

18-22 Mundamatta Street, Villawood

Noise Intrusion Assessment

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Attention To	New South Wales Land and Housing Corporation

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1 INTRODUCTION

This report has been prepared to assess the noise impacts associated with the proposed seniors living development located at 18-22 Mundamatta Street, Villawood.

This document addresses the noise impacts associated with traffic noise intrusion from the Hume highway.

The subject site and local context are indicated in Figure 1.

This report has been prepared for the sole purpose of a development application assessment and should not be used or relied on for any other purpose.

2 REFERENCED DOCUMENTS

2.1 BACKGROUND INFORMATION USED

This assessment has been conducted using the "Seniors Living Development, Land and Housing Corporation" architectural drawings provided by Custance, dated 07/11/2022; Revision 8.

2.2 PLANNING GUIDELINES

Acoustic Logic have used the following documents and regulations in the assessment of the above noise impact:

- Canterbury Bankstown Council Document *Bankstown Development Control Plan (DCP)* 2015 as amended 13 July 2016.
- NSW Department of Planning and Environment's Document *State Environmental Planning Policy (SEPP) Transport & Infrastructure (T&I) 2021*.
- NSW Department of Planning's *Developments near Rail Corridors or Busy Roads – Interim Guideline*. (DNRCBR).

3 SITE DESCRIPTION AND THE PROPOSAL

The project is located at 18-22 Mundamatta Street, Villawood. The proposed development consists of:

- A Ground floor consisting of 7 units.
- A first floor consisting of 5 units

An aerial view of the project site and measurement locations are presented in Figure 1 below.



Figure 1: Project Site
(Sourced from Google Maps)

4 ENVIRONMENTAL NOISE SURVEY

New South Wales (NSW) Environment Protection Authority's (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 the 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 1.

4.1 MEASUREMENT POSITION

One unattended noise monitor was installed on the western boundary of 20 Mundamatta Street, Villawood.

4.2 MEASUREMENT PERIOD

Unattended noise monitoring was conducted from Saturday 10th September 2022 to Sunday 18th September 2022.

4.2.1 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.

4.2.2 Measured Background Noise Levels

NSW EPA's 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.

Appendix One provides the results of the unattended background noise monitoring. Rain affected data was excluded from the assessment. The processed Rating Background Noise Levels (lowest 10th percentile noise levels during operation time period) are presented in Table 1 below.

Table 1 – Unattended Noise Monitor – Assessment Background Noise Levels

Date	Measured Assessment Background Noise Level dB(A) _{L_{A90}}		
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
Saturday 10 th September 2022	-	47	-
Sunday 11 th September 2022	46	46	40
Monday 12 th September 2022	48	46	38
Tuesday 13 th September 2022	49	45	38
Wednesday 14 th September 2022	45	46	38
Thursday 15 th September 2022	-	-	41
Friday 16 th September 2022	49	49	41
Saturday 17 th September 2022	47	49	40
Sunday 18 th September 2022	47	47	39
Rating Background Noise Levels (RBLs)	47	46	39

Note: Periods marked '-' have had more than 20% of data within the nominated period be either not collected or be affected by adverse weather and in accordance with Fact Sheets A and B of the NPfI, have been removed from the assessment.

5 EXTERNAL NOISE INTRUSION ASSESSMENT

Site investigation indicates that the major external noise source around the project site is traffic movements along the Hume highway.

5.1 TRAFFIC NOISE INTRUSION CRITERIA

A traffic noise intrusion assessment has been conducted based off the requirements of the following acoustic noise criteria/standards:

- Canterbury Bankstown Council Document *Bankstown Development Control Plan (DCP) 2015*
- NSW Department of Planning and Environment's Document *State Environmental Planning Policy Transport & Infrastructure (TI SEPP) 2021*.
- NSW Department of Planning's *Developments near Rail Corridors or Busy Roads – Interim Guideline' (DNRCBR)*

5.1.1 Bankstown DCP 2015

Bankstown DCP 2015 does not stipulate any requirements in relation to traffic noise intrusion for residential developments; and as such, the Standards listed in the following sections will be adopted to establish a requirement.

5.1.2 State Environmental Planning Policy (TI SEPP) 2021

"Clause 2.120

- (1) *This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transit way or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*
 - (a) *a building for residential use,*
 - (b) *a place of public worship,*
 - (c) *a hospital,*
 - (d) *an educational establishment or childcare centre.*
- (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."*

RMS Map No. 15 of the traffic volume maps referenced by the TI SEPP 2021 on the RMS website (see below), classifies the section of the Hume Highway where the development is located adjacent to as a road where a noise intrusion assessment is mandatory under clause 2.120 of TI SEPP 2021. See RMS average annual daily road traffic volume map number 15 and the location of the project site below.

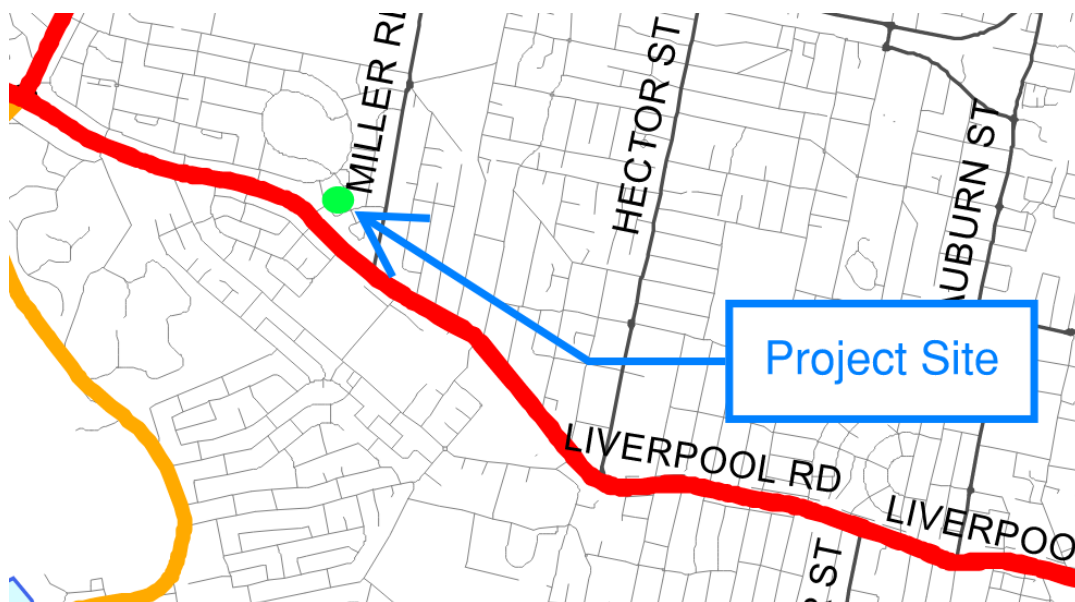


Figure 2: RMS Map No. 15 and Project Site Location

5.1.3 NSW Department of Planning and Environment's Document (DNRCBR)

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."*

Additionally, NSW Department of Planning's *Development near Busy Roads and Rail Corridors - Interim Guideline* dictates that:

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), and 50dB(A) in living rooms).

5.1.4 Summary of Noise Intrusion Criteria

The governing project criteria is presented in the table below based on requirements above.

Table 2 – Summary of Internal Noise Level Criteria

Space/Activity Type	Internal Traffic Noise Criteria dB(A) _{Leq(period)}
Bedroom	35dB(A) _{Leq(9hour)}
Living Room	40dB(A) _{Leq(15hour)}

5.2 TRAFFIC NOISE MEASUREMENTS

As part of this investigation, traffic noise from the Hume Highway has been measured. The results of this measurement will be used to determine the treatments required to reduce noise levels to within the project acoustic objectives.

Noise levels measurements conducted at the site as detailed in Figure 1 above.

5.2.1 Attended Noise Measurements

Attended traffic noise measurements were carried to measure road traffic noise levels at the site. The attended measurement was conducted between 5pm and 5:30pm on Thursday 10th November 2022. Measurements were undertaken using a Norsonic Type 140 precision sound level analyser, set to A-weighted fast response. The precision sound level analyser was calibrated before and after the measurements using a Norsonic 1251 precision sound level calibrator. No significant drift was recorded.

Table 3 – Attended Traffic Noise Level Measurements

Measurement Location	Time of Measurement	Measured Noise Level dB(A) $L_{eq}(\text{Period})$
Hume Highway 3m from kerb	Thursday 10 th November 2022 5:00pm – 5:30pm	73

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

Based on the attended noise measurements and the installed unattended noise monitoring conducted for the site, the below noise levels are predicted at the façades of the proposed development. Façade reflections have been taken out to present noise levels incident to the façade.

Table 4 – Predicted Façade Noise Levels

Location	Time of Day	Noise Level – L_{eq}
Future western façade facing Hume Highway	Daytime (7am – 10pm)	56 dB(A) L_{eq} (15hr)
	Night time (10pm – 7am)	51 dB(A) L_{eq} (9hr)

6 COMPLYING CONSTRUCTIONS

Traffic noise intrusion into the proposed development was assessed using the measured external noise levels reported above as a basis.

Calculations were performed, taking into account the orientation of windows; the total area of glazing; facade transmission loss; and room sound absorption characteristics. In this way the likely interior noise levels can be predicted. Acoustic treatment required to ensure compliance with the assessment criteria are detailed in this section.

Internal noise levels will primarily be a contribution of noise transfer through windows, doors and ceilings as these are relatively light building elements that offer less resistance to the transmission of sound. Noise transfer through the masonry elements will not be significant and need not be considered further.

The constructions necessary to achieve the noise levels are detailed below. The predicted noise levels have been based on the expected level and spectral characteristics of the external noise, the area of building elements exposed to traffic noise, the absorption characteristics of the rooms and the noise reduction performance of the building elements.

6.1 GLAZED 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-Ion 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 complying constructions are listed in the table below.

Table 5 – Complying Glazing Construction

Site	Level	Space	Glazing Construction	Acoustic Seals
18-22 Mundamatta Street, Villawood	All Levels	All Bedrooms	6mm Float	Yes
		All Living Rooms	6mm Float	Yes
		All Bathrooms	4mm Float	Yes

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. All windows shall have glazing thicknesses equal to those recommended above and are to have Raven RP10 to the top, bottom and sides.

In addition to complying with the minimum scheduled glazing thickness, the R_w rating of the glazing fitted into open-able frames and fixed into the building opening should not be lower than the values listed in the table below for all rooms. Where nominated, this will require the use of acoustic seals around the full perimeter of open-able frames and the frame will need to be sealed into the building opening using a flexible sealant.

Table 6 – Minimum R_w of Glazing (with Acoustic Seals)

Glazing Assembly	Minimum R_w of Installed Window
4mm Float	27
6mm Float	29

6.2 EXTERNAL ROOF/CEILING CONSTRUCTION

External walls constructed of concrete or masonry elements are acoustically adequate and do not require further treatment. Acoustic upgrading is required for the proposed new lightweight roof construction. The following is recommended.

Table 7 – External Light Weight Roof Construction

Site	Level	Space	Internal Lining	Truss System	External Lining
18-22 Mundamatta Street, Villawood	All Levels	All Spaces	1 x 13mm Plasterboard	Minimum of 250mm truss with 75mm thick 11kg/m ³ glasswool insulation	0.5mm steel sheet metal

In the event that any penetrations are required through the external skin, an acoustic sealant should be used to minimise all gaps.

6.3 EXTERNAL WALL CONSTRUCTION

External walls constructed of concrete or masonry elements are acoustically adequate and do not require further treatment. Care must be taken to ensure penetrations in external walls are acoustically treated and sealed gap free with a flexible sealant to prevent acoustic performance degradation.

6.4 VENTILATION REQUIREMENTS

With respect to natural ventilation of the dwelling, the NSW Department of Planning document "Development near Busy Roads and Rail Corridors - Interim Guideline" dictates that:

- *"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), and 50dB(A) in living rooms).

Natural ventilation is able to be achieved for the entirety of the development.

In the event that a supplementary ventilation system is proposed to be installed, this should be acoustically designed to ensure that the acoustic performance of the acoustic treatments outlined above is not reduced and does not exceed Council criteria for noise emission to nearby properties.

7 CONCLUSION

This report presents an acoustic assessment of the potential traffic noise impacts associated with the proposed seniors living development located at 18-22 Mundamatta Street, Villawood. Based on the information provided above, we conclude the following:

Provided that the treatments set out in Section 6 of this report are implemented, internal noise levels shall comply with the requirements of the following documents:

- Canterbury Bankstown Council Document *Bankstown Development Control Plan 2015*
- NSW Department of Planning and Environment's Document *State Environmental Planning Policy (SEPP) (Transport & Infrastructure) 2021*
- NSW Department of Planning's *Developments near Rail Corridors or Busy Roads – Interim Guideline*.

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

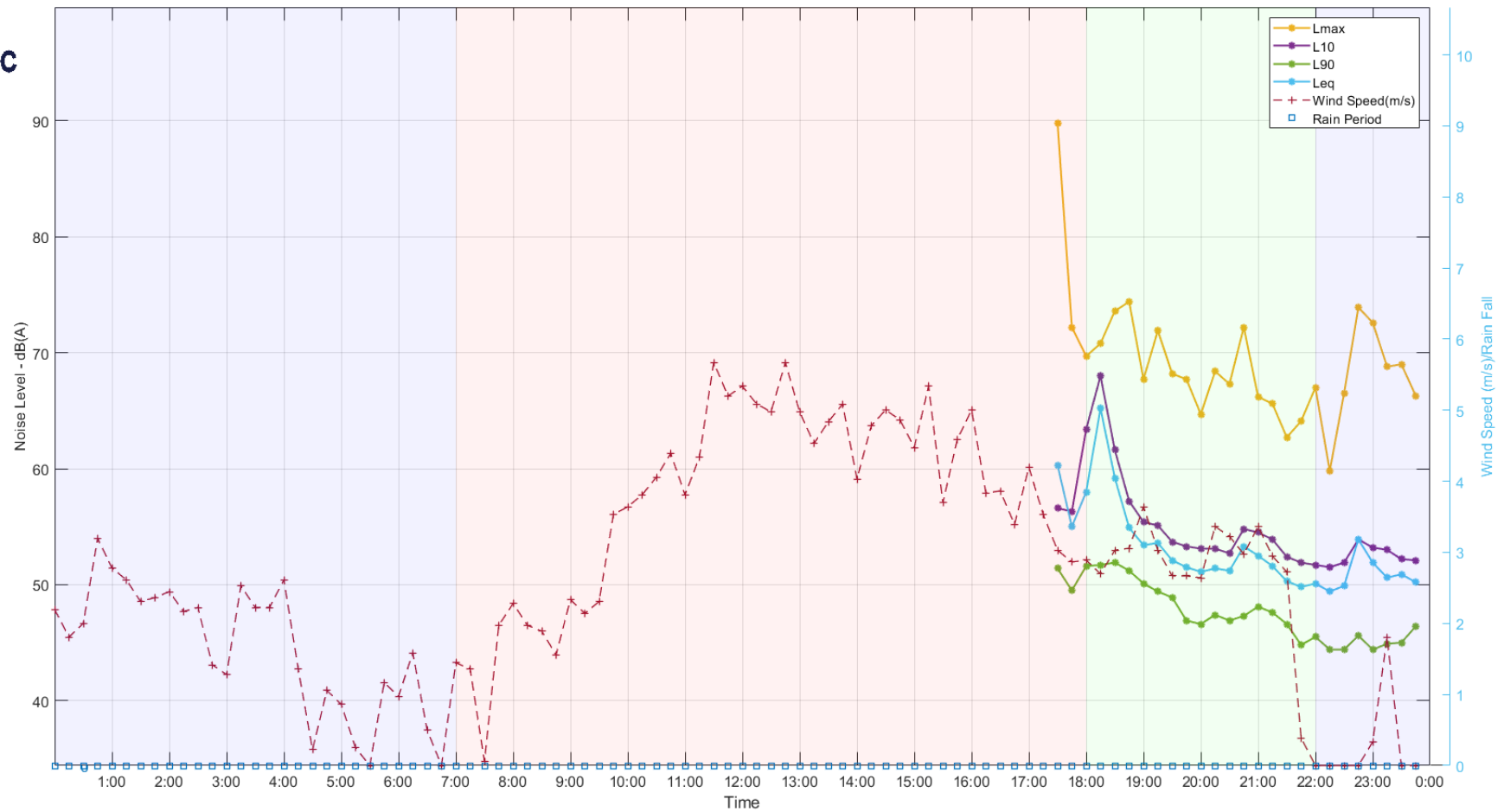
Yours faithfully,

A handwritten signature in black ink, appearing to read 'A Pham', with a stylized, cursive script.

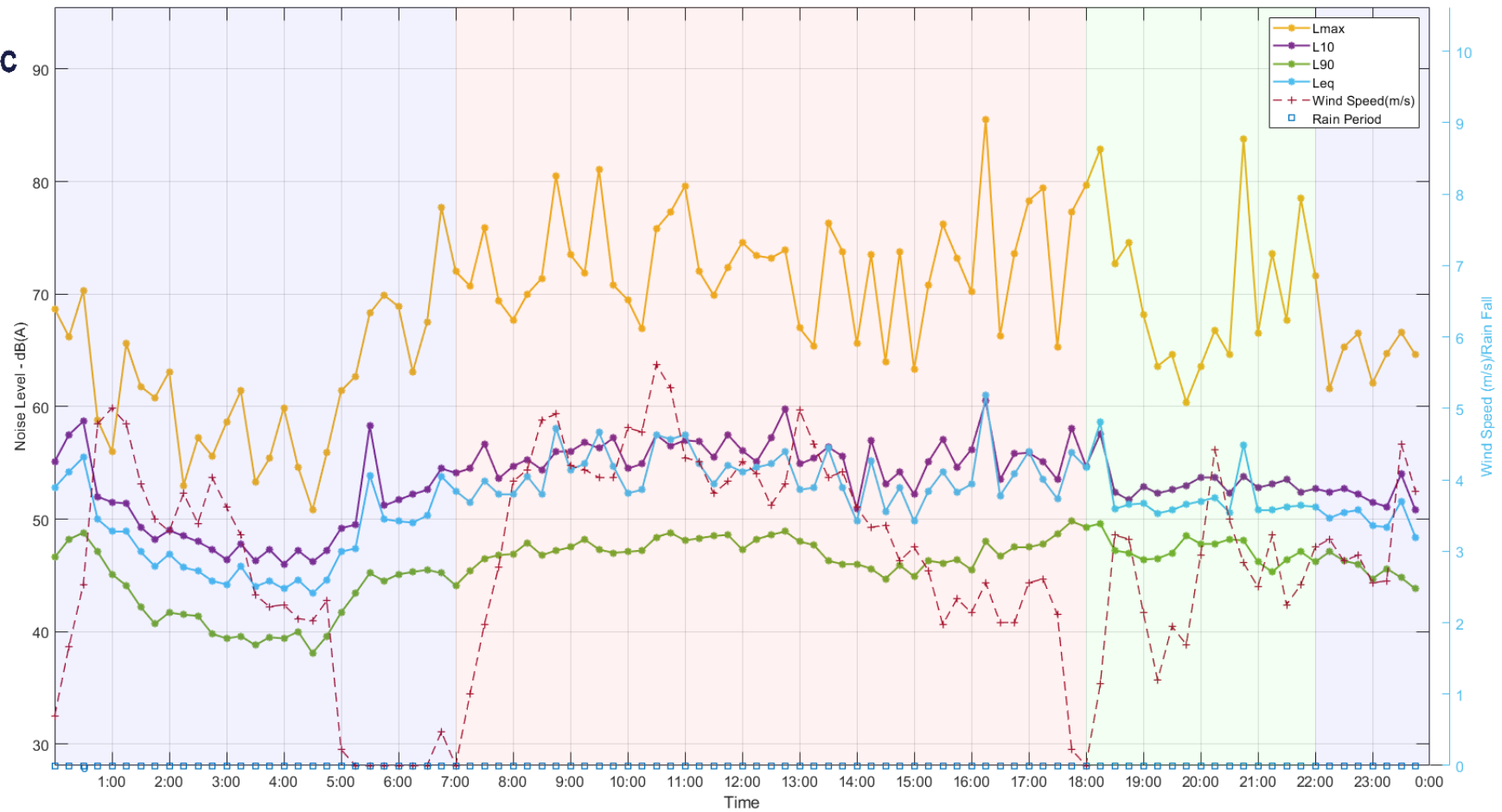
Acoustic Logic Pty Ltd
Andrew Pham

APPENDIX ONE – UNATTENDED NOISE MONITORING

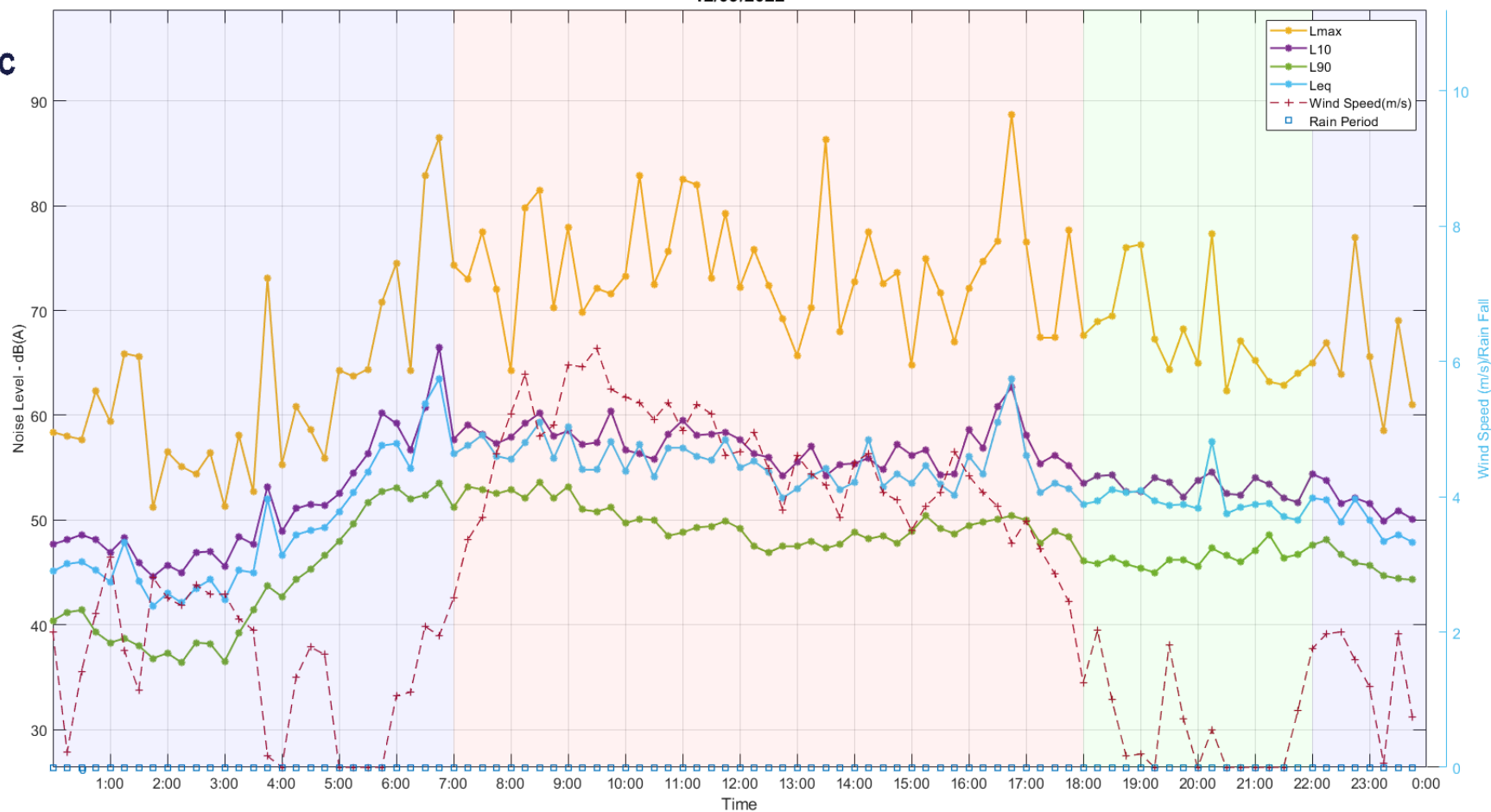
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10/09/2022**



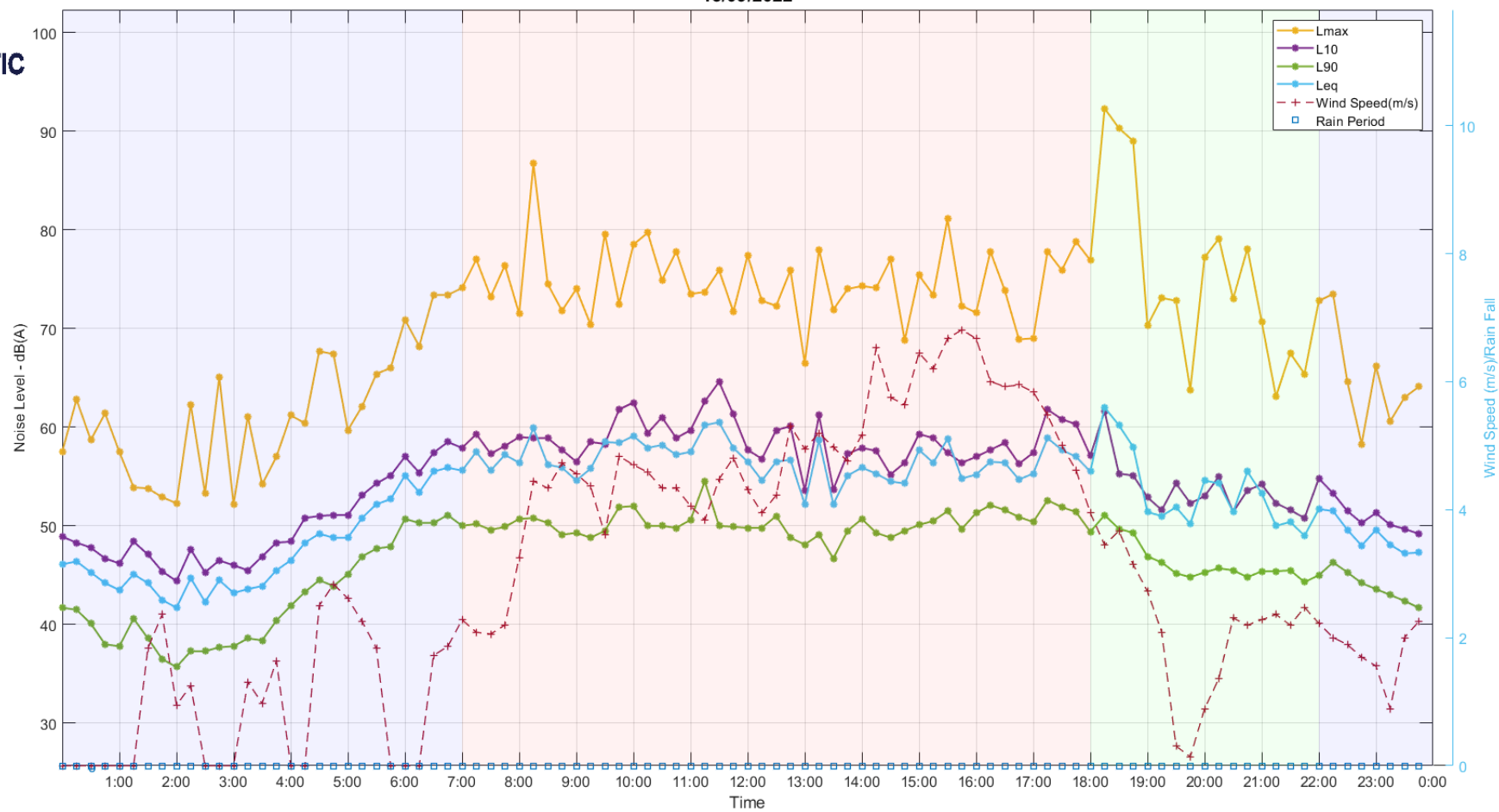
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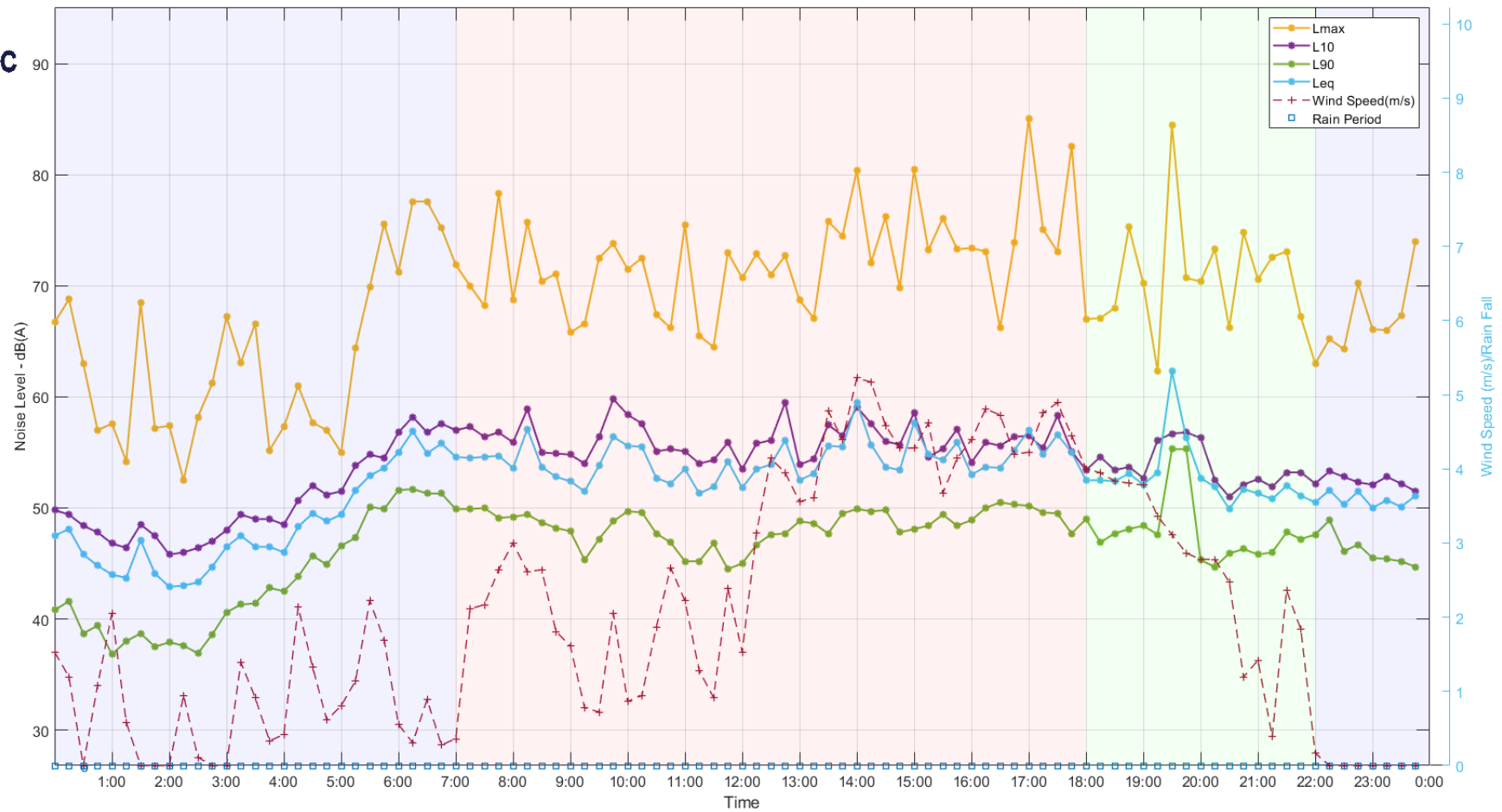
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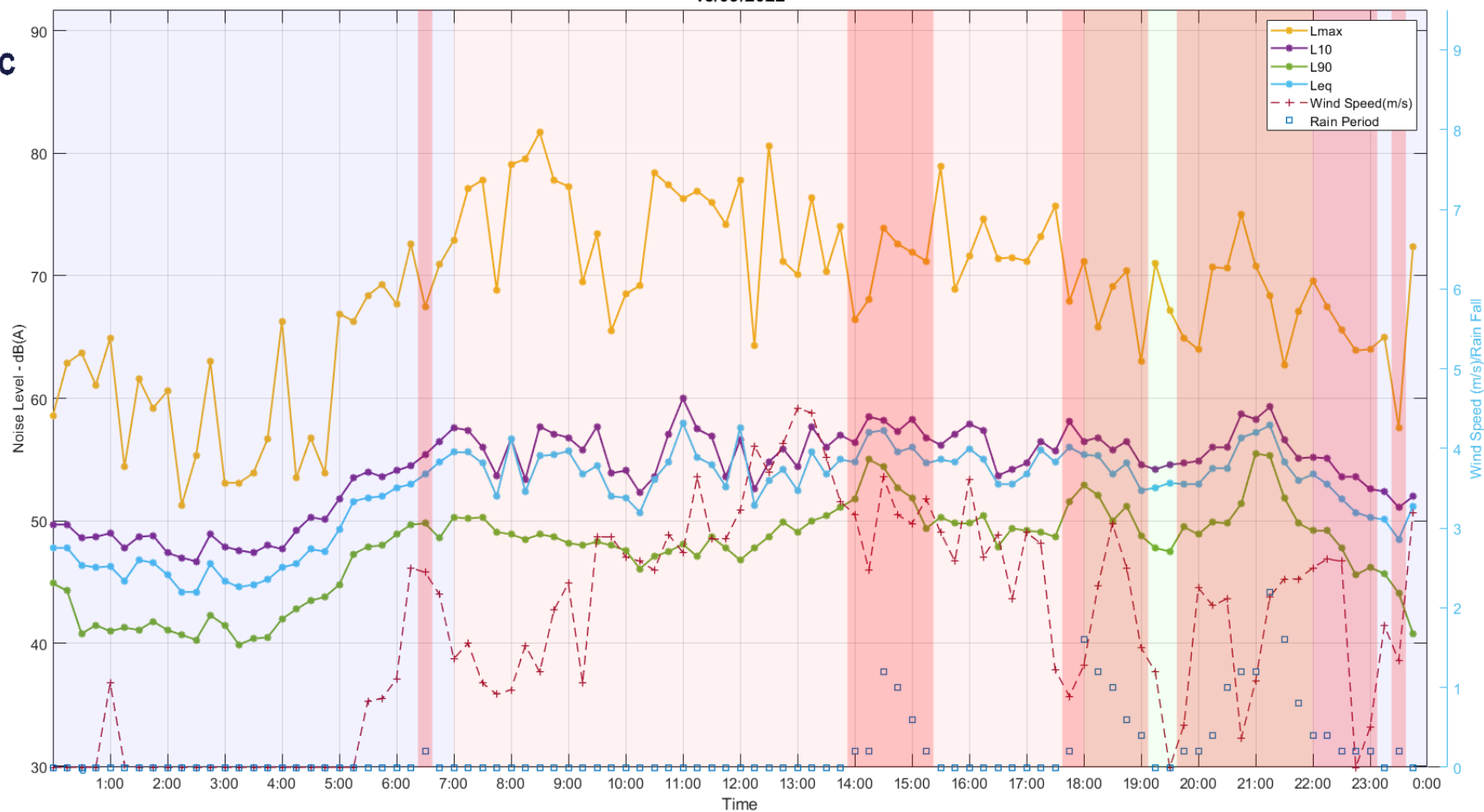
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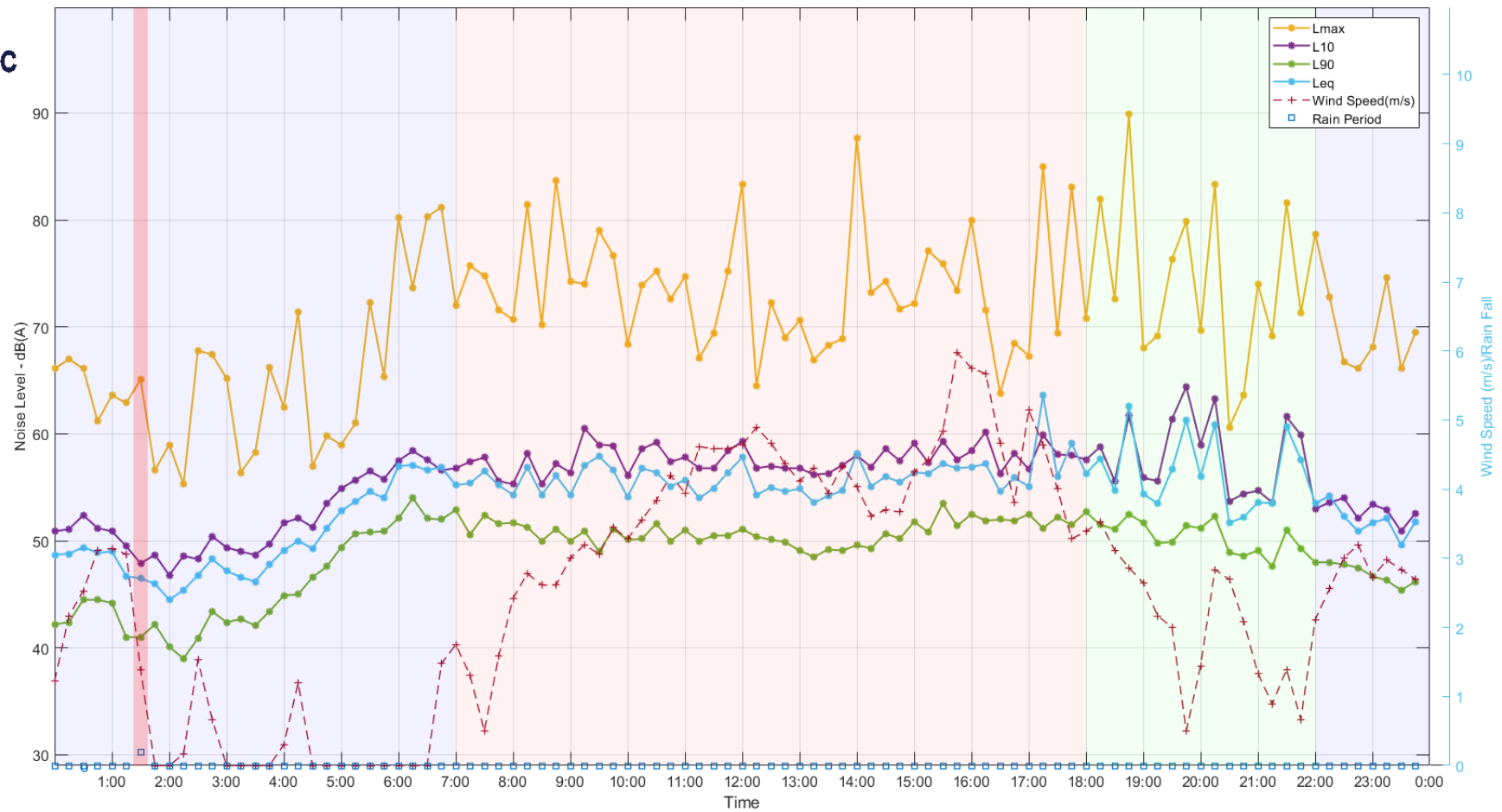
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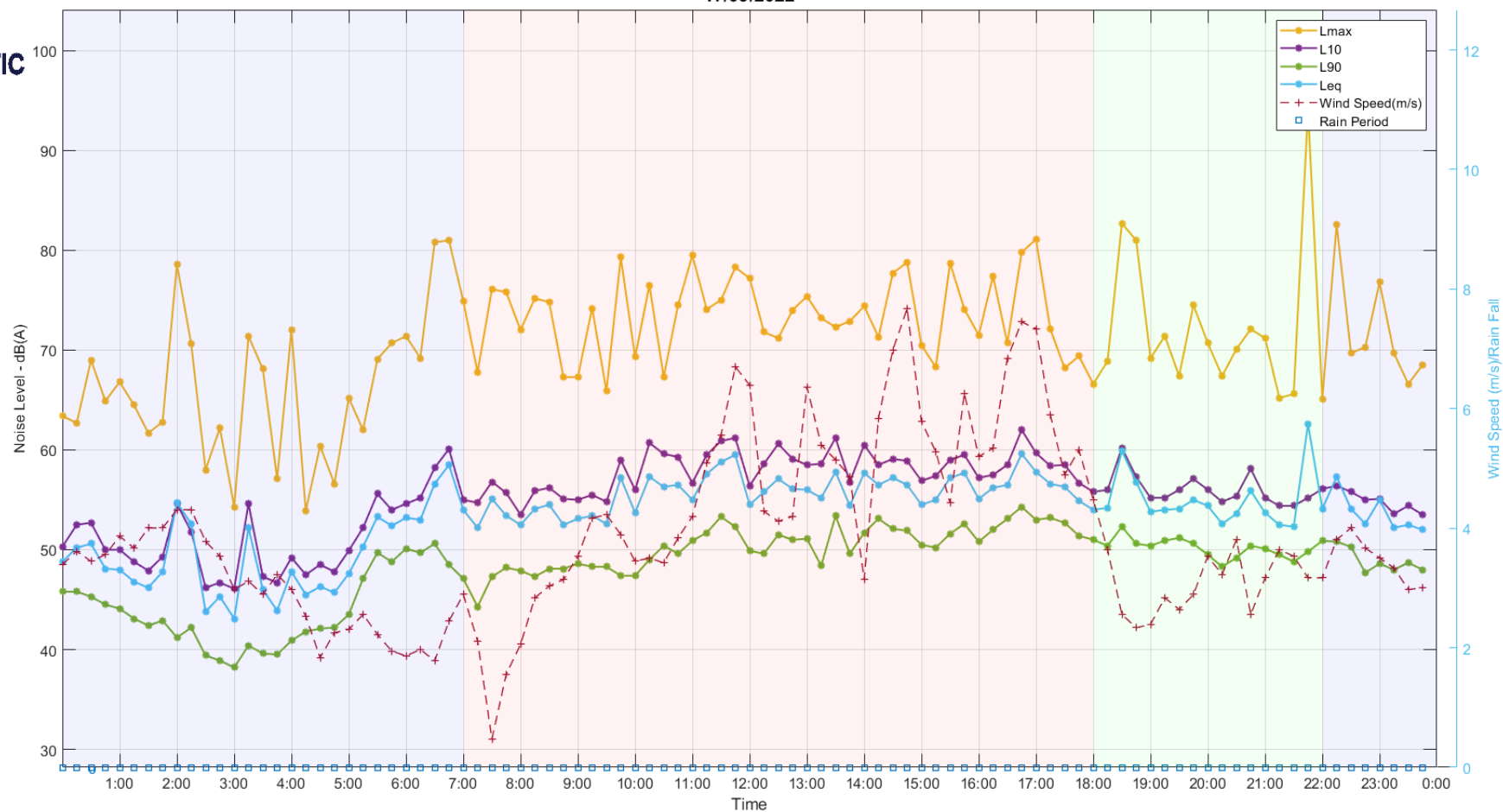
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15/09/2022**



**20 Mundamatta Street, Villawood
16/09/2022**



**20 Mundamatta Street, Villawood
17/09/2022**



20 Mundamatta Street, Villawood
18/09/2022

