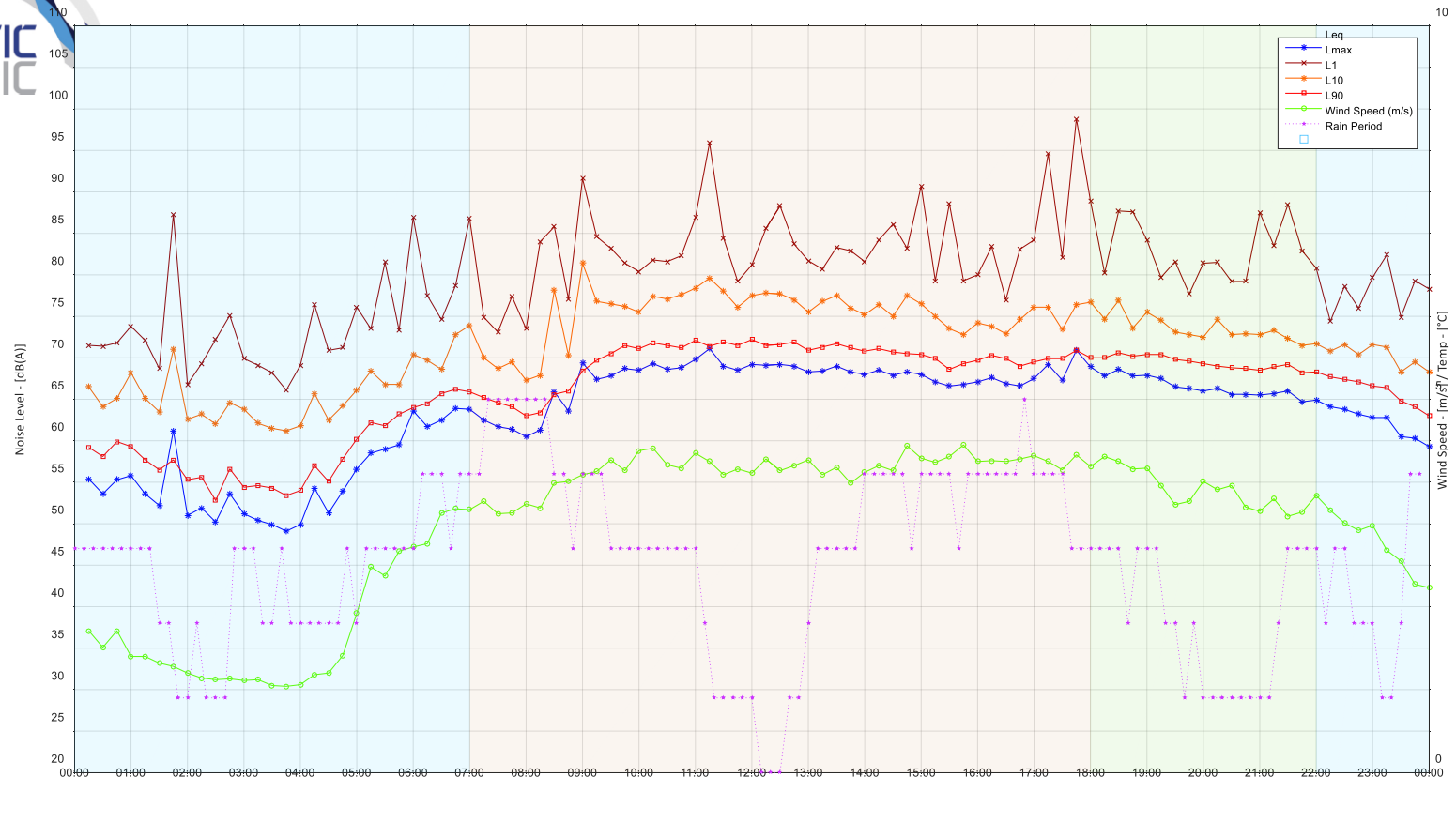
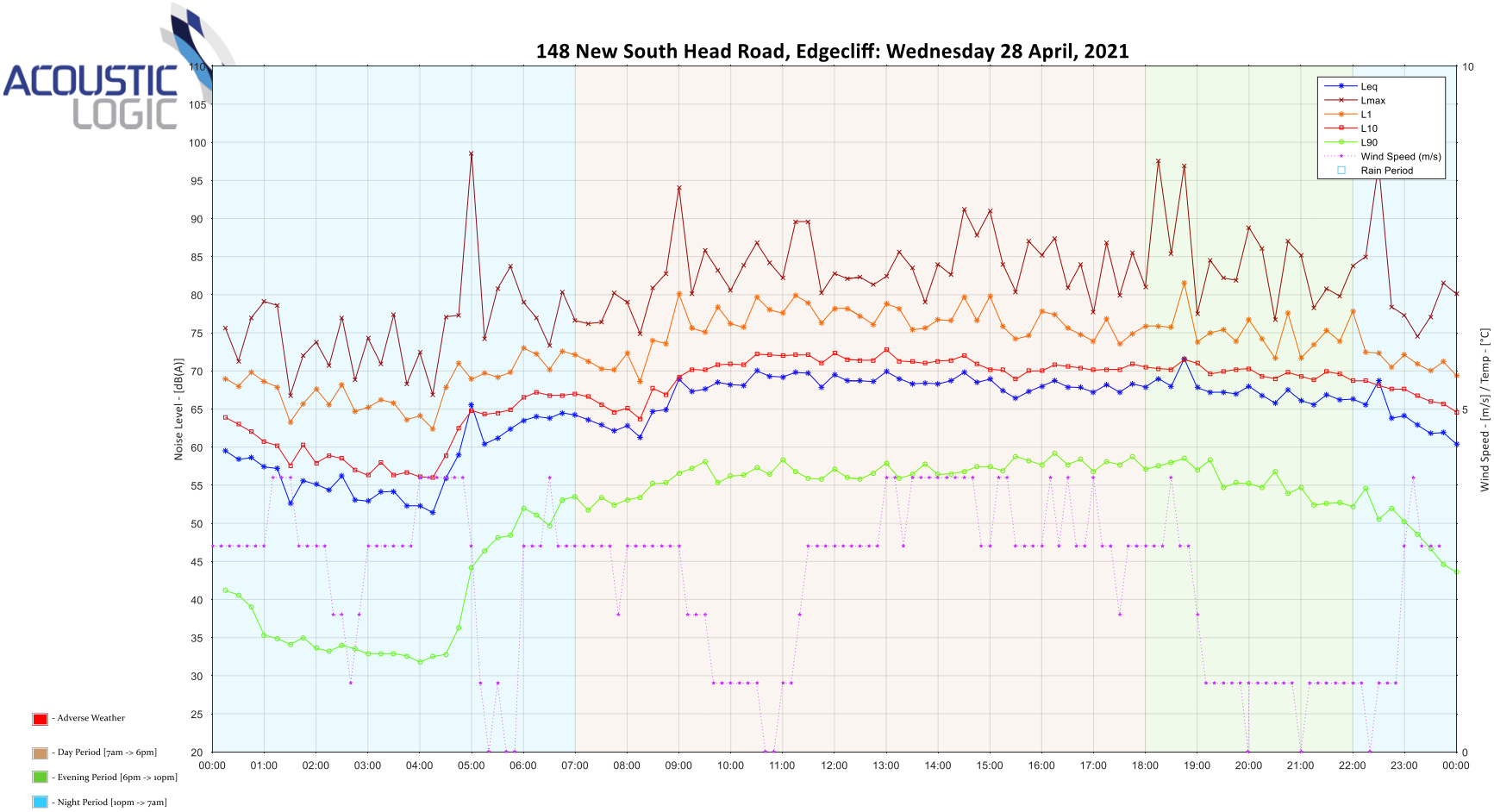
APPENDIX ONE – UNATTENDED NOISE MONITORING

142-146 NEW SOUTH HEAD ROAD, EDGECLIFF FACING NEW SOUTH HEAD ROAD

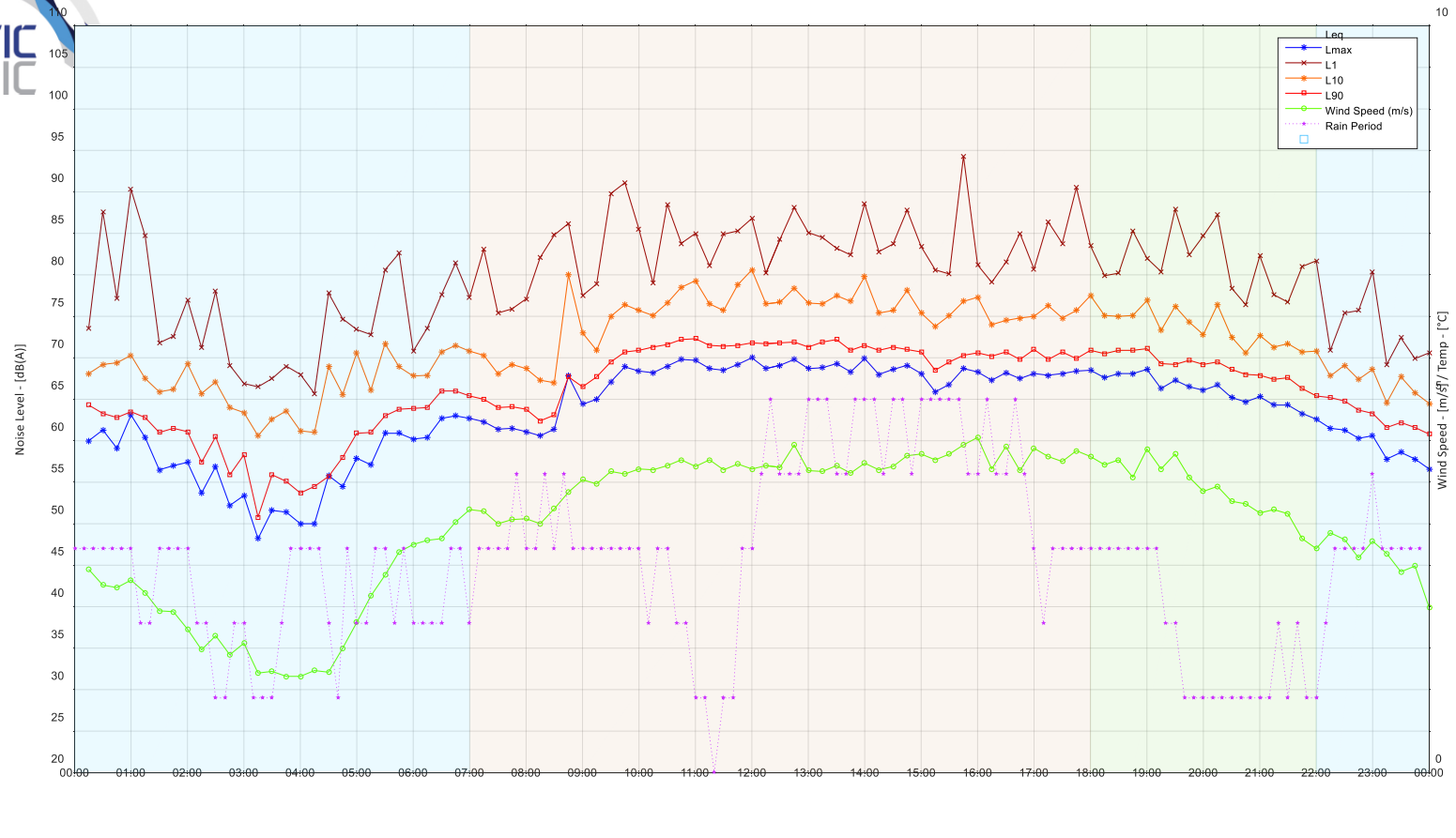

148 New South Head Road, Edgecliff: Monday 26 April, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

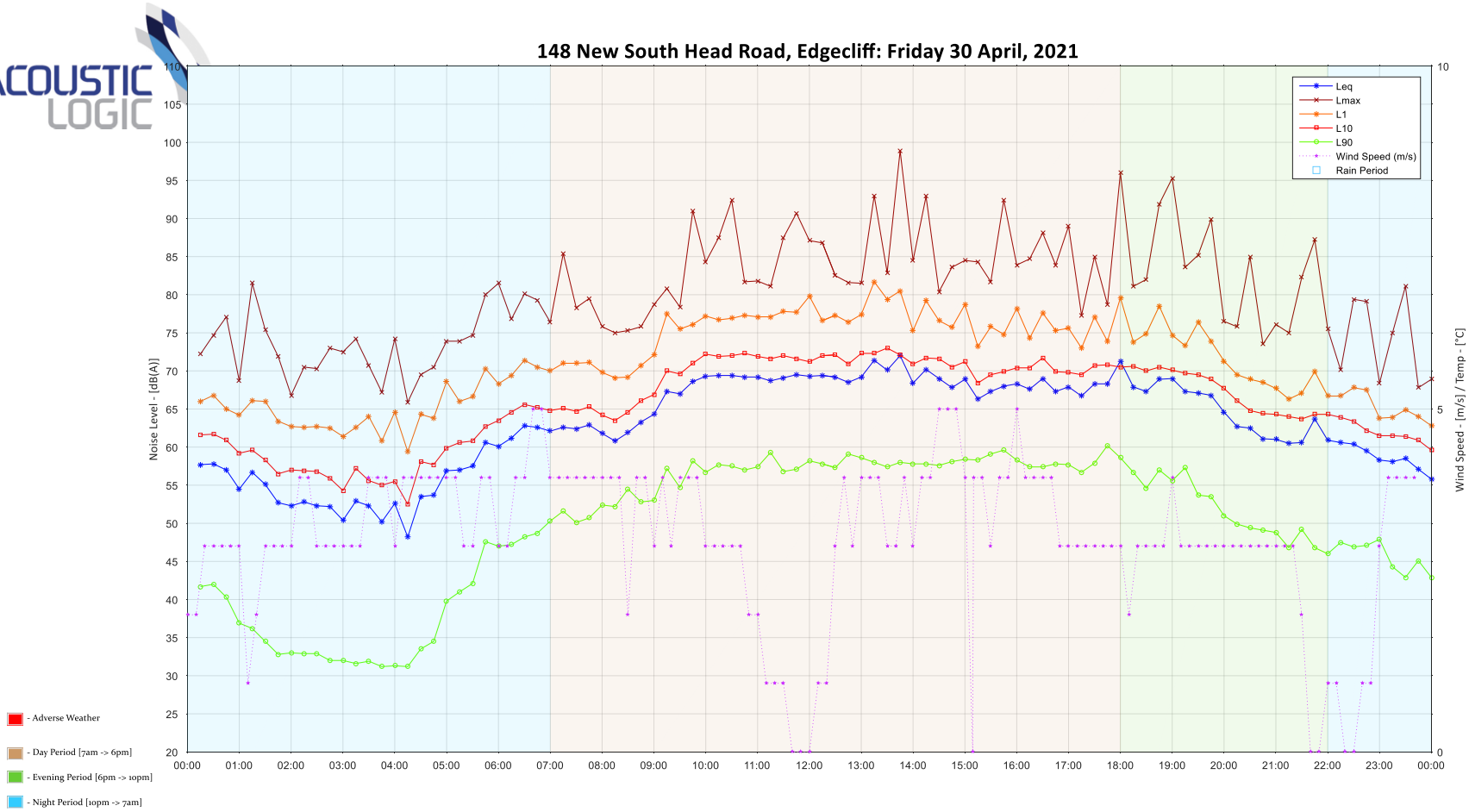
148 New South Head Road, Edgecliff: Tuesday 27 April, 2021

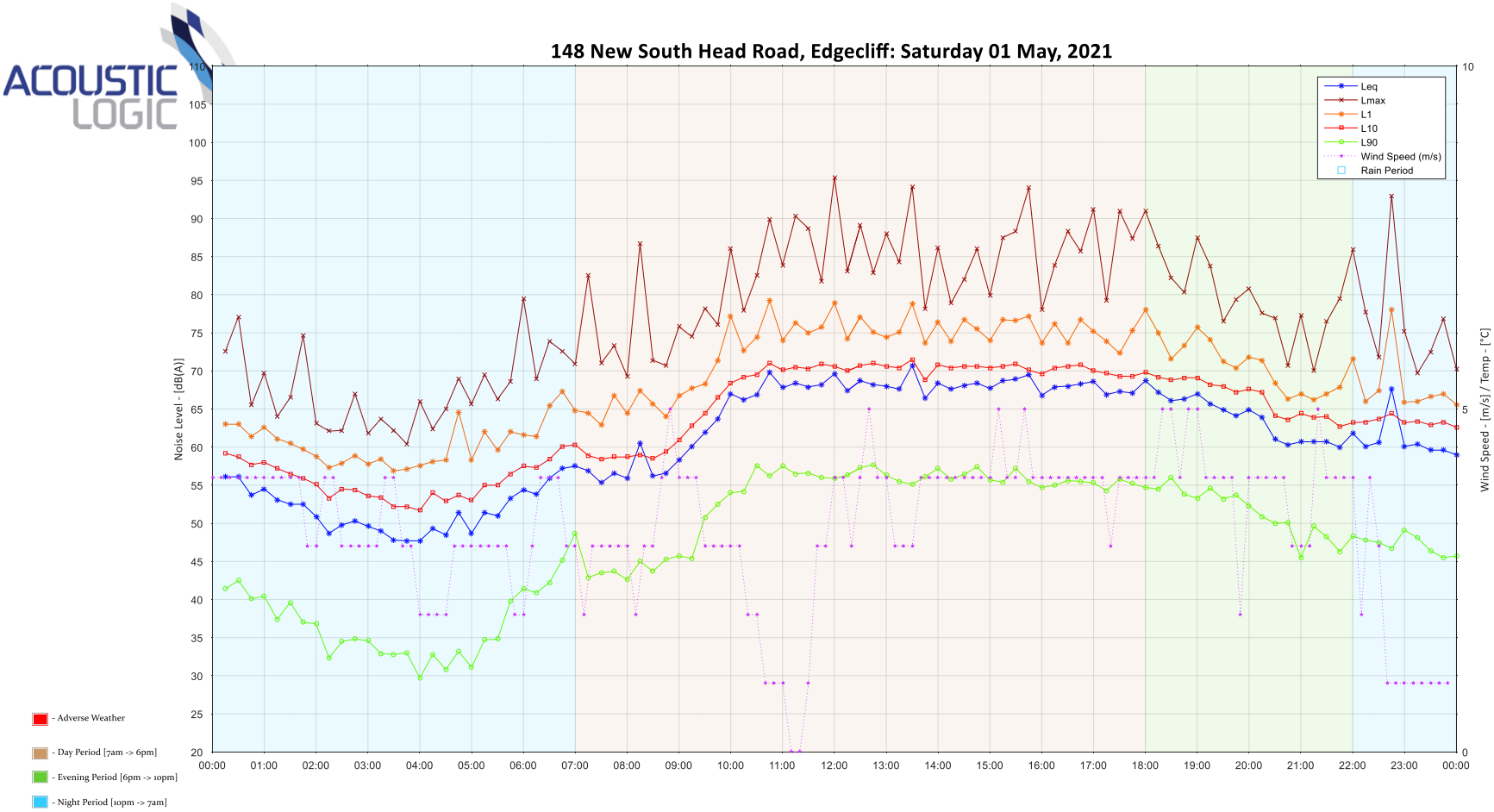


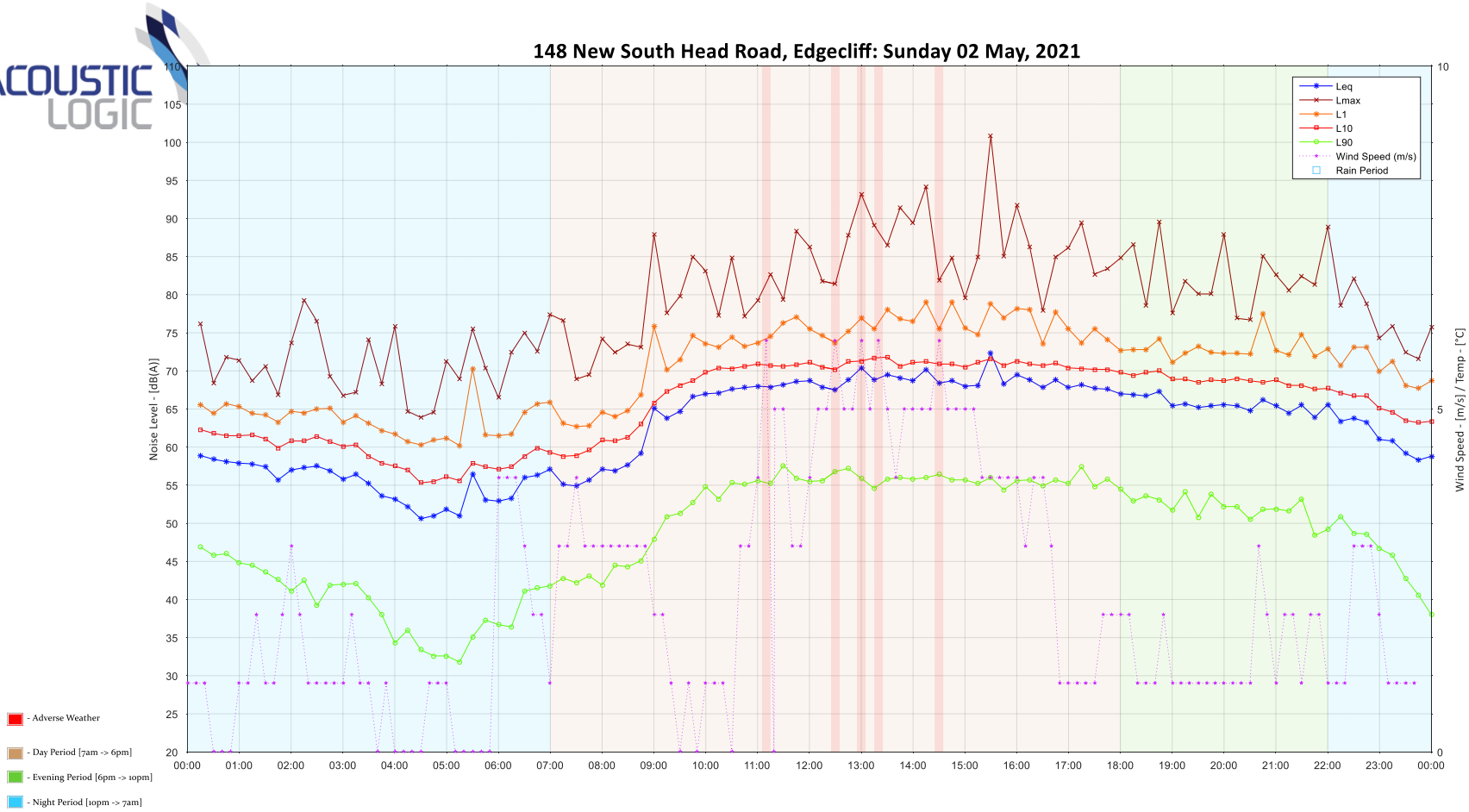

148 New South Head Road, Edgecliff: Wednesday 28 April, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

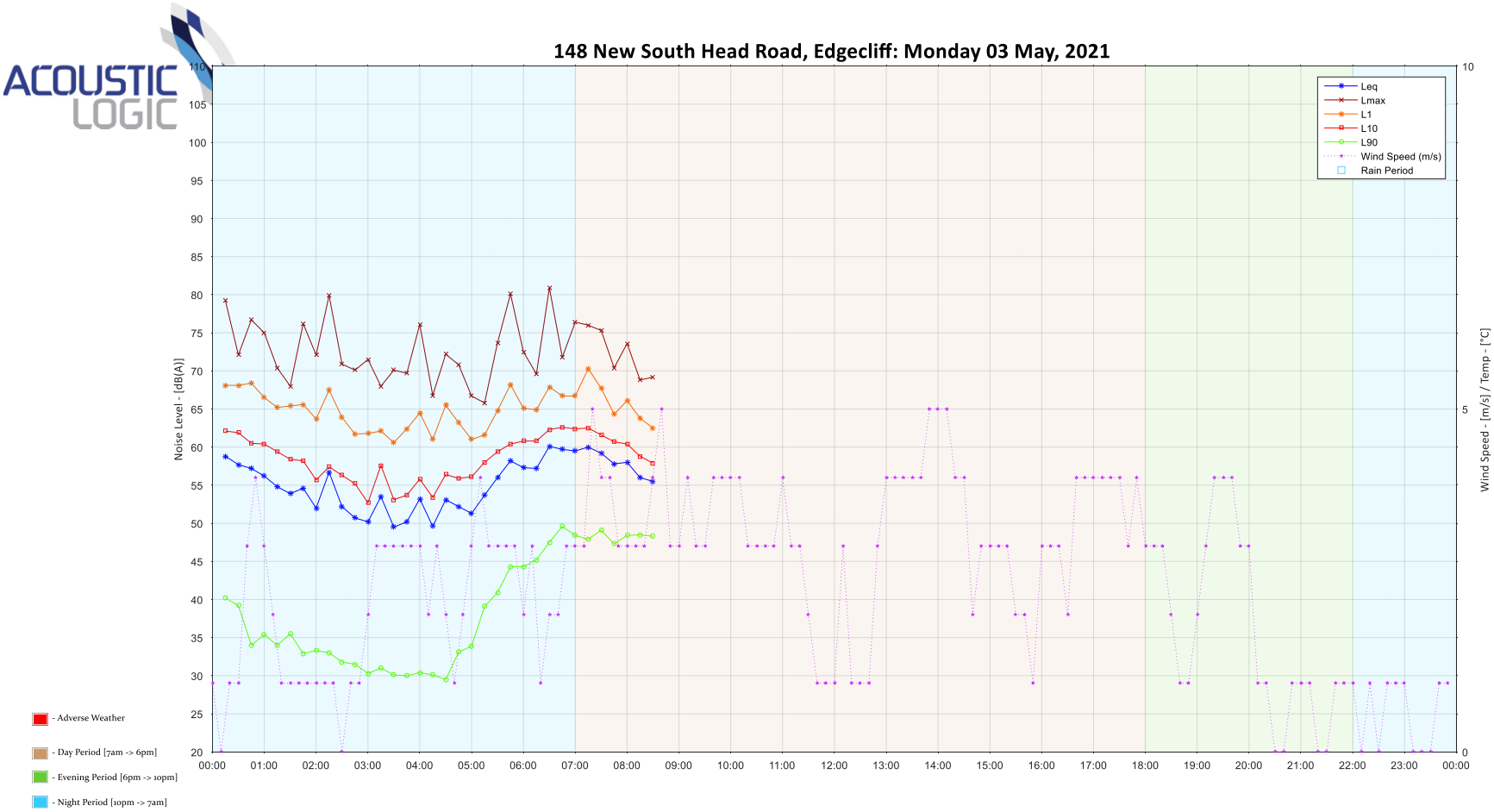
148 New South Head Road, Edgecliff: Thursday 29 April, 2021




148 New South Head Road, Edgecliff: Friday 30 April, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


148 New South Head Road, Edgecliff: Saturday 01 May, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


148 New South Head Road, Edgecliff: Sunday 02 May, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]


148 New South Head Road, Edgecliff: Monday 03 May, 2021
Noise Level - [dB(A)]
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]