MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

469-483 Balmain Road, Lilyfield

Noise Impact Assessment

SYDNEY
9 Sarah St
MASCOT NSW 2020
(02) 8339 8000

ABN 98 145 324 714
www.acousticlogic.com.au

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1 INTRODUCTION

This report has been prepared to assess noise impacts associated with the proposed development to be located at 469-483 Balmain Road, Lilyfield.

The noise impacts being assessed include:

- External noise emissions from surrounding employment uses.
- Traffic noise impacts from Balmain Road which is a connector road between Victoria Road and City West Link
- Aircraft noise impacts from Kingsford Smith Sydney Airport aircrafts taking off from the main runway.

This report has been prepared to accompany a Concept and Detailed Development Application (DA) for a development comprising residential flat buildings, light industries and creative spaces at 469-483 Balmain Road, Lilyfield. The proposed development aims to incorporate buildings on the site and construct buildings that are complementary to the surrounding residential neighbourhood and general industrial zone. The subject site and located context are indicated in Figure 1 below. 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 REFERENCE DOCUMENTS AND GUIDELINES

2.1 BACKGROUND INFORMATION USED

The assessment is based on the following drawings, report, and other information:

- Architectural Drawings prepared by Chrofi (Project No: 21049) dated May 2023.

2.2 PLANNING GUIDELINES

The following planning instruments and guidelines have been used in the assessment:

- Inner West Council (Formerly Leichhardt Council) Development Control Plan 2013 (DCP)
- Site-Specific Development Control Plan (DCP) – *Amendment 16 to Part G – Leichhardt Development Control Plan 2013 469-483 Balmain Road, Lilyfield May 2022.*
- 'State Environmental Planning Policy (Transport and Infrastructure) 2021
- Australian Standard AS2107:2016 Recommended Design Sound Levels and Reverberation Times for Building Interiors.
- NSW Department of Planning document – '*Development Near Rail Corridors and Busy Roads*' ("DNRCBR") 2008
- NSW Environmental Protection Authority (EPA) document – '*Noise Policy for Industry*' ("NPI") October 2017
- NSW Department of Planning Apartment Design Guide (ADG) 2015

3 SITE & PROJECT DESCRIPTION

The project site is legally described as Lot 2 DP1015843 and has an area of 6824m^2. The site is generally rectangular in shape and is bounded by Balmain Road, Cecily Street, Fred Street and Alberto Street, Lilyfield. The site is located approximately 500m southwest of Victoria Road, approximately 5km northwest of Sydney Central Business District (CBD) and approximately 1km from Lilyfield light rail station.

The site is in the E4 General Industrial zone which is strategically located within the Balmain Road Industrial Precinct and is characterised by a mix of industrial land uses. Low to medium density, residential developments are located to the south of the site in R1 zone (general residential), which mostly comprises single and double storey houses and residential flat buildings.

The proposal comprises the following elements:

- Concept Proposal (pursuant to Section 4.23 of the *Environmental Planning and Assessment Act 1979* and in satisfaction of Clause 6.25(4) of the *Inner West Local Environmental Plan 2022 (*IWLEP 2022) including:
    - Land uses consistent with those permitted under the IWLEP 2022, including for 'residential flat buildings' and 'light industries.
    - Maximum building envelope.
    - Design principles and controls that address each of the requirements set out under Clause 6.25(4) or the IWLEP 2022
- Detailed Development Application comprising:
    - Partial demolition of existing buildings and structures within the site
    - Site preparation works, including termination or relocation of site services. infrastructure, remediation, tree removal and the erection of site protection fencing.
    - Construction and use of a new development comprising residential apartment buildings, light industries, including adaptive reuse of existing buildings and erection of new building for 6000m^2 of light industrial uses.
        - At least 1200m^2 of the 6000m^2 would be used for light industries associated with creative purposes).
        - 89 residential apartments of which 5% would be used for the purposes of affordable housing.
    - Basement car parking for staff and resident vehicles, and a new loading dock for employment uses.
    - Public domain, communal open space, landscaping and tree planting.
    - Publicly accessible through site links, and footpath widening to Balmain Road and Alberto Street.

The employment uses nominated within this report are indicative and for assessment purposes only. The uses are permissibly within the site's E4 General Industrial Zone and under Clause 6.25 in IWLEP 2022, including at least 1,200m^2 of which is being set aside for creative purposes. Consent under this application is only sought for 'sold-shell' approval of each tenancy, with separate applications being pursued (as

required) in the future for specific uses and fit-outs (refer to the Statement of Environmental Effects for further details).

The proposed project site development and nearby receivers is presented in Figure 1 below.

Figure 1 – Site Map and Noise Monitor Locations

- Unattended Noise Monitoring Location	- Residential
- Attended Noise Monitoring Location	- Light Industrial

Note: 'R' denotes receiver. R1 denotes receiver one. The type of receiver is described in the legend above.

Receivers

- Residential 1 (R1): residential receivers located to the south west of the project site.
- Light Industrial (R2): Light industrial use receivers located to the north-east of the project site.
- Residential 3 (R3): Residential receivers located directly opposite Cecily street to the north west of the project site.
- Residential 4 (R4): Residential receivers located to the South East of the Project site.
- Residential 5 (R5): Residential receivers located to the south of the project site.

4 AMBIENT NOISE MONITORING

Monitoring has been undertaken to obtain the following data:

- Background noise levels at the surrounding residential properties.
- Noise levels generated by adjacent land uses.

Figure 1 above shows the monitoring locations used.

4.1 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).

L_{90} – 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 L_{90} 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 L_{90} level.

L_{10} 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.

L_1 is sometimes used in place of L_{max} to represent a typical noise level from a number of high-level, short-term noise events.

4.2 UNATTENDED LONG TERM NOISE MONITORING

Unattended long-term noise monitoring was undertaken between the period of 11th November 2022 and 21st November 2022. The following table summarises the background noise levels for the development.

Ambient noise levels obtained from long-term unattended noise monitoring in the report referenced above are as follows:

Table 1 –Background Noise Levels

Location	Rating Background Noise Level (dB(A) L_{90}) *		
See Figure 1	Day	Evening	Night
	44	39	32

4.3 SHORT-TERM NOISE MEASUREMENTS

4.3.1 Measurement Equipment

Attended short term measurements of traffic noise were undertaken by this office to supplement the unattended noise monitoring. 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.

4.3.2 Measurement Locations and Measurement Period

Refer to figure 1 for attended measurement location conducted on 11th November 2022. A 15-minute ambient measurement was performed at around 3:00PM – 3:15PM

4.3.3 Measurement Results

The results of the attended measurements are summarised in the table below.

Table 2 - External Attended Traffic Noise Measurement Results

Measurement Location	Measured Noise Level dB(A)$L_{Aeq(15\text{-}minute)}$
Balmain Road Approximately 3m from the kerb	66

5 EXTERNAL NOISE INTRUSION ASSESSMENT

The Site Is subject to external noise sources, mainly traffic and aircraft. The noise assessment also considered surrounding light industrial employment uses. A noise intrusion assessment of these external sources has been conducted based on the requirements of the following standards and guidelines:

- Inner West Council (Formerly Leichhardt Council) Development Control Plan 2013 (DCP)
- Site-Specific Development Control Plan (DCP) – *Amendment 16 to Part G – Leichhardt Development Control Plan 2013 469-483 Balmain Road, Lilyfield May 2022.*
- State Environmental Planning Policy (Transport and Infrastructure) 2021
- Australian Standard AS2021:2015 – '*Acoustics – Aircraft noise intrusion – building and siting*'
- Australian Standard AS2107:2016 – '*Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors'*.
- NSW Department of Planning and Environment's Document – '*Developments near Rail Corridors or Busy Roads – Interim Guideline*'

5.1 EXTERNAL NOISE INTRUSION CRITERIA

5.1.1 Traffic Noise Intrusion

5.1.1.1 Inner West Council (Formerly Leichhardt Council) Development Control Plan (DCP) 2013

Inner West Council document (formerly Leichhardt Council) – *Leichhardt DCP 2013* – Section C4.15 states the following regarding Acoustic Privacy for mixed-use development.

"C4.15 Mixed Use

> *C8. Dwellings are provided with an acceptable level of residential amenity in terms of… compliance with C3.12 – Acoustic Privacy of this Development Control Plan.*
>
> *Note: Where natural ventilation is not practicable, devices that move air such as fans are more preferred over air-conditioning for internal cooling purposes."*

As such section C3.12 of the DCP states the following regarding residential acoustic privacy.

"C3.12 Acoustic Privacy

> *C2. Buildings that are exposed to high levels of external noise are designed and constructed in accordance with AS3671 – Acoustics – Road Traffic Noise Intrusion, AS2107 – Recommended Design Sound Levels and Reverberation Times for Building Interiors, and AS2021-2000 (superseded by AS2021-2015) – Acoustics Aircraft noise intrusion – Building siting and construction."*
>
> *C4 Where for a new dwelling in locations that are exposed to high levels of external noise, including aircraft noise from Sydney Airport and road noise from mains roads such as Parramatta Road, City West Link and Victoria Road, an acoustic report that demonstrates compliance with these objectives and controls prepared by a suitably qualified and experienced professional and is to be submitted as part of a development application.*

5.1.1.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The NSW Department of Planning's policy, *Development Near Rail Corridors And Busy Roads – Interim Guideline*, sets out internal noise level criteria adapted from the State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP2021) for developments with the potential to be impacted by traffic or rail noise and vibration.

Section 2.120 of the NSW SEPP 2021 for road noise and vibration stipulates":

> *"(1) This section 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 transitway 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 TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration-*
>
> *(a) for residential accommodation,*
>
> *(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 L_{Aeq} levels are not exceeded:*
>
> *(a) in any bedroom in the residential accommodation – 35 dB(A) at any time between 10 pm and 7am,*
>
> *(b) anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway) – 40 dB(A) at any time."*

Table 3 – T&ISEPP Indoor Design Sound Level (Road Noise)

Activity	Indoor Design Sound Level dB(A)
Sleeping Areas	35 dB(A) $L_{eq(10pm-7am)}$
Anywhere Else (Except garage, kitchen, bathrooms or hallway)	40 dB(A) $L_{eq(anytime)}$

5.1.2 Aircraft Noise Intrusion

5.1.2.1 Inner West Council (Formerly Leichhardt Council) Development Control Plan (DCP) 2013

Section C3.12 of the DCP states the following regarding residential acoustic privacy.

"C3.12 Acoustic Privacy

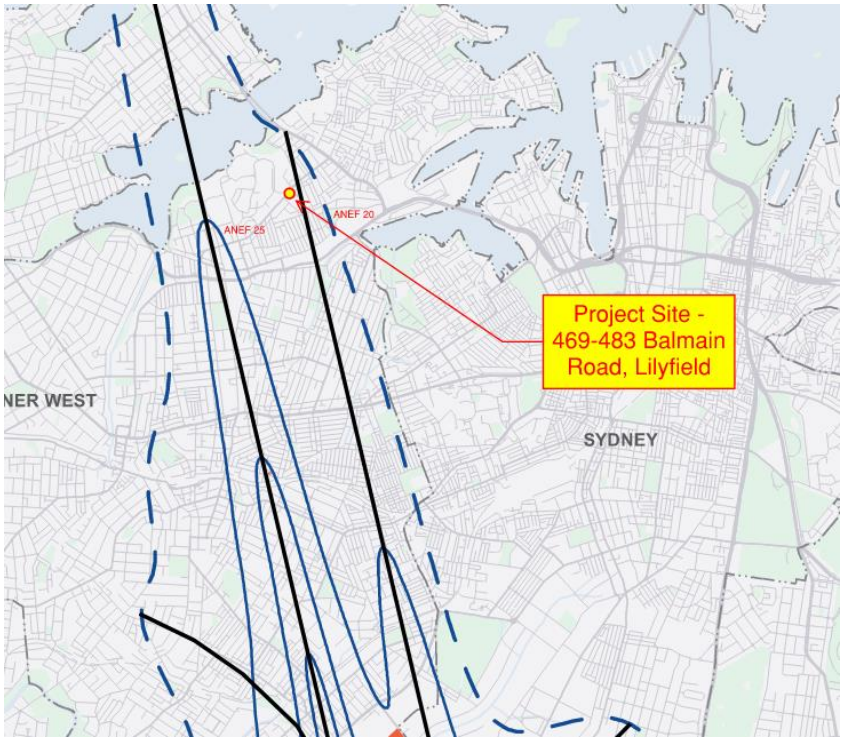
> *C2. Buildings that are exposed to high levels of external noise are designed and constructed in accordance with AS3671 – Acoustics – Road Traffic Noise Intrusion, AS2107 – Recommended Design Sound Levels and Reverberation Times for Building Interiors, and AS2021-2000 (superseded by AS2021-2015) – Acoustics Aircraft noise intrusion – Building siting and construction."*
>
> *C4 Where for a new dwelling in locations that are exposed to high levels of external noise, including aircraft noise from Sydney Airport and road noise from mains roads such as Parramatta Road, City West Link and Victoria Road, an acoustic report that demonstrates compliance with these objectives and controls prepared by a suitably qualified and experienced professional and is to be submitted as part of a development application.*

5.1.2.2 AS2021:2015 Aircraft Noise Intrusion – Building Siting and Construction

The acceptability of aircraft noise exposure is assessed using Australian Standard AS2021-2015 *'Aircraft Noise Intrusion – Building siting and construction'*.

The standard sets criteria for allowable levels of aircraft noise exposure depending on the proposed land use for the site being assessed.

The project site is located between ANEF 20 and 25 (see figure below) contours, based on the Sydney Airport 2039 ANEF contour map. The ANEF determines those residential developments located within these contours (20-25) are considered 'conditionally acceptable' based on the incorporation of noise control features in the construction of the residential building and 'acceptable' for light industrial buildings less than 30ANEF. On this basis, the proposed site requires only the residential levels to be assessed to ensure that internal noise levels are limited to those recommended in AS2021, specifically those in table 3.3 of the standard.



AS2021 stipulates the internal noise levels listed in Table 6 as summarised below:

Table 4 – AS2021-2015 Indoor Design Sound Level (Aircraft)

Activity	Indoor Design Sound Level dB(A)
Bedrooms	50
Living Spaces	55
Bathrooms, toilets, laundries	60

Aircraft noise levels at the site were determined using AS2021:2015. The standard gives aircraft noise levels for aircraft landing and taking off for locations near airports. The location of the runways was obtained from the Sydney Airport ANEF 2039.

Based on the distance from the site to the runways, the flight path and the site elevation, AS2021 predicts that the loudest typical aircraft movement will be from an A330 aircraft departing from the Main runway. The noise level at the site as indicated by the standard is 73dB(A). This noise level will be used to predict the resultant internal noise levels.

5.1.3 Light Industrial (Employment) Noise Intrusion

The surrounding area is a unique mix of traditional single-storey building and employment lands, with light industrial activity creating a certain level of noise. To ensure that the proposed development and residents can coexist harmoniously without conflicts, the noise levels from this source need to be assessed against the site-specific controls. A draft site-specific development control plan has been developed by Inner West Council for 469-483 Balmain Road, Lilyfield.

5.1.3.1 Draft Site Specific DCP 469-483 Balmain Road, Lilyfield May 2022

A site-specific development control plan has been provided for 469-483 Balmain Road, Lilyfield. The following controls have been outlined within the site-specific DCP which are relevant for acoustics:

"G12.2 Objectives

- *O9 To ensure acceptable residential amenity by ensuring adequate solar access, visual and acoustic privacy.*
- *O11 To mitigate land use conflict between the residential component and employment uses on the site, including the operation of employment uses in the vicinity.*

G12.3 Desired Future Character

- *O2 Achieve a mix of light industrial, creative and residential spaces that can be successfully coexist and support the employment viability of the wider light industrial precinct.*
- *O3 Protect and enhance the residential amenity of neighbouring dwellings and within the development.*
- *O4; Minimise conflict between residential and industrial uses in and adjoining sites.*

G12.7 Residential Amenity

Objectives

- *O1 To ensure acceptable residential amenity and the ongoing visibility of employment uses within the site and on the adjoining industrial land.*
- *O2 To provide an acoustically built development to minimise conflict between employment and residential uses.*

Controls

- *C1 The building design and construction shall minimise impacts between the employment and residential uses by:*
    - *Implementing a minimum 400mm thick floor slab, or alternative acoustic attenuation treatment, between employment uses and residential uses:*
    - *Incorporating construction methods and materials that insulate residential uses from noise and vibration transmission on site and from surrounding employment uses;*
    - *Designing and locating employment and residential services and equipment (e.g., plant, service lifts that minimise amenity impacts; and*
    - *Implementing suitable attenuation, vibration and odour/ventilation measures to safeguard viable employment industrial and minimise residential complaints.*

- *C2 the Acoustic report submitted with the development application must verify the adequacy of the proposed design, construction methods, and materials to achieve appropriate noise levels and ensure that the ongoing operation of employment uses will not impact the above residential uses or adjoining.*

- *C5 Residential uses are to be design to incorporate measures that reduce noise from external sources into the apartments.*

- *C7 Habitable rooms are to minimise the number or size of openings (where windows face industrial uses) or provide treatment of window openings with seals or other noise mitigating devices.*

- *C9 Minimise overlooking to surrounding residential properties and address any potential adverse noise and visual impact (such as night lighting) from employment areas.*

G12.12 Waste and Recycling

Controls

- *C3 Waste and recycling facilities must be managed in acoustically treated areas to minimise the noise of collection.*

5.2 METHODOLOGY AND COMPLYING CONSTRUCTIONS

5.2.1 Methodology

Internal noise levels will primarily be because of noise transfer through the roof, windows, and doors as these are relatively light building elements that offer less resistance to the transmission of sound.

The predicted noise levels through the roof, walls, windows, and doors are discussed 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 aircraft and traffic noise, and surrounding noise, the absorption characteristics of the rooms and the noise reduction performance of the building elements.

5.2.2 Draft Site-Specific Development Control Plan (DCP) – Amendment 16 to Part G – Leichhardt Development Control Plant 2013 469-483 Balmain Road, Lilyfield May 2022

The Draft Site Specific Development Control Plant (DCP) – Amendment 16 to Part G states the following regarding Controls for design and construction:

*"**C1** – The building design and construction shall minimise impacts between the employment and residential uses by:*

a) Implementing a minimum 400mm thick floor slab; or alternative acoustic attenuation treatment, between employment uses and residential uses.
b) Incorporating construction methods and materials that insulate residential uses from noise and vibration transmission on site and from surrounding employment uses;
c) Designing and locating employment and residential services and equipment (E.g, plant, service lifts that minimise amenity impacts; and
d) Implementing suitable attenuation, vibration and odour/ventilation measures to safeguard viable employment industrial and minimise residential complaints.

***C2 –** The acoustic report submitted with the development application must verify the adequacy of the proposed design, construction methods, and materials to achieve appropriate noise levels and ensure that the ongoing operation of employment uses will not impact the above residential uses or adjoining.*

***C5 –** Residential uses are to be designed to incorporate measures that reduce noise from external sources in the apartments."*

5.2.3 Assumptions

The following assumptions have been made for the purpose of analysis based on the available information and this office's experience with similar projects. Should there be any variations to the below; the acoustic engineer should be consulted for to review.

- Living Areas have an approximate room size of 5m x 6m x 2.7m
- Living Areas have an approximate glazing area of 10 square metres.
- Bedrooms have an approximate room size of 5m x 4m x 2.7m
- Bedrooms have an approximate glazing area of 10 square metres.

5.2.4 Glazed Windows and Doors

To ensure compliance with both the project noise objectives and the provisions of the Draft Site-Specific Control Plan (DCP), it is advised to implement the following new constructions. Aluminium framed/sliding

glass doors and windows will be satisfactory provided that 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.

Table 5 -Minimum Glazing Thickness Requirement

Level	Space	Element	Minimum Glazing Thickness	Acoustic Seals
GF	All	All Glazed Elements	6mm Float	Yes
L1-L4	All	All Glazed Elements	6mm Float	Yes
L5	Bedrooms	All Glazed Elements	6mm Float	Yes
	Living Areas	All Glazed Elements	6.38mm Laminated	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 glazed thickness equal to those recommended above and are to have Raven RP10 to the top, bottom and sides.

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

Glazing Assembly	Minimum R_w Rating
6mm Float	29
6.38mm Laminated	31

5.2.5 External Walls

The proposed external walls are to be masonry construction. Any walls consisting of masonry construction will be acoustically acceptable with no additional treatment. Should any light weight walls be desired, the acoustic engineer should be consulted to review the constructions.

5.2.6 External Roof/Ceiling Construction

The proposed external roof is to be masonry construction. Any roofing consisting of masonry construction will be acoustically acceptable with no additional treatment. Acoustic Logic has been advised that the proposed roof separating the light industrial and residential components of the development will be approximately 400mm thick concrete. This will be acoustically acceptable provided that any penetrations and are acoustically treated so as to not diminish the performance of the slab.

5.2.7 Slab Separating Residential and Employment Usage Area

The proposed development will contain a minimum 400mm thick floor slab, or an alternative acoustic treatment will be provided, to ensure proper attenuation treatment and separation between the light industrial and residential space. It is recommended that the acoustic engineer be consulted to review construction details.

5.2.8 Ventilation Requirements

AS2021-2015 requires the installation of ventilation or air conditioning system where aircraft noise exposure exceeds ANEF 20. As internal noise levels cannot be achieved with windows open it is required that an alternative outside air supply system or air conditioning be installed in accordance with AS 1668.2 requirements.

Any mechanical ventilation system that is installed should be acoustically designed such that the acoustic performance of the recommended constructions is not reduced by any duct or pipe penetrating the wall/ceiling/roof.

Noise emitted to the property boundaries by any ventilation system shall comply with Council requirements.

6 NOISE EMISSIONS ASSESSMENT

6.1 NOISE EMISSIONS CRITERIA

Noise Emission from the site have been assessed against the following guidelines:

- Inner West Council document – '*Leichhardt Development Control Plan* (DCP) 2013
- NSW Environmental Protection Authority (EPA) document – '*Noise Policy for Industry*' ("NPI") 2017
- NSW Department of Planning Apartment Design Guide (ADG) 2015
- Draft Site-Specific DCP 469-483 Balmain Road, Lilyfield May 2022.

6.1.1 Inner West Council (Formerly Leichhardt Council) Development Control Plan (DCP) 2013

Inner West Council document (formerly Leichhardt Council) – *Leichhardt DCP 2013* – Section C3.12 states the following regarding Acoustic Privacy for residential dwellings.

"C3.12 Acoustic Privacy

> *C6. Electrical, mechanical or hydraulic plant achieves a maximum noise level of 5dB(A) above background sound levels at the boundary of the site."*

6.1.2 NSW Environmental Protection Authority Noise Policy for Industry (NPI) 2017

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

6.1.2.1 Intrusiveness Criterion

The intrusiveness criterion 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 8 - Intrusiveness Criteria

Location	Period/Time	Background Noise level dB(A)$L_{90(period)}$	Intrusiveness Noise Emission Trigger Level dB(A) $L_{eq(15min)}$
Nearby Residences	Day (7am-6pm)	44	49
	Evening (6pm-10pm)	39	44
	Night (10pm-7am)	32	37

6.1.2.2 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 Noise Policy for Industry set outs 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 include rural, suburban, urban and urban/industrial interface.

For the purposes of a conservative assessment, this office will assess noise emissions to residential receivers in accordance with the 'Urban' category.

Table 9 - Amenity Noise Levels

Type of Receiver	Time of day	Project Amenity Noise Level dB(A)$L_{eq(15\ minute)}$
Residential – **Suburban**	Day (7am-6pm)	53
	Evening (6pm-10pm)	43
	Night (10pm-7am)	38
Light Industrial	When in Use	70

6.1.2.3 Summarised Project Criteria

The following table presents the overall project noise trigger levels (the prevailing criteria is bolded) for noise emissions from the project site to nearby receivers as presented in figure 1.

Table 7 – Summarised Project Noise Trigger Level

Receiver	Time Period	Background Noise level dB(A)$L_{eq(15\text{-}minute)}$	Project Intrusiveness Noise level dB(A)$L_{eq(15\text{-}minute)}$	Project Amenity Noise level dB(A)$L_{eq(15\text{-}minute)}$
Residential	Day (7am – 6pm)	44	**49**	53
	Evening (6pm – 10pm)	39	44	**43**
	Night (10pm – 7am)	32	**37**	38
Light Industrial	When in Use	-	-	**70**

Note: The prevailing criteria is the lower of the project intrusiveness noise level and the project amenity noise level.

6.1.3 Draft Site-Specific DCP 469-483 Balmain Road, Lilyfield May 2022

A draft site-specific development control plant has been provided for 469-483 Balmain Road, Lilyfield. The following general controls have been outlined within the draft site-specific DCP which are relevant for acoustics:

"G12.2 Objectives

- *O9 to ensure acceptable residential amenity by ensuring adequate solar access, visual and acoustic privacy.*
- *O11 – To mitigate land use conflict between the residential component and employment uses on the site, including the operation of employment uses in the vicinity.*

G12.3 Desired Future Character

- *O2 Achieve a mix of light industrial, creative and residential spaces that can be successfully coexist and support the employment viability of the wider light industrial precinct.*
- *O3 – Protect and enhance the residential amenity of neighbouring dwelling and within the development."*

6.2 ASSESSMENT OF OTHER NOISE EMISSIONS

6.2.1 Operation Noise Emissions (Carpark & Loading Dock)

At this stage, the details of specific vehicles pathways are not known, however, general deliveries will take place through the loading bay in Basement 1 with site entrance access being facilitated from the street. Alberto Lane does not intend on being used to facilitate delivery or vehicle movements. In general:

- Garbage disposal and bottle collection should only be undertaken during the day (7am-6pm)
- Trucks and delivery vehicles should be turned off whilst idling/ loading and unloading.
- Vehicles shall minimise idling on the ramp whilst waiting for basement carpark entry gate to open/close.
- Speed hump should not be located on the carpark ramp.

6.2.2 Noise From Mechanical Plant

Mechanical plant items are not typically selected at this stage as plant selections and locations are not finalised prior to DA.

All plant can be satisfactorily attenuated to levels complying with noise emission criteria through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/ lined ducting) or similar.

Detailed acoustic review of all external mechanical plant should be undertaken at construction certificate stage (once plant selections and locations are finalised). Acoustic treatment should be determined to control plant noise emissions to the levels set out in sections 6.1 of this report.

6.2.3 Possible Tenancies

Acoustic Logic has been advised that at the current time of preparing this report, no specific uses are being proposed within this DA as the exact tenancies are not known, however, provisional considerations have been made based on possible and likely uses for the tenancies. These uses are permissible within the site's E4 General Industrial Zone and consent under this application is only sought for 'cold-shell' approval for each tenancy, with separate applications being pursued in the future for specific uses and fit-outs. Future acoustic assessments will be undertaken as required under separate development application in accordance with specific uses. General controls and impacts have been provided below with reference to guidelines and the site-specific DCP.

At this stage, it is not known the extent of treatment required however, general controls have been provided in documents - such as the NSW Department of Planning Apartment Design Guide (ADG) 2015 – which comment on how to improve the acoustic privacy of nearby receivers. Additionally Australian Standard 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors is not directly relevant, but it can provide guidance for houses and apartments in inner city areas.

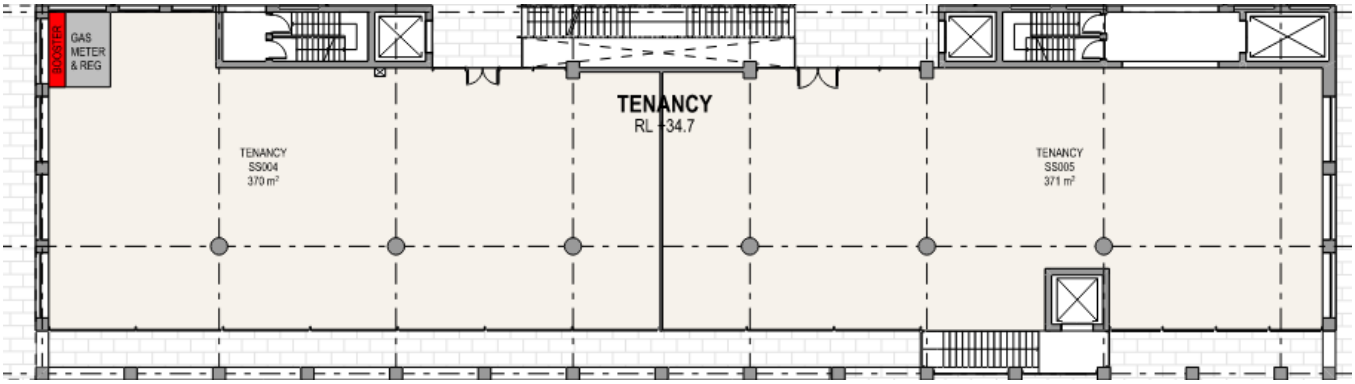
- Facades/windows of sensitive rooms (bedrooms/sleeping areas) away from outdoor courtyards and operations.
- Bedrooms should be located at least 3m away from noise sources (e.g., driveways and garage doors).
- Louvres can be utilised to improve both visual and acoustic privacy.

- Balustrades can act as a barrier and improve the noise attenuation loss to facades.

6.2.3.1 Indoor Artisan Food and Drink Industry

Indoor Artisan Food and Drink Industries have a few typical noise sources which may have potential impacts on nearby receivers. Such source examples could include fridge plant items, canning, vehicle noise/general industrial operations. The following assumptions have been utilised:

- Indoor Artisan Food and Drink Industries will operate during day and evening hours (7am – 10pm) within one of the tenancies facing Balmain Road, away from the residential receivers. Should operations intend to operate past these hours, a separate DA should be lodged, and specific controls should be reviewed.
- Worst case scenario -all plant will be operating at the same time.
- Residential receivers will keep their windows/doors closed.
- Location of plant is to be carefully considered to avoid noise impacts to adjacent residential.
- Loading and unloading heavy vehicle movements are not to occur on Alberto Lane



6.2.3.2 Outdoor Artisan Food and Drink Industry

Predominant noise sources associated with outdoor dining/seating are typically patron speech noise and background music. Preliminary considerations to the ground floor tenancies include:

- Outdoor dining will only be operating during day and evening hours (7am – 10pm).
- An approximate outdoor seating area has been allowed for as per drawings prepared by Chrofi Architects (dated May 2023). See screenshot from drawings below with cross-hatched potential outdoor seating areas.
- 1 out of every 2 patrons will be speaking at any time.
- Residential receivers will keep their windows/doors closed.
- Patrons have a sound power level of 75dB.

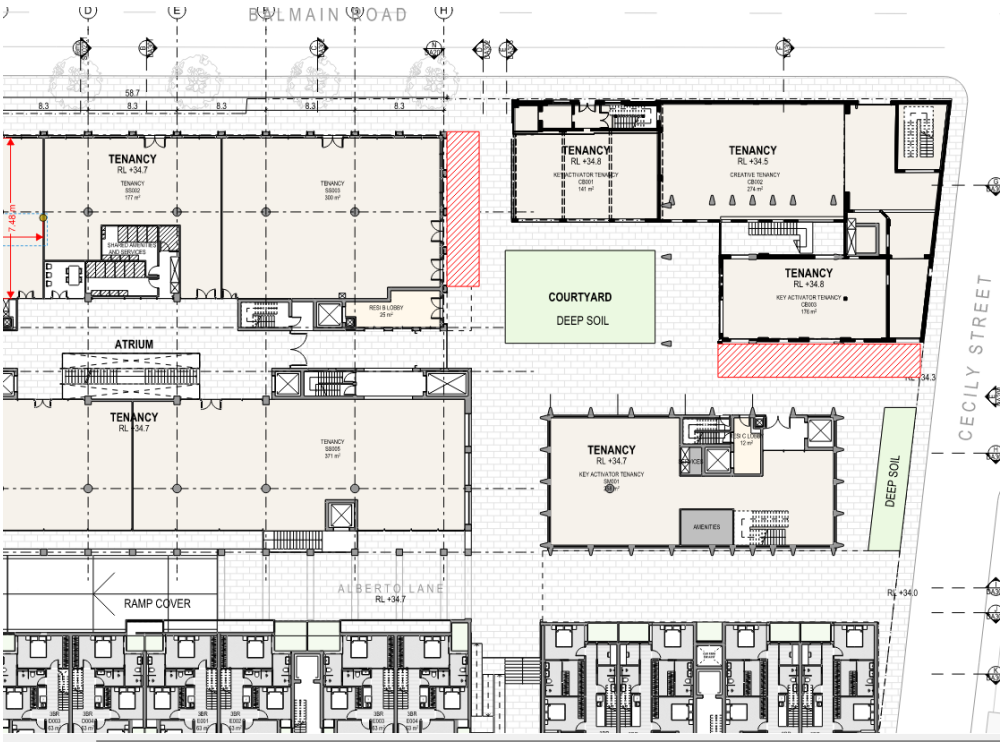


Figure 1: Potential Outdoor Seating Locations

The worst affected receivers are expected to be the residential receivers on level 3 of building block C (E.g., Unit C302 which has glazing facing out towards the courtyard.

6.2.3.3 Creative Industries

Creative industries generally do not have loud constant noise sources or require large machinery for operations. Provided that activities inside are consistent with painting, arts studios, galleries, it is not anticipated that noise sources would pose significant impacts on nearby receivers. However, should high noise generating activity be anticipated, this shall be subject to an acoustic review.

7 RECOMMENDATIONS & MANAGEMENT CONTROLS

The following management controls are recommended as a means of best practice to ensure that the noise impact associated with the operation of the proposed development are minimised.

- An internal speed limit of 10km/h within the driveway to the carpark/loading dock.
- Trucks are to be turned off whilst unloading and loading within the loading dock.
- The Loading Dock roller shutter can only open upon entering/exiting and will need to be closed while the loading dock is in operation.
- Mechanical plant items are to be reviewed in detail by the project acoustic consultant once plant selections and locations are finalised during the detailed design stage of the project.
- Waste and recycling facilities and should be located in acoustically treated areas to minimise noise of collection.

8 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the development to be located at 469-483 Balmain Road, Lilyfield.

Provided that the complying controls and constructions presented in Section 5 are adopted, operation noise emissions and noise intrusion will satisfy the requirements of the following documents:

- Inner West Council (Formerly Leichhardt Council) Development Control Plan 2013 (DCP)
- Site-Specific Development Control Plan (DCP) – *Amendment 16 to Part G – Leichhardt Development Control Plan 2013 469-483 Balmain Road, Lilyfield May 2022*.
- 'State Environmental Planning Policy (Transport and Infrastructure) 2021
- Australian Standard AS2107:2016 Recommended Design Sound Levels and Reverberation Times for Building Interiors.
- NSW Department of Planning document – '*Development Near Rail Corridors and Busy Roads*' ("DNRCBR") 2008
- NSW Environmental Protection Authority (EPA) document – '*Noise Policy for Industry*' ("NPI") October 2017
- NSW Department of Planning Apartment Design Guide (ADG) 2015

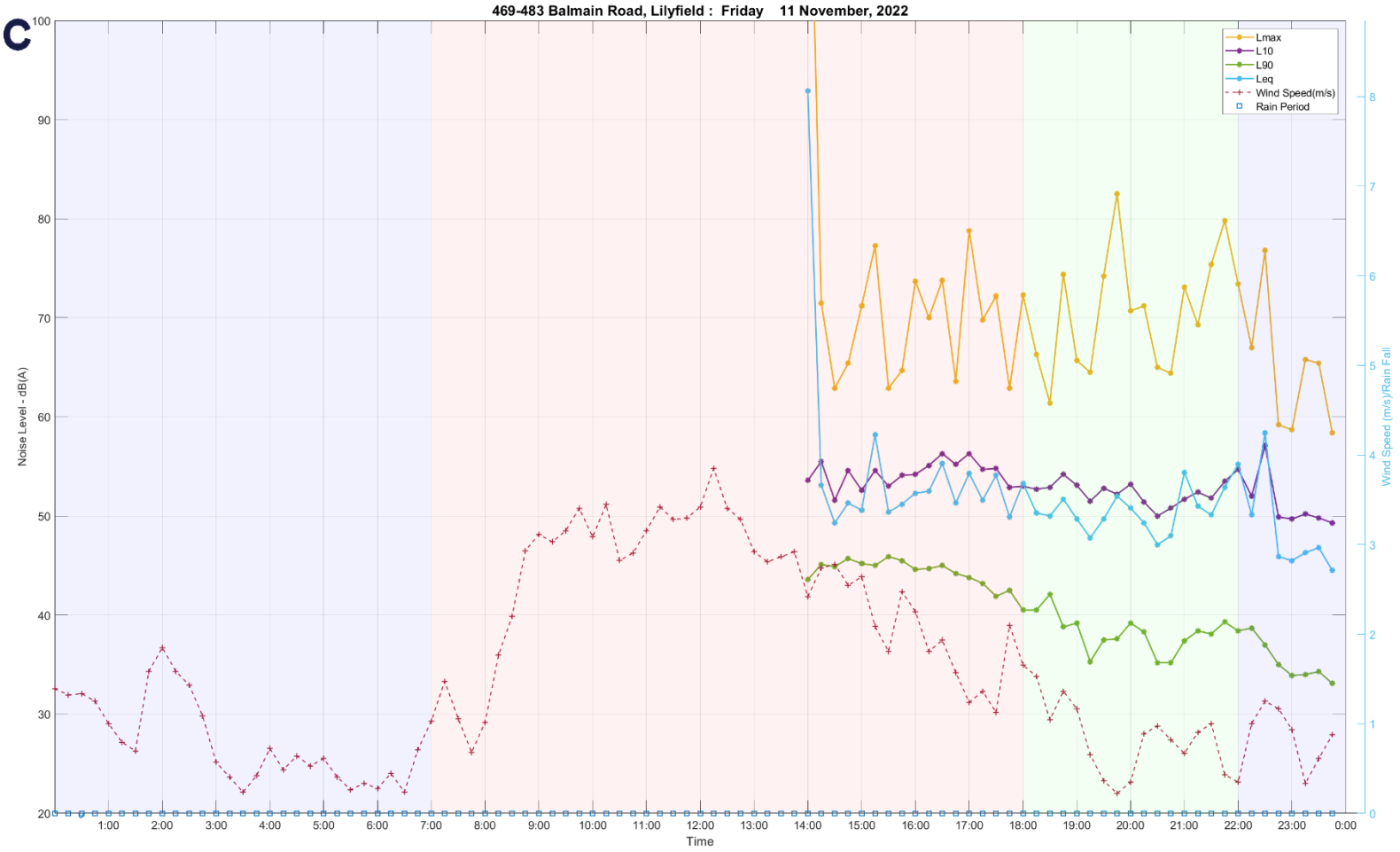
This office can confirm that the proposed design, construction methods and materials are sufficient to achieve appropriate design and noise levels. Ongoing operation of employment uses are capable of coexisting with nearby residential components, whilst maintaining their acoustic amenity.

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

Yours faithfully,

Acoustic Logic Pty Ltd
James Ting

APPENDIX 1- UNATTENDED NOISE MONITORING GRAPHS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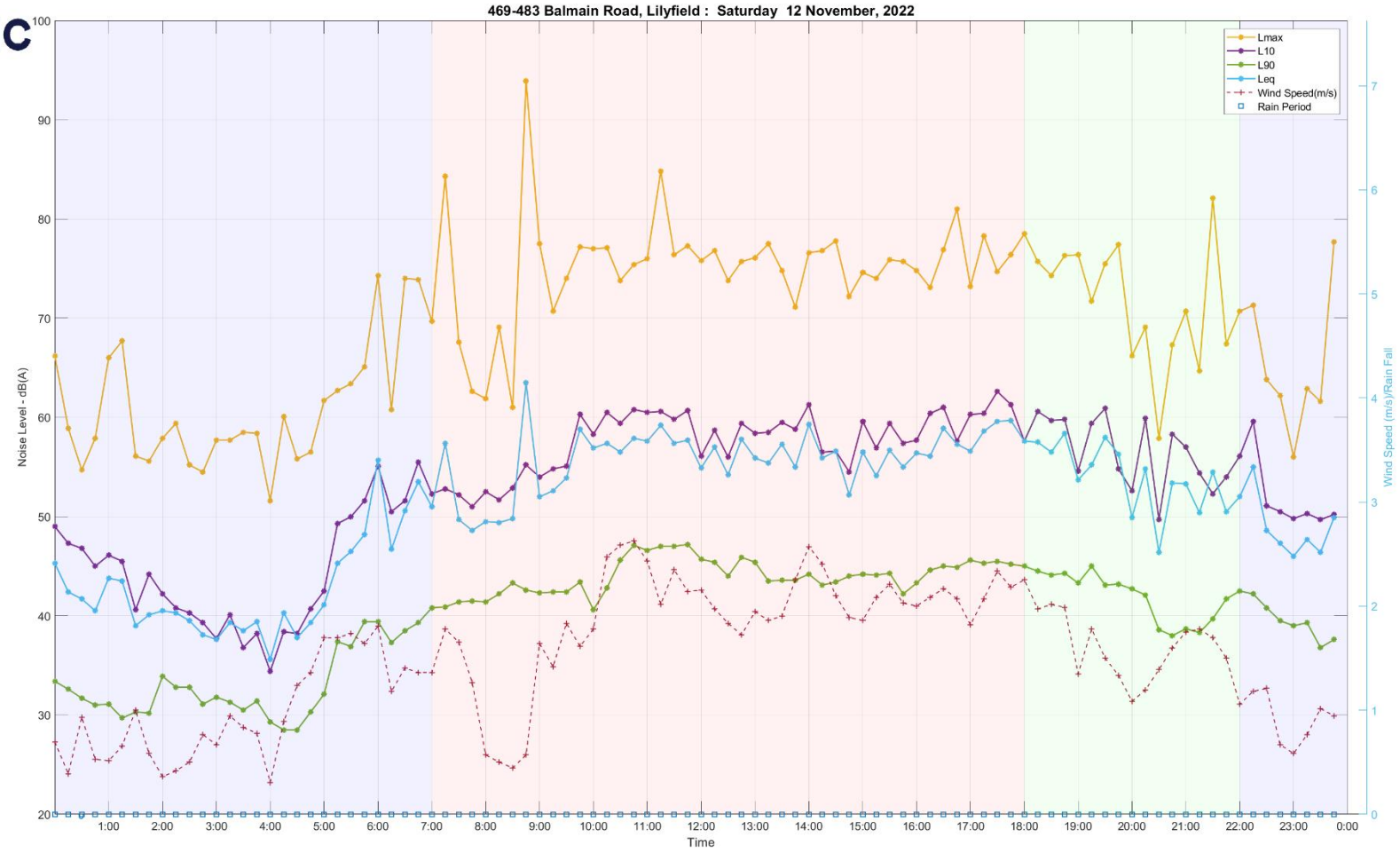
469-483 Balmain Road, Lilyfield : Saturday 12 November, 2022
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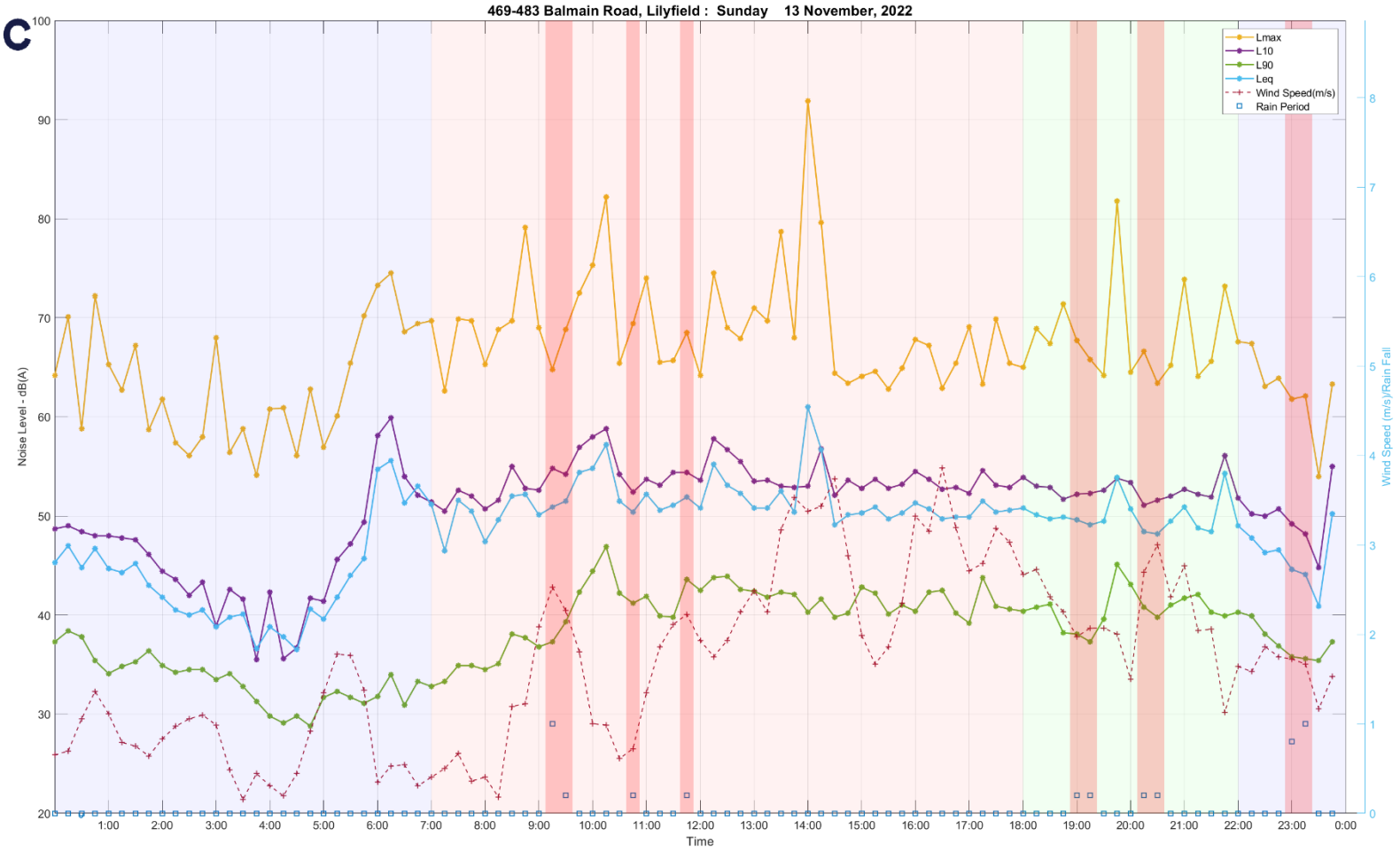
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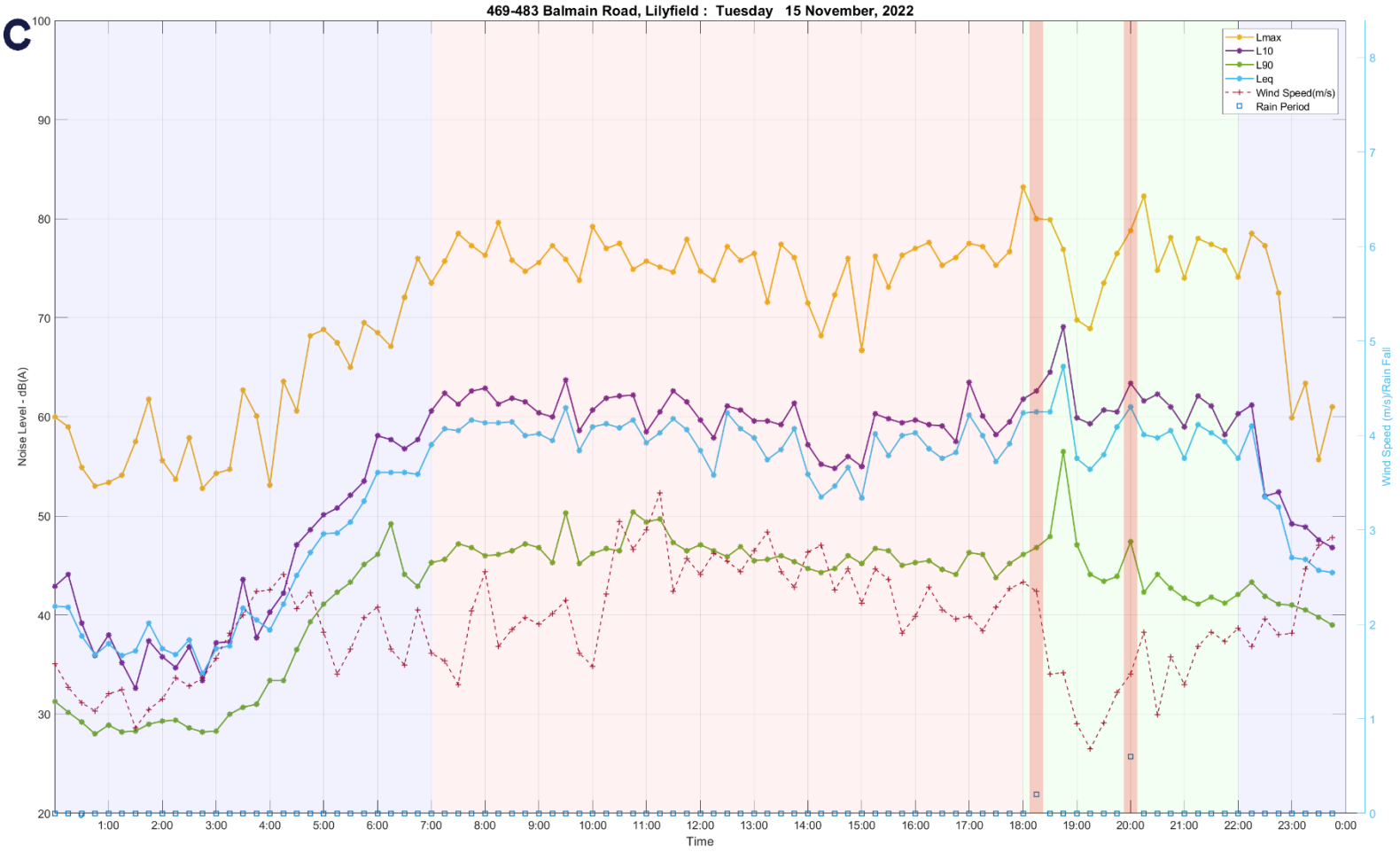
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Noise Level - dB(A)
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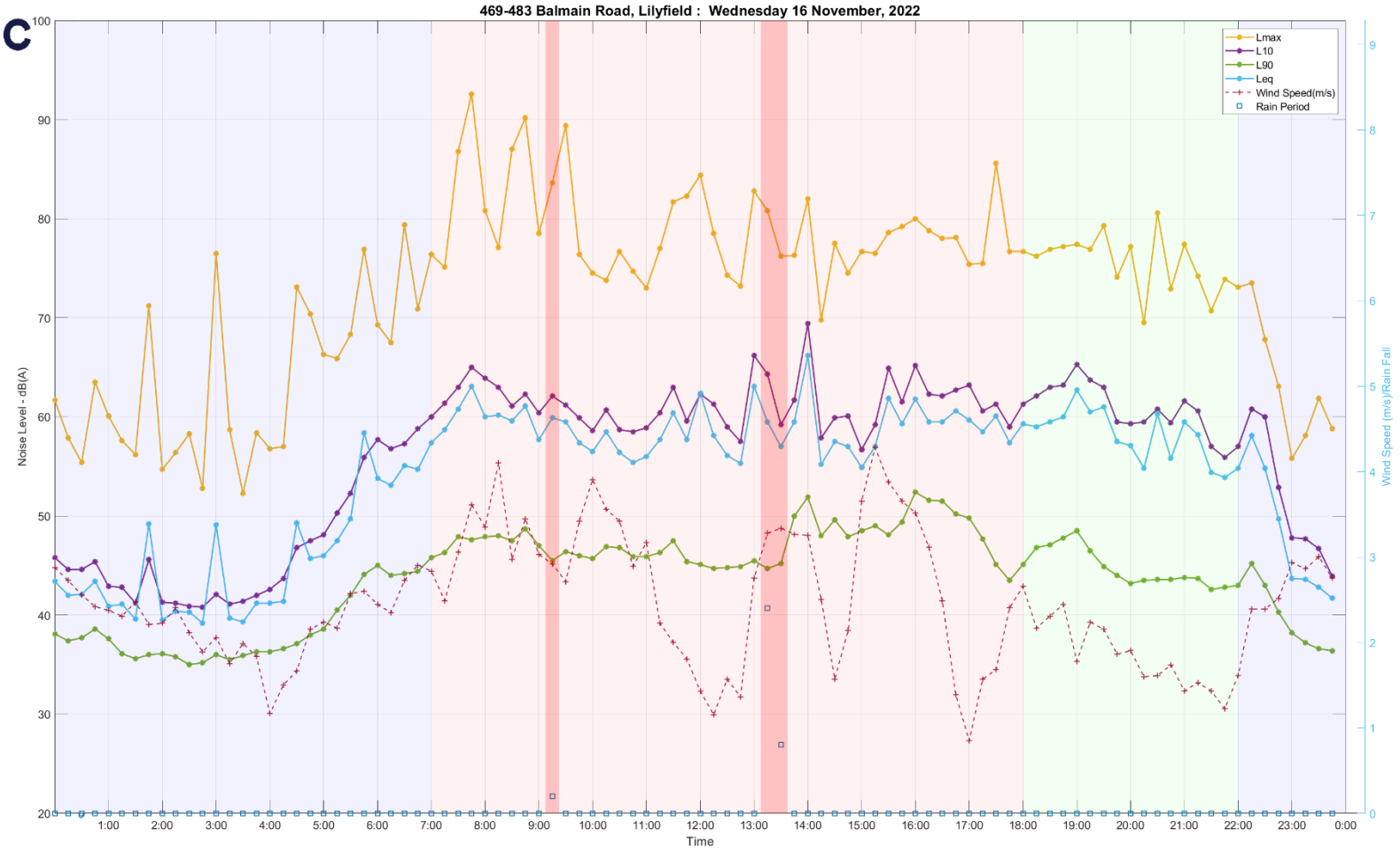
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Noise Level - dB(A)
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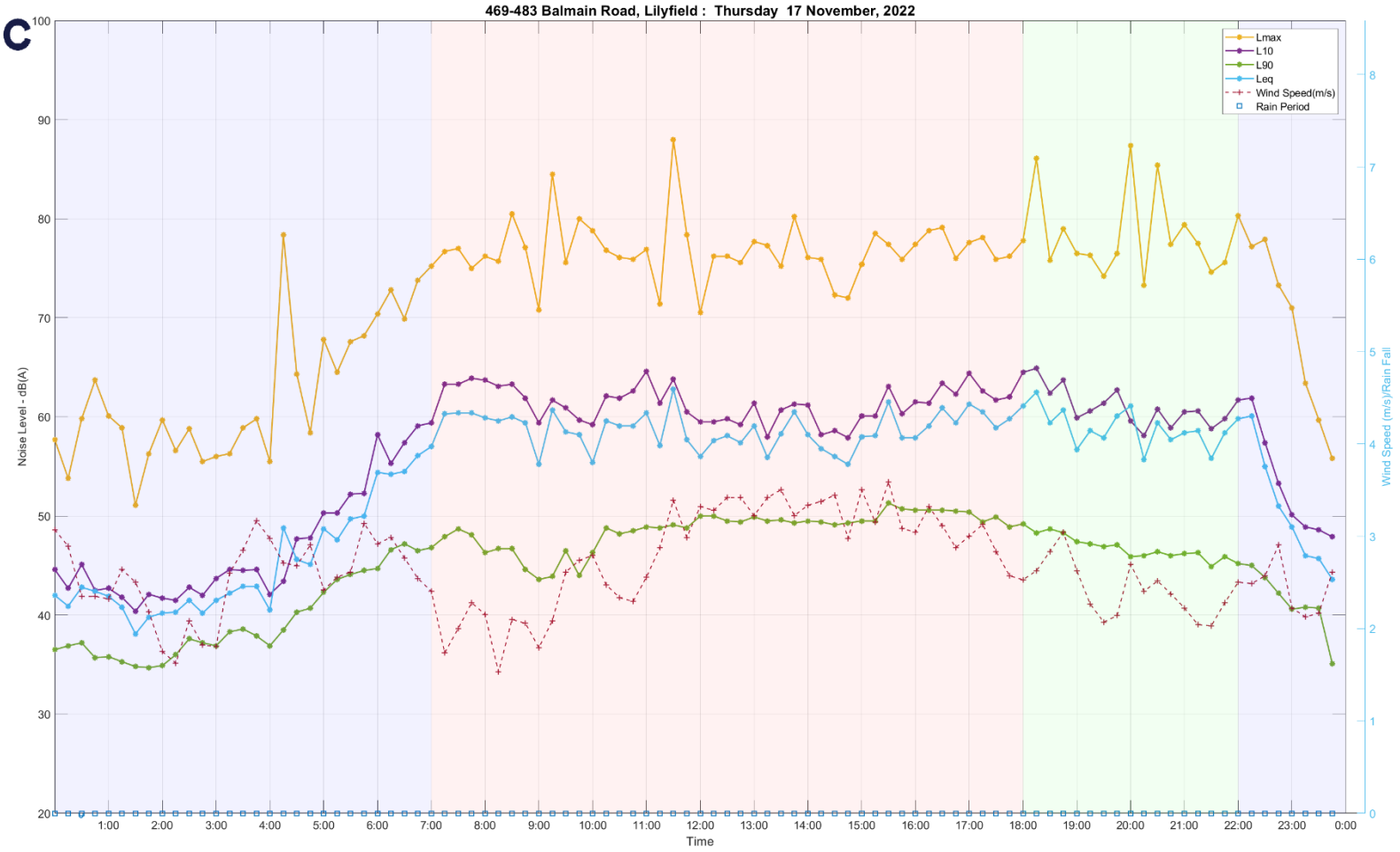
469-483 Balmain Road, Lilyfield : Thursday 17 November, 2022
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Noise Level - dB(A)
Wind Speed (m/s)/Rain Fall
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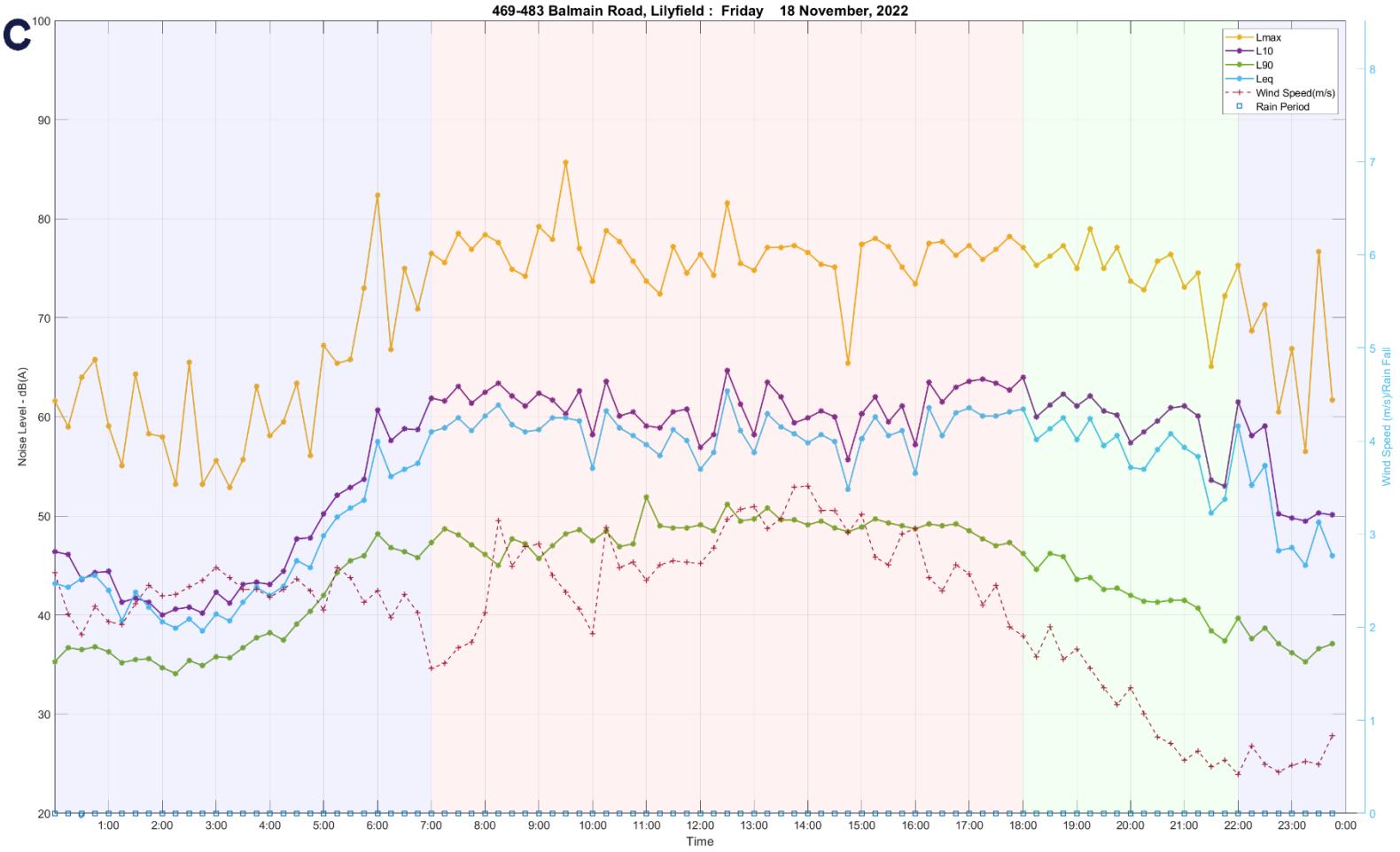
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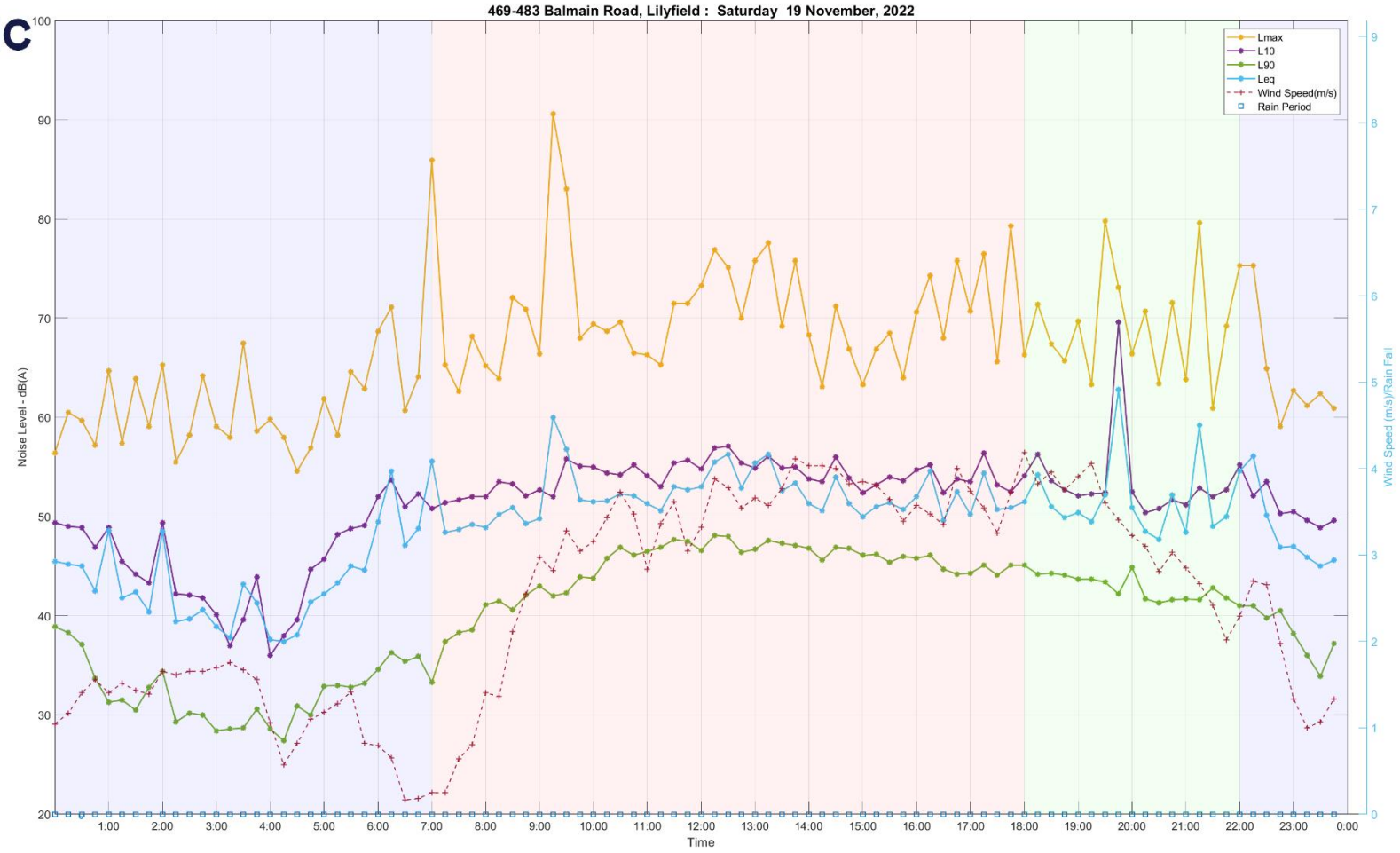
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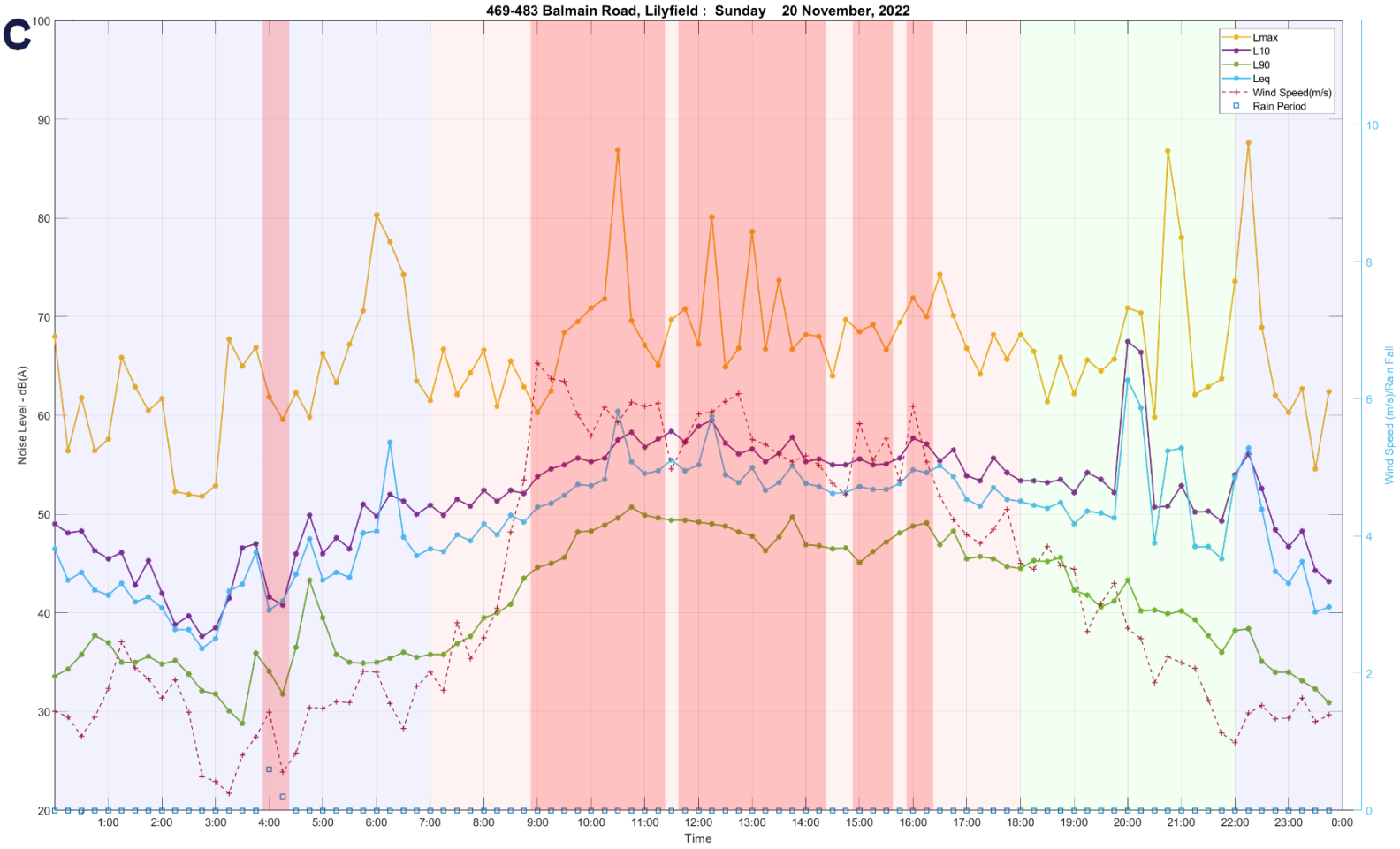
469-483 Balmain Road, Lilyfield : Sunday 20 November, 2022
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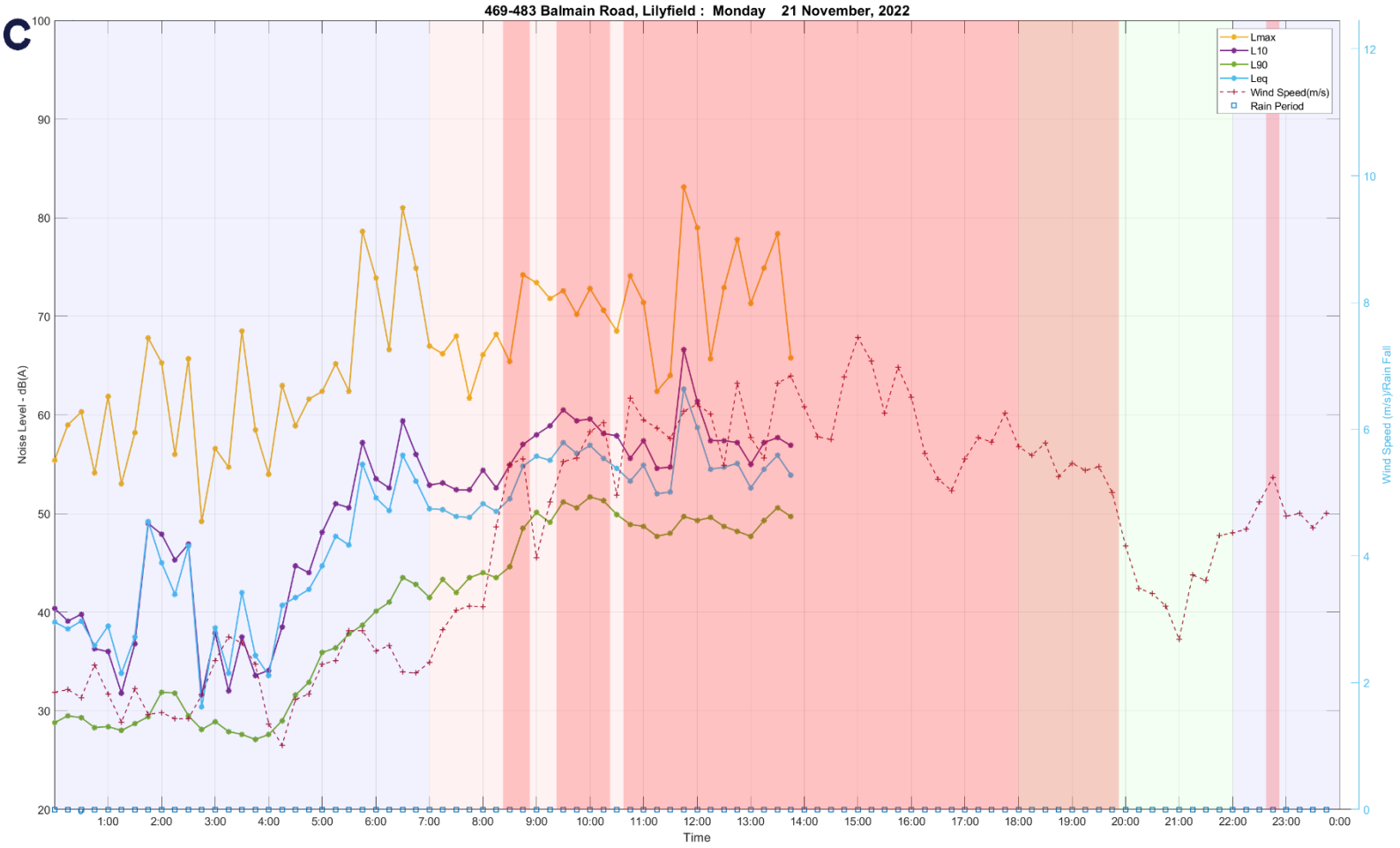

Wind Speed is corrected using factor 0.5000 based on logger location