Noise Assessment

Proposed Service Station with Drive-Thru Lane
353 Main Street
Lithgow, NSW

Prepared for: DMCK Planning Pty Ltd
November 2024
MAC231922-02RP1V2

Muller Acoustic Consulting

Document Information

Noise Assessment

Proposed Service Station with Drive-Thru Lane

353 Main Street

Lithgow, NSW

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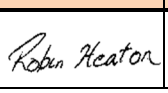
MAC231922-02RP1V2	15 November 2024	Robin Heaton		Oliver Muller	

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by DMCK Planning Pty Ltd (DMCK) to prepare a Noise Assessment (NA) to quantify emissions from the proposed Service Station with a drive-thru lane (the project) to be located at 353 Main Street, Lithgow, 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 Department of Environment and Climate Change (DECCW) – NSW Interim Construction Noise Guideline (ICNG), July 2009;
- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI) 2017;
- NSW Environment Protection Authority (EPA), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022; and
- Standards Australia AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures.

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 site is located at 353 Main Street, Lithgow, NSW, which is an area of mixed residential, commercial and infrastructure land uses. To the north of the project site is Main Street which connects Lithgow town centre to the Great Western Highway to the west of the site. To the east of the project site is Enfield Avenue with an unnamed laneway located to the west. Several undeveloped residential blocks are located to the south of the project site. The nearest existing residential dwelling is a multistorey unit block located to the west across the unnamed laneway. A future residential receiver has also been located to the south of the site to represent potential future receivers in this direction. The Blue Mountains Rail Line is also located to the north of the site at a setback distance of approximately 30m from the project sites northern boundary. The project site and non-project related blocks facing onto Main Street are all zoned for mixed uses with the residential blocks of land to the south zoned R3 residential.

The project proposes the development of a service station with single storey convenience store, light and heavy vehicle forecourts with canopies, a single drive-thru lane and associated parking. The project site is proposed to operate 24 hours a day, seven days a week.

2.1.1 Receiver Review

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

Table 1 Receiver Locations

Receiver	Receiver Type	Receiver Height m	Coordinates (MGA56)	
			Easting	Northing
R01	Residential	2/5/8	234077	6291632
R02	Residential	1.5	234047	6291609
R03	Residential	1.5	234039	6291595
R04	Residential	1.5	234042	6291579
R05	Residential	1.5	234036	6291565
R06	Residential	1.5	234035	6291552
R07	Residential	1.5	234055	6291531
R08	Residential	1.5	234094	6291521
R09	Residential	1.5	234141	6291497
R10	Residential	1.5	234148	6291570
FR01	Future Residential	1.5/4.5	234095	6291569

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2.1.2 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 2** provides a summary of project noise sources and the assessment period in which they propose to occur.

Table 2 Noise Generating Activities

Activity/Source	Period[1]	Operational
Customer light vehicles including Forecourt operations	Day	✓
	Evening	✓
	Night	✓
Customer heavy vehicles including forecourt operations	Day	✓
	Evening	✓
	Night	✓
Heavy vehicle deliveries	Day	✓
	Evening	✓
	Night	X
Light vehicle deliveries	Day	✓
	Evening	✓
	Night	✓
Fuel deliveries	Day	✓
	Evening	✓
	Night	✓
Drive-Thru operations	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.

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FIGURE 1

Locality Plan

MAC231922-02

353 Main Road

Lithgow, NSW

KEY

- Receiver
- Site Boundary
- Attended Location
- Logger Location

0 10 20 30 40 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.

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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 determined parameter 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 PINL 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.

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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 ANL).

The recommended Amenity Noise Levels as per Table 2.2 of the NPI are reproduced in **Table 3**.

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Table 3 Amenity Noise Levels			
Receiver Type	Noise Amenity Area	Time of day[1]	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.

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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.

The NPI outlines that additional guidance on maximum noise level assessments may be sourced from the EPA NSW Road Noise Policy (RNP). Section 5.4 of the RNP outlines that a maximum internal noise level of 50-55dBA is unlikely to awaken people from sleep. Taking into account a 10dB loss for a partially open window, an external level of 65dBA is unlikely to awaken internal occupants. This level has been adopted to assess the impact of maximum noise events on occupant of commercial residential land uses to safeguard against sleep disturbance. The recommended Amenity Noise Level for the night period will be adopted for awakening assessment for these receivers.

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:

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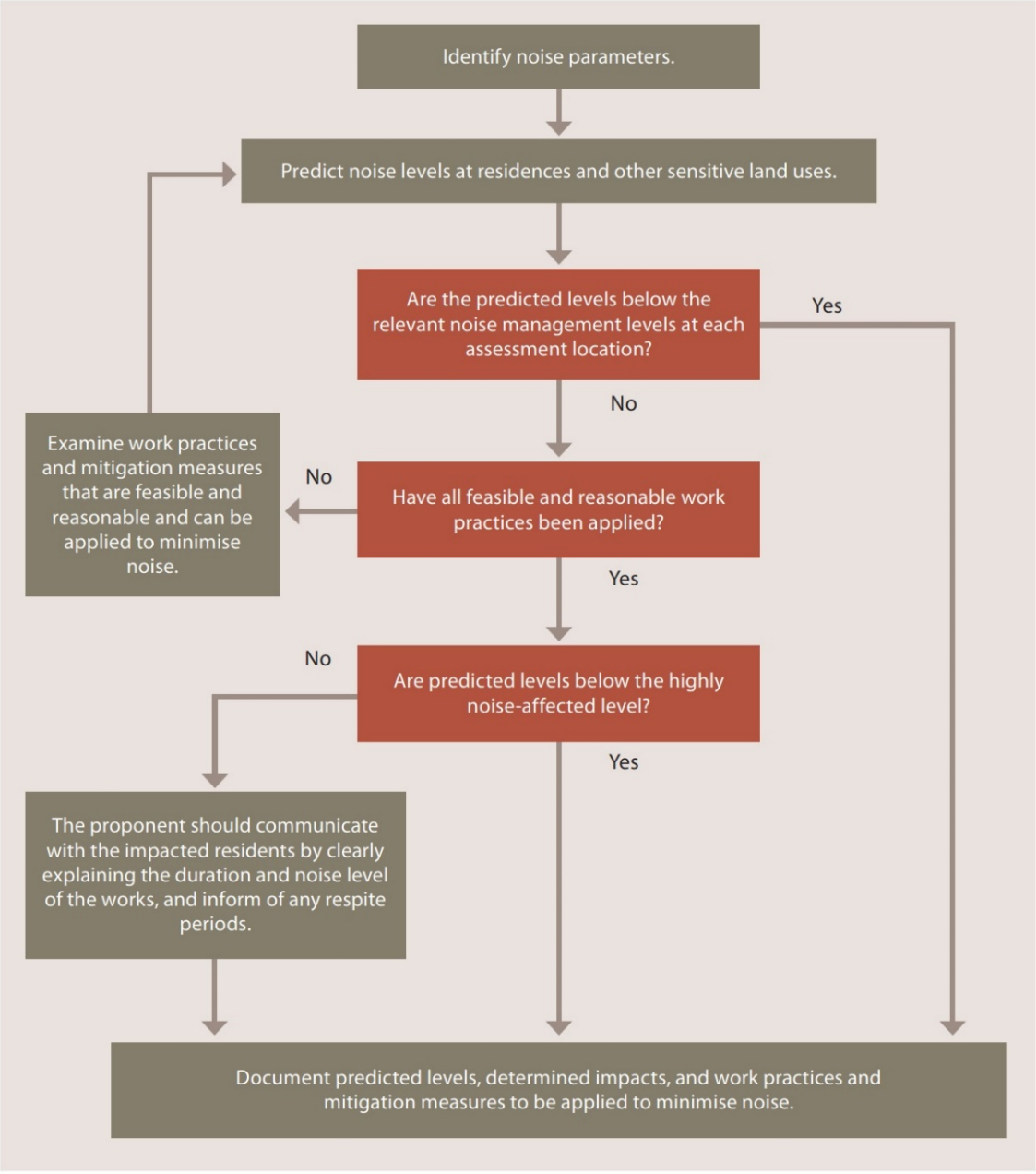
- quantitative, which is suited to major construction projects with typical durations of more than three weeks; and
- qualitative, which is suited to short term infrastructure maintenance (< three weeks).

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.

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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.

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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.

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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 one location representative of the ambient environment surrounding the project site. The selected monitoring location is shown in **Figure 1** and is considered representative of surrounding residential receivers as per Fact Sheet B1.1 of the NPI. The unattended noise survey was 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 one Svantek 977 noise analyser from Tuesday 12 September 2023 to Thursday 21 September 2023. 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.

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 receptors situated in surrounding area have been classified under the EPA's urban amenity category (see **Section 5.1.2**). This criterion is used in conjunction with the intrusiveness criteria to determine the limiting criteria. A summary of measured background noise levels and derived intrusive criteria are summarised in **Table C22**. The noise monitoring charts, and a summary of the background monitoring data are provided in **Appendix C**. Calibration certificates of the sound level meters used for this project are available on request.

Table 7 Background Noise Monitoring Summary[1]

Location	Measured background noise level, RBL, dBA			Measured LA_{eq} Noise Level, dBA		
	Day	Evening	Night	Day	Evening	Night
	7am to 6pm	6pm to 10pm	10pm to 7am	7am to 6pm	6pm to 10pm	10pm to 7am
L1	48	40	34	61	56	57

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 Marangaroo AWS 33.43S 150.33°E 555m AMSL.

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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 Standards Australia AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise".

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.

The attended noise monitoring was conducted using one Svantek 971 noise analyser at the site (see **Figure 1**) on Tuesday 12 September 2023 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 – ATT01

Date /Time (hrs)	Noise Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
	L_{Amax}	L_{Aeq}	L_{A90}		
12/09/2023 12:05	80	61	54	WD: W WS: 1.5m/s Rain: Nil	Traffic 50-80 Garden Maintenance Activities 55-64 Aircraft 40-50 Birds 45-50

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5 Assessment Criteria

5.1 Operational Noise

5.1.1 Intrusiveness Noise Levels

The PINL 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 LA_{90}	PINL dB $LA_{eq(15min)}$
L1	Residential	Day	48	53
		Evening	40	45
		Night	37	42

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/Location/Catchment	Rural	Suburban	Urban
L1	0	0	5

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

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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 Type	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	Urban	Day	60	55	58
		Evening	50	45	48
		Night	45	40	43

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	Urban	Day	53	58	53
		Evening	45	48	45
		Night	42	43	42

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.

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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 Period			
$L_{Aeq(15min)}$		L_{Amax}	
40dB $L_{Aeq(15min)}$ or RBL + 5dB		52dB L_{Amax} or RBL + 15dB	
Trigger	40	Trigger	52
RBL +5dB	37	RBL +15dB	52
Highest	**42**	**Highest**	**52**

5.2 Construction Noise

The relevant NMLs for standard construction hours are presented in **Table 14**.

Table 14 Construction Noise Management Levels

Receivers	Assessment Period[1]	Adopted RBL dB L_{A90}	NML dB $L_{Aeq(15min)}$
Urban Residential	Standard Hours	48	58 (RBL+10dBA)

Note 1: See 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) 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.

[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

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6.1 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 quantity (per 15 minutes)	Individual Sound Power Level dB LAeq	Modelled Sound Power Level dB LAeq(15min)	Source Height[1]
Operation			
Extractor Fans (x2)	73	75	0.5m
AC Units (x2)	71	74	1.0m
Refrigeration Condensers (x1)	73	73	0.5m
Heavy Vehicle Delivery (x1)	92	92	1.0m
Fuel Delivery (x1)	82	82	1.0m
Light Vehicle Delivery (x1)	77	77	0.5m
Customer Light Vehicle idle, start up and drive off (x10)[2,3]	81	83	0.5m
Customers light vehicles travelling through Forecourt (10 vehicles per 15min)[3]	81	83	0.5m
Customers light vehicles travelling through Drive-Thru (10 vehicles per 15min)[3]	81	83	0.5m
Customer Ordering Displays (x1)	75	75	1.0m
Customers heavy vehicles travelling through Forecourt (2 vehicles per 15min)[3]	73	83	0.5m
Customer Heavy Vehicle, start up and drive off (x1)[2,3]	80	80	0.5m
Sleep disturbance assessment (L_{Amax}), Night-time periods (10pm to 7am)			
Car Door Slam in Waiting Bay		87	1.0m
Light Delivery Impact		92	1.0m
Fuel Delivery Impact		102	0.2m
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: There is a 50% reduction in onsite customer vehicles after 10pm.

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6.2 Noise Assumptions, Attenuation Recommendations and Controls

The noise model incorporated the following:

- the project is constructed as per the site design and plans (as presented in **Appendix B**);
- construction of the 2.2m the loading bay enclosure on the western side of the convenience store; (See **Figure 3**);
- construction of the 2.0m noise barrier along the southern boundary of the site (See **Figure 3**);
- the mechanical AC plant are located on the roof top of the operation which is surrounded by the mechanical plant noise barrier which extends a minimum 600mm above the top of the highest item of plant (See **Figure 3**); and
- there is a 50% reduction in onsite customer light and heavy vehicles during the night period.

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FIGURE 3

Barrier Plan

MAC231922-02

353 Main Road

Lithgow, NSW

KEY

- Rooftop Plant Barrier
- 2.0m Southern Barrier
- 2.2m Loading Bay Barrier

0 2 4 6 8 10 m

N

MAC
Muller Acoustic Consulting

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7 Noise Assessment Results

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

7.1 Operational Noise Assessment

Noise predictions from all sources excluding consumable goods or fuel deliveries have been quantified at surrounding residential receivers to the project site and are presented in **Table 16.**

Table 16 Combined Noise Predictions – Operations without Consumable Goods or Fuel Deliveries

Residential Receivers[1]							
Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	43	43	41	53	45	42	✓
R02	38	38	38	53	45	42	✓
R03	37	38	37	53	45	42	✓
R04	<35	<35	<35	53	45	42	✓
R05	<35	<35	<35	53	45	42	✓
R06	<35	<35	<35	53	45	42	✓
R07	<35	<35	<35	53	45	42	✓
R08	<35	<35	<35	53	45	42	✓
R09	<35	<35	<35	53	45	42	✓
R10	38	39	37	53	45	42	✓
FR01 GF[2]	39	39	38	53	45	42	✓
FR01 L1[3]	43	43	42	53	45	42	✓

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: Ground Floor Receiver.

Note 3: 1st Floor Receiver.

The results of the predictive noise modelling demonstrate operation noise emissions satisfy the applicable noise criteria at all receivers during all periods.

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7.2 Operational Noise Results – Delivery Options

It is noted that only one delivery type is likely to occur simultaneously, especially taking into account sweep paths on this site. Hence, these options for deliveries have been considered.

Fuel deliveries are expected to be undertaken once per day during the day, evening or night periods. These operations usually take a short period to complete, but to present a conservative assessment, it has been assumed that it would take up to one hour to complete. 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 with no adjustment during the night period, when the event is expected to occur. Noise predictions from all operational sources including fuel deliveries have been quantified at surrounding residential receivers to the project site and are presented in **Table 17**.

Table 17 Combined Noise Predictions – Operations with Fuel Deliveries

Residential Receivers[1]							
Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	44	44	42	58	50	42	✓
R02	40	40	39	58	50	42	✓
R03	38	38	37	58	50	42	✓
R04	<35	<35	<35	58	50	42	✓
R05	<35	<35	<35	58	50	42	✓
R06	<35	<35	<35	58	50	42	✓
R07	<35	<35	<35	58	50	42	✓
R08	<35	<35	<35	58	50	42	✓
R09	<35	<35	<35	58	50	42	✓
R10	39	39	37	58	50	42	✓
FR01 GF[2]	39	39	38	58	50	42	✓
FR01 L1[3]	43	43	42	58	50	42	✓

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: Ground Floor Receiver.

Note 3: 1st Floor Receiver.

The results of the predictive noise modelling demonstrate operation noise emissions including fuel deliveries satisfy the applicable noise criteria at all receivers during all periods.

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Heavy vehicle deliveries are expected to be undertaken once per day during the day and evening periods period. These operations usually take several minutes, but to present a conservative assessment, it has been assumed that it would take up to one hour to complete. 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, when the event is expected to occur. Noise predictions for all assessed receivers from all sources including heavy vehicle deliveries for the day and evening periods have been quantified and are presented in **Table 18**.

Table 18 Combined Noise Predictions – Operations with Heavy Vehicle Deliveries

Residential Receivers[1]					
Receiver	Predicted Noise Level dB $LA_{eq(15min)}$		PNTL dB $LA_{eq(15min)}$		Compliant
	Day	Evening	Day	Evening	
R01	50	50	58	50	✓
R02	47	47	58	50	✓
R03	46	46	58	50	✓
R04	37	37	58	50	✓
R05	<35	<35	58	50	✓
R06	<35	<35	58	50	✓
R07	<35	<35	58	50	✓
R08	<35	<35	58	50	✓
R09	<35	<35	58	50	✓
R10	40	40	58	50	✓
FR01 GF[2]	40	40	58	50	✓
FR01 L1[3]	44	44	58	50	✓

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: Ground Floor Receiver.

Note 3: 1st Floor Receiver.

The results of the predictive noise modelling demonstrate operation noise emissions including heavy vehicle deliveries satisfy the applicable noise criteria at all receivers during all periods.

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Light vehicle deliveries are expected to be undertaken once per day during the day, evening or night periods. These operations usually take several minutes to complete, but to present a conservative assessment, it has been assumed that it would take up to 15 minutes to complete. 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 adjustment during the night period, when the event is expected to occur. Noise predictions from all sources including light vehicle deliveries have been quantified at surrounding residential receivers to the project site and are presented in **Table 19**.

Table 19 Combined Noise Predictions – Operations with Light Vehicle Deliveries

Residential Receivers[1]							
Receiver	Predicted Noise Level dB $LA_{eq(15min)}$			PNTL dB $LA_{eq(15min)}$			Compliant
	Day	Evening	Night	Day	Evening	Night	
R01	44	44	42	60	52	44	✓
R02	39	39	38	60	52	44	✓
R03	38	38	37	60	52	44	✓
R04	<35	<35	<35	60	52	44	✓
R05	<35	<35	<35	60	52	44	✓
R06	<35	<35	<35	60	52	44	✓
R07	<35	<35	<35	60	52	44	✓
R08	<35	<35	<35	60	52	44	✓
R09	<35	<35	<35	60	52	44	✓
R10	39	39	37	60	52	44	✓
FR01 GF[2]	39	39	38	60	52	44	✓
FR01 L1[3]	43	43	42	60	52	44	✓

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: Ground Floor Receiver.

Note 3: 1st Floor Receiver.

The results of the predictive noise modelling demonstrate operation noise emissions including light vehicle deliveries satisfy the applicable noise criteria at all receivers during all periods.

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7.2.1 Maximum Noise Level Assessment

In assessing maximum noise events, typical L_{Amax} noise levels from transient events were assessed at the nearest residential receivers. For the sleep disturbance assessment, a Sound Power Level of 87dBA for a car door slam in the forecourt and southernmost car space and 92dBA for a light delivery impact and 102 dBA for a fuel delivery impact at the fill point are adopted for this assessment.

Predicted noise levels from $L_{Aeq(15min)}$ and L_{Amax} events for assessed receivers are presented in **Table 20.**

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

	Night Period					
Receiver	Predicted Noise Level dB L_{Amax}				Trigger Level dB L_{Amax}	RNP Sleep Disturbance Criteria dB LAmax
	Light Vehicle Delivery Impact	Door Slam on Forecourt	Fuel Delivery Impact	Door Slam Southernmost Car Space		
R01	47	45	60	41	52	65
R02	46	<35	56	37	52	65
R03	44	38	54	36	52	65
R04	38	<35	50	<35	52	65
R05	36	<35	41	<35	52	65
R06	<35	<35	38	<35	52	65
R07	38	<35	49	<35	52	65
R08	<35	<35	47	<35	52	65
R09	<35	<35	35	<35	52	65
R10	36	37	51	41	52	65
FR01 GF[2]	43	<35	55	<35	52	65
FR01 L1[3]	48	38	59	<35	52	65

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: Ground Floor Receiver.

Note 3: 1st Floor Receiver.

The predicted maximum levels results show compliance with the maximum noise trigger levels for door slams and for light vehicle deliveries.

Maximum noise emissions levels from fuel deliveries have the potential to be above the maximum noise trigger levels at several assessed receivers. In accordance with Section 2.5 of the NPI, a detailed sleep disturbance assessment has been undertaken.

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7.2.2 Detailed Maximum Level Assessment

Section 5.2 of the NPI outlines the other factors that may be important in assessing the extent of impacts on sleep. These other factors include:

- how often high noise events will occur;
- the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the subject 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 scientific literature available at the time of the assessment regarding the impact of maximum noise level events at night.

Reviewing the proposed fuel delivery for the project site, deliveries will occur once a day and are proposed to be undertaken during either the day, evening or night assessment periods. Therefore, the maximum occurrence of high noise events from fuel delivery is once per day, with the majority of collections to be undertaken during the day or evening periods, resulting in no sleep disturbance events at all.

Additionally, the NPI outlines that additional guidance on maximum noise level assessments may be sourced from the EPA NSW Road Noise Policy (RNP). Section 5.4 of the RNP outlines that a maximum internal noise level of 50-55dBA is unlikely to awaken people from sleep. Taking into account a 10dB loss for a partially open window, an external level of 65dBA is unlikely to awaken internal occupants.

It is noted that no receiver is predicted to experience noise levels above 65dBAmax sleep disturbance criteria from fuel delivery impacts.

Accordingly, due to the low probability of these events occurring during the night period, levels are predicted to remain below 65dBA, the potential for sleep disturbance is considered negligible.

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7.3 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 $L_{Aeq(15min)}$	Management Level dB $L_{Aeq(15min)}$	Compliant
R01	Day	51	58	✓
R02	Day	56	58	✓
R03	Day	56	58	✓
R04	Day	40	58	✓
R05	Day	48	58	✓
R06	Day	30	58	✓
R07	Day	38	58	✓
R08	Day	29	58	✓
R09	Day	43	58	✓
R10	Day	44	58	✓
FR01 GF	Day	42	58	✓
FR01 L1	Day	51	58	X

Note 1: See 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 a drive-thru lane located at 353 Main Street, Lithgow, NSW.

The assessment has quantified potential operation emissions pertaining to customer generated noise, including light vehicles and COD operations for the proposed service station with a drive-thru lane.

The results of the Noise Assessment demonstrate that noise emissions from the operation would satisfy the relevant PNTLs at all assessed receivers for all assessment periods once noise controls for the project are implemented (see **Section 6.2**):

- the project is constructed as per the site design and plans (as presented in **Appendix B**);
- construction of the 2.2m the loading bay enclosure on the western side of the convenience store; (See **Figure 3**);
- construction of the 2.0m noise barrier along the southern boundary of the site (See **Figure 3**);
- the mechanical AC plant are located on the roof top of the operation which is surrounded by the mechanical plant noise barrier which extends a minimum 600mm above the top of the highest item of plant (See **Figure 3**); and
- there is a 50% reduction in onsite customer light and heavy vehicles during the night period.

Furthermore, sleep disturbance is not anticipated, as emissions from maximum noise events (ie light vehicle delivery impact noise and car door slams) are predicted to satisfy the NPIs maximum noise trigger levels.

Sleep disturbance noise emissions from fuel deliveries impact may have the potential to be above the maximum noise trigger levels, however a detailed sleep disturbance assessment demonstrated that due to the low occurrence of these events occurring during the night period and are predicted to remain below the maximum level of 65dBA, the potential for sleep disturbance is considered negligible.

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 the 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

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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.

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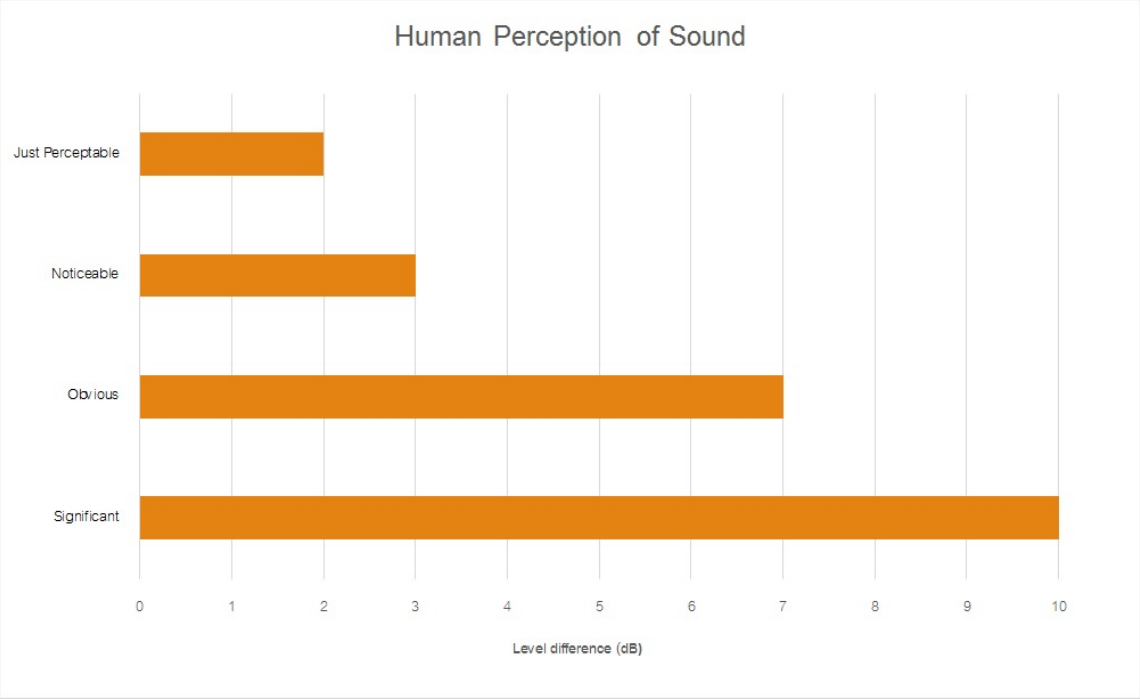
Table A2 provides a list of common noise sources and their typical sound level.

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

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MAIN STREET CAP PTY LTD

SERVICE STATION DEVELOPMENT

353 Main Street
Lithgow NSW 2790

DRAWING SCHEDULE

24/06/2024

ISSUED FOR DEVELOPMENT APPROVAL
NOT FOR CONSTRUCTION

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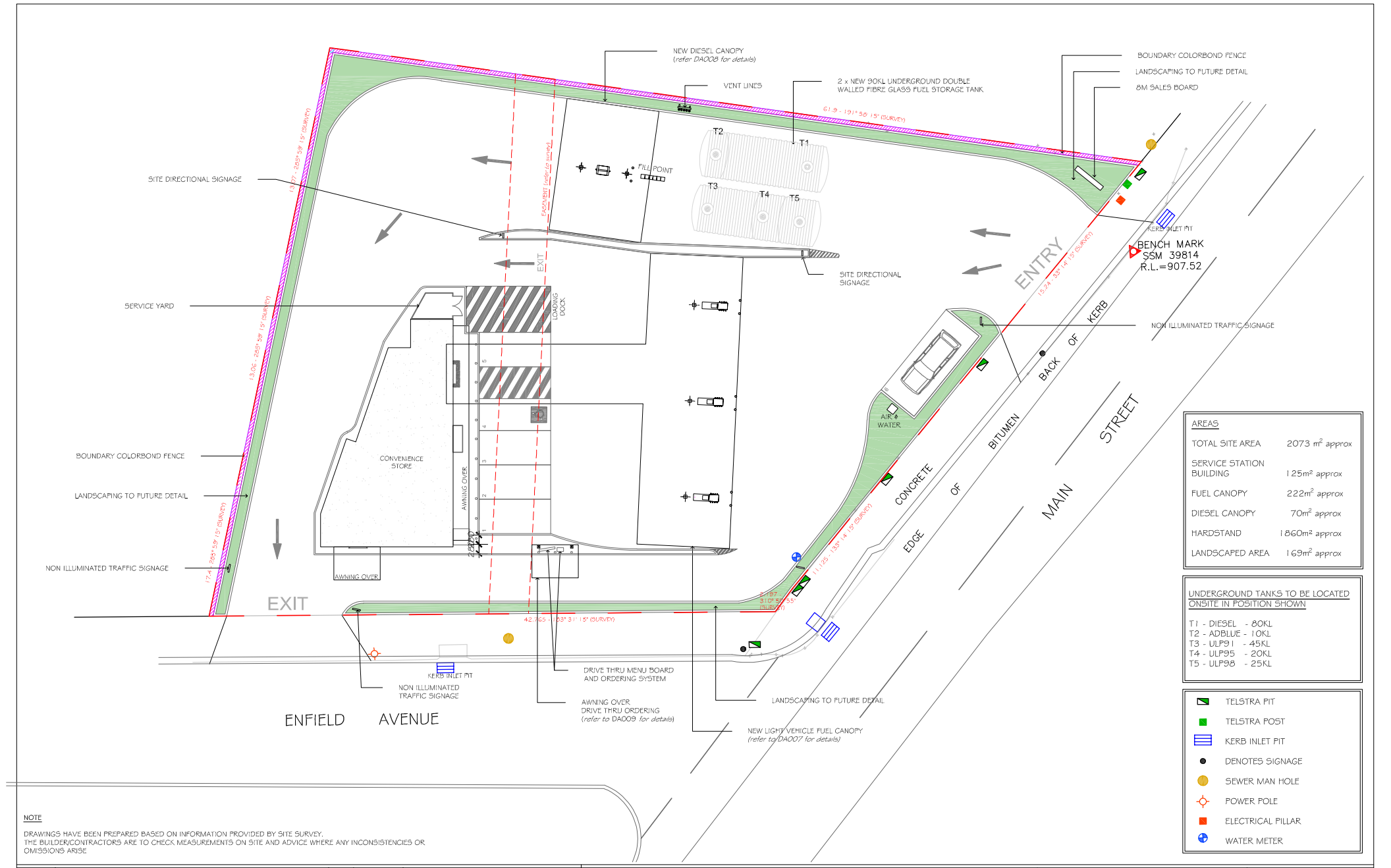


AREAS	
TOTAL SITE AREA	2073 m² approx
SERVICE STATION BUILDING	125m² approx
FUEL CANOPY	222m² approx
DIESEL CANOPY	70m² approx
HARDSTAND	1860m² approx
LANDSCAPED AREA	169m² approx

UNDERGROUND TANKS TO BE LOCATED ONSITE IN POSITION SHOWN

T1 - DIESEL - 80KL
T2 - ADBLUE - 10KL
T3 - ULP91 - 45KL
T4 - ULP95 - 20KL
T5 - ULP98 - 25KL

- TELSTRA PIT
- TELSTRA POST
- KERB INLET PIT
- DENOTES SIGNAGE
- SEWER MAN HOLE
- POWER POLE
- ELECTRICAL PILLAR
- WATER METER

NOTE

DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY SITE SURVEY.
THE BUILDER/CONTRACTORS ARE TO CHECK MEASUREMENTS ON SITE AND ADVICE WHERE ANY INCONSISTENCIES OR OMISSIONS ARISE

ISSUE	AMENDMENT	DRAWN	DATE
A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

DO NOT SCALE DRAWING

CONTRACTORS TO CHECK ALL SITE DIMENSIONS & LEVELS BEFORE COMENCEMENT OF WORK WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE

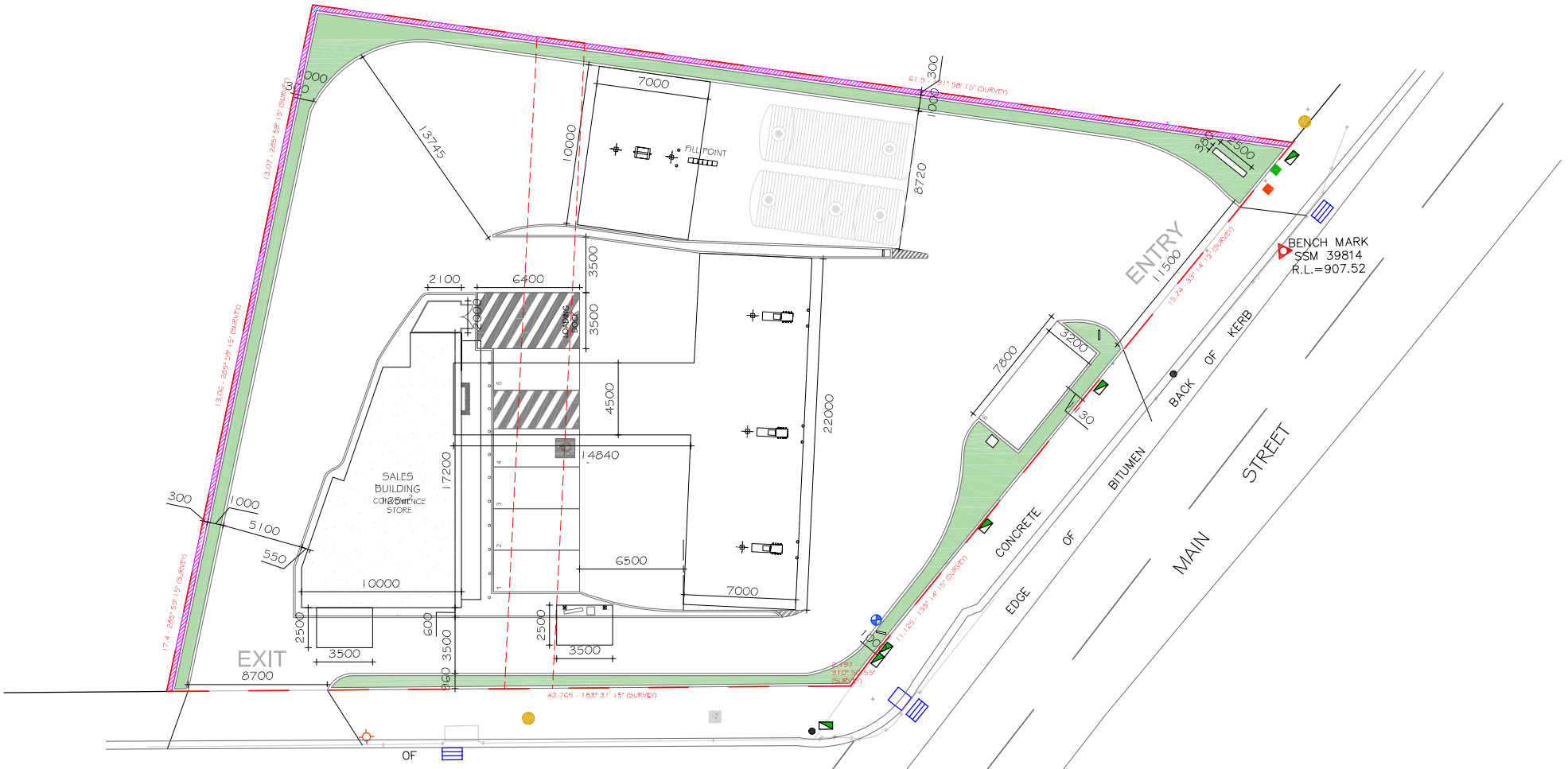
Go Go Petroleum
Builder, developer & specialist retailer since 1993
No. 666 Main St, BAIRNSDALE, VIC, 3875
ph 0417 492 759
email mick2374@gmail.com
'Concept to completion'

ISSUED FOR DEVELOPMENT APPROVAL
NOT FOR CONSTRUCTION

CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET LITHGOW NSW
TITLE: PROPOSED SITE PLAN

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 001
SCALE: 1:250

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



NOTE

DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY SITE SURVEY.
THE BUILDER/CONTRACTORS ARE TO CHECK MEASUREMENTS ON SITE AND ADVICE WHERE ANY INCONSISTENCIES OR OMISSIONS ARISE

ISSUE	AMENDMENT	DRAWN	DATE
A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

DO NOT SCALE DRAWING

CONTRACTORS TO CHECK ALL SITE DIMENSIONS & LEVELS BEFORE COMENCEMENT OF WORK WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE

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Builder, developer & specialist retailer since 1993
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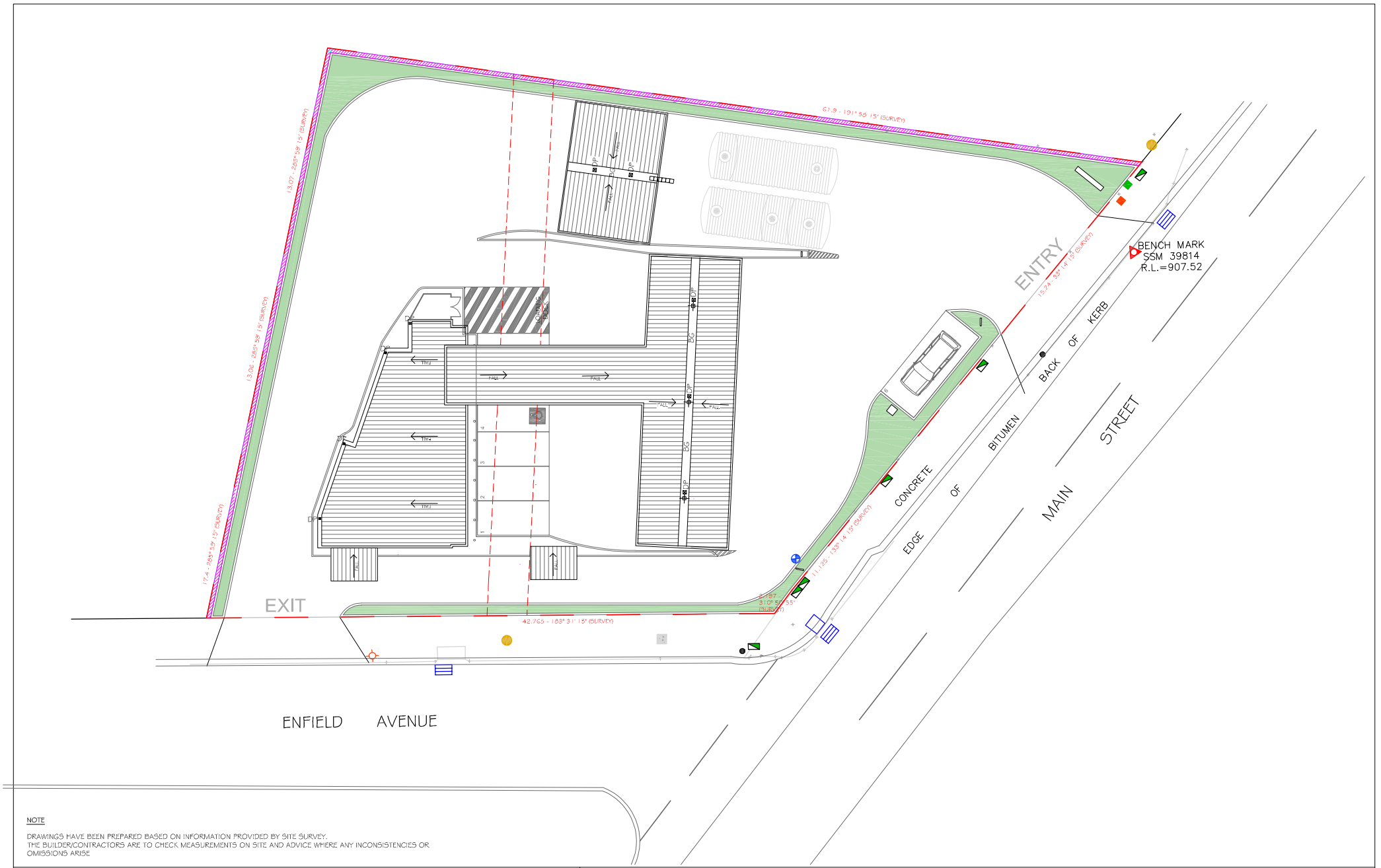
ph 0417 492 759
email mick2374@gmail.com
'Concept to completion'

ISSUED FOR DEVELOPMENT APPROVAL
NOT FOR CONSTRUCTION

CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET LITHGOW NSW
TITLE: DIMENSIONED SITE PLAN

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 002
SCALE: 1:250

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



NOTE

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A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

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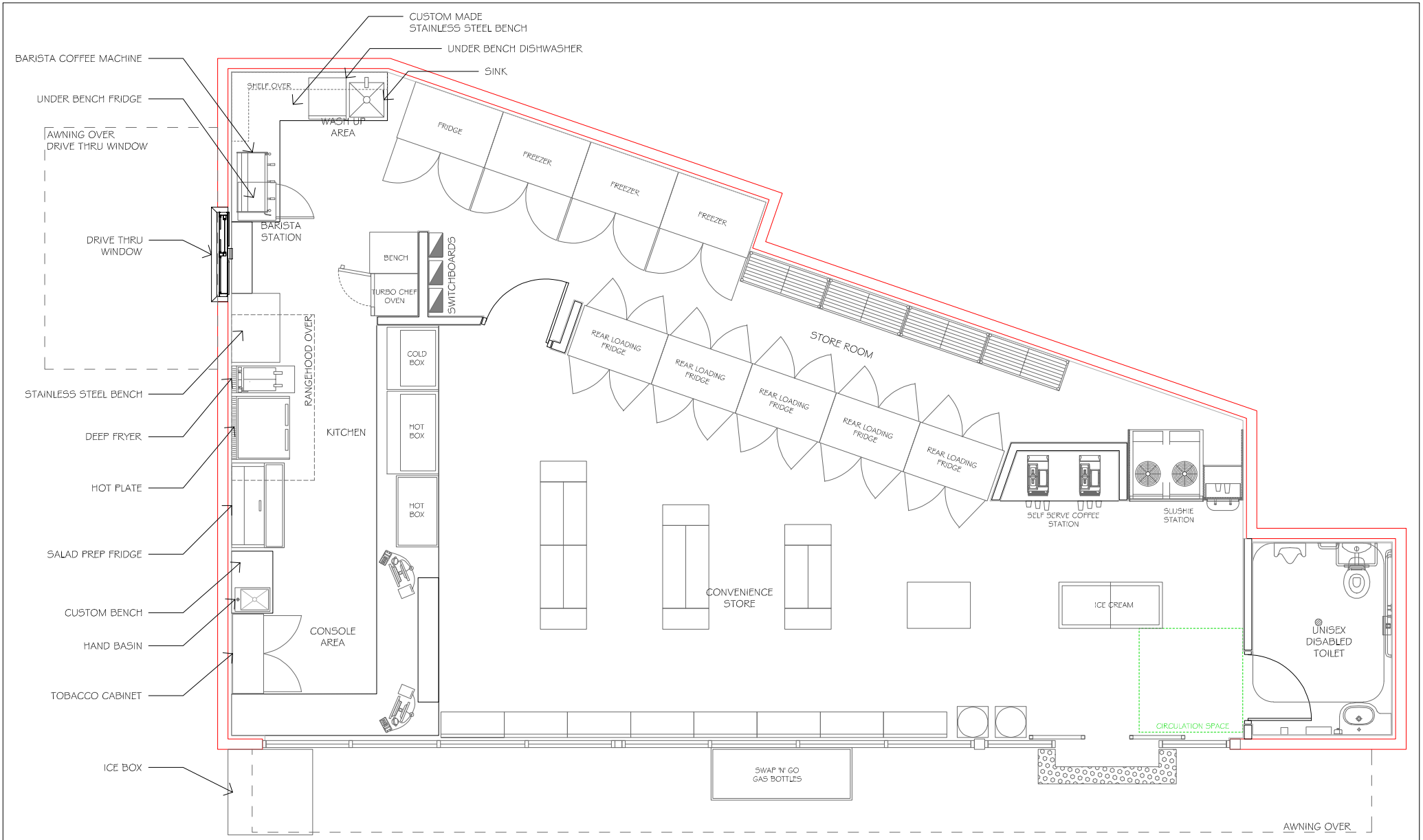
CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET LITHGOW NSW
TITLE: ROOF PLAN

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 003
SCALE: 1:250

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



NOTE

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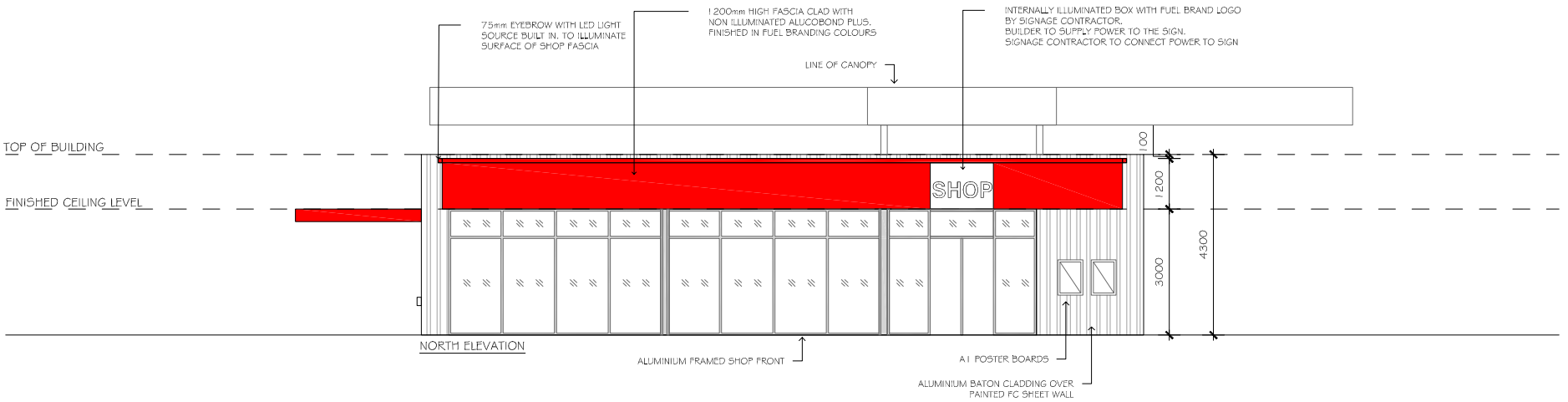
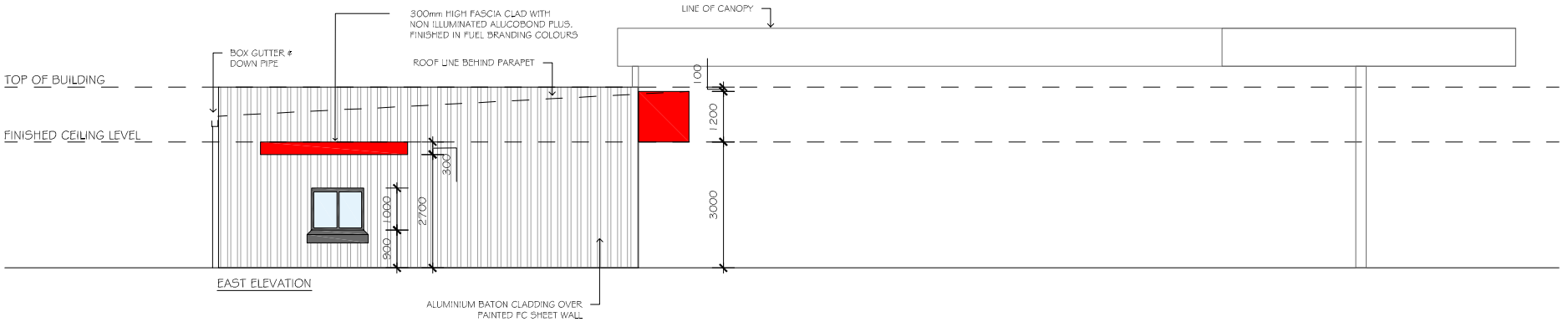
CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET
LITHGOW
NSW
TITLE: PROPOSED SHOP FLOOR PLAN

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 004
SCALE: 1:50

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025





NOTE

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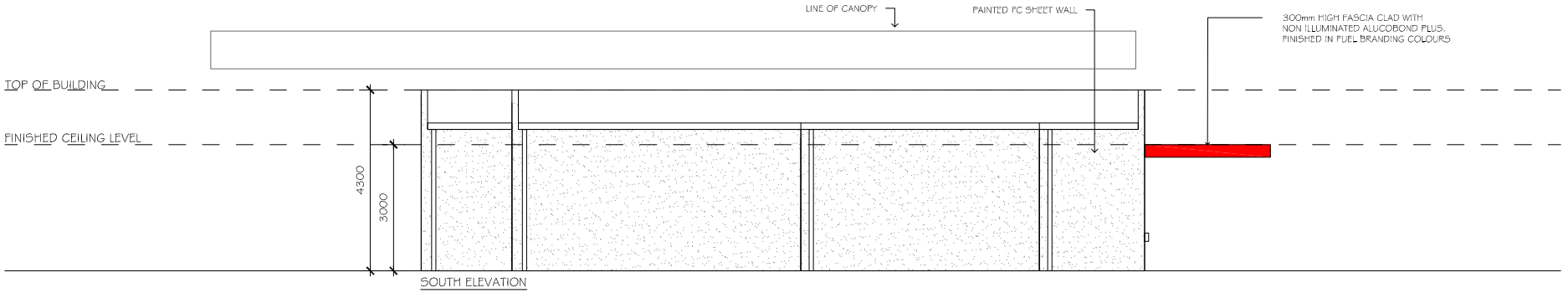
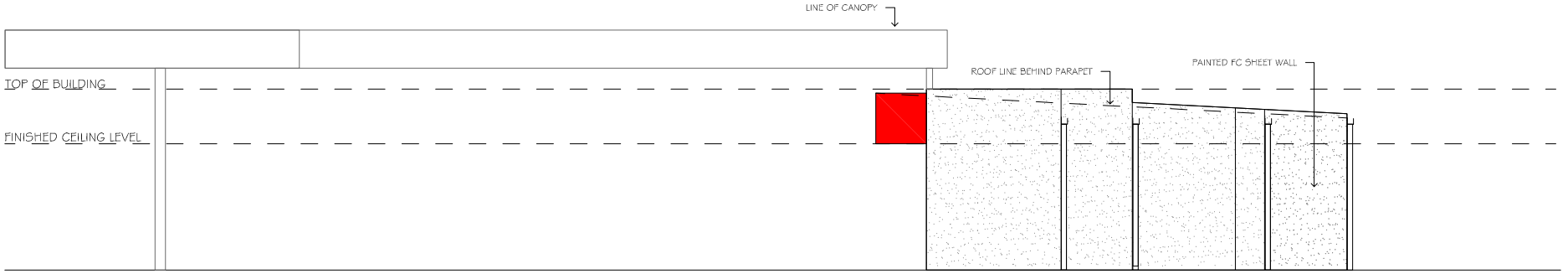
CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET LITHGOW NSW
TITLE: PROPOSED SHOP ELEVATIONS

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 005
SCALE: 1:100

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



SOUTH ELEVATION



WEST ELEVATION

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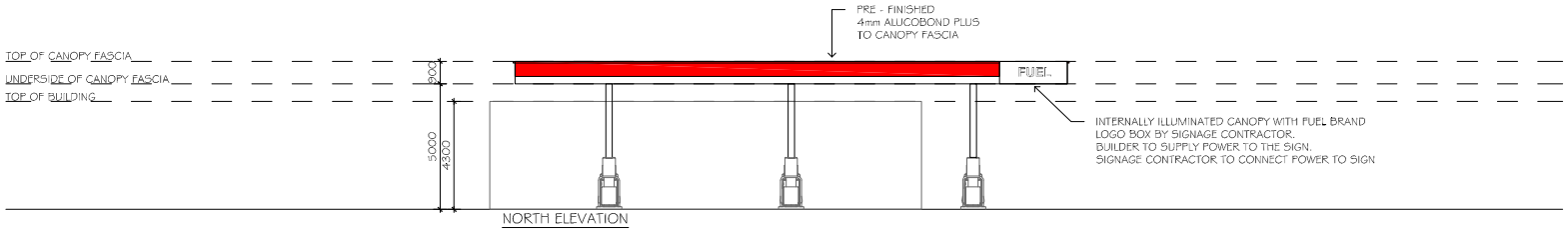
PROJECT: 353 MAIN STREET
LITHGOW
NSW

TITLE: PROPOSED SHOP ELEVATIONS

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 006
SCALE: 1:100

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



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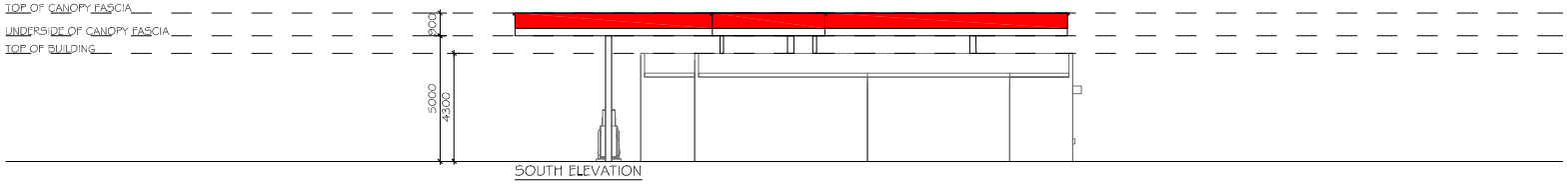

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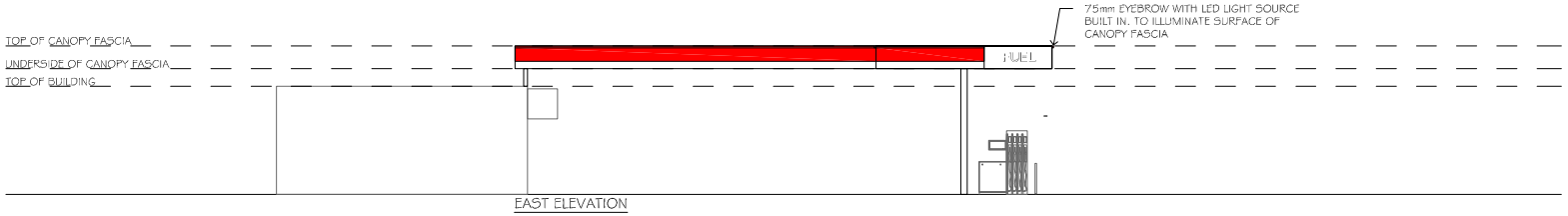
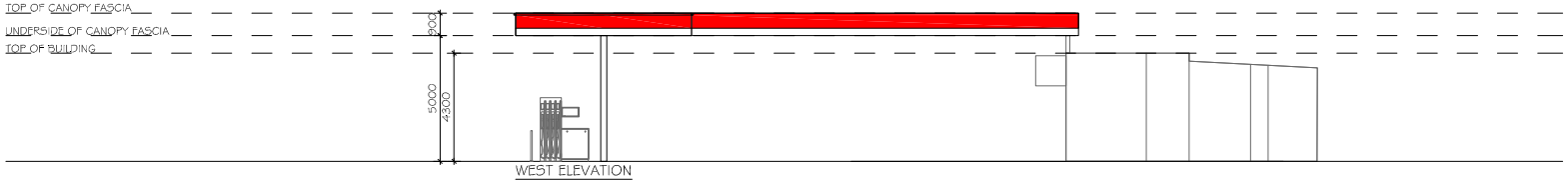


EAST ELEVATION



WEST ELEVATION

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ISSUE	AMENDMENT	DRAWN	DATE
A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

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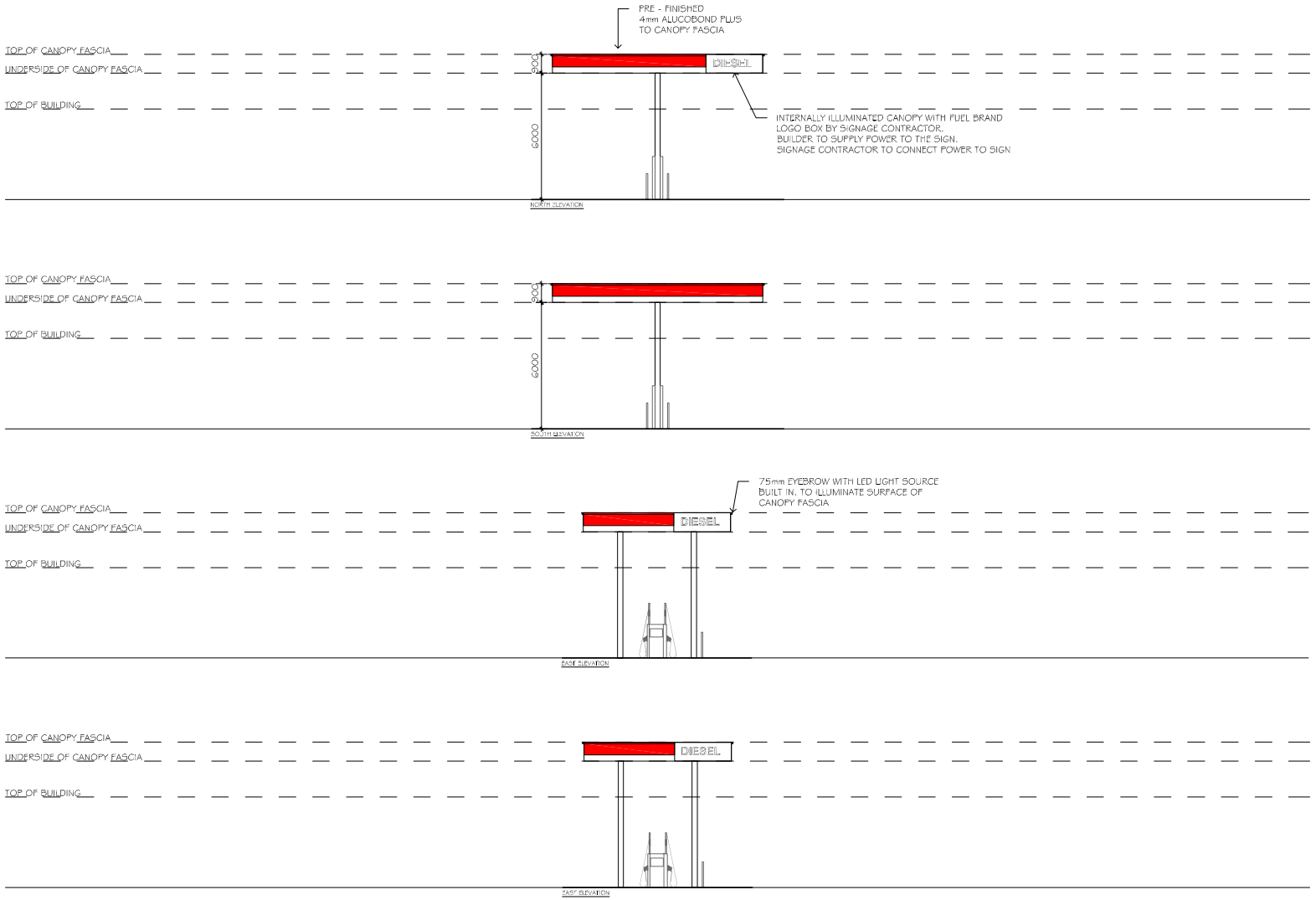
CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET
LITHGOW
NSW
TITLE: PROPOSED FUEL CANOPY ELEVATIONS

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 007
SCALE: 1:100

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



NOTE

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ISSUE	AMENDMENT	DRAWN	DATE
A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

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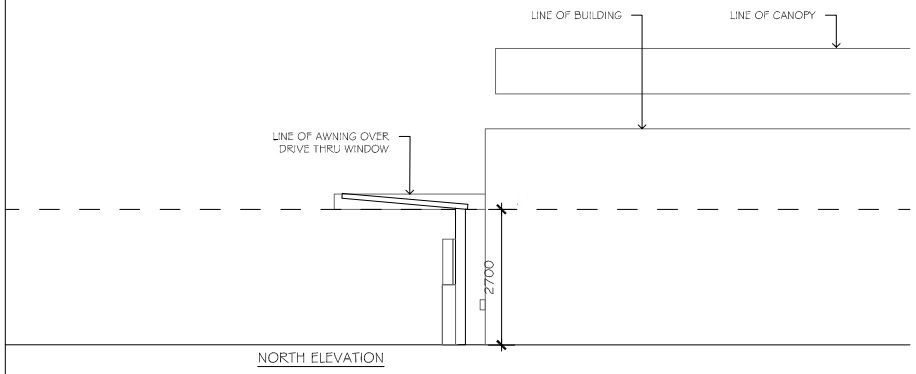
PROJECT: 353 MAIN STREET
LITHGOW
NSW
TITLE: PROPOSED DIESEL CANOPY ELEVATIONS

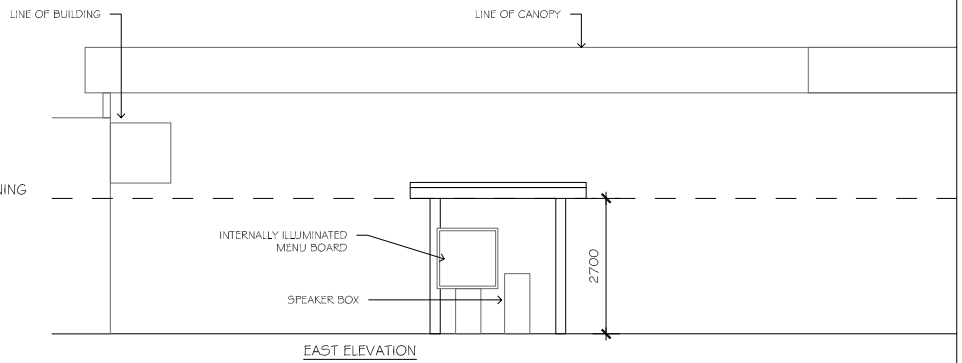
DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 008
SCALE: 1:200

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

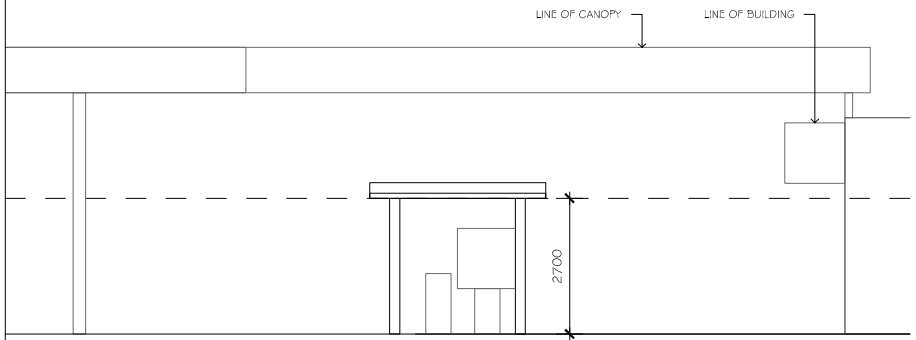


NORTH ELEVATION

LOWEST HEIGHT OF AWNING

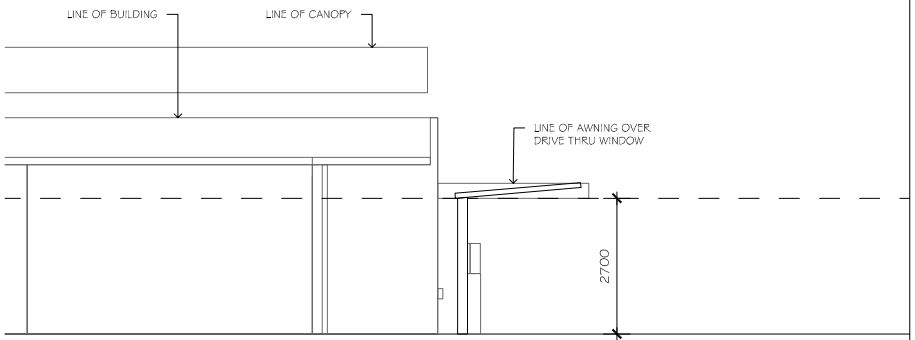


EAST ELEVATION



WEST ELEVATION

LOWEST HEIGHT OF AWNING



SOUTH ELEVATION

NOTE

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ISSUE	AMENDMENT	DRAWN	DATE
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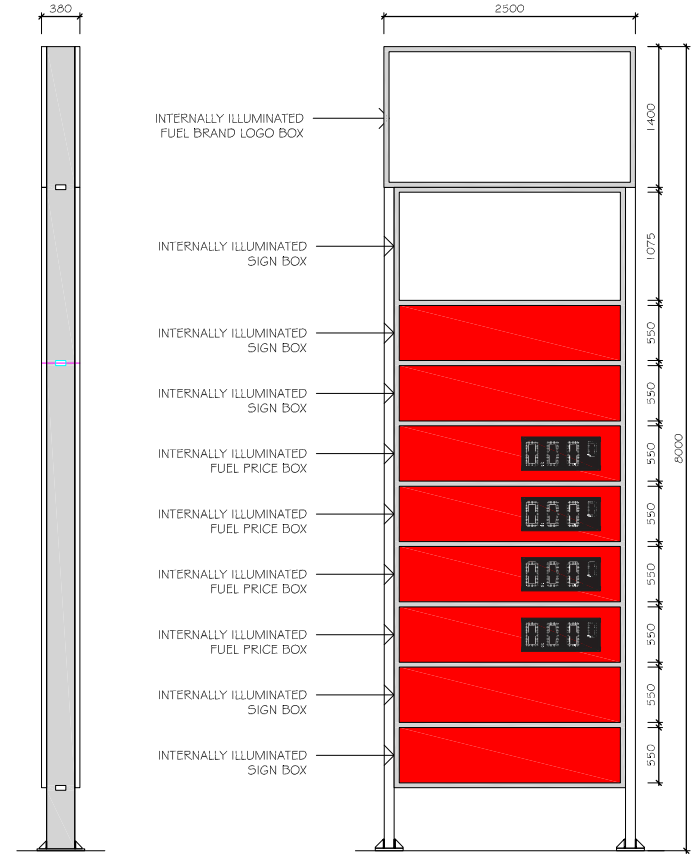
CLIENT: MAIN STREET CAP PTY LTD
PROJECT: 353 MAIN STREET LITHGOW NSW
TITLE: PROPOSED DRIVE THRU AWNING ELEVATIONS

DATE: 24/06/2024
SHEET SIZE: A3
DWG No: DA 009
SCALE: 1:100

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



SIDE ELEVATION

FRONT ELEVATION

ISSUE	AMENDMENT	DRAWN	DATE
A	ISSUED FOR DISCUSSION	MB/SH	24/06/2024

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CLIENT: MAIN STREET CAP PTY LTD

PROJECT: 353 MAIN STREET
LITHGOW
NSW

TITLE: PROPOSED SALES BOARD DETAILS

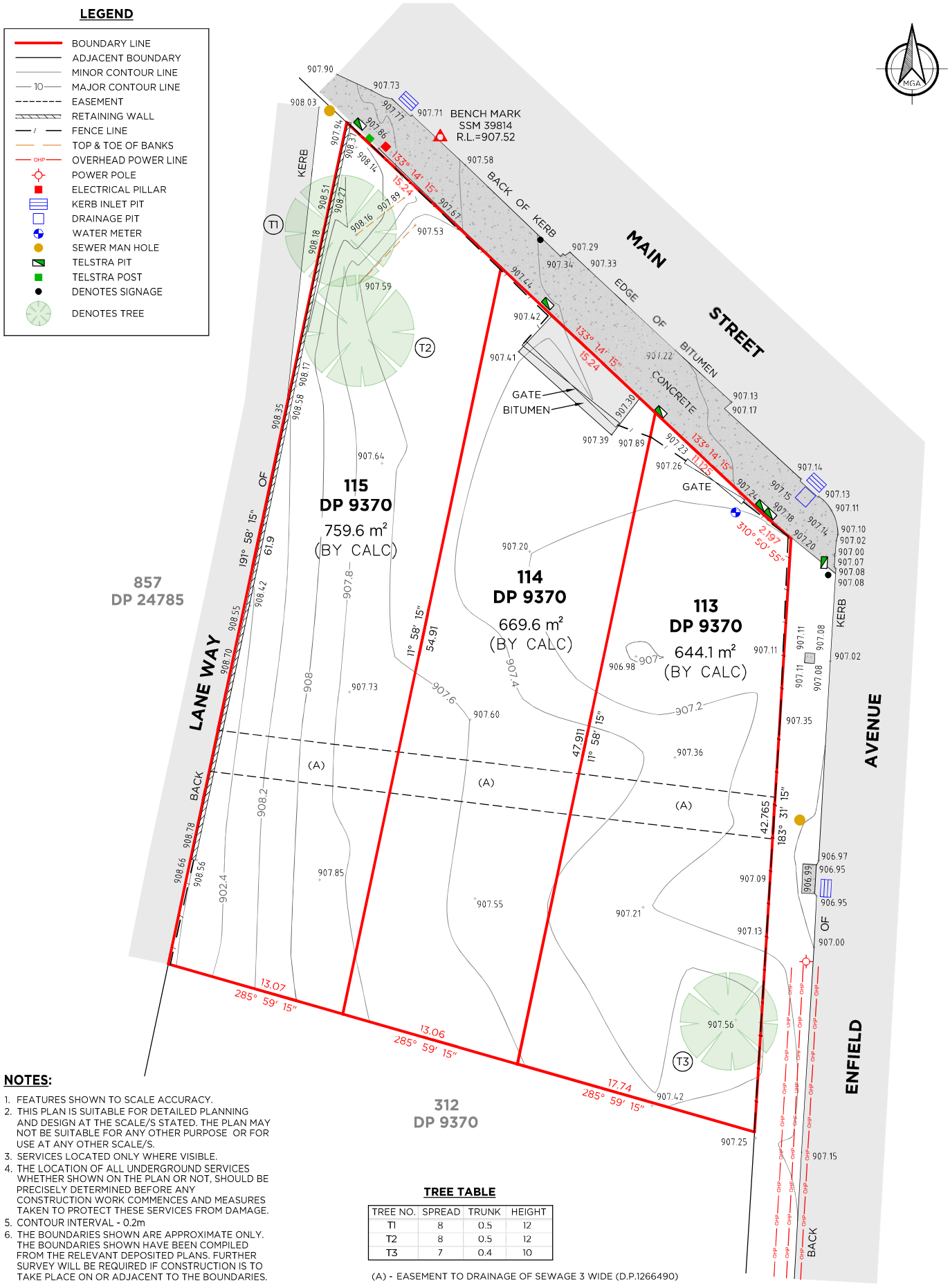
DATE: 24/06/2024

SHEET SIZE: A3

DWG No: DA 010

SCALE: 1:50

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025



NOTES:

1. FEATURES SHOWN TO SCALE ACCURACY.
2. THIS PLAN IS SUITABLE FOR DETAILED PLANNING AND DESIGN AT THE SCALE/S STATED. THE PLAN MAY NOT BE SUITABLE FOR ANY OTHER PURPOSE OR FOR USE AT ANY OTHER SCALE/S.
3. SERVICES LOCATED ONLY WHERE VISIBLE.
4. THE LOCATION OF ALL UNDERGROUND SERVICES WHETHER SHOWN ON THE PLAN OR NOT, SHOULD BE PRECISELY DETERMINED BEFORE ANY CONSTRUCTION WORK COMMENCES AND MEASURES TAKEN TO PROTECT THESE SERVICES FROM DAMAGE.
5. CONTOUR INTERVAL - 0.2m
6. THE BOUNDARIES SHOWN ARE APPROXIMATE ONLY. THE BOUNDARIES SHOWN HAVE BEEN COMPILED FROM THE RELEVANT DEPOSITED PLANS. FURTHER SURVEY WILL BE REQUIRED IF CONSTRUCTION IS TO TAKE PLACE ON OR ADJACENT TO THE BOUNDARIES.

TREE TABLE

TREE NO.	SPREAD	TRUNK	HEIGHT
T1	8	0.5	12
T2	8	0.5	12
T3	7	0.4	10

(A) - EASEMENT TO DRAINAGE OF SEWAGE 3 WIDE (D.P.1266490)

REV.	DATE	AMENDMENT(S)	SUR	DFT	CHK
A	22.07.21	ORIGINAL ISSUE	LM	JD	LM

DELFS LASCELLES
CONSULTING SURVEYORS
260 MAITLAND ROAD, MAYFIELD NSW 2304
ABN: 28 164 260 100
T: (02) 4964 4886
E: admin@delacs.com.au
delacs.com.au
CAD REF: 21484 - DET

DETAIL SURVEY OF LOTS 113-115 DP9370

SITE ADDRESS: 353 MAIN STREET LITHGOW

CLIENT: SLR

POSITION DATUM:	SSM 39814
ORIENTATION:	MGA (GROUND)
EASTING:	234 093.260
NORTHING:	6 291640.485
CLASS: B	PU: 0.02
HEIGHT DATUM:	SSM 39814
CLASS: LB	PU: 0.02
RL: 907.521 (AHD)	DATE: 24.05.21

SURVEYED	DRAFTED	CHECKED
LM	JD	LM

SCALE	PAGE SIZE	DATE
1:250	A3	23.06.21

SHEET	REV.	PROJECT No.
1	A	21484

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

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Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Appendix C – Noise Monitoring Charts

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Table C22 Background Noise Monitoring Summary – Unattended Noise Monitoring (L1)						
Date	Measured Background Noise Level (LA_{90}) dB ABL[1]			Measured dB $LA_{eq(period)}$		
	Day	Evening	Night	Day	Evening	Night
Tuesday 12 September 2023	--	38	35	--	55	56
Wednesday 13 September 2023	47	39	35	60	57	57
Thursday 14 September 2023	48	39	36	64	57	56
Friday 15 September 2023	49	42	37	59	57	55
Saturday 16 September 2023	45	40	37	59	55	54
Sunday 17 September 2023	48	37	35	59	54	55
Monday 18 September 2023	48	40	38	60	57	59
Tuesday 19 September 2023	51	48	47	61	57	57
Wednesday 20 September 2023	53	48	45	61	56	58
Thursday 21 September 2023	--	--	--	--	--	--
Location1 – RBL / Leq Overall	48	40	37	61	56	57

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.

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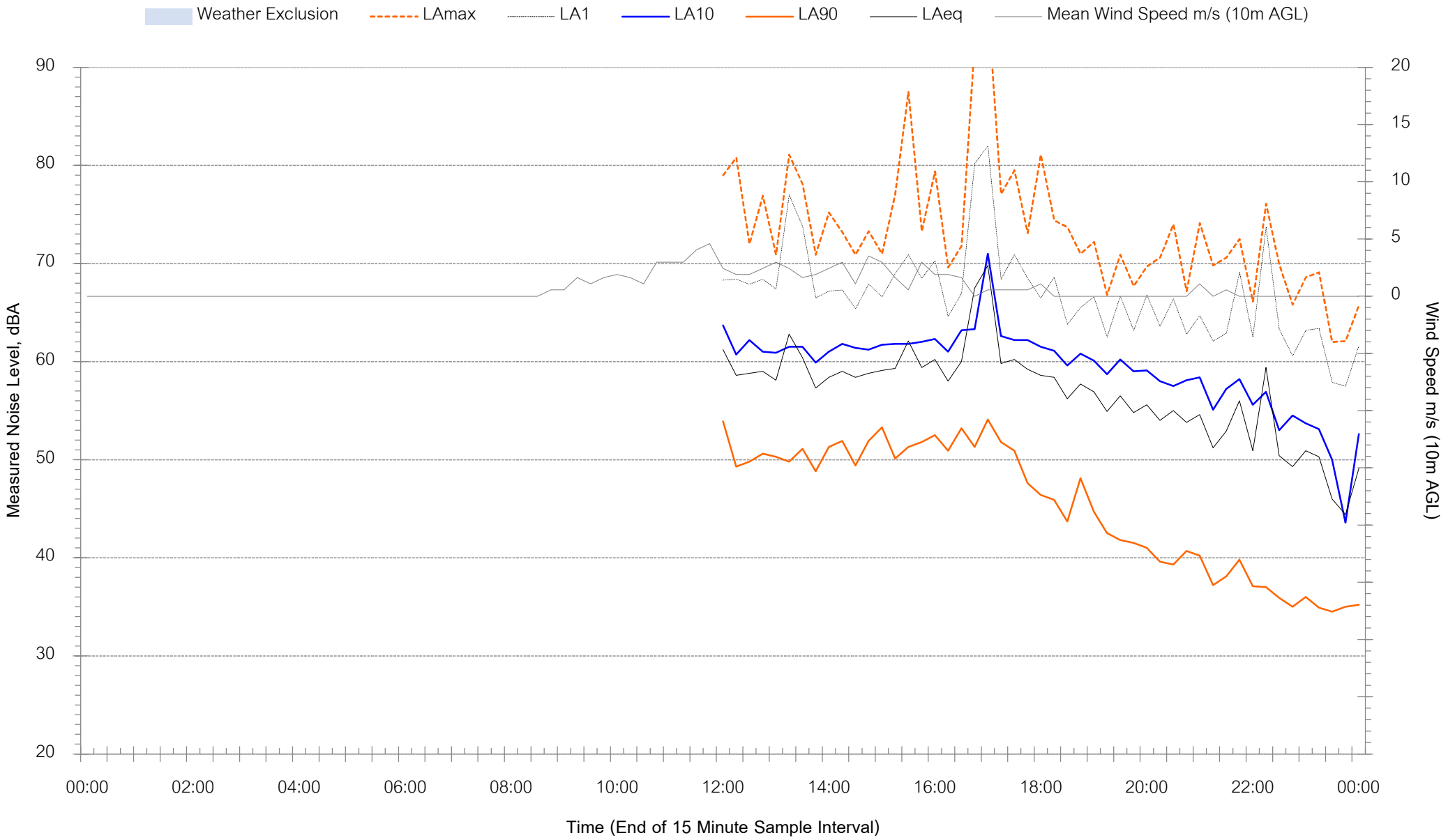
Version: 1, Version Date: 21/01/2025

Background Noise Levels

353 Main Street, Lithgow - Tuesday 12 September 2023



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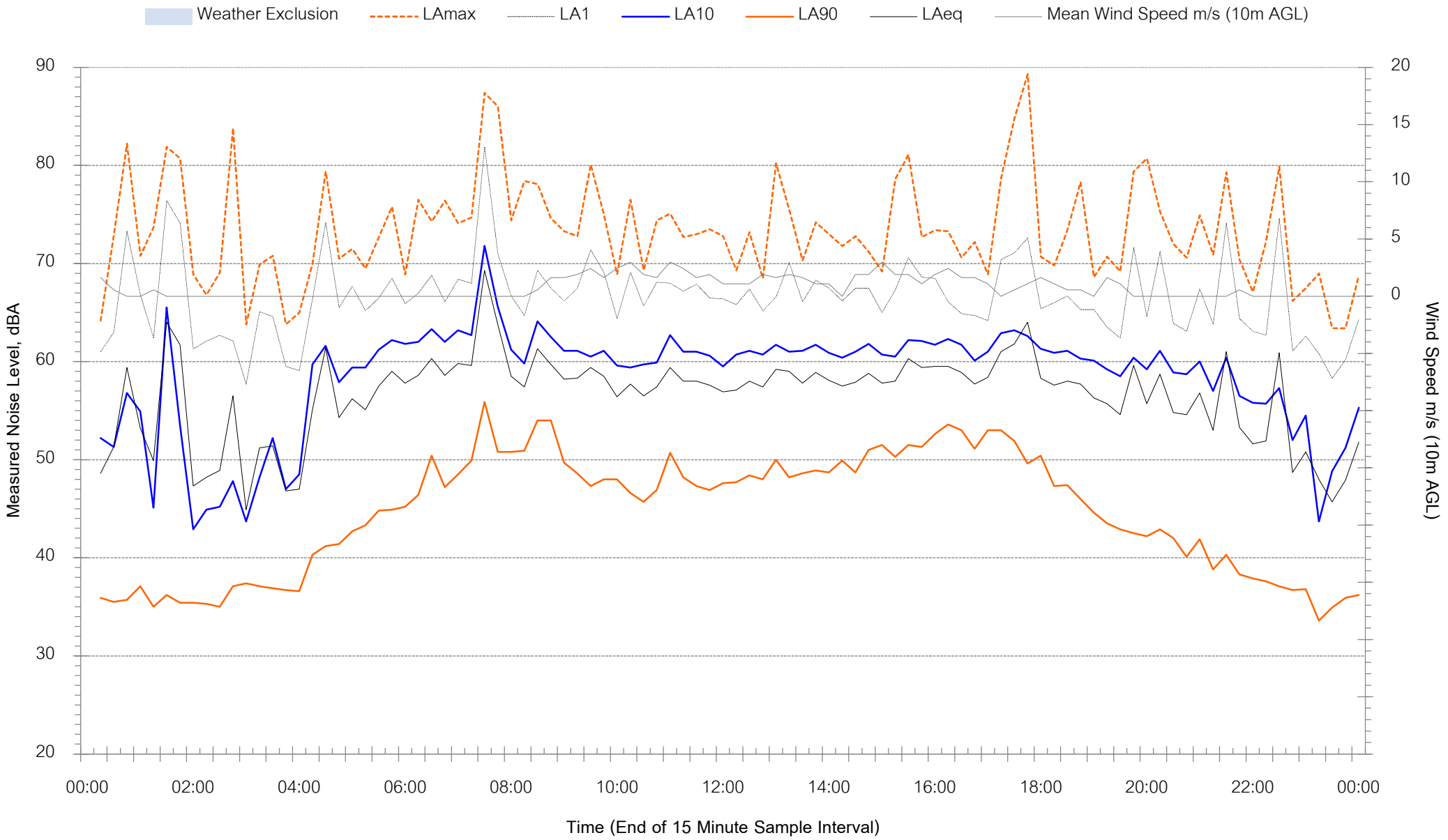
Background Noise Levels

353 Main Street, Lithgow - Wednesday 13 September 2023



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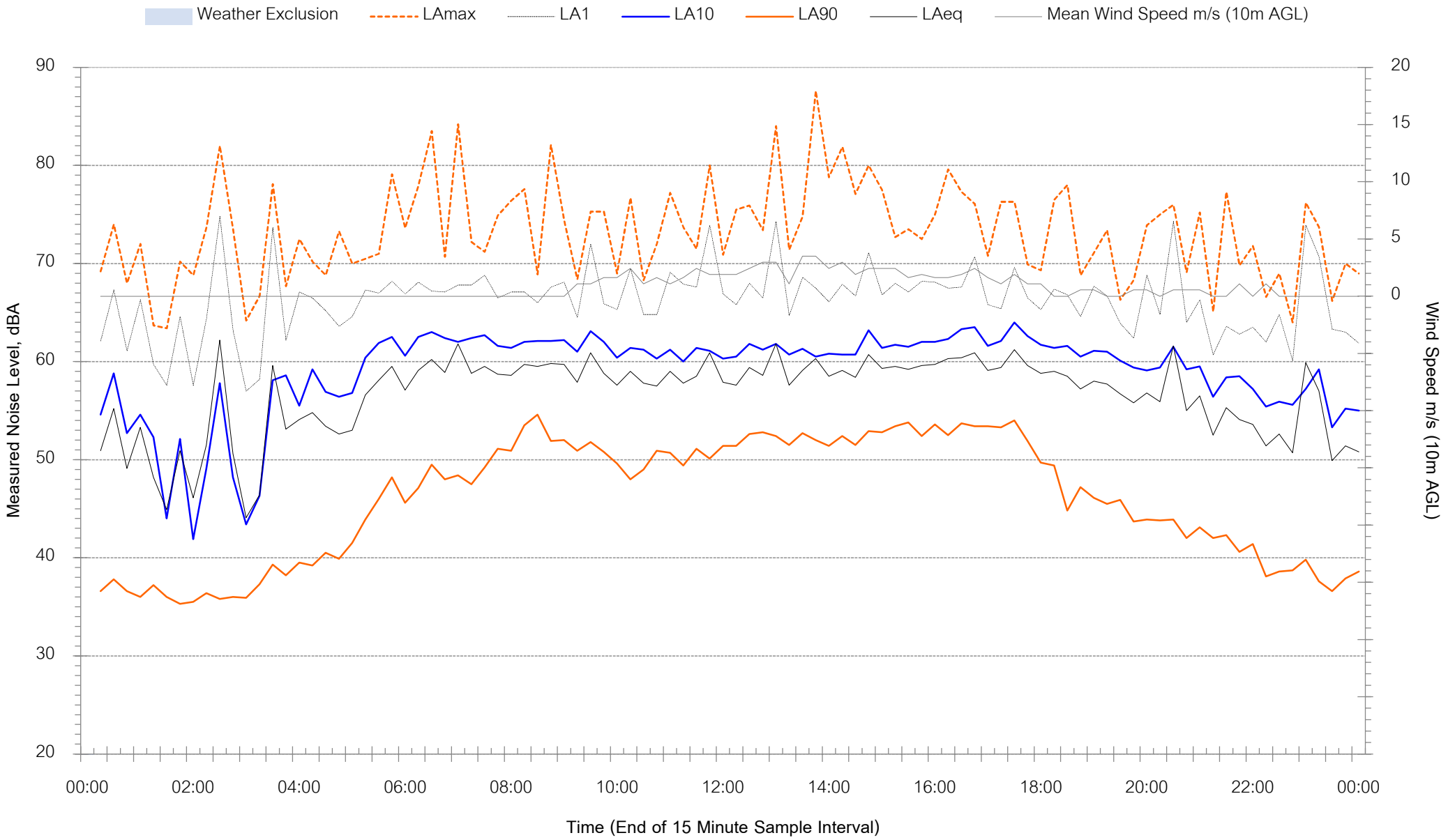
Version: 1, Version Date: 21/01/2025

Background Noise Levels

353 Main Street, Lithgow - Thursday 14 September 2023

Background Noise Levels

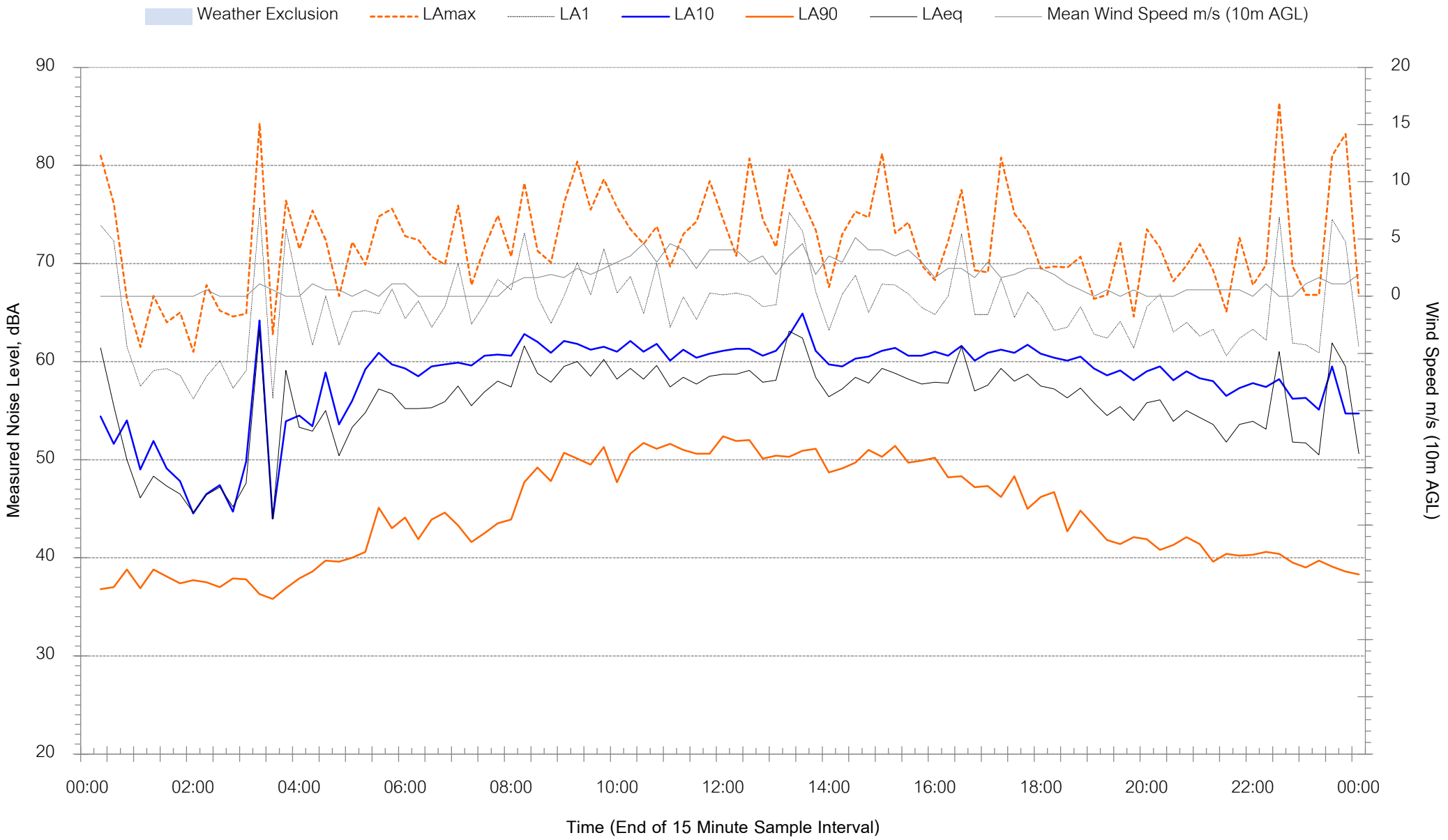
353 Main Street, Lithgow - Friday 15 September 2023



Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Background Noise Levels

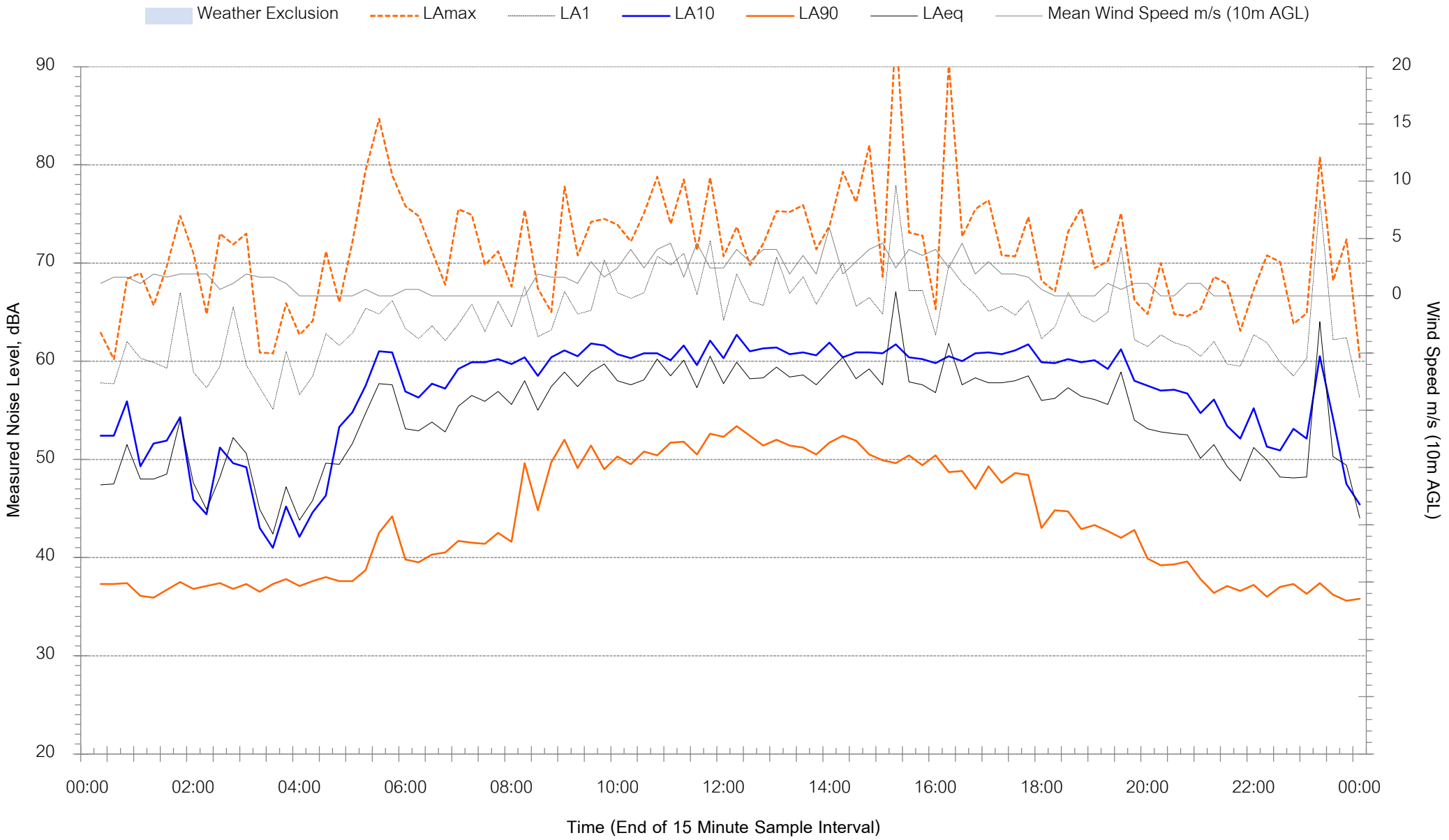
353 Main Street, Lithgow - Saturday 16 September 2023



Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Background Noise Levels

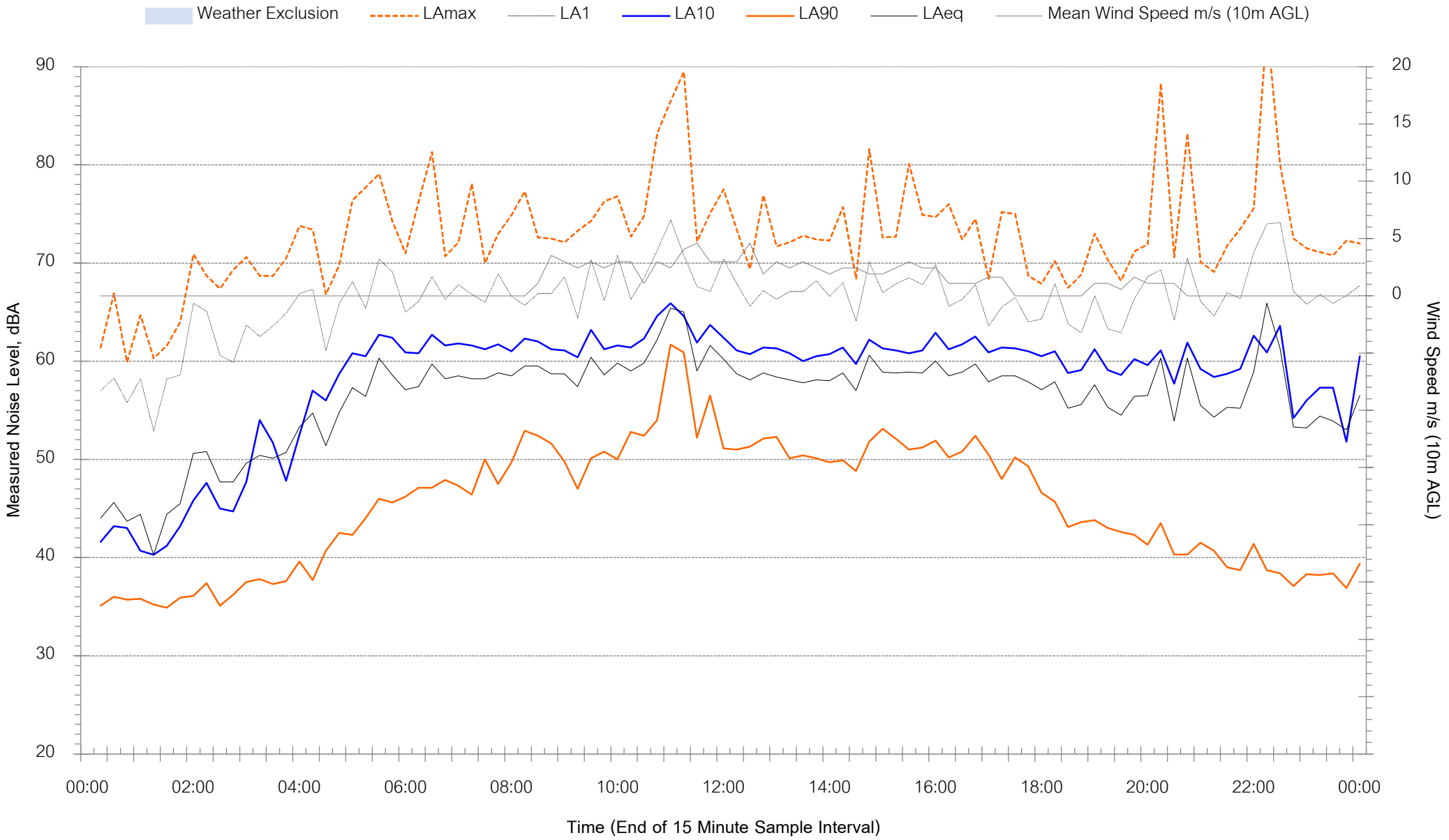
353 Main Street, Lithgow - Sunday 17 September 2023



Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Background Noise Levels

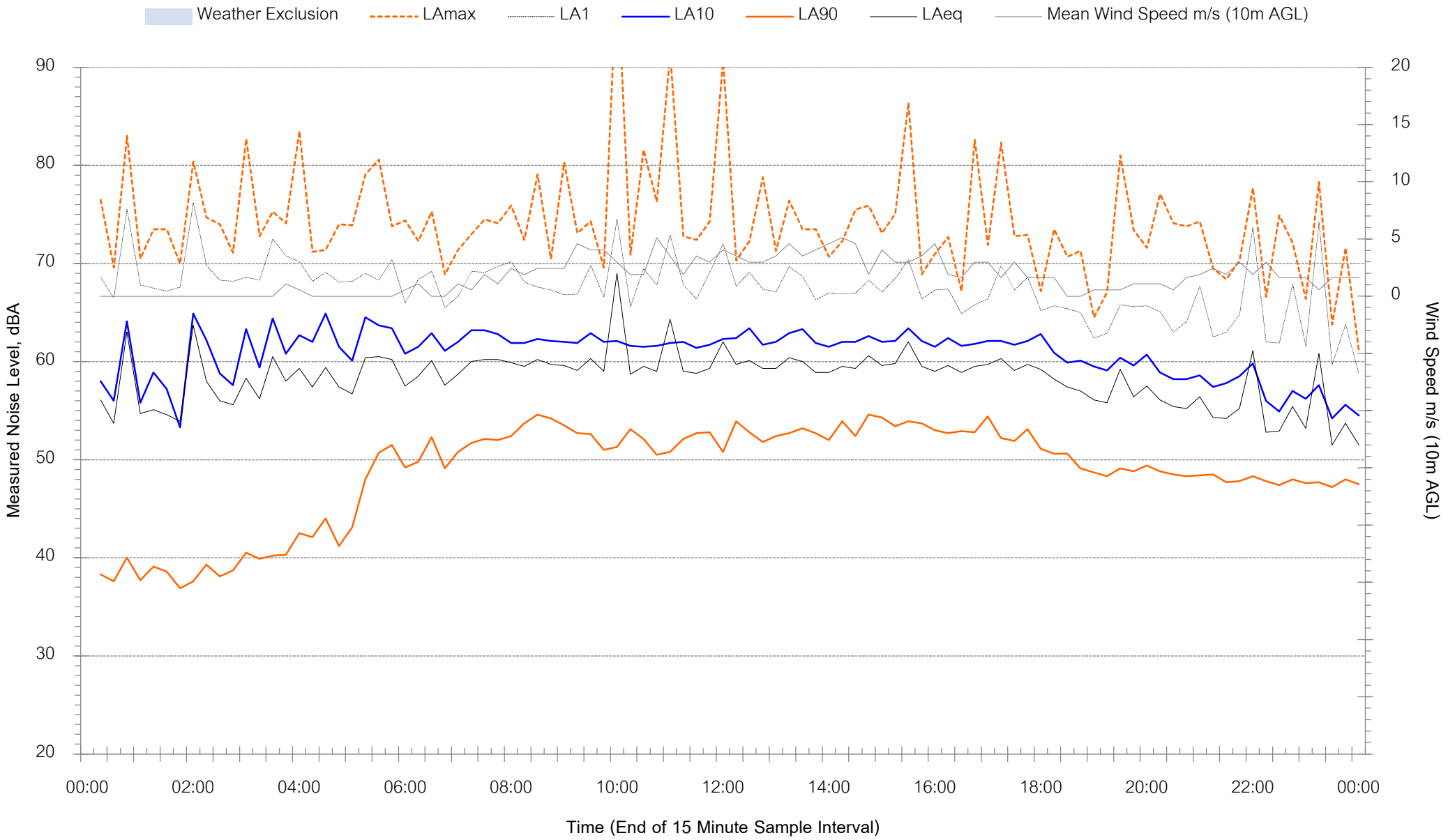
353 Main Street, Lithgow - Monday 18 September 2023



Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

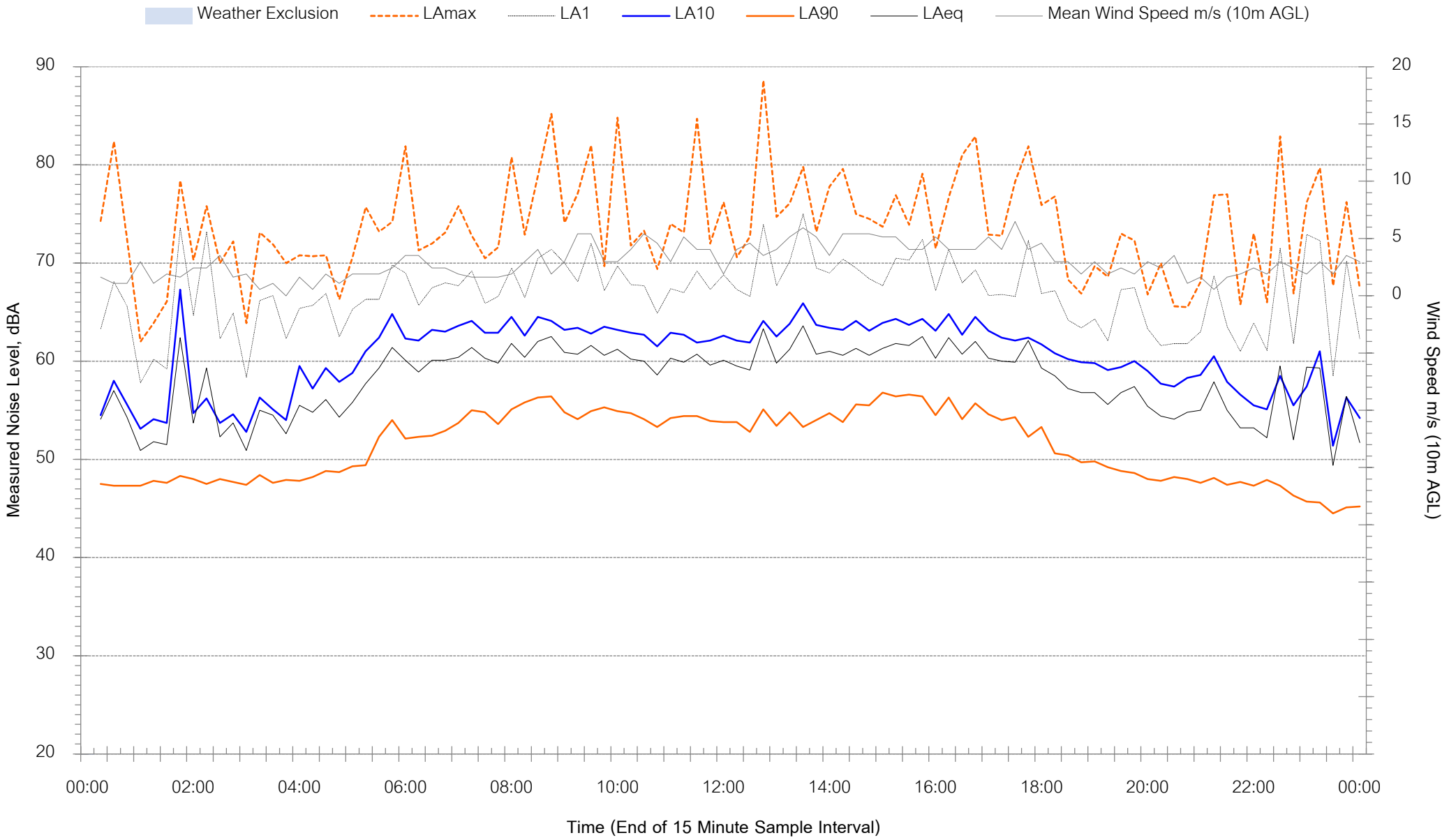
Background Noise Levels

353 Main Street, Lithgow - Tuesday 19 September 2023



Background Noise Levels

353 Main Street, Lithgow - Wednesday 20 September 2023



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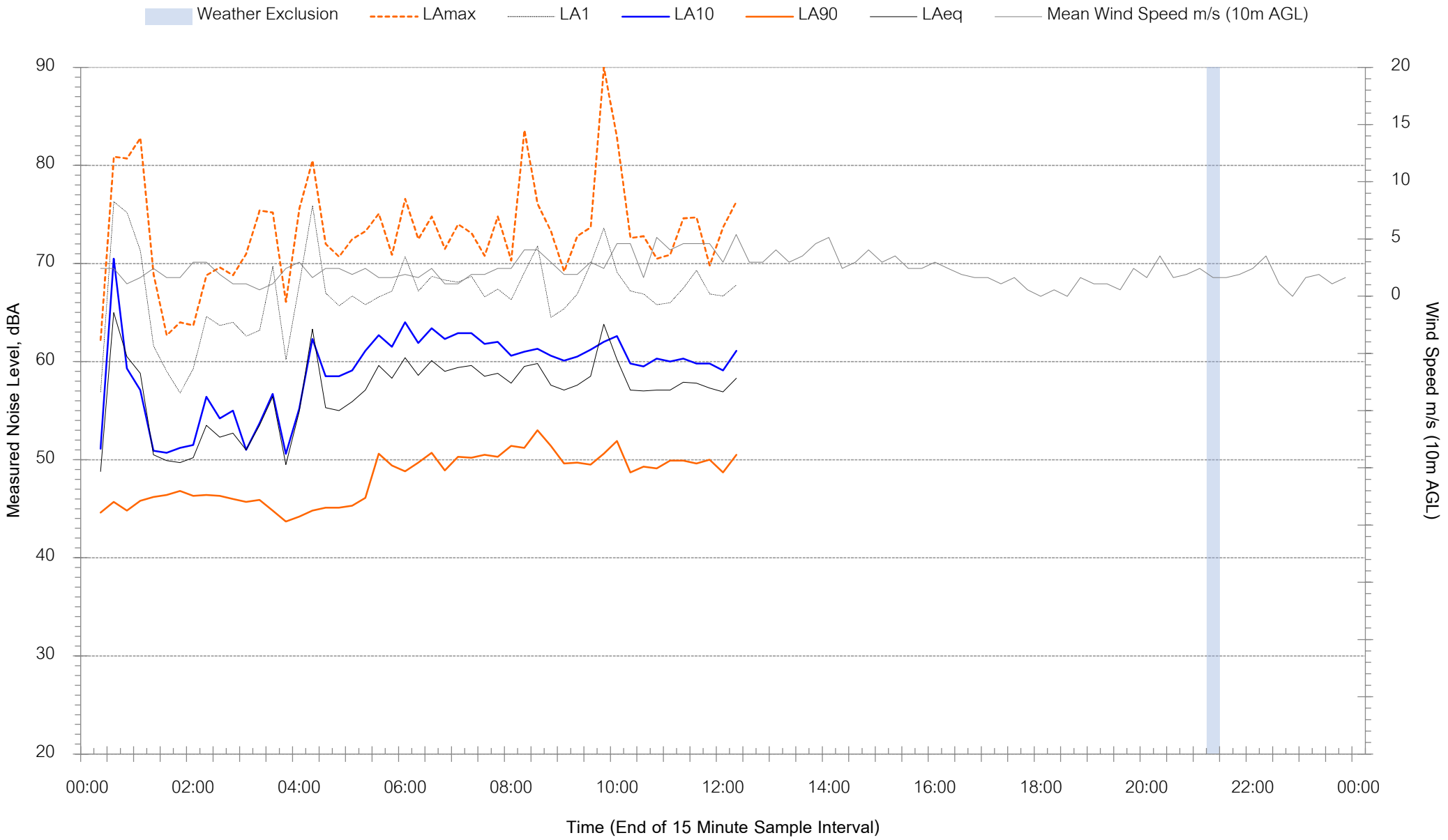
Version: 1, Version Date: 21/01/2025

Background Noise Levels

353 Main Street, Lithgow - Thursday 21 September 2023



Appendix D – Determination of NPI Receiver Category

Document Set ID: 2346820
Version: 1, Version Date: 21/01/2025

Table D1 - 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	SUBURBAN Daytime <45 Eve <40 Night <35	URBAN Daytime >45 Eve >40 Night >35	Rural Residential - an area with an acoustical environment that: is dominated by natural sounds.	having little or no road traffic noise	generally characterised by low background noise levels.	Settlement patterns would be typically sparse	Suburban Residential - an area that has: local traffic with characteristically intermittent traffic flows	or with some limited commerce or industry.	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	has through-traffic with characteristically heavy and continuous traffic flows during peak periods	is near commercial districts or industrial districts	has any combination of the above
Location 1	Day	48			✓				✓								✓	✓	✓	✓
	Evening	40																		
	Night	37																		

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 - Description				Suburban - Description			Urban - Description			
Location 1	0	0	5		0	0	1	0	0	0	0	0	0	0	1	1	1	1

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Muller Acoustic Consulting Pty Ltd
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