Noise Assessment

Proposed McDonald's Operation
4 Heritage Drive
Chisholm, NSW

Prepared for: McDonald's Australia Limited
December 2024
MAC242119-01RP1V2

Muller Acoustic Consulting

Document Information

Noise Assessment

Proposed McDonald's Operation

4 Heritage Drive

Chisholm, NSW

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by McDonald's Australia Limited (MCD) to prepare a Noise Assessment (NA) to quantify emissions from proposed McDonald's Operation (the operation) to be located at 4 Heritage Drive, Chisholm, 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's), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- Standards Australia AS/NZS IEC 61672:1-2019 (AS 61672) – Electro Acoustics - Sound Level Meters Specifications; 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 operation is to be located at 4 Heritage Drive, Chisholm, NSW, which is part of the Chisholm town centre precinct. The area surrounding the operation site comprises of residential, commercial and educational land uses. To the east and south of the operation site is the approved Chisholm shopping centre and with an educational receiver located on the far side of the shopping centre carpark. An additional educational receiver is located to the north of the operation, across the carpark and Tigerhawk Drive. The nearest existing residential receiver to the operation is approximately 240m to the south, however several future residential receivers have been considered to the east of the operation across Settlers Boulevard.

The ambient noise environment surrounding the proposed operation is dominated by educational noise from the surrounding schools and childcare centres and urban hum from the existing dwellings and noise from the construction of new dwellings. The operation will consist of a new building with two drive-thru lanes and car park spaces. The operation is proposed to operate 24 hours a day, seven days a week. **Appendix B** provides the site layout plans of the operation.

2.2 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 vehicles including drive thru and carpark operations	Morning Shoulder	✓
	Day	✓
	Evening	✓
	Night	✓
Mechanical plant	Morning Shoulder	✓
	Day	✓
	Evening	✓
	Night	✓
Truck consumable deliveries	Morning Shoulder	✓
	Day	✓
	Evening	✓
	Night	X
Waste collection	Morning Shoulder	✓
	Day	✓
	Evening	✓
	Night	X

Note 1: Morning Shoulder - the period from 5am to 7am; Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

2.2.1 Receiver Review

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

Table 2 Receiver Locations				
Receiver	Receiver Type	Receiver Height m	Coordinates (MGA56)	
			Easting	Northing
R01	Residential	1.5m	371941	6374979
R02	Residential	1.5m	371911	6374980
R03	Residential	1.5m	371807	6374906
R04	Residential	1.5m	371820	6374862
R05	Residential	1.5m	371825	6374843
R06	Residential	1.5m	371830	6374824
R07	Residential	1.5m	371835	6374809
R08	Residential	1.5m	371845	6374774
R09	Residential	1.5m	372157	6374593
R10	Residential	1.5m	372165	6374584
FR01	Future Residential	1.5m	372237	6374957
FR02	Future Residential	1.5m	372227	6374898
FR03	Future Residential	1.5m	372225	6374874
FR04	Future Residential	1.5m	372222	6374858
FR05	Future Residential	1.5m	372221	6374840
FR06	Future Residential	1.5m	372218	6374825
FR07	Future Residential	1.5m	372217	6374810
FR08	Future Residential	1.5m	372216	6374794
FR09	Future Residential	1.5m	372212	6374779
FR10	Future Residential	1.5m	372211	6374763
ED01	Educational	1.5m	372149	6374970
FED01	Future Educational	1.5m	372000	6374918
FC01	Future Commercial	1.5m	372157	6374822
FC02	Future Commercial	1.5m	372124	6374834

FIGURE 1

Locality Plan

MAC242119-01

Chisholm Mcdonalds

KEY

- Boundary
- Attended Logger
- Unattended Logger
- Receivers

0 20 40 60 80 100 m

N

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3 Noise Policy and Guidelines

3.1 Noise Policy for Industry

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

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

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

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

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

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

3.1.1 Project Noise Trigger Levels (PNTL)

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

3.1.2 Rating Background Level (RBL)

The Rating Background Level (RBL) is a 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.

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 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

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.

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.

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 in 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.

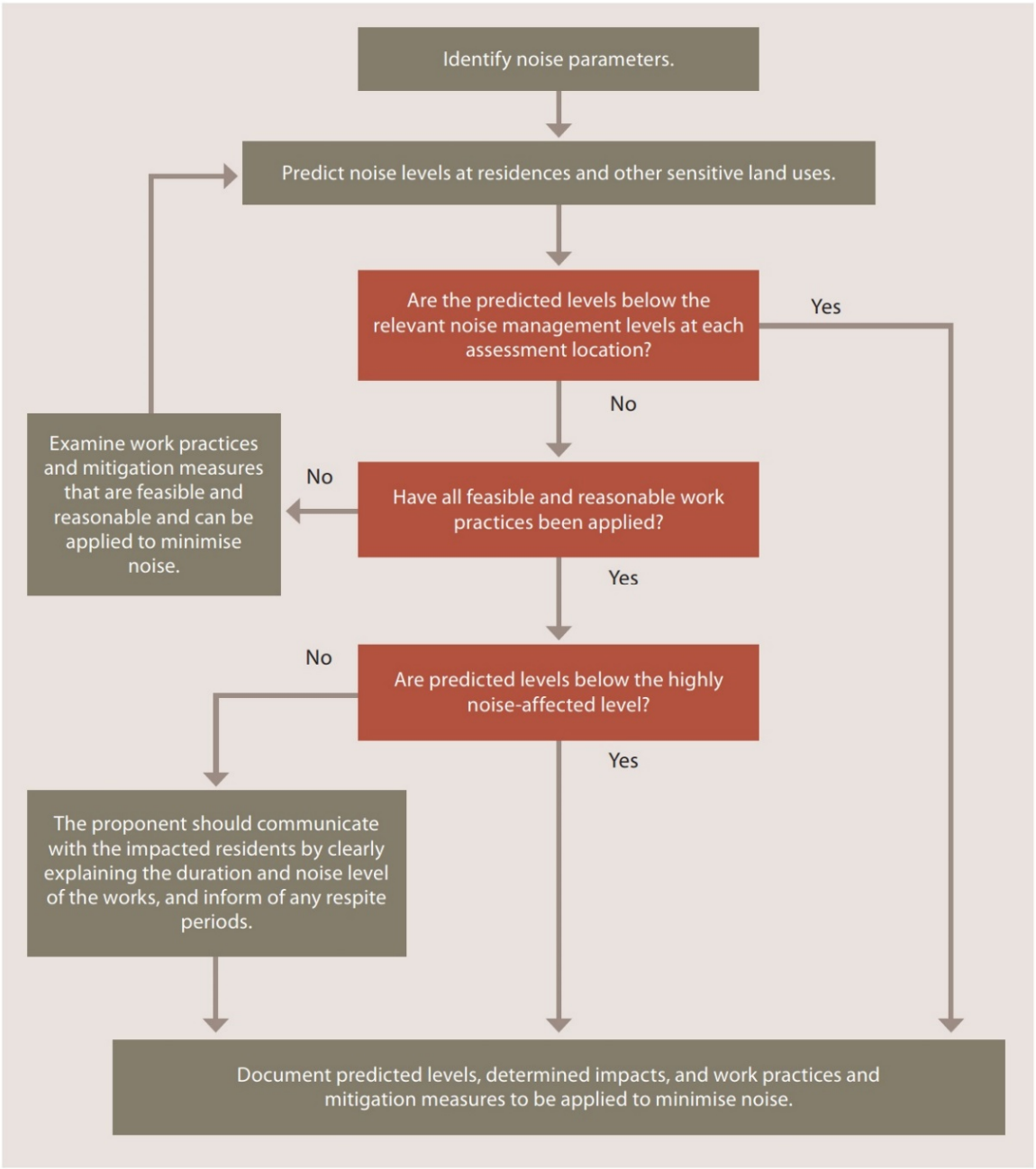
3.2 Interim Construction Noise Guideline

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:

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

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

Figure 2 Quantitative Assessment Processes for Assessing and Managing Construction Noise



Source: Department of Environment and Climate Change, 2009.

3.2.1 Standard Hours for Construction

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

Table 4 Recommended Standard Hours for Construction

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

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

3.2.2 Construction Noise Management Levels

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

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

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

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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 17 September 2024 to Thursday 26 September 2024. All acoustic instrumentation used carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022) and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA.

Observations on-site identified the surrounding locality was typical of a suburban environment, with traffic noise, children in school or childcare and construction noise audible.

Data affected by adverse meteorological conditions have been excluded from the results in accordance with methodologies provided in Fact Sheet A4 of the NPI. Residential receivers situated in the surrounding area have been classified under the EPA's suburban amenity category. This criterion is used in conjunction with the intrusiveness criteria to determine the limiting criteria. The results of long-term unattended noise monitoring are provided in **Table 6**. The measured daily ABLs for the background monitoring are provided in **Table C21** in **Appendix C** along with the daily noise monitoring charts.

Table 6 Background Noise Monitoring Summary

Monitoring Location	Period[1]	Measured Background Noise Level (LA90) dB RBL	Measured dB LAeq
L1	Morning Shoulder	35	49
	Day	38	55
	Evening	33	45
	Night	26	44

Note 1: Morning Shoulder -the period from 5am to 7am; 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 Paterson AWS (32.63°S 151.59°E 30m AMSL).

Note: Calibration certificates of the sound level meters used for this project are available on request.

4.2 Attended Noise Monitoring

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

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

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

The attended noise monitoring was conducted using one Svantek 971 noise analyser at the site (see **Figure 1**) on Tuesday 17 September 2024 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 7**.

Table 7 Operator-Attended Noise Survey Results

Date/Time (hrs)	Noise Descriptor (dBA re 20 µPa)			Meteorology	Description and SPL, dBA
	L_{Amax}	L_{Aeq}	L_{A90}		
17/09/2024 11:18	73	53	41	WD: NW WS: 0.5m/s Rain: Nil	Children in Childcare Centre 40-73 Traffic 43-60 Birds 40-51 Construction Noise 40-49

5 Assessment Criteria

5.1 Operational Noise Trigger Levels (Criteria)

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

5.1.1 Intrusiveness Noise Levels

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

Table 8 Project Intrusiveness Noise Levels

Location	Receiver Type	Period[1]	Measured RBL dB L_{A90}	Adopted RBL dB L_{A90}	PINL dB $L_{Aeq(15min)}$
L1	Residential	Morning Shoulder	35	35	40
		Day	38	38	43
		Evening	33	33	38
		Night	26	30[2]	35

Note 1: Morning Shoulder -the period from 5am to 7am; 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: As per NPI guidance, the minimum nighttime RBL is 30dBA.

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 9**. 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 9 Determination of NPI Residential Receiver Category

Receiver/Location/Catchment	Rural	Suburban	Urban
L1	2	10	0

Observations at locations in the surrounding locality support the assessment of the receiver as a suburban residential category.

5.1.3 Amenity Noise Levels and Project Amenity Noise Levels

The PANL for residential receivers and other receiver types (ie non-residential) potentially affected by the project are presented in **Table 10.**

Table 10 Amenity Noise Levels and Project Amenity Noise Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	NPI Recommended ANL dB $L_{Aeq(period)}$	ANL dB $L_{Aeq(period)}$[2]	PANL dB $L_{Aeq(15min)}$[3]
Residential	Suburban	Morning Shoulder	N/A	N/A	N/A
		Day	55	50	53
		Evening	45	40	43
		Night	40	35	38
Educational	All	When in use	35 (internal 1 hr)	30 (internal 1 hr)	33 (internal 1 hr) 43 (external 1 hr)[5]
Commercial	All	When in use	65	60	63

Note 1: Morning Shoulder - the period from 6am to 7am; 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.

Note 4: As per NPI guidance, shoulder periods are assessed on intrusiveness levels only.

Note 5: External level based on 10dB loss through partially open window.

5.1.4 Project Noise Trigger Levels

The PNTL are the lower of either the PINL or the PANL. **Table 11** presents the derivation of the PNTLs in accordance with the methodologies outlined in the NPI.

Table 11 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	Suburban	Morning Shoulder	40	N/A[2]	40
		Day	43	53	43
		Evening	38	43	38
		Night	35	38	35
Educational	All	Noisiest 1 hour period	N/A	33 (internal 1 hr) 43 (external 1 hr)	33 (internal 1 hr) 43 (external 1 hr)[3]
Commercial	All	When in Use	N/A	63	63

Note 1: Morning Shoulder - the period from 5am to 7am; 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: As per NPI guidance, shoulder periods are assessed on intrusiveness levels only.

Note 3: External level based on 10dB with windows open for adequate ventilation (NPI).

5.1.5 Maximum Noise Trigger Levels

The maximum noise trigger levels shown in **Table 12** 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 12 Maximum Noise Trigger Levels

NPI Residential Receivers (Night)			
$L_{Aeq(15min)}$		L_{Amax}	
40dB $L_{Aeq(15min)}$ or RBL + 5dB		52dB L_{Amax} or RBL + 15dB	
Trigger	40	Trigger	52
RBL +5dB	35	RBL +15dB	45
Highest	**40**	**Highest**	**52**
NPI Residential Receivers (Morning Shoulder)			
$L_{Aeq(15min)}$		L_{Amax}	
40dB LAeq(15min) or RBL + 5dB		52dB LAmax or RBL + 15dB	
Trigger	40	Trigger	40
RBL +5dB	40	RBL +5dB	52
Highest	**40**	**Highest**	**52**
RNP Residential Receivers			
$L_{Aeq(15min)}$		L_{Amax}	
N/A		65	

Note 1: Morning Shoulder - the period from 5am to 7am; 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 Management Levels

The relevant Noise Management Levels (NMLs) for standard construction hours are presented in **Table 13**.

Table 13 Construction Noise Management Levels

Catchment (No) Receiver ID	Assessment Period[1]	Adopted RBL dB LA_{90}	NML dB $L_{Aeq(15min)}$
Residential	Standard Hours	38	48 (RBL+10dBA)
Educational	When in use	N/A	45 (internal) 55 (external)[2]
Commercial Premises	When in use	N/A	70 (external)

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

Note 2: External level based on 10dB with windows open for adequate ventilation (ICNG).

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6 Modelling Methodology

A computer model was developed to quantify project noise emissions to neighbouring receivers using DGMR (iNoise, Version 2024.1) noise modelling software. iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

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

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

6.1 Mitigation Included in Design and Noise Control Recommendations

The noise model incorporated the following recommendations and noise controls:

- the project is constructed as per the site design and plans (as presented in **Appendix B**) which includes the barrier attenuation provided by the project buildings orientation;
- the mechanical air conditioning (AC) plant is located on the plant deck of the operation which is surrounded by the roof parapet and extends a minimum of 100mm above level of the highest item of plant; and
- it is assumed there is a 50% reduction in onsite cars during the night period.

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

6.2 Sound Power Levels

Table 14 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. Only high front-loading waste trucks have been considered as part of this assessment.

Table 14 Acoustically Significant Sources – Sound Power Levels dBA *(re 10^{-12} Watts)*

Item and quantity (per 15 minutes)	Sound Power Level dB LAeq	Total Sound Power Level dB LAeq(15min)	Source Height[1]
Operation			
MCD Fan 01 GUEEC28V (x1)	72	72	0.3m
MCD Fan 02 CDG354 (x1)	73	73	0.8m
MCD Fan 03 CDG354 (x1)	73	73	0.8m
MCD Fan 04 CDG404 (x1)	77	77	0.8m
MCD Fan 05 CEEC25D (x1)	66	66	0.2m
MCD Fan 06 CE356 (x1)	63	63	0.4m
MCD Fan 07 PUE354ER (x1)	64	64	0.3m
MCD Fan 08 AP0716BP7 (x1)	77	77	0.4m
MCD AC Plant PKY700T (x1)	81	81	1.6m
MCD AC Plant PKY500T (x1)	80	80	1.6m
Cold Room Condenser (x2)	75	78	0.5m
Customer Ordering Displays (x2)	75	78	1.0m
Truck Deliveries (x1)[2]	87	87	1.0m
Waste Collection (x1)	86	86	2.5m
Car idle, start up and drive off (x15)[3]	81	85	0.5m
Customers vehicles travelling through Car Park (15 cars per 15min)[3]	81	85	0.5m
Customers vehicles travelling through Drive-Thru (15 cars per 15min)[3]	81	85	0.5m
Sleep disturbance assessment (L_{Amax}), Night-time periods (10pm to 7am)			
Patron Yelling	92		1.0m
Car Door Slam	87		1.0m
Waste Impact	104		2.5m
Construction Fleet			
Combined Construction Fleet	108		1.5m

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

Note 2: Assumes an 8.8m medium rigid truck.

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

7 Noise Assessment Results

7.1 Operational Noise Assessment

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

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

Table 15 Operational Noise Predictions without Deliveries or Waste Collection – All Receivers

Residential Receivers

Receiver No	Predicted Noise Level dB $LA_{eq(15min)}$				PNTL dB $LA_{eq(15min)}$				Compliant
	MS	Day	Evening	Night	MS	Day	Evening	Night	
R01	<35	<35	<35	<35	40	43	38	35	✓
R02	<35	<35	<35	<35	40	43	38	35	✓
R03	<35	<35	<35	<35	40	43	38	35	✓
R04	<35	<35	<35	<35	40	43	38	35	✓
R05	<35	<35	<35	<35	40	43	38	35	✓
R06	<35	<35	<35	<35	40	43	38	35	✓
R07	<35	<35	<35	<35	40	43	38	35	✓
R08	<35	<35	<35	<35	40	43	38	35	✓
R09	<35	<35	<35	<35	40	43	38	35	✓
R10	<35	<35	<35	<35	40	43	38	35	✓
FR01	<35	<35	<35	<35	40	43	38	35	✓
FR02	<35	<35	<35	<35	40	43	38	35	✓
FR03	35	35	<35	35	40	43	38	35	✓
FR04	35	35	<35	35	40	43	38	35	✓
FR05	35	35	<35	35	40	43	38	35	✓
FR06	35	35	<35	35	40	43	38	35	✓
FR07	<35	<35	<35	<35	40	43	38	35	✓
FR08	<35	<35	<35	<35	40	43	38	35	✓
FR09	<35	<35	<35	<35	40	43	38	35	✓
FR10	<35	<35	<35	<35	40	43	38	35	✓

Other Receivers

Receiver No	Period	Predicted Noise Level dB $LA_{eq(15min)}$	PNTL dB $LA_{eq(15min)}$	Compliant
ED01	Noisiest 1 Hour	<35	43	✓
FED01	Noisiest 1 Hour	<35	43	✓
FC01	When in use	45	63	✓
FC02	When in use	44	63	✓

Note: Morning Shoulder - the period from 5am to 7am; 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.

Deliveries are expected to be undertaken once per day during the morning shoulder, day or evening periods by a medium rigid vehicle. These operations usually take less than a few minutes, although to present a conservative assessment, it has been assumed that it would take up 15 minutes. Fact Sheet C of the NPI allows for exceedance of the PNTL or adjustment of the PNTL for short term single events that may occur in any 24 hour period. Table C3 of the NPI allows an adjustment to the PNTL of +7dB for the daytime and evening periods, when the event is expected to occur. Results of the noise modelling predictions are presented in **Table 16** for operations with consumable good deliveries during all periods.

Table 16 Operational Noise Predictions with Consumable Goods Deliveries – All Receivers

Residential Receivers

Receiver No	Predicted Noise Level dB $L_{Aeq(15min)}$			PNTL dB $L_{Aeq(15min)}$			Compliant
	MS	Day	Evening	MS	Day	Evening	
R01	<35	<35	<35	42	50	45	✓
R02	<35	<35	<35	42	50	45	✓
R03	<35	<35	<35	42	50	45	✓
R04	<35	<35	<35	42	50	45	✓
R05	<35	<35	<35	42	50	45	✓
R06	<35	<35	<35	42	50	45	✓
R07	<35	<35	<35	42	50	45	✓
R08	<35	<35	<35	42	50	45	✓
R09	<35	<35	<35	42	50	45	✓
R10	<35	<35	<35	42	50	45	✓
FR01	37	37	37	42	50	45	✓
FR02	41	41	41	42	50	45	✓
FR03	42	42	42	42	50	45	✓
FR04	41	41	41	42	50	45	✓
FR05	36	36	36	42	50	45	✓
FR06	35	35	35	42	50	45	✓
FR07	<35	<35	<35	42	50	45	✓
FR08	<35	<35	<35	42	50	45	✓
FR09	<35	<35	<35	42	50	45	✓
FR10	<35	<35	<35	42	50	45	✓

Other Receivers

Receiver No	Period	Predicted Noise Level dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$	Compliant
ED01	Noisiest 1 Hour	36	50	✓
FED01	Noisiest 1 Hour	<35	50	✓
FC01	When in use	45	70	✓
FC02	When in use	44	70	✓

Note: Morning Shoulder - the period from 5am to 7am; 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.

Waste collections are expected to be undertaken once per day during the morning shoulder, day or evening periods. Waste collection usually takes several minutes, 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 during the morning shoulder period, when the event is expected to occur. Results of the noise modelling are presented in Table 17 for operations with waste collection.

Table 17 Operational Noise Predictions with Waste Collection – All Receivers

Residential Receivers

Receiver No	Predicted Noise Level dB $L_{Aeq(15min)}$			PNTL dB $L_{Aeq(15min)}$			Compliant
	MS	Day	Evening	MS	Day	Evening	
R01	<35	<35	<35	42	50	45	✓
R02	<35	<35	<35	42	50	45	✓
R03	<35	<35	<35	42	50	45	✓
R04	<35	<35	<35	42	50	45	✓
R05	<35	<35	<35	42	50	45	✓
R06	<35	<35	<35	42	50	45	✓
R07	<35	<35	<35	42	50	45	✓
R08	<35	<35	<35	42	50	45	✓
R09	<35	<35	<35	42	50	45	✓
R10	<35	<35	<35	42	50	45	✓
FR01	35	35	35	42	50	45	✓
FR02	39	39	39	42	50	45	✓
FR03	40	40	40	42	50	45	✓
FR04	40	40	40	42	50	45	✓
FR05	36	36	36	42	50	45	✓
FR06	36	36	36	42	50	45	✓
FR07	35	35	35	42	50	45	✓
FR08	<35	<35	<35	42	50	45	✓
FR09	<35	<35	<35	42	50	45	✓
FR10	<35	<35	<35	42	50	45	✓

Other Receivers

Receiver No	Period	Predicted Noise Level dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$	Compliant
ED01	Noisiest 1 Hour	36	50	✓
FED01	Noisiest 1 Hour	<35	50	✓
FC01	When in use	45	70	✓
FC02	When in use	44	70	✓

Note: Morning Shoulder - the period from 5am to 7am; 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 Maximum Noise Level Assessment

In assessing maximum noise events, typical LAmax noise levels from transient events were assessed at the nearest residential receivers. For the sleep disturbance assessment, a Sound Power Level of 87dBA for a car door slam and 92dBA for a customer yelling were adopted for maximum noise level (LAmax) events during the night period. Predicted noise levels from LAmax events for assessed receivers are presented in **Table 18** for the night period.

Table 18 Maximum Noise Level Assessment (Night)[1]

Rec	Predicted Noise Level				Trigger Level	
	dB LAmax				NPI	RNP
	Door Slam South	Door Slam North	Yell Entry	Yell COD	dB LAmax	dB LAmax
Residential Receivers						
R01	<35	<35	<35	<35	52	65
R02	<35	<35	<35	<35	52	65
R03	<35	<35	<35	<35	52	65
R04	<35	<35	<35	<35	52	65
R05	<35	<35	<35	<35	52	65
R06	<35	<35	<35	<35	52	65
R07	<35	<35	<35	<35	52	65
R08	<35	<35	<35	<35	52	65
R09	<35	<35	<35	<35	52	65
R10	<35	<35	<35	<35	52	65
FR01	<35	<35	<35	40	52	65
FR02	<35	36	<35	43	52	65
FR03	37	37	<35	45	52	65
FR04	38	36	<35	45	52	65
FR05	39	35	<35	44	52	65
FR06	39	<35	<35	42	52	65
FR07	39	<35	<35	36	52	65
FR08	37	<35	<35	<35	52	65
FR09	38	<35	<35	<35	52	65
FR10	37	<35	<35	<35	52	65

Note 1: Monday to Saturday; Night 10pm to 7am. On Sundays and Public Holidays Night 10pm to 8am.

The predicted maximum levels results show compliance with the maximum noise trigger levels for door slams, yelling at the COD and entry.

In assessing maximum noise events, typical LAmax noise levels from transient events were assessed at the nearest residential receivers. For the sleep disturbance assessment, a Sound Power Level of 87dBA for a car door slam and 92dBA for a customer yelling and 102dBA for a waste collection/delivery impact were adopted for maximum noise level (LAmax) events during the morning shoulder period. Predicted noise levels from LAmax events for assessed receivers are presented in **Table 19** for the morning shoulder period.

Table 19 Maximum Noise Level Assessment (Morning Shoulder)[1]

Rec	Predicted Noise Level				Trigger Level	
	dB LAmax				NPI	RNP
	Door Slam South	Door Slam North	Yell Entry	Waste/Delivery Impact	dB LAmax	dB LAmax
Residential Receivers						
R01	<35	<35	<35	38	52	65
R02	<35	<35	<35	37	52	65
R03	<35	<35	<35	38	52	65
R04	<35	<35	<35	41	52	65
R05	<35	<35	<35	41	52	65
R06	<35	<35	<35	39	52	65
R07	<35	<35	<35	39	52	65
R08	<35	<35	<35	<35	52	65
R09	<35	<35	<35	<35	52	65
R10	<35	<35	<35	<35	52	65
FR01	<35	<35	40	53	52	65
FR02	<35	36	43	58	52	65
FR03	37	37	45	58	52	65
FR04	38	36	45	58	52	65
FR05	39	35	44	57	52	65
FR06	39	<35	42	45	52	65
FR07	39	<35	36	40	52	65
FR08	37	<35	<35	37	52	65
FR09	38	<35	<35	<35	52	65
FR10	37	<35	<35	<35	52	65

Note: Morning Shoulder - the period from 6am to 7am; 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.

The predicted maximum level results show compliance with the maximum noise trigger levels for door slams, yelling at the entry. Maximum noise emissions levels from waste collection/delivery have the potential to be above the Maximum Noise Trigger Levels at several assessed receivers. Accordingly, in accordance with Section 2.5 of the NPI, a detail sleep disturbance assessment has been undertaken.

7.2.1 Detailed Sleep Disturbance 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 waste collection for the project site, they will occur once in a 24 hour period and are proposed to be undertaken during either the morning shoulder, day or evening assessment periods. Therefore, the maximum occurrence of high noise events from either event is once per 24 hours, 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 65dBA L_{Amax} sleep disturbance criteria from waste collection.

Accordingly, due to the low occurrence of these events occurring during the night period which are not predicted to be above the maximum level of 65dBA, the potential for sleep disturbance is considered negligible.

7.3 Construction Noise Assessment

Table 20 presents the results of modelled construction noise emissions. 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 20 Construction Noise Levels – All Receivers

Receiver	Period[1]	Predicted Noise Level dB $LA_{eq(15min)}$	Management Level dB $LA_{eq(15min)}$	Compliant
R01	Day	<35	48	✓
R02	Day	<35	48	✓
R03	Day	<35	48	✓
R04	Day	<35	48	✓
R05	Day	<35	48	✓
R06	Day	<35	48	✓
R07	Day	<35	48	✓
R08	Day	<35	48	✓
R09	Day	36	48	✓
R10	Day	38	48	✓
FR01	Day	44	48	✓
FR02	Day	49	48	X
FR03	Day	51	48	X
FR04	Day	52	48	X
FR05	Day	52	48	X
FR06	Day	52	48	X
FR07	Day	50	48	X
FR08	Day	49	48	X
FR09	Day	48	48	✓
FR10	Day	46	48	✓
ED01	Day	44	55	✓
FED01	Day	35	55	✓
FC01	Day	56	70	✓
FC02	Day	52	70	✓

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

8 Construction Recommendations

The results of the Noise Assessment demonstrate that levels during standard construction hours may be above the applicable ICNG Noise Management Levels at several of the nearest receivers in proximity to the operation. Accordingly, it is recommended that noise management and mitigation measures be adopted during noise intensive construction activities to limit impact on surrounding receivers.

Recommendations for consideration during construction activities for this operation 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 emissions from proposed McDonald's Operation (the operation) to be located at 4 Heritage Drive, Chisholm, 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 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 operation are implemented (see **Section 6.1**):

- the project is constructed as per the site design and plans (as presented in **Appendix B**) which includes the barrier attenuation provided by the project buildings orientation;
- the mechanical air conditioning (AC) plant is located on the plant deck of the operation which is surrounded by the roof parapet and extends a minimum of 100mm above level of the highest item of plant; and
- it is assumed there is a 50% reduction in onsite cars during the night period.

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

Sleep disturbance associated with transient event noise emissions from waste collection/delivery 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 which are not predicted to be above the maximum level of 65dBA, the potential for sleep disturbance is considered negligible.

Modelled noise emissions from construction activities identify that predicted noise emissions may be above the applicable construction management levels at several assessed receivers. Accordingly, noise management measures are provided in this report to reduce potential impacts on surrounding receivers.

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

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Appendix A – Glossary of Terms

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

Table A1 Glossary of Acoustical Terms

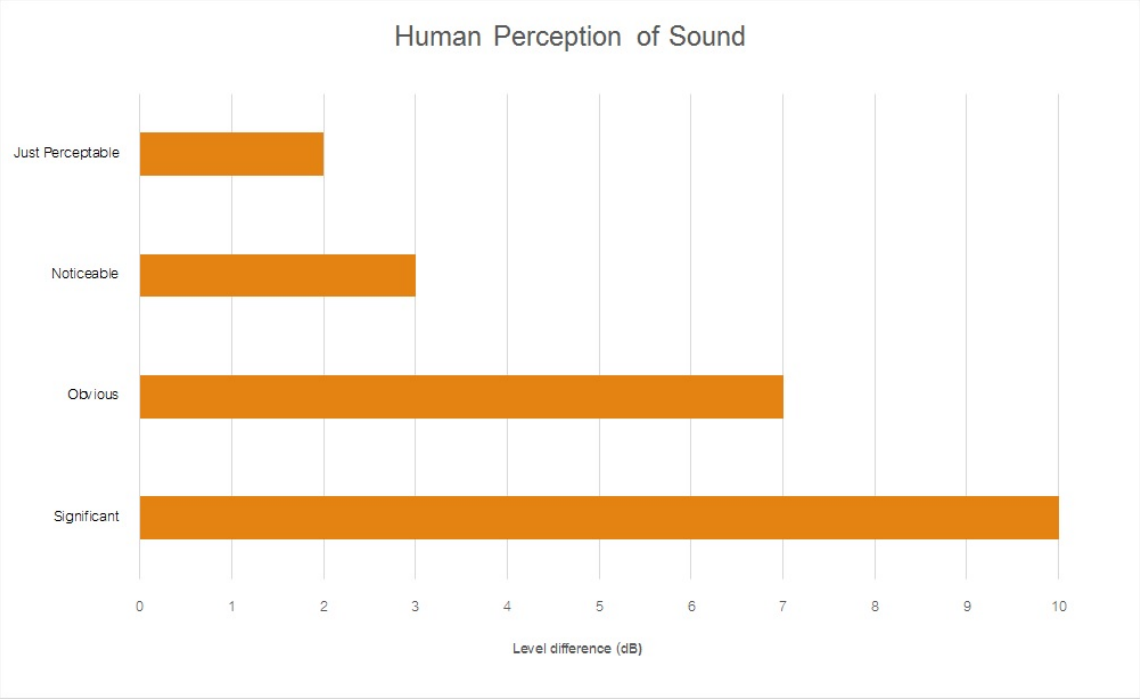
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for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

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

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

Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawnmower (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

ARCHITECTURAL DRAWINGS

DA000	A	COVER SHEET
DA001	A	3D VIEWS
DA002	A	SURVEY
DA003	A	OVERALL SITE PLAN
DA004	A	SITE PLAN
DA010	A	SITE SIGNAGE PLAN
DA011	A	SIGNAGE DETAILS
DA012	A	SIGNAGE DETAILS
DA013	A	SIGNAGE DETAILS
DA201	A	SOUTH & WEST BUILDING ELEVATIONS
DA202	A	EAST & NORTH BUILDING ELEVATIONS
DA205	A	FINISHES SCHEDULE

McDONALDS CHISHOLM

DA ISSUE - DECEMBER 2024

Client

McDonald's Australia Limited
ABN 43 008 496 928
02 9675 6666

Project Manager

NATIONAL DEVELOPMENT GROUP

Architect

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS
28 Willoughby Road Crows Nest NSW 2065
TEL: (02) 9436 0666 FAX: (02) 9436 0611

Consultants

Project

McDONALDS CHISHOLM

Location

CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

COVER PAGE

Project Number	Drawing Number	Issue
240406	DA000	A

ENTRY

PLAYPLACE

CORRAL

DRIVETHRU

Revisions

A	DA ISSUE	12.12.2024	EH	DS
Issue	Description	Date	Chk	Apvd

General Notes

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contact of manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing

Drawing Notes

Client

McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666

Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project

McDONALDS CHISHOLM

Location

CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Scale	Series
@ A3	SPECIAL (BASED ON MOD-20240)

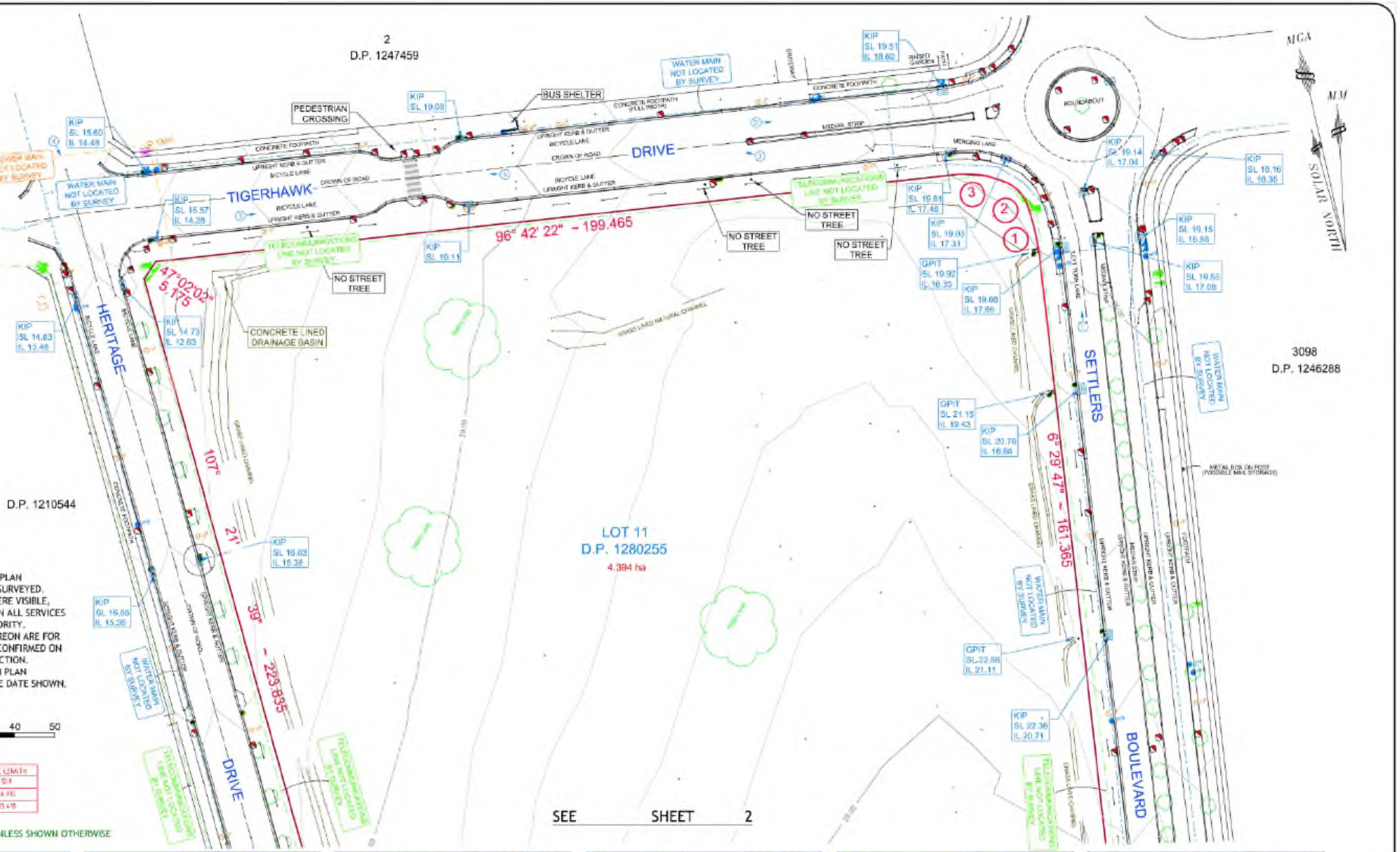
Drawing

3D VIEWS

Project Number	Drawing Number	Issue
240406	DA001	A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DanielSandoval7373.rvt

LEGEND



NOTE:-
1. BOUNDARIES HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY, AND HAVE NOT BEEN SURVEYED.
2. SERVICES HAVE BEEN LOCATED ONLY WHERE VISIBLE, PRIOR TO EXCAVATION OR CONSTRUCTION ALL SERVICES ARE TO BE LOCATED BY RELEVANT AUTHORITY.
3. SPOT LEVELS AND CONTOURS SHOWN HEREON ARE FOR DESIGN PURPOSES ONLY AND ARE TO BE CONFIRMED ON SITE PRIOR TO EXCAVATION OR CONSTRUCTION.
4. APPROXIMATE SITE AREA IS AS SHOWN ON PLAN
5. DETAILS OF SURVEY ARE CORRECT TO THE DATE SHOWN. (14/10/2021)

SCALE 1:500 (A1)

SHORT LINE TABLE

LINE	BEARING	DISTANCE	RADIUS	ARC LENGTH
1	179°[illegible]'07"	12.87	54.03	[illegible]
2	153°32'47"	6.745	9.05	[illegible]
3	178°41'00"	13.24	54.03	13.416

ALL STREET TREES ARE A NOMINAL 4/0.2/4 UNLESS SHOWN OTHERWISE


PHOTOGRAPH 1


PHOTOGRAPH 2


PHOTOGRAPH 3


PHOTOGRAPH 4


PHOTOGRAPH 5


PHOTOGRAPH 6

Ed.	Details of Revisions	Date
B	ADDITIONAL DETAILS – OTHER SIDE OF ROAD CORRIDORS	24/01/23
A	INITIAL ISSUE	21/10/21

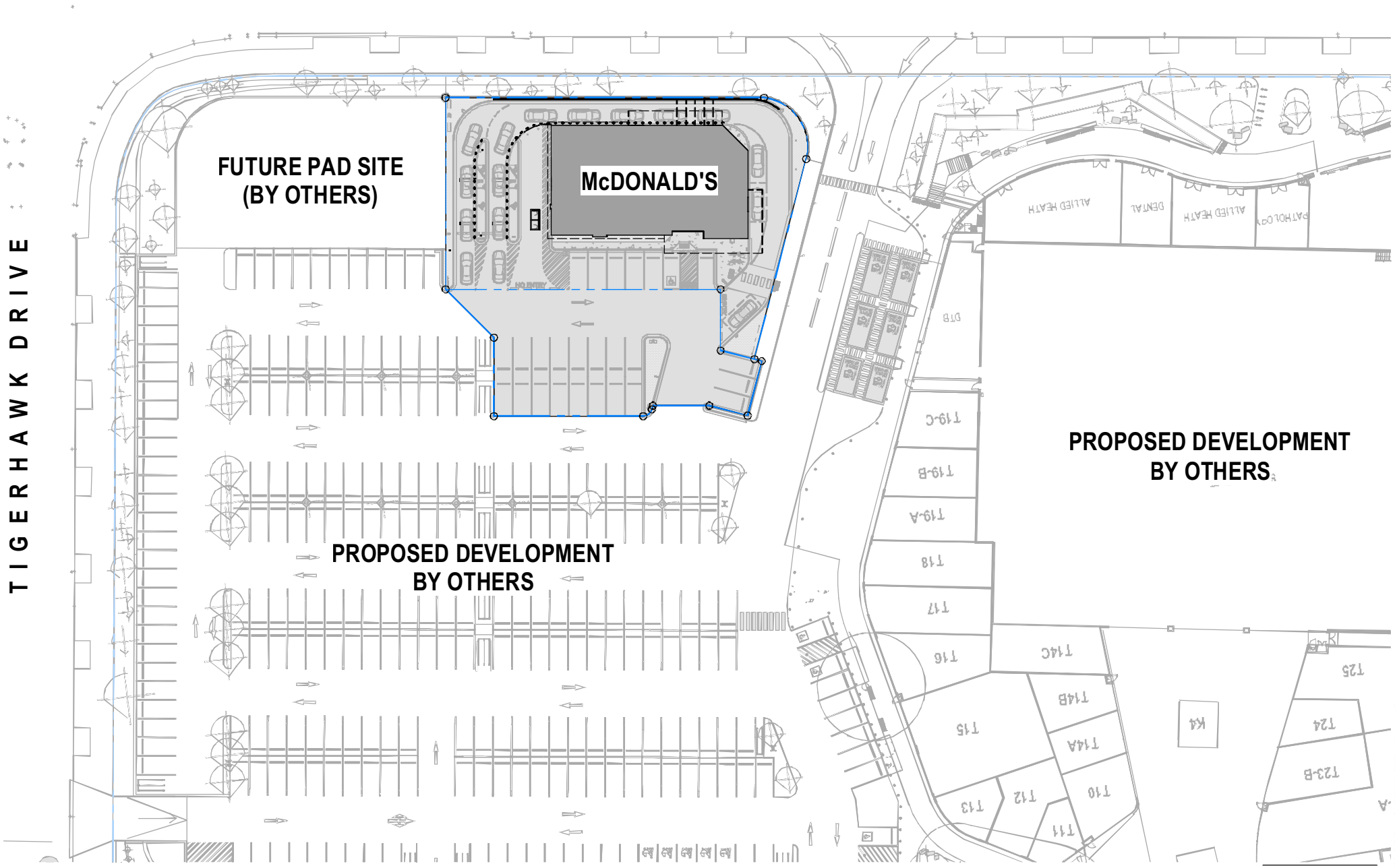
Client / Council Development Consent Number

Scale: 1:500 (A1),1:1000 (A3) Datum: AHD
Origin: SSM171224 Contour Int: 1.0
Surveyor: S.N. Drawn: S.F.
Checked: S.C. Approved: J.H.
Job Number: 6636 Drawing File: 6636-DET-2
Registered Surveyor

LAND DEVELOPMENT SOLUTIONS
-Surveying.-Planning.-Engineering
PO Box 853 THE JUNCTION NSW 2291
Phone: (02) 4963 5520 Fax: (02) 4963 5521
E-mail: mail@lds.net.au
ABN: 42 110 897 528

DETAIL SURVEY OF
LOT 11 & 12, D.P 1280255,
BEING No. 4 & No.2 HERITAGE DRIVE,
CHISHOLM

Drawing Number 1 Edition B
Sheet 1 of 3



Revisions

A	DA ISSUE	12.12.2024	CH	DS
Issue	Description	Date	Chk	Int

General Notes

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Drawing Notes

North

Client

McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666

Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Scale	Series
1 : 500 @ A3	SPECIAL (BASED ON MOD-2024.3)

Drawing
OVERALL SITE PLAN

Project Number	Drawing Number	Issue
240406	DA003	A

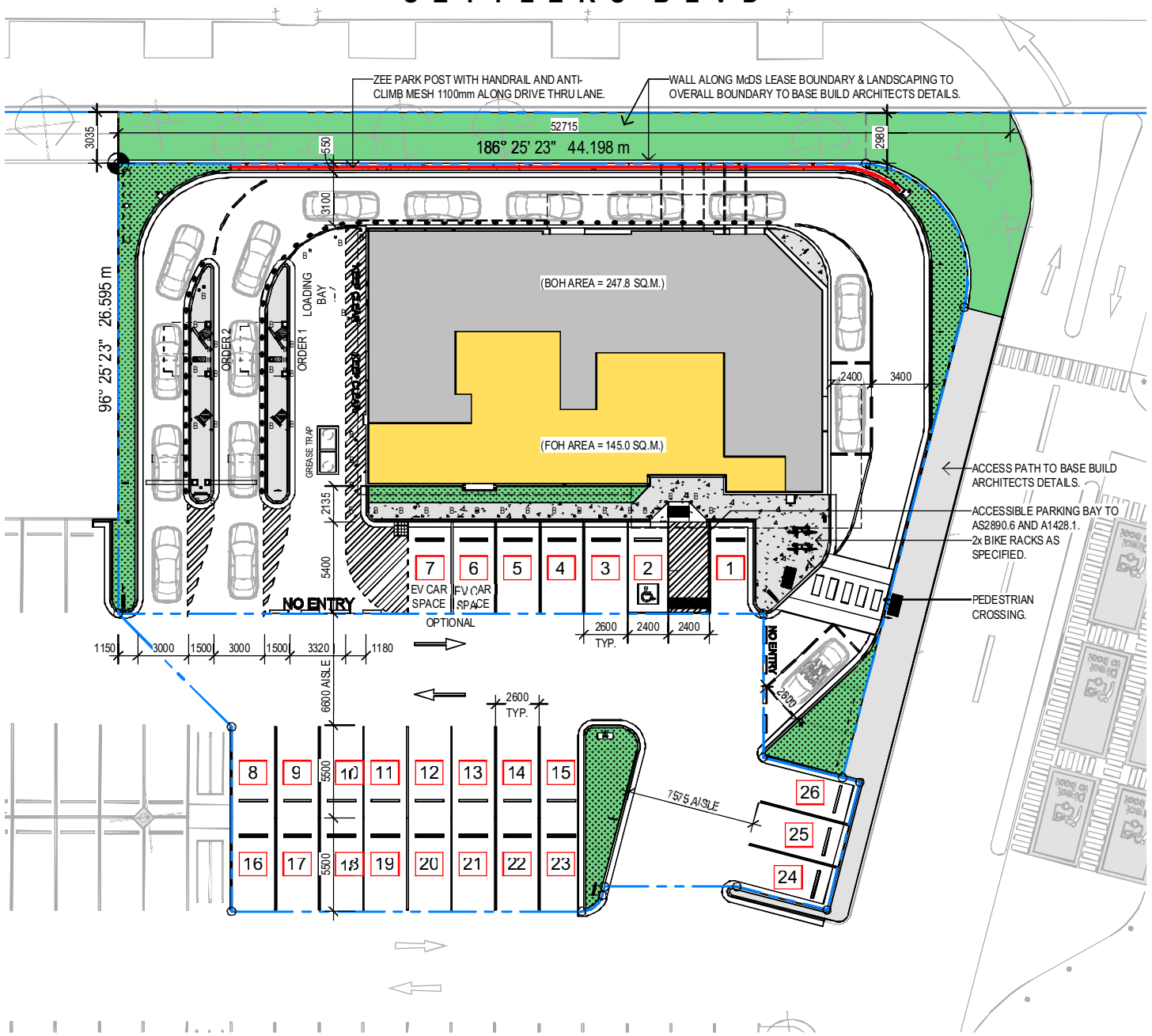
File Name C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DanielSandoval73f3.rvt

NOTES

1. LEASE AREA = 1334.5 SQ.M.
   PARKING LEASE AREA = 600.1 SQ.M.
   BUILDING FOOTPRINT = 410.2 SQ.M.
   BUILDING AREA = 145 SQ.M
   (BOH AREA = 247.8 SQ.M.)

2. DINING ROOM SEATING CAPACITY = 52 SEATS.

3. PARKING: 26 CAR SPACES.
   9 X 2600 X 5400 CAR SPACES (1, 3-7, 24-26).
   16 X 2600 X 5500 CAR SPACES (8-23).
   1 X 2400 X 5400 ACCESSIBLE SPACE WITH
   2400 X 5400 SHARED SPACE.
   13 CARS IN DRIVE THRU QUEUE.
   1 X 2600 X 5400 3RD WINDOW WAITING BAY.
   1 X 2600 X 5400 WAITING BAY.
   1 X LOADING BAY.



DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Revisions			
A	DA ISSUE	12.12.2024	DS
Issue	Description	Date	Init

General Notes

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Drawing Notes

North

Client
McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666

Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

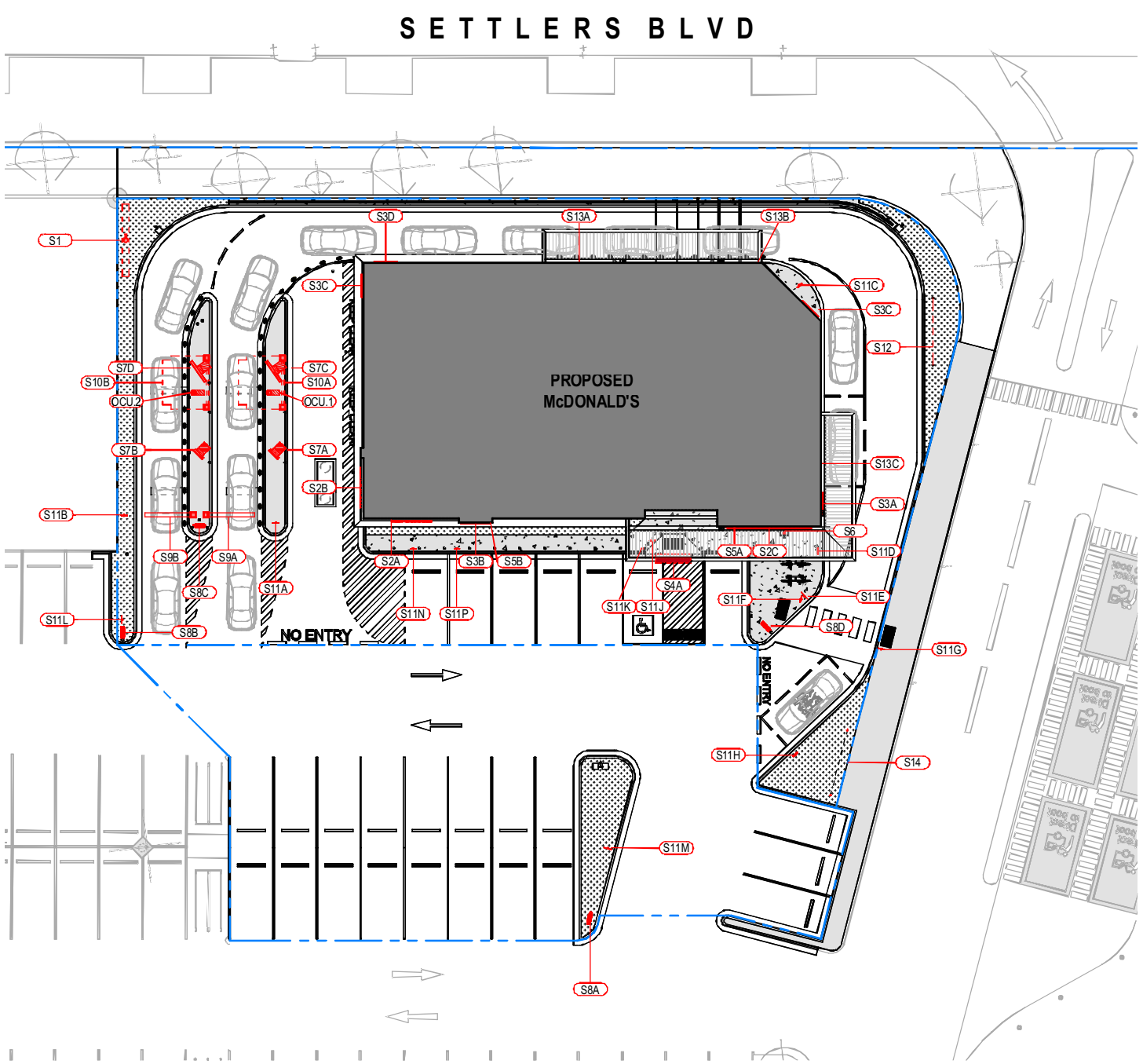
Scale	Series
1 : 250 @ A3	SPECIAL (BASED ON MOD-20240)
Drawing	
SITE PLAN	
Project Number	Drawing Number / Issue
240406	DA004 A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DaniellSandoval73f3.rvt

NOTE: REFER TO DRAWINGS A011, A012 & A013 FOR RELEVANT SIGNAGE DETAILS.

SIGNAGE SCHEDULE

Tag	Description	Illuminated
S1	8m Pylon Sign	Yes
S2A	Play Place Wall Sign (Arm Bracket)	Yes
S2B	Play Place Wall Sign (Arm Bracket)	Yes
S2C	"McDonald's" Wordmark Wall Sign	Yes
S3A	"Golden Arches" Wall Sign	Yes
S3B	"Golden Arches" Wall Sign	Yes
S3C	"Golden Arches" Wall Sign	Yes
S3D	"Golden Arches" Wall Sign	Yes
S4A	"McDonald's" Wordmark Wall Sign	Yes
S5A	"McCafe" Button Sign Ø1200mm	Yes
S5B	"McCafe" Wall Sign	Yes
S6	McDelivery Wall Sign (Double Sided)	Yes
S7A	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7B	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7C	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S7D	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S8A	Directional Sign - Entry	Yes
S8A Side 2	Directional Sign - Blank	Yes
S8B	Directional Sign - Drive Thru - Right Arrow	
S8B Side 2	Directional Sign - Drive Thru - Left Arrow	Yes
S8C	Directional Sign - Drive Thru - Double Arrow - Any Lane Any Time	Yes
S8C Side 2	Directional Sign - Blank	Yes
S8D	Directional Sign - Thank You	Yes
S8D Side 2	Directional Sign - No Entry	Yes
S9A	Height Clearance Gantry Sign	Yes
S9B	Height Clearance Gantry Sign	Yes
S10A	Canopy - Drive Thru - Wording "1. Order here"	Yes
S10B	Canopy - Drive Thru - Wording "1. Order here"	Yes
S11A	No Pedestrian Access Sign	No
S11B	No Pedestrian Access Sign	No
S11C	No Pedestrian Access Sign	No
S11D	Bicycle Parking Sign	No
S11E	Pedestrian Crossing Sign	No
S11F	Pedestrian Caution - Look Both Ways Sign	No
S11G	Pedestrian Caution - Look Both Ways Sign	No
S11H	Drive Thru Wait Bay #1 Sign	No
S11J	Pedestrian Caution - Look Both Ways Sign	No
S11K	Accessible Parking Sign	No
S11L	Speed Sign (10km/hr)	No
S11M	Speed Sign (10km/hr)	No
S11N	Electric Vehicle Charging Bay #1 Sign (Optional)	No
S11P	Electric Vehicle Charging Bay #2 Sign (Optional)	No
S12	Flag Poles	No
S13A	Drive-Thru Information Sign "2. PAY HERE"	No
S13B	Drive-Thru Information Sign "3. PICK UP HERE"	No
S13C	Drive-Thru Information Sign "4. PICK UP HERE"	No
S14	Banner Signage	No



Revisions

A	DA ISSUE	12.12.2024	KH	DS
Issue	Description	Date	Chk	Int

General Notes

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Drawing Notes

North

Client
McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666

Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

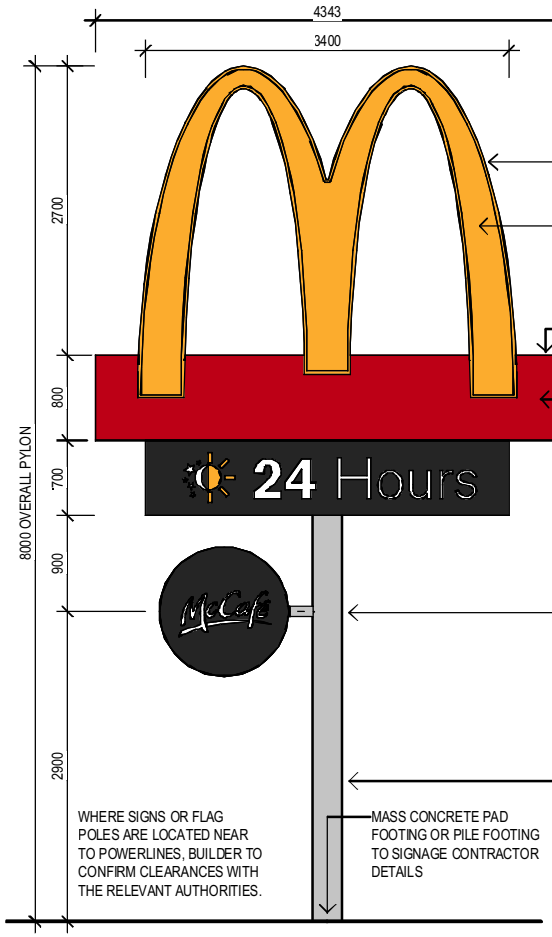
Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

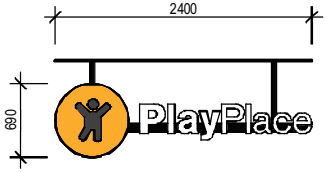
DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Scale: 1 : 250 @ A3
Series: SPECIAL (BASED ON MOD-20240)
Drawing: SITE SIGNAGE PLAN
Project Number: 240406
Drawing Number: DA010
Issue: A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DanielSandoval73f3.rvt

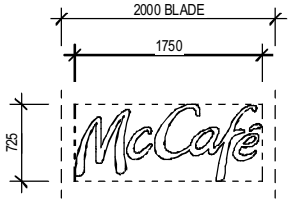


S1 PYLON SIGN
1 : 50



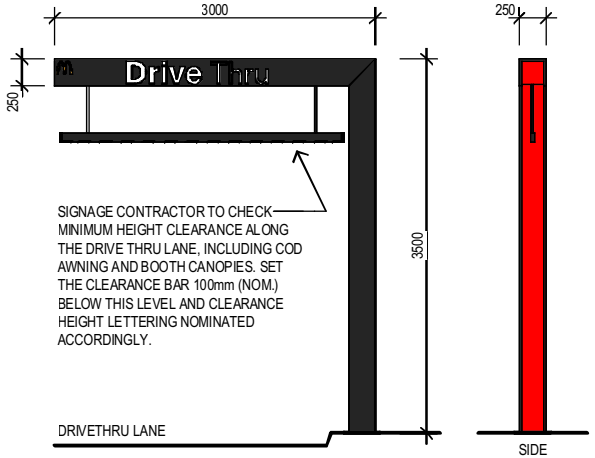
YELLOW LOGO WITH INDIVIDUAL POLYCARBONATE LETTERING FIXED TO FRAME. INTERNALLY ILLUMINATED. WHITE LETTERS.

S2A/B PLAYPLACE
1 : 50

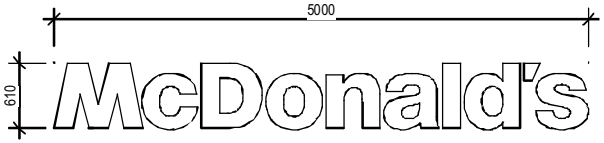


INDIVIDUAL HALO ILLUMINATED REVERSE PAN FABRICATED ALUMINIUM CHANNEL LETTERS. BRUSHED ALUMINIUM FINISH.

S5B WALL SIGN
1 : 50

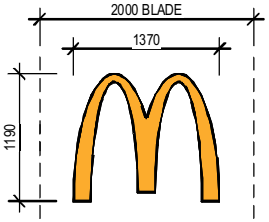


S9 HEIGHT CLEARANCE GANTRY
1 : 50

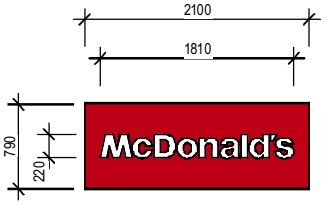


S2C McDS LETTERSET
1 : 50

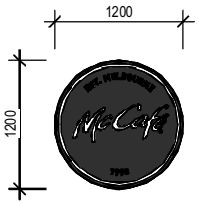
INDIVIDUAL FULLY MOULDED ACRYLIC PRISMATIC LETTERING.
INTERNALLY ILLUMINATED. WHITE LETTERS.



YELLOW FLAT FACE POLYCARBONATE LOGO. INTERNALLY ILLUMINATED. YELLOW LOGO



LED ILLUMINATED WORDMARK ONLY. RED CLIP TO BE CONSTRUCTED BY THE BUILDER.

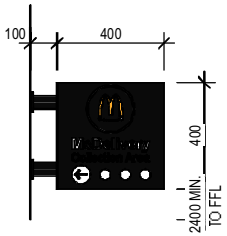


FABRICATED METAL BUTTON SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.

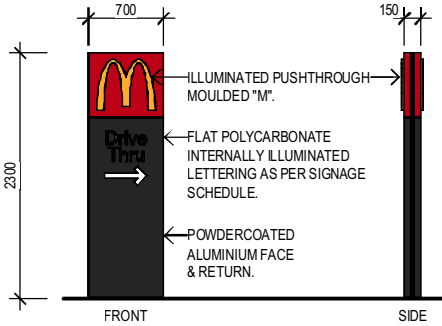
S3 WALL SIGN
1 : 50

S4 ENTRY CLIP
1 : 50

S5A WALL SIGN - BUTTON
1 : 50

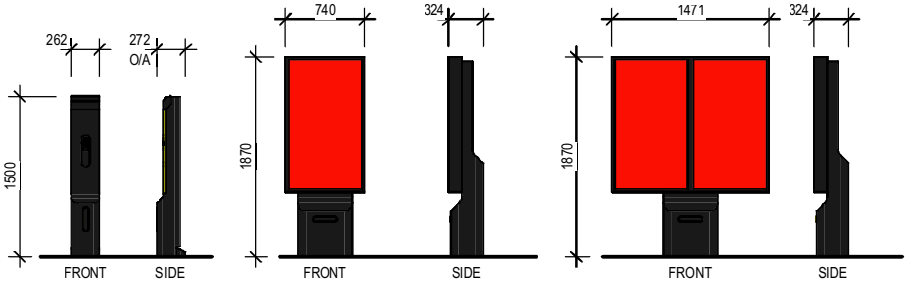


FABRICATED METAL SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



S6 McDELIVERY SIGN
1 : 20

S8 WAYFINDING SIGN
1 : 50



S7 CUSTOMER ORDER
1 : 50

Revisions

A	DA ISSUE	12.12.2024	CH	DS
Issue	Description	Date	Chk	Int

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Drawing Notes

Client
McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666
Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

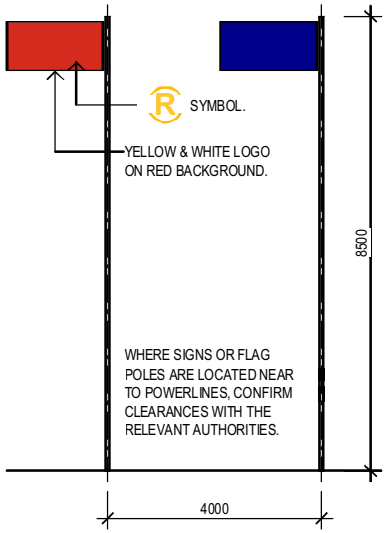
DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Scale	Series
As indicated @ A3	SPECIAL (BASED ON MOD-20240)

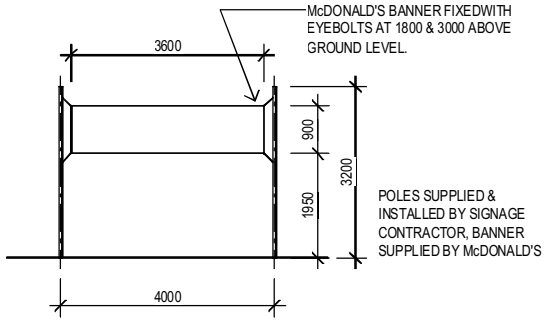
Drawing
SIGNAGE DETAILS

Project Number	Drawing Number	Issue
240406	DA011	A

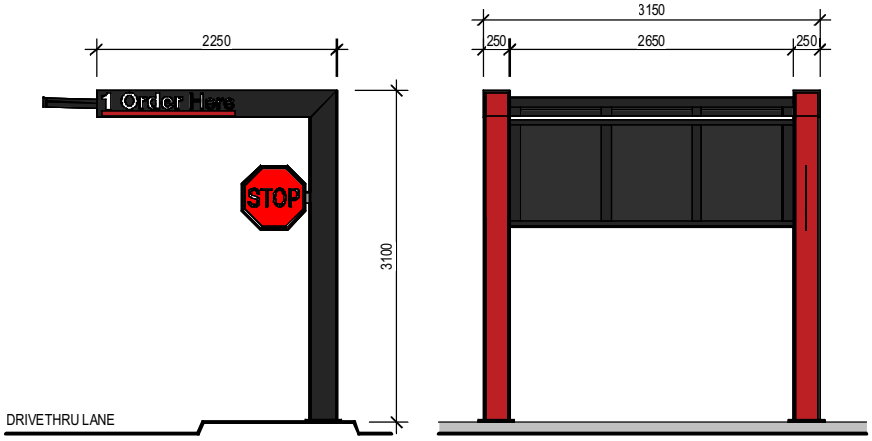
File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DaineSandoval7373.rvt



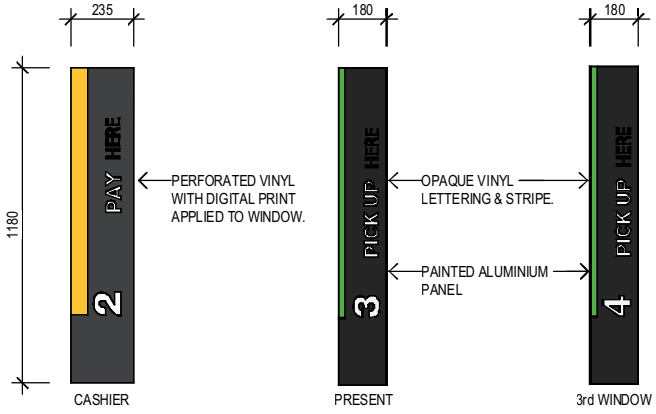
S12 FLAGPOLES
1 : 100



S14 BANNER POLES
1 : 100



S10 ORDER CANOPY
1 : 50



S13 INFORMATION BOARDS
1 : 20

Revisions

A	DA ISSUE	12.12.2024	GH	DS
Issue	Description	Date	Chk	Int

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Drawing Notes

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McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666
Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

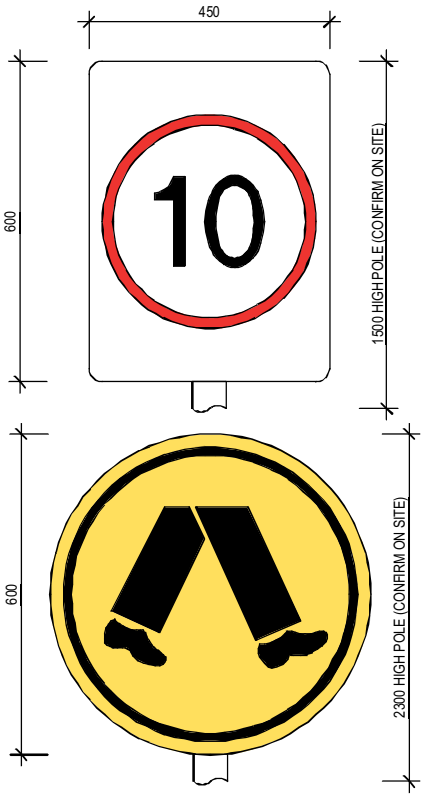
DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

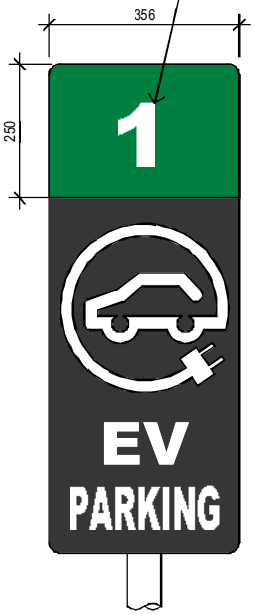
Scale	Series
As indicated @ A3	SPECIAL (BASED ON MOD-202403)

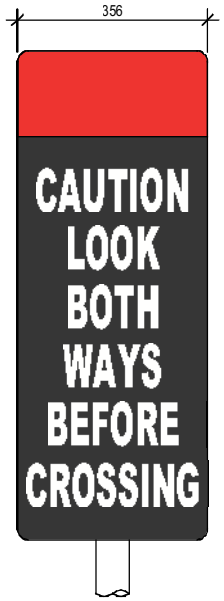
Drawing
SIGNAGE DETAILS

Project Number	Drawing Number	Issue
240406	DA012	A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DanielSandoval7373.rvt







DEPENDING ON LOCATION WITHIN SITE, S11 SIGNAGE SHOULD BE SET A MINIMUM OF 2m ABOVE TOP OF KERB TO PREVENT OBSTRUCTION TO OCCASIONAL PEDESTRIANS, OR TO REDUCE INTERFERENCE FROM PARKED VEHICLES. IF THIS DOESN'T APPLY, SIGNAGE HEIGHTS SHALL BE SET AS NOTED.

McDONALD's Signage Colours

	McDonalds Gold	McDonalds Red	Green	Charcoal	Light Grey	Black	Reflex Blue
PMS	1235 C 122 U	2035 C	350 C	Cool Gray 11C	Cool Gray 1C	Black 6 C	Reflex Blue
CMYK	0.29.96.0	0.100.95.0	80.43.86.42	0.0.0.80	0.0.0.8	82.71.59.75	100.96.13.9
RGB	255.188.13	219.0.7	43.82.51	45.45.45	247.247.247	16.24.32	0.22.137
HEX	FFBC0D	DB0007	2B5233	2D2D2D	B69A81	101820	001689

DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Revisions			
A	DA ISSUE	12.12.2024	DS
Issue	Description	Date	Drawn

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Drawing Notes

Client: McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666
Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project: McDONALDS CHISHOLM

Location:
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

Scale	Series
1 : 10 @ A3	SPECIAL (BASED ON MOD-202403)

Drawing: SIGNAGE DETAILS

Project Number	Drawing Number	Issue
240406	DA013	A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DaineSandoval73f3.rvt

1 DA101 SOUTH ELEVATION 1 : 100

2 DA101 WEST ELEVATION 1 : 100

DA ISSUE
NOT TO BE USED FOR CONSTRUCTION

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

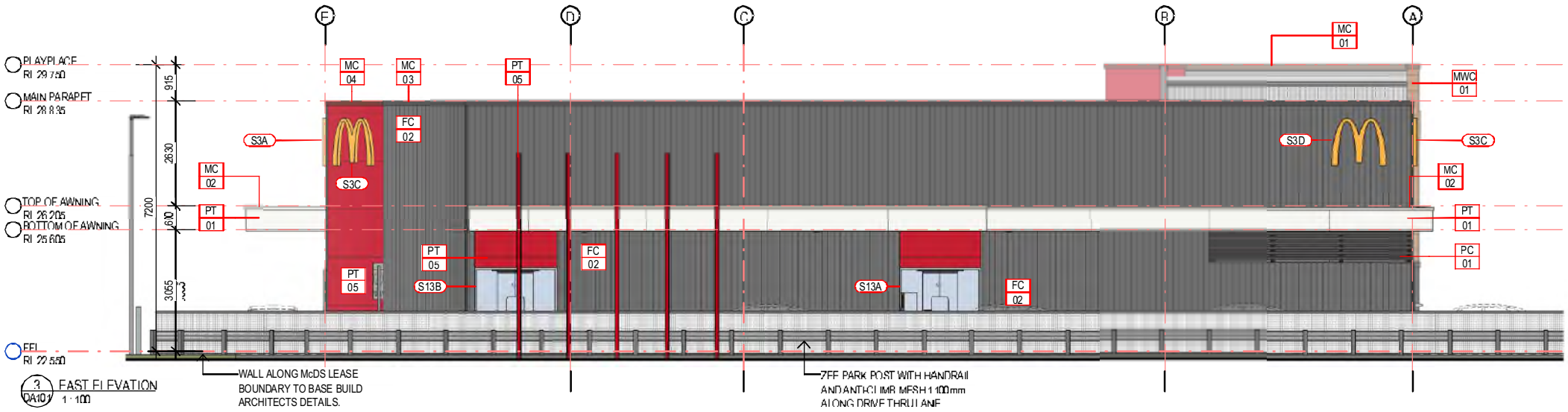
McDONALDS CHISHOLM

CHISHOLM PLAZA
4 HERITAGE DRIVE

1:100 @ A3 SPECIAL

SOUTH & WEST BUILDING ELEVATIONS

240406 DA201 A



3 DA101 EAST ELEVATION 1 : 100

4 DA101 NORTH ELEVATION 1 : 100

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

McDONALDS CHISHOLM

CHISHOLM PLAZA
4 HERITAGE DRIVE

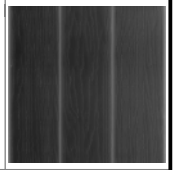
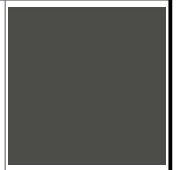
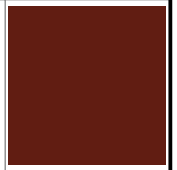
DA ISSUE
NOT TO BE USED FOR A CONSTRUCTION

1:100 @ A3 SPECIAL

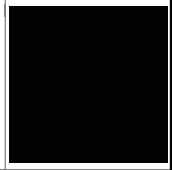
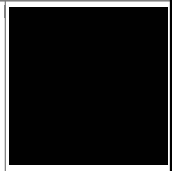
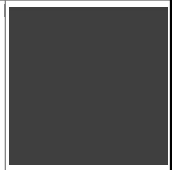
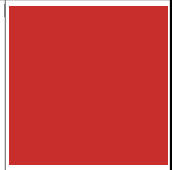
EAST & NORTH BUILDING ELEVATIONS

240406 DA202 A

EXTERNAL FINISHES SCHEDULE

CODE	NO.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
FC	02	MAIN BUILDING WALLS	FIBRE CEMENT WEATHERTEX VERTICAL WEATHERBOARDS	WEATHERTEX	WAYWARD GREY PG1G8	
MC	01	PARAPET CAPPING - ADJACENT TIMBER LOOK CLADDING (PLAYLAND)	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	JASPER	
MC	02	PARAPET CAPPING - AWNINGS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	SURFMIST	
MC	03	PARAPET CAPPING - MAIN BUILDING WALLS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	WOODLAND GREY	
MC	04	PARAPET CAPPING	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	MANOR RED	
MWC	01	PLAYPLACE & PARAPETS	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	LIGHT OAK	
MWC	02	ROOF WELL (INTERNAL PARAPET LINING)	CUSTOM ORB CORRUGATED STEEL RIVET FIXED VERTICALLY TO FRAMES	LYSAGHT	ZINCALUME	

EXTERNAL FINISHES SCHEDULE

CODE	NO.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
PC	01	CORRAL BATTENS & ROOF ACCESS, ELEC. ROOM DOORS	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PC	02	ALUMINIUM WINDOWS & DOOR FRAMES. REFER NOTE 1.	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PT	01	FASCIAS (RIBBON)	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	VIVID WHITE PW1H9	
PT	02	MAIN BUILDING WALLS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	WAYWARD GREY PG1G8	
PT	05	BLADE WALL & DRIVETHRU WINDOWS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	DULUX HOT LIPS PB1F2	
STN	01	DRIVETHRU WINDOW SILL & SURROUND	RECONSTITUTED STONE. REFER TO DECOR DOCUMENTS	REFER DECOR	REFER DECOR	

Revisions

A	DA ISSUE	12.12.2024	DS
Issue	Description	Date	Chk

General Notes

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contact of manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing

Drawing Notes

Client
McDonald's Australia Limited
ABN. 43 008 496 928
02 9875 6666

Project Manager

Richmond+Ross
CONSULTING ENGINEERS AND PROJECT LEADERS

Project
McDONALDS CHISHOLM

Location
CHISHOLM PLAZA
4 HERITAGE DRIVE
CHISHOLM NSW 2322

DA ISSUE
NOT TO BE USED DURING CONSTRUCTION

Scale	Series
@ A3	SPECIAL (BASED ON MOD-202403)

Drawing
FINISHES SCHEDULE

Project Number	Drawing Number	Issue
240406	DA205	A

File Name: C:\RVT_Temp\240406_McDONALDS_CHISHOLM_NSW_SITE_[DA]_CENTRAL_R2023_DanielSandoval7373.rvt

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Appendix C – Noise Monitoring Charts and Assessment Background Levels Summary

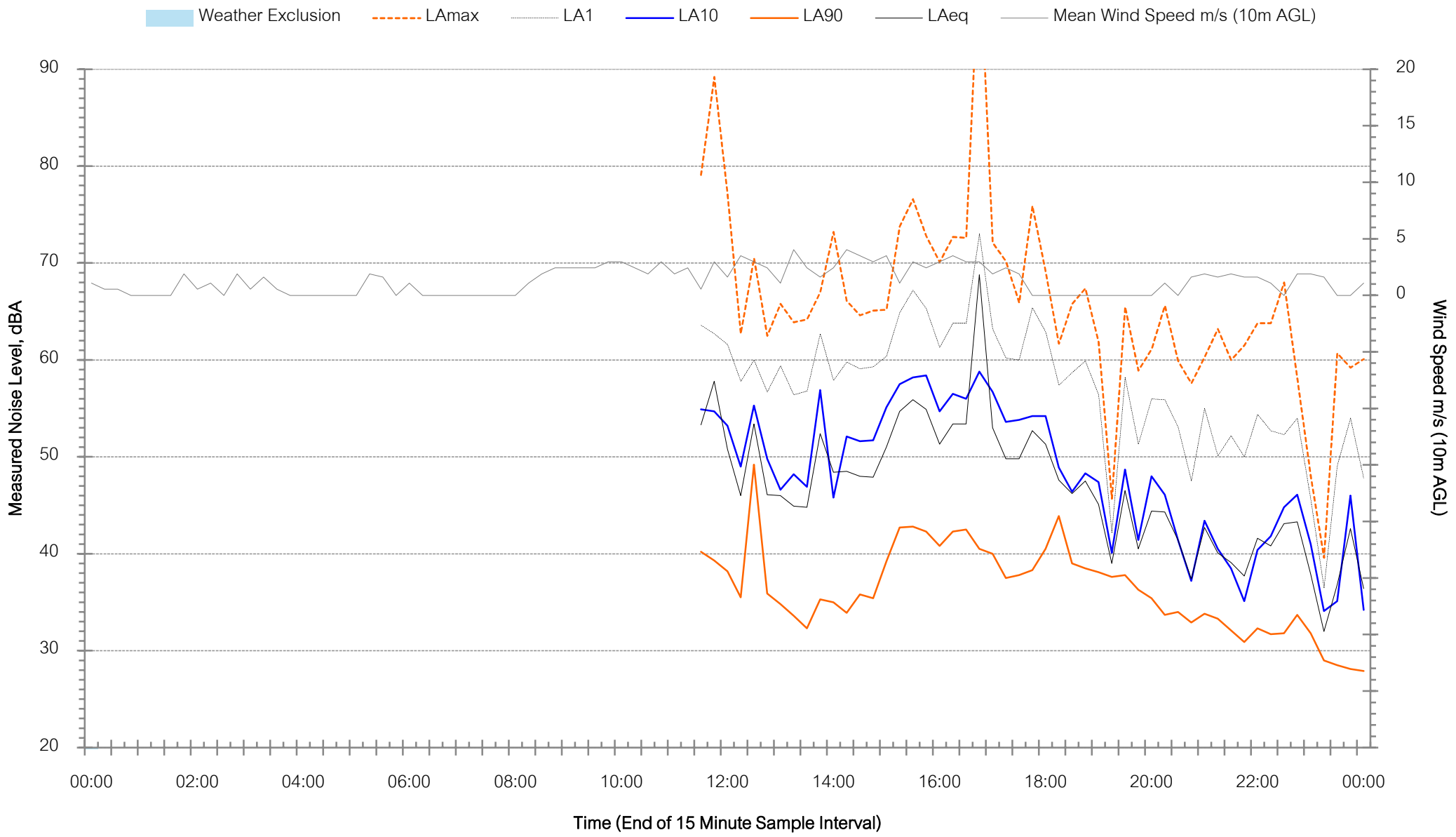
Table C21 Background Noise Monitoring Summary – Location L1						
Date	Measured Background Noise Level (LA90) dB ABL[1]			Measured dB LAeq(period)		
	Day	Evening	Night	Day	Evening	Night
Tuesday 17 September 2024	--	32	26	--	44	43
Wednesday 18 September 2024	40	33	24	55	45	45
Thursday19 September 2024	39	33	26	53	44	44
Friday 20 September 2024	39	33	24	51	44	41
Saturday 21 September 2024	37	33	26	49	44	42
Sunday 22 September 2024	37	34	25	48	43	44
Monday 23 September 2024	38	36	26	50	44	44
Tuesday 24 September 2024	32	37	26	59	46	45
Wednesday 25 September 2024	36	38	24	58	47	49
Thursday 26 September 2024	--	--	--	--	--	--
Location1 – RBL / Leq Overall	38	33	26	55	45	44

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

Note: 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

Background Noise Levels

Heritage Drive, Chisholm - Tuesday 17 September 2024



Background Noise Levels

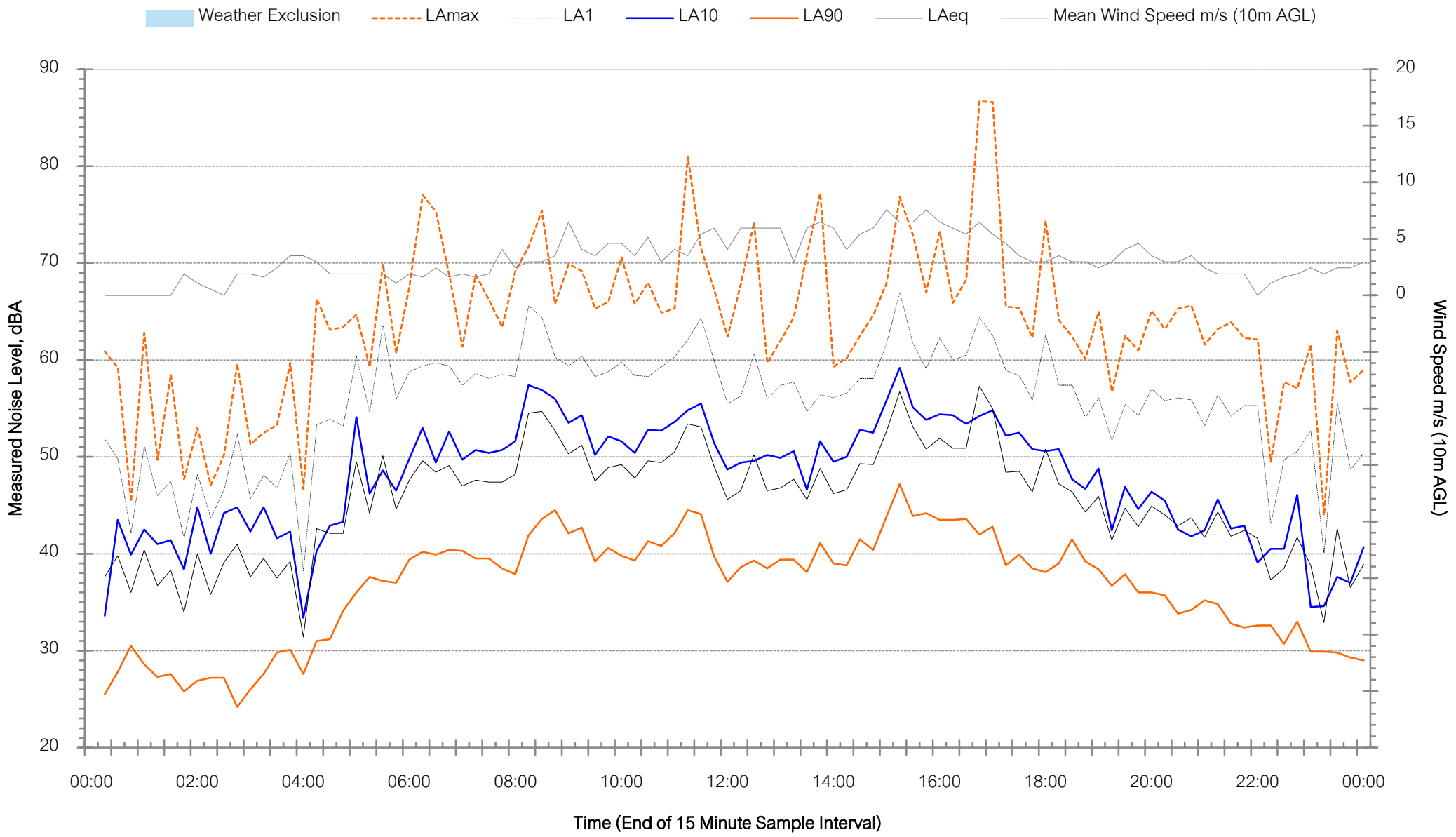
Heritage Drive, Chisholm - Wednesday 18 September 2024

Background Noise Levels

Heritage Drive, Chisholm - Thursday 19 September 2024

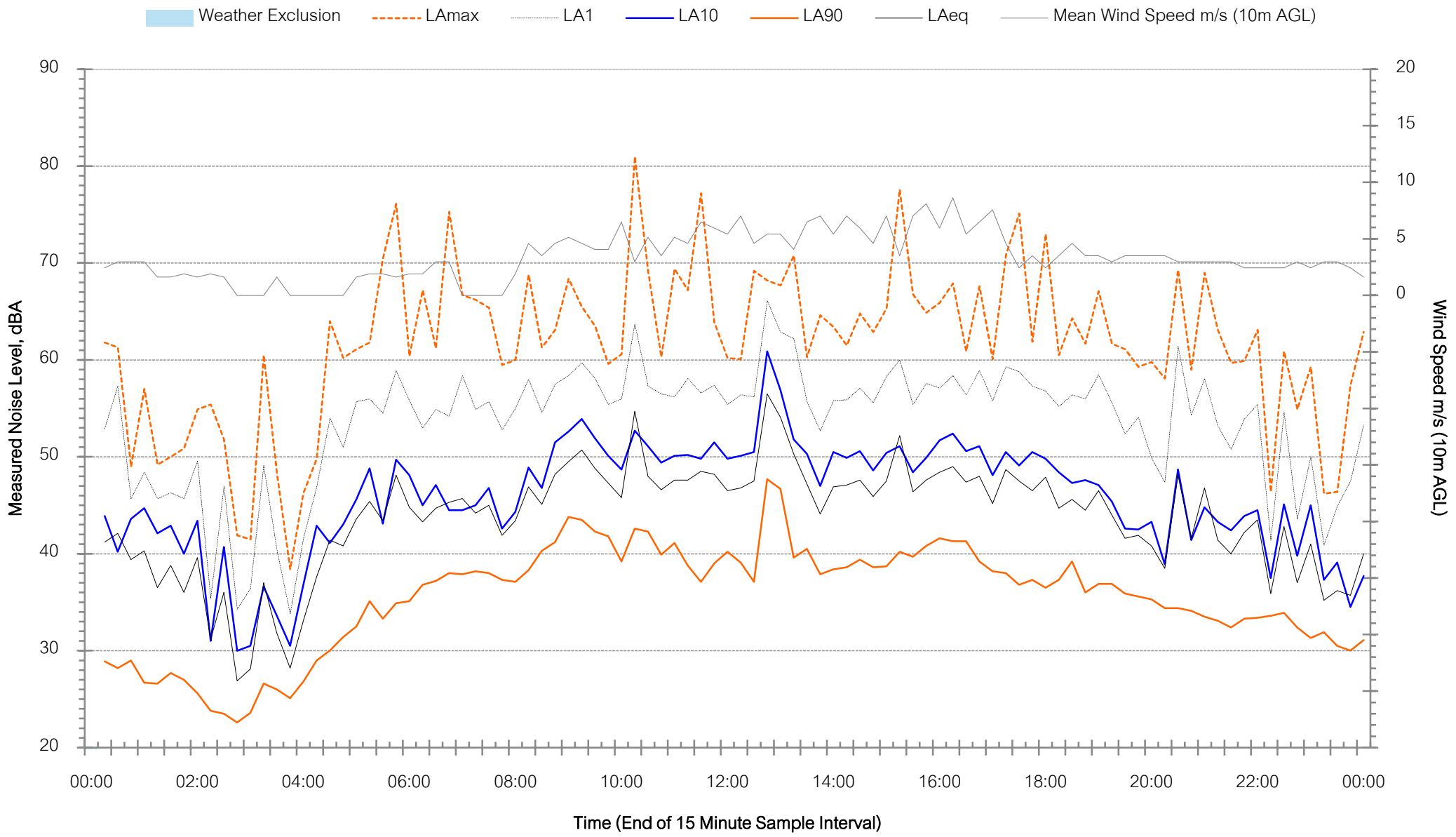
Background Noise Levels

Heritage Drive, Chisholm - Friday 20 September 2024



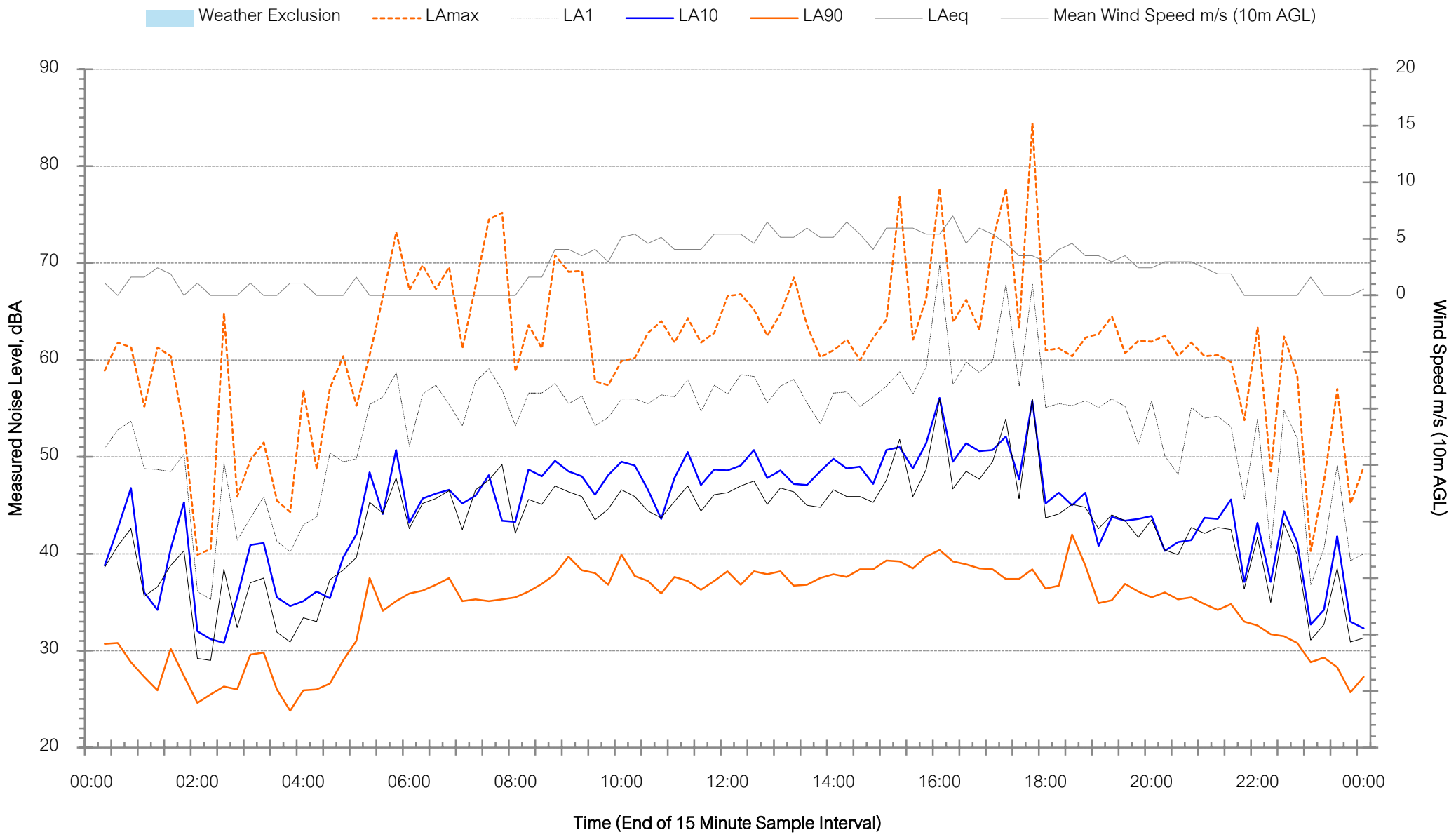
Background Noise Levels

Heritage Drive, Chisholm - Saturday 21 September 2024



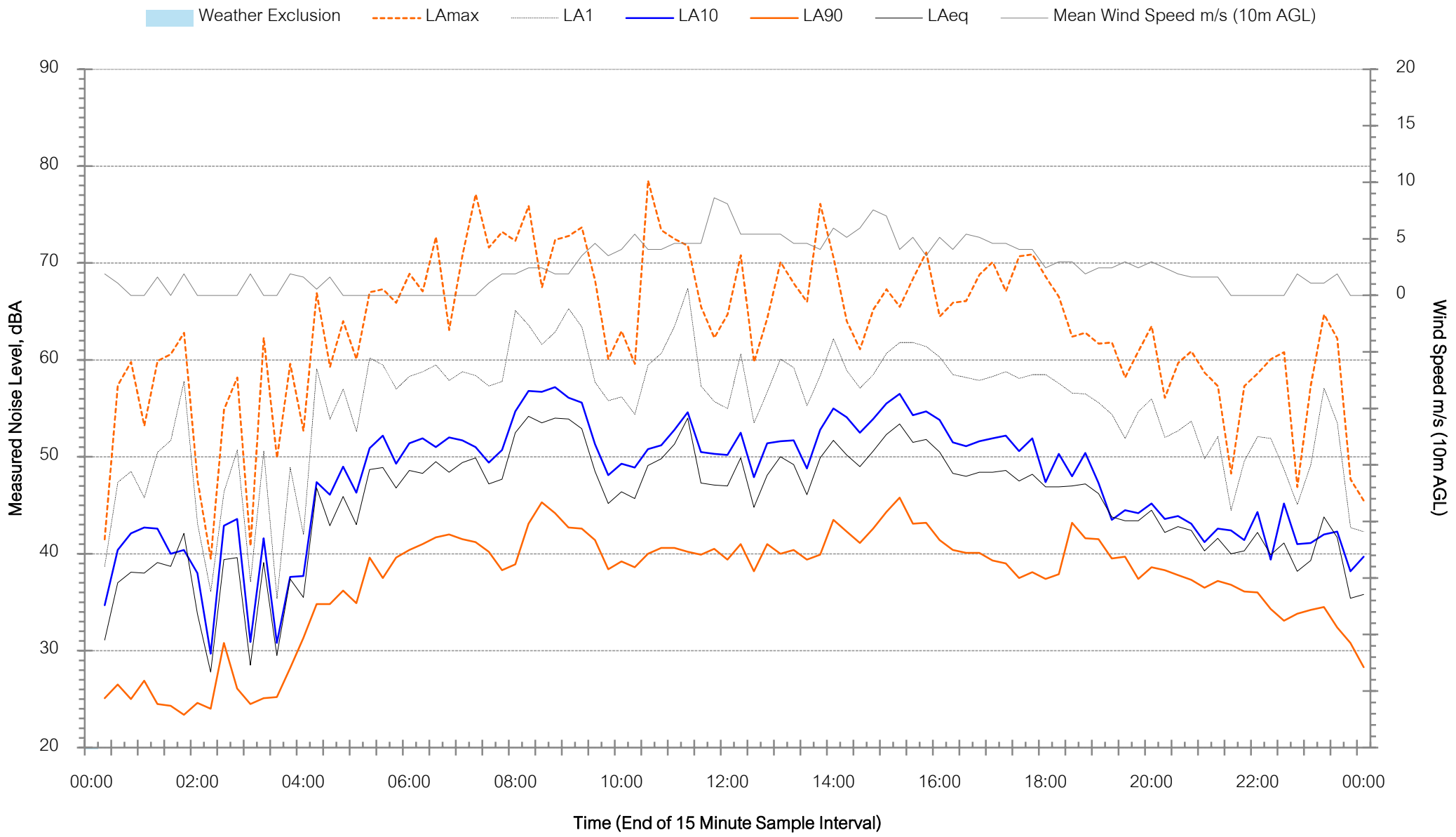
Background Noise Levels

Heritage Drive, Chisholm - Sunday 22 September 2024



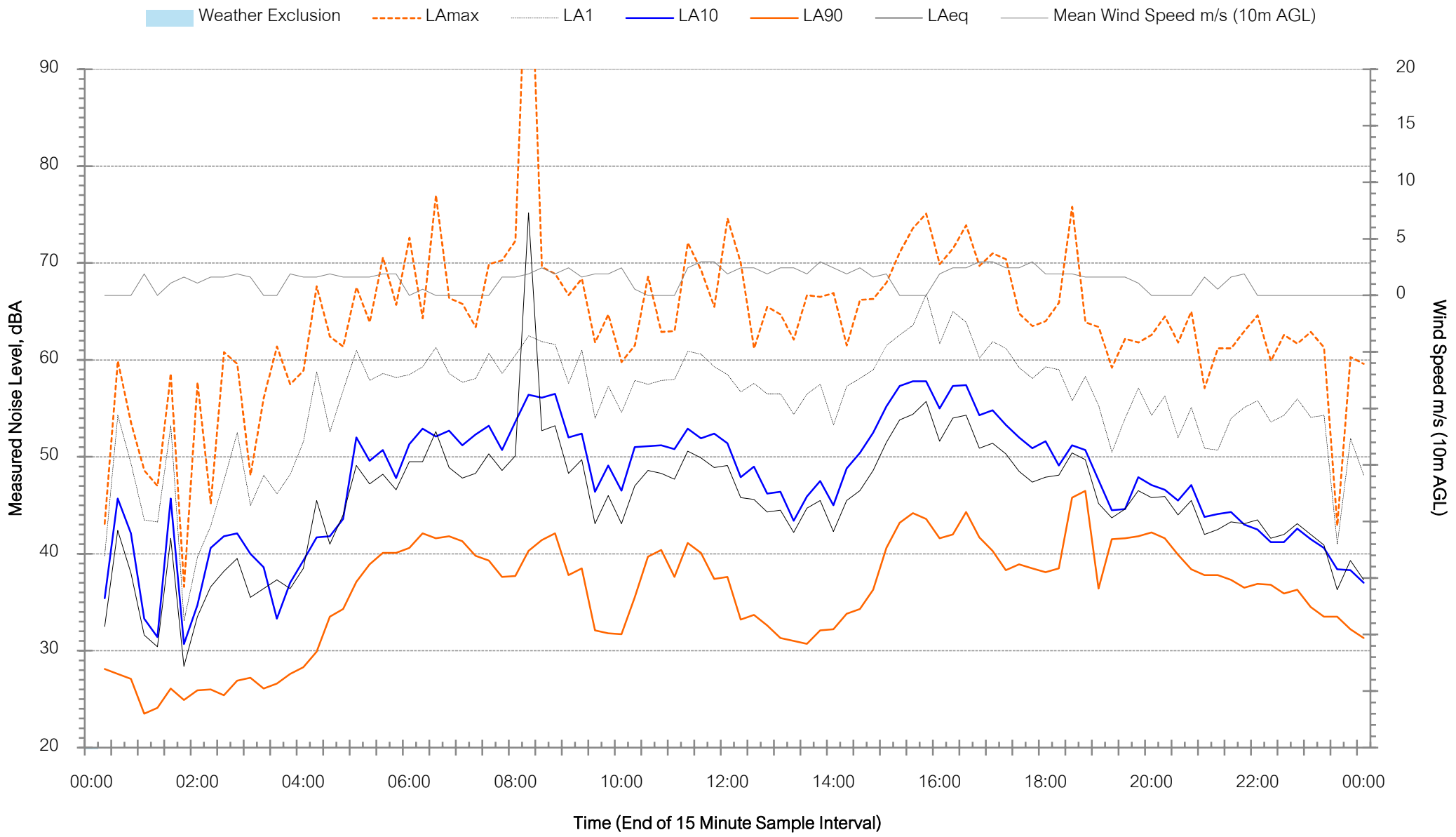
Background Noise Levels

Heritage Drive, Chisholm - Monday 23 September 2024



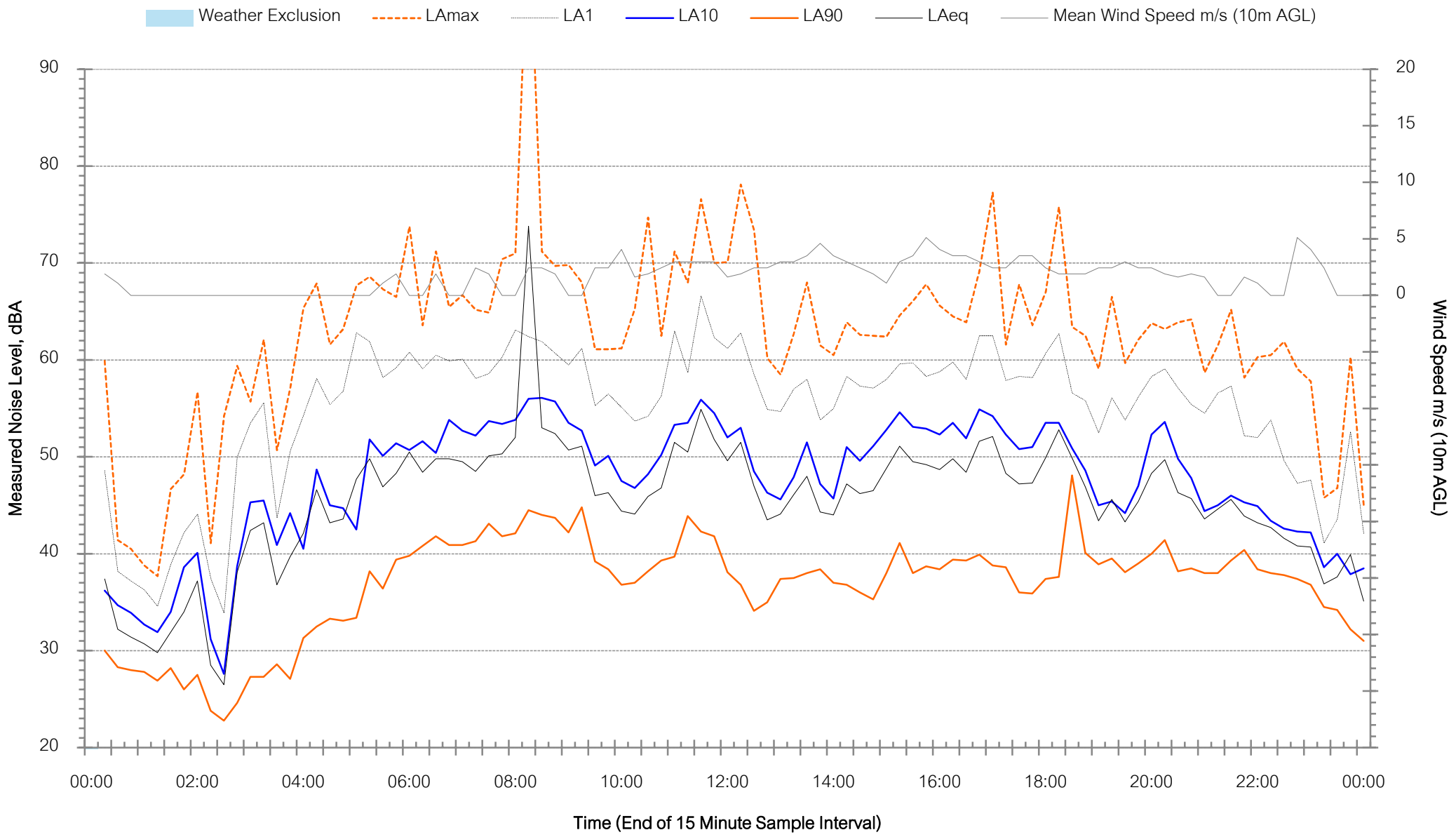
Background Noise Levels

Heritage Drive, Chisholm - Tuesday 24 September 2024



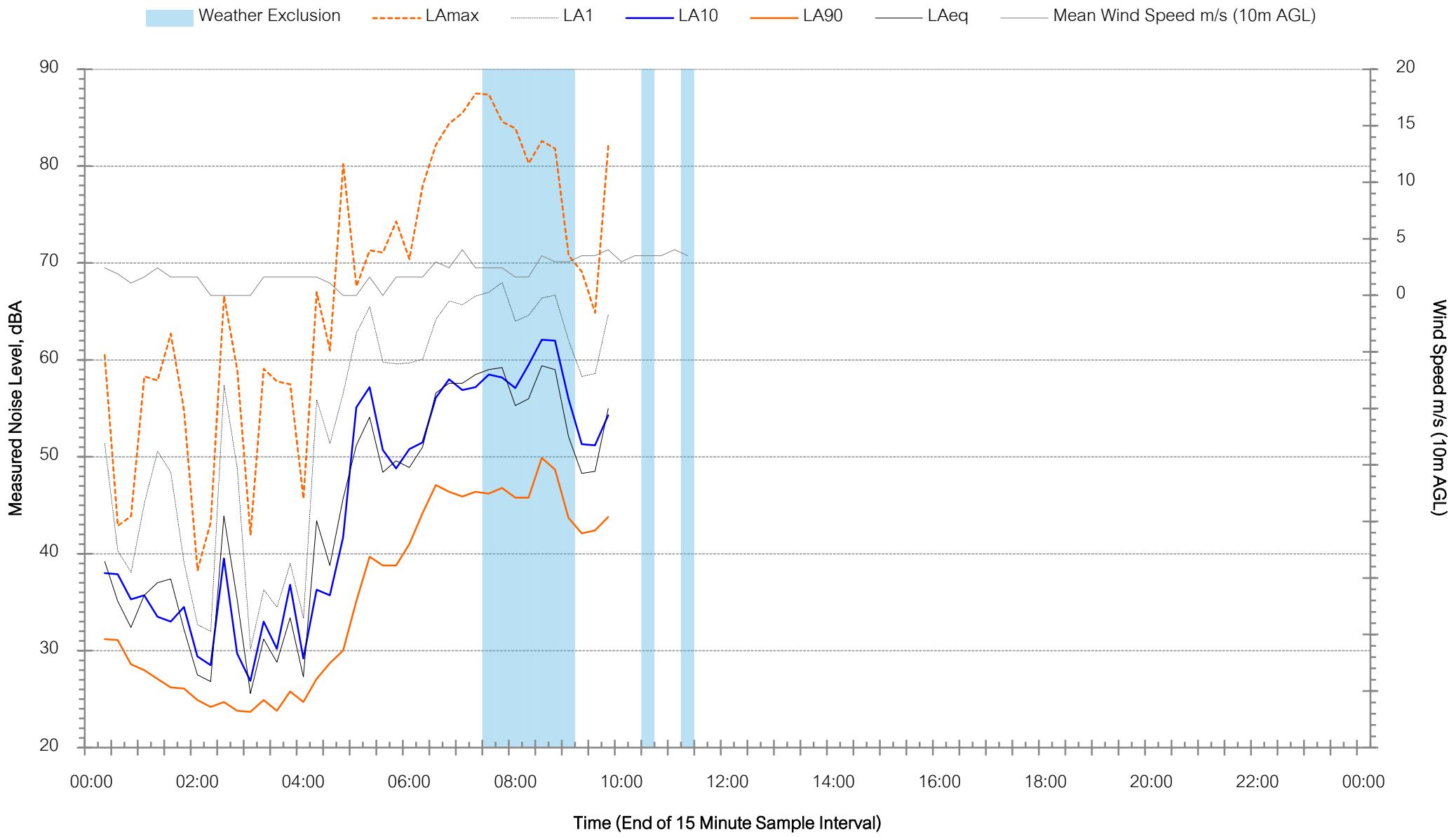
Background Noise Levels

Heritage Drive, Chisholm - Wednesday 25 September 2024



Background Noise Levels

Heritage Drive, Chisholm - Thursday 26 September 2024



Appendix D – Determination of NPI

Receiver Category

Table D23 - Determination of NPI Residential Receiver Category

Location/ Catchment	Period	Measured RBL dB $LA_{90(period)}$	Land Use Zone: RU1, RU2, RU4, R5, E4 (Rural)	Land Use Zone: RU5, RU6, R2, R3, R4, E2, E3 (Suburban)	Land Use Zone: R1, R4, B1, B2, B4 (Urban)	Land Use Zone: Others (Commercial, Industrial)	Typical Existing Background Noise Levels Table 2.3 NPI: RURAL Daytime <40 Eve <35 Night <30	Typical Existing Background Noise Levels Table 2.3 NPI: SUBURBAN Daytime <45 Eve <40 Night <35	Typical Existing Background Noise Levels Table 2.3 NPI: URBAN Daytime >45 Eve >40 Night >35	Rural Residential - an area with an acoustical environment that: is dominated by natural sounds.	Rural Residential: having little or no road traffic noise	Rural Residential: generally characterised by low background noise levels.	Rural Residential: Settlement patterns would be typically sparse	Suburban Residential - an area that has: local traffic with characteristically intermittent traffic flows	Suburban Residential: or with some limited commerce or industry.	Suburban Residential: evening ambient noise levels defined by the natural environment and human activity.	Urban Residential- an area with an acoustical environment that: is dominated by 'urban hum' or industrial source noise	Urban Residential: has through-traffic with characteristically heavy and continuous traffic flows during peak . . .	Urban Residential: is near commercial districts or industrial districts	Urban Residential: has any combination of the above
Location 1	Day	38				✓		✓						✓	✓	✓				
	Evening	33				✓	✓							✓	✓	✓				
	Night	30				✓	✓							✓	✓	✓				

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	2	**10**	0	2	1	0	0	0	0	0	3	3	3	0	0	0	0

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MAC
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