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Sanctuary Point Library

DA Noise Impact Assessment

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1 INTRODUCTION

Acoustic Logic have been engaged to conduct an acoustic assessment of potential operational noise impacts associated with the proposed new Sanctuary Point Library to be constructed at 944-947 Corner of Paradise Beach Road & Kerry Street.

Acoustic Logic have utilised the following documents and regulations in the assessment of noise emanating from the development:

- Shoalhaven Development Control Plan (DCP) 2014*; and*
- NSW Environmental Protection Authority (EPA) document – *'Noise Policy for Industry (NPfI) 2017'*.

This assessment has been conducted using the architectural drawing set issued by Brewster Hjorth Architects, dated 9th August 2021, issued for DA.

2 SITE DESCRIPTION

The proposed new Library will serve as the Sanctuary Point Library. The new building will be a two-storey construction containing offices, amenities, communal areas, outdoor terrace and as well as general library spaces.

The proposed operating hours for the library fall between 9:30am and 5:00pm Monday to Friday, and 9.30am to 12pm on Saturday with potential for the outdoor terrace area to be hired out to community for use up to midnight Monday to Saturday. The library is proposed to be closed on Sundays.

Onsite acoustic investigation has been carried out by this office regarding the surrounding acoustic environment around the proposed development.

The nearest noise receivers around the project site include:

Closest Residential Receivers

R1: Single storey residence building located 97m south of the project site at 205 Kerry Street.

R2: Single storey residence building located 50m north of the project site at 185 Kerry Street.

R3: Double Storey hotel building located approximately 25 metres to the east from the site.

Non Residential Receivers

NR1: Single Storey Bendigo Bank located immediately south of the project site, at 198 Kerry Street.

NR2: Single Storey commercial buildings located approximately 25 metres on the western side of Kerry Street from the site.

NR3: Double Storey Country Club building located approximately 30 metres on the northern side of Paradise Beach Road from the site.

NR4: Francis Ryan Reserve located approximately 75 metres to the south east from the site.

A site map and surrounding receivers are presented in figure 1 below.

Figure 1 – Aerial View of Site & Receivers with Monitor Location

Project Site

Residential Receiver

Commercial Receiver

Unattended Noise Monitor

3 ENVIRONMENTAL 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 15-20 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.

The L_1 parameter (or the noise level exceeded for 1% of the time) is used during the night period to assess potential sleep arousal effects due to transient noise sources.

4 EXISTING ACOUSTIC ENVIRONMENT

4.1 NOISE LEVEL MEASUREMENTS

4.1.1 Unattended Noise Monitoring

The background noise monitoring undertaken as part of this assessment was conducted between 4th May and 14th May 2021 using an unattended noise monitor, the monitor was installed at the southern boundary of the Sanctuary Point- Francis Ryan Reserve. The site location was chosen to as it is a site more indicative of local residential premises.

Equipment used consists of an Acoustic Research Laboratories Pty Ltd noise logger, the logger was calibrated before and after the measurement using a Rion NC-74 calibrator; no significant drift was detected. Details of the recorded noise levels are included in Appendix 1.

Table 1 – Measured Background Noise Levels

Location	Period	Measured Background $L_{90,15min}$ dB(A)
Southern Boundary of Sanctuary Point- Francis Ryan Reserve. See Figure 1 for Logger Location	Day (9.30am – 6pm)	39
	Evening (6pm – 10.00pm)	38
	Night (10.00pm to midnight)	33

Note: As the library hours of operation are proposed to be from 9.30 till 5pm Monday to Friday and 9.30 to 12pm on Saturday, with potential for the outdoor terrace area to be hired out to community for use up to midnight Monday to Saturday this will be the time period to be assessed for the purposes of this report.

5 ACOUSTIC CRITERIA

A noise emission assessment has been carried out to ensure noise emitted from the use of the site is in accordance with the requirements listed below:

- Shoalhaven Development Control Plan (DCP) 2014*; and*
- NSW EPA Noise Policy for Industry (NPfI) - 2017

5.1 SHOALHAVEN DEVELOPMENT CONTROL PLAN (DCP) 2018

The Shoalhaven DCP does not have any specific noise emission criteria. Therefore, the NSW EPA *Noise Policy for Industry* (NPfI) *2017* will be adopted.

5.2 NSW EPA INDUSTRIAL NOISE POLICY FOR INDUSTRY 2017

The NSW EPA Noise Policy for Industry 2017, has two criteria which need to be satisfied; namely the Intrusiveness noise level criteria and the Project amenity noise level criteria. The project noise trigger level is then established based on the lower of the intrusiveness and project amenity levels.

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

5.2.1.1 Intrusiveness Noise Level Criteria

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 do 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 Section 4.1.1. Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

Table 2 – Intrusiveness Noise Level Criteria

Location	Period/Time	Intrusiveness Noise Level Criteria dB(A) $L_{eq(15min)}$
Nearby Residences	Day (9.30am – 6pm)	44
	Evening (6pm – 10.00pm)	43
	Night (10.00pm to midnight)	38

Note: As the library hours of operation are proposed to be from 9.30 till 5pm Monday to Friday and 9.30 to 12pm on Saturday, with potential for the outdoor terrace area to be hired out to community for use up to midnight Monday to Saturday this will be the time period to be assessed for the purposes of this report.

5.2.1.2 Project Amenity Noise Level Criteria

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 NSW EPA Industrial noise policy sets out acceptable noise levels for various localities. Table 2.2 on page 11 of the policy indicates 3 categories to distinguish different residential areas. They are rural, suburban, urban. This site is categorised by suburban receivers.

For the purposes of this condition:

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

Due to the proposed hours of operation being during the day time period, for the purposes of this report we will only be applying the day time period to residential receivers.

The project amenity noise level is calculated by taking the recommended amenity noise level (as presented in table 2.2 of the policy), subtracting 5dB(A) and then adding 3dB(A) to convert from $L_{Aeq,\ period}$ to a $L_{Aeq,\ 15\ minute}$ descriptor. The project amenity noise level criteria are presented in the table below.

Table 3 – Project Amenity Noise Level Criteria

Location	**Period/Time**	**Project Amenity Noise Level Criteria dB(A) $L_{eq(15min)}$**
Nearby Residences – Suburban Receiver	Day (9.30am – 6pm)	53
	Evening (6pm – 10.00pm)	43
	Night (10.00pm to midnight)	38
Commercial	When in use	63
Active Recreation Area	When in use	55

5.2.2 Noise Emission Objectives

The noise emission objectives to govern the project have been established from the intrusive and amenity criterion under the NPfI and are presented in the Table below. Noise emissions shall comply with the strictest of the two criteria.

Table 4 – Summary of Noise Emission Criteria

Location	Period/Time	Recommended Acceptable Noise Level dB(A) $L_{eq(15min)}$
Nearby Residences	Day (9.30am to 5pm)	44
	Evening (6pm – 10.00pm)	43
	Night (10.00pm to midnight)	38
Commercial	When in use	63
Active Recreation Area	When in use	55

Note: As the library hours of operation are proposed to be from 9.30 till 5pm Monday to Friday and 9.30 to 12pm on Saturday, with potential for the outdoor terrace area to be hired out to community for use up to midnight Monday to Saturday this will be the time period to be assessed for the purposes of this report.

6 NOISE EMISSION ASSESSMENT

6.1 PATRON NOISE

The proposed development includes a number of locations patrons can gather/utilise. These areas are as follows:

- Outdoor Terrace located on level one at the southern side of the development;
- Multi-Purpose Room located internally;
- A number of reading spaces, meeting rooms and the like all located internally.

The areas in which patrons congregate which are internal spaces will have glazing to protect the acoustic amenity of the surrounding receivers. It is also proposed to have a large Multi-Purpose room on Ground floor which is completely enclosed.

See section 7 for recommendations to ensure development's operations are compliant with noise emission criteria outlined in section 5 of this report.

6.1.1 Noise Emission from Outdoor Terrace Area

The outdoor terrace area has been assessed for occupants of the library building using the area for general library reading, classroom and as a talks, meetings or gatherings area. Larger events with amplified music are not proposed.

The following numbers are proposed for the different activities in the outdoor terrace:

- Up to 38 patrons occupying the outdoor terrace for library reading;
- Up to 38 patrons occupying the outdoor terrace for classroom purposes;
- Up to 75 patrons occupying the outdoor terrace for talks, meetings or gatherings purposes;

The assessment has been based on the following and the outdoor terrace being used for talks, meetings or gatherings purposes as this would be deemed the loudest proposed activity:

- Up to 75 patrons occupying the outdoor terrace for talks, meetings or gatherings purposes;
- 1 in 3 patrons talking with a raised voice at any one time;
- Outdoor terrace to be closed between midnight and 9.30am
- Patrons talking with a raised voice with a sound power level of 77dB(A) L_{10}.
- Constructions as per the architectural drawings dated 9/8/2021
- Recommendations in Section 7 are implemented.

6.1.1.1 Predicted Noise Levels At Closest Affected Receivers

Noise levels at the receivers were predicted based on the noise levels and conditions presented above.

Table 5 summaries the predicted noise levels at the nearest receivers.

Table 5 – Assessment of Outdoor Terrace Noise Emissions

Location/Activity	Receiver	Predicted Noise Level at Residence $L_{eq,15min}$	Allowable Noise Level at Residence $L_{eq,15min}$
Outdoor Terrace used for talks, meetings or gatherings	R1 Residential Receiver to South	<33 dB(A)	44 dB(A) Day 43 dB(A) Evening till 7.30pm 38 dB(A) Night – 10pm to midnight
	R2 Residential Receiver to North	<34 dB(A)	44 dB(A) Day 43 dB(A) Evening till 7.30pm 38 dB(A) Night – 10pm to midnight
	R3 Hotel Receiver to the east	<37 dB(A)	44 dB(A) Day 43 dB(A) Evening till 7.30pm 38 dB(A) Night – 10pm to midnight
	NR1 Commercial Receiver to the south	<63 dB(A)	63 dB(A)
	NR2 Commercial Receiver to the west	<54 dB(A)	63 dB(A)
	NR3 Commercial Receiver to the north	<34 dB(A)	63 dB(A)
	NR4 Active Recreation Area Receiver to the south west	<35 dB(A)	63 dB(A)

6.1.2 Mechanical Plant

Mechanical plant items are not typically selected at selected at DA stage.

Detailed plant selection have not been undertaken at this stage. As plant selections have not been determined., detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels. Satisfactory levels will be achievable through appropriate plant selection and location and, if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services plant to the closest residential receiver should comply with the noise emission criteria in Section 5.

7 RECOMMENDATION

7.1 MINIMUM CONSTRUCTIONS

Glazing

- All glazing along the façades shall be fitted with minimum 6.38mm laminate glazing, with both glass and frame to achieve a minimum Rw rating of 31.

7.2 MANAGEMENT CONTROLS

- Amplified music is not permitted in any external areas.
- Conduct a Detailed acoustic review of mechanical plant at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels (following final equipment selections)

8 CONCLUSION

This report presents an acoustic assessment of potential noise impacts associated with the proposed new Sanctuary Point Library to be constructed at 944-947 Corner of Paradise Beach Road & Kerry Street.

This document addresses noise impacts associated with noise emissions from operation of the building (in principle).

Provided the recommendations outlined in section 7 of this report, noise emissions can comply with the following criteria:

- Shoalhaven Development Control Plan (DCP) 2014*; and*
- NSW Environmental Protection Authority (EPA) document – *'Noise Policy for Industry (NPfI) 2017'*.

Detailed acoustic control measures for the plant servicing the proposed development will be determined at CC stage.

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

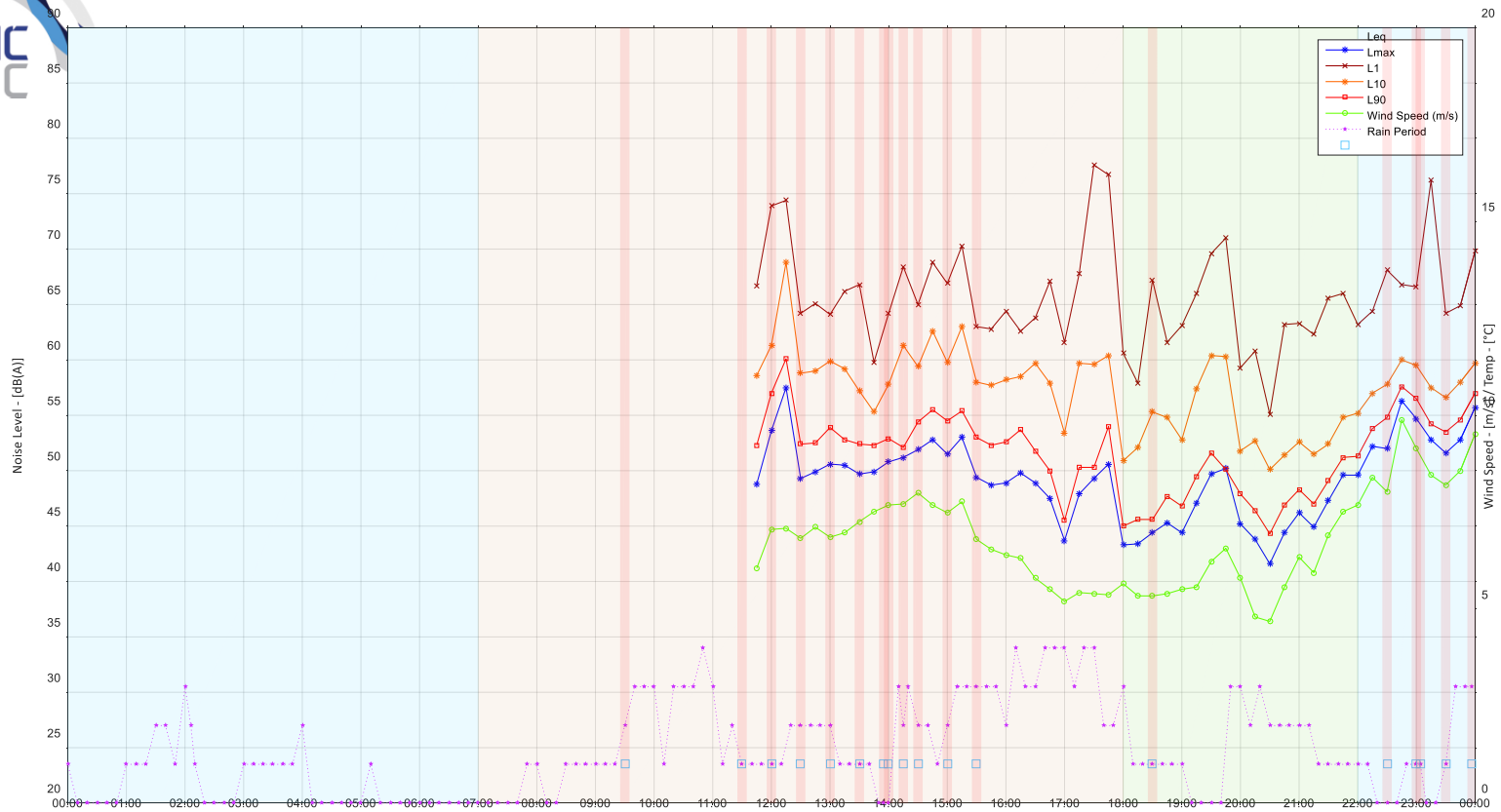
Yours faithfully,

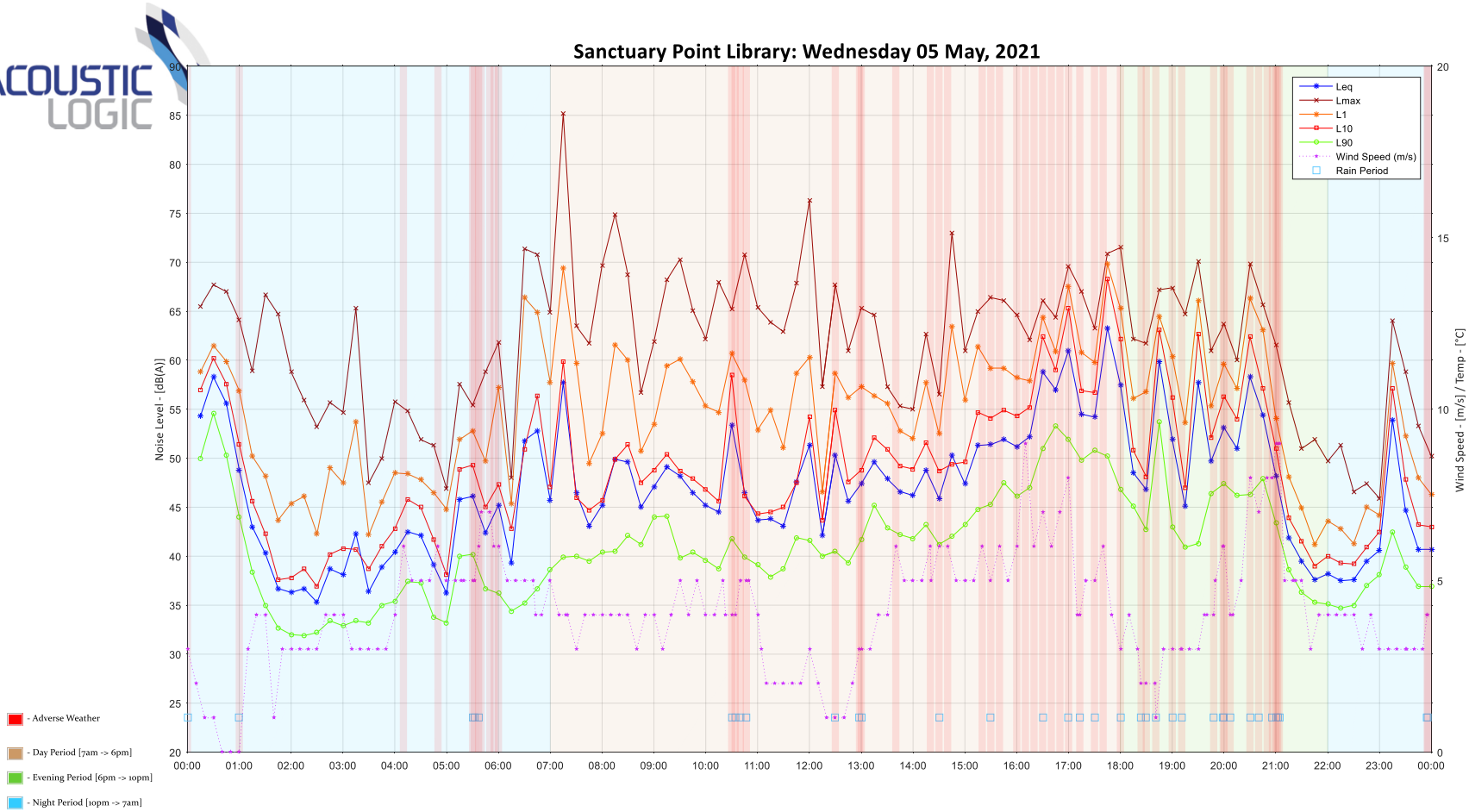
Acoustic Logic Pty Ltd
Glen Campbell

APPENDIX 1

Unattended Noise Monitoring Data

Sanctuary Point Library: Tuesday 04 May, 2021




Sanctuary Point Library: Wednesday 05 May, 2021
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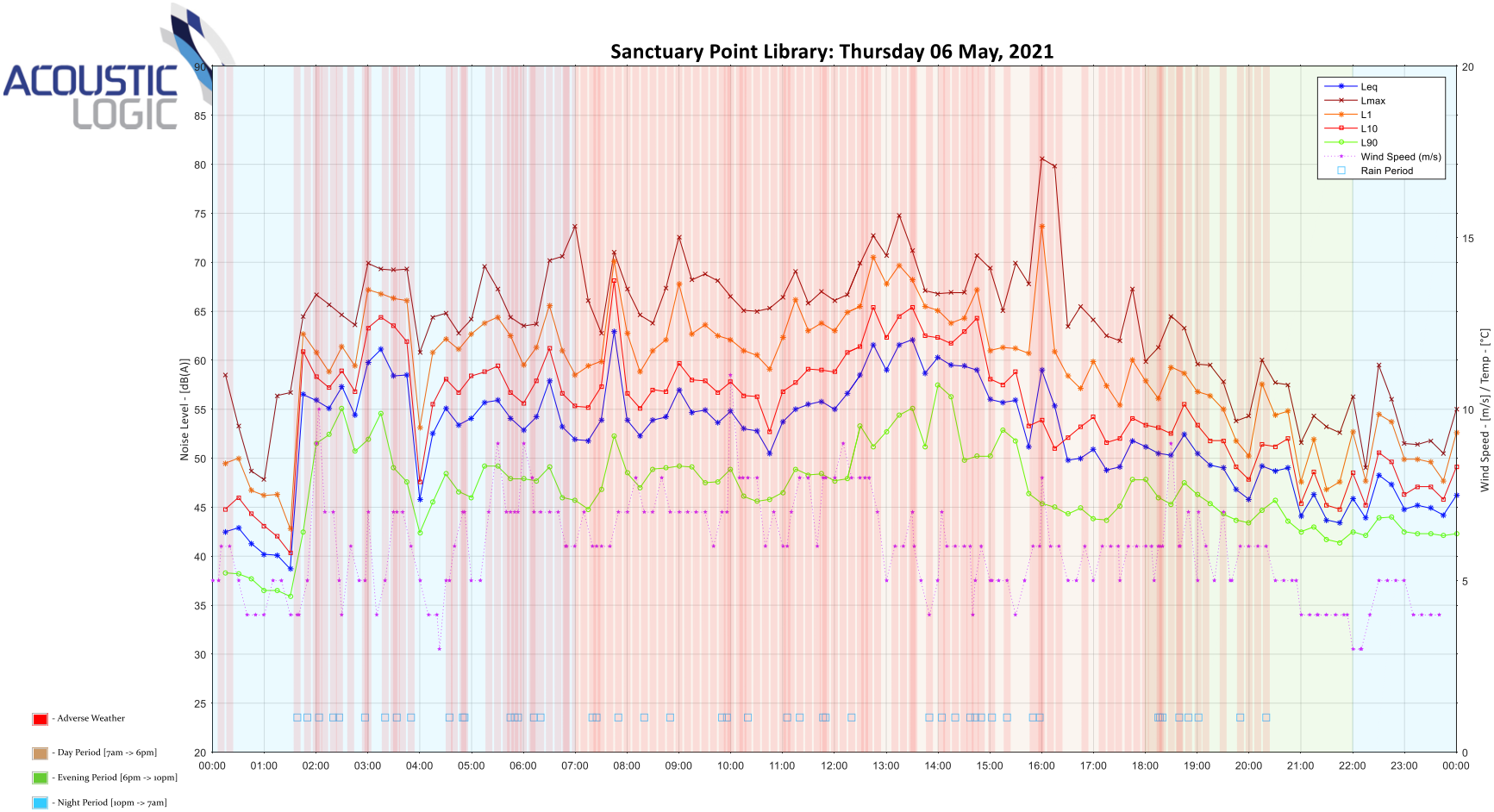
Wind Speed - [m/s] / Temp - [°C]
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]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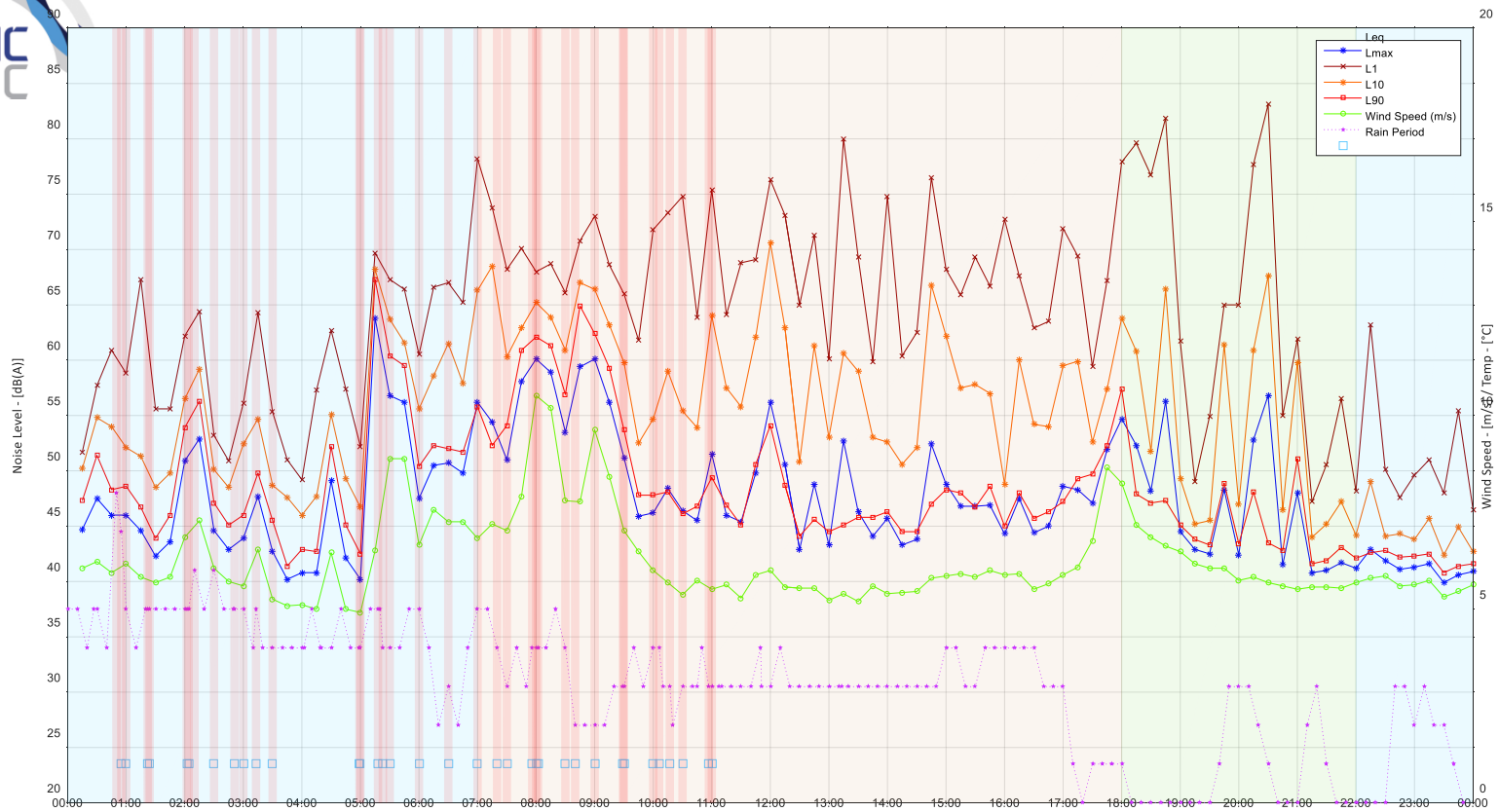
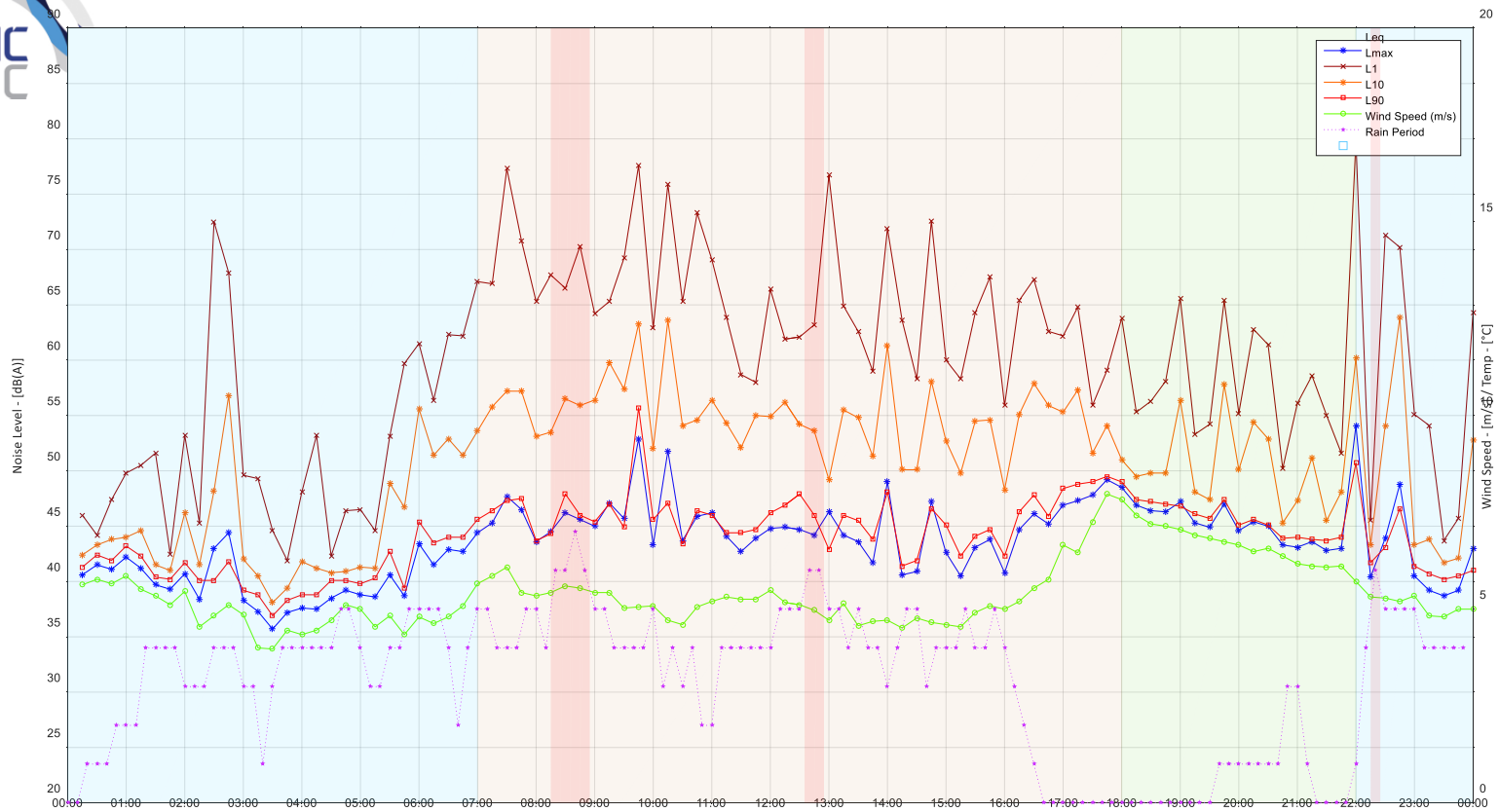
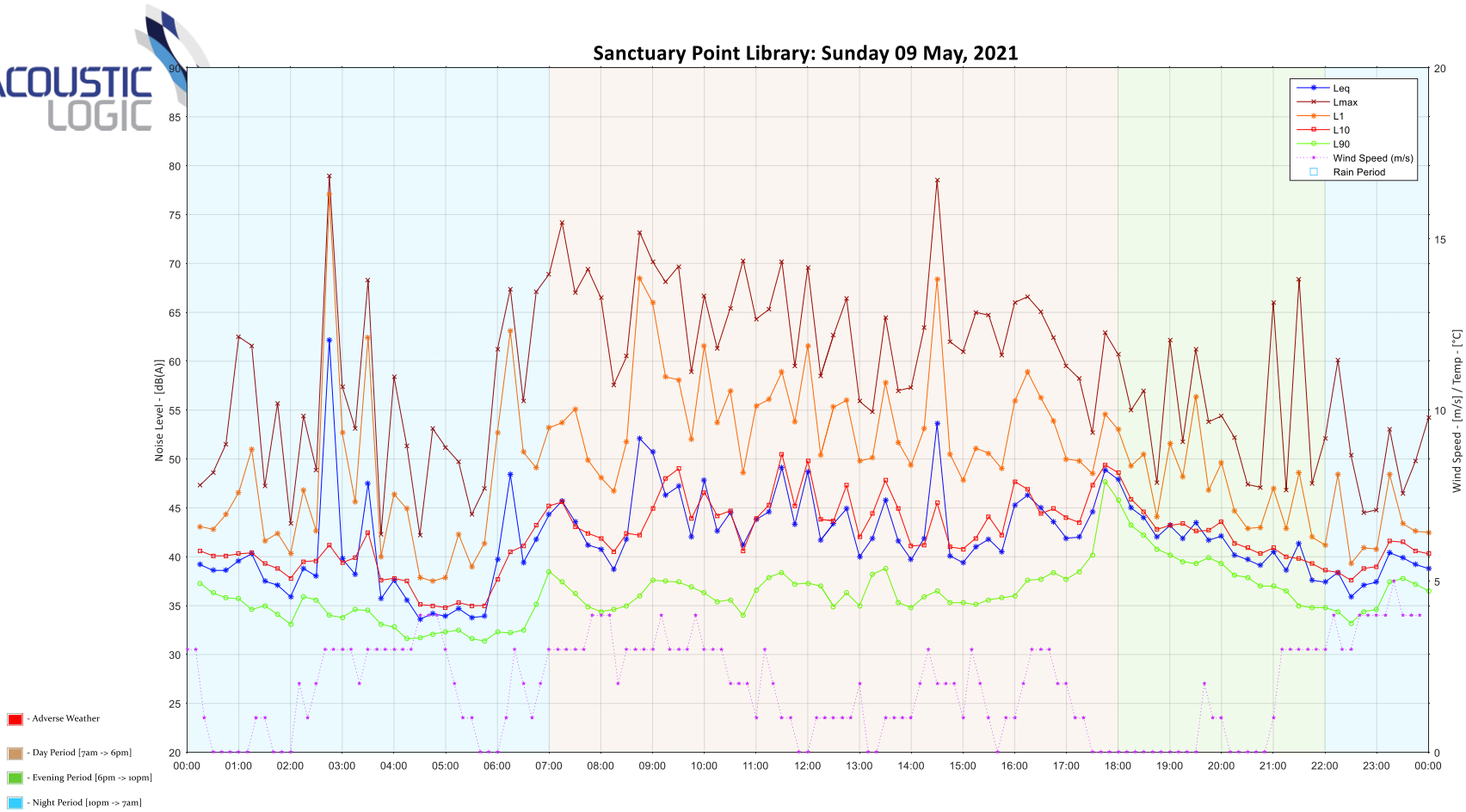
Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

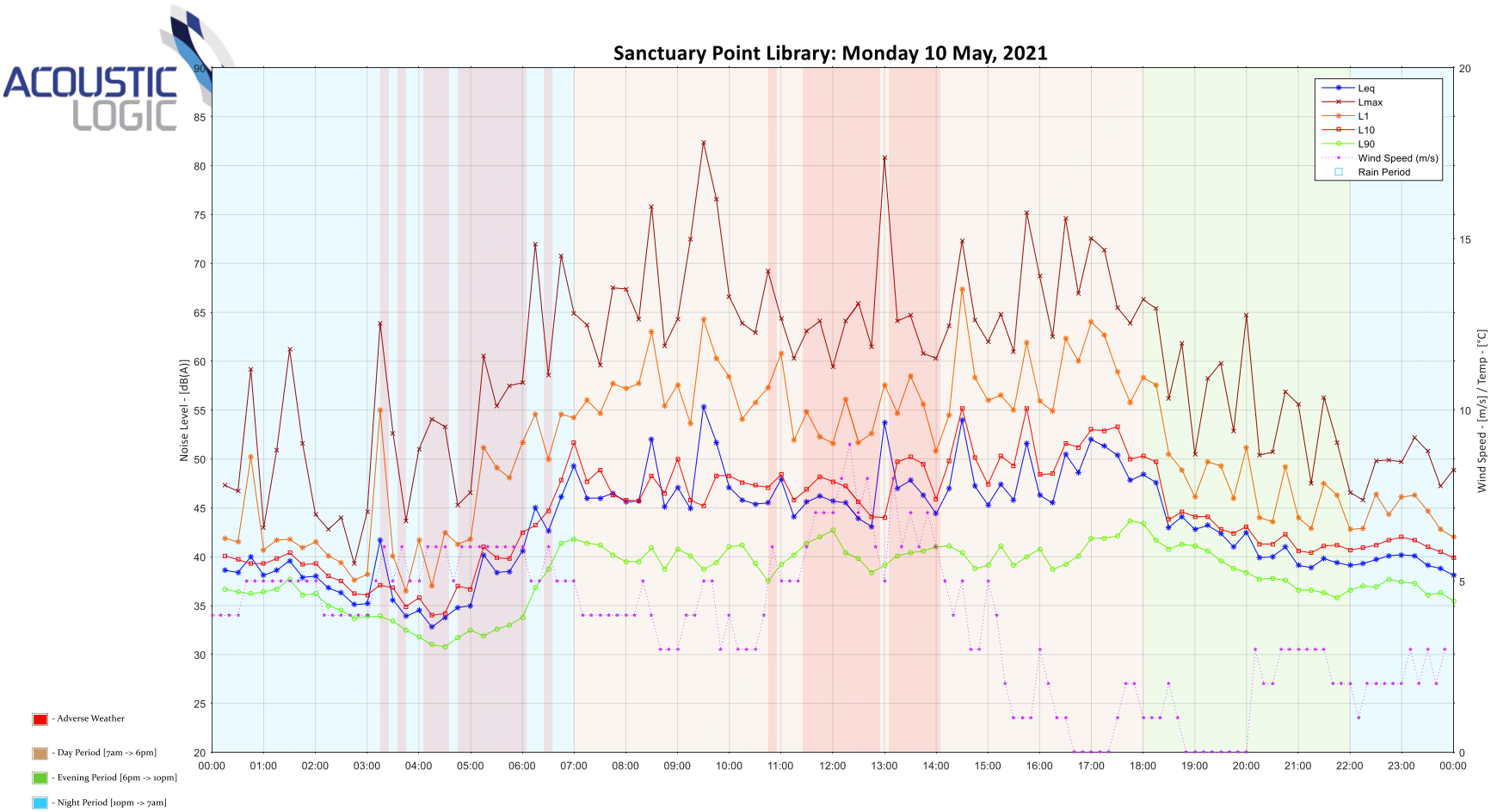
Sanctuary Point Library: Friday 07 May, 2021



Sanctuary Point Library: Saturday 08 May, 2021




Sanctuary Point Library: Sunday 09 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]


Sanctuary Point Library: Monday 10 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
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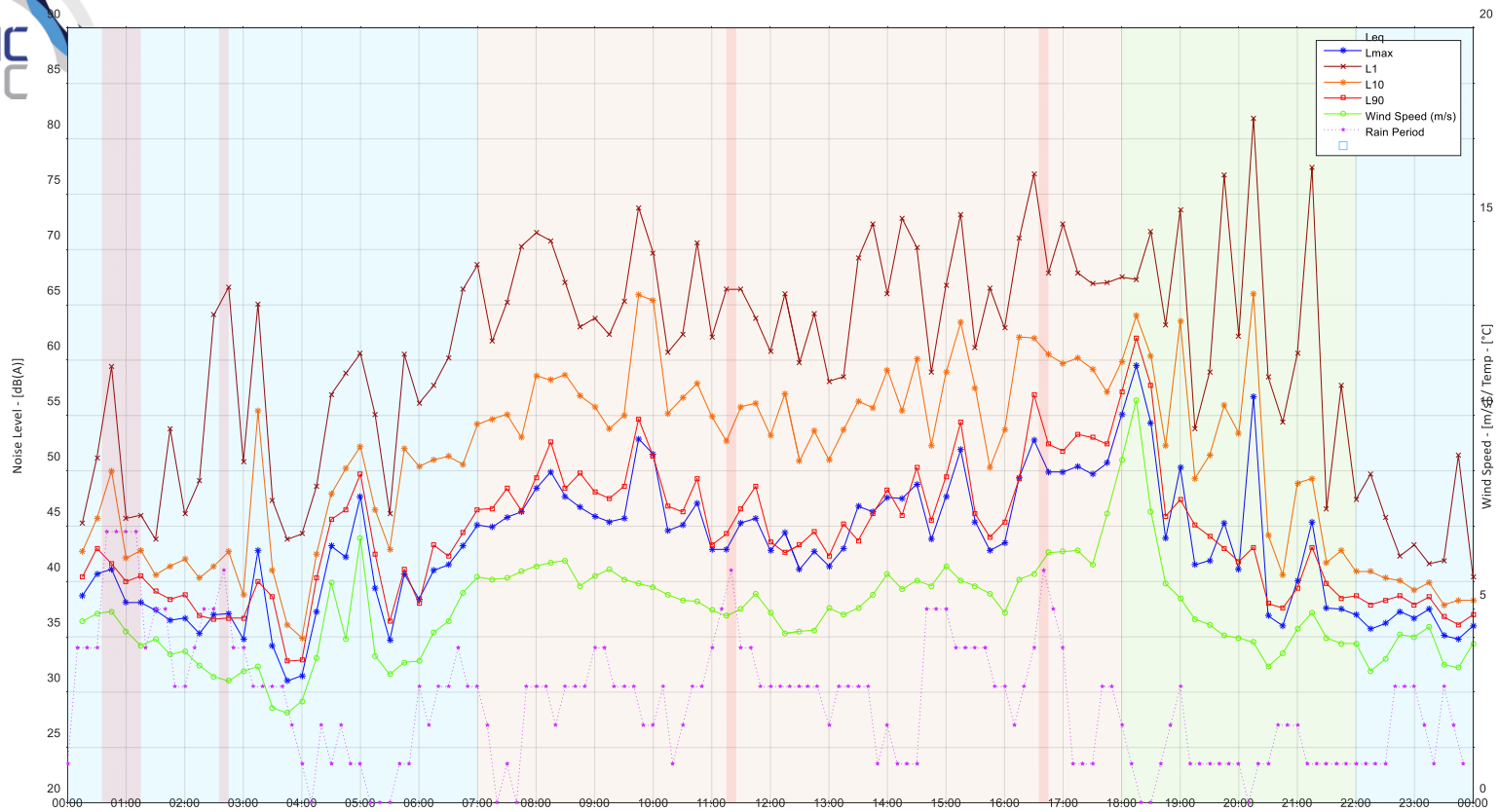
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]

Sanctuary Point Library: Tuesday 11 May, 2021



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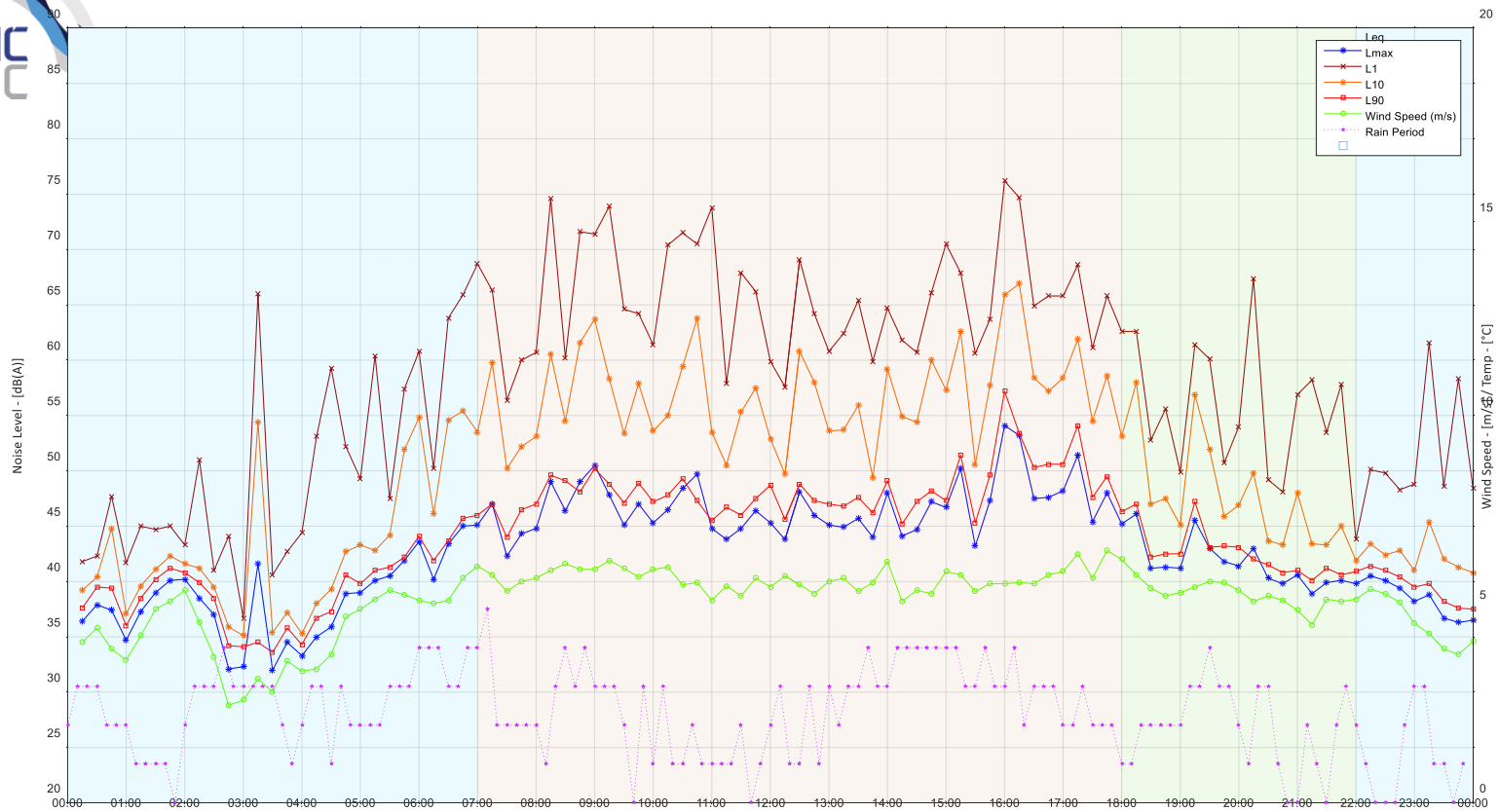

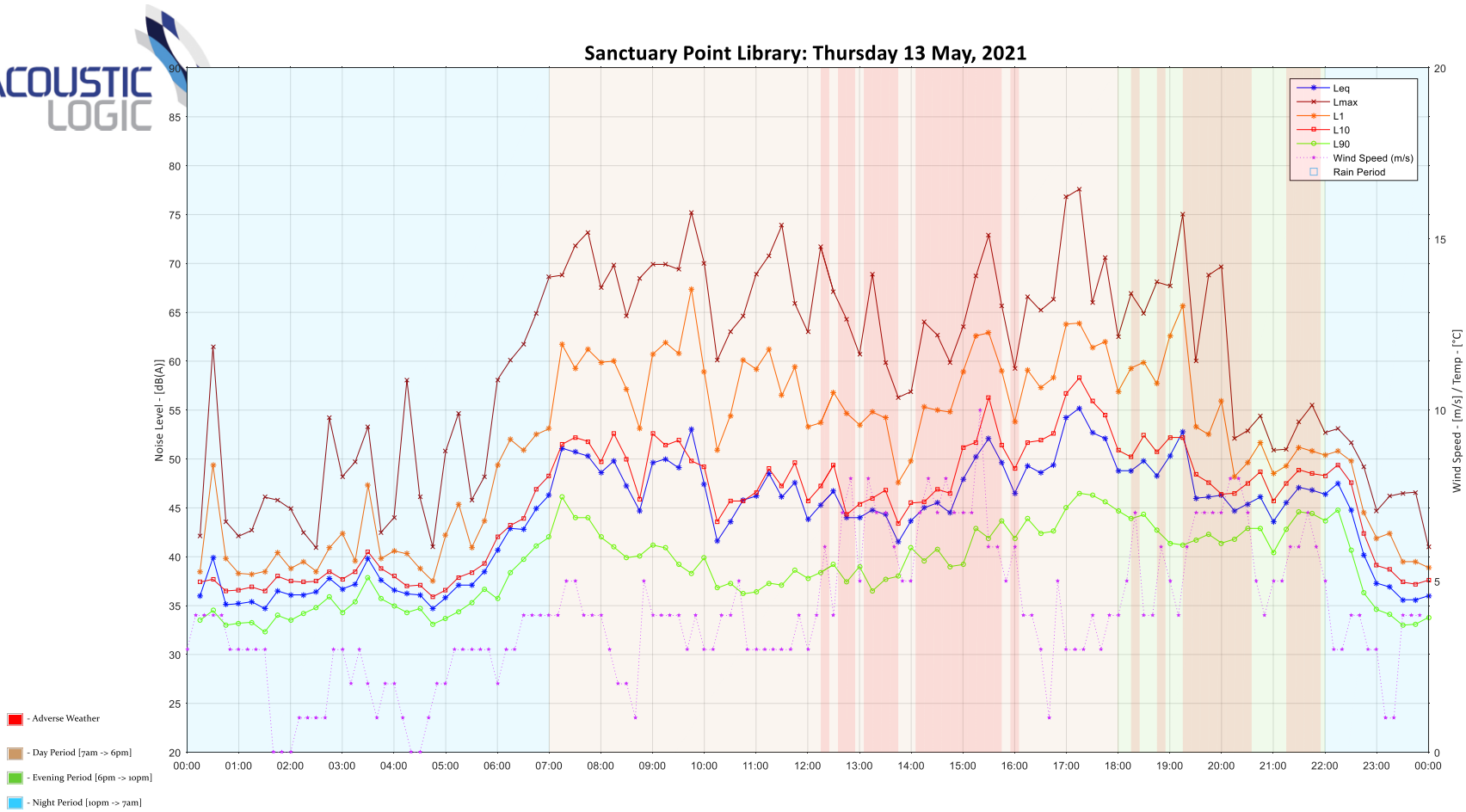
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Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
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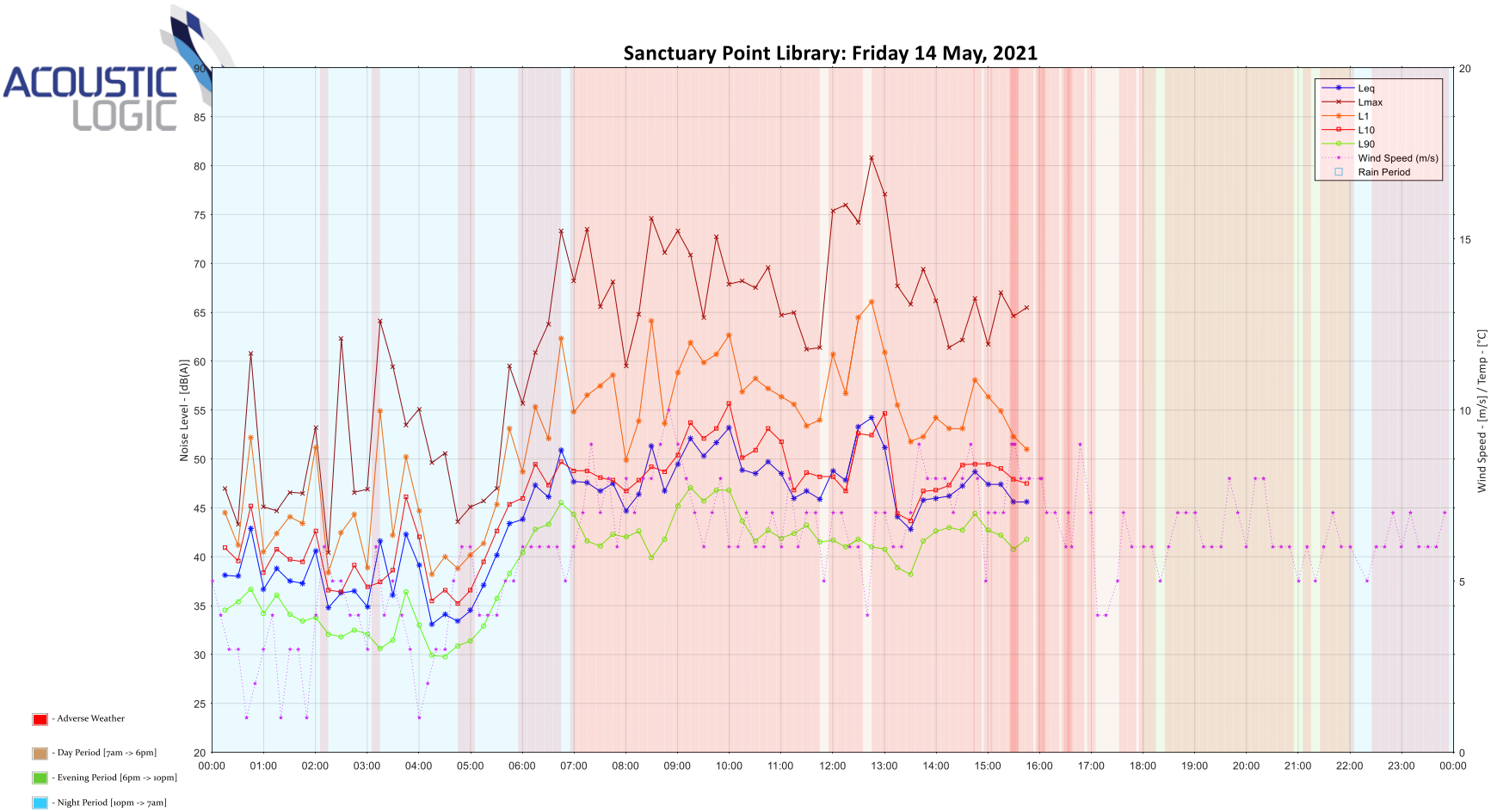
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Leq
Lmax
L1
L10
L90
Wind Speed (m/s)
Rain Period
- Adverse Weather
- Day Period [7am -> 6pm]
- Evening Period [6pm -> 10pm]
- Night Period [10pm -> 7am]