Noise Assessment

Proposed Service Station with Food and Drinks Premises
5-13 Louth Park Road
South Maitland, NSW

Prepared for: SLR Consulting Australia Pty Ltd
April 2022
MAC221533-01RP1

MAC
Muller Acoustic Consulting

Document Information

Noise Assessment

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by SLR Consulting Australia Pty Ltd (SLR) to prepare a Noise Assessment (NA) to quantify emissions from the Proposed Service Station with Food and Drinks Premises (the 'Project') to be established at 5-13 Louth Park Road, South Maitland, NSW.

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

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

- NSW Department of Environment and Climate Change (DECCW), NSW Interim Construction Noise Guideline (ICNG), 2009;
- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- NSW Department of Environment, Climate Change and Water (DECCW), NSW Road Noise Policy (RNP), 2011;
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures; and
- International Standard ISO 9613:1993 - Acoustics - Attenuation of sound during propagation outdoors.

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 operation is to be located at 5-13 Louth Park Road, South Maitland, NSW. The surrounding locality comprises primarily of residential, commercial and transport land uses. The site is bound to the north by the New England Highway which carries approximately 38,000 vehicles per day. On the far side of the highway is Main Hunter Rail Line. To the west of the site is Louth Park Road, with an existing service station located on the opposing side of the road. The site is bound to the south by a residential dwelling set back approximately 17 metres from the project site southern boundary. There are additional residential receivers to the southeast of the site at a setback distance of approximately 12m from the site boundary, to the east of the site is an undeveloped parcel of land.

The project proposes the establishment of a service station with food and drinks premises and drive-thru lane. The project will provide a main building containing a service station convenience store and food and drinks premises, forecourt with overhead canopy, a drive-thru lane and 43 car parking spaces. Approval is being sought for the project to operate 24 hours 7 days. Operation site plans are provided in **Appendix B** of this report.

2.1.1 Proposed Activities & Operating Hours

There are several key activities associated with the operation 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 and heavy vehicles	Day	✓
	Evening	✓
	Night	✓
Consumables goods deliveries	Day	✓
	Evening	✓
	Night	✓
Waste collection	Day	✓
	Evening	✓
	Night	✓
Mechanical plant	Day	✓
	Evening	✓
	Night	✓
COD operations	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.

2.1.2 Receiver Review

A review of residential receivers in close proximity to the operation has been completed and are summarised in **Table 2.** Receiver heights were set at various heights representative of the surrounding receiver buildings. **Figure 1** provides a locality plan showing the position of these receivers in relation to the operation.

Table 2 Receiver Locations

Receiver	Description	Receiver Height	Coordinates (MGA56)	
			Easting	Northing
R01	Residential	1.5m	365049	6376463
R02	Residential	1.5m	365047	6376449
R03	Residential	1.5/4m	365064	6376385
R04	Residential	1.5m	365071	6376368
R05	Residential	1.5m	365062	6376327
R06	Residential	1.5m	365131	6376360
R07	Residential	1.5m	365133	6376339
R08	Residential	1.5m	365144	6376331
R09	Residential	1.5m	365168	6376359
R10	Residential	1.5m	365175	6376365
R11	Residential	1.5/4m	365198	6376328
R12	Residential	1.5m	365288	6376309
R13	Residential	1.5m	365262	6376352
R14	Residential	1.5m	365270	6376360
R15	Residential	1.5m	365276	6376366
R16	Residential	1.5m	365292	6376381
R17	Residential	1.5m	365299	6376388
R18	Residential	1.5m	365355	6376378
R19	Residential	1.5m	365248	6376518
R20	Residential	1.5m	365218	6376545
C01	Commercial	1.5m	365079	6376436


R20
R19
R01
R02
C01
R03
L1
A1
R04
R10
R06
R09
R07
R08
R05
R11
R17
R18
R16
R15
R14
R13
R12
FIGURE 1
Locality Plan
MAC221533
5-13 Louth Park Road
KEY
L1 - Logger Location
A1 - Attended Location
Site Boundary
Receivers
0 10 20 30 40 50 60 70 m
N
MAC

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) (i.e. 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 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 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).

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

Table 3 Amenity Criteria

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: 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.

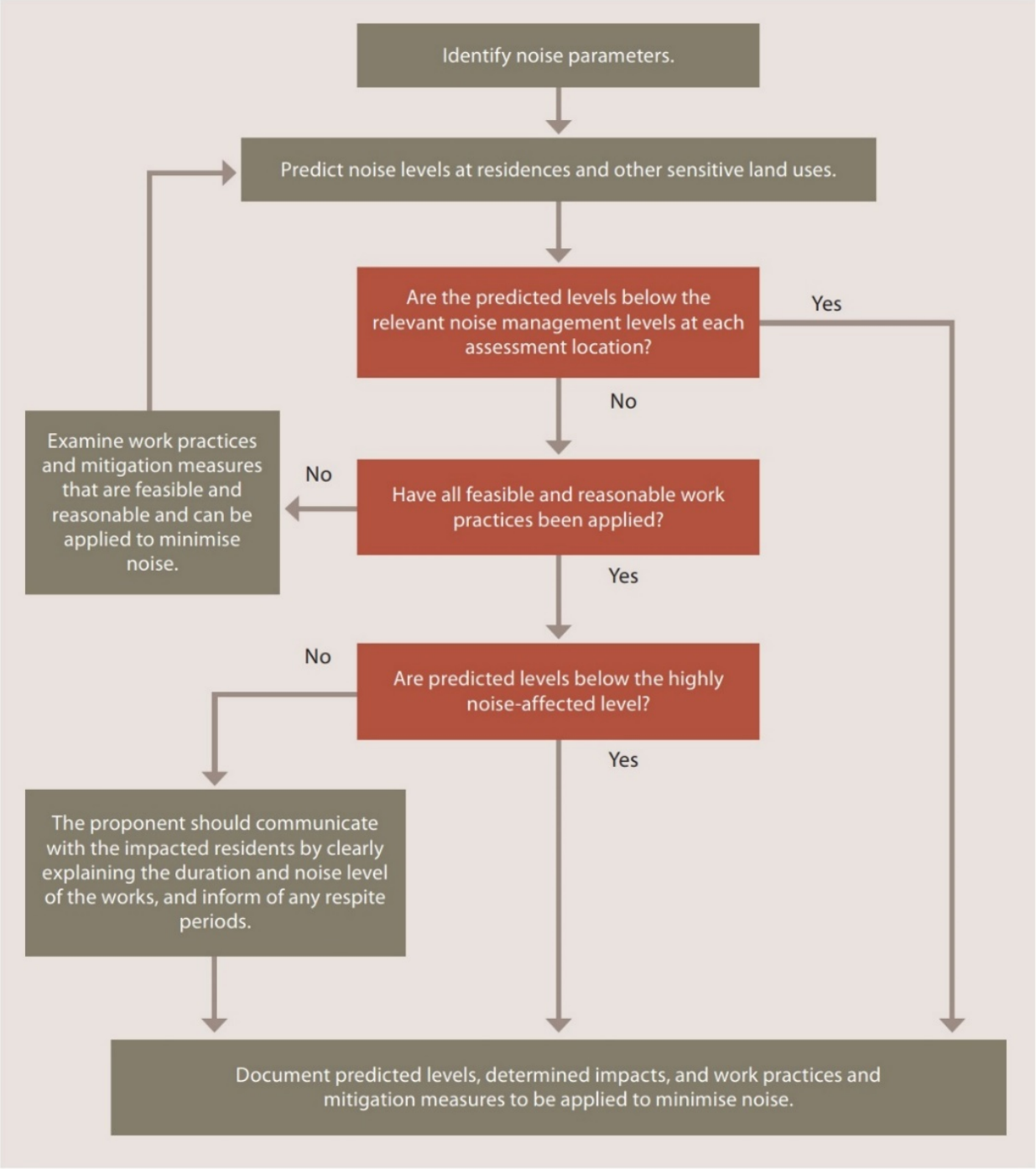
3.2 Interim Construction Noise Guideline

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 study 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 summaries 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 (DECC, 2009) 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 (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	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.

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.

4 Noise Criteria

4.1 Background Noise levels

4.1.1 Unattended Noise Monitoring

To quantify the existing background noise environment of the area, unattended noise monitoring was conducted at the project site, which is considered representative of the surrounding noise catchment. The noise monitoring location is presented visually in **Figure 1.**

The unattended 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 measurements were carried out using a Type 1, Svantek 977 noise analyser from Monday 28 March 2022 to Wednesday 6 April 2022. Observations on-site identified the surrounding locality was typical of an urban environment, with passing traffic noise audible in the area. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

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. 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 6** and plotted in graph format along with wind speed and rainfall for the monitoring period in **Appendix C**. Calibration certificates of the sound level meters used for this project are available on request.

Table 6 Background Noise Monitoring Summary

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	54	49	37	60	61	56

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 32.70S 151.488°E 28m AMSL.

4.2 Attended Noise Measurements

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 carried appropriate and current NATA (or manufacturer) calibration certificates.

The attended noise monitoring was conducted using one Svantek 971 noise analyser at the logger location on Monday 28 March 2022 to quantify ambient background noise levels.

The attended measurements were completed during calm and clear meteorological conditions and confirmed that ambient traffic dominated the surrounding noise environment. The results of the short-term noise measurement and observations are summarised in **Table 7**.

Table 7 Operator-Attended Noise Survey Results

Location	Time (hrs)	Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}		
A1	15:00	71	58	54	WD: SE WS: <0.5m/s	Birds 40-55 Traffic 52-71 Insects 30-40

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 Assessment Criteria

5.1 Operational Noise Criteria

5.1.1 Intrusiveness Noise Levels

The PINL for the operation are presented in **Table 8** and have been determined based on the RBL +5dBA and only apply to residential receivers.

Table 8 Project Intrusiveness Noise Levels

Receiver Type	Period	Measured RBL dB LA_{90}	PINL dB $LA_{eq(15min)}$
Residential	Day	54	59
	Evening	49	54
	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 Amenity Noise Levels and Project Amenity Noise Levels

The PANL for residential receivers and other receiver types (ie non-residential) potentially affected by the operation are presented in **Table 9.**

Table 9 Amenity Noise Levels and Project Amenity Noise Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	NPI Recommended ANL dB $LA_{eq(period)}$[2]	ANL dB $LA_{eq(period)}$	PANL dB $LA_{eq(15min)}$[5]
Residential	Urban	Day	60	55[3]	58
		Evening	50	46[4]	49
		Night	45	41[4]	44
Commercial	All	When in use	65	60[3]	63

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: Recommended amenity noise levels as per Table2.2 of the NPI.

Note 3: Project Amenity Noise Level equals the Amenity Noise Level -5dB as there is other industry in the area.

Note 4: LAeq,period (traffic) as per section 2.4.1 of the NPI (i.e. existing LAeq Traffic -15dB).

Note 5: 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.

5.1.3 Project Noise Trigger Levels

The PNTL are the lower of either the PINL or the PANL. **Table 10** presents the derivation of the PNTLs in accordance with the methodologies outlined in the NPI.

Table 10 Project Noise Trigger Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	PINL dB $L_{Aeq(15min)}$	PANL dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$
Residential	Urban	Day	59	58	58
		Evening	54	49	49
		Night	42	44	42
Commercial	All	When in Use	N/A	63	63

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.

5.1.4 Maximum Noise Assessment Trigger Levels

The maximum noise trigger levels shown in **Table 11** 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 11 Maximum Noise Trigger Level

Residential Receivers - 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 37+5dB	42	RBL 37+15dB	52
Highest	**42**	**Highest**	**52**

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

5.2 Construction Noise Criteria

The relevant Noise Management Levels (NMLs) for standard construction hours are presented in **Table 12**.

Table 12 Construction Noise Management Levels

Catchment	Assessment Period	Adopted RBL dB L_{A90}	NML dB $L_{Aeq(15min)}$
Residential	Standard Hours	54	64 (RBL+10dBA)
Commercial Premises	When in use	N/A	70

Note 1: See Table 4 of this report for Recommended Standard Hours for Construction.

6 Modelling Methodology

A computer model was developed to quantify project noise emissions to neighbouring receivers for the project. DGMR (iNoise, Version 2022.1) noise modelling software was used to quantify noise emissions from typical construction activities and operations. iNoise is a new 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 'Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere' and ISO 9613-2 'Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation' including corrections for meteorological conditions using CONCAWE[1]. The ISO 9613 standard from 1996 is 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

6.1 Sound Power Levels

Table 13 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 13 Acoustically Significant Sources - Sound Power Levels dBA (re 10^{-12} Watts)

Item and quantity (per 15 minutes)	Individual Sound Power Level dB L_{Aeq}	Modelled Sound Power Level dB $L_{Aeq(15min)}$	Source Height[1]
Operation			
Fan CDG354 (x3)	73	78	0.5m
AC Plant PCA260U (x3)	76	81	1.5m
Cold Room Condenser (x1)	75	75	0.5m
Customer Ordering Displays (x1)	75	75	1.0m
Truck Deliveries (x1)	92	92	1.0m
Waste Collection (x1)	86	86	1.0m
Car idle, start up and drive off (x31)[2]	81	88	0.5m
Customers vehicles travelling through Drive-Thru (15 cars per 15min)	81	85	0.5m
Sleep disturbance assessment (L_{Amax}), Night time periods (10pm to 7am)			
Car Door Slam		87	0.5m
Delivery /Waste Collection Impact		104	1.0m
Fuel Delivery Impact		102	0.3m
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.

6.2 Noise Attenuation Recommendations and Controls

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 project building orientation;
- the mechanical AC plant are located on the roof top of the operation which is surrounded by an acoustic barrier which extends 500mm above the top of the highest item of plant. The barrier should be constructed of materials that have a minimum density of 10kg/m^2 and doesn't contain any gaps;
- construction of a loading bay barrier as shown in **Figure 3**. The barrier should extend 2.0m above the final floor level of the loading bay and be constructed of materials consistent with those outlined above;
- construction of an impervious noise barrier along the southern boundary as shown in **Figure 3**. The barrier should extend 2.0m above the final floor level of the forecourt along the southern boundary and be constructed of materials consistent with those outlined above; and
- the COD's are assumed to be set at the lowest volume setting.

FIGURE 3

Barrier Plan

MAC221533

5-13 Louth Park Road

KEY

Proposed 2.0m Barrier

0 3 6 9 12 15 m

N

MAC
Muller Acoustic Consulting

7 Noise Assessment Results

7.1 Operational Noise Assessment

Noise predictions from all sources have been quantified at surrounding residential receivers to the operation site and are presented in **Table 14**. The predictions are considered a worse case assessment. Noise levels from are predicted to satisfy the relevant NPI noise criteria at all receivers during all assessment periods.

Table 14 Operational Noise Predictions – All Receivers

Residential Receivers

Rec	Predicted Noise Level dB $L_{Aeq(15min)}$					PNTL dB $L_{Aeq(15min)}$			Compliant
			Night						
	Day	Evening	Waste Collection	Consumable Delivery	Fuel Delivery	Day	Evening	Night	
R01	39	39	<35	37	<35	58	49	42	✓
R02	<35	<35	<35	<35	<35	58	49	42	✓
R03	42	42	37	40	36	58	49	42	✓
R04	39	39	<35	37	<35	58	49	42	✓
R05	<35	<35	<35	<35	<35	58	49	42	✓
R06	42	42	38	41	36	58	49	42	✓
R07	39	39	<35	38	<35	58	49	42	✓
R08	38	38	35	36	<35	58	49	42	✓
R09	42	42	39	40	36	58	49	42	✓
R10	44	44	41	42	37	58	49	42	✓
R11	<35	<35	<35	<35	<35	58	49	42	✓
R12	<35	<35	<35	<35	<35	58	49	42	✓
R13	<35	<35	<35	<35	<35	58	49	42	✓
R14	<35	<35	<35	<35	<35	58	49	42	✓
R15	<35	<35	<35	<35	<35	58	49	42	✓
R16	<35	<35	<35	<35	<35	58	49	42	✓
R17	<35	<35	<35	<35	<35	58	49	42	✓
R18	<35	<35	<35	<35	<35	58	49	42	✓
R19	<35	<35	<35	<35	<35	58	49	42	✓
R20	<35	<35	<35	<35	<35	58	49	42	✓

Other Receivers

Rec	Period	Predicted Noise Level dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$	Compliant
C01	When in use	43	63	✓

7.1.1 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 104dBA for consumable good delivery impact, 102dBA for a fuel delivery impact and 87dBA for a door slam in the northern most and southern most car parking spaces are adopted for this assessment.

Predicted noise levels from $L_{Aeq(15min)}$ and L_{Amax} events for assessed receivers are presented in **Table 15.** Results identify that the maximum noise trigger levels will be satisfied for all assessed receivers.

Table 15 Maximum Noise Trigger Level Assessment (Night)[1]

Night Period						
Rec	Predicted Noise Level dB L_{Amax}				Trigger Level dB L_{Amax}	Compliant
	Delivery/ Waste Impact	Fuel Delivery Impact	Car Door Slam South	Car Door Slam North		
R01	49	51	<35	<35	52	✓
R02	37	36	<35	<35	52	✓
R03	49	52	<35	37	52	✓
R04	43	49	<35	<35	52	✓
R05	36	43	<35	<35	52	✓
R06	46	48	<35	38	52	✓
R07	42	46	<35	<35	52	✓
R08	46	48	<35	<35	52	✓
R09	48	48	<35	<35	52	✓
R10	50	48	<35	<35	52	✓
R11	39	41	<35	<35	52	✓
R12	38	29	<35	<35	52	✓
R13	40	31	<35	<35	52	✓
R14	37	31	<35	<35	52	✓
R15	36	31	<35	<35	52	✓
R16	32	29	<35	<35	52	✓
R17	32	30	<35	<35	52	✓
R18	26	26	<35	<35	52	✓
R19	31	47	<35	<35	52	✓
R20	28	47	<35	<35	52	✓

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.

7.2 Construction Noise Assessment

Table 16 presents the results of modelled construction noise emissions on each façade of the existing food and drinks premises building. Predictions identify that emissions from construction may be above the noise management levels at several assessed receivers. Accordingly, recommendations to reduce the impact of construction noise emissions on surrounding receivers are provided in Section 8.

Table 16 Construction Noise Levels – All Receivers

Rec	Period[1]	Predicted Noise Level dB $LA_{eq(15min)}$	Management Level dB $LA_{eq(15min)}$	Compliant
R01	Day	51	64	✓
R02	Day	41	64	✓
R03	Day	58	64	✓
R04	Day	53	64	✓
R05	Day	51	64	✓
R06	Day	64	64	✓
R07	Day	61	64	✓
R08	Day	62	64	✓
R09	Day	65	64	X
R10	Day	65	64	X
R11	Day	54	64	✓
R12	Day	52	64	✓
R13	Day	56	64	✓
R14	Day	55	64	✓
R15	Day	54	64	✓
R16	Day	53	64	✓
R17	Day	53	64	✓
R18	Day	38	64	✓
R19	Day	53	64	✓
R20	Day	52	64	✓
C01	Day	59	70	✓

Note 1: See Table 4 of this report for Recommended Standard Hours for Construction.

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8 Construction Recommendations

The results of the Noise Assessment demonstrate that levels during standard construction hours may be above the ICNG noise management levels at the nearest receivers surrounding the project. Accordingly, it is recommended that noise management and mitigation measures be adopted during noise intensive construction activities to limit impacts on surrounding receivers.

Recommendations for consideration during construction activities for this project may include:

- implement boundary fences/retaining walls as early as possible to maximise their attenuation benefits to surrounding receivers;
- toolbox and induction of personnel prior to shift to discuss noise control measures that may be implemented to reduce noise emissions to the community;
- where possible use mobile screens or construction hording to act as barriers between construction works and receivers;
- all plant should be shut down when not in use. Plant to be parked/started at farthest point from relevant assessment locations;
- operating plant in a conservative manner (no over-revving);
- selection of the quietest suitable machinery available for each activity;
- avoidance of noisy plant/machinery working simultaneously where practicable;
- minimisation of metallic impact noise;
- all plant are to utilise a broadband reverse alarm in lieu of the traditional hi frequency type reverse alarm; and
- undertake letter box drops to notify receivers of potential works.

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9 Discussion and Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Assessment to quantify potential noise emissions from the Proposed Service Station with Food and Drinks Premises to be established at 5-13 Louth Park Road, South Maitland, NSW.

The assessment has quantified potential operation emissions pertaining to customer generated noise, including light vehicles, truck deliveries, waste collection and mechanical plant.

The results of the NA demonstrate that 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**) and reproduced below:

- the project is constructed as per the site design and plans (as presented in **Appendix B**), which includes the barrier attenuation provided by project building orientation;
- the mechanical AC plant are located on the roof top of the operation which is surrounded by an acoustic barrier which extends 500mm above the top of the highest item of plant. The barrier should be constructed of materials that have a minimum density of 10kg/m^2 and doesn't contain any gaps;
- construction of a loading bay barrier as shown in **Figure 3**. The barrier should extend 2.0m above the final floor level of the loading bay and be constructed of materials consistent with those outlined above;
- construction of an impervious noise barrier along the southern boundary as shown in **Figure 3**. The barrier should extend 2.0m above the final floor level of the forecourt along the southern boundary and be constructed of materials consistent with those outlined above; and
- the COD's are assumed to be set at the lowest volume setting.

Furthermore, sleep disturbance is not anticipated, and maximum noise events are predicted to remain below the EPA trigger level for sleep disturbance and awakenings.

Modelled noise emissions from project construction and demolition activities identify construction noise emissions satisfy the relevant noise management levels at all assessed receivers. Notwithstanding, noise management measures are provided in **Section 8** of this report to reduce potential impacts on surrounding receivers.

In summary, the Noise Assessment supports the Development Application for the project incorporating the recommendations 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

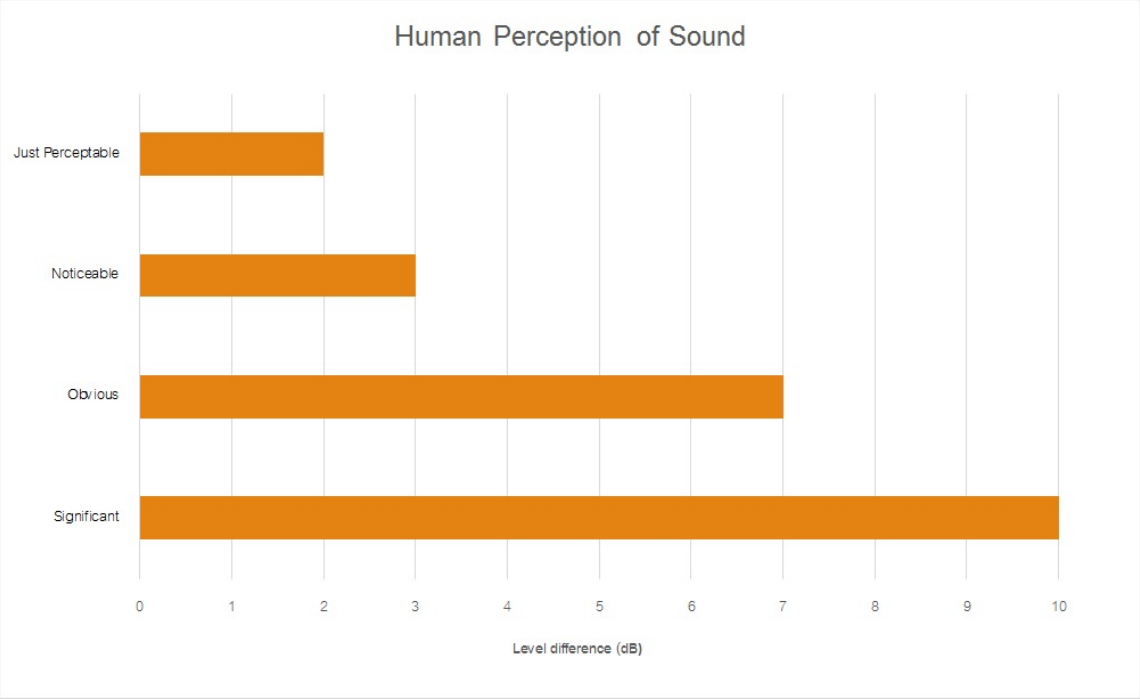
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for 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

Development Application

LOUTH PARK ROAD, SOUTH MAITLAND

SHEET LIST

Sheet Number	Sheet Name	Rev
00	COVER PAGE	1
01	SITE ANALYSIS PLAN	1
02	DEMOLITION PLAN	1
03	SITE PLAN	1
04	BUILDING FLOOR PLAN	1
05	ROOF PLAN	1
06	BUILDING ELEVATIONS	
07	BUILDING ELEVATIONS	1
08	CANOPY PLAN, ELEVATIONS	1
09	SIGNAGE	1

LIST OF CLAUSES:

- **Clause B1.4 – Materials & Forms Constructions**
- **Spec. C1.1- Fire Resisting Construction**
- **Spec. C1.10 – Fire Hazard Properties**
- **Spec. C1.11 – Performance of External Walls in a Fire**
- **Clause C2.6 – Vertical Separation of Openings in External Walls**
- **Clause C2.12 – Separation of Equipment**
- **Clause C2.13 – Electricity Supply System**
- **Clause C3.4 – Acceptable Methods of Protection (of openings)**
- **Clause C3.8 – Opening in Fire Isolated Exits**
- **Clause C3.15 – Openings for Service Installations**
- **Clause D1.10 – Discharge from Exits**
- **Clause D2.7 – Installations in Exits and Paths of Travel**

***- Clause D2.13 – Goings and Risers** Treads which have:-

a. A surface with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586 **or**

(b) A nosing strip with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586.

***- Clause D2.14 – Landings** which have: -

a. A surface with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586 **or**

(b) A strip at the edge of the landing with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586, where the edge leads to a flight below.

- **Clause D2.15 – Thresholds**

***- Clause D2.16 – Balustrades**

***- Clause D2.17 – Handrails**

- **Clause D2.21 – Operation of Latch**
- **Clause D2.23 – Sign on Doors**
- **Clause D3.2 – General Building Access Requirements**
- **Clause D3.3 – Parts of Building to be Accessible**
- **Clause D3.6 – Identification of Accessible Facilities, Services and Features**
- **Clause D3.8 – Tactile Indicators**
- **Clause F1.7 – Waterproofing of Wet Areas**
- **Clause F1.9/ F1.10 – Damp Proofing**
- **Clause F2.5 – Construction of Sanitary Compartments**
- **Part F4 – Lighting and Ventilation**
- **Clause F5.4 – Sound Insulation of Floors**
- **Clause F5.5 – Sound Insulation of Walls**
- **Clause F5.6 – Sound Insulation of Services**
- **Clause F5.7 – Sound Insulation of Pumps**

GENERAL NOTES:

1. BUILDING SHELL DESIGN INTENT SHOWN.CONTRACTOR TO PROPOSE DETAILED DESIGN FOR CONSTRUCTION, INCLUDING ALL SITE RELATED WORKS, STRUCTURAL, CIVIL WORKS & BUILDING SERVICES.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING IN-GROUND AND ABOVE-GROUND SERVICES WITHIN THE SCOPE OF WORKS BEFORE COMMENCING CONSTRUCTION/DEMOLITION.
3. ANY 3D DRAWINGS ARE INDICATIVE ONLY, AND ARE TO BE READ IN CONJUNCTION WITH OTHER RELEVANT DRAWINGS.
4. ALL ACCESSIBILITY AND MOBILITY DESIGN (DDA) ITEMS TO COMPLY WITH A.S. 1428.1 2009
5. THIS DRAWINGS SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, SCHEDULES AND DRAWINGS INCLUDING CIVIL, STRUCTURAL, HYDRAULIC
6. DIMENSIONS:

   CONTRACTOR AND SUB-CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF THIS DRAWING AND SITE CONDITIONS PRIOR TO ANY WORK COMMENCING.
   FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS (UNLESS NOTED OTHERWISE).
   FIGURED DIMENSIONS ARE:
   - WALL / PARTITIONS SETOUT TO CENTRE LINE WHERE NOTED
   - ALL OTHER WALL/PARTITION DIMENSIONS ARE TO FINISHED FACE OF PARTITION.
   - CEILINGS: FINISHED UNDERSIDE OF CEILINGS - CEILING HEIGHT IS MEASURED FROM FINISH FLOOR LEVEL
   - FITTINGS AND FIXTURES: - DIMENSIONS TO FIXTURES AND FITTINGS ARE SETOUT FROM "FINISH" WALL FACE / FINISH FLOOR LEVEL.

PLANS TO BE READ IN CONJUNCTION WITH:

- BUILDING CODE OF AUSTRALIA
- RELEVANT AUSTRALIAN STANDARDS
- HYDRAULIC DRAWING SET
- CIVIL DRAWING SET
- STRUCTURAL DRAWING SET
- LANDSCAPE DRAWING SET

IF NO INTERNAL FITOUT FINISHES & PLANS ARE PRESENT, CLIENT SELECTIONS & DETAILS ARE TO TAKE PRECEDENCE.

PLEASE NOTE:
DETAILS SHOWN ON THIS PLAN ARE INTENDED TO BE ACCURATE.
HOWEVER INFORMATION WRITTEN INTO INDIVIDUAL CONTRACTS
AND DRAWINGS WILL TAKE PRECEDENCE OVER THIS SET.

LEGEND:

℄ CENTRE LINE

DP ▭ RAINWATER DOWNPIPE LOCATION AND NOS. SHOWN INDICATIVELY. CONTRACTOR TO DESIGN AND CONSTRUCT TO COMPLY WITH RELEVANT CODES AND STANDARDS.

MADE.

Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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 AND TAKE AWAY

Sheet Title: COVER PAGE

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

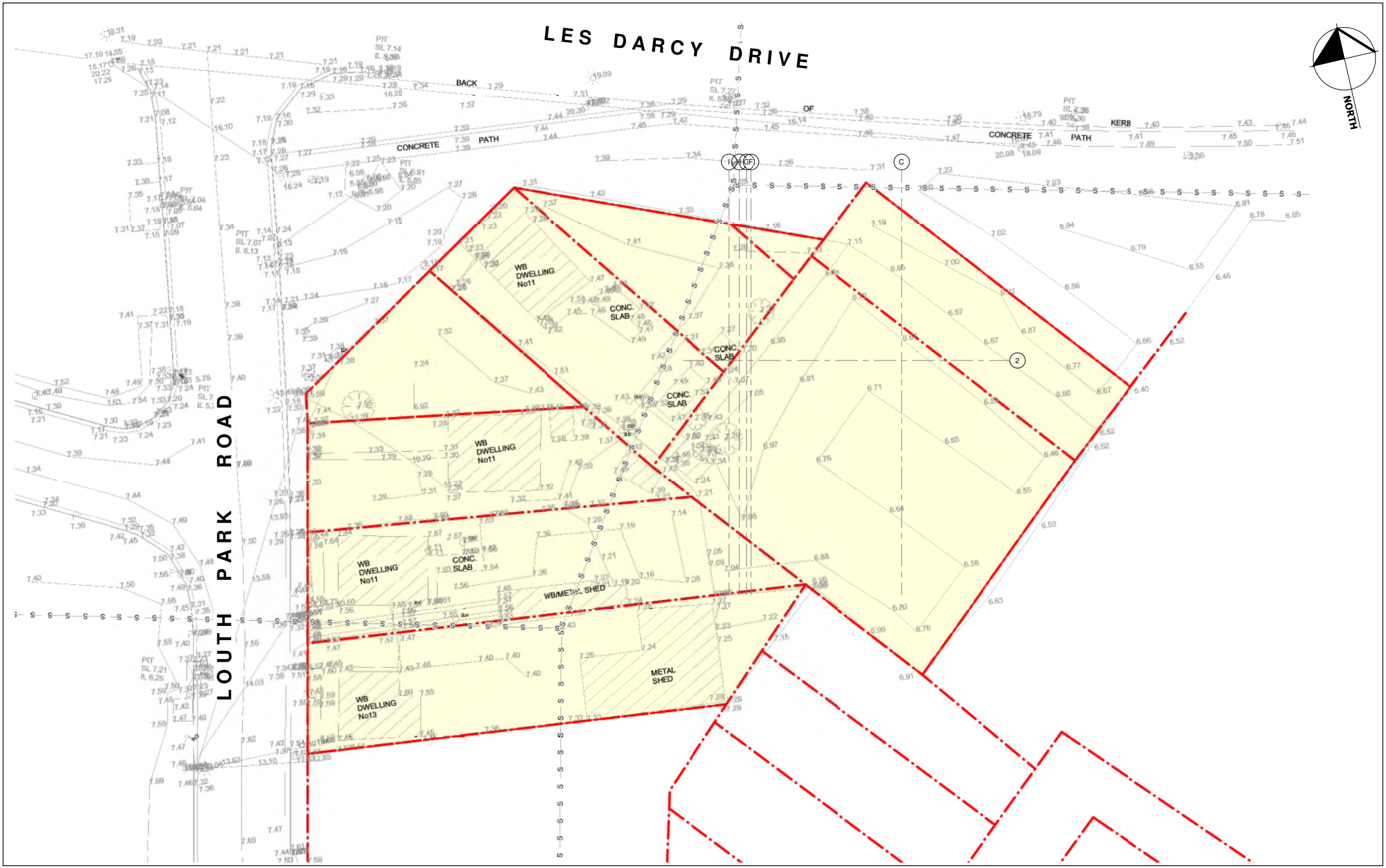
Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: As indicated on A1

Revision: 1

DWG No: 00



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Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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Project: SERVICE STATION AND TAKE AWAY

Sheet Title: SITE ANALYSIS PLAN

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 200 on A1

Revision: 1

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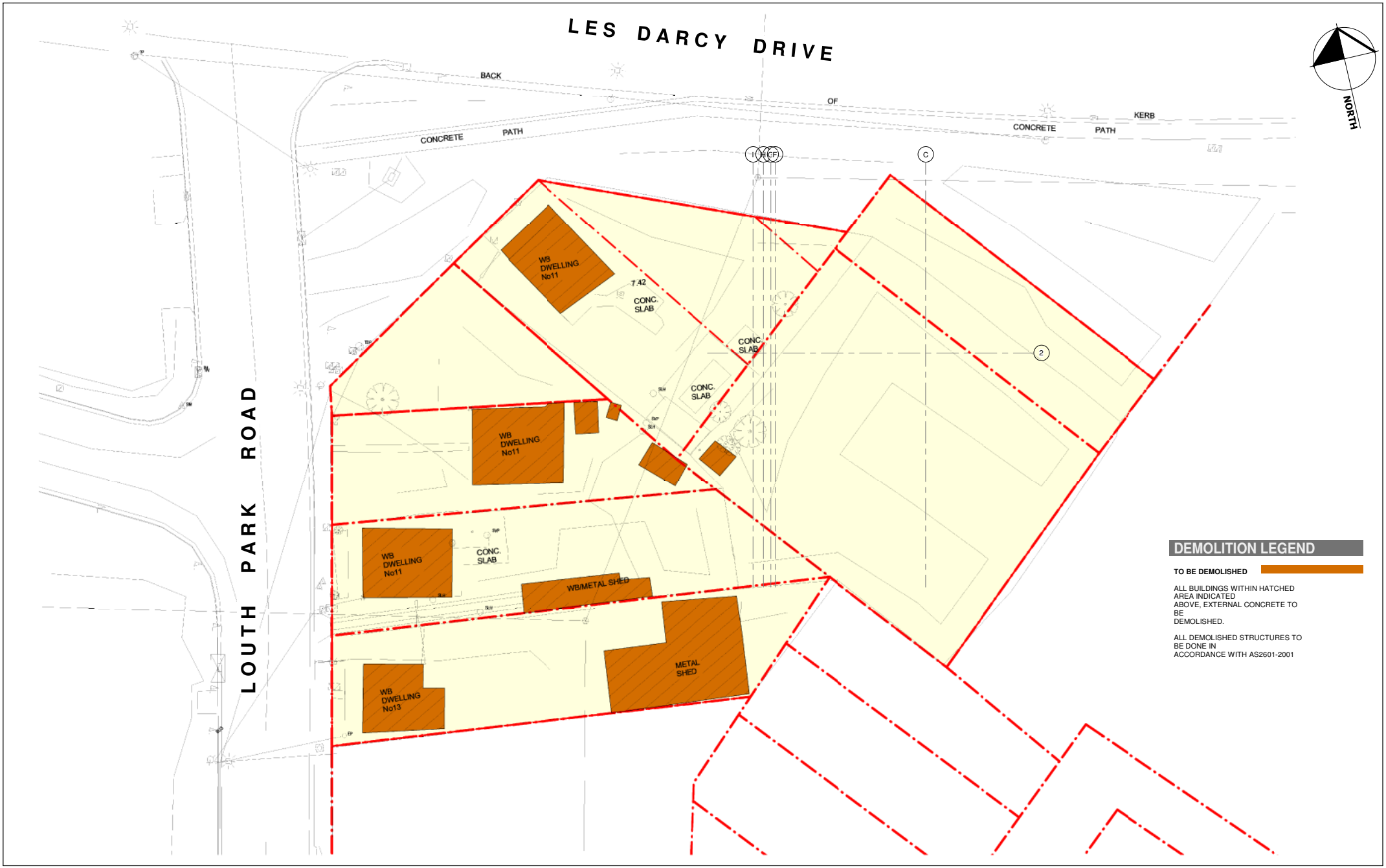

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Rev.	Description	Date	Issued by
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Project: SERVICE STATION AND TAKE AWAY

Sheet Title: DEMOLITION PLAN

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

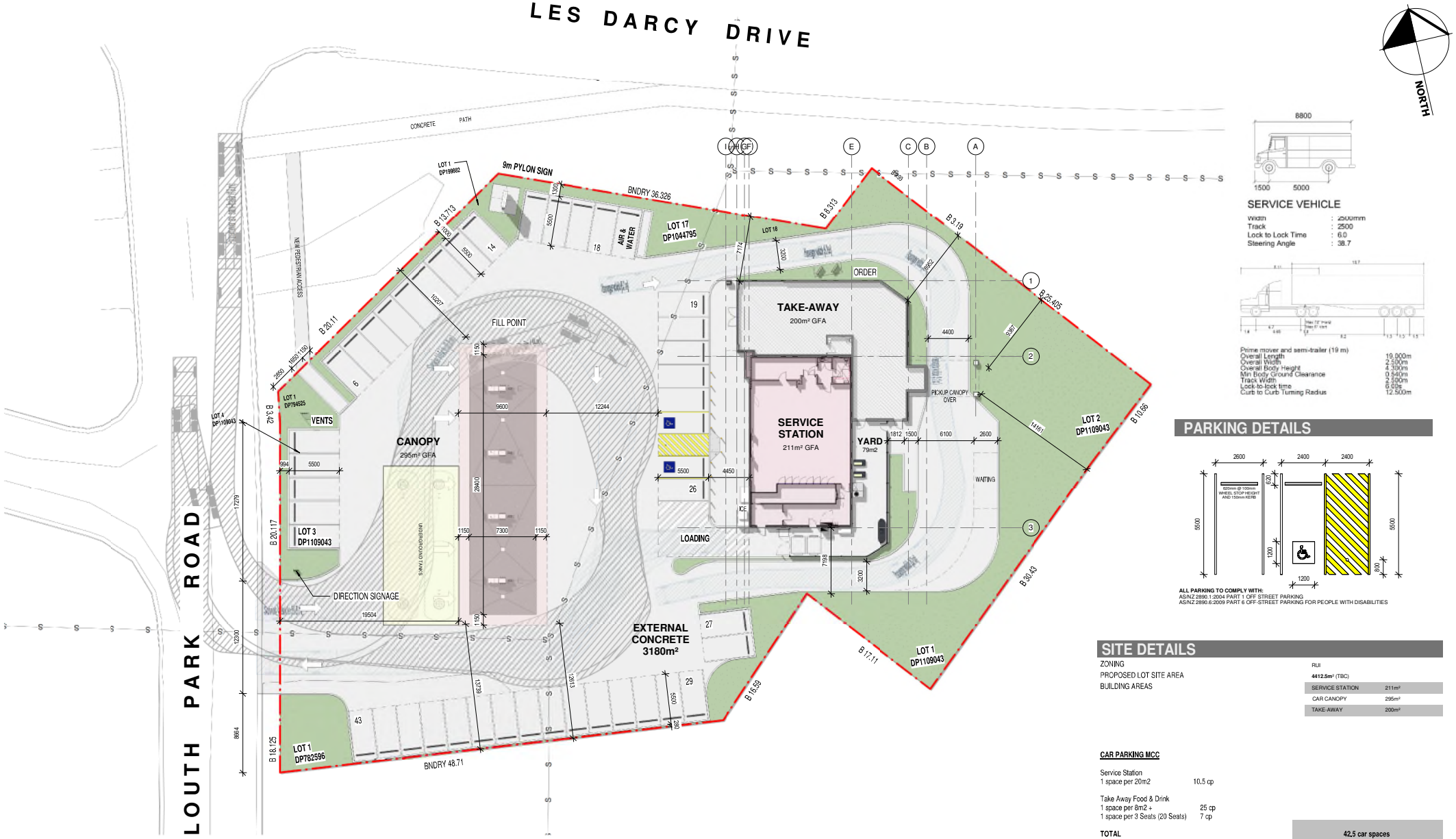
Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: As indicated on A1

Revision: 1

DWG No: 02



SERVICE VEHICLE

Width	: 2500mm
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

Prime mover and semi-trailer (19 m)

Overall Length	19.000m
Overal Width	2.500m
Overal 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

PARKING DETAILS

ALL PARKING TO COMPLY WITH:
AS/NZ 2890.1:2004 PART 1 OFF STREET PARKING
AS/NZ 2890.6:2009 PART 6 OFF-STREET PARKING FOR PEOPLE WITH DISABILITIES

SITE DETAILS

ZONING	RUI
PROPOSED LOT SITE AREA	4412.5m² (TBC)
BUILDING AREAS	

SERVICE STATION	211m²
CAR CANOPY	295m²
TAKE-AWAY	200m²

CAR PARKING MCC

Service Station	
1 space per 20m2	10.5 cp
Take Away Food & Drink	
1 space per 8m2 +	25 cp
1 space per 3 Seats (20 Seats)	7 cp
TOTAL	

42.5 car spaces

Off street car parking to comply with AS 2890.1 - 2004
Disability car parking to compy with AS2890.6 - 2009
Bicycle parking facilities to AS2890.3 1993

NOTE: VEHICLE SWEEP PATHS INDICATIVE ONLY. REFER TO ENGINEERS DETAIL

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1	DA APPLICATION	21.01.22	M.Marshall

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Project: SERVICE STATION AND TAKE AWAY
Sheet Title: SITE PLAN
Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

Client: MADE ARCHITECTURAL CONSTRUCTIONS
Project Status: DA APPLICATION
Scale: As indicated on A1
Revision: 1
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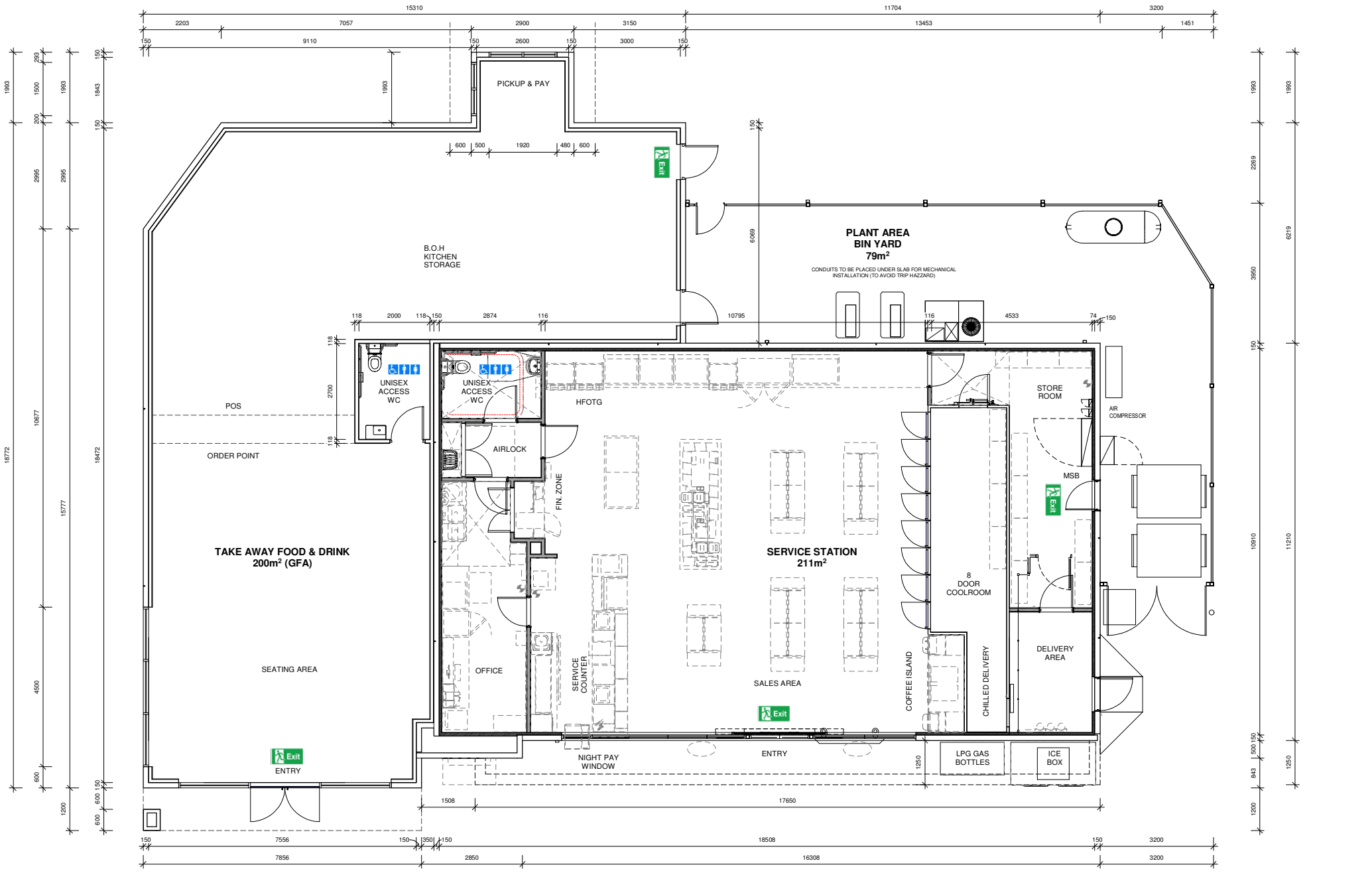

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Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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NOTES:
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2. Written dimensions take precedence over scaled ones

Project: SERVICE STATION AND TAKE AWAY

Sheet Title: BUILDNG FLOOR PLAN

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,791525,199882,1044795 **No:** 5 - 13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 50 on A1

Revision: 1

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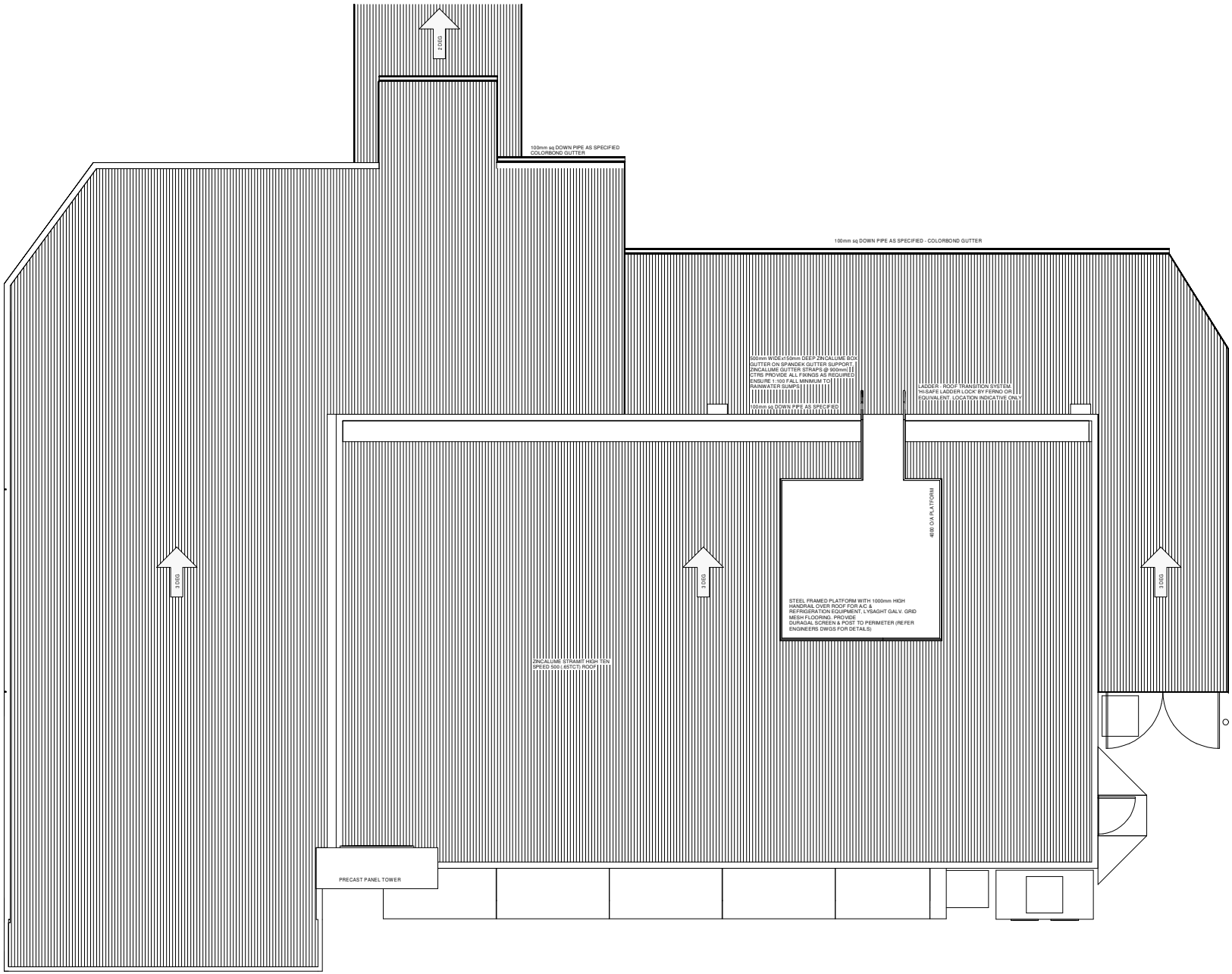

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1	DA APPLICATION	21.01.22	M.Marshall

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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 AND TAKE AWAY

Sheet Title: BUILDING ROOF PLAN

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,791525,199882,1044795 **No:** 5 - 13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

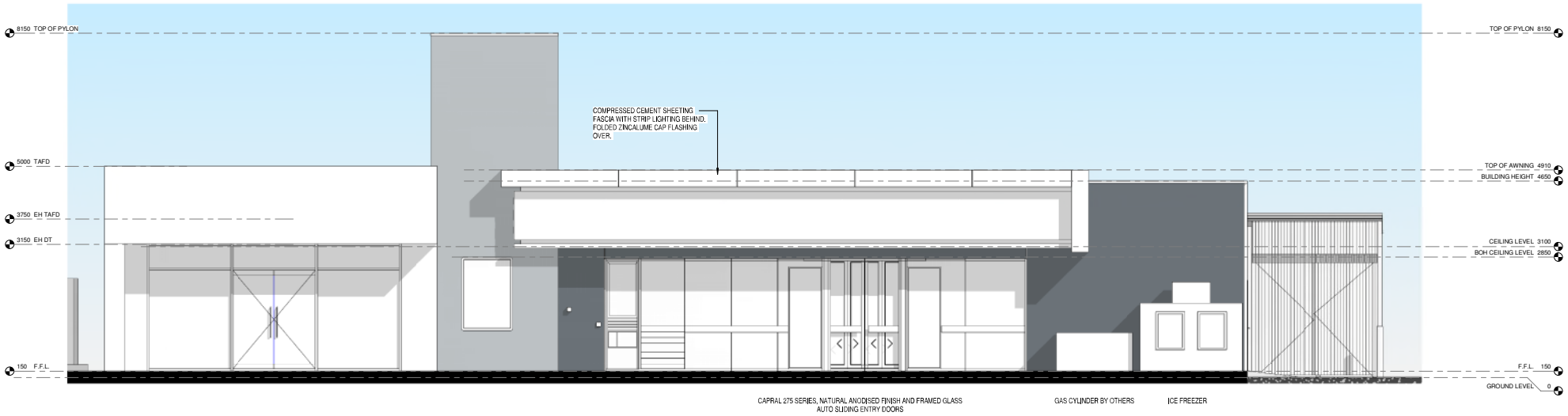
Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 50 on A1

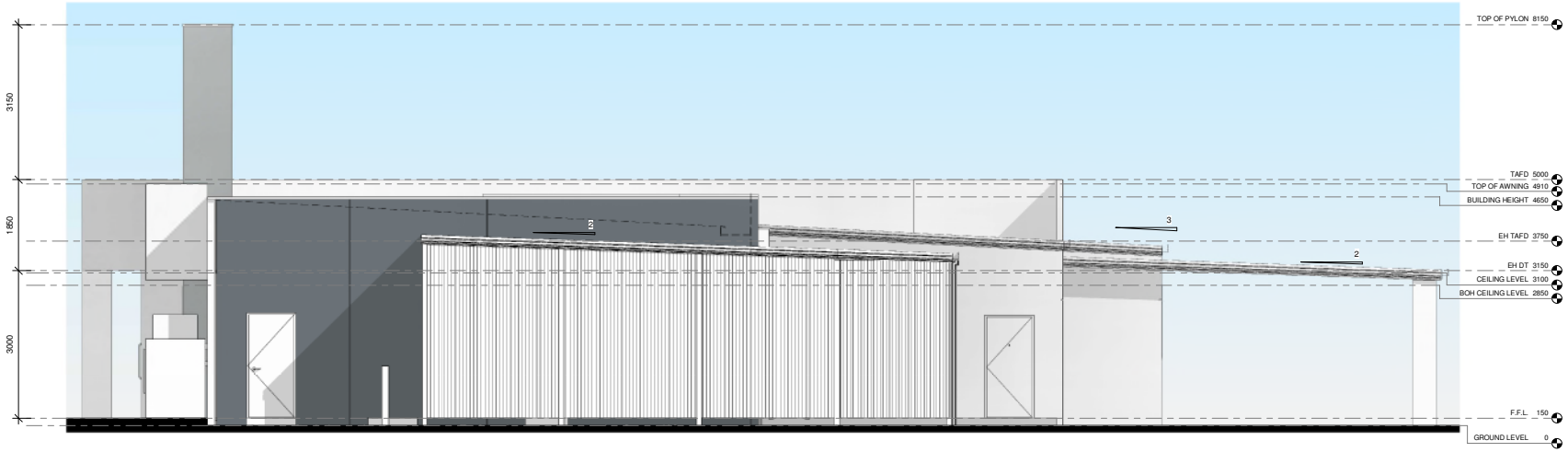
Revision: 1

DWG No: 05



1 WEST ELEVATION

1 : 50 (A1)



2 SOUTH ELEVATION

1 : 50 (A1)

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1	DA APPLICATION	21.01.22	M.Marshall

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 AND TAKE AWAY

Sheet Title: BUILDING ELEVATIONS

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,791525,199882,1044795 **No:** 5 - 13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 50 on A1

Revision: 1

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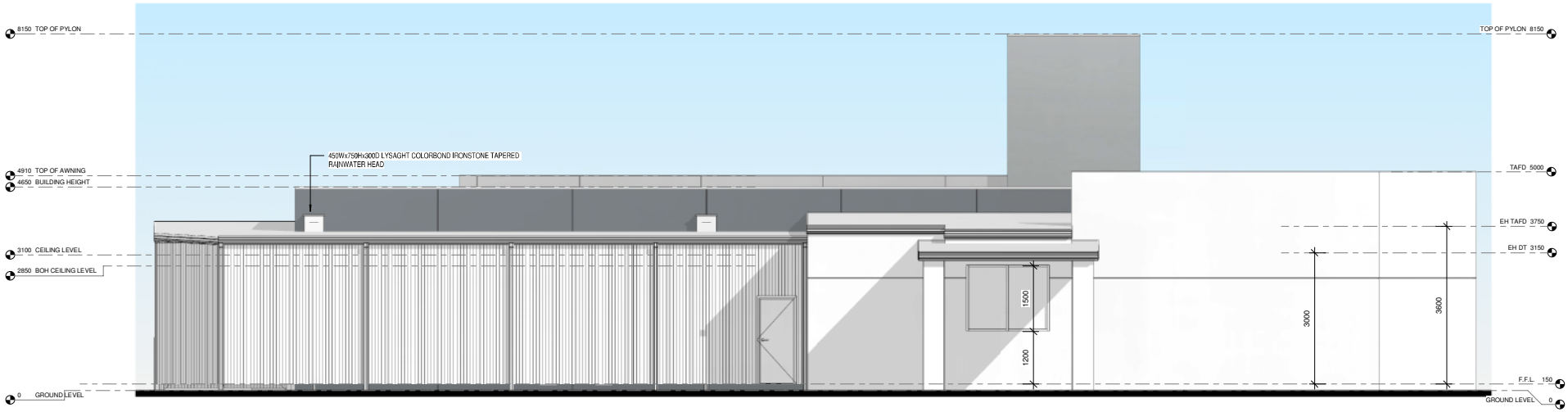
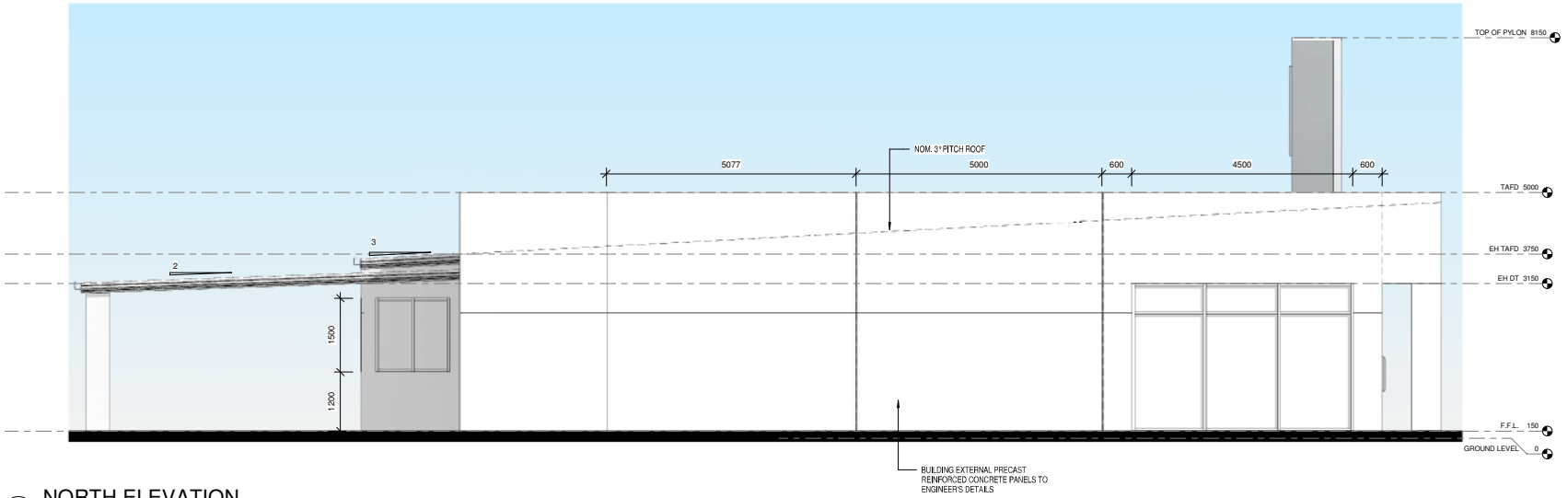


1 EAST ELEVATION

1 : 50 (A1)



2 NORTH ELEVATION

1 : 50 (A1)

MADE.

Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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 AND TAKE AWAY

Sheet Title: BUILDING ELEVATIONS

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,791525,199882,1044795 **No:** 5 - 13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

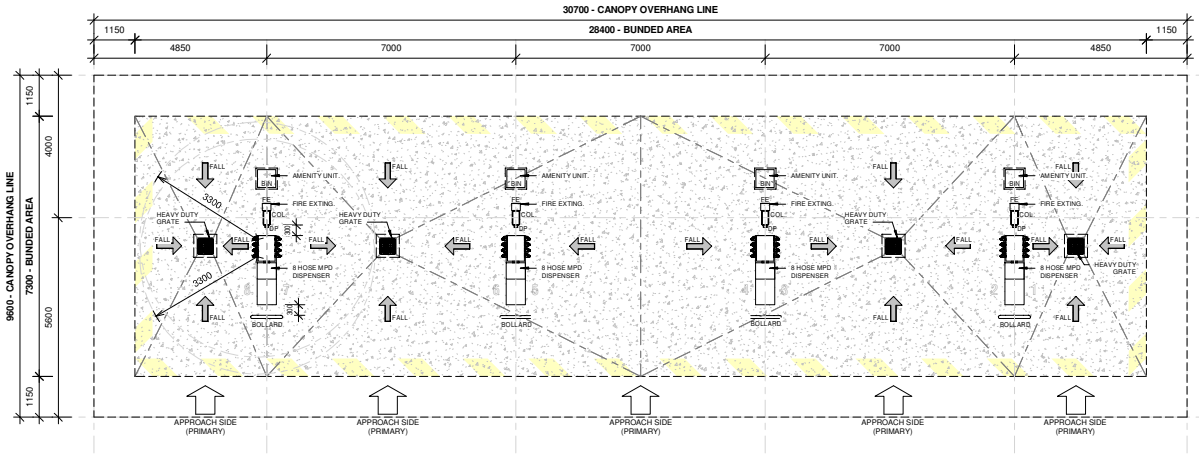
Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 50 on A1

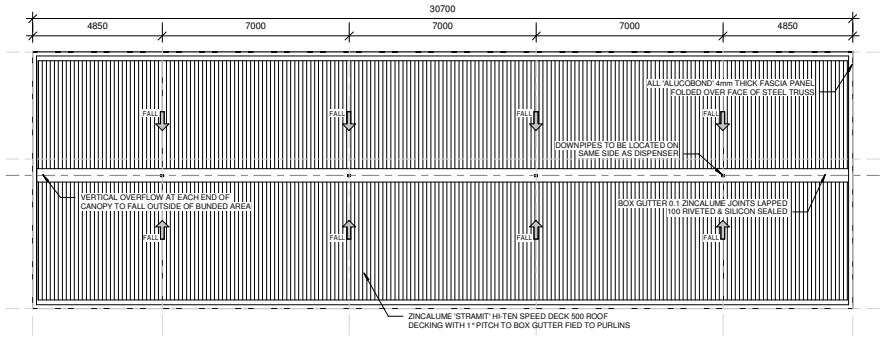
Revision: 1

DWG No: 07



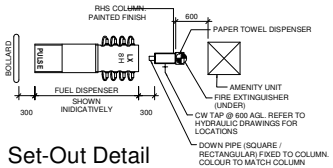
1 CANOPY FLOOR PLAN

1 : 75 (A1)



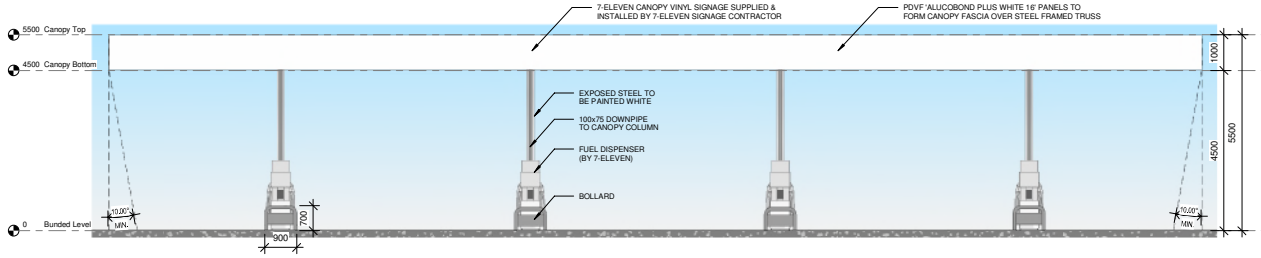
7 CANOPY ROOF PLAN

1 : 100(A1)



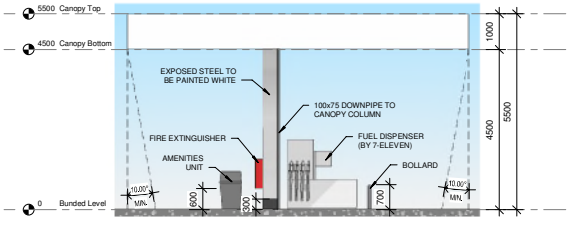
9 Set-Out Detail

1 : 50 (A1)



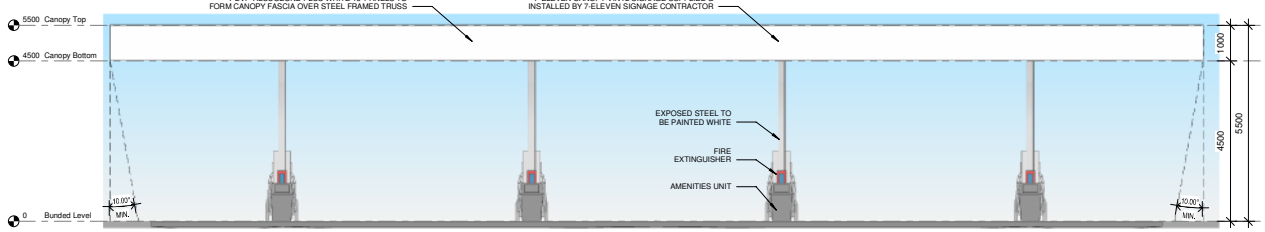
2 West Elevation

1 : 75 (A1)



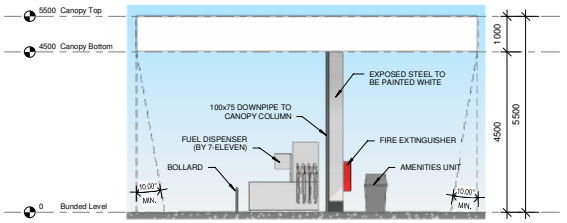
4 North Elevation

1 : 75 (A1)



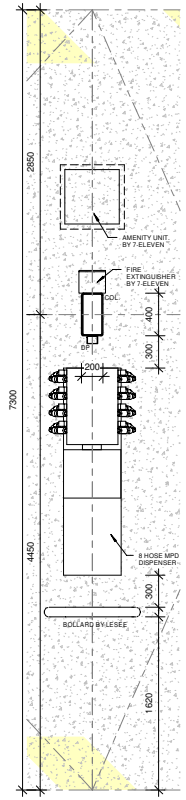
3 East Elevation

1 : 75 (A1)



5 South Elevation

1 : 75 (A1)



6 DISPENSER DETAIL

1 : 25 (A1)

MADE.

Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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 & TAKE AWAY FOOD

Sheet Title: CANOPY PLAN, ELEVATIONS

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

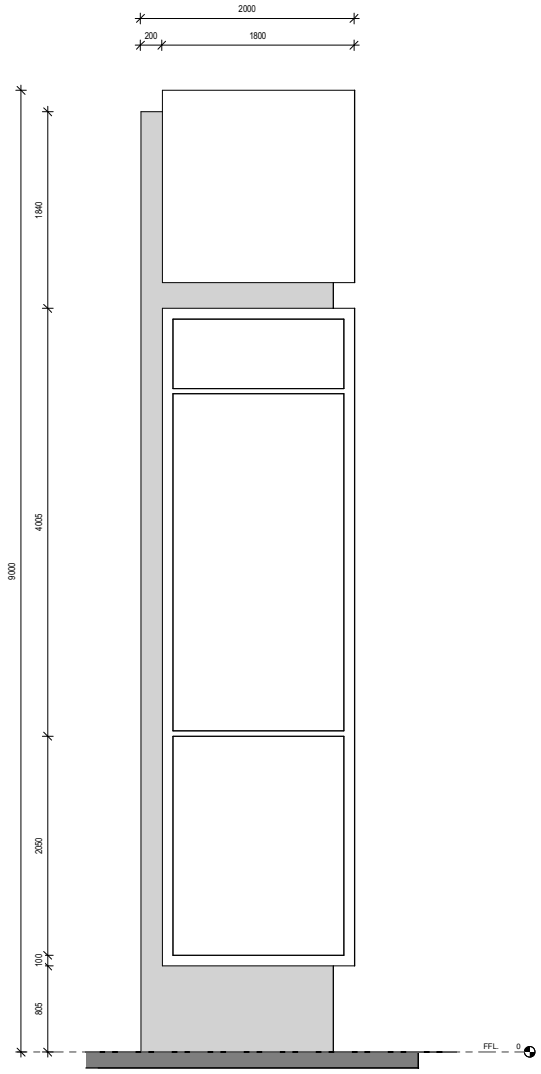
Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: As indicated on A1

Revision: 1

DWG No: 8



PYLON SIGN
1 : 25

MADE.

Rev.	Description	Date	Issued by
1	DA APPLICATION	21.01.22	M.Marshall

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 AND TAKE AWAY

Sheet Title: SIGNAGE

Project No: BC0119

Lot: 1,2,3,4,6,17 **DP:** 782596,1109043,794525,199882,1044795 **No:** 5-13 **Street:** LOUTH PARK ROAD **Suburb:** SOUTH MAITLAND

Client: MADE ARCHITECTURAL CONSTRUCTIONS

Project Status: DA APPLICATION

Scale: 1 : 25 on A1

Revision: 1

DWG No: 09

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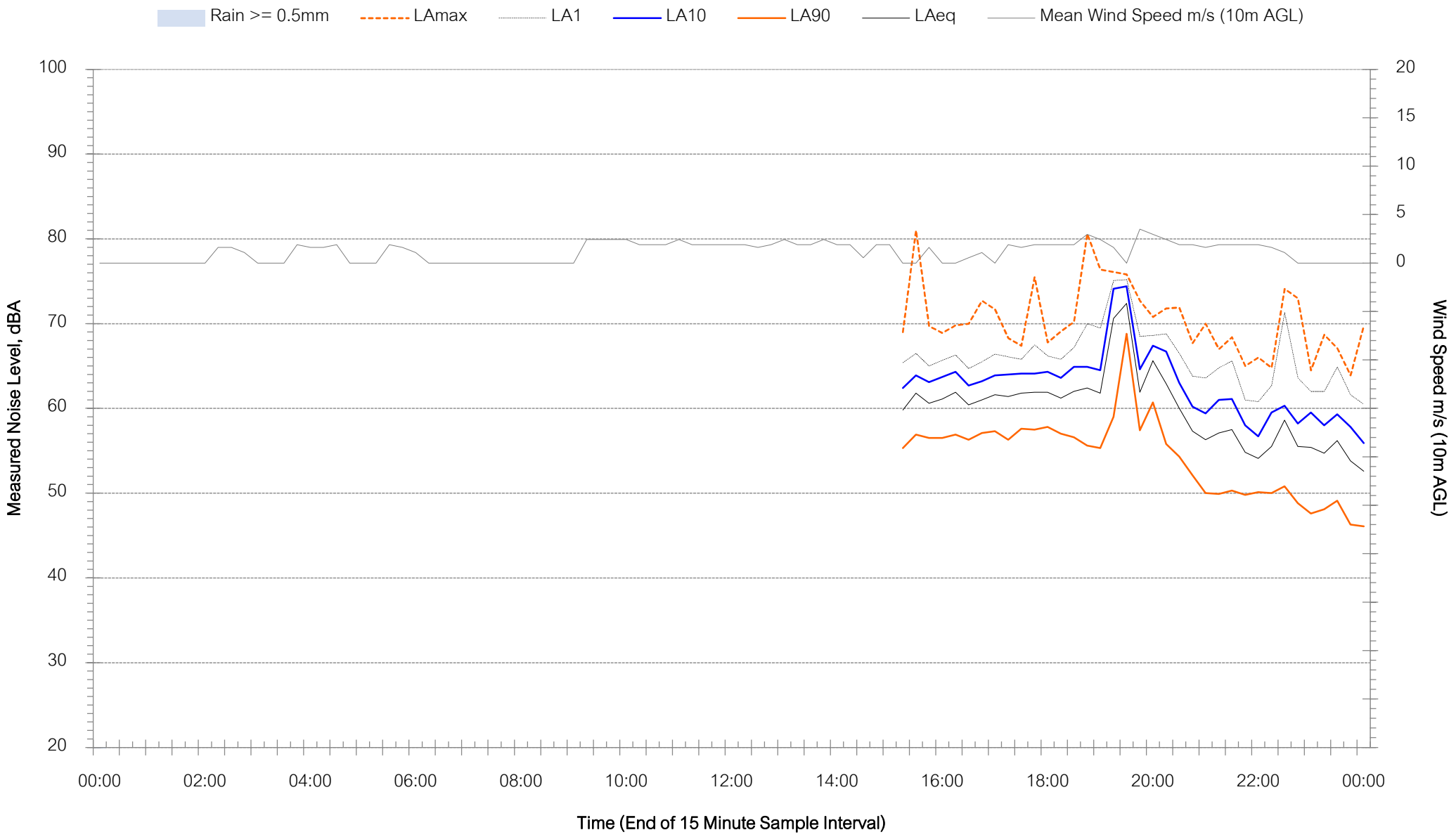
Appendix C – Noise Monitoring Charts

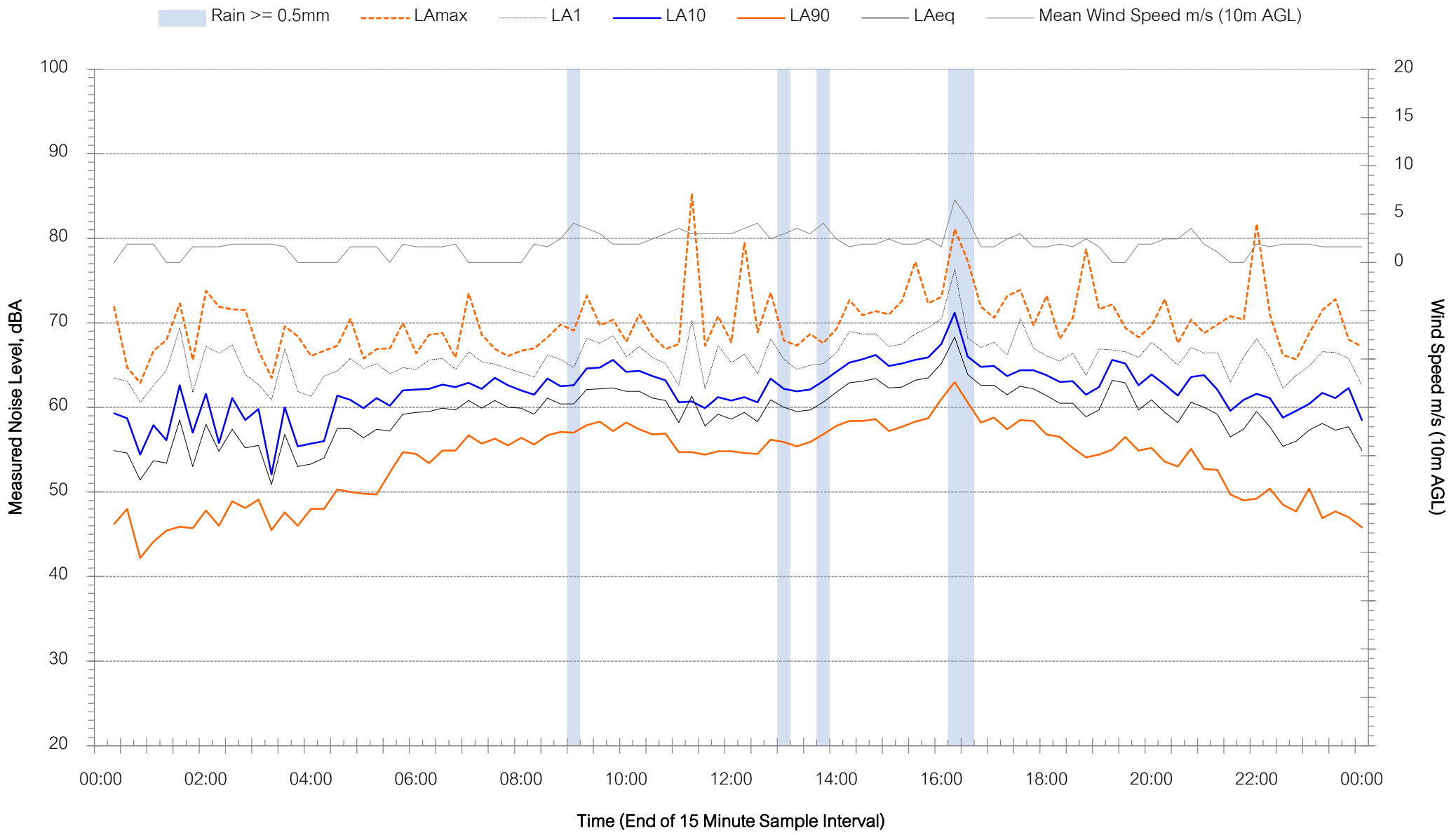
Background Noise Levels

9 Louth Park Road, South Maitland - Monday 28 March 2022



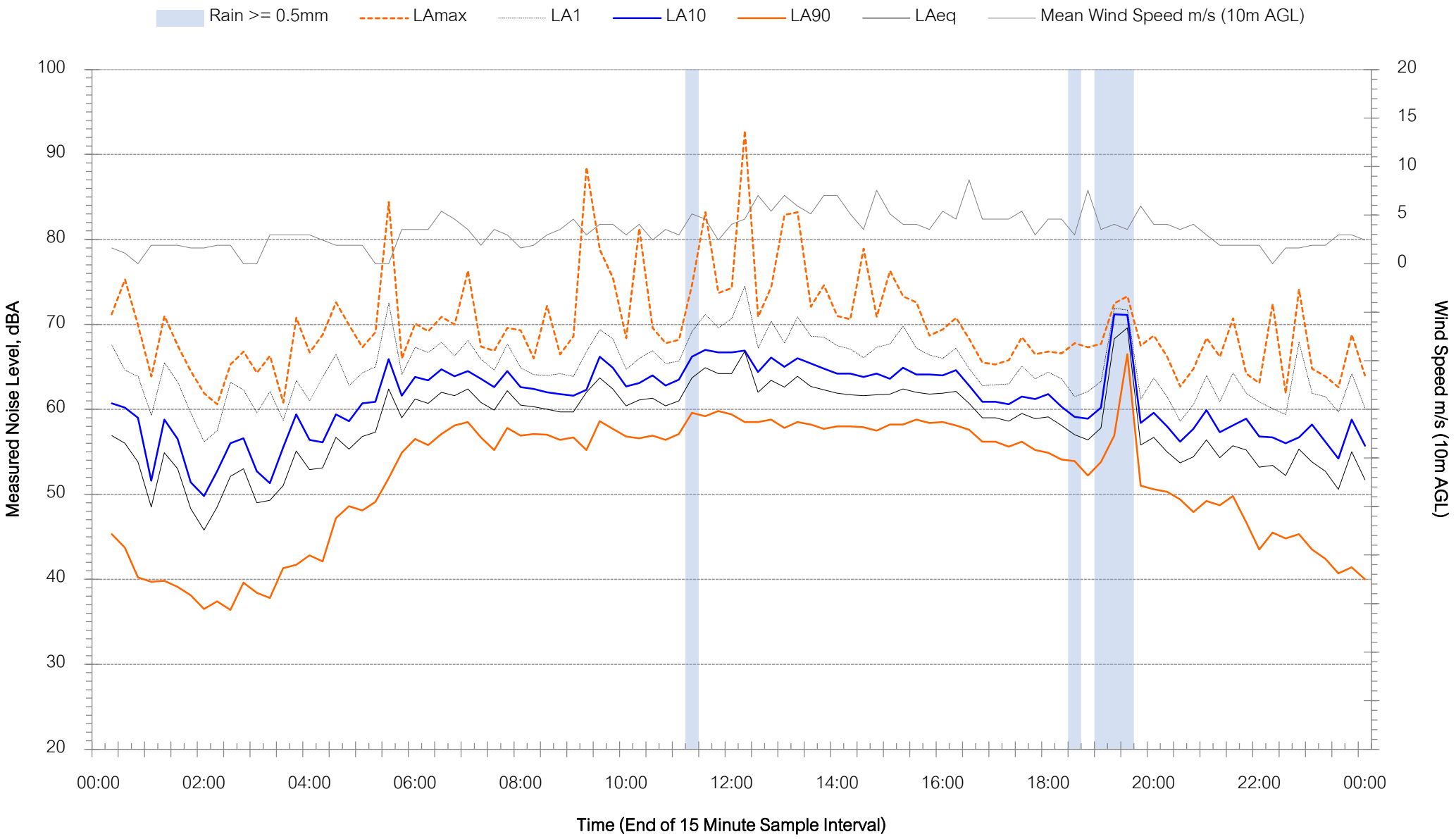
Background Noise Levels

9 Louth Park Road, South Maitland - Tuesday 29 March 2022



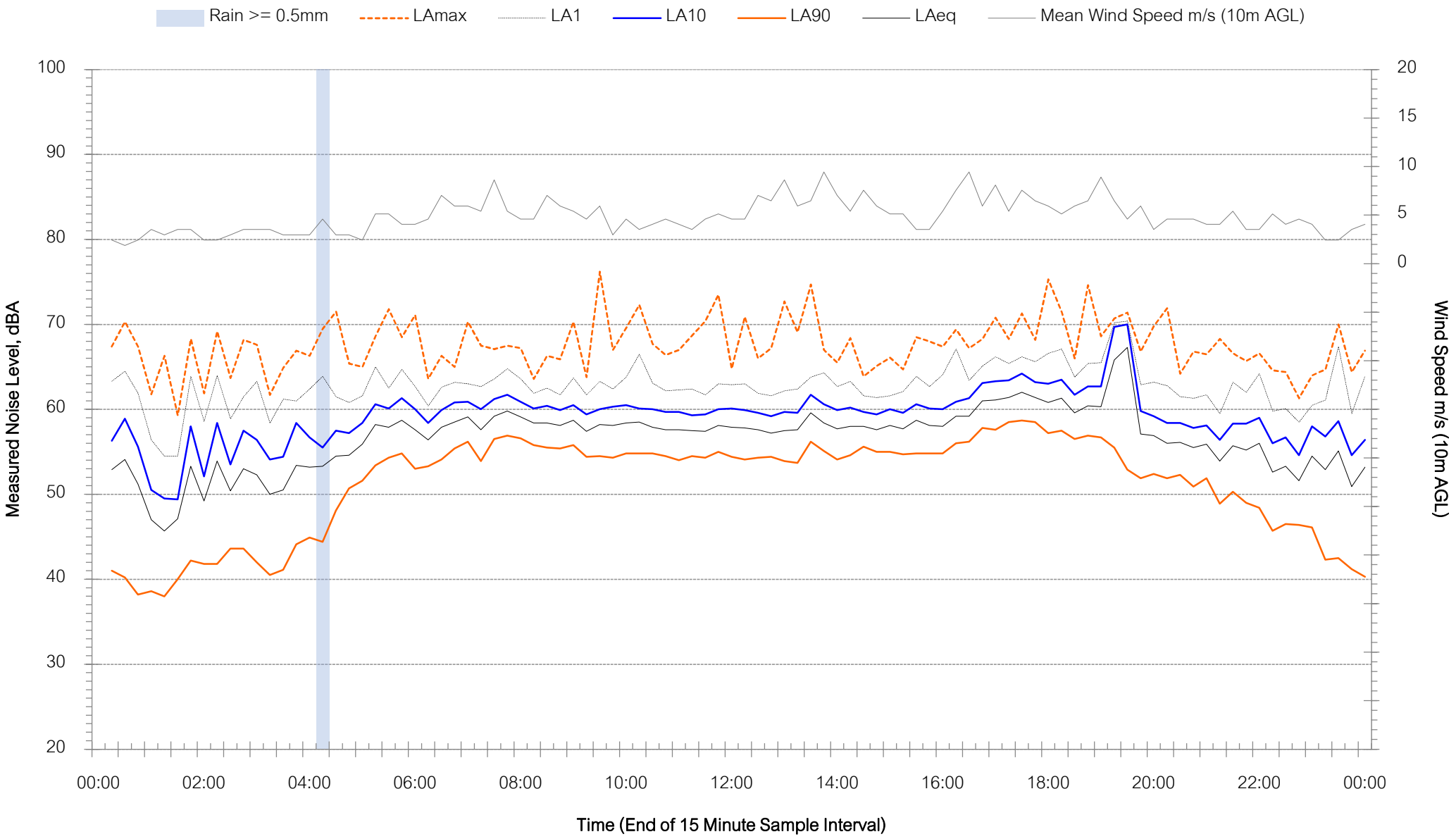
Background Noise Levels

9 Louth Park Road, South Maitland - Wednesday 30 March 2022



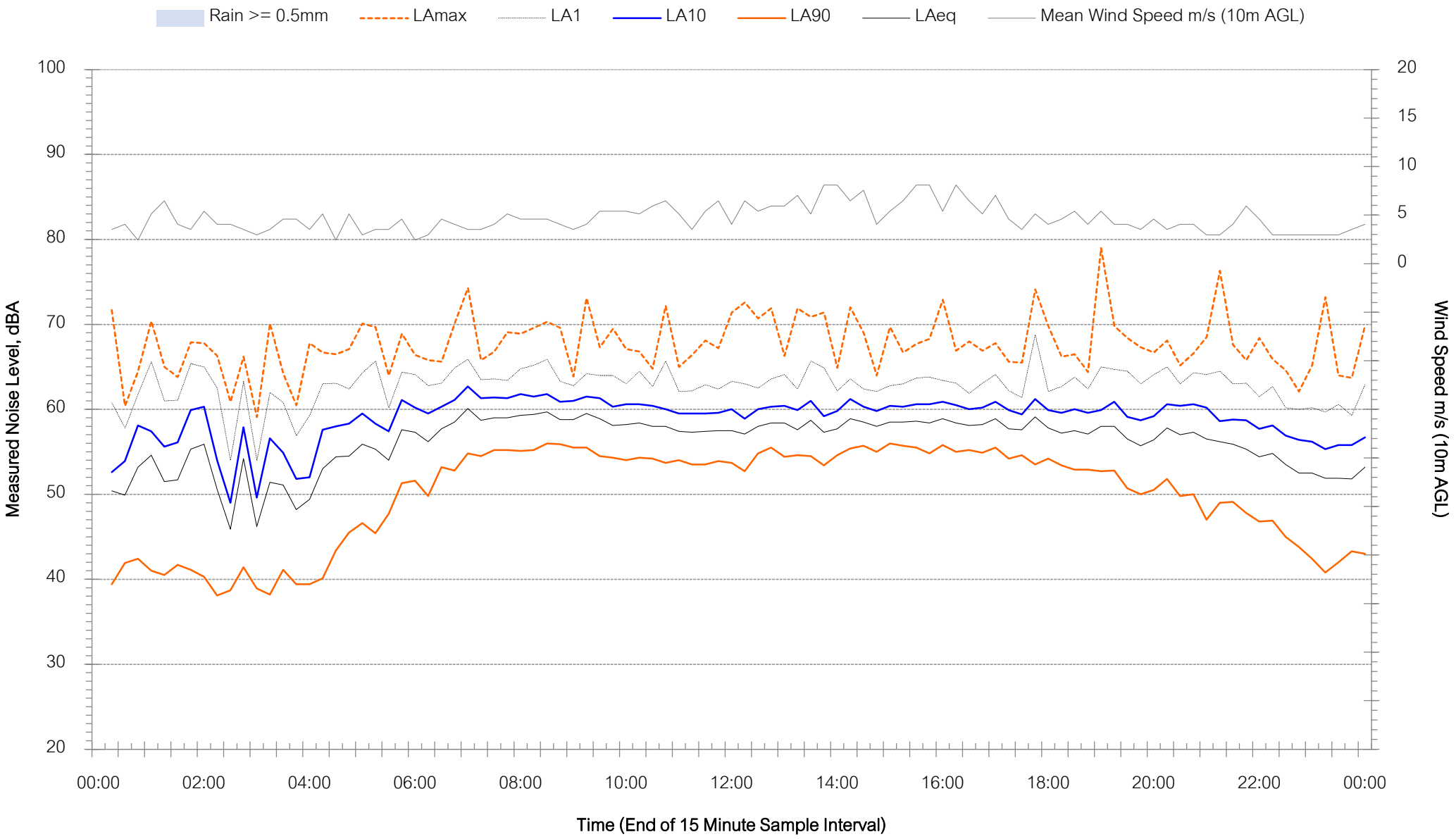
Background Noise Levels

9 Louth Park Road, South Maitland - Thursday 31 March 2022



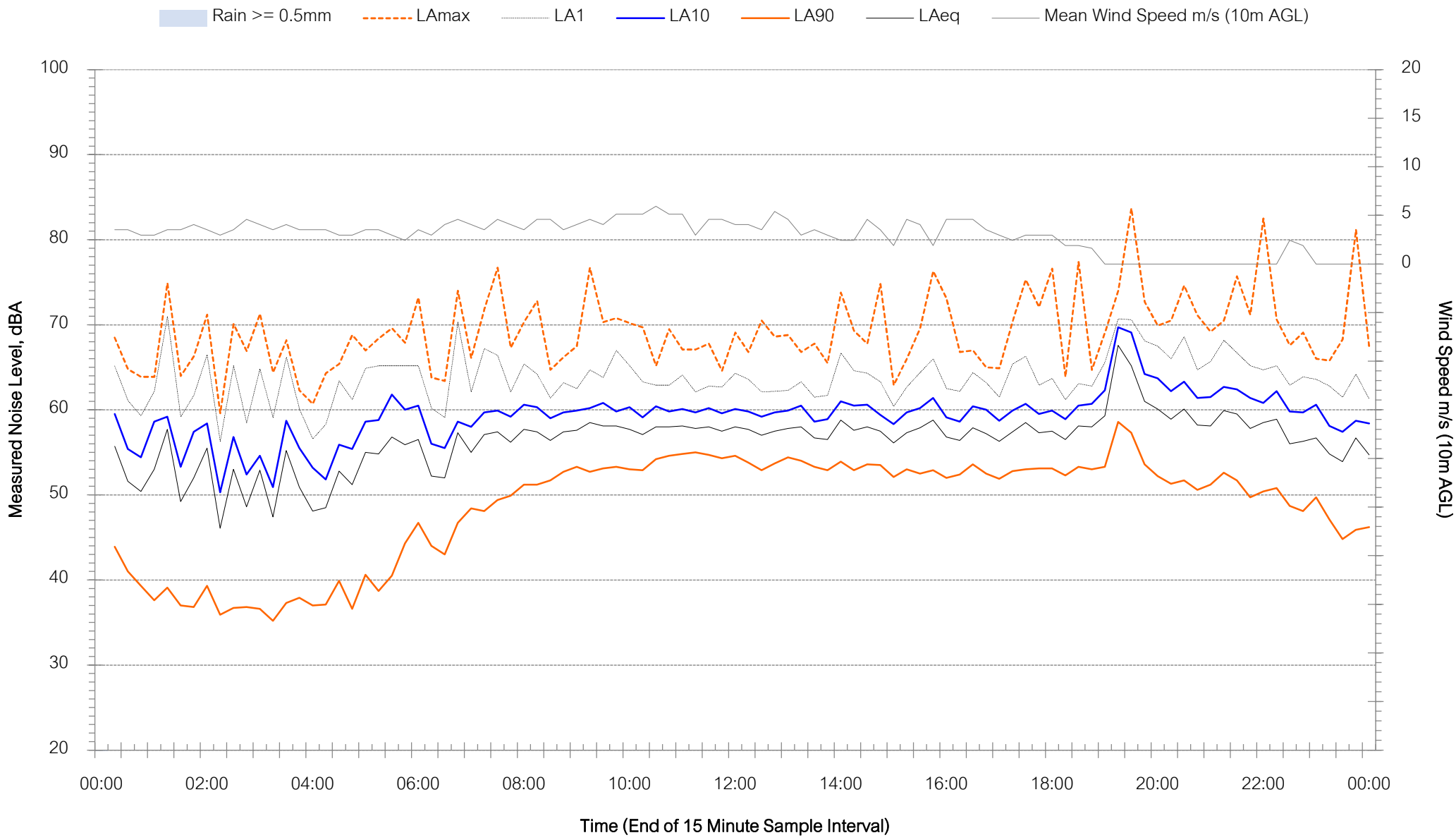
Background Noise Levels

9 Louth Park Road, South Maitland - Friday 1 April 2022



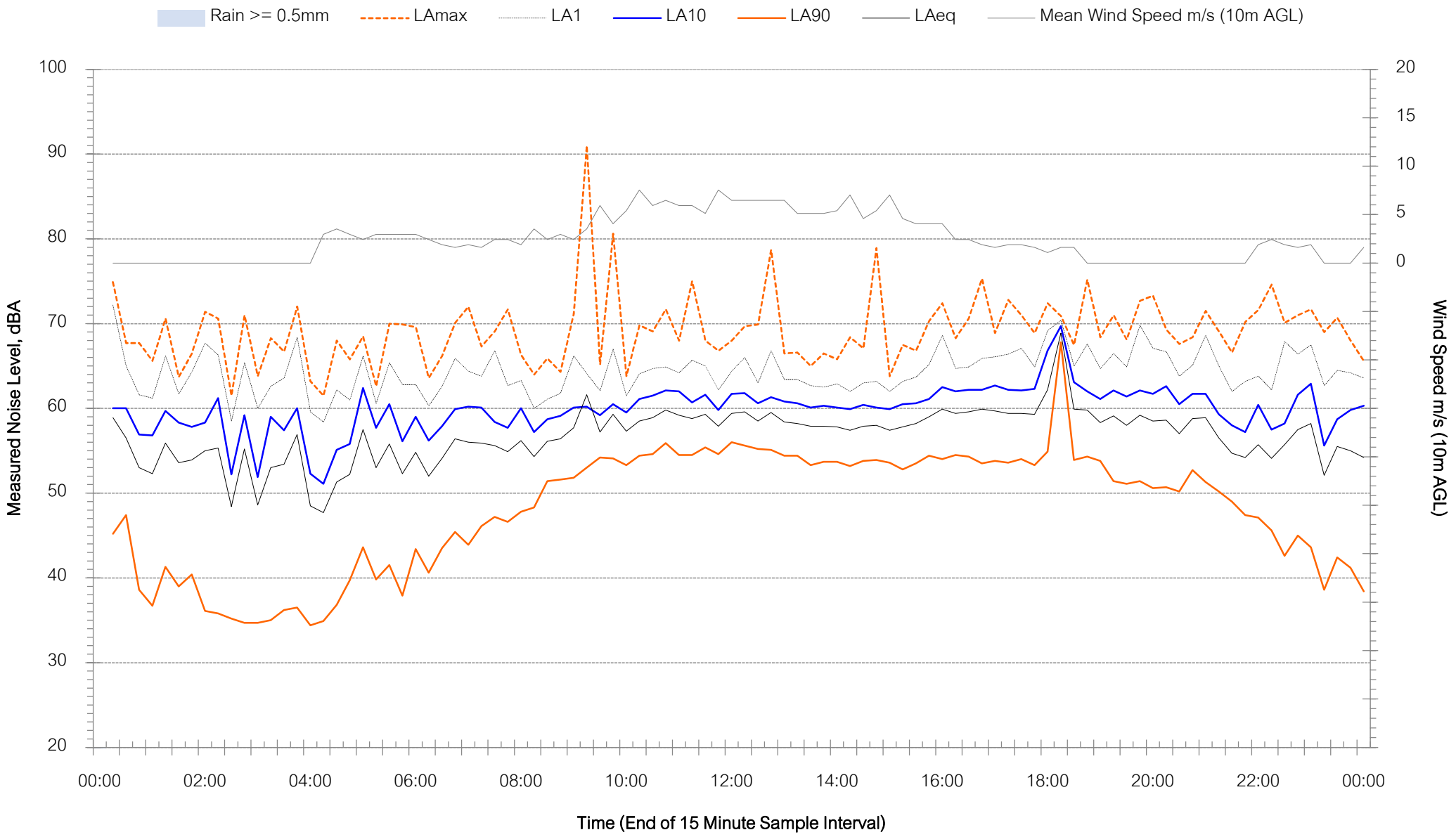
Background Noise Levels

9 Louth Park Road, South Maitland - Saturday 2 April 2022



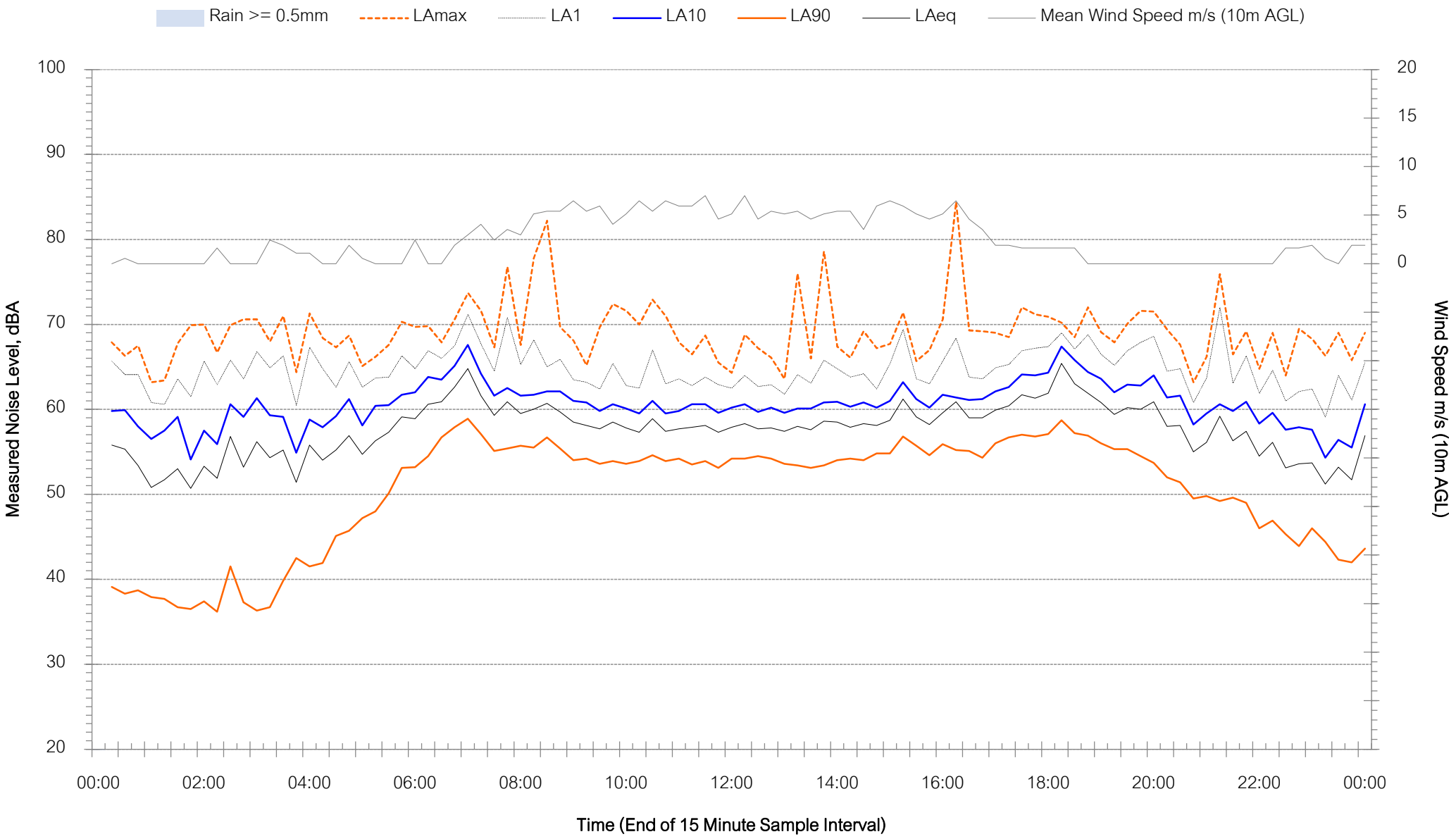
Background Noise Levels

9 Louth Park Road, South Maitland - Sunday 3 April 2022



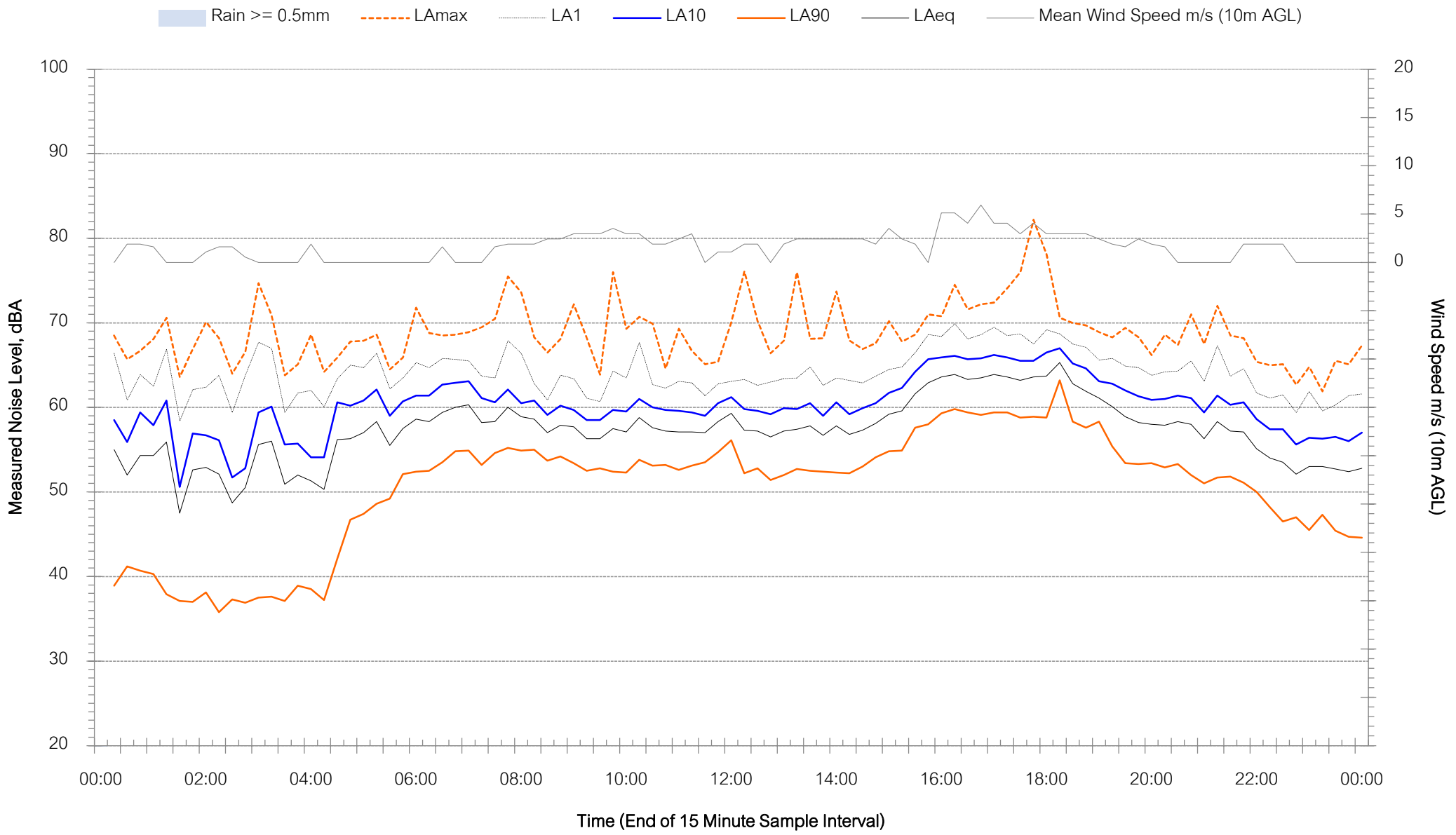
Background Noise Levels

9 Louth Park Road, South Maitland - Monday 4 April 2022



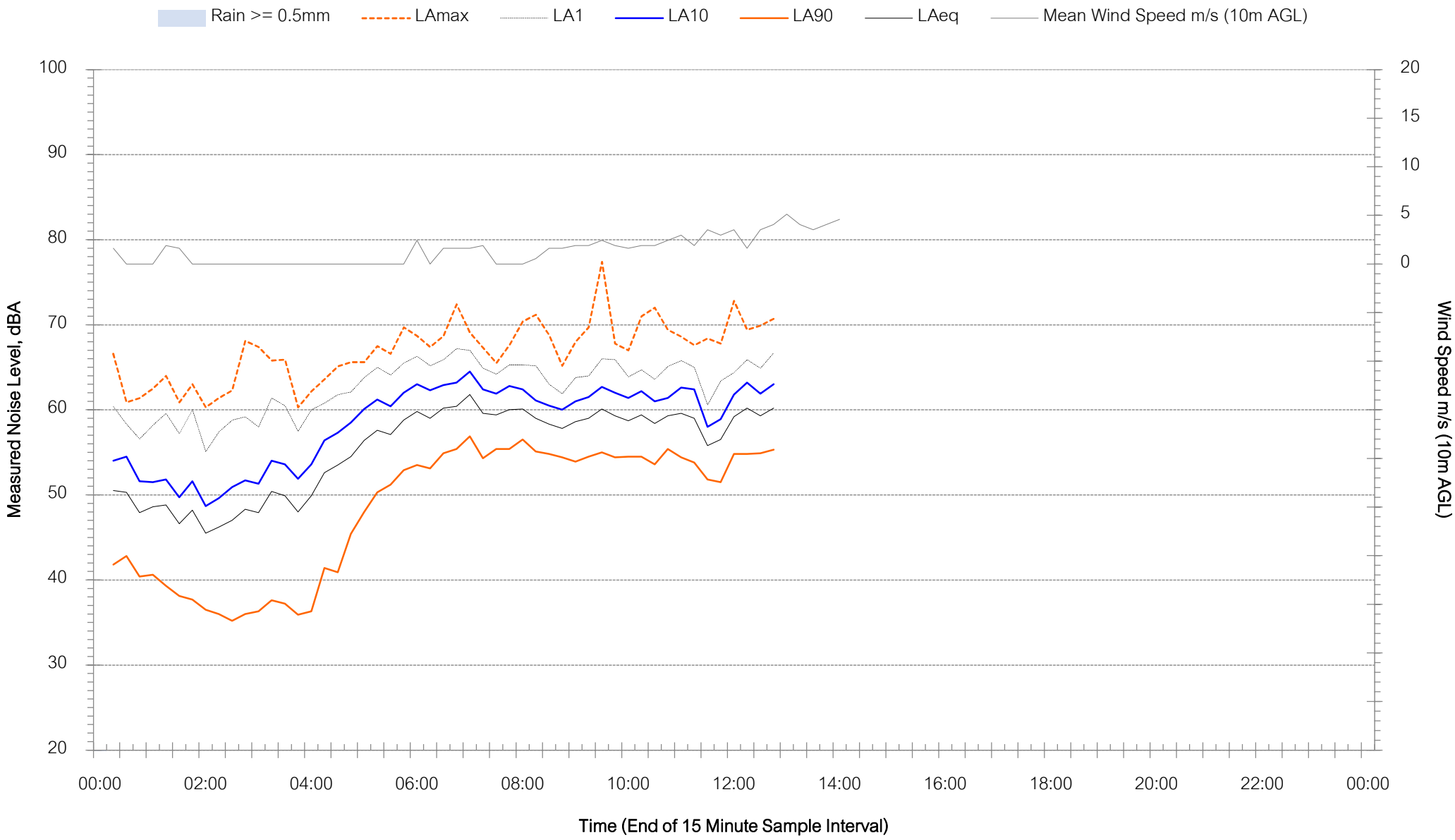
Background Noise Levels

9 Louth Park Road, South Maitland - Tuesday 5 April 2022



Background Noise Levels

9 Louth Park Road, South Maitland - Wednesday 6 April 2022



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