Noise Assessment

Proposed Service Station with Ancillary Car Wash Facility
71 Turton Street
Metford, NSW

Prepared for: Brown Commercial Building Pty Ltd
March 2025
MAC242287-01RP1V1

Muller Acoustic Consulting

Document Information

Noise Assessment

Proposed Service Station with Ancillary Car Wash Facility

71 Turton Street

Metford, NSW

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Brown Commercial Building Pty Ltd (BCB) to prepare a Noise Assessment (NA) to quantify emissions from the proposed Service Station with Ancillary Car Wash Facility (the 'project') to be located at 71 Turton Street, Metford, NSW

The NA has quantified potential operational and sleep disturbance noise emissions from the operation and recommends reasonable and feasible noise controls where required.

This assessment has been undertaken in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI) 2017;
- NSW Department of Environment and Climate Change (DECCW) – NSW Interim Construction Noise Guideline (ICNG), July 2009;
- NSW Environment Protection Authority (EPA), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures;
- International Organisation for Standardisation (ISO) 9613-1:1993 (ISO9613:1) - Acoustics - Attenuation of Sound During Propagation Outdoors - Part 1: Calculation of the Absorption of Sound by the Atmosphere; and
- International Organisation for Standardisation (ISO) 9613-2:1996 (ISO9613:2) - Acoustics - Attenuation of Sound during Propagation Outdoors - Part 2: General Method of Calculation.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

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2 Project Description

2.1 Background

The project is to be located at 71 Turton Street, Metford, NSW, which is in an area primarily comprising of commercial and industrial land uses. The site is bound to the south Chelmsford Drive and to the east by Turton Street. To the north and west of the site are industrial premises with additional industrial as well as several commercial receivers located further to the east north and west.

The nearest residential receivers are located to the north west at a setback distance of approximately 180m and south east at a setback distance of approximately 140m. The project proposes the construction of a new service station development with ancillary carwash facility on the site of a car sales premises. The project will provide a service station with convenience store and forecourt with an overhead canopy and associated parking. The project will also provide an ancillary carwash facility comprising of two auto car washes, two self-wash bays, four vacuum bays and a dog wash facility. The project is proposed to operate 24 hours seven days.

2.2 Proposed Activities & Operating Hours

There are several key activities associated with the project that have the potential to generate acoustic impacts on nearby receivers. Table 1 provides a summary of operation noise sources and the assessment period in which they propose to occur.

Table 1 Noise Generating Activities		
Activity/Source	Period[1]	Operational
Customer Light Vehicles in Carpark and Fore Court	Day	✓
	Evening	✓
	Night	✓
Truck Consumable Deliveries	Day	✓
	Evening	✓
	Night	✓
Waste Collection	Day	✓
	Evening	✓
	Night	✓
Fuel Deliveries	Day	✓
	Evening	✓
	Night	✓
Car Wash Facilities	Day	✓
	Evening	✓
	Night	✓
Vacuum Bays	Day	✓
	Evening	✓
	Night	✓
Dog Wash Facilities	Day	✓
	Evening	✓
	Night	✓
Mechanical Plant	Day	✓
	Evening	✓
	Night	✓

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

2.2.1 Receiver Review

A review of residential receivers in proximity to the project has been completed and are summarised in **Table 2. Figure 1** provides a locality plan showing the position of these receivers in relation to the project.

Table 2 Receiver Locations

Receiver	Receiver Type	Receiver Height	Coordinates (MGA56)	
			Easting	Northing
R01	Residential	1.5m	368521	6374400
R02	Residential	1.5m	368545	6374429
R03	Residential	1.5m	368559	6374447
R04	Residential	1.5m	368577	6374456
R05	Residential	1.5m	368909	6374301
R06	Residential	1.5m	368901	6374275
R07	Residential	1.5m	368894	6374267
R08	Residential	1.5m	368885	6374247
R09	Residential	1.5m	368870	6374232
R10	Residential	1.5m	368829	6374194
R11	Residential	1.5m	368795	6374150
C01	Commercial	1.5m	368760	6374328
C02	Commercial	1.5m	368865	6374330
C03	Commercial	1.5m	368780	6374266
C04	Commercial	1.5m	368761	6374245
C05	Commercial	1.5m	368722	6374177
I01	Industrial	1.5m	368667	6374329
I02	Industrial	1.5m	368696	6374374
I03	Industrial	1.5m	368807	6374381

FIGURE 1

Locality Plan

MAC242287-01RP1

71 Turton Road, Metford, NSW

KEY

- Receiver
- Attended Noise Monitoring Location
- Unattended Noise Monitoring Location
- Site Boundary

0 15 30 45 60 75 m

N

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3 Noise Policy and Guidelines

3.1 Noise Policy for Industry

The EPA released the Noise Policy for Industry (NPI) in October 2017 which provides a process for establishing noise criteria for consents and licenses enabling the EPA to regulate noise emissions from scheduled premises under the Protection of the Environment Operations Act 1997. The objectives of the NPI are to:

- provide noise criteria that is used to assess the change in both short term and long-term noise levels;
- provide a clear and consistent framework for assessing environmental noise impacts from industrial premises and industrial development proposals;
- promote the use of best-practice noise mitigation measures that are feasible and reasonable where potential impacts have been identified; and
- support a process to guide the determination of achievable noise limits for planning approvals and/or licences, considering the matters that must be considered under the relevant legislation (such as the economic and social benefits and impacts of industrial development).

The policy sets out a process for industrial noise management involving the following key steps:

1. Determine the Project Noise Trigger Levels (PNTLs) (ie criteria) for a development. These are the levels (criteria), above which noise management measures are required to be considered. They are derived by considering two factors: shorter-term intrusiveness due to changes in the noise environment; and maintaining the noise amenity of an area.
2. Predict or measure the noise levels produced by the development with regard to the presence of annoying noise characteristics and meteorological effects such as temperature inversions and wind.
3. Compare the predicted or measured noise level with the PNTL, assessing impacts and the need for noise mitigation and management measures.
4. Consider residual noise impacts - that is, where noise levels exceed the PNTLs after the application of feasible and reasonable noise mitigation measures. This may involve balancing economic, social and environmental costs and benefits from the proposed development against the noise impacts, including consultation with the affected community where impacts are expected to be significant.

5. Set statutory compliance levels that reflect the best achievable and agreed noise limits for the development.

6. Monitor and report environmental noise levels from the development.

3.1.1 Project Noise Trigger Levels (PNTL)

The policy sets out the procedure to determine the PNTLs relevant to an industrial development. The PNTL is the lower (ie, the more stringent) of the **Project Intrusiveness Noise Level** (PINL) and **Project Amenity Noise Level** (PANL) determined in accordance with Section 2.3 and Section 2.4 of the NPI.

3.1.2 Rating Background Level (RBL)

The Rating Background Level (RBL) is a parameter determined from noise monitoring and is used for assessment purposes. As per the NPI, the RBL is an overall single figure background level representing each assessment period (day, evening and night) over the noise monitoring period. The measured RBLs relevant to the project are contained in **Section 4**.

3.1.3 Project Intrusiveness Noise Level (PINL)

The PINL ($LA_{eq(15min)}$) is the RBL + 5dB and seeks to limit the degree of change a new noise source introduces to an existing environment. Hence, when assessing intrusiveness, background noise levels need to be measured.

Background noise levels need to be determined before intrusive noise can be assessed. The NPI states that background noise levels to be measured are those that are present at the time of the noise assessment and without the subject development operating. For the assessment of modifications to existing premises, the noise from the existing premises should be excluded from background noise measurements. It is note that the exception is where the premises has been operating for a significant period of time and is considered a normal part of the acoustic environment; it may be included in the background noise assessment under the following circumstances:

- the development must have been operating for a period in excess of 10 years in the assessment period/s being considered and is considered a normal part of the acoustic environment; and,
- the development must be operating in accordance with noise limits and requirements imposed in a consent or licence and/or be applying best practice.

Where a project intrusiveness noise level has been derived in this way, the derived level applies for a period of 10 years to avoid continuous incremental increases in intrusiveness noise levels. This approach is consistent with the purpose of the intrusiveness noise level to limit significant change in the acoustic environment. The purpose of the project amenity noise level is to moderate against background noise creep.

3.1.4 Project Amenity Noise Level (PANL)

The PANL is relevant to a specific land use or locality. To limit continuing increases in intrusiveness levels, the ambient noise level within an area from all combined industrial sources should remain below the recommended amenity noise levels specified in Table 2.2 (of the NPI). The NPI defines two categories of amenity noise levels:

- **Amenity Noise Levels (ANL)** – are determined considering all current and future industrial noise within a receiver area; and
- **Project Amenity Noise Level (PANL)** – is the recommended level for a receiver area, specifically focusing the project being assessed.

Additionally, Section 2.4 of the NPI states: "to ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows":

PANL for new industrial developments = recommended **ANL** minus 5dBA.

The following exceptions apply when deriving the PANL:

- areas with high traffic noise levels;
- proposed developments in major industrial clusters;
- existing industrial noise and cumulative industrial noise effects; and
- greenfield sites.

The NPI states with respect to high traffic noise areas:

The level of transport noise, road traffic noise in particular, may be high enough to make noise from an industrial source effectively inaudible, even though the LAeq noise level from that industrial noise source may exceed the project amenity noise level. In such cases the project amenity noise level may be derived from the LAeq, period(traffic) minus 15 dB(A).

Where relevant this assessment has considered influences of traffic with respect to amenity noise levels (ie areas where existing traffic noise levels are 10dB greater than the recommended amenity noise level).

Furthermore, Section 2.4 of the NPI states "*where the project amenity noise level applies and it can be met, no additional consideration of cumulative industrial noise is required.* "

The recommended amenity noise levels as per Table 2.2 of the NPI are reproduced in **Table 3**.

Table 3 Amenity Noise Levels

Receiver Type	Noise Amenity Area	Time of day	Recommended amenity noise level dB LAeq(period)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks.	See column 4	See column 4	5dB above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School Classroom	All	Noisiest 1-hour period when in use	35 (internal) 45 (external)
Hospital ward - internal	All	Noisiest 1-hour	35
- external	All	Noisiest 1-hour	50
Place of worship - internal	All	When in use	40
Passive Recreation	All	When in use	50
Active Recreation	All	When in use	55
Commercial premises	All	When in use	65
Industrial	All	When in use	70

Notes: The recommended amenity noise levels refer only to noise from industrial noise sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The levels represent outdoor levels except where otherwise stated.

Types of receivers are defined as rural residential; suburban residential; urban residential; industrial interface; commercial; industrial – see Table 2.3 and Section 2.7 of the NPI.

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

3.1.5 Maximum Noise Assessment Trigger Levels

The potential for sleep disturbance from maximum noise level events from a project during the night-time period needs to be considered. The NPI considers sleep disturbance to be both awakenings and disturbance to sleep stages.

Where night-time noise levels from a development/premises at a residential location exceed the following criteria, a detailed maximum noise level event assessment should be undertaken:

- $L_{Aeq(15min)}$ 40dB or the prevailing RBL plus 5dBA, whichever is the greater, and/or
- L_{Amax} 52dB or the prevailing RBL plus 15dBA, whichever is the greater.

A detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

Other factors that may be important in assessing the impacts on sleep disturbance include:

- how often the events would occur;
- the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the development;
- whether there are times of day when there is a clear change in the noise environment (such as during early morning shoulder periods); and
- current understanding of effects of maximum noise level events at night.

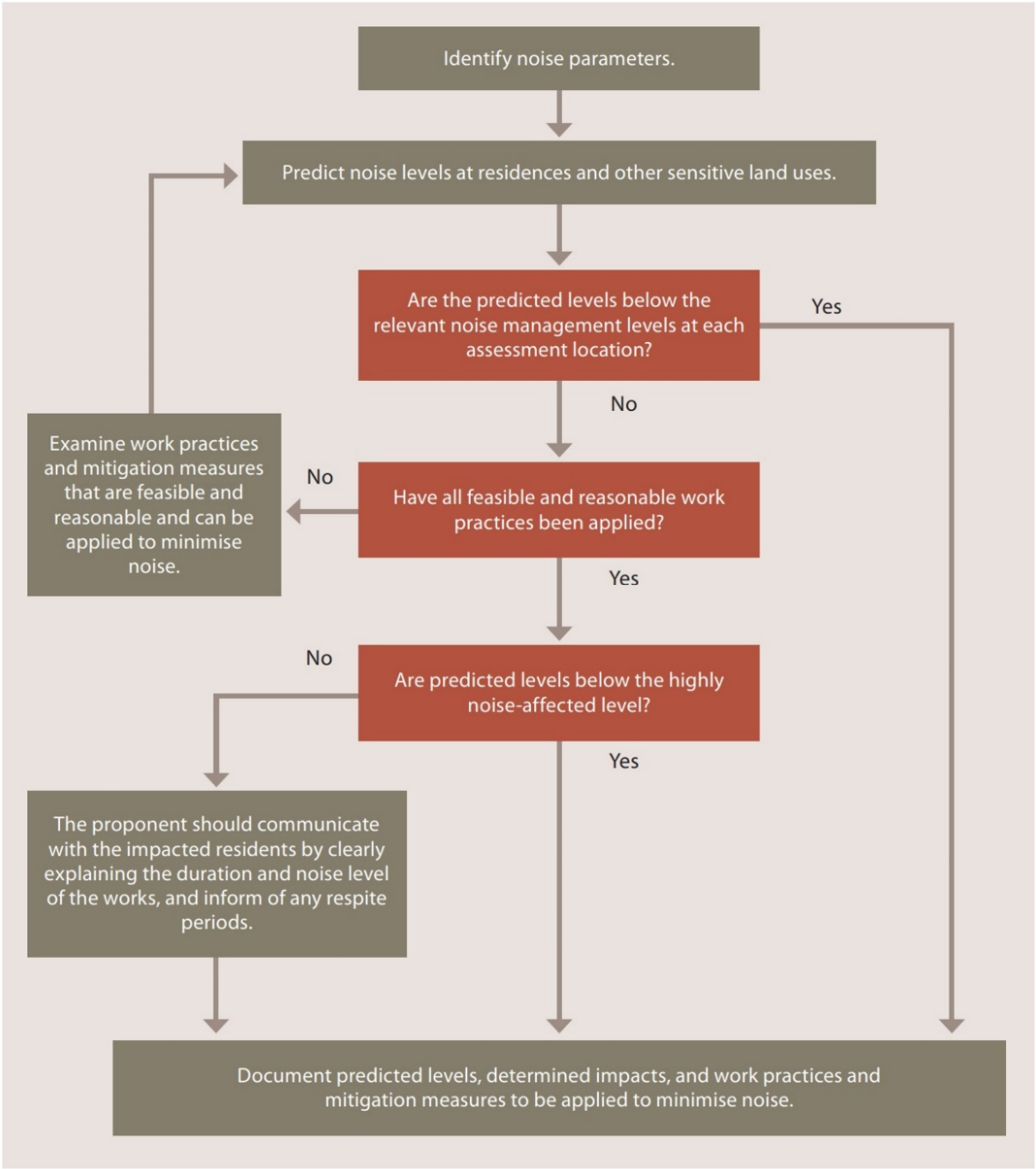
3.2 Interim Construction Noise Guideline

The ICNG sets out procedures to identify and address the impacts of construction noise on residences and other sensitive land uses. This section provides a summary of noise objectives that are applicable to the assessment. The ICNG provides two methodologies for the assessment of construction noise emissions:

- Quantitative, which is suited to major construction projects with typical durations of more than three weeks; and
- Qualitative, which is suited to short term infrastructure maintenance (< three weeks).

The qualitative assessment methodology is a more simplified approach that relies on noise management strategies. This NA has adopted a quantitative assessment approach which is summarised in **Figure 2.** The quantitative approach includes identification of potentially affected receivers, derivation of the construction noise management levels, quantification of potential noise impact at receivers via predictive modelling and, provides management and mitigation recommendations.

Figure 2 Quantitative Assessment Processes for Assessing and Managing Construction Noise



Source: Department of Environment and Climate Change, 2009.

3.2.1 Standard Hours for Construction

Table 4 presents the ICNG recommended standard hours for construction works.

Table 4 Recommended Standard Hours for Construction

Daytime	Construction Hours
Monday to Friday	7am to 6pm
Saturdays	8am to 1pm
Sundays or Public Holidays	No construction

These recommended hours do not apply in the event of direction from police, or other relevant authorities, for safety reasons or where required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm. Construction activities are anticipated to be undertaken during standard construction hours.

3.2.2 Construction Noise Management Levels

Section 4 of the ICNG details the quantitative assessment method involving predicting noise levels and comparing them with the Noise Management Level (NML) and are important indicators of the potential level of construction noise impact. **Table 5** reproduces the ICNG Noise Management Level (NML) for residential receivers. The NML is determined by adding 10dB (standard hours) or 5dB for Out of Hours (OOH) to the Rating Background Level (RBL) for each specific assessment period.

Table 5 Noise Management Levels		
Time of Day	Management Level LAeq(15min)[1]	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays.	Noise affected RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq(15min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of work to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected 75dBA (HNA)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise such as before and after school for work near schools, or mid-morning or mid-afternoon for work near residences; and if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours.	Noise affected RBL + 5dB	A strong justification would typically be required for work outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see Section 7.2.2 of the ICNG.

Note 1: The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the construction noise management levels for noise assessment purposes and is the median of the ABL's.

3.2.3 Minimising Construction Noise

The ICNG outlines noise management and mitigation measures to minimise the noise impacts from construction activities on nearby sensitive receivers. Adopting the standard mitigation measures may result in an attenuation of up to 10dBA where space requirements place limitations on the attenuation options. Examples of standard mitigation measures are reproduced in **Table 6**, which may be adopted for the operation.

Table 6 Standard Mitigation Measures		
	Action Required	Details
Management Measures	Implement community consultation or notification measures	Notification detailing work activities, dates, and hours, impacts and mitigation measures, indication of work schedule over the night-time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required. Please contact Roads and Maritime Communication and Stakeholder Engagement for guidance: - website (If required); - contact telephone number for community; - email distribution list (if required); and/or - community drop-in session (if required by approval conditions).
	Site Inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: - all relevant project specific and standard noise and vibration mitigation measures; - relevant licence and approval conditions; - permissible hours of work; - any limitations on noise generating activities; - location of nearest sensitive receivers; - construction employee parking areas; - designated loading/unloading areas and procedures; - site opening/closing times (including deliveries); and - environmental incident procedures.
Site Controls	Minimise disturbance arising from delivery of goods to construction sites	Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers. Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible. Avoid or minimise these out of hours movements where possible.
Path Controls	Shield stationary noise sources	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. Appendix D of AS2436:2010 lists materials suitable for shielding.
	Shield sensitive receivers from noise activities	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when situating plant.

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4 Existing Environment

4.1 Unattended Noise Monitoring

To quantify the existing background noise environment of the area, unattended noise monitoring was conducted at two locations representative of the ambient environment surrounding the project site. The selected monitoring locations are shown in **Figure 1** and are considered representative of surrounding residential receivers as per Fact Sheet B1.1 of the NPI.

The unattended noise surveys were conducted in general accordance with the procedures described in Standards Australia AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise".

The measurements were carried out using two Svantek 977 noise analyser from Monday 3 February 2025 to Wednesday 12 February 2025. All acoustic instrumentation used carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022) and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA.

Observations on-site identified the surrounding locality was typical of an urban environment, with traffic and commercial noise the dominant noise sources. Data affected by adverse meteorological conditions have been excluded from the results in accordance with methodologies provided in Fact Sheet A4 of the NPI. Residential receivers situated in the surrounding area have been classified under the EPA's urban amenity category. This criteria is used in conjunction with the intrusiveness criteria to determine the limiting criteria. The results of long-term unattended noise monitoring are provided in **Table 7**. The noise monitoring charts, and a summary of the background monitoring data are provided in **Appendix C.**

Table 7 Background Noise Monitoring Summary

Monitoring Location	Period[1]	Measured Background Noise Level (LA90) dB RBL	Measured dB LAeq
L1 (R01-R04)	Day	55	66
	Evening	47	59
	Night	37	56
L2 (R05-R11)	Day	43	57
	Evening	40	53
	Night	36	36

Note 1: Day – the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening – the period from 6pm to 10pm; Night – the remaining periods.

Note: Excludes periods of wind or rain affected data. Meteorological data obtained from the Bureau of Meteorology weather station Maitland Airport AWS (32.7°S 151.49E 28m AMSL).

4.2 Attended Noise Monitoring

To supplement the unattended noise assessment and to quantify the changes in ambient noise in the community surrounding the operation, one 15 minute attended measurement was completed.

The attended noise survey was conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise".

The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA. All equipment carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per the EPA's Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022).

The attended noise monitoring was conducted using one Svantek 971 noise analyser at the site (see **Figure 1**) on Monday 3 February 2025 to quantify ambient background noise levels.

The attended measurement was completed during calm and clear meteorological conditions and confirmed that ambient traffic and commercial noise dominated the surrounding environment. The results of the short-term noise measurement and observations are summarised in **Table 8**.

Table 8 Operator-Attended Noise Survey Results

Date/Time (hrs)	Noise Descriptor (dB re 20µPa)			Meteorology	Description and SPL, dBA
	L_{Amax}	L_{Aeq}	L_{A90}		
Location Att01					
03/02/2025 12:34	77	61	51	WD: S WS: 0.1m/s Rain: Nil	Wildlife 55-77 Traffic 50-73 Industrial Hum 40-51
Location Att02					
03/02/2025 13:15	78	61	56	WD: S WS: 0.3m/s Rain: Nil	Traffic 40-78 Insects 40-50 Birds 50-57

5 Assessment Criteria

5.1 Project Noise Trigger Levels (Operational Criteria)

This section outlines the determination of PNTLs and Maximum Noise Assessment Trigger Levels in accordance with NPI methodology.

5.1.1 Intrusiveness Noise Levels

The PINL for the project are presented in **Table 9** and have been determined based on the RBL +5dBA and only apply to residential receivers.

Table 9 Project Intrusiveness Noise Levels

Location	Receiver Type	Period[1]	Measured RBL dB L_{A90}	Adopted RBL dB L_{A90}	PINL dB $L_{Aeq(15min)}$
L1 (R01-R04)	Residential	Day	55	55	60
		Evening	47	47	52
		Night	37	37	42
L2 (R05-R11)	Residential	Day	43	43	48
		Evening	40	40	45
		Night	36	36	41

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

5.1.2 Determination of NPI Residential Receiver Amenity Category

Classification of residential receivers in the surrounding area have been determined by review of the measured RBLs and a tally of the features for each category described in Table 2.3 of the NPI. The overall tally of features and resulting classifications are provided in **Table 10**. The detailed assessment of receiver categories is provided in **Appendix D.** This classification is used in conjunction with the intrusiveness criteria to determine the limiting criteria.

Table 10 Determination of NPI Residential Receiver Category

Receiver	Rural	Suburban	Urban
L1 (R01-R04)	0	0	9
L2 (R05-R11)	0	1	8

Observations at locations in the surrounding locality support the assessment of the receiver as an urban residential category.

5.1.3 Amenity Noise Levels and Project Amenity Noise Levels

The PANL for residential receivers and other receiver types (ie non-residential) potentially affected by the project are presented in **Table 11.**

Table 11 Amenity Noise Levels and Project Amenity Noise Levels

Receiver	Noise Amenity Area	Assessment Period[1]	NPI Recommended ANL dB $LA_{eq(period)}$	ANL dB $LA_{eq(period)}$[2]	PANL dB $LA_{eq(15min)}$[3]
Residential (R01-R04)	Urban	Day	60	55	58
		Evening	50	45	48
		Night	45	40	43
Residential (R05-R11)	Urban	Day	60	55	58
		Evening	50	45	48
		Night	45	40	43
Commercial (C01-C06)	All	When in use	65	60	63
Industrial (I01-I03)	All	When in use	70	65	68

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 2: Project Amenity Noise Level equals the Amenity Noise Level -5dB as there is other industry in the area.

Note 3: Includes a +3dB adjustment to the amenity period level to convert to a 15-minute assessment period as per Section 2.2 of the NPI.

5.1.4 Project Noise Trigger Levels

The PNTL are the lower of either the PINL or the PANL. **Table 12** presents the derivation of the PNTLs in accordance with the methodologies outlined in the NPI.

Table 12 Project Noise Trigger Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	PINL dB $LA_{eq(15min)}$	PANL dB $LA_{eq(15min)}$	PNTL dB $LA_{eq(15min)}$
Residential (R01-R04)	Urban	Day	60	58	58
		Evening	52	48	48
		Night	42	43	42
Residential (R05-R11)	Urban	Day	48	58	48
		Evening	45	48	45
		Night	41	43	41
Commercial (C01-C05)	All	When in Use	N/A	63	63
Industrial (I01-I03)	All	When in Use	N/A	68	68

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

5.1.5 Maximum Noise Trigger Levels

The maximum noise trigger levels shown in **Table 13** are based on night time RBLs and trigger levels as per Section 2.5 of the NPI. The trigger levels will be applied to transient noise events that have the potential to cause sleep disturbance.

Table 13 Maximum Noise Trigger Levels (Night)

Residential Receivers (R01-R04)			
$L_{Aeq(15min)}$		L_{Amax}	
40dB $L_{Aeq(15min)}$ or RBL + 5dB		52dB L_{Amax} or RBL + 15dB	
Trigger	40	Trigger	52
RBL +5dB	42	RBL +15dB	52
Highest	**42**	**Highest**	**52**

Residential Receivers (R05-R11)			
$L_{Aeq(15min)}$		L_{Amax}	
40dB $L_{Aeq(15min)}$ or RBL + 5dB		52dB L_{Amax} or RBL + 15dB	
Trigger	40	Trigger	52
RBL +5dB	**41**	RBL +15dB	**51**
Highest	**41**	**Highest**	**52**

Note: Monday to Saturday; Night 10pm to 7am. On Sundays and Public Holidays Night 10pm to 8am.

Note: NPI identifies that maximum of the two values is to be adopted which is shown in bold font.

5.2 Construction Noise Management Levels

The relevant Noise Management Levels (NMLs) for standard construction hours are presented in **Table 14**.

Table 14 Construction Noise Management Levels

Receiver	Assessment Period[1]	Measured RBL dB L_{A90}	NML dB $L_{Aeq(15min)}$
Residential (R01-R04)	Standard Hours	55	65 (RBL+10dBA)
Residential (R05-R11)	Standard Hours	43	53 (RBL+10dBA)
Commercial Premises (C01-C06)	When in use	N/A	70 (external)
Industrial Premises (I01-I03)	When in use	N/A	75 (external)

Note 1: Refer to Table 4 for Standard Recommended Hours for Construction.

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6 Modelling Methodology

A computer model was developed to quantify project noise emissions to neighbouring receivers using DGMR (iNoise, Version 2024.2) noise modelling software. iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers. Where relevant, modifying factors in accordance with Fact Sheet C of the NPI have been applied to calculations.

The model calculation method used to predict noise levels was in accordance with ISO 9613:1 and ISO 9613:2 including corrections for meteorological conditions using CONCAWE[1]. The ISO 9613 standards are the most used noise prediction method worldwide. Many countries refer to ISO 9613 in their noise legislation. However, the ISO 9613 standard does not contain guidelines for quality assured software implementation, which leads to differences between applications in calculated results. In 2015 this changed with the release of ISO/TR 17534-3. This quality standard gives clear recommendations for interpreting the ISO 9613 method. iNoise fully supports these recommendations. The models and results for the 19 test cases are included in the software.

6.1 Mitigation Included in Design and Noise Control Recommendations

The noise model incorporated the following recommendations and noise controls:

- the project is constructed as per the site design and plans (as presented in **Appendix B**) which includes the barrier attenuation provided by buildings orientation; and
- the mechanical cooling and ventilation plant are located in the coral of the project, which is surrounded by the coral boundary fence, which extends 2.2m above the relative ground level of the coral area.

[1] Report no. 4/18, "the propagation of noise from petroleum and petrochemical complexes to neighbouring communities", Prepared by C.J. Manning, M.Sc., M.I.O.A. Acoustic Technology Limited (Ref.AT 931), CONCAWE, Den Haag May 1981

6.2 Sound Power Levels

Table 15 presents the sound power level for each noise source modelled in this assessment. It is noted that sound power levels were sourced from manufacturer's specifications or from in-field measurements at similar project sites.

Table 15 Acoustically Significant Sources - Sound Power Levels dBA (re 10^{-12} Watts)

Item and number modelled per 15 minutes	Individual Sound Power Level	Modelled Sound Power Level dB LAeq(15min)	Source Height[1]
Operation			
Extractor Fans (x4)	73	79	0.5m
AC Plant (x2)	78	81	1.5m
Refrigeration Condenser (x2)	75	78	1.5m
Car enters, park, start up, idle and drive off – Forecourt (x15)[2]	81	85	0.5m
Customers vehicles travelling through Forecourt (15 cars per 15min)[3]	81	85	0.5m
Customers vehicles travelling through Carwash (10 cars per 15min)[3]	81	83	0.5m
Truck Deliveries (x1)	92	92	1.0m
Fuel Deliveries (x1)	86	86	1.0m
Waste Collection (x1)[2]	85	85	1.5m
Auto Wash Bay (x2)	78	81	1.5m
Manual Wash Bay (x2)	86	89	1.5m
Vacuum Systems (x2)	86	89	1.5m
Dog Wash (x1)	86	86	1.5m
Maximum Noise Level Assessment (L_{Amax}), Night time periods (10pm to 7am)			
Delivery/Waste Collection Impact[4]	104		1.0m
Car Door Slam	87		1.0m
Construction Fleet			
Combined Construction Fleet	108		1.5m

Note 1: Height above the relative ground or building below source.

Note 2: Includes a duration adjustment assuming vehicles operate for three (3) minutes continuously within a period of 15-minutes.

Note 3: Modelled as a moving point source with adjustments for length of travelled path, velocity and number of movements in a 15-minute period.

Note 4: Heavy Vehicle Impacts are representative of pallet/goods impact on hard surface.

7 Noise Assessment Results

This assessment has quantified operational noise levels at the nearest receivers.

7.1 Operational Noise Assessment

Noise predictions from all operational noise sources have been quantified at surrounding receivers. The coincidence of all plant occurring onsite simultaneously for an entire 15-minute period is unlikely. However, it is probable that several plant may operate simultaneously on occasion for a limited duration. To account for this, modelling has adopted the $LA_{eq(15min)}$ contribution of sources which were derived from manufacturer's specifications or from in-field measurements of operation sources or activities.

Results of the noise modelling predictions are presented in **Table 16** for operations without consumable goods deliveries or waste collection during all periods.

Table 16 Operational Noise Predictions without Deliveries/Waste Collection – All Receivers

Residential Receivers

Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	<35	<35	<35	58	48	42	✓
R02	<35	<35	<35	58	48	42	✓
R03	<35	<35	<35	58	48	42	✓
R04	<35	<35	<35	58	48	42	✓
R05	<35	<35	<35	48	45	41	✓
R06	<35	<35	<35	48	45	41	✓
R07	<35	<35	<35	48	45	41	✓
R08	<35	<35	<35	48	45	41	✓
R09	<35	<35	<35	48	45	41	✓
R10	<35	<35	<35	48	45	41	✓
R11	<35	<35	<35	48	45	41	✓

Other Receivers

Receiver	Period	Predicted Noise Level dB $LA_{eq(15min)}$	PNTL dB $LA_{eq(15min)}$	Compliant
C01	When in use	<35	63	✓
C02	When in use	<35	63	✓
C03	When in use	41	63	✓
C04	When in use	42	63	✓
C05	When in use	<35	63	✓
I01	When in use	48	68	✓
I02	When in use	47	68	✓
I03	When in use	<35	68	✓

Deliveries are expected to be undertaken once per day during the day, evening or night periods by a medium-rigid vehicle. These operations usually take less than a few minutes, although to present a conservative assessment, it has been assumed that it would take up to 15 minutes. Fact Sheet C of the NPI allows for exceedance of the PNTL or adjustment of the PNTL for short term single events that may occur in any 24-hour period. Table C3 of the NPI allows an adjustment to the PNTL of +7dB for the daytime and evening periods and +2dB during the night period, when the event is expected to occur. Results of the noise modelling predictions are presented in **Table 17** for operations with consumable good deliveries during all periods.

Table 17 Operational Noise Predictions with Consumable Goods Deliveries – All Receivers

Residential Receivers

Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	<35	<35	<35	65	55	44	✓
R02	<35	<35	<35	65	55	44	✓
R03	<35	<35	<35	65	55	44	✓
R04	<35	<35	<35	65	55	44	✓
R05	36	36	36	55	52	43	✓
R06	37	37	37	55	52	43	✓
R07	37	37	37	55	52	43	✓
R08	37	37	37	55	52	43	✓
R09	<35	<35	<35	55	52	43	✓
R10	<35	<35	<35	55	52	43	✓
R11	<35	<35	<35	55	52	43	✓

Other Receivers

Receiver	Period	Predicted Noise Level dB $LA_{eq(15min)}$	PNTL dB $LA_{eq(15min)}$	Compliant
C01	When in use	36	70	✓
C02	When in use	39	70	✓
C03	When in use	46	70	✓
C04	When in use	45	70	✓
C05	When in use	38	70	✓
I01	When in use	48	75	✓
I02	When in use	47	75	✓
I03	When in use	<35	75	✓

Fuel deliveries are expected to be undertaken once per day during the day, evening or night periods by a medium-rigid vehicle. These operations usually take less than a few minutes, although to present a conservative assessment, it has been assumed that it would take up to 1 hour. Fact Sheet C of the NPI allows for exceedance of the PNTL or adjustment of the PNTL for short term single events that may occur in any 24-hour period. Table C3 of the NPI allows an adjustment to the PNTL of +5dB for the daytime and evening periods and +0dB during the night period, when the event is expected to occur. Results of the noise modelling predictions are presented in **Table 18** for operations with fuel deliveries during all periods.

Table 18 Operational Noise Predictions with Fuel Deliveries – All Receivers

Residential Receivers

Receiver	Predicted Noise Level dB $L_{Aeq(15min)}$			PNTL dB $L_{Aeq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	<35	<35	<35	63	53	42	✓
R02	<35	<35	<35	63	53	42	✓
R03	<35	<35	<35	63	53	42	✓
R04	<35	<35	<35	63	53	42	✓
R05	<35	<35	<35	53	50	41	✓
R06	<35	<35	<35	53	50	41	✓
R07	<35	<35	<35	53	50	41	✓
R08	<35	<35	<35	53	50	41	✓
R09	<35	<35	<35	53	50	41	✓
R10	<35	<35	<35	53	50	41	✓
R11	<35	<35	<35	53	50	41	✓

Other Receivers

Receiver	Period	Predicted Noise Level dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$	Compliant
C01	When in use	38	68	✓
C02	When in use	<35	68	✓
C03	When in use	42	68	✓
C04	When in use	43	68	✓
C05	When in use	36	68	✓
I01	When in use	48	73	✓
I02	When in use	47	73	✓
I03	When in use	<35	73	✓

Waste collections are expected to be undertaken once per day during the day, evening or night periods. Waste collection operations usually take less than a few minutes, although to present a conservative assessment, it has been assumed that it would take up to 15 minutes. Fact Sheet C of the NPI allows for exceedance of the PNTL or adjustment of the PNTL for short term single events that may occur in any 24-hour period. Table C3 of the NPI allows an adjustment to the PNTL of +7dB for the daytime and evening periods and +2dB during the night period, when the event is expected to occur. Results of the noise modelling are presented in **Table 19** for operations with waste collection.

Table 19 Operational Noise Predictions with Waste Collection – All Receivers

Residential Receivers

Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	<35	<35	<35	65	55	44	✓
R02	<35	<35	<35	65	55	44	✓
R03	<35	<35	<35	65	55	44	✓
R04	<35	<35	<35	65	55	44	✓
R05	<35	<35	<35	55	52	43	✓
R06	<35	<35	<35	55	52	43	✓
R07	<35	<35	<35	55	52	43	✓
R08	<35	<35	<35	55	52	43	✓
R09	<35	<35	<35	55	52	43	✓
R10	<35	<35	<35	55	52	43	✓
R11	<35	<35	<35	55	52	43	✓

Other Receivers

Receiver	Period	Predicted Noise Level dB $LA_{eq(15min)}$	PNTL dB $LA_{eq(15min)}$	Compliant
C01	When in use	35	70	✓
C02	When in use	<35	70	✓
C03	When in use	43	70	✓
C04	When in use	43	70	✓
C05	When in use	36	70	✓
I01	When in use	48	75	✓
I02	When in use	48	75	✓
I03	When in use	<35	75	✓

7.1.1 Maximum Noise Level Assessment

In assessing maximum noise events, typical LAmax noise levels from transient events were assessed at the nearest residential receivers. For the sleep disturbance assessment, a sound power level of 92dBA for a patron yelling and 104dBA for a delivery / waste collection impact were adopted for maximum noise level (LAmax) events during the night period. Predicted noise levels from LAmax events for assessed receivers are presented in **Table 20.** Results identify that the maximum noise trigger levels will be satisfied for all assessed receivers.

Table 20 Maximum Noise Level Assessment (Night)[1]

Receiver	Predicted Noise Level dB LAmax				Trigger Levels dB LAmax	Compliant
	Delivery Impact	Waste Collection Impact	Door Slam in Northeastern Space	Door Slam in Southeastern Space		
R01	<35	<35	<35	<35	52	✓
R02	45	45	<35	<35	52	✓
R03	45	46	<35	<35	52	✓
R04	44	44	<35	<35	52	✓
R05	45	45	<35	<35	52	✓
R06	45	46	<35	<35	52	✓
R07	46	46	<35	<35	52	✓
R08	46	46	<35	<35	52	✓
R09	37	38	<35	<35	52	✓
R10	40	40	<35	<35	52	✓
R11	46	46	<35	<35	52	✓

Note 1: Monday to Saturday; Night 10pm to 7am. On Sundays and Public Holidays Night 10pm to 8am. Morning Shoulder 5am to 7am; Evening Shoulder 10pm to 12am.

7.2 Construction Noise Assessment

Table 21 presents the results of modelled construction noise emissions taking into account the additional 10dB attenuation provided by standard mitigation measures. Predictions identify that emissions from construction would remain below the Construction NMLs at all the assessed receivers with the inclusion of standard mitigation measures.

Table 21 Construction Noise Levels – All Receivers

Receiver	Period[1]	Predicted Noise Level dB $LA_{eq(15min)}$				Management Level dB $LA_{eq(15min)}$	Compliant
		Car Wash	Convenience Store	Vacuum Bays	Canopy		
R01	Day	<35	39	39	<35	65	✓
R02	Day	<35	<35	40	<35	65	✓
R03	Day	39	36	38	38	65	✓
R04	Day	39	38	37	37	65	✓
R05	Day	38	38	<35	40	53	✓
R06	Day	38	39	40	40	53	✓
R07	Day	39	39	40	41	53	✓
R08	Day	39	<35	39	<35	53	✓
R09	Day	<35	<35	<35	<35	53	✓
R10	Day	<35	<35	36	<35	53	✓
R11	Day	39	40	41	42	53	✓
C01	Day	<35	<35	<35	39	70	✓
C02	Day	40	41	<35	42	70	✓
C03	Day	48	47	48	51	70	✓
C04	Day	48	49	48	52	70	✓
C05	Day	44	45	42	46	70	✓
C06	Day	58	55	56	50	70	✓
I01	Day	46	43	54	<35	75	✓
I02	Day	<35	<35	<35	<35	75	✓
I03	Day	<35	39	39	<35	75	✓

Note 1: Refer to Table 4 for Standard Recommended Hours for Construction.

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8 Discussion and Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Assessment (NA) to quantify emissions from the proposed Service Station with Ancillary Car Wash Facility (the 'project') to be located at 71 Turton Street, Metford, NSW.

The assessment has quantified potential operation emissions pertaining to customer generated noise, including light vehicles, truck goods or fuel deliveries, waste collections and mechanical plant. The results of the Noise Assessment demonstrate that noise emissions from the project would satisfy the relevant PNTLs at all assessed receivers for all assessment periods once noise controls for the project are implemented (see Section 6.1):

- the project is constructed as per the site design and plans (as presented in Appendix B) which includes the barrier attenuation provided by buildings orientation; and
- the mechanical cooling and ventilation plant are located in the coral of the project, which is surrounded by the coral boundary fence, which extends 2.2m above the relative ground level of the coral area.

Modelled noise emissions from construction activities identify that predicted noise emissions will remain below the applicable construction management levels at all receivers taking into account standard mitigation measures (see Table 6).

In summary, the Noise Assessment supports the Development Application for the project incorporating the recommendations and controls outlined in this report

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Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Acoustical Terms

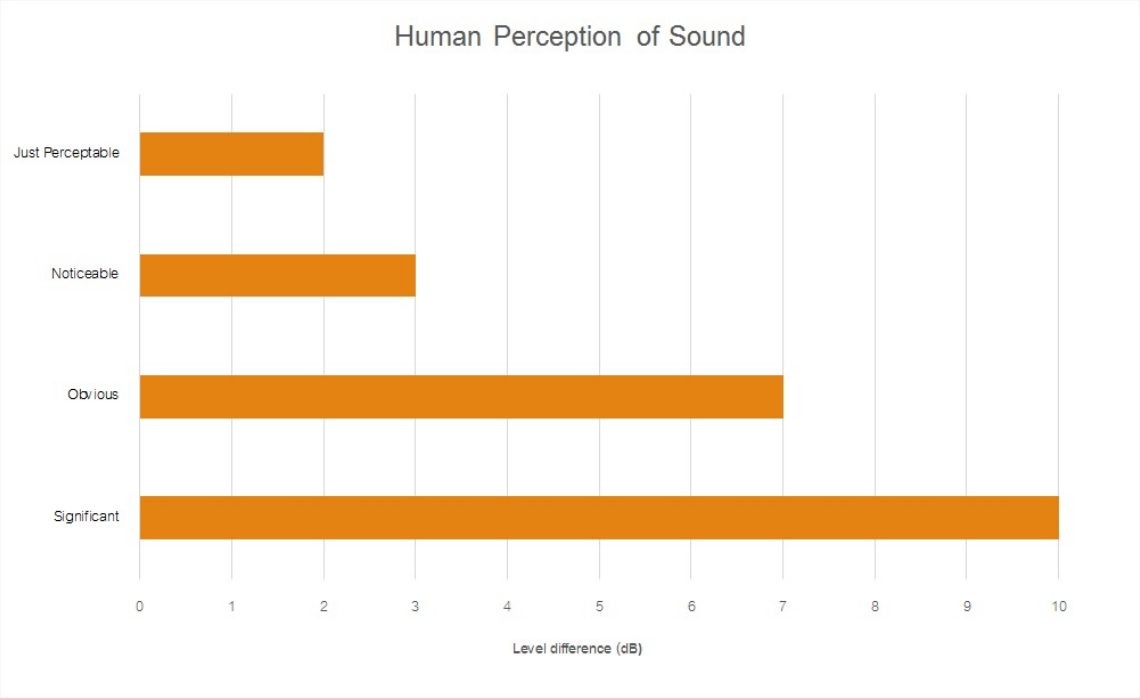
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmax	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by 10.log10 (W/Wo). Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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Appendix B – Site Plans

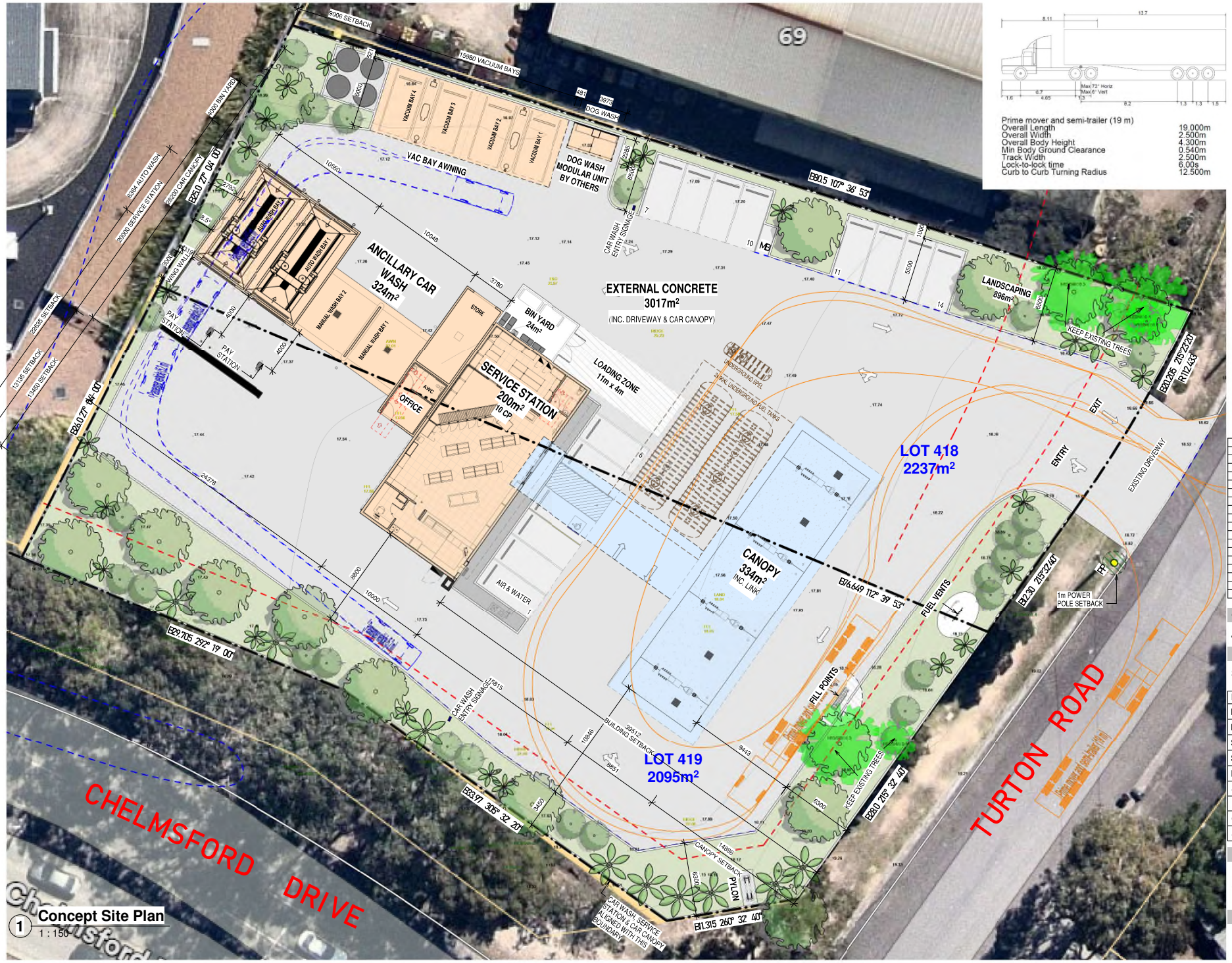
Project:	SERVICE STATION
Client:	JAMES BRADSTREET
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Drawn by:	LT
Rev No:	7
Job No:	BC0537
Sheet No:	00
Scale:	1 : 1

SHEET LIST

Sheet Number	Sheet Name	Current Rev
00	Title Page	7
01	General Notes	1
02	Signage	2
03	Site Analysis Plan	1
04	Demolition Plan	1
05	Site Plan	6
06	Service Station Roof Plan & Electrical	1
07	Service Station General Arrangement	1
08	Service Station Elevations	1
10	Car Canopy Plans	2
11	Car Canopy Elevations	2
12	Car Wash Floor Plan	4
13	Car Wash Roof Plan	3
14	Car Wash Elevations	5
15	Vac Bays Plans	1
16	Vac Bays Elevations	1
17	Dog Wash Plans	2

BROWN COMMERCIAL BUILDING

PH: (02)4966 0218
ABN: 14 619 195 078
P.O. Box 596 East Maitland NSW 2323



1 Concept Site Plan
1 : 150

Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

MAITLAND CITY COUNCIL

ZONE : E4
GENERAL INDUSTRIAL

SETBACKS :
5m LANDSCAPED

CAR PARKING :

SERVICE STATION
1 space / 20m² GFA

Rev	Description	Date	Issued by
	Car Wash Changes	27.02.25	LT
	Car Wash Changes	25.02.25	LT
	Car wash Changes	14.02.25	H.Skinner
	Site Changes	13.02.25	H.Skinner
	Signage	16.01.25	H.Skinner
1	DA Set	18.12.24	LT

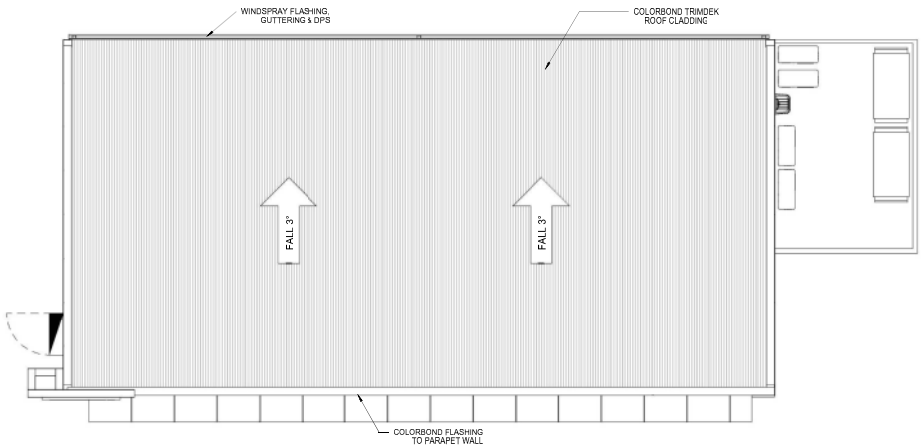
Client
JAMES BRADSTREET

Project
SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 150
Drawn by	
Checked by	
Sheet Size	A1

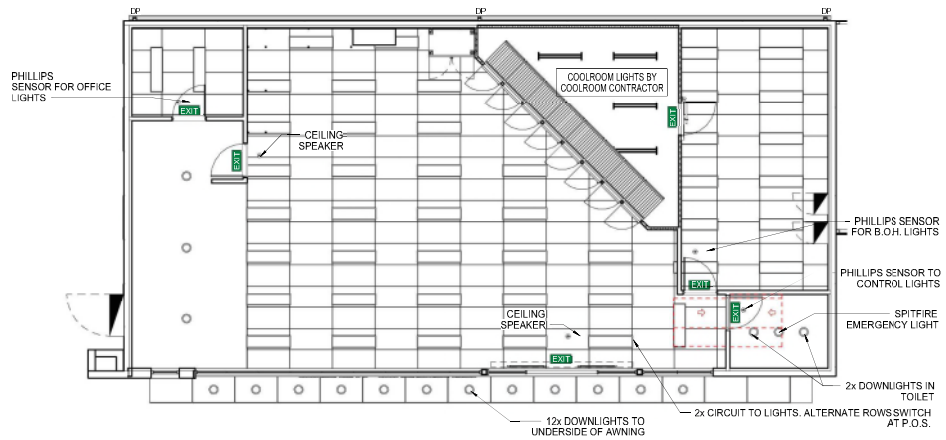
Drawing
Site Plan

Job No:	Issue:	No:
BC0537	6	05



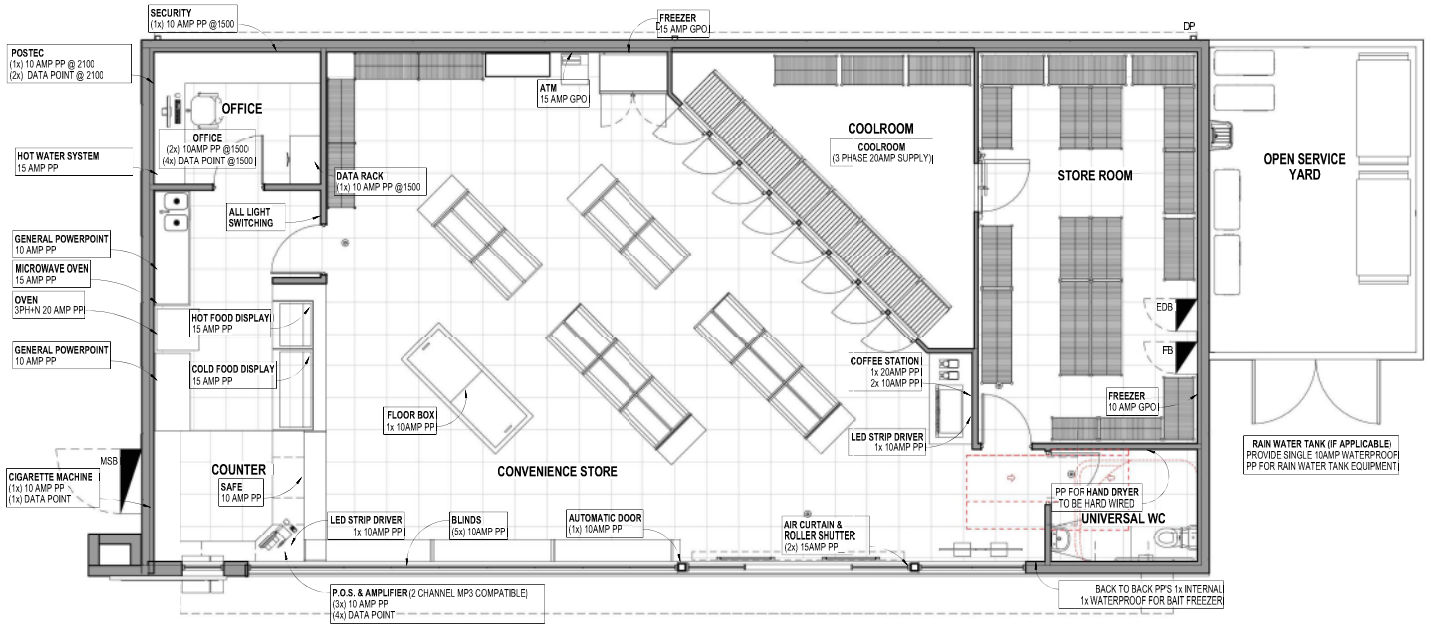
1 Building Roof Plan

1 : 75 (A1)



2 Building Reflected Ceiling Plan

1 : 75 (A1)



3 Building Electrical Plan

1 : 50 (A1)

Rev	Description	Date	Issued by
1	DA Set	11.12.24	LT

Client

JAMES BRADSTREET

Project

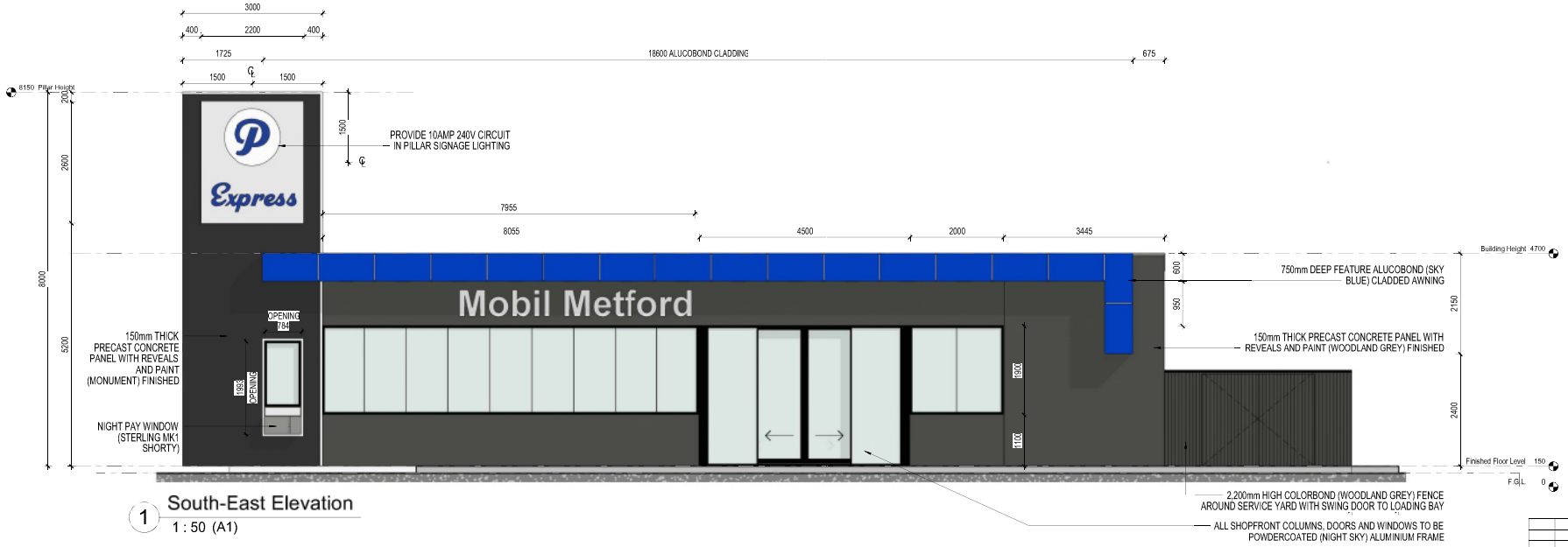
MIXED USE

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	As indicated
Drawn by	
Checked by	
Sheet Size	A1

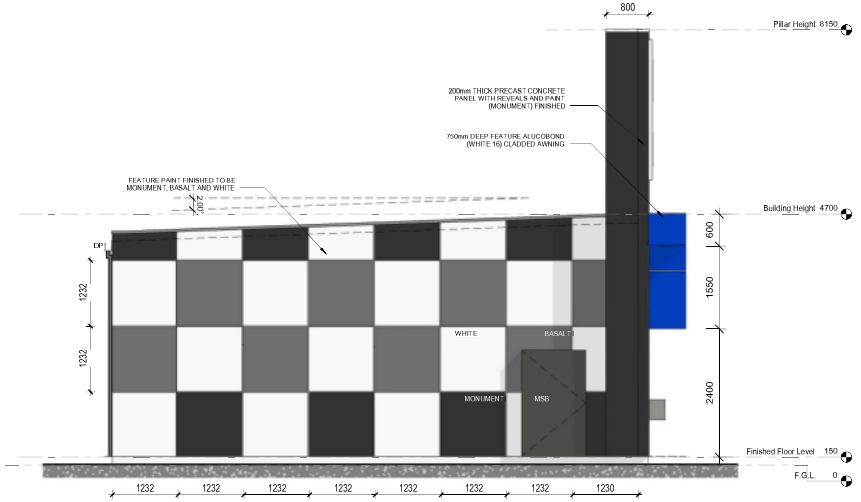
Drawing

Service Station Roof Plan & Electrical

Job No:	Issue:	No:
BC0537	1	06



1 South-East Elevation
1 : 50 (A1)



2 South-West Elevation
1 : 50 (A1)

Rev	Description	Date	Issued by
1	DA Set	11.12.24	LT

Client

JAMES BRADSTREET

Project

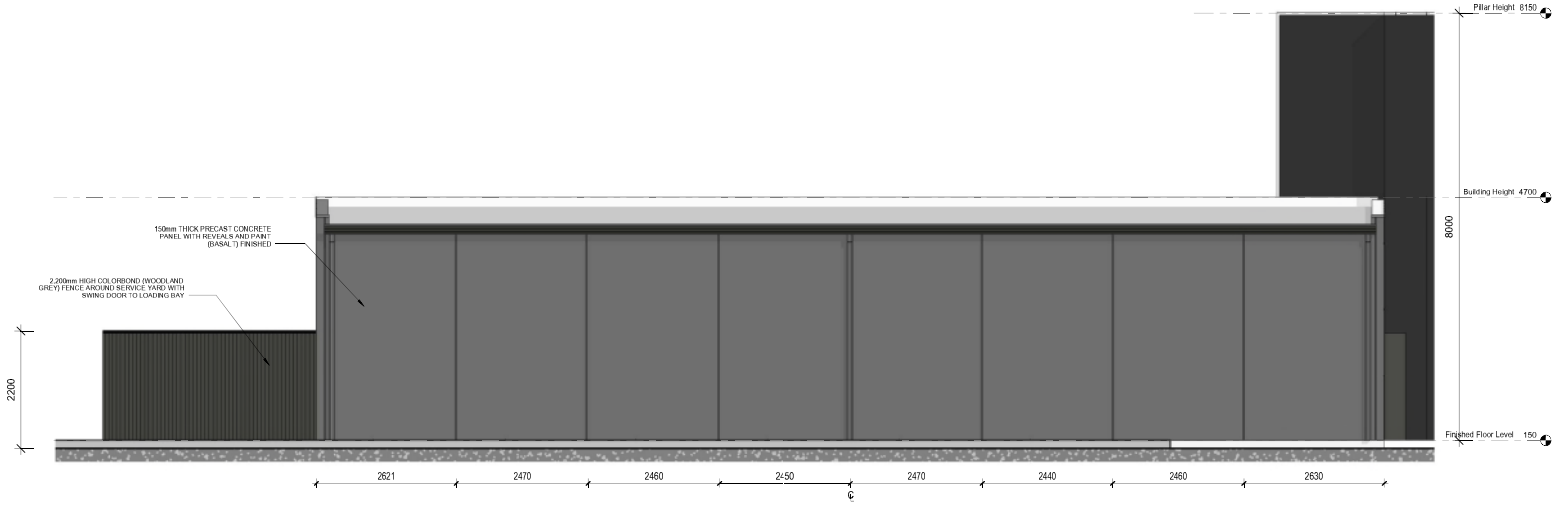
MIXED USE

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 50
Drawn by	
Checked by	
Sheet Size	A1

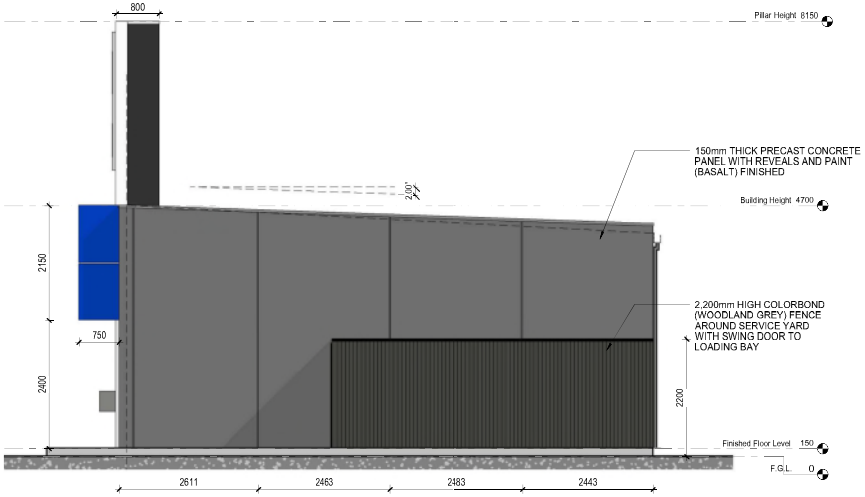
Drawing

Service Station Elevations

Job No:	Issue:	No:
BC0537	1	08



1 North-West Elevation
1 : 50 (A1)



2 North-East Elevation
1 : 50 (A1)

Rev	Description	Date	Issued by
1	DA Set	11.12.24	LT

Client

JAMES BRADSTREET

Project

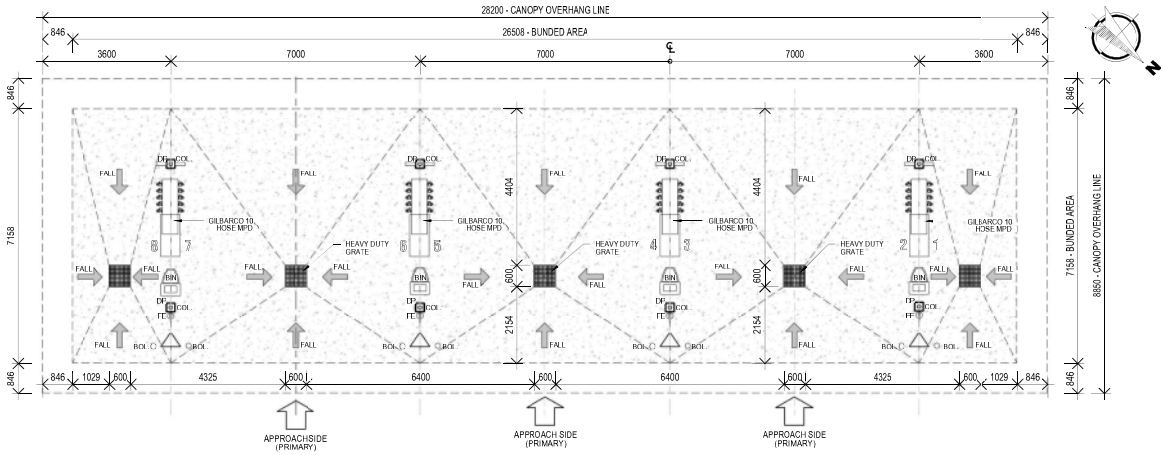
MIXED USE

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 50
Drawn by	
Checked by	
Sheet Size	A1

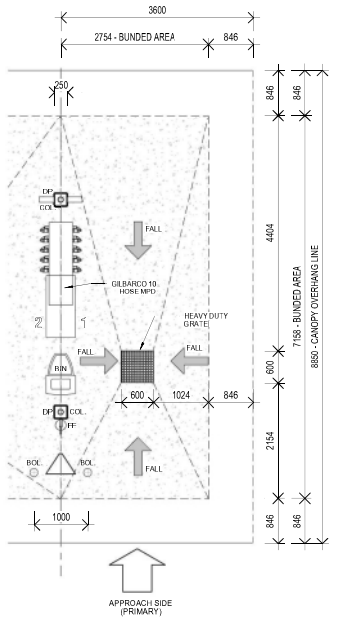
Drawing

Service Station Elevations

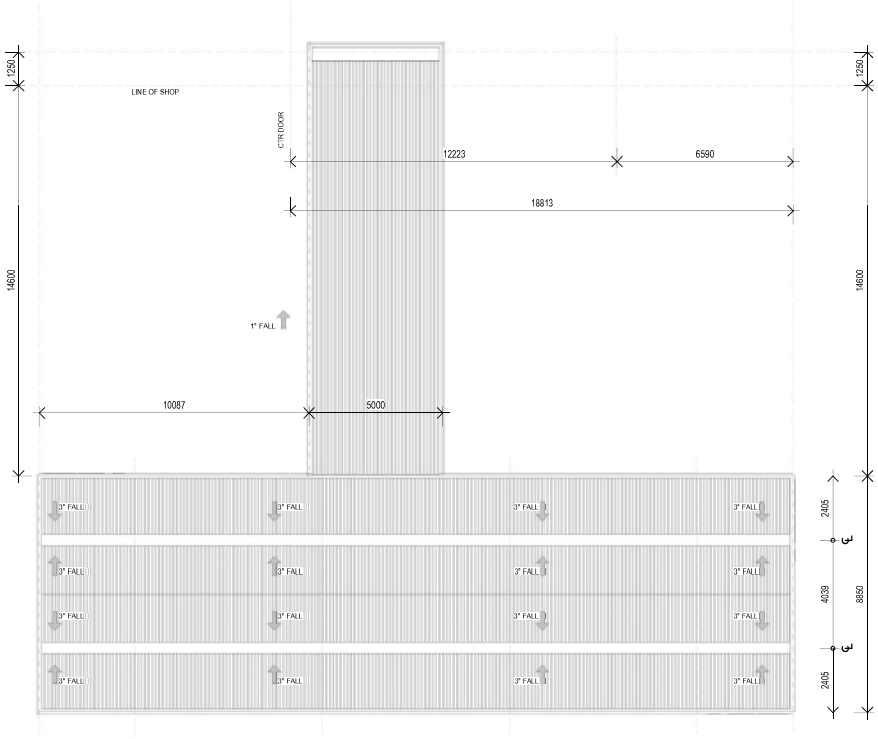
Job No:	Issue:	No:
BC0537	1	09



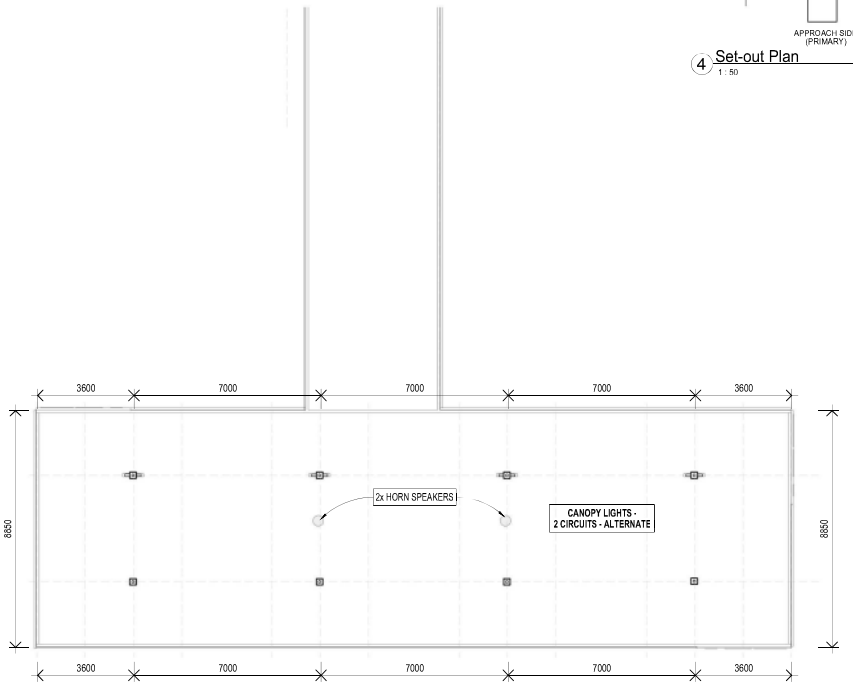
1 Canopy Floor Plan
1 : 75



4 Set-out Plan
1 : 50



2 Canopy Roof Plan
1 : 100



3 Reflected Ceiling Plan
1 : 100

2 Elwell Close
Beresfield, NSW 2322
PO Box 596
East Maitland NSW 2323
Ph: (02)4966 0218
BROWN COMMERCIAL BUILDING
www.brownbuild.com.au

Rev.	Description	Date	Issued by
1	DA SET	16.01.24	H.Skinner

0 1 2 4 6m

NOTES:
1. All dimensions, levels, and setouts are to be verified on site prior to fabrication or construction.
2. Written dimensions take precedence over scaled ones

Project: SERVICE STATION

Sheet Title: CAR CANOPY PLANS

Project No: BC0537

Lot: 1 **DP:** 1109997 **No:** 2325 **Street:** OXLEY HIGHWAY **Suburb:** WAUCHOPE

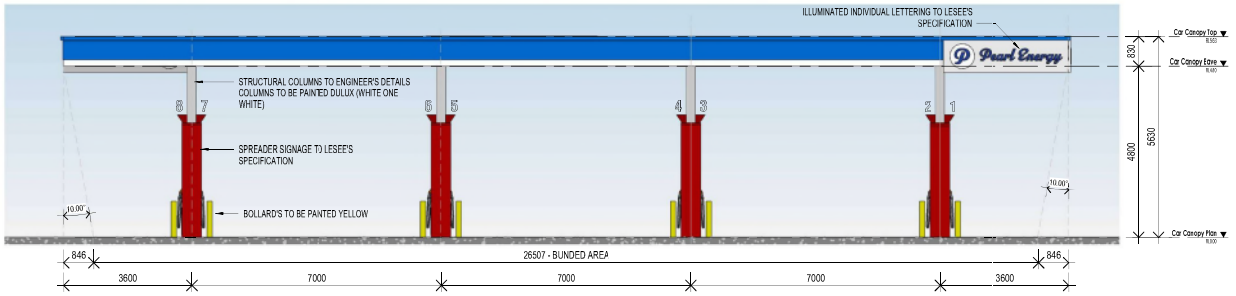
Client: PEARL INVESTMENTS

Project Status: CONSTRUCTION CERTIFICATE

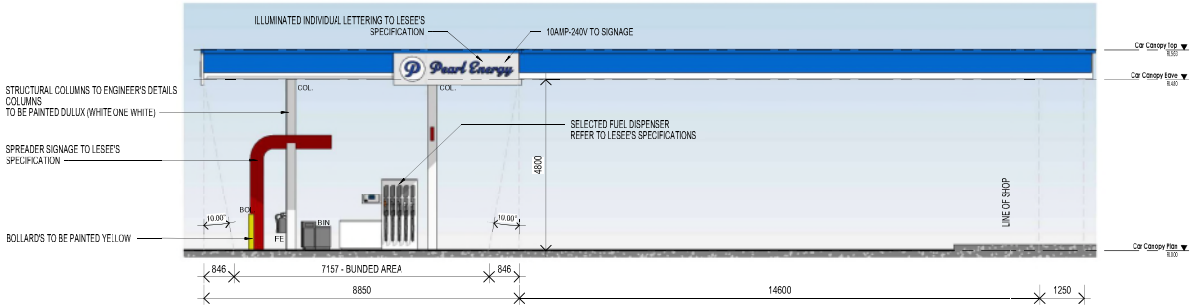
Scale: As indicated on A1

Revision: 1

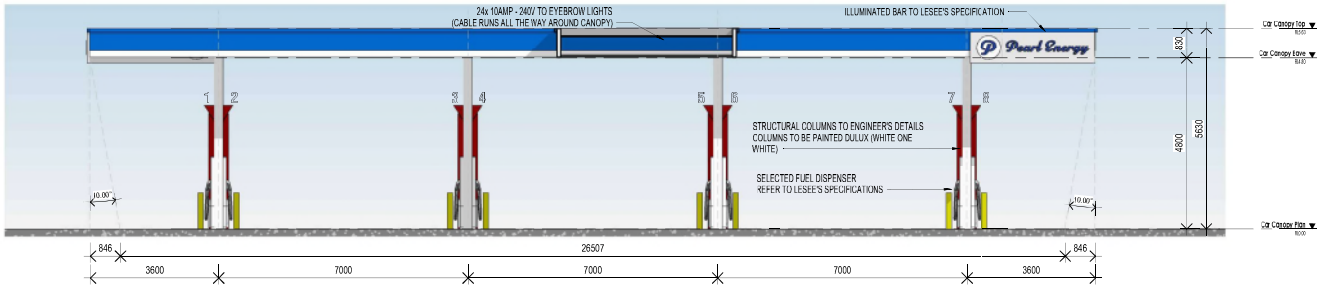
DWG No: 10



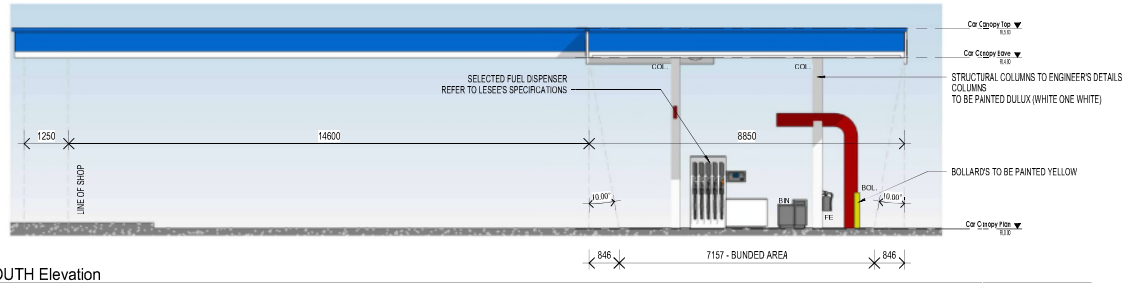
1 NORTH EAST Elevation
1 : 75



2 NORTH WEST Elevation
1 : 75



3 SOUTH WEST Elevation
1 : 75



4 SOUTH Elevation
1 : 75

5 Canopy Signage Details
1 : 25

BROWN COMMERCIAL BUILDING
www.brownbuild.com.au
2 Elwell Close
Beresfield, NSW 2322
PO Box 596
East Maitland NSW 2323
Ph: (02)4966 0218

Rev.	Description	Date	Issued by
1	DA SET	16.01.24	H.Skinner

0 1 2 4 6m

NOTES:
1. All dimensions, levels, and setouts are to be verified on site prior to fabrication or construction.
2. Written dimensions take precedence over scaled ones

Project: SERVICE STATION

Sheet Title: CAR CANOPY ELEVATIONS

Project No: BC0537

Lot: 1 **DP:** 1109997 **No:** 2325 **Street:** OXLEY HIGHWAY **Suburb:** WAUCHOPE

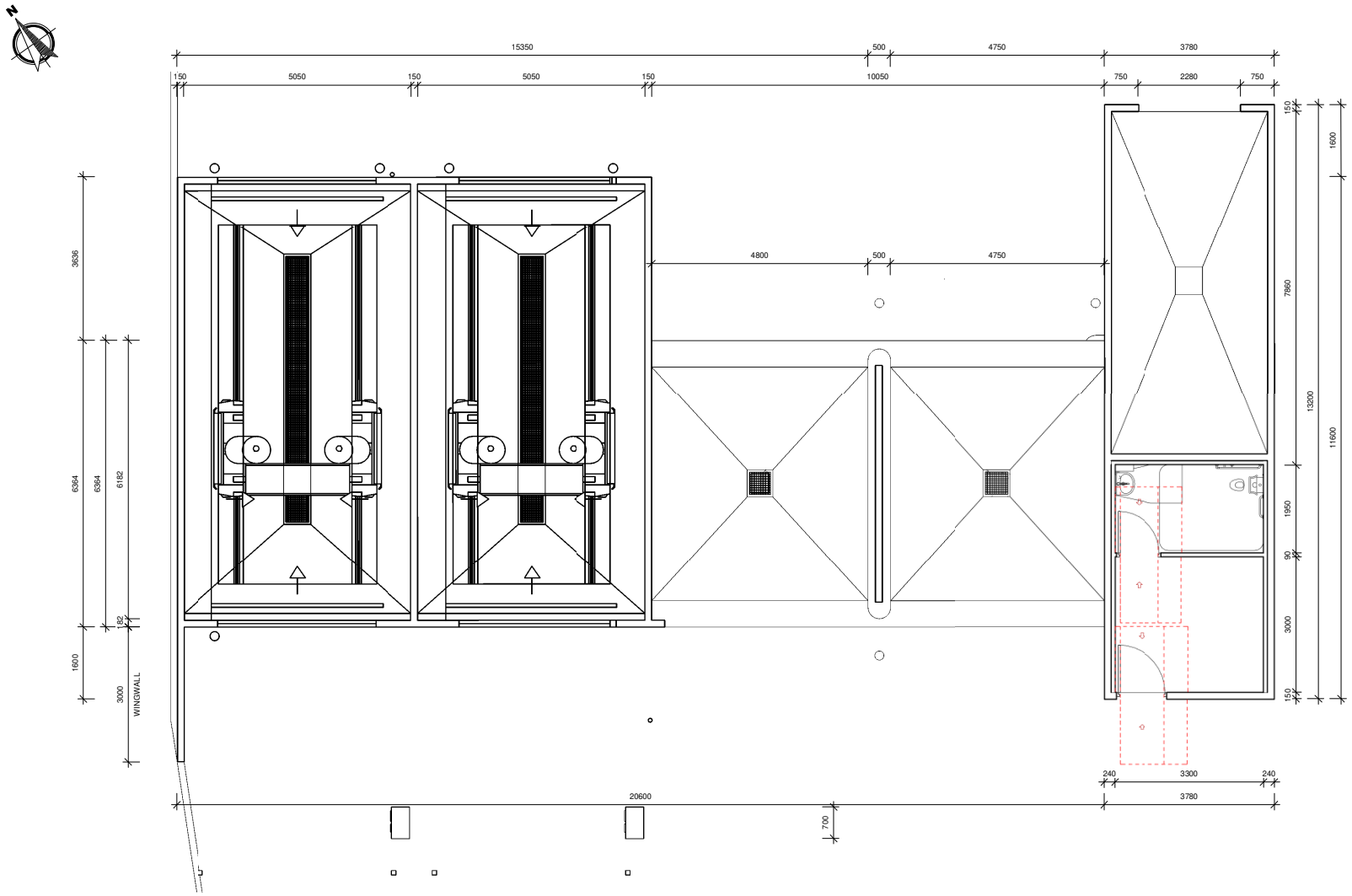
Client: PEARL INVESTMENTS

Project Status: CONSTRUCTION CERTIFICATE

Scale: As indicated on A1

Revision: 1

DWG No: 11



1 Car Wash Floor Plan

1 : 50

Rev	Description	Date	Issued by
	Car Wash Changes	25.02.25	LT
	Car wash Changes	14.02.25	H.Skinner
	Signage	16.01.25	H.Skinner
1	DA Set	18.12.24	LT

Client

JAMES BRADSTREET

Project

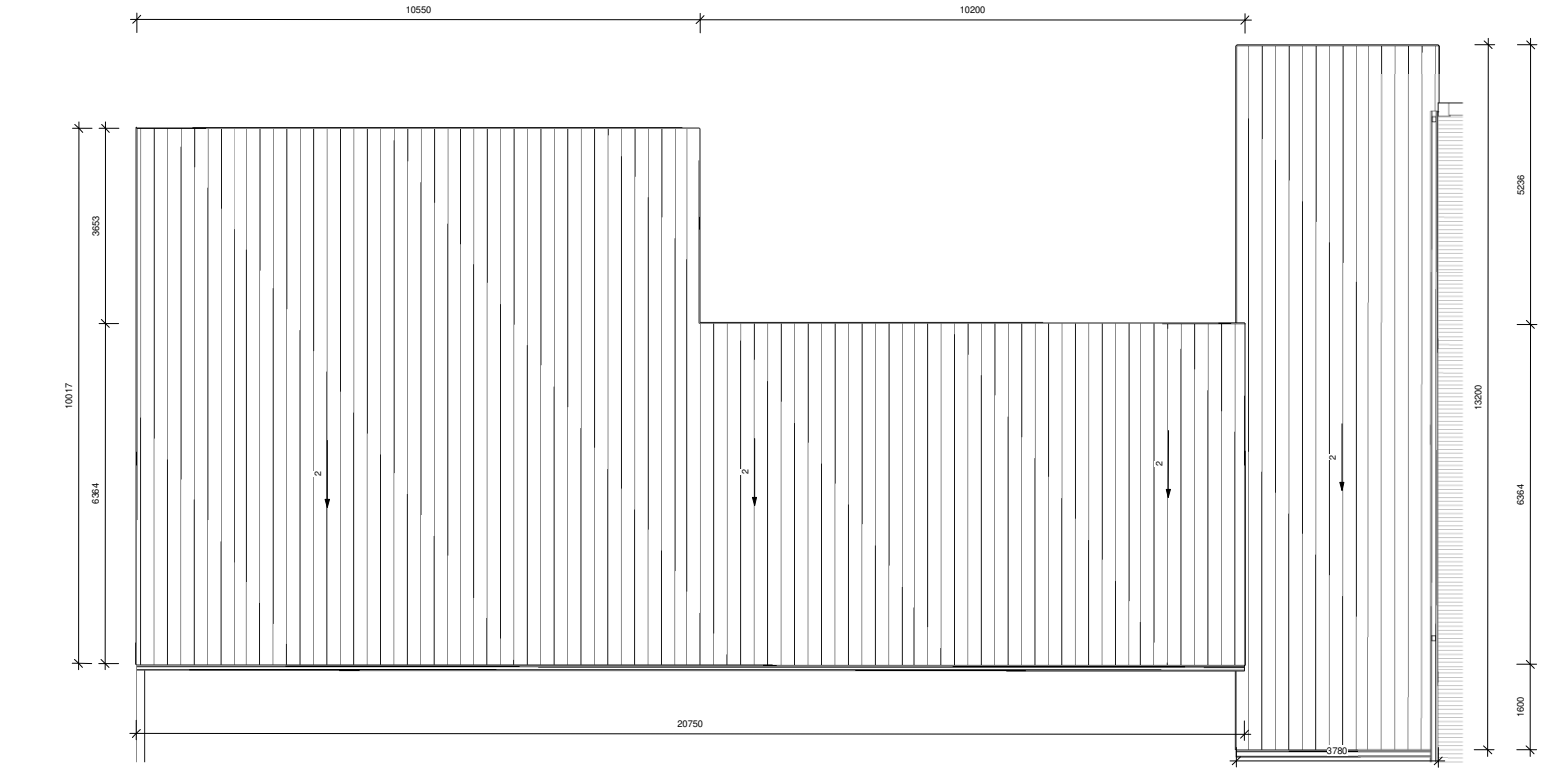
SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 50
Drawn by	
Checked by	
Sheet Size	A1

Drawing

Car Wash Floor Plan

Job No:	Issue:	No:
BC0537	4	12



1 Car wash Roof plan

1 : 50

Rev	Description	Date	Issued by
	Car wash Changes	14.02.25	H.Skinner
	Signage	16.01.25	H.Skinner
1	DA Set	18.12.24	LT

Client

JAMES BRADSTREET

Project

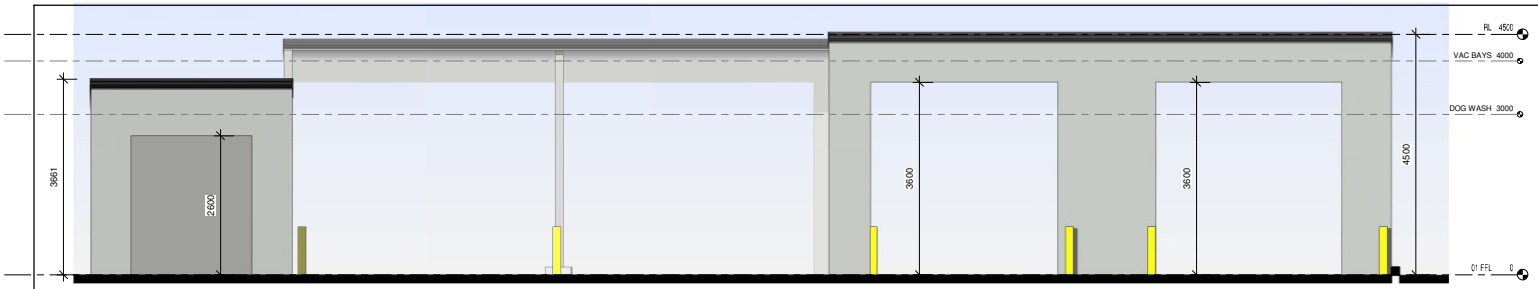
SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 50
Drawn by	
Checked by	
Sheet Size	A1

Drawing

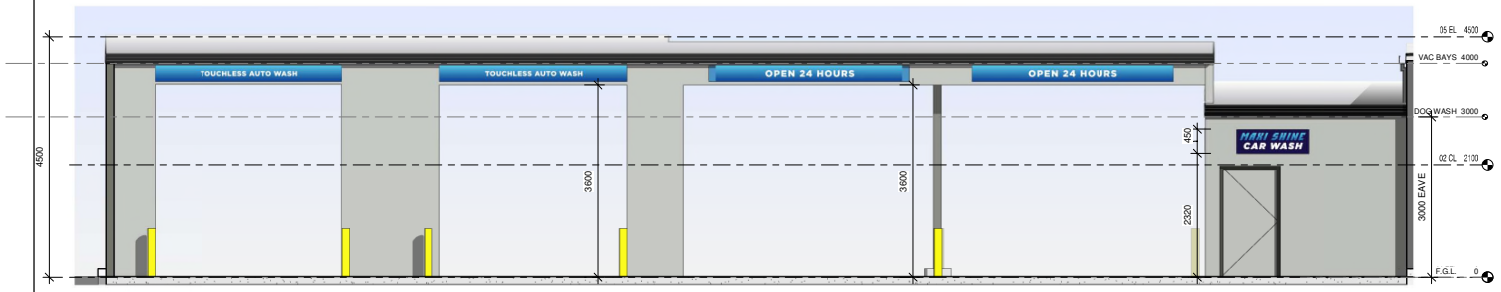
Car Wash Roof Plan

Job No:	Issue:	No:
BC0537	3	13



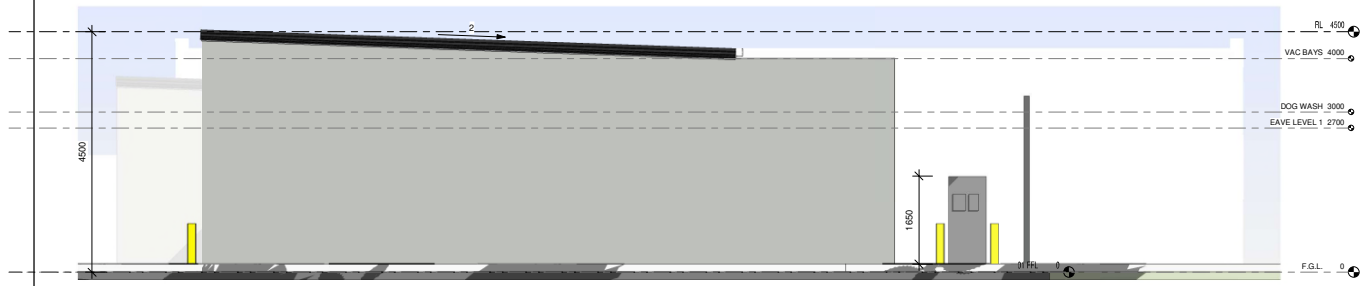
1 North-East Elevation CW

1 : 50



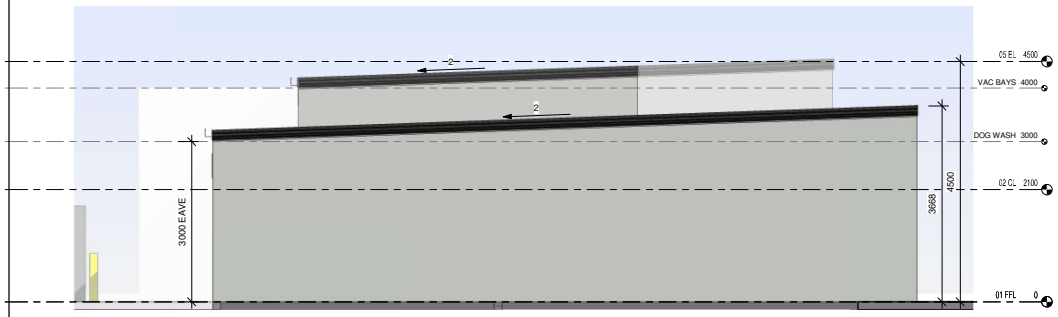
4 South-West Elevation CW

1 : 50



2 North-West Elevation CW

1 : 50



3 South-East Elevation CW

1 : 50

Rev	Description	Date	Issued by
	Car Wash Changes	27.02.25	LT
	Car Wash Changes	25.02.25	LT
	Car wash Changes	14.02.25	H.Skinner
	Signage	16.01.25	H.Skinner
1	DA Set	18.12.24	LT

Client

JAMES BRADSTREET

Project

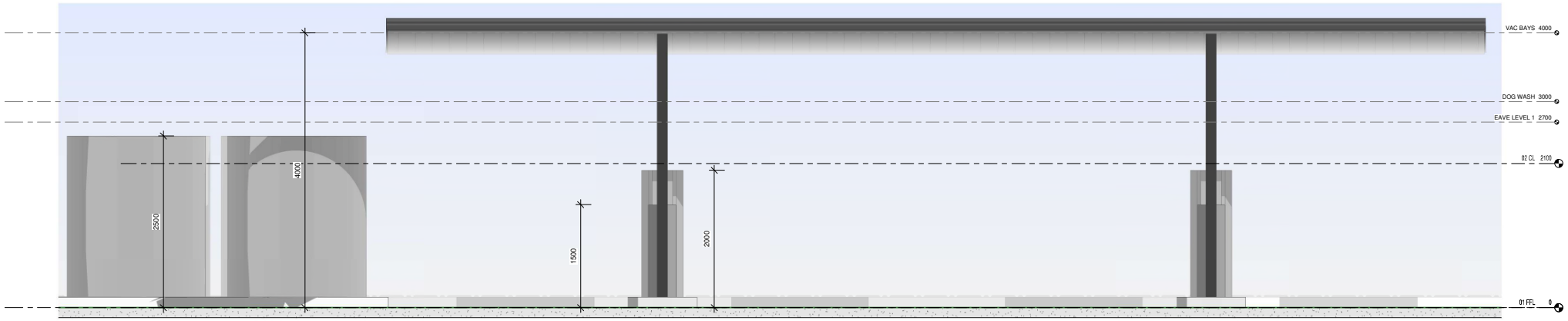
SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 50
Drawn by	
Checked by	
Sheet Size	A1

Drawing

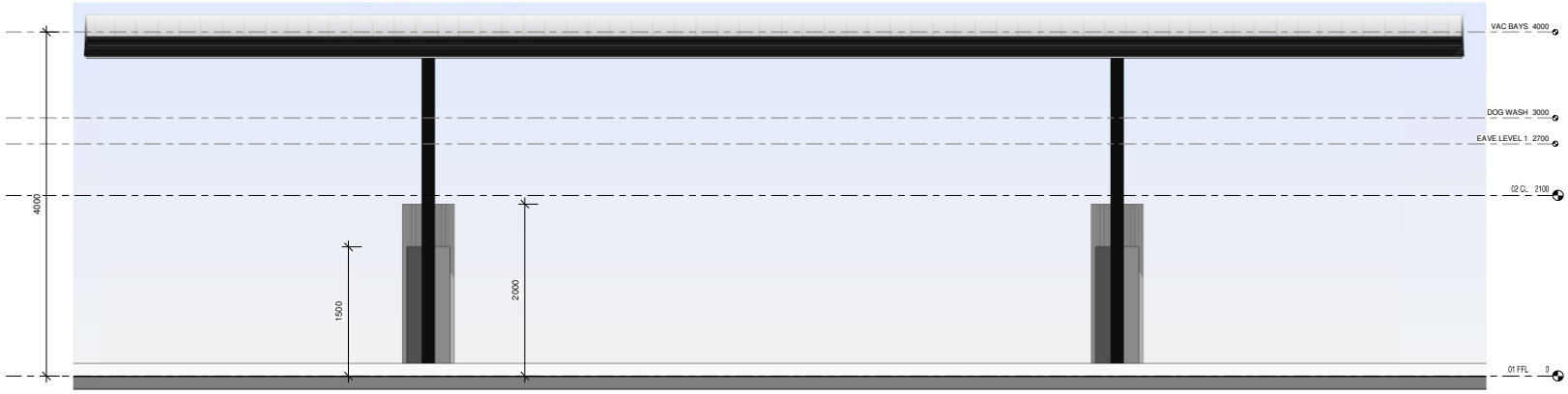
Car Wash Elevations

Job No:	Issue:	No:
BC0537	5	14



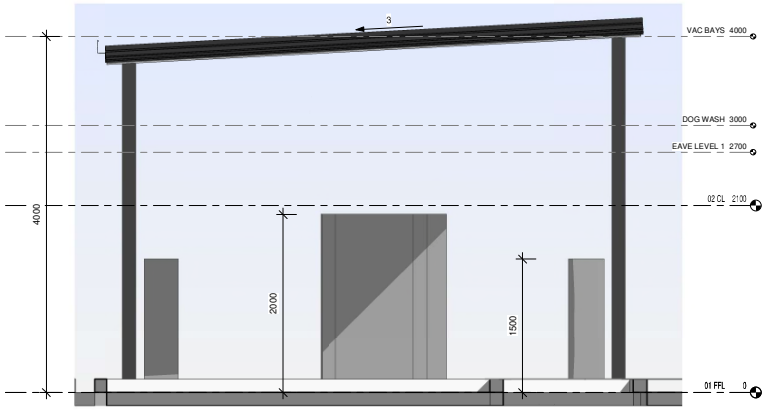
3 South Elevation VB

1 : 30



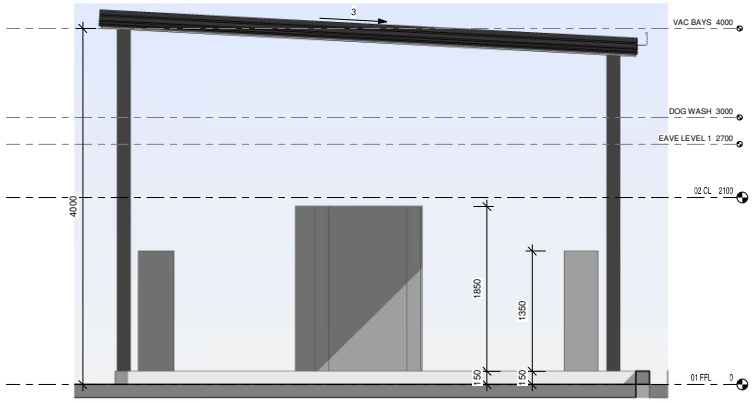
2 North Elevation VB

1 : 30



4 West Elevation VB

1 : 30



1 East Elevation VB

1 : 30

Rev	Description	Date	Issued by
1	DA Set	18.12.24	LT

Client

JAMES BRADSTREET

Project

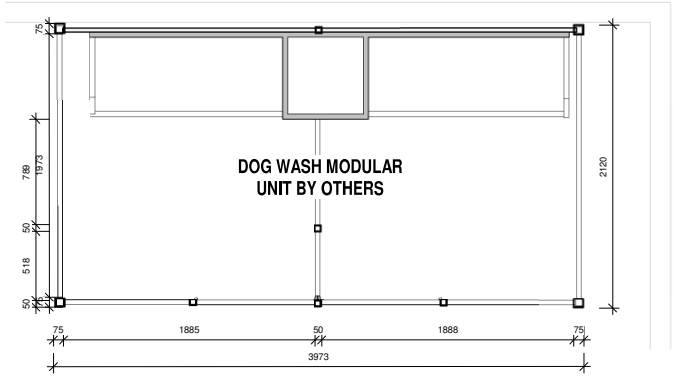
SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 30
Drawn by	
Checked by	
Sheet Size	A1

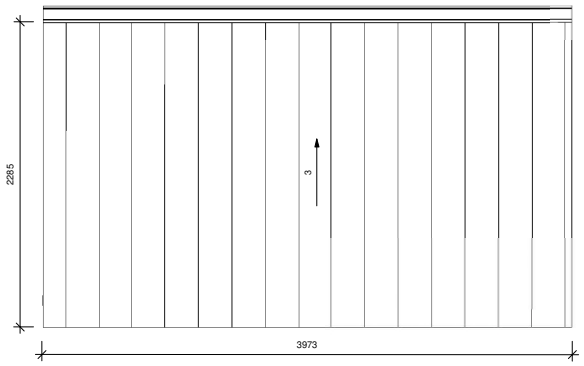
Drawing

Vac Bays Elevations

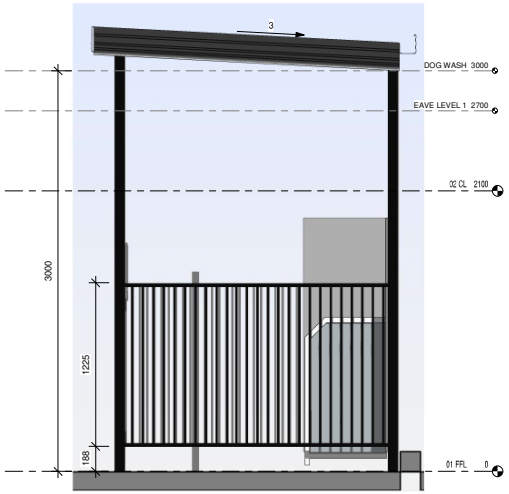
Job No:	Issue:	No:
BC0537	1	16



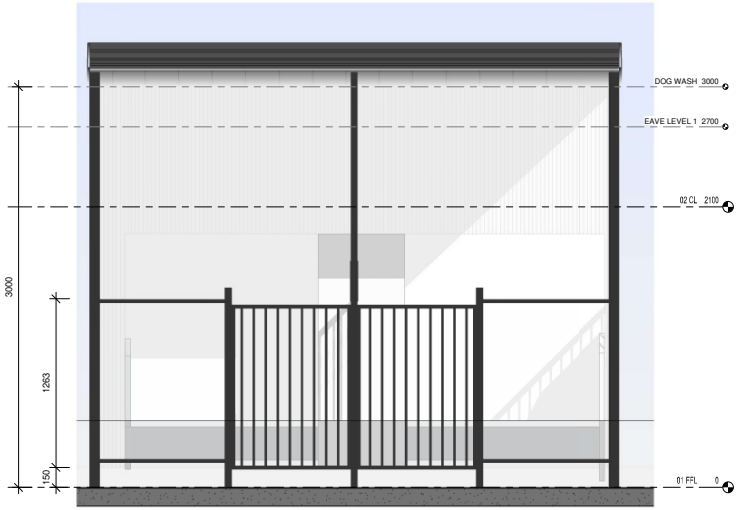
1 Dog Wash Floor Plan
1 : 20



2 Dog Wash Roof Plan
1 : 20



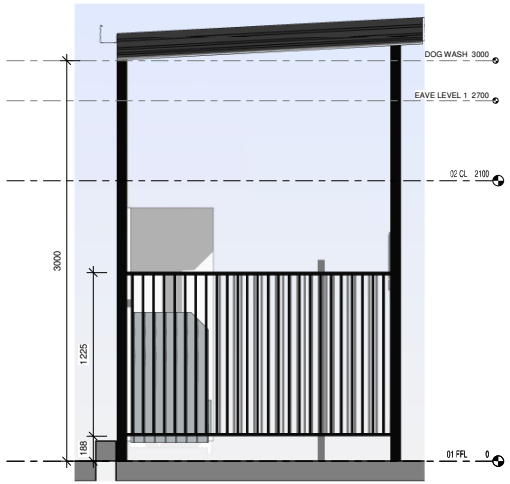
3 East Elevation DW
1 : 20



5 South Elevation DW
1 : 20

DOG WASH MODULAR
UNIT BY OTHERS

4 North Elevation DW
1 : 20



6 West Elevation DW
1 : 20

Rev	Description	Date	Issued by
	Car Wash Changes	27.02.25	LT
1	DA Set	18.12.24	LT

Client

JAMES BRADSTREET

Project

SERVICE STATION

Location:	
Lot:	418-419
No:	71
Street:	TURTON ROAD
Suburb:	METFORD
DP:	41113
Scale	1 : 20
Drawn by	
Checked by	
Sheet Size	A1

Drawing

Dog Wash Plans

Job No:	Issue:	No:
BC0537	2	17

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Appendix C – Noise Monitoring Charts

Table C22 Background Noise Monitoring Summary – Unattended Noise Monitoring (L1)

Date	Measured Background Noise Level (LA90) dB ABL[1]			Measured dB LAeq(period)		
	Day	Evening	Night	Day	Evening	Night
Monday 3 February 2025	-[2]	39	36	-[2]	54	54
Tuesday-4 February 2025	42	41	38	57	53	54
Wednesday 5 February 2025	45	39	39	58	52	55
Thursday 6 February 2025	44	41	37	56	52	55
Friday 7 February 2025	45	40	37	57	54	56
Saturday 8 February 2025	42	40	36	56	53	54
Sunday 9 February 2025	42	38	36	55	53	56
Monday 10 February 2025	43	39	35	60	54	56
Tuesday-11 February 2025	44	40	36	57	53	56
Wednesday 12 February 2025	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]
RBL / Leq Overall	43	40	36	57	53	55

Note 1: Assessment background level (ABL) – the single-figure background level representing each assessment period day, evening and night as per NPI Fact Sheet A.

Note 2: Measurement removed due to adverse weather as per NPI Fact Sheet A.

Table C23 Background Noise Monitoring Summary – Unattended Noise Monitoring (L2)

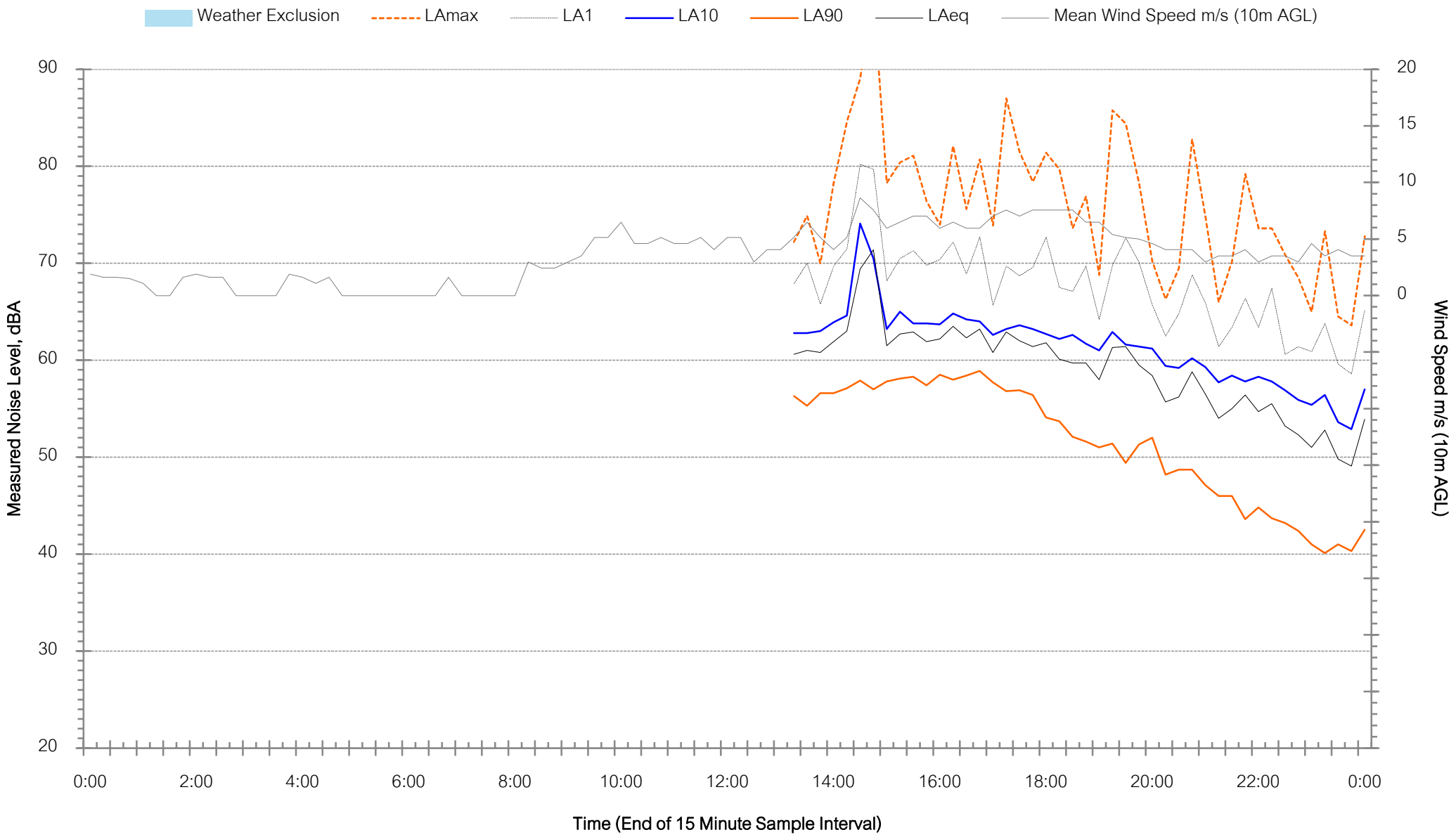
Date	Measured Background Noise Level (LA90) dB ABL[1]			Measured dB LAeq(period)		
	Day	Evening	Night	Day	Evening	Night
Monday 3 February 2025	-[2]	45	38	-[2]	58	56
Tuesday-4 February 2025	56	48	38	63	58	56
Wednesday 5 February 2025	56	47	36	64	60	57
Thursday 6 February 2025	55	49	37	64	59	56
Friday 7 February 2025	56	48	37	62	60	54
Saturday 8 February 2025	52	47	36	61	59	54
Sunday 9 February 2025	53	43	35	62	57	54
Monday 10 February 2025	55	45	36	71	61	57
Tuesday-11 February 2025	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]
RBL / Leq Overall	55	47	37	66	59	56

Note 1: Assessment background level (ABL) – the single-figure background level representing each assessment period day, evening and night as per NPI Fact Sheet A.

Note 2: Measurement removed due to adverse weather as per NPI Fact Sheet A.

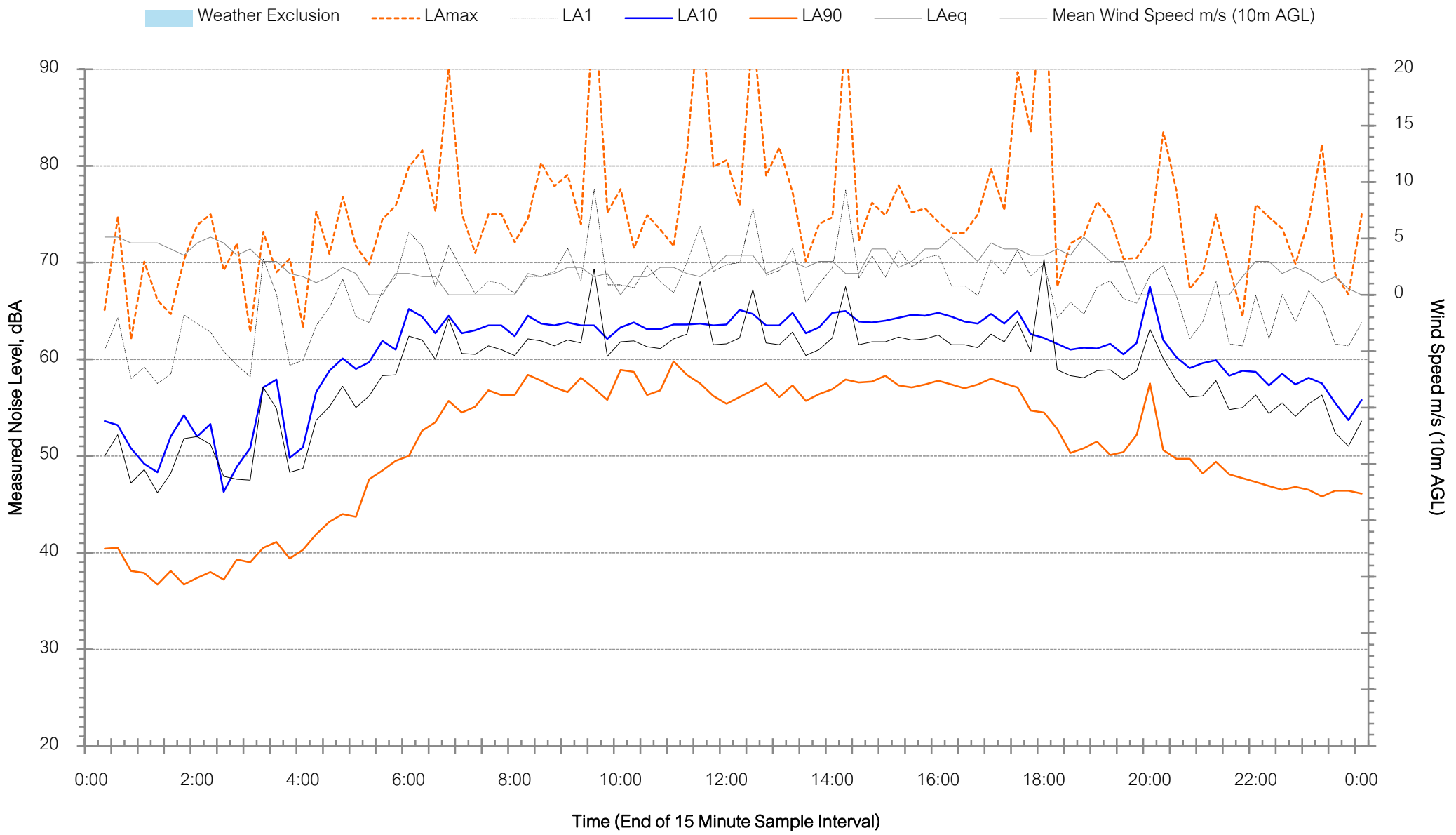
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Monday 3 February 2025



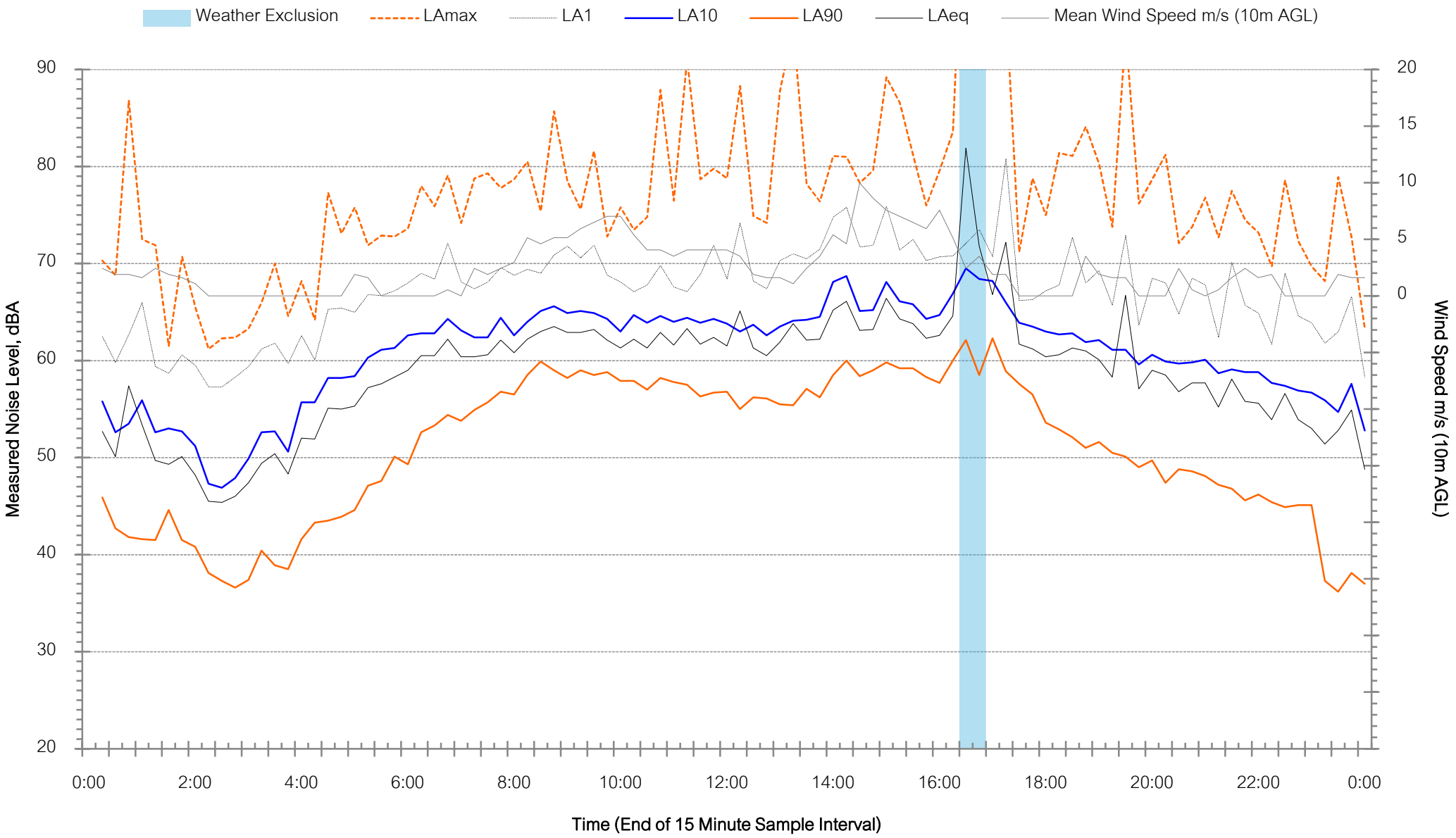
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Tuesday 4 February 2025



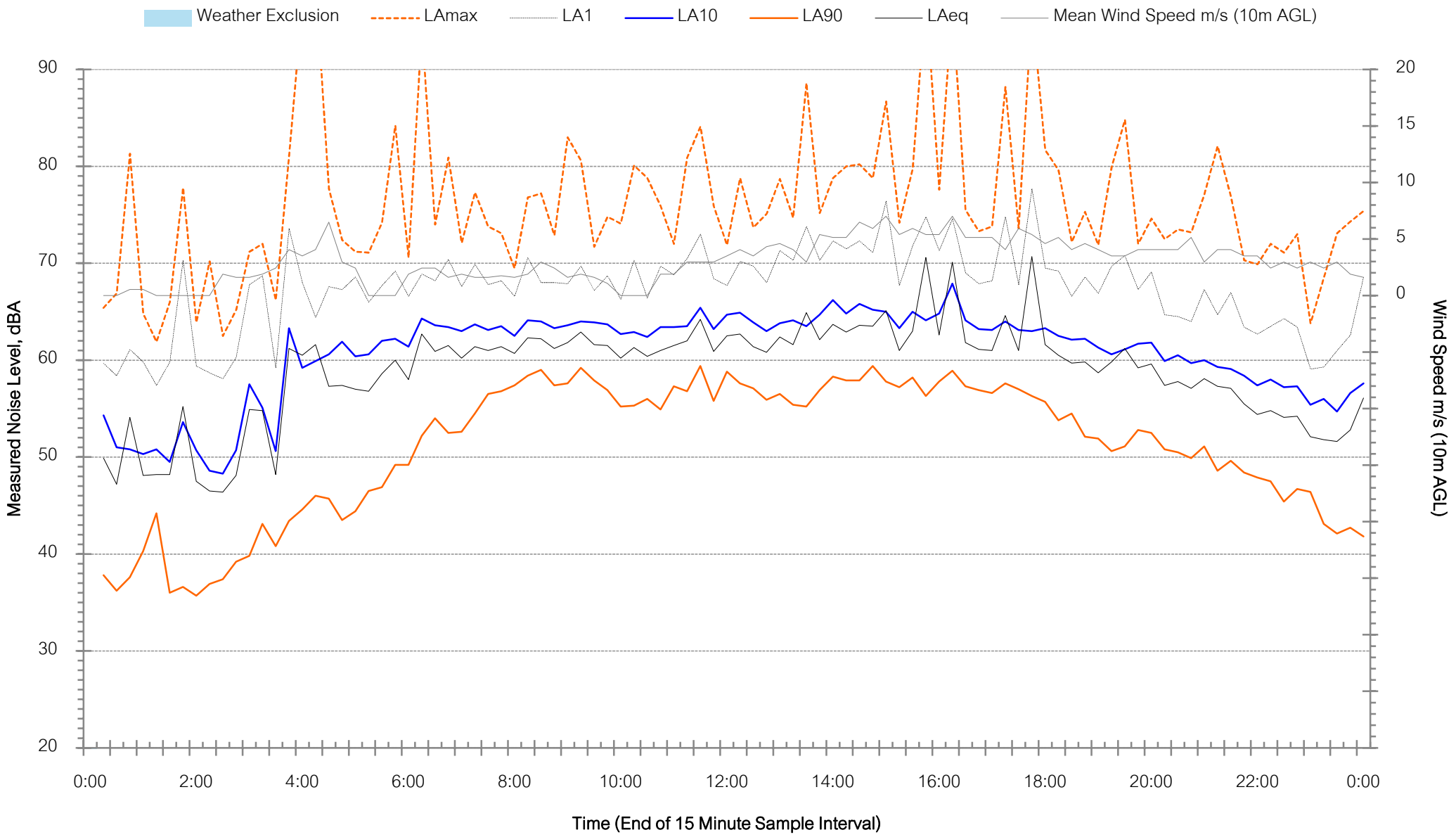
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Wednesday 5 February 2025



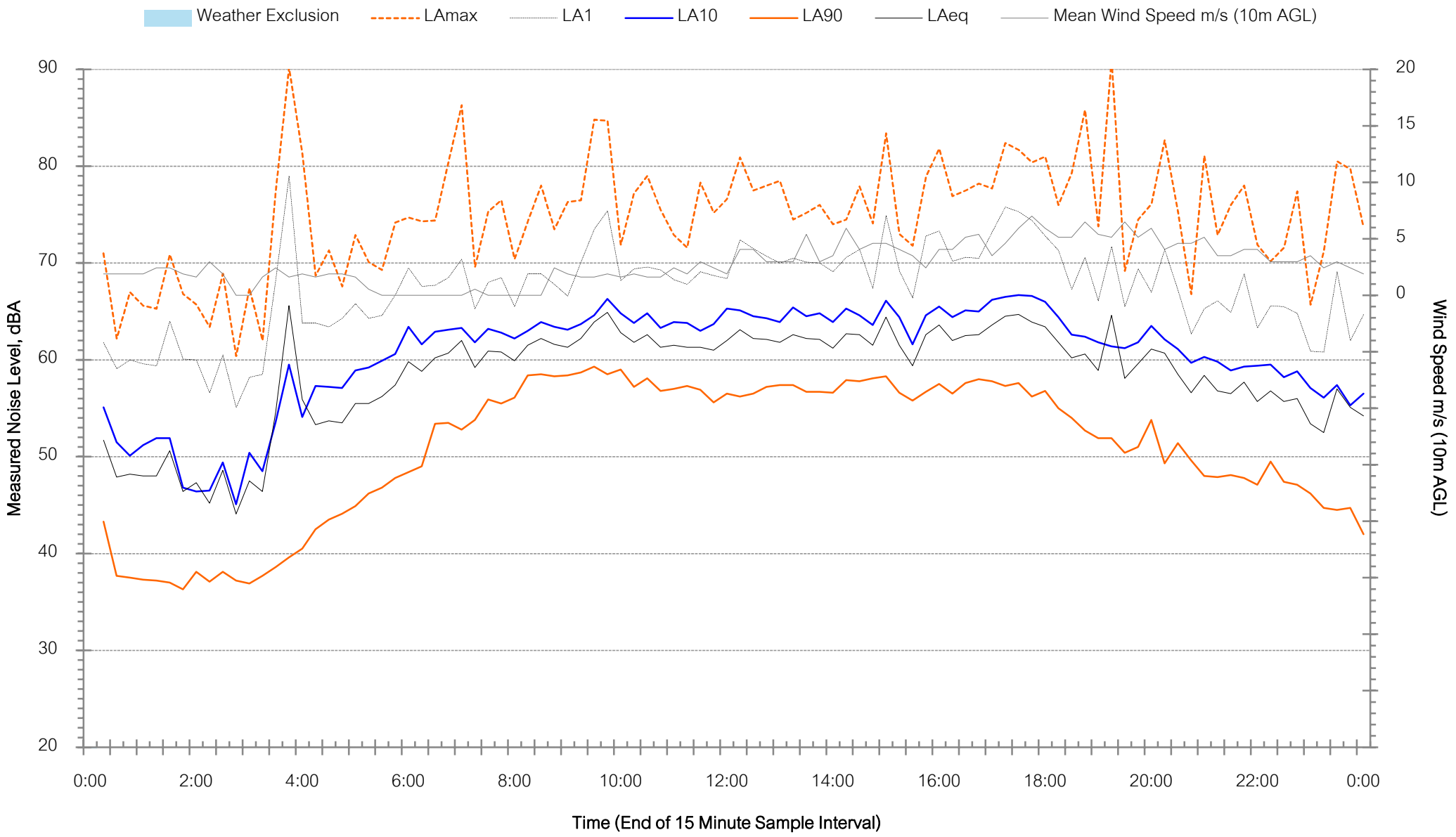
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Thursday 6 February 2025



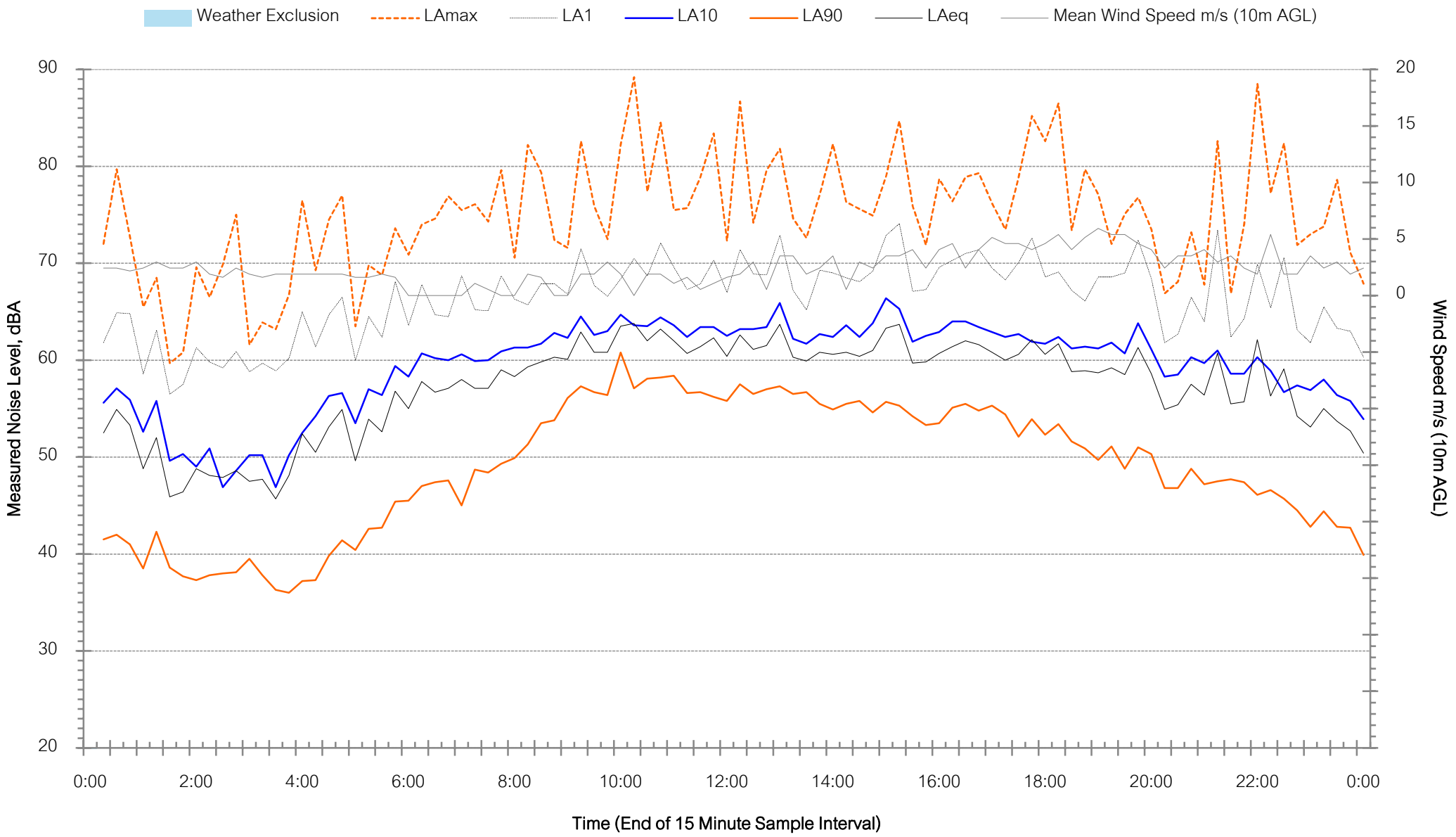
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Friday 7 February 2025



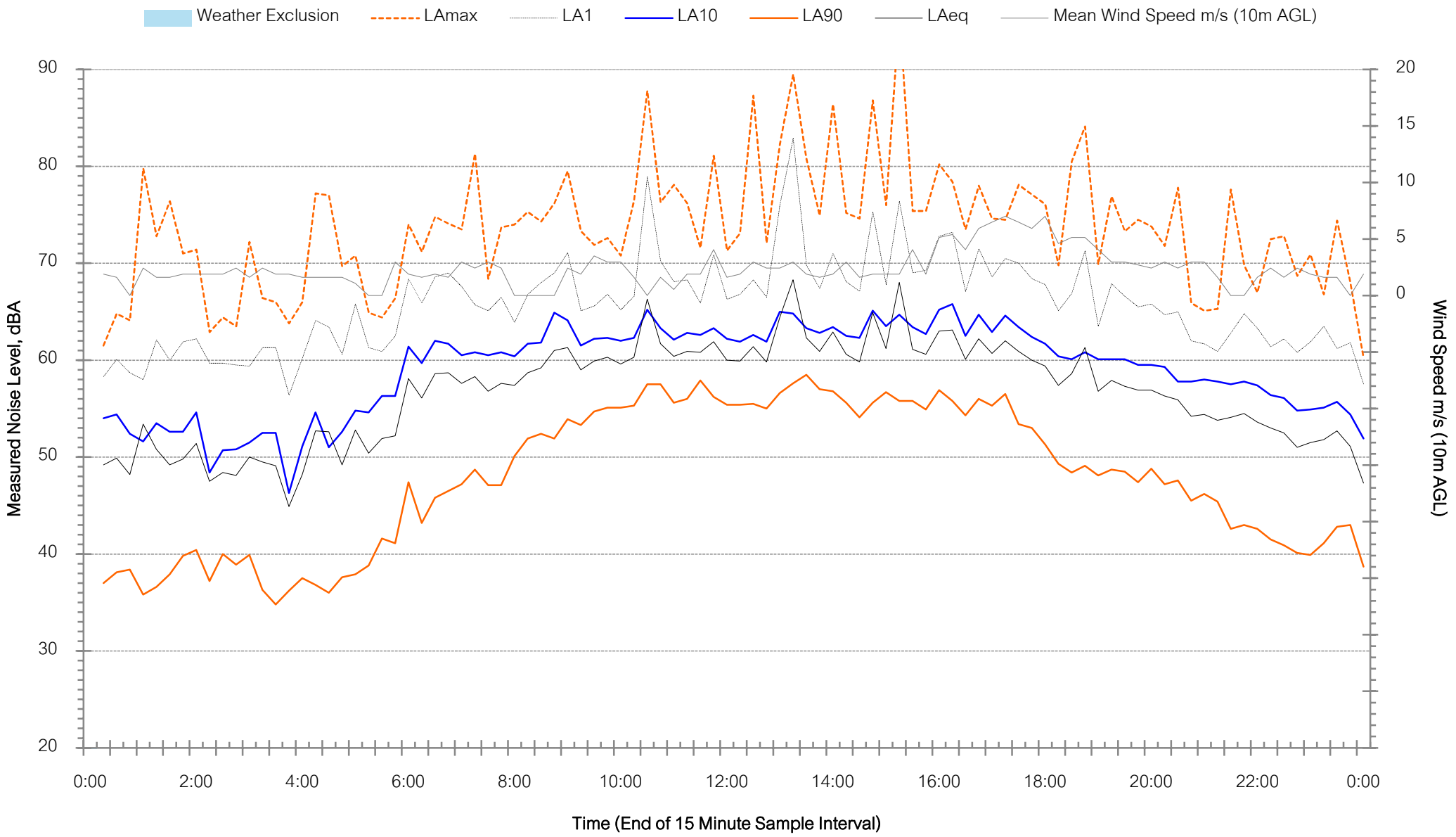
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Saturday 8 February 2025



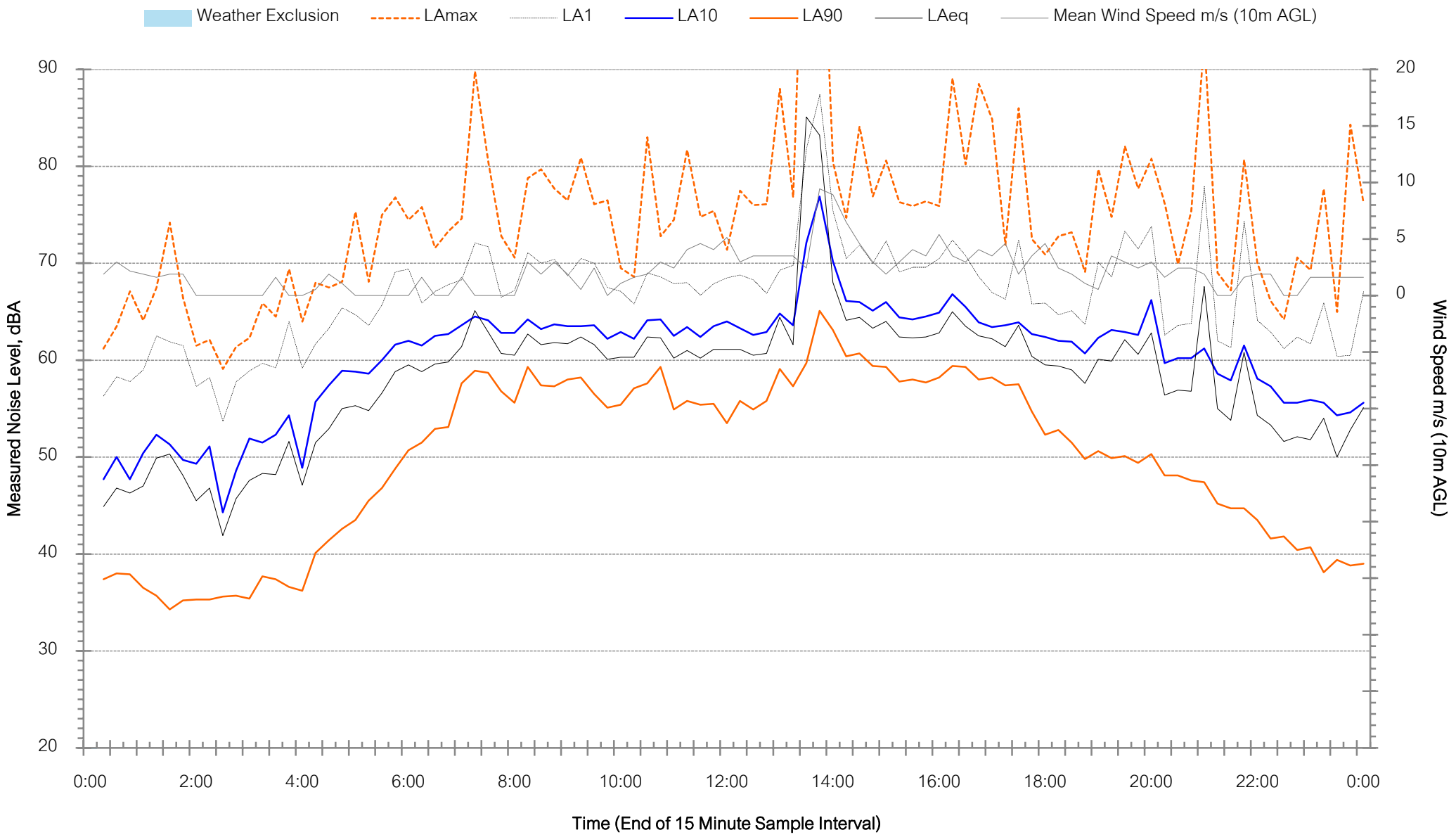
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Sunday 9 February 2025



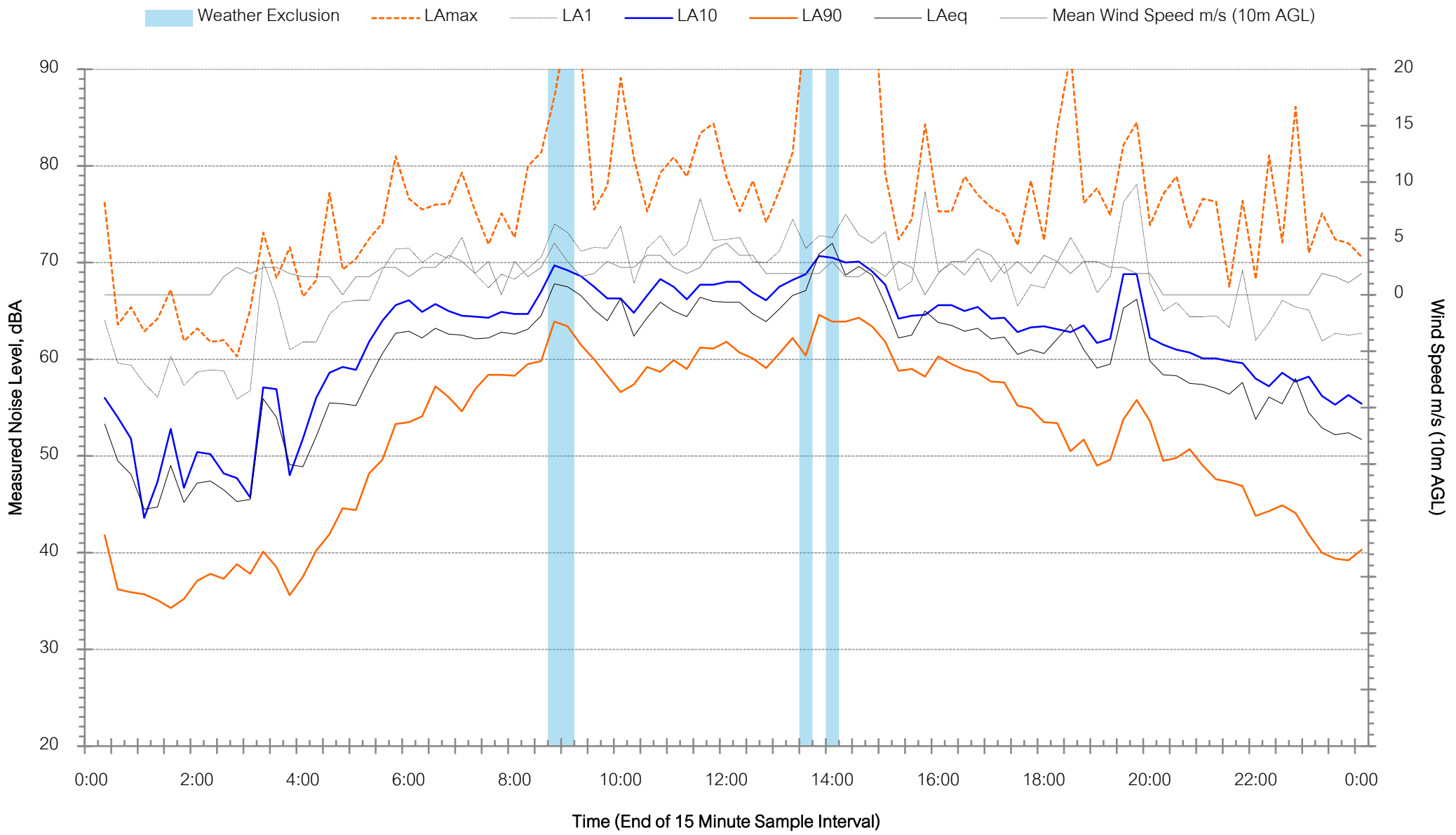
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Monday 10 February 2025



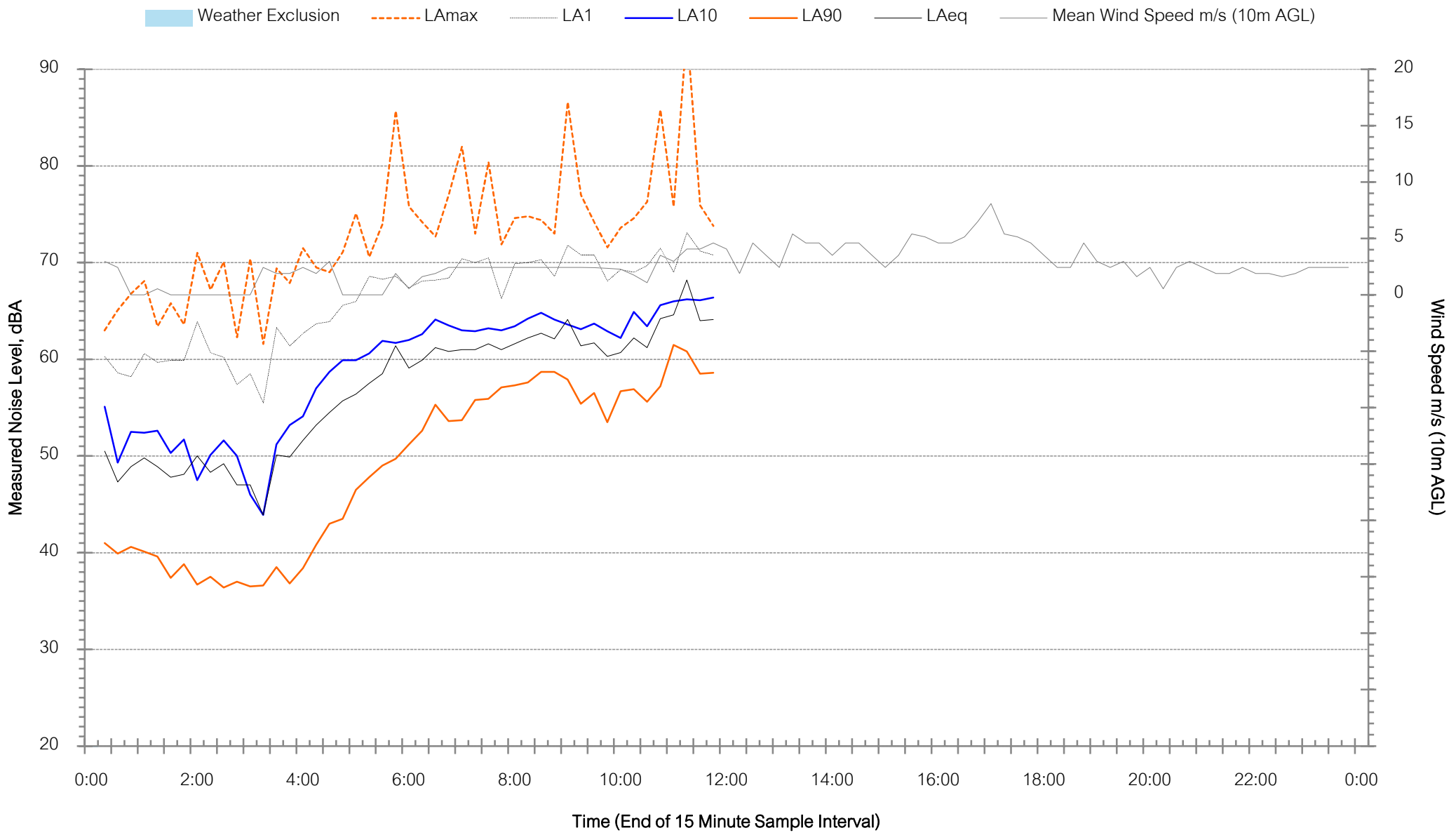
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Tuesday 11 February 2025



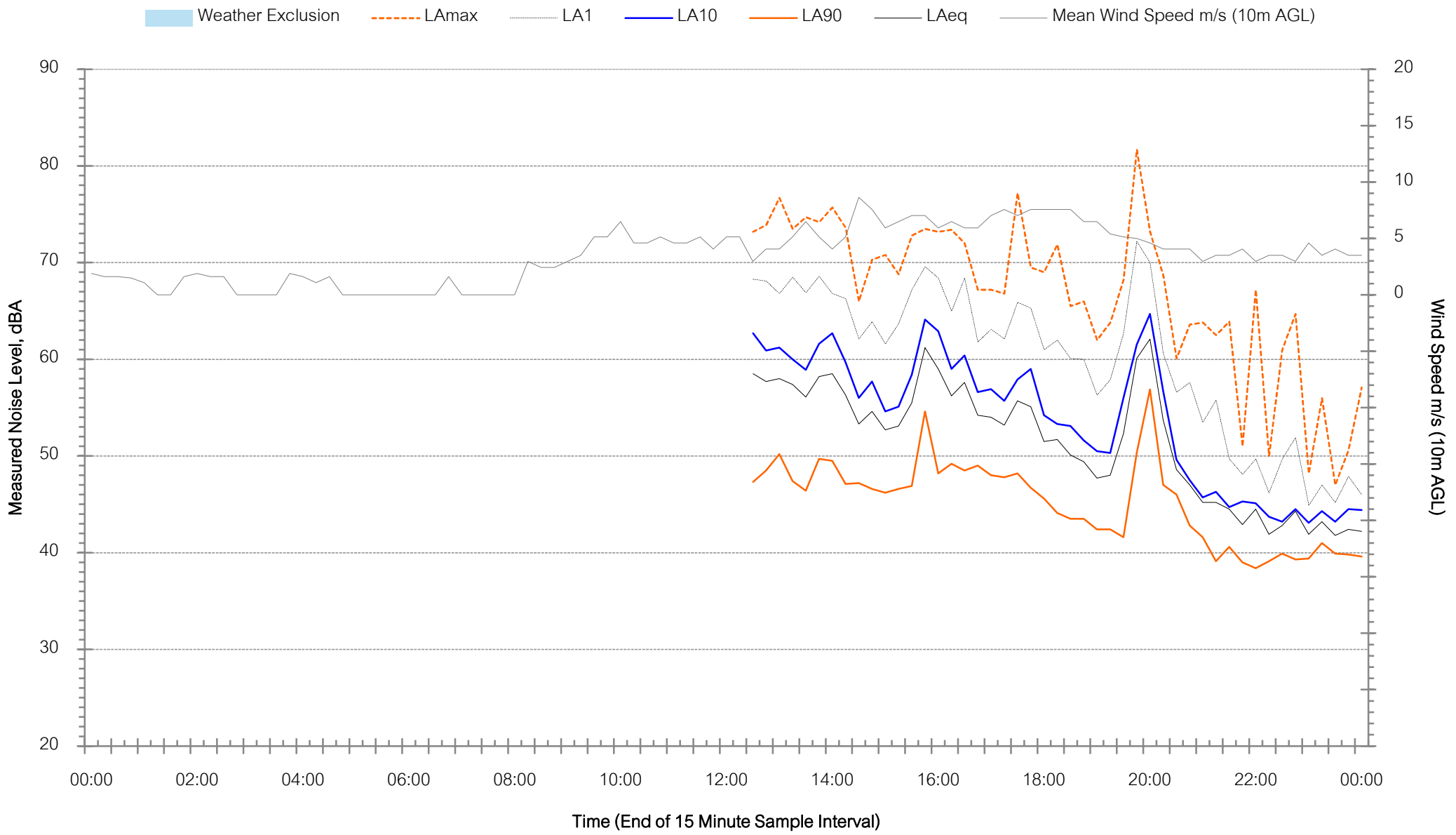
Background Noise Levels

L1 - Chifley Street, East Maitland, NSW - Wednesday 12 February 2025



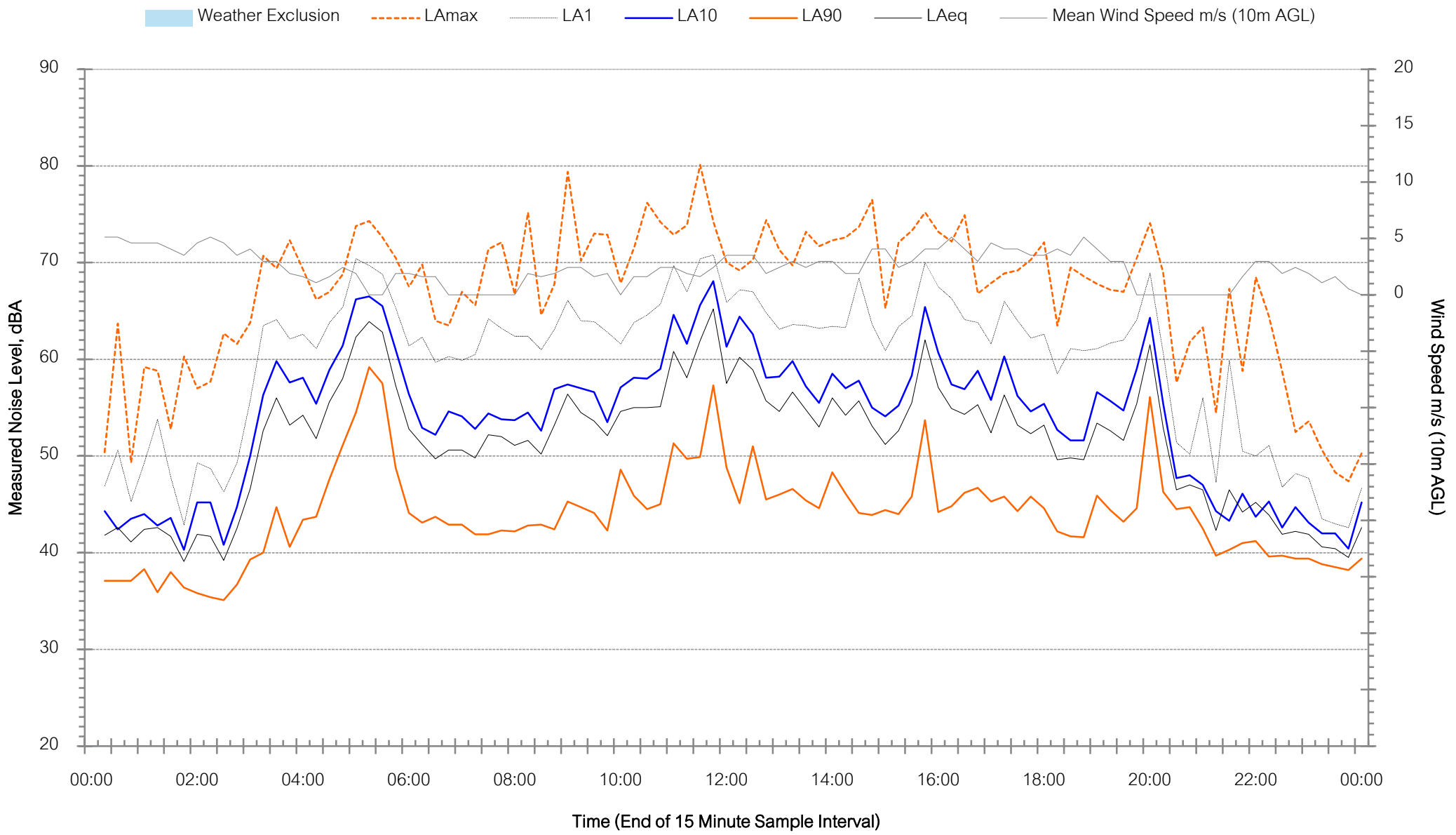
Background Noise Levels

L2 - Metford Road, Metford NSW - Monday 3 February 2025



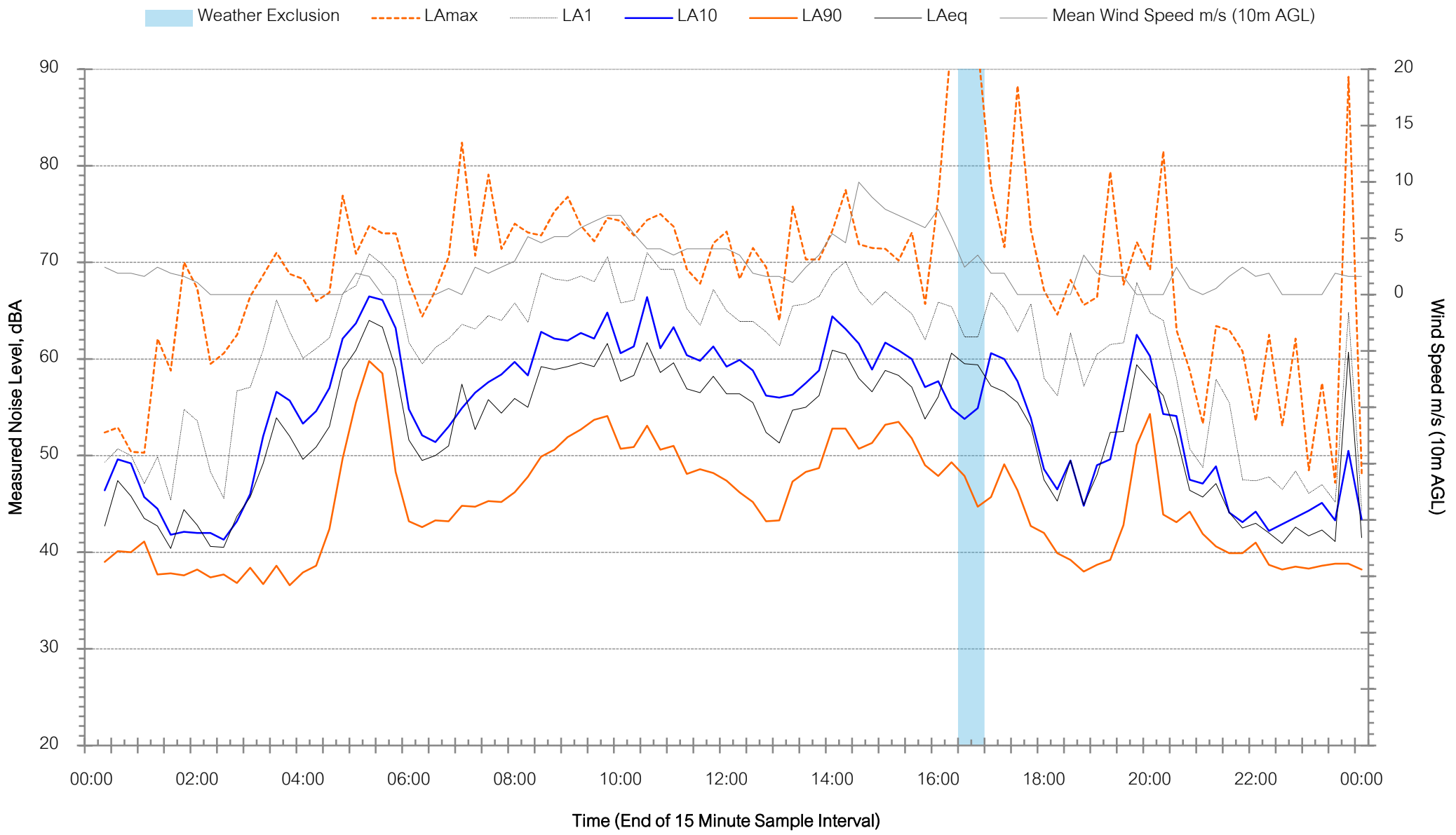
Background Noise Levels

L2 - Metford Road, Metford NSW - Tuesday 4 February 2025



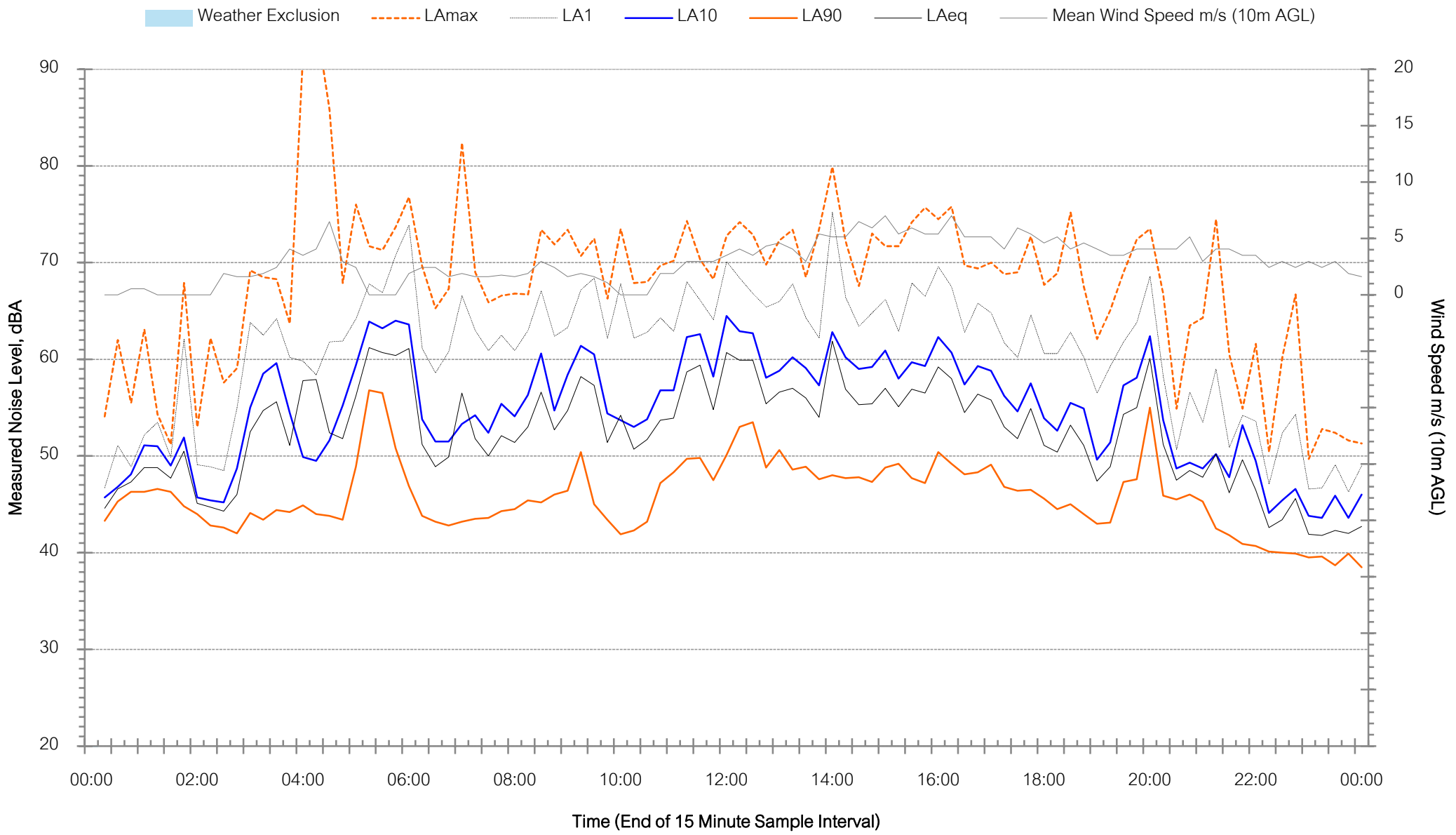
Background Noise Levels

L2 - Metford Road, Metford NSW - Wednesday 5 February 2025



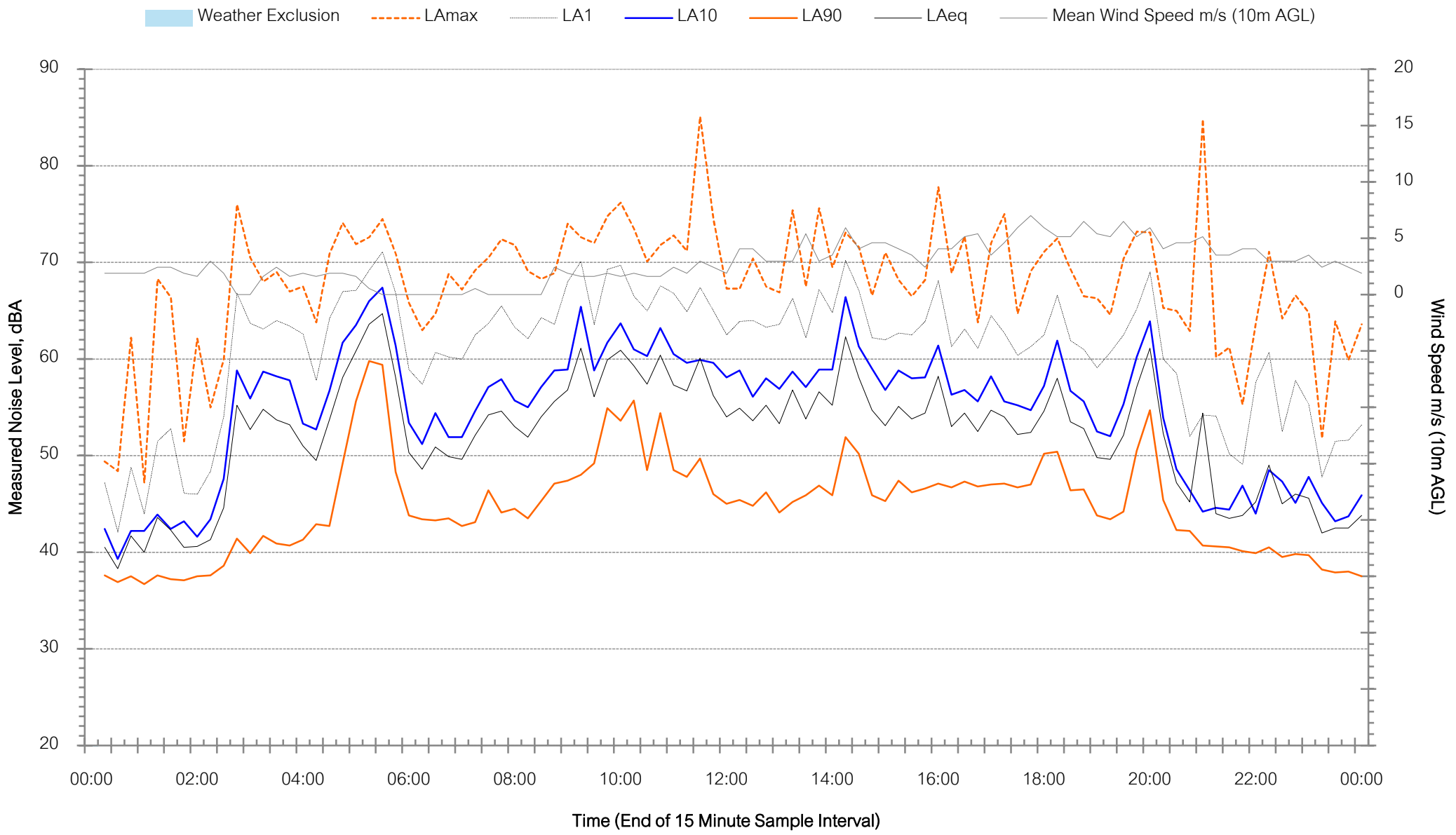
Background Noise Levels

L2 - Metford Road, Metford NSW - Thursday 6 February 2025



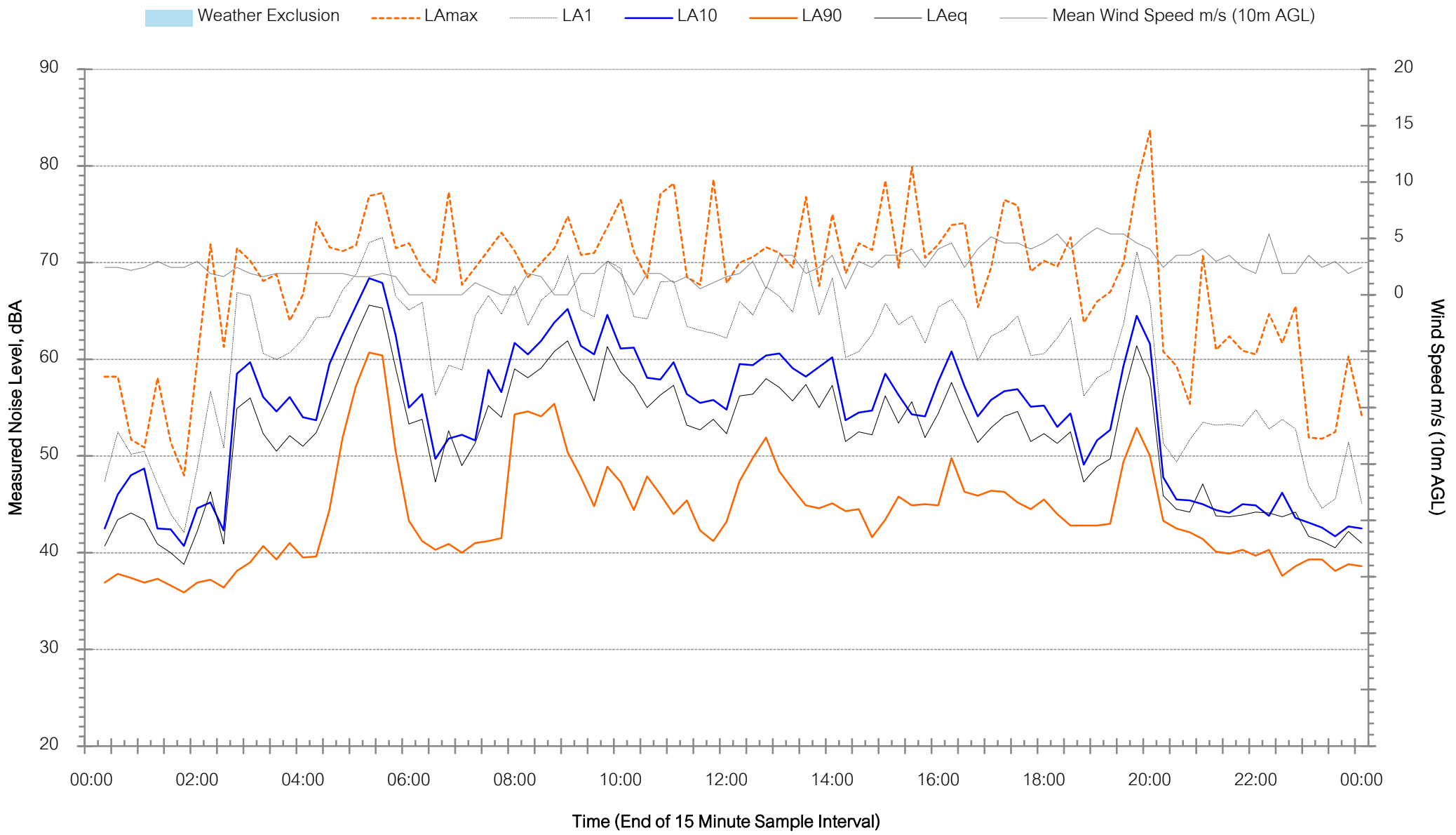
Background Noise Levels

L2 - Metford Road, Metford NSW - Friday 7 February 2025



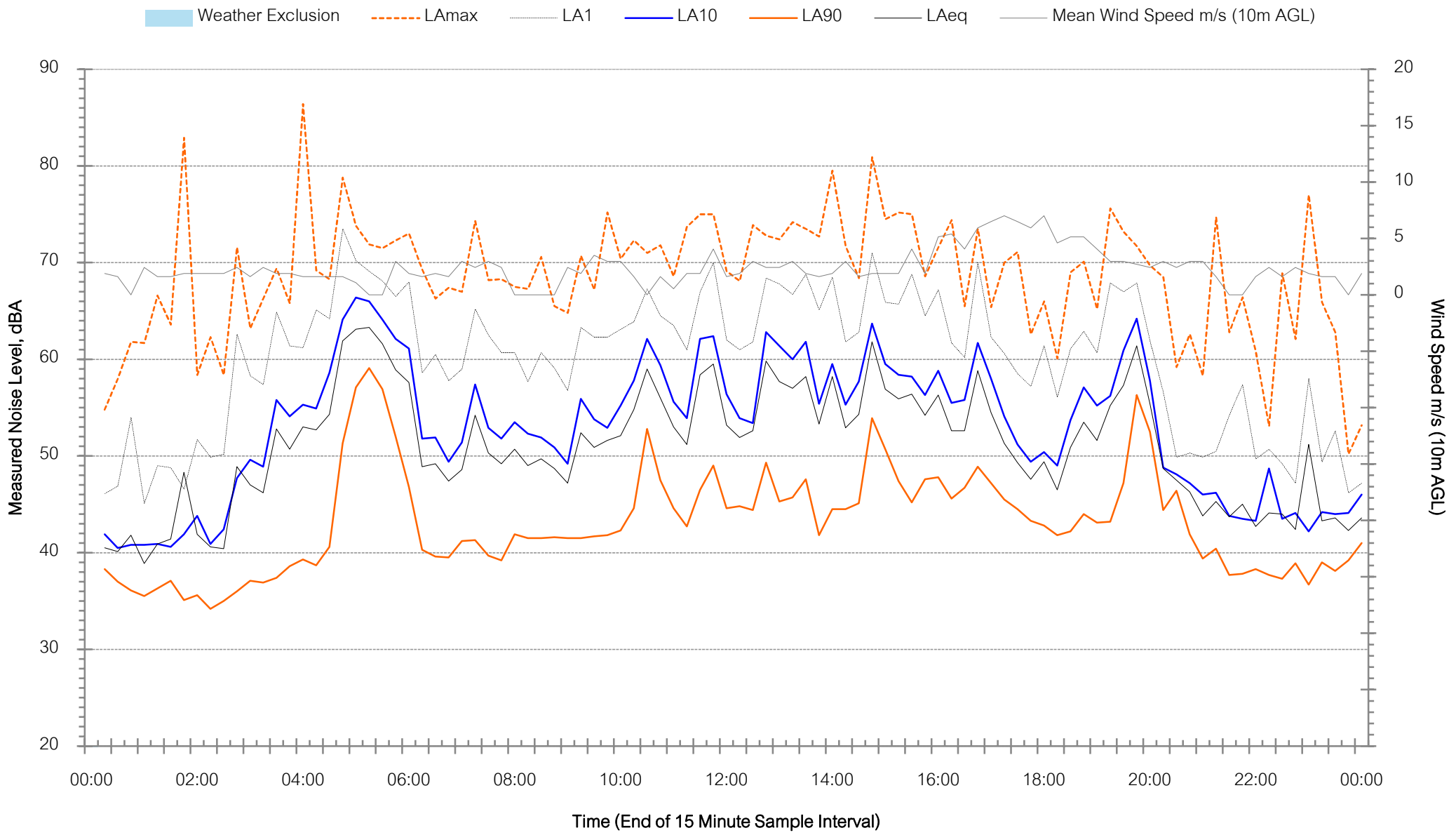
Background Noise Levels

L2 - Metford Road, Metford NSW - Saturday 8 February 2025



Background Noise Levels

L2 - Metford Road, Metford NSW - Sunday 9 February 2025

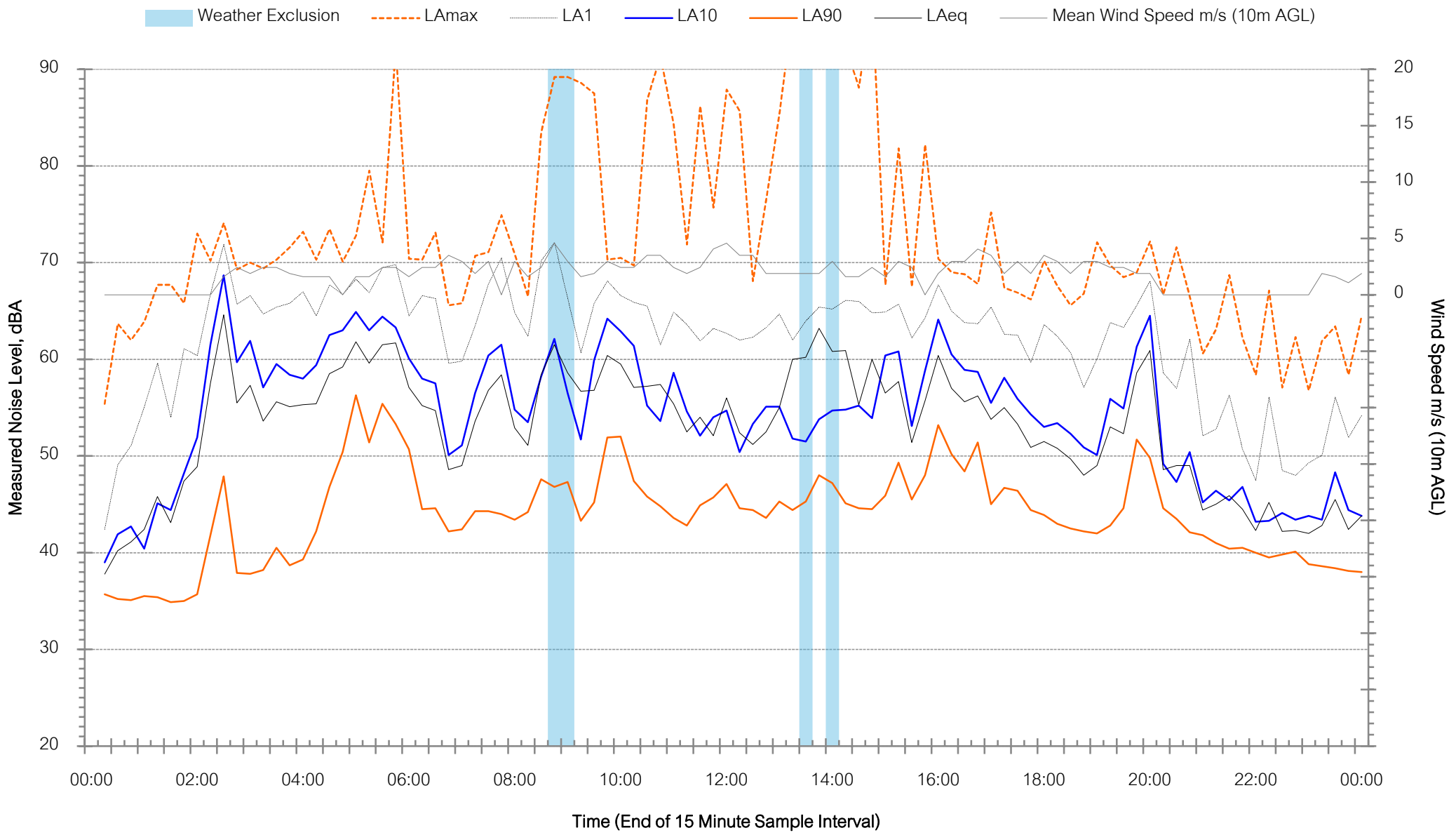


Background Noise Levels

L2 - Metford Road, Metford NSW - Monday 10 February 2025

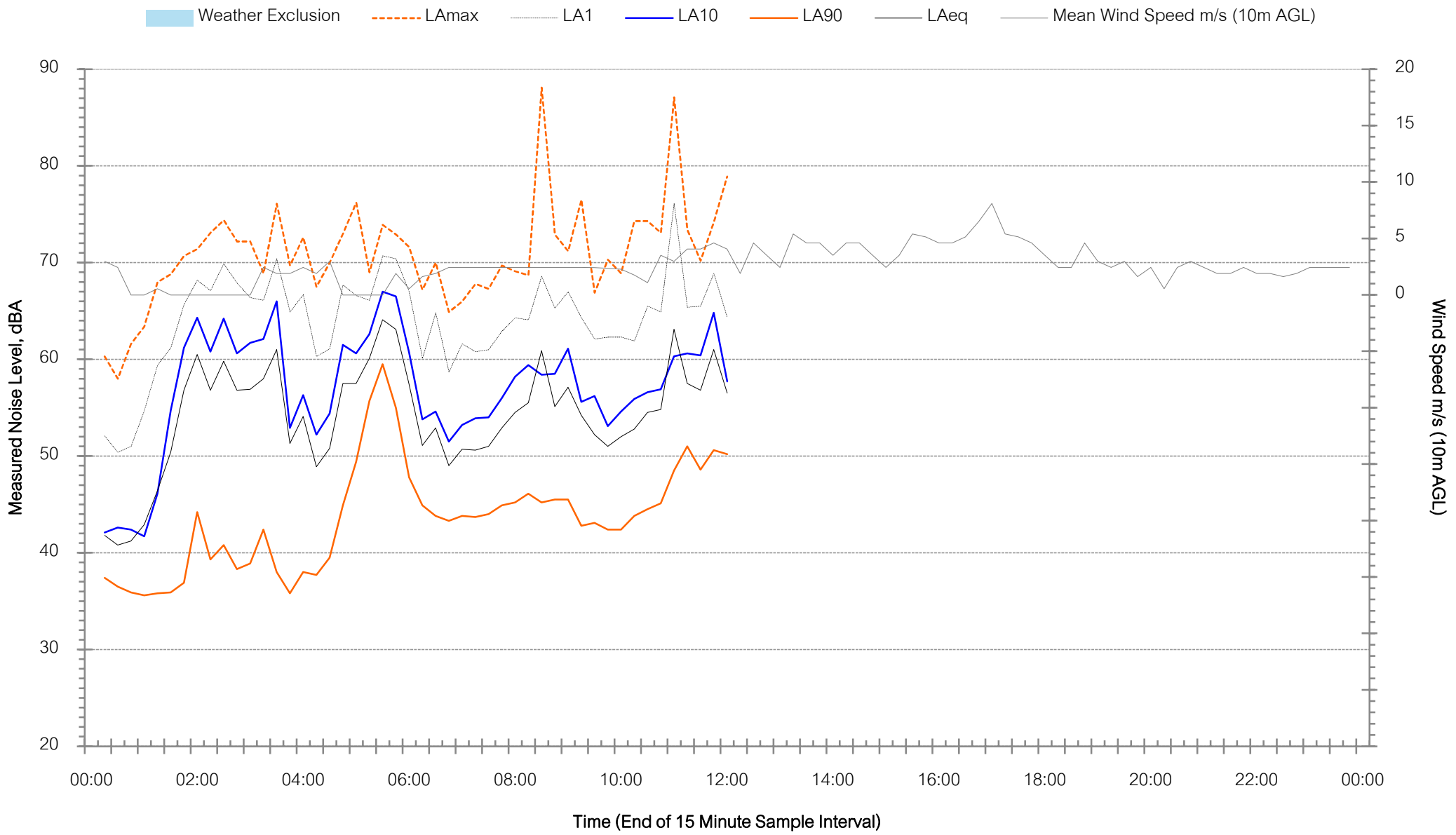
Background Noise Levels

L2 - Metford Road, Metford NSW - Tuesday 11 February 2025



Background Noise Levels

L2 - Metford Road, Metford NSW - Wednesday 12 February 2025



Appendix D – Determination of NPI

Receiver Category

Table D24 - Determination of NPI Residential Receiver Category

Location/ Catchment	Period	Measured RBL dB LA90(period)	Land Use Zone: Rural (RU1, RU2, RU4, R5, E4)	Land Use Zone: Suburban (RU5, RU6, R2, R3, R4, E2, E3)	Land Use Zone: Urban (R1, R4, B1, B2, B4)	Land Use Zone: Commercial, Industrial (Others)	Typical Existing Background Noise Levels Table 2.3 NPI: RURAL Daytime <40 Eve <35 Night <30	Typical Existing Background Noise Levels Table 2.3 NPI: SUBURBAN Daytime <45 Eve <40 Night <35	Typical Existing Background Noise Levels Table 2.3 NPI: URBAN Daytime >45 Eve >40 Night >35	Rural Residential - an area with an acoustical environment that: is dominated by natural sounds.	Rural Residential: having little or no road traffic noise	Rural Residential: generally characterised by low background noise levels.	Rural Residential: Settlement patterns would be typically sparse	Suburban Residential - an area that has: local traffic with characteristically intermittent traffic flows	Suburban Residential: or with some limited commerce or industry.	Suburban Residential: evening ambient noise levels defined by the natural environment and human activity.	Urban Residential- an area with an acoustical environment that: is dominated by 'urban hum' or industrial source noise	Urban Residential: has through-traffic with characteristically heavy and continuous traffic flows during peak . .	Urban Residential: is near commercial districts or industrial districts	Urban Residential: has any combination of the above
Location 1	Day	55			✓				✓											✓
	Evening	47			✓				✓											✓
	Night	37			✓				✓											✓
Location 2	Day	43			✓			✓												✓
	Evening	40			✓				✓											✓
	Night	36			✓				✓											✓

where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources

Assessment

Location	Rural	Suburban	Urban	Rural - RBL	Suburban - RBL	Urban - RBL	Rural - RBL	Suburban - RBL	Urban - RBL	Rural - Description				Suburban - Description			Urban - Description			
Location 1	0	0	**9**	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Location 2	0	1	**8**	0	0	3	0	1	2	0	0	0	0	0	0	0	0	0	0	3

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