

Lot 1, 63-67 The Corso, Manly

Noise Impact Assessment

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1 INTRODUCTION

This report presents an acoustic assessment of the potential noise impacts associated with the proposed restaurant and live entertainment venue to be located at Lot 1, 63-67 The Corso, Manly.

This document addresses noise emissions associated with the operation of the site based on the proposed extensions to the outdoor patron areas.

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

- Northern Beaches Council (formerly Manly Council) *Development Control Plan (DCP) 2013*;
- NSW Liquor & Gaming (NSWL&G) noise requirements; and
- NSW EPA *Noise Policy for Industry (NPfI) 2017*.

This assessment has been conducted using the Grain architects drawings dated 1st of December 2021.

2 SITE DESCRIPTION AND THE PROPOSAL

The project site is located at Lot 1, 63-67 The Corso, Manly. The proposed development consists of a restaurant fit out within the existing ground floor of the building with a mezzanine level. The restaurant will front onto The Corso.

2.1 NEAREST SENSITIVE RECEIVERS

The following table lists the nearest sensitive receivers surrounding the site. An aerial photo of the site indicating nearby noise sensitive receivers and measurement locations is presented in Figure 1.

Table 1 – Sensitive Receivers

Receiver (Refer Figure 1)	Land Use	Comment
R1	Hostel	Existing boarding house located above the proposed restaurant within 63-67 The Corso, Manly.
R2	Commercial	Licensed venue (New Brighton Hotel) neighbouring the development to the east.
R3	Commercial	Two storey commercial building to the west.
R4	Residential	Closest residential receiver located at 72 The Corso Manly



3 AMBIENT NOISE MONITORING

Monitoring has been undertaken to determine background noise levels representative of the surrounding properties. Figure 1 above shows the monitoring locations used.

3.1 NOISE DESCRIPTORS

Ambient noise constantly varies in level from moment to moment, so it is not possible to accurately determine prevailing noise conditions by measuring a single, instantaneous noise level.

To quantify ambient noise, a 15 minute measurement interval is typically utilised. Noise levels are monitored continuously during this period, and then statistical and integrating techniques are used to characterise the noise being measured.

The principal measurement parameters obtained from the data are:

L_{eq} - represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. **L_{eq}** is important in the assessment of noise impact as it closely corresponds with how humans perceive the loudness of time-varying noise sources (such as traffic noise).

L₉₀ - This is commonly used as a measure of the background noise level as it represents the noise level heard in the typical, quiet periods during the measurement interval. The **L₉₀** parameter is used to set noise emission criteria for potentially intrusive noise sources since the disturbance caused by a noise source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the **L₉₀** level.

L₁₀ is used in some guidelines to measure noise produced by an intrusive noise source since it represents the average of the loudest noise levels produced at the source. Typically, this is used to assess noise from licenced venues.

L_{max} is the highest noise level produced during a noise event, and is typically used to assess sleep arousal impacts from short term noise events during the night. It is also used to assess internal noise levels resulting from aircraft and railway ground vibration induced noise.

L₁ is sometimes used in place of **L_{max}** to represent a typical noise level from a number of high level, short term noise events.

3.2 UNATTENDED LONG TERM NOISE MONITORING

3.2.1 Equipment Used

Unattended noise monitoring was conducted using a Rion NL-42 (Type 2) noise monitor.

The monitoring was continuous, with statistical noise levels recorded at 15-minute intervals throughout the monitoring period. Measurements were taken on "A" frequency weighting and fast time response.

All monitoring equipment used retains current calibration - either manufacturers' calibration or NATA certified calibration. The monitors were field calibrated at the beginning and the end of the measurement with no significant drift in calibration noted.

3.2.2 Monitoring Location and Period

One noise monitor was located on the front awning of 63-67 The Corso, facing the Corso. Monitoring was conducted from the 2nd until the 11th of November 2021.

3.2.3 Calculated Noise Levels

Rating background levels have been determined from the long term, unattended noise monitoring data based on the methodology in the Noise Policy for Industry Fact Sheet B. Appendix A contains the data collected, and the periods identified as being affected by adverse weather conditions or extraneous noise (as defined by NPfI Fact Sheet B).

Weather data was obtained from records provided by the Bureau of Meteorology for the weather station located in Sydney Harbour.

The NPfI day, evening and night periods are:

- Day - period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays
- Evening - the period from 6 pm to 10 pm
- Night - the remaining periods

Representative traffic noise levels have been calculated using the guidelines in the EPA Road Noise Policy.

3.2.3.1 Background Noise Levels

The following table summarises the rating background noise levels determined for the day, evening and night periods as defined in the NPfI. It was noted on site that ambient noise levels during quiet periods are dominated by the water fountains that are present along The Corso.

Table 2 – NPfl Rating Background Noise Levels

Location	Assessment Background Noise Level (dB(A) L₉₀)*			
	Day (7am-6pm)	Evening (6pm-10pm)	Early Night (10pm-12am)	Night (12am-7am)
63-67 The Corso, Manly	60	57	53	50

An attended measurement was conducted on Thursday 11th November 2021 in front of the residential building located at 72 The Corso, Manly. The following noise spectrum was recorded:

Table 3 – Measured Background Noise Spectrum

Frequency (Hz)	31.5	63	125	250	500	1k	2k	4k	8k	A-wt
Noise Level	66	65	59	56	54	54	49	43	34	58

4 NOISE EMISSION ASSESSMENT

The noise emissions from the project site shall comply with the requirements of the following;

- Northern Beaches Council (formerly Manly Council) *Development Control Plan (DCP) 2013*
- NSW Department of Environment and Heritage, Environmental Protection Authority document – ‘Noise Policy for Industry (NPfI) 2017’.

4.1 OPERATIONAL NOISE EMISSION CRITERIA (MECHANICAL PLANT)

4.1.1 NSW Environmental Protection Authority (EPA) document – ‘Noise Policy for Industry (NPfI) 2017

The NPfI provides guidelines for assessing noise impacts from developments. The recommended assessment objectives vary depending on the potentially affected receivers, the time of day, and the type of noise source. The NPfI has two requirements which both have to be complied with namely, an amenity criterion and an intrusiveness criterion.

4.1.1.1 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).

Table 4 – NPfI Intrusiveness Criteria

Receiver	Time of Day	Background Noise Level dB(A) $L_{90}(5min)^{(1)}$	Intrusiveness Criteria (background + 5dB(A) $L_{eq}(15mins)$)
Residential Receiver	Day (7am-6pm)	60	65
	Evening (6pm-10pm)	57	62
	Night (10pm-7am)	50	55

Note 1: Rating background noise levels have been adopted as per the results presented in Table 2 of this report.

4.1.1.2 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 NPfl sets out acceptable noise levels for various land uses. Table 2.2 on page 11 of the policy has four categories to distinguish different residential areas. They are rural, suburban, urban and urban/industrial interface. Noise emissions in accordance with the 'urban' category.

Table 5 – NPfl Project Amenity Criteria

Type of Receiver	Time of Day	Amenity Criteria dB(A) $L_{eq}(15mins)$
Residential (Urban)	Day (7am-6pm)	58
	Evening (6pm-10pm)	48
	Night (10pm-7am)	43
Commercial	When in use	63

4.1.2 Summarised Noise Emission Criteria

Summary for noise emission criteria for noise emission associated with the development has been summarised below.

Table 6 – Summary of Noise Emission Criteria

Time of Day	Background Noise Level dB(A) $L_{90(period)}$	Amenity Criteria dB(A) $L_{eq}(15mins)$	Intrusiveness Criteria (Background + 5dB(A) $L_{eq}(15mins)$)	Project Noise Emission Goal dB(A) $L_{eq}(15mins)$
Day (7am-6pm)	60	58	65	58
Evening (6pm-10pm)	57	48	62	48
Night (10pm-7am)	50	43	55	43
		63		63

4.2 PATRON AND MUSIC NOISE

4.2.1 Northern Beaches Council Document (Manly DCP 2013)

The Northern Beaches Council (formerly Manly Council) *Development Control Plan* (DCP) 2013 states the following with regards to noise impacts from licensed premises to residences:

3.4.2.3 Acoustical Privacy (Noise Nuisance)

- (g) *Noise control reports are to be submitted with DAs for licensed premises for the management of patron noise (including patrons exiting the premises) and other offensive noise (including amplified music and plant and equipment noise emissions) emitted over the life of the development. The Noise Control report is to demonstrate to the satisfaction of Council that the activities carried out and related to the operation of the premises will meet the following requirements:*
- i) *The LA10* noise level emitted from the licensed premises must not exceed the background of noise level in any octave band centre frequency (31.5Hz to 8kHz inclusive) by more than 5dB between 7am and 12am midnight at the boundary of any affected residence.*
 - ii) *The LA10* noise level emitted from the licensed premises must not exceed the background noise level in any octave band centre frequency (31.5Hz to 8kHz inclusive) between 12 midnight and 7am at the boundary of any affected residence.*
 - iii) *The noise level from the licensed premises must not be audible within any habitable room in any residential premises between the hours of 12 midnight and 7am or as otherwise required under conditions of development consent.*

In light of the information above, we note the following:

- Noise emission goals from the DCP detailed above are equivalent to the requirements of NSW Liquor & Gaming (NSWL&G) guidelines for assessing noise emissions from the operation of a licensed venue.

The noise emission goals are summarised in the table below.

Table 7 – Noise Emission Criteria at Nearby Residences

Time	Noise Emission Criteria dB(A)L ₁₀ (15-minute)									
	31.5Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-Wt
Day (7am-6pm) BG + 5	73	72	66	63	61	61	56	50	41	65
Evening (6pm-10pm) BG + 5	70	69	63	60	58	58	53	47	38	62
Early Night (10pm-12am) BG + 5	66	65	59	56	54	54	49	43	34	58
Night (12am-3am) BG + 0, Inaudible	58	57	51	48	46	46	41	35	26	50

4.2.2 Australian standard AS2107:2016 – Recommended design sound levels and reverberation times for building interiors.

The above Manly DCP criteria outlines noise emission criteria for residential receivers only. We note that there is a hostel/backpackers accommodation located above the proposed premises. As part of the measurements, it was requested that access be provided to the accommodation rooms located directly above the proposed premises so that background noise measurements could be undertaken, and the transmission loss/noise separation of the existing construction could be measured.

Unfortunately, it was not possible to gain access to the adjoining backpackers accommodation to take background noise measurements or complete sample testing. As such, Australian Standard AS2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* can provide guidance as to noise levels within the accommodation directly above the premises. AS2107 provides a range for recommended noise levels in various spaces. Table 1, in Section 5 of AS 2107-2016, gives the following recommended range of internal noise levels for hostels.

Table 8 – Recommended Design Sound Levels

Space /Activity Type	Recommended Maximum Design Sound Level dB(A) $L_{Aeq}(\text{Period})$
Common Rooms	40-45dB(A) $L_{Aeq}(\text{when in use})$
Sleeping Areas (Night Time)- In inner city areas or entertainment districts	35-40dB(A) $L_{Aeq}(10\text{pm}-7\text{am})$
Kitchens Services Areas	45-55dB(A) $L_{Aeq}(\text{when in use})$

5 NOISE EMISSION ASSESSMENT

This section of the report examines the potential noise impacts from the licenced venue. The main potential sources will be patron noise within internal areas and live music. Noise from the various activities associated with the proposal has been predicted at the potentially affected receivers as identified in Section 2.1. Noise emissions have been assessed to the nearest residential and boarding house receivers.

The noise predictions are based on typical noise levels likely to be generated within the venue. These emission levels are corrected for transmission loss through building elements, distance attenuation, barrier effects where applicable, and the orientation of the respective receivers to determine the resultant noise level at the potentially affected properties.

5.1 ASSUMPTIONS ADOPTED WITH RESPECT TO NOISE EMISSION CALCULATIONS

Predicted noise levels within the venue are made based on the following assumptions:

- The venue is filled to capacity with 534 patrons.
- Live music is played up until 12am at an assumed 99dB(A) L_{10} sound pressure level in the space (based on measurements conducted by this office).
- Amplified music is played between 12am and 3am at 92dB(A) L_{10} sound pressure level in the space
- That typical patron vocal sound power levels are: Up to 77dB(A) L_{10} , 1 in 2 speaking (loud voice)
- The tenancy will operate between 7am-3am
- The recommendations in Section 5.4 are implemented.
- A typical live music sound spectrum as follows:

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Amplified Music	112	110	100	93	90	88	87	83	99

- A typical amplified music sound spectrum as follows

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Amplified Music	88	94	90	89	88	83	74	76	92

- A typical sound spectrum of a patron as follows:

Noise Source	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	A-wt
Raised Voice	62	70	70	76	73	68	59	47	77

5.2 NOISE EMISSIONS TO RESIDENTIAL RECEIVERS

Table 9 – Predicted External Noise Levels from Venue Operation to Closest Residential Receiver (72 The Corso)

Noise Source	Time of Day		Octave Band Noise Levels, dB									A-wt
			31.5Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Venue Operation (Patron and Music Noise)	Evening 6pm-10pm	Predicted Noise Level L_{eq}	54	54	50	38	37	32	25	14	<10	39
		External Criteria (BG + 5)	70	69	63	60	58	58	53	47	38	62
		Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Early Night 10pm-12am	Predicted Noise Level L_{eq}	54	54	50	38	37	32	25	14	<10	39
		External Criteria (BG + 5)	66	65	59	56	54	54	49	43	34	58
		Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Night 12am – 3am	Predicted Noise Level L_{eq}	31	31	35	33	37	32	25	11	<10	37
		External Criteria (BG + 0, Inaudible)	58	57	51	48	46	46	41	35	26	50
		Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

5.3 NOISE EMISSION TO INTERNAL RECIEVERS – BACKPACKERS ACCOMODATION (63 THE CORSO)

The predicted noise levels from use of the venue have been predicted to the closest internal receivers within the building, being the backpacker's accommodation above and behind the proposed restaurant. The main source of noise emissions affecting these receivers will be noise transmission through the restaurant ceiling/hostel floor. Noise predictions take into account the transmission loss of the indicative constructions detailed in section 5.4.1.

Table 10 – Predicted Hostel Internal Noise Levels

Noise Source	Receiver	Predicted Noise Level dB(A) $L_{Aeq}(\text{Period})$	Acoustic Criteria dB(A) $L_{Aeq}(\text{Period})$	Comments
Patron Noise and Live Music	Hostel Room Above Main Restaurant Area	30	35-40	Within AS2107 recommended internal noise levels
	Hostel Room Above Mezzanine	39	35-40	
Patron Noise and Amplified Music	Hostel Room Above Main Restaurant Area	<30	35-40	
	Hostel Room Above Mezzanine	<30	35-40	

5.4 RECOMMENDATIONS

The following is recommended to achieve the noise levels detailed in Section 4.1.2.

- All external windows and doors are to remain closed between 10pm and 7am or anytime while live music is played (except when required for egress by patrons or staff).
- External windows and doors are to be constructed with minimum 10.38mm laminate glazing (Rw35).
- Minimum of 60% ceiling area of the restaurant is to be treated with absorptive lining achieving an NRC of 0.8 (equal to Autex QuietSpace Panel).
- Any fixed speakers are to be vibration isolated by NRD mounts or equal. Where subwoofers are installed, they are to be mounted with 25mm static deflection springs. Alternative isolation arrangements will also be acceptable pending review of the finalised speaker layout selections.
- Signs are to be displayed at the entry / exit of the venue reminding patrons to minimise noise when departing the premises, especially after 10pm.
- All internal walls are to be constructed discontinuous to the structural building elements (e.g. 20mm spacing between any stud wall/plasterboard and masonry/concrete wall, or other structural elements which connect to the hostel).

5.4.1 Indicative Ceiling Constructions

It is noted that access to the backpacker's accommodation was not granted and thus the acoustic performance of the existing concrete slab structure was unable to be tested. As a result, construction advice is indicative only and we recommend the below constructions are tested prior to occupation and reviewed by the project acoustic consultant. Noise emission calculations have been based off the predicted transmission loss performance of the below constructions. In-situ performance may vary based on the existing base building structure.

- Indicative ceiling constructions are as follows:
 - Above the mezzanine:
 - Concrete slab, 250mm air gap with 2 x 110mm thick glasswool insulation (11kg/m³) and 4 layers of 16mm thick fire rated plasterboard suspended on resilient hangers (indicatively spring isolation).
 - Everywhere else above the restaurant area:
 - Concrete slab, 600mm air gap with 2 x 110mm thick glasswool insulation (11kg/m³) and 4 layers of 16mm thick fire rated plasterboard suspended on resilient hangers (indicatively spring isolation).

6 CONCLUSION

This report provides the assessment of potential noise impacts resulting from the use of the proposed restaurant to be located within Lot 1, 63-67 The Corso, Manly.

Provided that the recommendations in Section 5.4 of this report are adopted, noise emissions to all nearby development will achieve the requirements of Manly council Development Control Plan and NSW Department of Industry Office of Liquor and Gaming Guidelines.

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

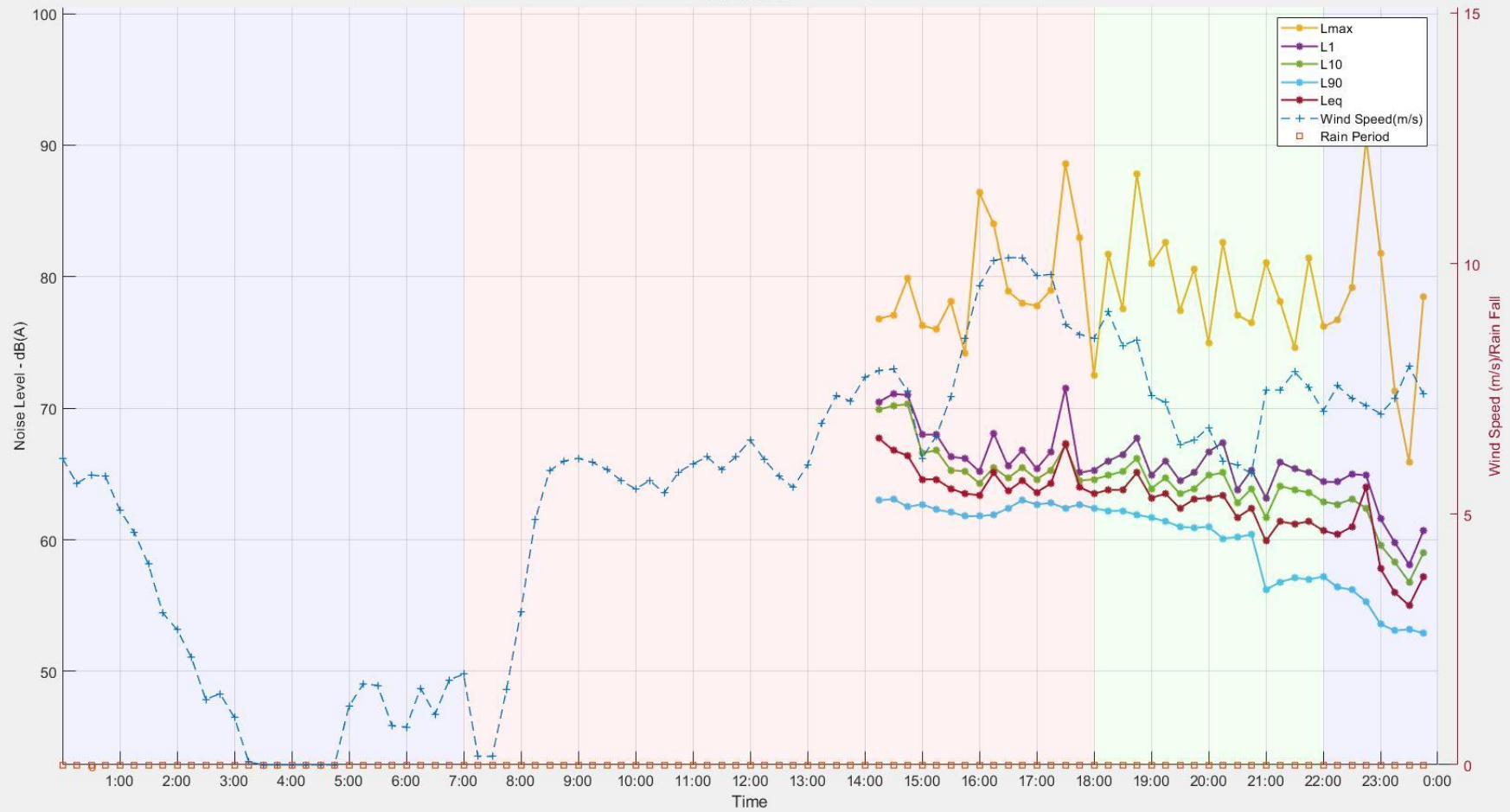
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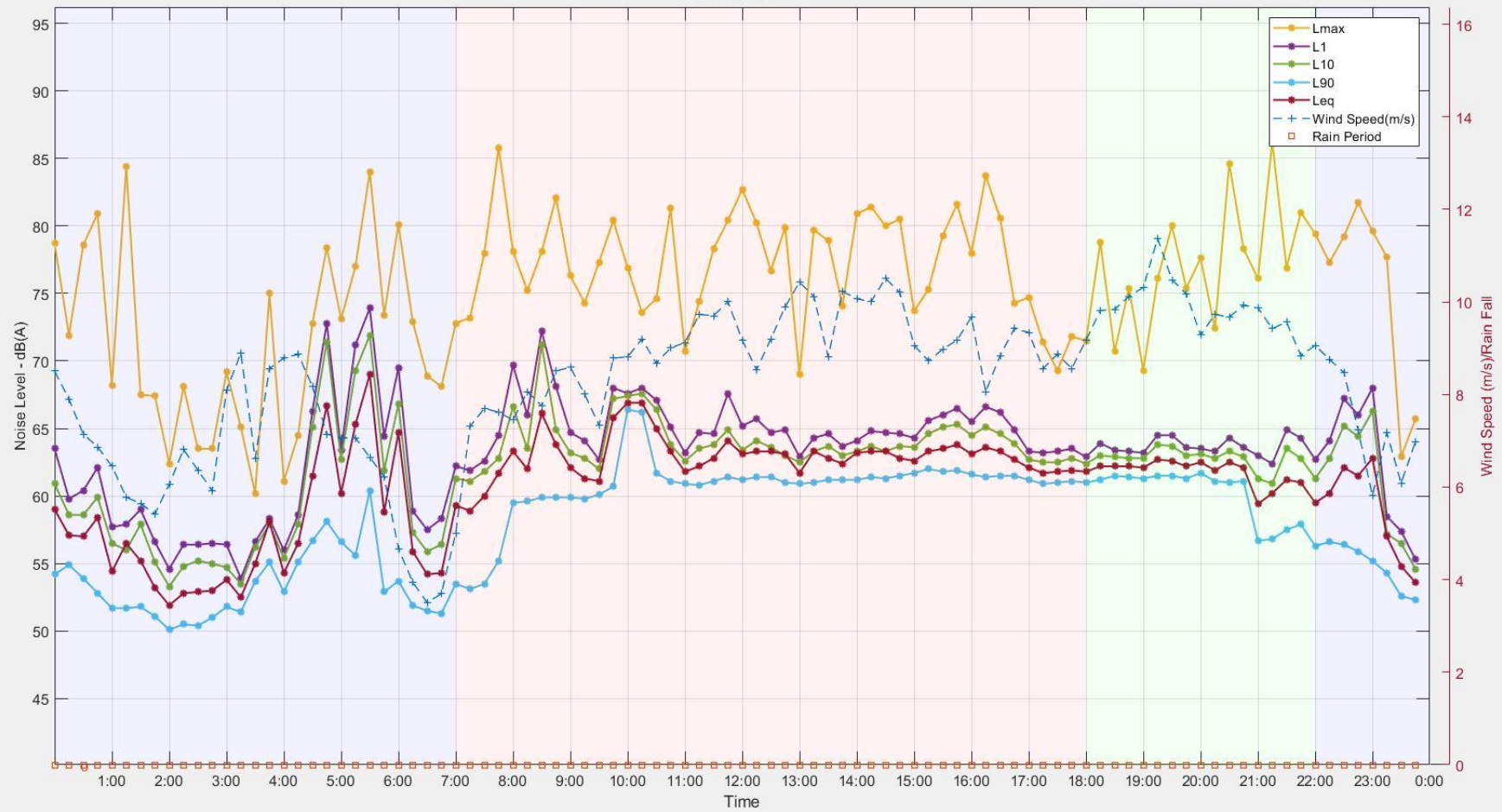
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7 APPENDIX A – UNATTENDED NOISE MONITORING DATA

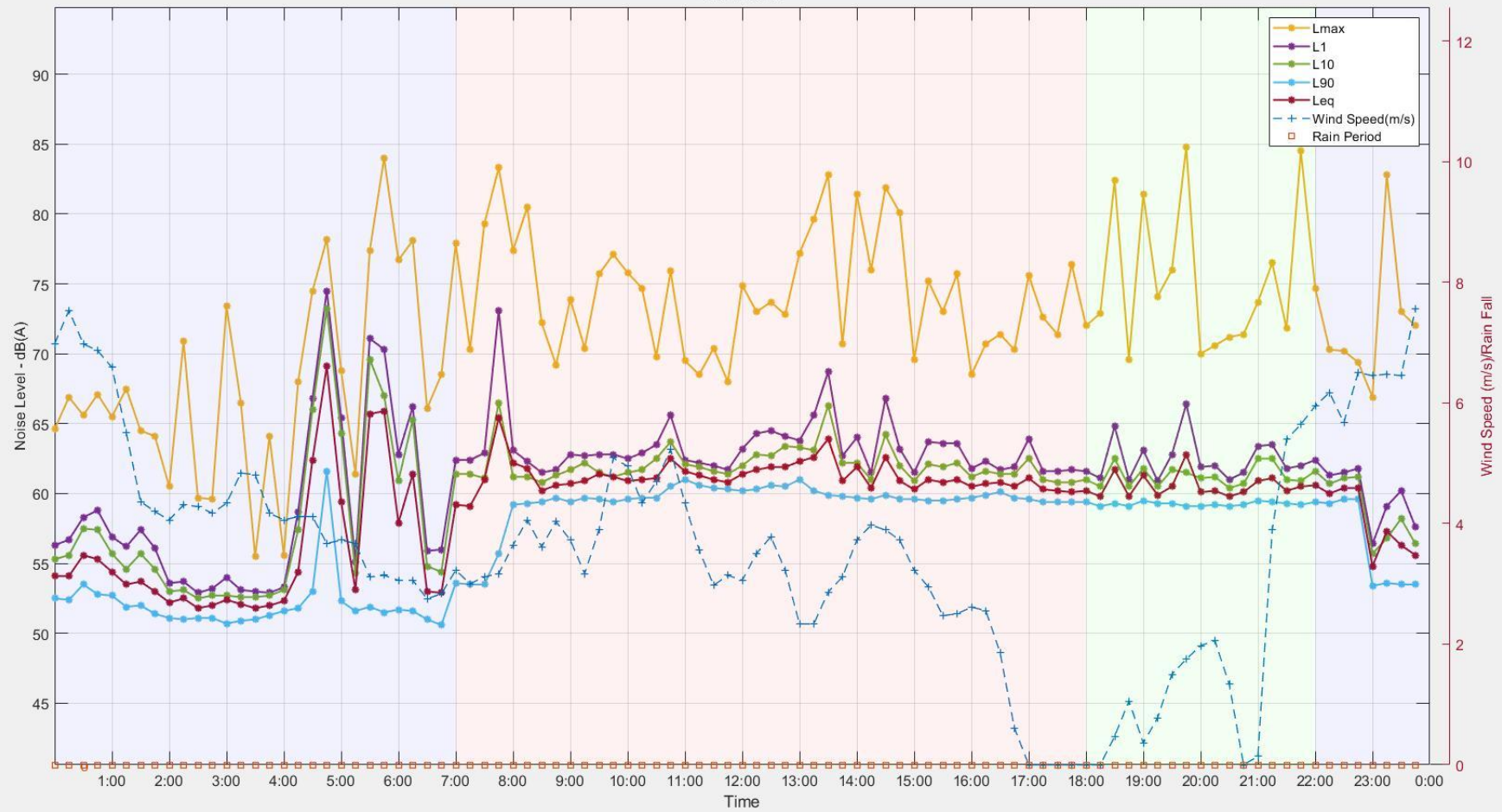
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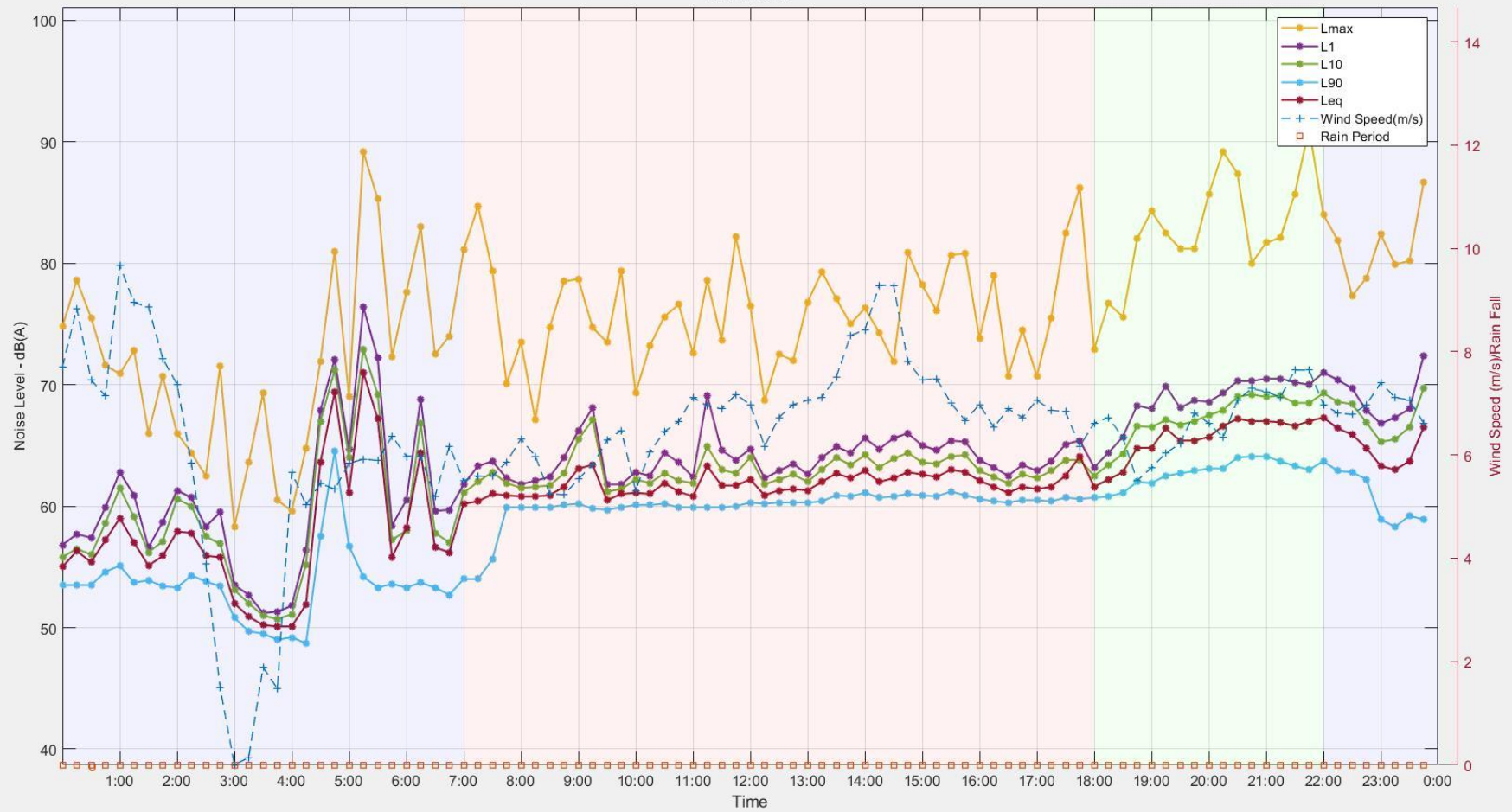
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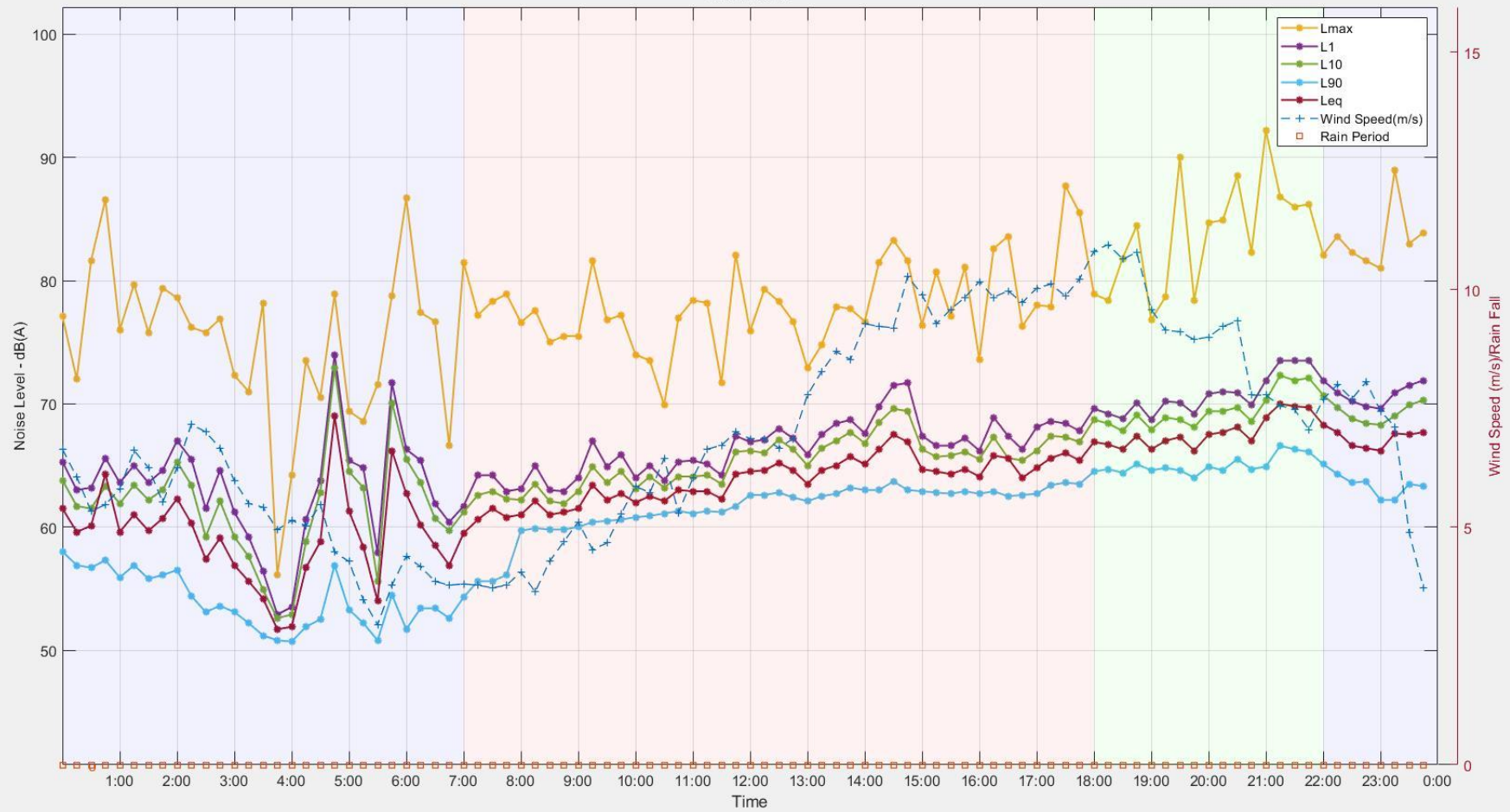
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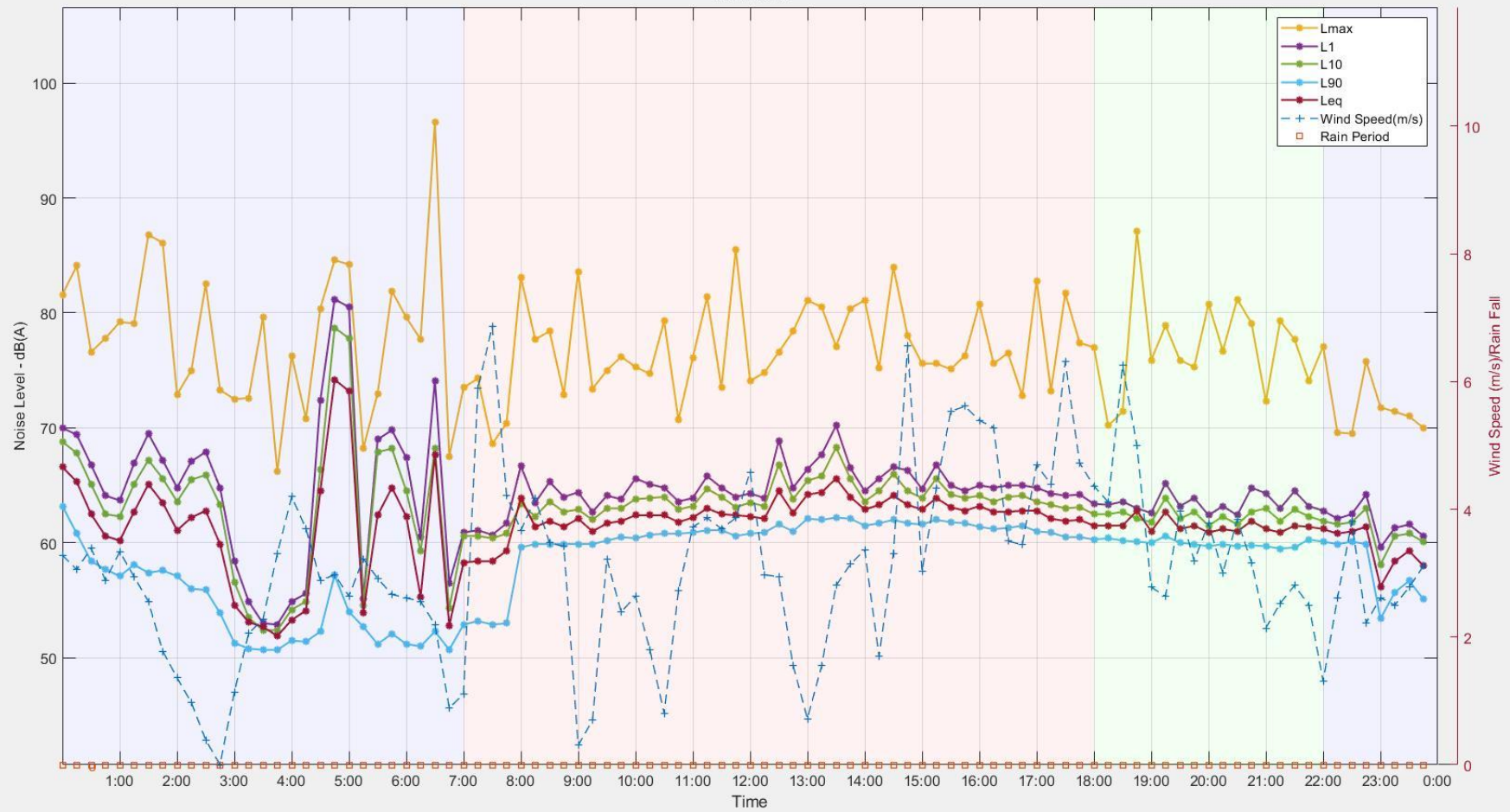
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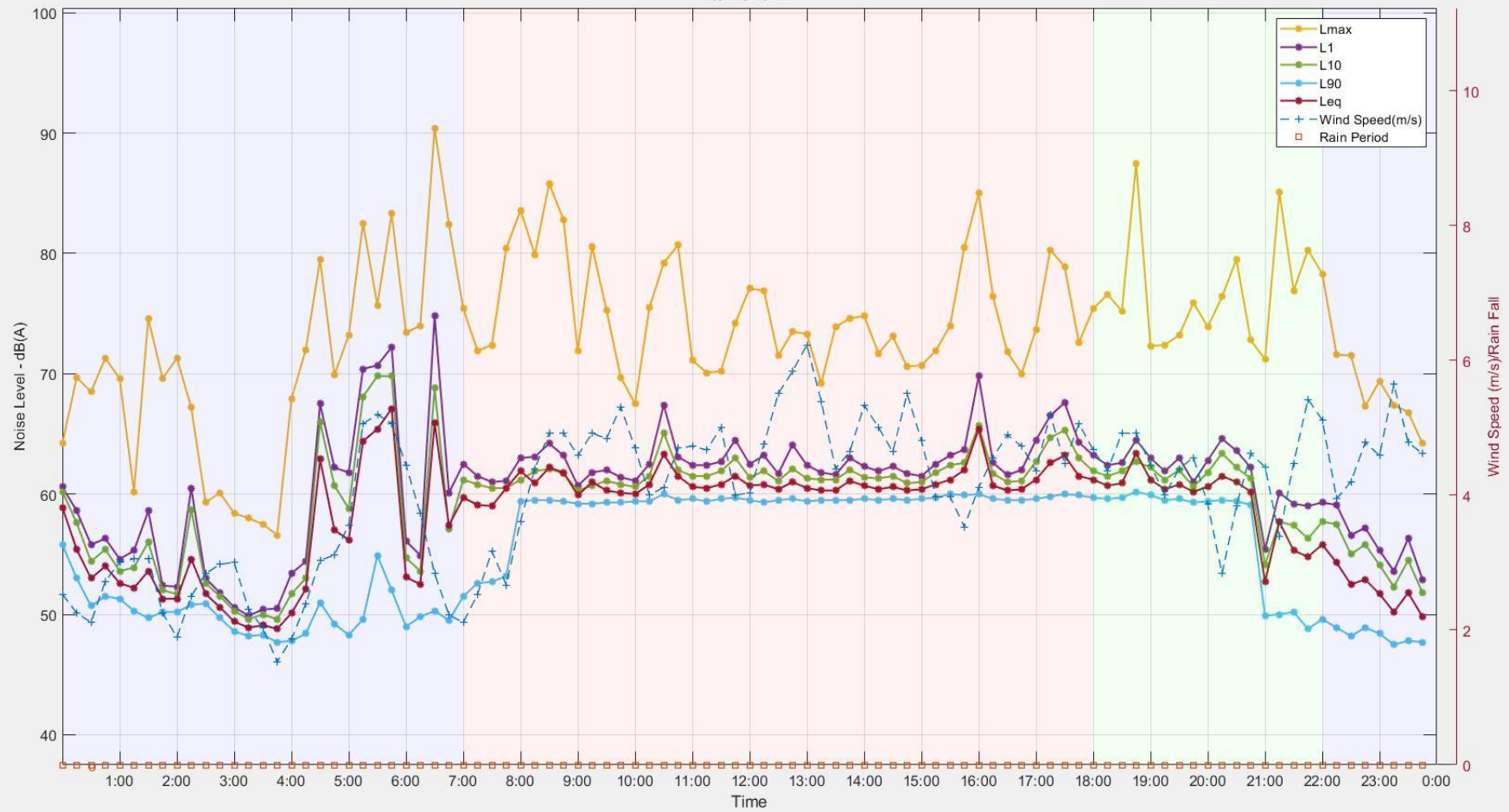
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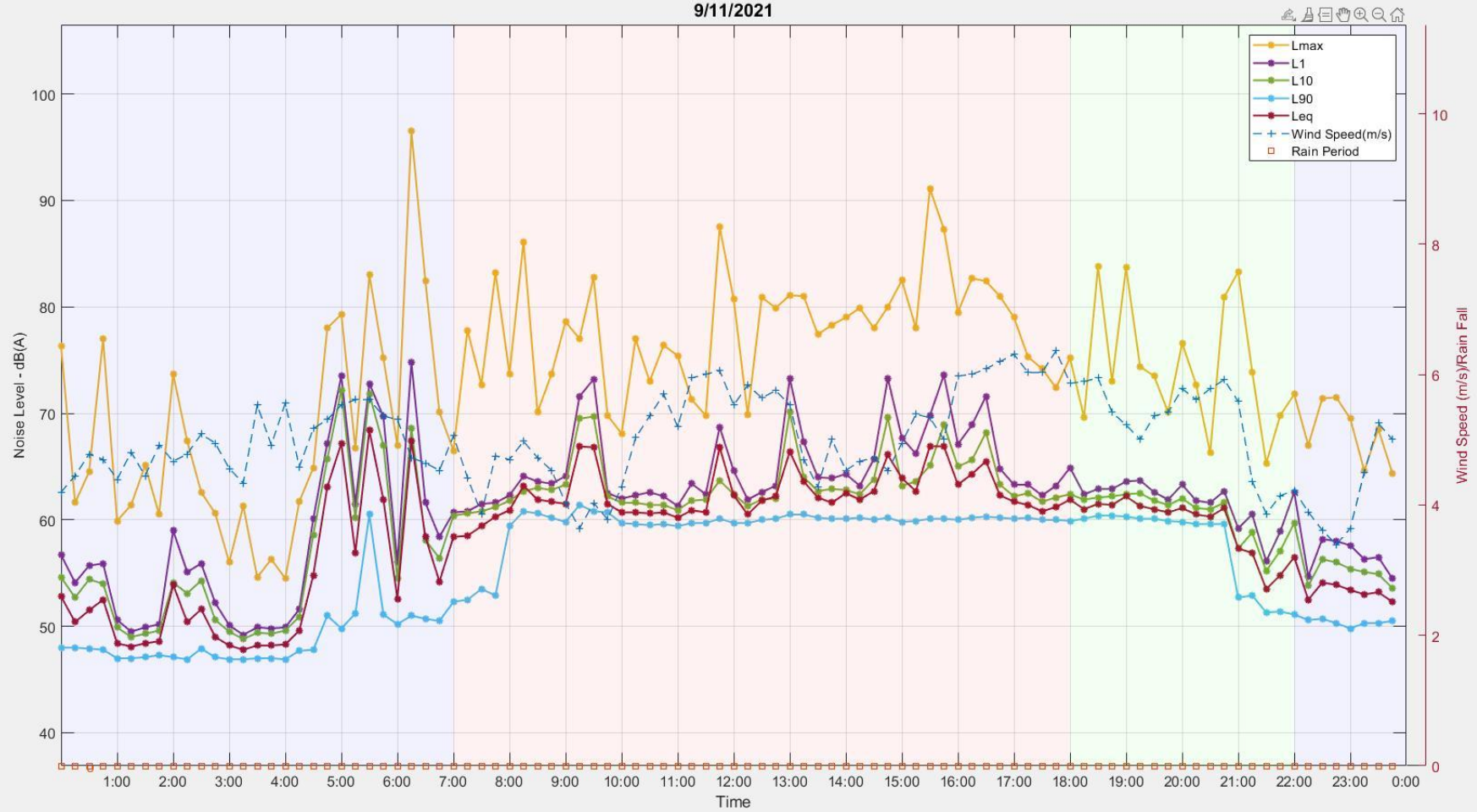
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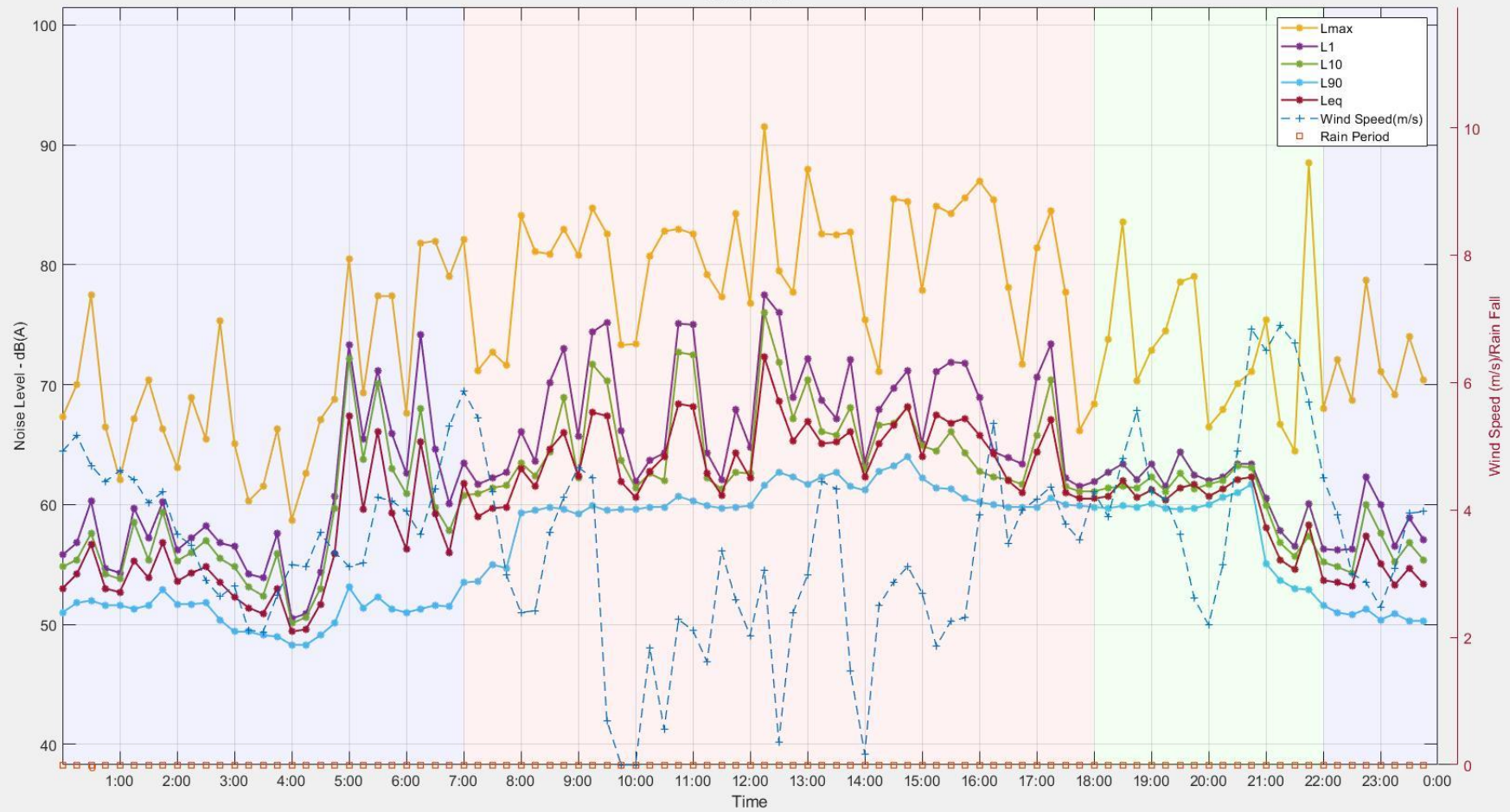
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Lot 1, 63-67 The Corso, Manly
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