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Noise Impact Assessment

Residential Development (21 Townhouses) at 9-11 Adler Circuit, Yarrabilba

Sandsky Constructions

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Executive Summary

ATP Consulting Engineers (ATP) was engaged to prepare an acoustic report (road traffic and commercial noise impact assessment) in support of a Reconfiguring a Lot (RaL) application to create 21 new townhouses at 9-11 Adler Circuit in Yarrabilba.

The purpose of the report is to assess the traffic noise impacts from the state-controlled Waterford - Tamborine Road and Camp Cable Road and the locally-controlled Yarrabilba Drive, and from the operation of the nearby commercial developments, on the proposed townhouse development.

The assessment is carried out in accordance with the *Yarrabilba Priority Development Area Development Scheme*, and the relevant noise criteria specified in the SDAP State Code 1.

Based on the results of the road traffic and commercial/operational noise impact assessment for the proposed residential development over Lot 11 on SP296372, No. 9-11 Adler Circuit in Yarrabilba, the following is concluded:

- The road traffic from the state-controlled Waterford – Tamborine Road and Camp Cable Road as well as from the locally controlled Yarrabilba Drive, as per the traffic flows predicted within a planning horizon to Year 2037, impacts on the ground and the upper floor of the proposed townhouses 6 to 14 and to the upper floor only of the townhouses 15 to 17.
- All proposed townhouses contain at least one private open space which complies with the 60dB(A) $L_{10,18hr}$ criteria from the state-controlled roads, accessible from the living areas.
- Townhouses 13-17 are however impacted by the traffic noise from the Logan City Council (LCC) controlled Yarrabilba Drive and therefore they are required to have solid balustrades to the upper floor balconies facing Yarrabilba Road.
- The future townhouses listed in Table 3.7 of this report are impacted by traffic noise that corresponds with Noise Categories 1, 2 and 3 of QDC MP4.4, and therefore architectural treatment is required to the building façades.
- There are two options available for architectural treatment to the building façades, as follows:
 - **Option 1:** Implementation of the ‘acceptable forms of construction’ specified in Queensland Development Code (QDC) Mandatory Part 4.4 (Buildings in a Transport Noise Corridor) as per the noise categories presented in Table 3.7 of this report.
 - **Option 2:** Floor plan specific acoustic design, in accordance with AS3671-1989, to ensure compliance with the internal noise criteria.
- Detailed acoustic design specifications will be provided at building approval (BA) stage when the floor plans of the townhouses affected by traffic noise, as resented in Table 3.7 of this report, will be finalised.
- The proposed townhouse development at 9-11 Adler Circuit is located adjacent to existing commercial operations. To the south of the site is *Containers for Change*, Yarrabilba an

existing recycling depot. Further to the south-east is an existing childcare centre (*Grand Kids Early Learning Centre*).

- The results of the commercial/operational noise assessment indicate that some of the proposed townhouses are affected by noise levels higher than the relevant noise criteria from EPP (Noise). The dominant noise impact is from the commercial/operational noise emissions from the *Containers for Change*, Yarrabilba.
- The townhouses which are affected by the commercial/operational noise and require acoustic design are listed in Table 5.1 of this report.
- To prevent commercial/operational noise impacts the façades of the townhouses 3, 4 and 5, as presented in Table 5.1 of this report, must be designed and constructed to comply with the internal noise criteria from *AS/NZS2107-2016* when the windows are closed.

Provided the recommended acoustic upgrades to the building facades of the road traffic and commercial/operational noise impacted townhouses are implemented at detailed design and construction, the residential development at 9-11 Adler Circuit in Yarrabilba can be established as per the proposed development layout.

Table of Contents

1.	Introduction	1
1.1	Project Background	1
1.2	Study Objectives	1
1.3	Site Description	2
2.	Existing Noise Amenity	3
2.1	Road Traffic and Background Noise Measurements	3
2.2	Attended Commercial Noise Measurements	4
2.3	Noise Measurement Results	7
2.3.1	Road Traffic Noise Measurements	7
2.3.2	Background Noise Measurements	7
2.3.3	Attended Noise Measurements – Containers for Change	8
2.3.4	Attended Noise Measurements – Child Care Centre	8
3.	Road Traffic Noise Assessment	9
3.1	Traffic Noise Criteria	9
3.1.1	State Development Assessment Provisions (SDAP)	9
3.1.2	Queensland Development Code (QDC) MP4.4	11
3.2	Traffic Noise Calculation Methodology	11
3.2.1	Modelling Assumptions (Road Traffic)	12
3.2.2	Model Validation (Year 2025)	13
3.3	Calculated Traffic Noise Levels	17
4.	Commercial Noise Impact Assessment	18
4.1	Noise Criteria	18
4.1.1	Yarrabilba Priority Development Area Development Scheme	18
4.2	Noise Propagation Modelling	19
4.2.1	Modelling Methodology	19
4.2.2	Noise Sources	21
4.2.3	Noise Model Validation	22
4.2.4	Commercial Noise Calculation Results	24
5.	Discussions and Recommendations	26
5.1	Road Traffic Noise Impact	26
5.2	Commercial/Operational Noise Impact Assessment	26
6.	Conclusions	28
7.	References	30
8.	Appendices	31

Tables

Table 2.1 Unattended noise measurements	3
Table 2.2 Attended noise measurements	5
Table 2.3 Noise measurement results – Road traffic noise	7
Table 2.4 Noise measurement results – Background noise	7
Table 2.5 Attended noise measurement results – Containers for Change	8
Table 2.6 Attended noise measurement results – Childcare Centre	8
Table 3.1 External traffic noise criteria	9
Table 3.2 Performance and acceptable outcomes (SDAP State Code 1)	10
Table 3.3 4QDC MP4.4 noise categories	11
Table 3.4 Data and assumptions – Traffic noise model	12
Table 3.5 Traffic flow data	13
Table 3.6 SoundPLAN validation results	14
Table 3.7 Traffic noise levels	17
Table 4.1 Acoustic quality objectives	18
Table 4.2 Data and assumptions – Operational noise model	20
Table 4.3 Details of operational noise sources	21
Table 4.4 SoundPLAN validation results	22
Table 4.5 Operational noise levels – Acoustic Quality Objectives	24

Figures

Figure 1.1 Site location	2
Figure 2.1 Unattended noise measurement location	4
Figure 3.1 Excerpt from 3D SoundPLAN traffic noise validation model (year 2025)	15
Figure 3.2 Excerpt from 3D SoundPLAN traffic noise model (year 2037)	16
Figure 4.1 3D Commercial Noise Propagation Model – SoundPLAN Excerpt	23

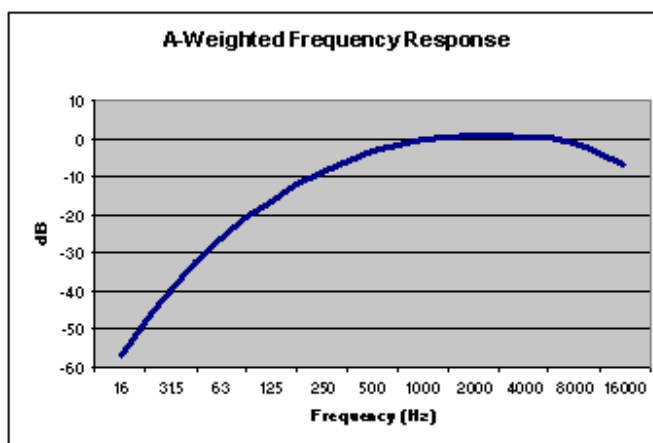
Appendices

Appendix A – Development Layout
Appendix B – Site Photos
Appendix C – Meteorological Data
Appendix D – Noise Measurement Results
Appendix E – RTNA Validation (Year 2025)
Appendix F – RTNA Noise Contour Maps (Year 2037)
Appendix G – ONIA Tabulated Noise Levels
Appendix H – ONIA Noise Contour Maps

Acoustics Glossary

A-weighting

The A-weighting filter suppresses low frequency sounds and some of the higher frequency sounds to which the human ear is less sensitive. It is a correction to sound pressure levels to mimic the response of the human ear at low sound pressure levels. The A-weighted sound pressure level correlates well with the perceived loudness at low sound levels. The A-weighted sound pressure level is used extensively for general purpose noise measurements.



AADT

Annual average daily traffic. The total traffic flow over a 24-hour period along a specific segment of road.

Broadband sound

Sound distributed across the whole audible frequency range.

dB(A)

The A-weighted sound pressure level.

Façade adjusted

The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the buildings façades are “façade-adjusted”.

Fast time-weighting

The Fast (“F”) time-weighting is defined in AS 1259.1-1990. Instruments with F time weighting use a time constant of 125 milliseconds in their exponential averaging circuit.

Free-field

Noise level without any reflected sound from buildings or other hard, reflective surfaces (except for the ground plane).

Hz (Hertz)

Hertz is the standard measure of the frequency of oscillations in a wave motion. The frequency is most often measured in cycles per second (cps) or Hertz (Hz). Frequency of 1 Hz is one cycle per second.

Impulsive noise and impulsiveness adjustment

Noise having a high peak of short duration or a sequence of such peaks. Impulsive noise is present if the difference in A-weighted maximum noise levels between fast response and impulse response is greater than 2dB. Impulsiveness adjustment (penalty) of up to 5dB should be applied to the component noise level.

$L_{Aeq,T}$

“Average-energy” sound level used in situations where sound varies over time. $L_{Aeq,T}$ is the A-weighted sound pressure level that has the same energy as the fluctuating sound over the time period T sec.

L_{A01,T}	Measure of the maximum sound level. L _{A01,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 1% of the measurement time T.
L_{A10,T}	L _{A10,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 10% of the measurement time T. Used as a traffic noise descriptor in Queensland.
L_{A10,18hr}	The arithmetic average of the 18 individual L _{A10,1hr} values between 6:00am and 12:00am (midnight). It is a derived descriptor which is used as a main traffic noise descriptor in the Calculation of Road Traffic Noise (CoRTN) procedure developed by the UK Department of Environment, Welsh Office, HMSO, 1988.
L_{A90,T}	Background sound level. L _{A90,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T.
Noise	Unwanted sound.
Octave bands and 1/3 octave bands	A range of frequencies whose upper frequency limit is twice that of its lower frequency limit. In acoustics, the audible spectrum (20Hz to 20kHz) is divided into 10 parts (octaves) with centre frequencies of 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz. For more detailed frequency analysis, octave bands are further divided into more discrete bands. For examples, 1/3 octaves bands are where each octave band is divided into three parts. IEC 61260:1995, <i>Electroacoustics — Octave-band and fractional-octave band filters</i>
Rating background level (RBL)	The overall single-figure background level representing each assessment period (e.g. standard hours, non-standard hours). The RBL is the background noise level for each work period using the tenth percentile method of measured L _{A90,15-minute} .
Sound power	The sound energy radiated per unit time by a sound source in all directions, measured in Watts (W).
Sound Power Level, L_w (SWL)	The sound power level in decibels (dB) is 10 times the base 10 logarithm of the ratio of the sound power in W to the reference sound power of 1 x 10 ⁻¹² W (hearing threshold).
Sound pressure	The difference between the pressure caused by a sound wave and the ambient pressure of the medium the sound wave is passing through. Measured in Pascals (Pa).
Sound Pressure Level, L_p (SPL)	The sound power level in decibels (dB) is 20 times the base 10 logarithm of the ratio of the sound pressure in Pa to the reference sound pressure of 2 x 10 ⁻⁵ Pa (hearing threshold).
Tonal noise, tonality, and tonality adjustment	Tonal noise is characterised by one or more distinct frequency components (“tones”) that emerge audibly from the total sound. In accordance with the <i>NSW EPA Noise Policy for Industry</i> (2017), tonal noise is assessed with one-third octave band analysis using the “objective method for assessing the audibility of tones in noise – simplified method” (ISO 1996.2:2007 – Annex D). Tonal noise is penalised by the addition of up to 5dB to the component noise level.
Weighted Sound Reduction Index (R_w)	A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies.

1. Introduction

1.1 Project Background

ATP Consulting Engineers (ATP) was engaged to prepare an acoustic report (road traffic and commercial noise impact assessment) in support of a Reconfiguring a Lot (RaL) application to create 21 new townhouses at 9-11 Adler Circuit in Yarrabilba.

The purpose of the report is to assess the traffic noise impacts from the state-controlled Waterford - Tamborine Road and Camp Cable Road and the locally-controlled Yarrabilba Drive, and from the operation of the nearby commercial developments, on the proposed townhouse development.

The assessment is carried out in accordance with the *Yarrabilba Priority Development Area Development Scheme*, and the relevant noise criteria specified in the SDAP State Code 1.

1.2 Study Objectives

Study objectives are as follows:

- Site visit and establishment of an automated noise logger at the boundary of the development site exposed to traffic noise from Waterford – Tamborine Road/Camp Cable Road/ Yarrabilba Drive to measure the road traffic and background noise levels over a typical 7-day period.
- Attended noise measurements at the southern boundary to record the commercial noise emissions from the activities at the recycling depot (*Containers for Change*, Yarrabilba) and simultaneous attended noise measurements at the boundary of Lot 10, immediately opposite to the outdoor playing area of the *Grand Kids Early Learning Centre*.
- Development of a 3D noise propagation model using SoundPLAN software with consideration of the proposed development layout, current and projected traffic flows along Tamborine - Waterford Road/Camp Cable Road and Yarrabilba Drive, and operational noise emissions from the existing commercial operations (*Containers for Change*, Yarrabilba and *Grand Kids Early Learning Centre*) near the proposed development site.
- Assessment of traffic noise levels ($L_{10,18hr}$) from the state-controlled Tamborine – Waterford Road and Camp Cable Road, and the locally-controlled Yarrabilba Drive, within a planning horizon up to Year 2037, considering the traffic noise impact on the facades and the private open spaces of the future dwellings.
- Assessment of the traffic noise levels against the relevant criteria specified in the *SDAP State Code 1*.
- Assessment of operational noise impacts from the nearby recycling depot (*Containers for Change*, Yarrabilba) and childcare centre (*Grand Kids Early Learning Centre*) on the future dwellings in accordance with the *Yarrabilba Priority Development Area Development Scheme*.
- Recommendations of noise control measures to ensure compliance with the relevant external and internal noise criteria.

1.3 Site Description

The proposed development is located at Lot 11 on SP296372, No. 9-11 Adler Circuit in Yarrabilba. The land, with a total area of 5,263m², is zoned as *Urban Living* by the Yarrabilba Priority Development Area Plan.

The location of the subject site is presented in Figure 1.1.



Figure 1.1 Site location

The proposed development site is to be subdivided into 21 new lots – each lot consisting of a high-set townhouse designed with ground floor; a private open space at the rear of the property; and a first-floor balcony at the front. The balconies are accessible from a main living area, and as such are considered Private Open Spaces (POS).

The proposed development layout presented in Appendix A.

2. Existing Noise Amenity

2.1 Road Traffic and Background Noise Measurements

Noise monitoring was carried at the proposed development site, to obtain information about the existing road traffic and background noise levels.

The unattended noise measurement methodology is summarised in Table 2.1.

Table 2.1 Unattended noise measurements

Relevant legislation, standards, and guidelines	The noise measurements were carried out in accordance with: - Australian Standard AS 1055:2018 (<i>Acoustics – Description and measurement of environmental noise</i>); - Australian Standard AS 2702-1984 (<i>Acoustics – Methods for measurement of road traffic noise</i>).
Measurement location	- The noise monitoring was carried out using a noise logger at representative location with clear exposure to traffic noise from Waterford - Tamborine Road/Camp Cable Road and Yarrabilba Drive. - The location of the noise measurements is presented in Figure 2.1. - Photos showing the noise measurement location are presented in Appendix B.
Measurement period	Continuous noise monitoring was carried out 24 hours a day from 14 to 22 July 2025.
Measurement equipment	The following noise measurement equipment was used: - Environmental noise logger – ARL Ngara (serial no. 8780D2); and - Calibration – RION NC-74 Sound Level Calibrator (serial no. 34413140). The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A).
Meteorological conditions	The weather conditions during the monitoring period from 14 to 22 July 2025 were mostly fine. However, significant rainfall was recorded on 18 July 2025. Noise data from this day was excluded from the assessment. Full meteorological data¹ over the noise measurement period is presented in Appendix C.
Analysis of data	The noise measurement data was analysed to determine the following noise descriptors: Road Traffic Noise Assessment: L_{10,18hr}: L₁₀ is the level of noise exceeded for 10% of any time period; L_{10,18hr} is the typical traffic noise descriptor, and is the arithmetic average of 18 hourly L_{10,1hr} levels over consecutive hours between 6am and 12am. L_{A90,T}: Background sound level. L_{A90,T} is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T.

¹ Observation from Bureau of Meteorology (BoM) weather station in Greenbank (Station ID: #140009).



Figure 2.1 Unattended noise measurement location

2.2 Attended Commercial Noise Measurements

During the site visit to deploy the automated noise logger for road traffic noise measurements, attended noise measurements were carried out at the southern boundary of the proposed development site to record the commercial noise emissions from the activities at the recycling depot (*Containers for Change*, Yarrabilba). Simultaneously attended noise measurements were carried out at the boundary of Lot 10, immediately opposite to the outdoor playing area of the *Grand Kids Early Learning Centre*.

The attended noise measurement methodology is summarised in Table 2.2.

Table 2.2 Attended noise measurements

Relevant legislation, standards, and guidelines	The noise measurements were carried out in accordance with: Australian Standard AS 1055:2018 (<i>Acoustics – Description and measurement of environmental noise</i>).
Measurement location	- The noise monitoring was carried out using two sound level meters on tripods at representative locations with clear exposure to commercial noise emissions from the <i>Containers for Change</i> and the outdoor play area of the <i>Grand Kids Early Learning Centre</i>. - The location of the noise measurements is presented in Figure 2.2. - Photos showing the noise measurement locations are presented in Appendix B.
Measurement period	Continuous attended noise monitoring was carried out for 1-hour on 14 July 2025 (Monday).
Measurement equipment	The following noise measurement equipment was used: - Sound Level Meter – SVAN977C (serial no. 97577); - Sound Level Meter – SVAN977C (serial no. 98032); and - Calibration – RION NC-74 Sound Level Calibrator (serial no. 34413140). The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A).
Meteorological conditions	The weather conditions during the attended noise monitoring on 14 July 2025 were fine. Full meteorological data² over the noise measurement period is presented in Appendix C.
Analysis of data	The noise measurement data was analysed to determine the following noise descriptors: Operational Noise Impact Assessment L_{Aeq,1hr}: Operational noise levels associated with the existing recycling depot and childcare centre at the subject site over a 1-hour period.

² Observation from Bureau of Meteorology (BoM) weather station in Greenbank (Station ID: #140009).



Figure 2.2 Attended noise measurement locations

2.3 Noise Measurement Results

2.3.1 Road Traffic Noise Measurements

The results of the unattended noise measurements relevant for the road traffic noise, carried out from 14 to 22 July 2025 are presented in Table 2.3.

Table 2.3 Noise measurement results – Road traffic noise

Date	Traffic noise levels		Background noise levels	
	L _{10,18hr} (6am-12am)	L _{10,1hr max} (6am-12am)	L _{90,18hr} (6am-12am)	L _{90,8hr} (10pm-6am)
14 Jul 2025 (Mon)	—	—	—	42.7
15 Jul 2025 (Tue)	60.9	64.3	52.2	42.2
16 Jul 2025 (Wed)	61.3	65.0	52.8	42.7
17 Jul 2025 (Thu)	61.2	63.9	52.9	43.1
18 Jul 2025 (Fri)	62.2	65.2	53.3	43.1
19 Jul 2025 (Sat)	61.2	63.5	52.2	44.3
20 Jul 2025 (Sun)	60.9	64.3	52.2	42.2
21 Jul 2025 (Mon)	61.3	65.0	52.8	42.7
Average (weekdays only)	61.2	64.5	52.7	42.7

Data for periods of inclement weather were disregarded in determination of average noise levels

2.3.2 Background Noise Measurements

The results of the unattended background noise measurements, relevant for the operational noise assessment, carried out at the subject site on 14 to 22 July 2025 are presented in Table 2.4.

Table 2.4 Noise measurement results – Background noise

Date	Background Noise Levels		
	L _{90,11hr,Day} (7am–6pm)	L _{90,4hr,Evening} (6pm–10pm)	L _{90,9hr,Night} (10pm–7am)
14 Jul 2025 (Mon)	—	52	44
15 Jul 2025 (Tue)	54	50	44
16 Jul 2025 (Wed)	55	50	44
17 Jul 2025 (Thu)	54	52	45
18 Jul 2025 (Fri)	54	53	44
19 Jul 2025 (Sat)	53	51	46
20 Jul 2025 (Sun)	54	50	44
21 Jul 2025 (Mon)	55	50	44
Average	54	51	44

Data for periods of inclement weather were disregarded in determination of average noise levels

2.3.3 Attended Noise Measurements – Containers for Change

The results of the attended commercial noise measurements as carried out on 14 July 2025 at the boundary of the proposed development site with the recycling depot (*Containers for Change*, Yarrabilba), presented as four sets of 15-minute average noise levels, are presented in Table 2.5.

Table 2.5 Attended noise measurement results – Containers for Change

Date	Commercial Activities Noise Levels
	L_{eq},1hr,Day (7am–6pm)
14 Jul 2025 (Mon) 10:25 to 10:39am	58
14 Jul 2025 (Mon) 10:40 to 10:54am	56
14 Jul 2025 (Mon) 10:55am to 11:09am	54
14 Jul 2025 (Mon) 11:10am to 11:24am	56
Average (1-hour Period)	56

2.3.4 Attended Noise Measurements – Child Care Centre

The results of the attended commercial noise measurements as carried out on 14 July 2025 near the childcare centre (*Grand Kids Early Learning Centre*), presented as four sets of 15-minute average noise levels, are presented in Table 2.6.

Table 2.6 Attended noise measurement results – Childcare Centre

Date	Commercial Activities Noise Levels
	L_{eq},1hr,Day (7am–6pm)
14 Jul 2025 (Mon) 10:25 to 10:39am	56
14 Jul 2025 (Mon) 10:40 to 10:54am	58
14 Jul 2025 (Mon) 10:55am to 11:09am	56
14 Jul 2025 (Mon) 11:10am to 11:24am	57
Average (1-hour Period)	56

Full summary of the noise measurement data is presented in Appendix D.

3. Road Traffic Noise Assessment

3.1 Traffic Noise Criteria

3.1.1 State Development Assessment Provisions (SDAP)

The proposed development is located near the Waterford - Tamborine Road and Camp Cable Road, which represent a state-controlled Transport Noise Corridor under administration by Department of Transport and Main Roads (TMR). Traffic noise impacts from state-controlled roads on the noise sensitive development must be assessed in accordance with the *TMR Transport Noise Management Code of Practice, Volume 1 – Road Traffic Noise* (November 2013).

The relevant traffic noise criteria with both the performance outcomes (PO) and acceptable outcomes (AO) are provided in the following documents:

- Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP), *State Development Assessment Provisions (SDAP) Version 3.2* (February 2025), *State Code 1: Development in state-controlled road environment*; and
- Department of Transport and Main Roads (TMR), *Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 4* (October 2017).

The applicable internal and external criteria from the *Reference tables* of *State Code 1* of *SDAP* and the *TMR Policy* are summarised in Tables 3.1.

Table 3.1 External traffic noise criteria

Transport Infrastructure	Development Type	Location Within Development	Environmental Criteria
State-controlled Road	Accommodation activities ³	All facades	≤60dB(A) L _{10,18hr} facade corrected (measured L _{90,8hr} free field between 10pm and 6am ≤ 40dB(A))
			≤63dB(A) L _{10,18hr} facade corrected (measured L _{90,8hr} free field between 10pm and 6am > 40dB(A))
		Outdoor spaces for passive recreation	≤57dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and 10pm ≤ 45dB(A))
			≤60dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and 10pm > 45dB(A))
		Internal	≤35dB(A) L _{eq, 1hr} (maximum hour over 24 hours)

The relevant performance and acceptable outcomes from the *SDAP* are presented in Table 3.2.

³ Includes caretaker's accommodation, community residence, dual occupancy, dwelling house, dwelling unit, multiple dwelling, relocatable home park, residential care facility, resort complex, retirement facility, rooming accommodation, short-term accommodation, and tourist park.

Table 3.2 Performance and acceptable outcomes (SDAP State Code 1)

Performance outcome	Acceptable outcome
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor	
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor	
PO38 Development minimises free field noise intrusion from a state-controlled road .	AO38.1 Development provides a noise barrier or earth mound which is designed, sited, and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.

The existing background noise levels at night-time, in terms of the $L_{90, 8hr}$ noise descriptor, are on average 42.7dB(A). Similarly, the existing background noise levels during daytime, in terms of the $L_{90, 18hr}$ noise descriptor, are on average 52.7dB(A).

Therefore, the applicable traffic noise criteria are:

- Building façades (façade adjusted⁴): $\leq 63\text{dB(A)} L_{10, 18hr}$;
- Private open spaces (free-field⁵): $\leq 60\text{dB(A)} L_{10, 18hr}$; and
- Internal: $\leq 35\text{dB(A)} L_{eq, 1hr}$ (maximum hour over 24-hour period).

⁴ The façade adjusted noise criterion contains +2.5dB(A) adjustment factor for the sound energy reflected from the hard surface of a typical building. This adjustment factor is applicable for areas within 3m from a hard-reflective vertical surface.

⁵ "Free-field" refers to open space with no reflected noise.

3.1.2 Queensland Development Code (QDC) MP4.4

In case of exceedance of the external traffic noise criteria, architectural treatment must be applied to the external façade of the future dwellings to protect the internal noise amenity.

The architectural treatments are specified in *Queensland Development Code (QDC) Mandatory Part 4.4 (Buildings in a Transport Noise Corridor)* (MP4.4). Depending on the calculated planning horizon road traffic noise, under the MP4.4, there are five road traffic noise categories and corresponding acceptable form of construction, as presented in Table 3.3.

Table 3.3 4QDC MP4.4 noise categories

Noise category	Level of transport noise* L _{A10,18hr} for State-controlled and designated local government roads
Category 4	≥ 73 dB(A)
Category 3	68 – 72 dB(A)
Category 2	63 – 67 dB(A)
Category 1	58 – 62 dB(A)
Category 0	≤ 57 dB(A)

*Measured at 1m from building façade

QDCMP4.4 specifies acceptable forms of construction for the external walls, windows, and roof/ceiling corresponding with the QDCMP4.4 Noise Category.

The noise categories applicable to the proposed development are determined in this report.

As an alternative to the deemed-to-comply construction specifications from QDCMP4.4, the buildings can be constructed as per the advice of a qualified acoustical engineer. The engineer can carry out floor plan specific acoustic design in accordance with AS3671-1989 and provide acoustic design specifications for the external walls, windows, and roof/ceilings.

The buildings should be constructed with materials that have sufficient sound attenuation properties to prevent traffic noise ingress. The sound attenuation properties are expressed in terms of weighted sound reduction index (R_w) for the construction components (i.e. external walls; roof/ceilings; windows/doors) of the proposed dwellings. The R_w are determined based on design calculations in accordance with AS3671-1989, to allow specific acoustic design specifications to be provided for each of the construction components.

3.2 Traffic Noise Calculation Methodology

Traffic noise levels at the proposed development, within a planning horizon of up to Year 2037, were calculated using SoundPLAN noise propagation modelling software.

SoundPLAN calculates traffic noise as per the procedure specified in the UK Department of Transport Welsh Office *Method of Calculation of Road Traffic Noise* (CoRTN). This traffic noise calculation procedure is widely adopted in Australia.

3.2.1 Modelling Assumptions (Road Traffic)

The assumptions and data used in development of the traffic noise propagation model are presented in Table 3.4.

Table 3.4 Data and assumptions – Traffic noise model

Terrain	- The model uses the finished surface levels (earthworks model) of the proposed development as provided by Axis Surveys. - Elevation data for the surroundings were obtained from Department of Natural Resources and Mines Airborne Laser (LiDAR) 1 metre elevation data. - Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas.
Development layout	The model uses the lot boundaries presented in the development layout for the full extent of the proposed development. The development layout is presented in Appendix A.
Buildings	- The proposed 21 townhouse units were included in the model along with the existing surrounding premises. - Existing buildings near the proposed development were included in the model.
Road traffic	- Waterford-Tamborine Road and Camp Cable Road were included in the modelling, with alignment determined based on aerial imagery. The length of the road considered in the traffic noise modelling spans approximately 300m past the site extent of the proposed development. - Traffic volumes for Waterford Tamborine Road, north of Camp Cable Road, were obtained from the AADT Segment Reports (Road Section 207 – Waterford – Tamborine Road Segment from 10.67km to 14.80km, Segment Site 11,772), sourced from TMR Data Solutions and Insight Team: 2024 AADT of 27,572 vehicles per day; - The heavy vehicle percentage is 10%; and - Average annual growth rate of 3.19% per annum. - Traffic volumes for Waterford Tamborine Road, south of Camp Cable Road, were obtained from the AADT Segment Reports (Road Section 207 – Waterford – Tamborine Road Segment from 14.80km to 24.97km, Segment Site 11429), sourced from TMR Data Solutions and Insight Team: 2024 AADT of 5,905 vehicles per day; - The heavy vehicle percentage is 17%; and - Average annual growth rate of 10.16% per annum. - Traffic volumes for Camp Cable Road were obtained from the AADT Segment Reports (Road Section 2071 – Camp Cable Road Segment from 0.00km to 7.25km, Segment Site 11617), sourced from TMR Data Solutions and Insight Team: 2024 AADT of 14,606 vehicles per day; - The heavy vehicle percentage is 10%; and - Average annual growth rate of 3.83% per annum. - Traffic volumes for Yarrabilba Drive were obtained from the, sourced from Logan City Council Open Data: 2020 AADT of 16,736 vehicles per day; - The heavy vehicle percentage is 10%; and - Average annual growth rate conservatively assumed as of 3% per annum. - Speed limit on Waterford – Tamborine Road is 80km/h while it passes the development. - Speed limit on Camp Cable Road is 80km/h while it passes the development. - Speed limit on Yarrabilba Drive is 60km/h while it passes the development.

	The CoRTN procedure requires traffic volume data input for 18 hours. Traffic volume for 18-hour period (6:00am to midnight) was considered as 94% of the 24-hour AADT, as per the procedure of the TMR CoP Vol. 1.
Calculation receivers	2m grid spacing was used for calculation of noise contour maps. - Free-field and facade-adjusted noise contour maps were generated: - Free-field: No adjustment for facade reflection. Represents the traffic noise levels that are applicable to private open spaces. - Facade-adjusted: +2.5dB(A) facade adjustment was applied to the calculated noise levels to account for noise reflection from building façades. Represents the traffic noise levels that are applicable to building façades. - Traffic noise levels were calculated at 1.5m above ground level (Ground floor private open spaces) - CoRTN Calibration Factors for Queensland Conditions was considered in this assessment, as per the procedure from the TMR CoP Vol. 1⁶: - Adjustment of -1.7 dB was applied to the calculated facade traffic noise levels; and - Adjustment of -0.7 dB was applied to the calculated free-field traffic noise levels.
Calculation procedure	CoRTN '88.

3.2.2 Model Validation (Year 2025)

The noise data collected during the monitoring period (as presented in Table 2.2) was used to validate the accuracy of the SoundPLAN model prior to undertaking calculations of the future road traffic noise levels, after the development is fully established.

The traffic flow data considered in the SoundPLAN validation model is presented in Table 3.5.

Table 3.5 Traffic flow data

Road	Traffic volumes		Heavy vehicles (%)
	2024 AADT ¹	2037 AADT	
Waterford Tamborine Road (North of Camp Cable Road)	27,572 vpd	29,425 vpd	10%
Waterford Tamborine Road (South of Camp Cable Road)	5,905 vpd	15,527 vpd	17%
Camp Cable Road	14,606 vpd	21,269 vpd	10%
Yarrabilba Drive	16,736 vpd ²	24, 633 vpd	10%

Notes:

1. AADT – Average Annual Daily Traffic.
2. Data from Yarrabilba Drive from 2020

The results of the SoundPLAN model validation are presented in Table 3.6 and in Appendix E.

⁶ Source: Australian Road Research Board, 1982, *An Evaluation of the UK DoE Traffic Noise Prediction* (Report No. 122, ARRB – NAASRA Planning Group). Referenced in the TMR CoP Vol. 1.

Table 3.6 SoundPLAN validation results

Receiver	Traffic noise level L ₁₀ (18-hour) dB(A), free-field		Difference dB(A)	Validation Factor
	Measured	Calculated		
Waterford – Tamborine Road	61.2	62.9	+1.7	n/a

The average free-field calculated values are within the acceptable tolerance of ± 2 dB(A), hence no adjustments were made to the calculated values as specified in CoP Vol.1.

The SoundPLAN model, validated as per the results presented in Table 3.6 was used to calculate the projected road traffic noise levels up to Year 2037.

An excerpt from the 3D SoundPLAN traffic noise validation model (year 2025) showing the full alignment of Waterford-Tamboine Road is presented in Figure 3.1.

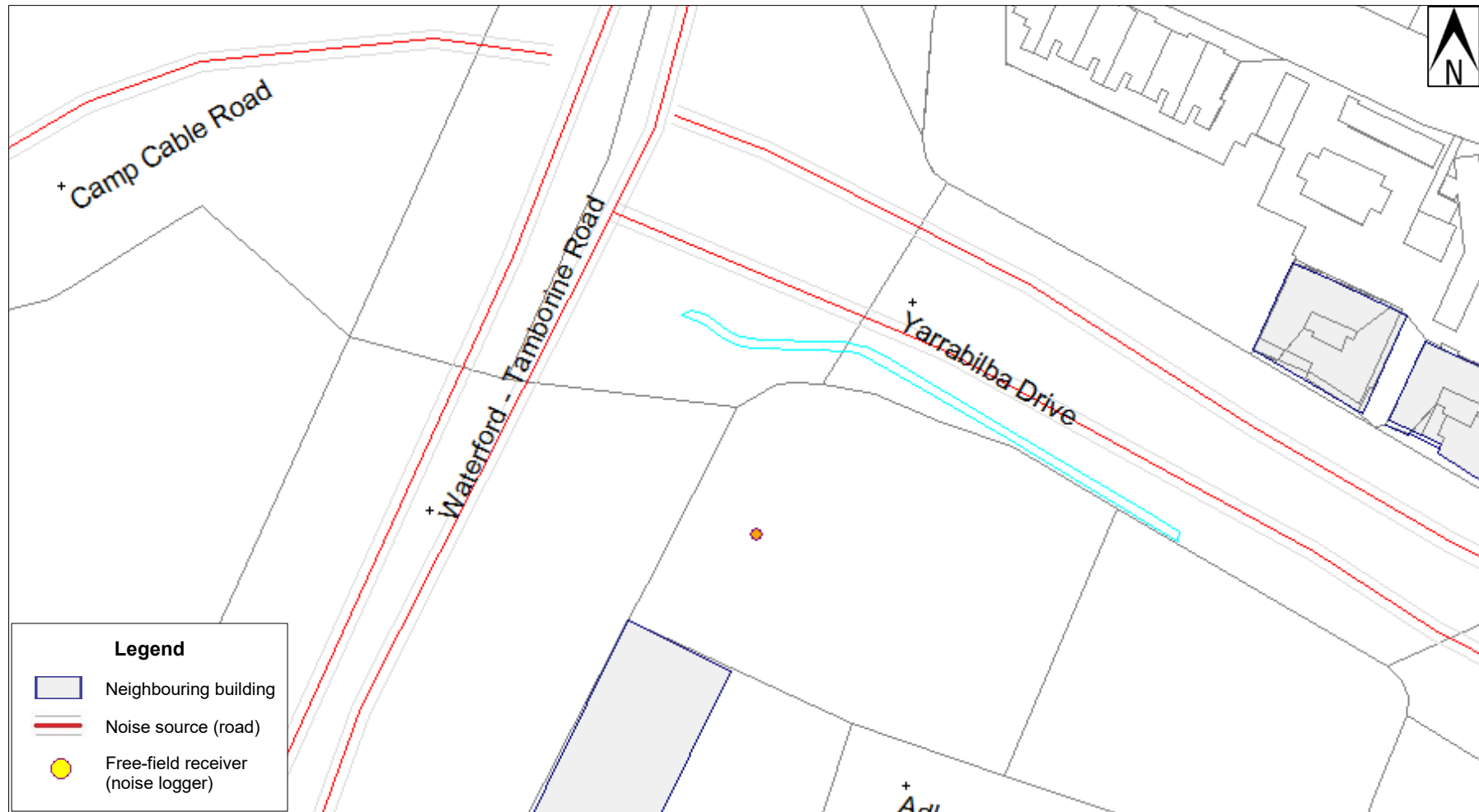


Figure 3.1 Excerpt from 3D SoundPLAN traffic noise validation model (year 2025)

An excerpt from the 3D SoundPLAN traffic noise model for the Year 2035 planning horizon showing the full extent of Waterford - Tamborine Road is presented in Figure 3.2.

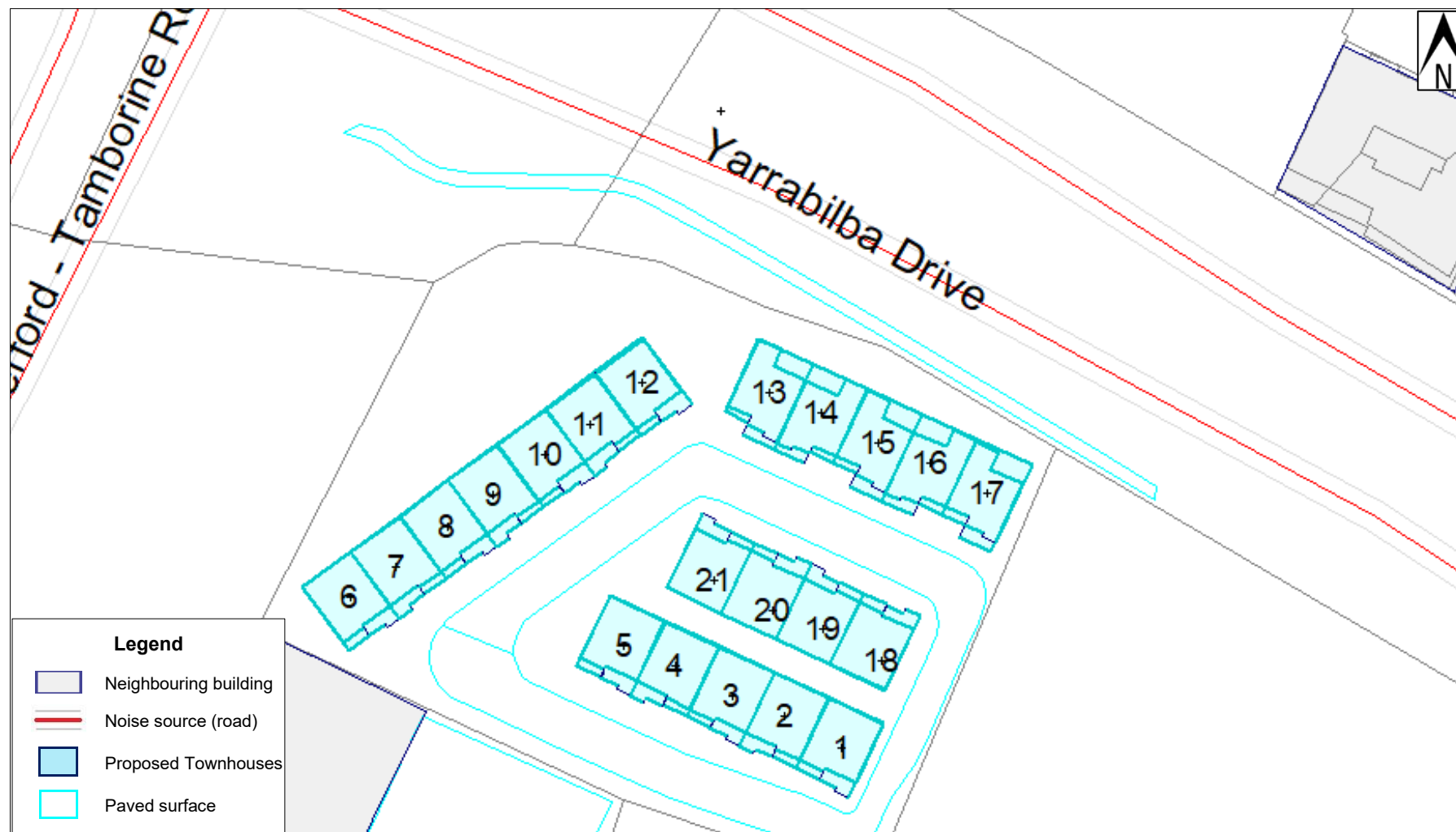


Figure 3.2 Excerpt from 3D SoundPLAN traffic noise model (year 2037)

3.3 Calculated Traffic Noise Levels

The road traffic noise levels were calculated at heights representative of the ground and upper floor façades of future dwellings, and at the representative private open spaces of the future dwellings (townhouses).

The calculated noise levels were then assessed against the traffic noise criterion of $\leq 63\text{dB(A)}$ $L_{10,18\text{hr}}$ façade adjusted for building façades; and traffic noise criterion of $\leq 60\text{dB(A)}$ $L_{10,18\text{hr}}$ free-field for private open spaces.

The traffic noise levels for the entire development at 9-11 Adler Circuit in Yarrabilba are represented as noise contour maps in Appendix F, relative to compliance with the traffic noise criteria as per SDAP State Code 1. In addition, the corresponding QDC MP4.4 Noise Categories applicable to the façades of the future dwellings of the subdivision are summarised in Table 3.7.

Table 3.7 Traffic noise levels

Lot no.	Building façades (facade-adjusted)				Private open spaces (free-field)
	Ground floor (1.8m AGL)		Upper floor (4.6m AGL)		
	Compliance with ≤63dB(A) criterion	Noise Category QDC MP4.4	Compliance with ≤63dB(A) criterion	Noise Category QDC MP4.4	Compliance with ≤60dB(A) criterion
TH01	Yes	Category 0	Yes	Category 0	Yes
TH02	Yes	Category 0	Yes	Category 0	Yes
TH03	Yes	Category 0	Yes	Category 0	Yes
TH04	Yes	Category 0	Yes	Category 0	Yes
TH05	Yes	Category 0	Yes	Category 1	Yes
TH06	No	Category 2	No	Category 3	Yes
TH07	No	Category 2	No	Category 3	Yes
TH08	No	Category 2	No	Category 2	Yes
TH09	No	Category 2	No	Category 2	Yes
TH10	No	Category 2	No	Category 2	Yes
TH11	No	Category 2	No	Category 2	Yes
TH12	No	Category 2	No	Category 2	Yes
TH13	No	Category 2	No	Category 2	No
TH14	No	Category 1	No	Category 2	No
TH15	Yes	Category 1	No	Category 2	No
TH16	Yes	Category 1	No	Category 2	No
TH17	Yes	Category 1	No	Category 2	Yes
TH18	Yes	Category 0	Yes	Category 1	Yes
TH19	Yes	Category 0	Yes	Category 1	Yes
TH20	Yes	Category 0	Yes	Category 1	Yes
TH21	Yes	Category 0	Yes	Category 1	Yes

4. Commercial Noise Impact Assessment

4.1 Noise Criteria

4.1.1 Yarrabilba Priority Development Area Development Scheme

Section 3.4.2 *Urban Living Zone* of the Yarrabilba Priority Development Area Development Scheme states the following with regard to non-residential uses located in the *Urban Living Zone*:

- Any impacts associated with the use (e.g. noise, dust, emissions) will not affect residential or other sensitive uses.

There is no specific numerical criteria in the Yarrabilba Priority Development Area Development Scheme. Therefore the noise criteria from the *Environmental Protection (Noise) Policy 2019* is considered to determine whether the existing commercial activities in the vicinity of the proposed development may cause impact on the noise amenity.

4.1.2 Environmental Protection (Noise) Policy 2019

Acoustic Quality Objectives

The *Environmental Protection (Noise) Policy 2019* (EPP Noise) identifies environmental values for the acoustic environment and sets acoustic quality objectives for sensitive receptors. The purpose of the acoustic quality objectives is to protect the acoustic amenity of the environment.

The criteria from Schedule 1 of the policy are presented in Table 4.1.

Table 4.1 Acoustic quality objectives

Sensitive receptor	Location	Period	Acoustic quality objectives			Environmental value
			L _{Aeq,adj,1-hr}	L _{A10,adj,1-hr}	L _{A01,adj,1-hr}	
Dwelling	Indoors	Day time and evening	35	40	45	Health and wellbeing
		Night-time	30	35	40	Health and wellbeing, in relation to the ability to sleep
	Outdoors	Day time and evening	50	55	65	Health and wellbeing
		Night-time, windows open	37 (30 + 7)	42 (35 + 7)	47 (40 + 7)	Health and wellbeing, in relation to the ability to sleep

The following is noted regarding the acoustic quality objectives:

- Under the Noise *Policy*, daytime is 7:00am to 6:00pm, evening is 6:00pm to 10:00pm and night-time is 10:00pm to 7:00am.
- The *Noise Policy* does not specify outdoor noise criteria for commercial premises; nor does it specify outdoor noise criteria for dwellings during night-time. However, the outdoor noise

criteria have been derived from the internal criteria, assuming 7dB noise reduction by the building envelope with windows open⁷.

- The assessment of compliance with the operational noise criteria is based on the results of the noise propagation modelling for a period of 1-hour with maximum noise emissions.

4.2 Noise Propagation Modelling

4.2.1 Modelling Methodology

A 3D model of the site and surroundings was developed using SoundPLAN noise propagation software considering the proposed activities at the adjacent commercial uses relative to the proposed townhouses.

The calculations were carried out as per the procedures specified in the International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*).

The calculation method for a single frequency is as follows:

$$L_S = [L_W + K_0] - [A_{dl} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}]$$

Where:	L_S	Sound pressure for a single frequency
	L_W	Sound power of source
	K₀	Correction for propagation in limited spatial angle
	A_{DI}	Mean directivity correction
	A_{div}	Mean attenuation due to geometrical spreading
	A_{gr}	Mean attenuation due to ground effect
	A_{bar}	Mean attenuation due to screening
	A_{atm}	Mean attenuation due to air absorption
	d_{Lrefl}	Level increase due to reflections
	d_{Lw}	Correction due to source operation time

The noise propagation losses are calculated as a combination of distance attenuation (geometrical spreading), screening, ground attenuation and other factors.

⁷ Typical noise reduction for windows closed, *Planning for Noise Control Guideline*, Dept. of Environment and Science (DES).

The parameters and assumptions considered in the 3D noise propagation model are described in Table 4.2.

Table 4.2 Data and assumptions – Operational noise model

Terrain	- Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre data was used to determine the elevation of the development relative to the surrounds. - Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas.
Buildings	- The proposed residential development was included in the model along with neighbouring buildings. - The development layout is presented in Appendix A.
Noise sources	Refer to Section 4.2.2 of this report.
Receivers	2m grid spacing was used for calculation of noise contour maps.
Noise mitigation measures	The recommended noise control measures are discussed in Section 5 of this report.
Distance attenuation	3D model of the subject site and surroundings was developed using cadastral and survey data using SoundPLAN software. The source-receiver distances and geometrical spreading are automatically calculated in SoundPLAN to a high level of accuracy in accordance with the ISO9613 procedure.
Barrier attenuation / screening	Screening by walls and roofs was considered in the model. The screening was calculated in SoundPLAN in accordance with the ISO9613 procedure.
Ground attenuation	Sound reflecting surfaces such as pavement are modelled with ground absorption coefficient of 0 (no absorption). Grassed and vegetated areas were modelled with ground absorption coefficient of 1 (100% absorption) in accordance with ISO9613.

4.2.2 Noise Sources

The sound power levels, tonality/impulsiveness adjustment factors, and the operational scenarios for all noise sources considered in the model are presented in Table 4.3.

Table 4.3 Details of operational noise sources

Operational noise source	Location	Sound power level dB(A) (re 10 ⁻¹² W)	Operational scenario ⁸	Tonality/impulsiveness
Children Outdoor Play	Childcare centre outdoor area	The sound power of 33 children (3-5 years) playing is 90.8dB(A) ⁹	<u>Operating Hours (when the outdoor playground area is in use: - 7:00am to 6:00pm)</u> – 33 Children playing outdoors at all times	n/a
Car Movements	Bottle & can recycling centre <i>Containers for Change</i>	90.1 dB(A) point source, moving at 15 km/h, equating to a line source with 48.4 dB(A) per metre ¹⁰ . ATP Library: Pkw (heavy vehicle) – Slowly accelerating 10-20km/h (line source)	<u>Business hours (9am to 4pm)</u> – 5 car movements per hour.	n/a
Breakout noise from indoor areas of building	Bottle & can recycling centre <i>Containers for Change</i>	73.0dB(A) /m ² Cumulative noise from all indoor activities based measurements by ATP adjacent to the recycling plant. Modelling considers the external roller doors of the building being fully open.	<u>Business hours (9am to 4pm)</u> – Continuous operation	n/a
Delivery / dispatch trucks (idling)	Bottle & can recycling centre <i>Containers for Change</i>	90.8dB(A) ATP Library: Lkw (heavy vehicle) idling (point source)	<u>Business hours (9am to 4pm)</u> – 2 minutes every two hours.	+5 dB for tonality
Delivery / dispatch trucks (loading)	Bottle & can recycling centre <i>Containers for Change</i>	92.0dB(A) ATP Library: Truck loading low-lift (point source)	<u>Business hours (9am to 4pm)</u> – 2 minutes every two hours.	+5 dB for impulsiveness

⁹ Association of Australasian Acoustical Consultants (AAAC) Guideline for Child Care Centre Acoustic Assessment Version 3.0 – Section 4.1 Children Outdoor Play

¹⁰ Modelled as a line source, with the sound power per metre calculated using the “moving point source definition” in SoundPLAN (point source with sound power of 90.1 dB(A) moving at 15 km/h).

4.2.3 Noise Model Validation

As discussed in Section 2.3, attended noise measurements were carried out near the commercial operations (*Containers for Change*, *Yarrabilba* and *Grand Kids Early Learning Centre*) to obtain data for validation of the commercial noise propagation model. These measurements were used to validate the SoundPLAN noise propagation model as presented in Table 4.4.

Table 4.4 SoundPLAN validation results

Measurement Location	Measured	Calculated	Difference dB	Validation Factor
	L _{eq,1hr} Day dB(A)	L _{eq,1hr} Day dB(A)	L _{eq,1hr} Day dB(A)	
Easten Boundary (Childcare noise)	56	56	0	n/a
Southern Boundary (industrial noise)	56	56	0	n/a

Excerpt from the 3D noise propagation model developed in SoundPLAN is presented in Figure 4.1.

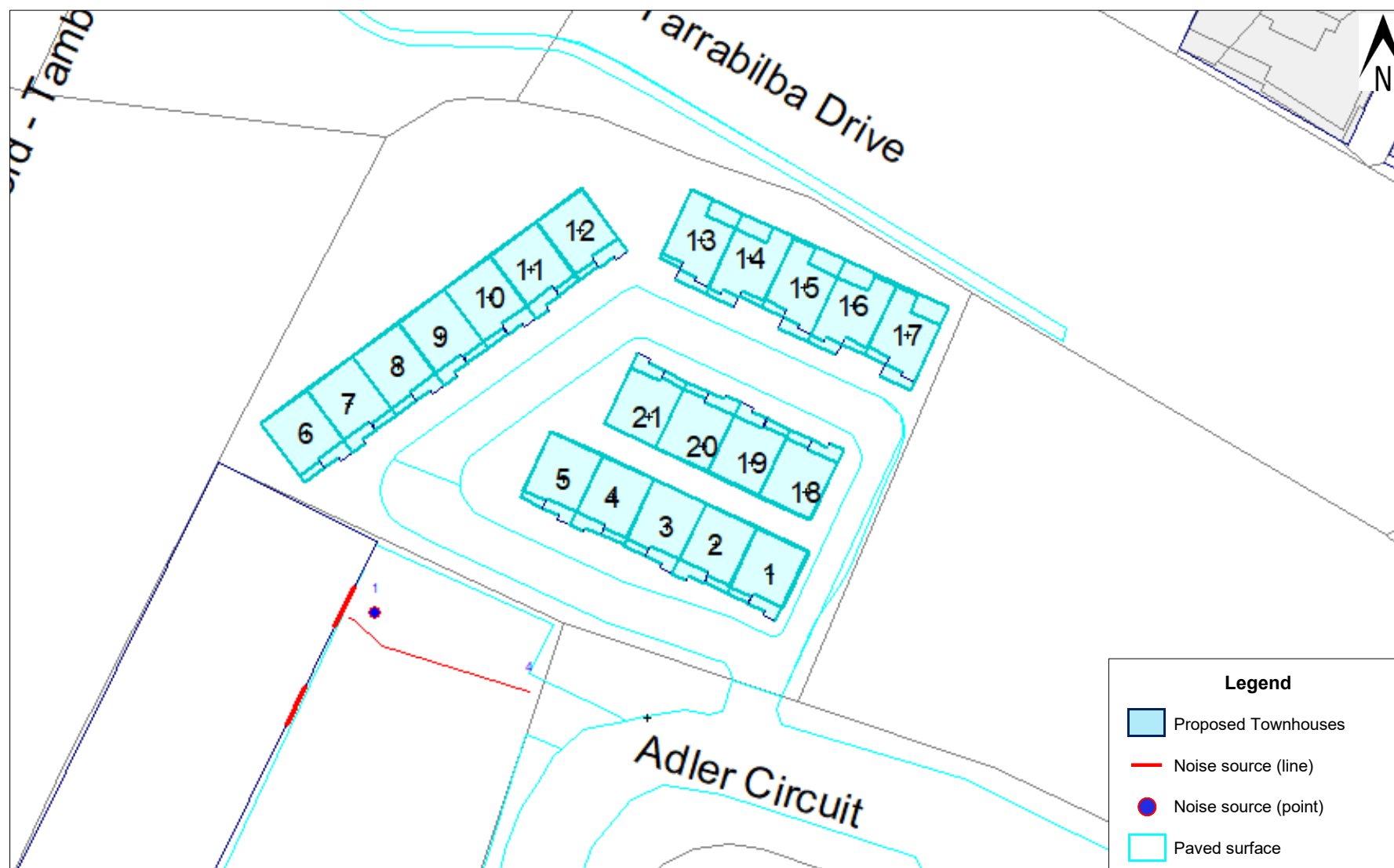


Figure 4.1 3D Commercial Noise Propagation Model – SoundPLAN Excerpt

4.2.4 Commercial Noise Calculation Results

The calculated noise levels at each of the allotments of the proposed development, relative to the Acoustic Quality Objectives, are presented in Tables 4.5.

Table 4.5 Operational noise levels – Acoustic Quality Objectives

Receiver name	Calculated noise levels									Complies with noise criteria?
	Leq,adj,1hr Day dB(A)	Leq,adj,1hr Evening dB(A)	Leq,adj,1hr Night dB(A)	L10,adj,1hr Day dB(A)	L10,adj,1hr Evening dB(A)	L10,adj,1hr Night dB(A)	L01,adj,1hr Day dB(A)	L01,adj,1hr Evening dB(A)	L01,adj,1hr Night dB(A)	
EPP Noise 2019 Acoustic quality objectives (external criteria) for dwellings:	50	50	37	55	55	42	65	65	47	
Townhouse 1	49	–	–	52	–	–	57	–	–	Yes
Townhouse 2	50	–	–	53	–	–	58	–	–	Yes
Townhouse 3	51	–	–	54	–	–	59	–	–	No
Townhouse 4	53	–	–	56	–	–	61	–	–	No
Townhouse 5	54	–	–	57	–	–	62	–	–	No
Townhouse 6	38	–	–	41	–	–	46	–	–	Yes
Townhouse 7	44	–	–	47	–	–	52	–	–	Yes
Townhouse 8	44	–	–	47	–	–	52	–	–	Yes
Townhouse 9	50	–	–	53	–	–	58	–	–	Yes
Townhouse 10	50	–	–	53	–	–	58	–	–	Yes
Townhouse 11	50	–	–	53	–	–	58	–	–	Yes
Townhouse 12	48	–	–	51	–	–	56	–	–	Yes

Townhouse 13	46	–	–	49	–	–	54	–	–	Yes
Townhouse 14	41	–	–	44	–	–	49	–	–	Yes
Townhouse 15	39	–	–	42	–	–	47	–	–	Yes
Townhouse 16	40	–	–	43	–	–	48	–	–	Yes
Townhouse 17	40	–	–	43	–	–	48	–	–	Yes
Townhouse 18	42	–	–	45	–	–	50	–	–	Yes
Townhouse 19	38	–	–	41	–	–	46	–	–	Yes
Townhouse 20	41	–	–	44	–	–	49	–	–	Yes
Townhouse 21	42	–	–	45	–	–	50	–	–	Yes

Full tabulated results of the commercial/operational noise assessment for these receptors, are presented in Appendix G.

Noise contour maps showing the propagation of the commercial/operational noise from the development are presented in Appendix H.

5. Discussions and Recommendations

5.1 Road Traffic Noise Impact

Traffic noise propagation modelling was carried out considering the future traffic flows on Waterford – Tamborine Road, Camp Cable Road and Yarrabilba Drive for a planning horizon to Year 2037.

Each of the proposed townhouses contain at least one Private Open Space that is free from road traffic noise impact. Townhouses 13-17 are however impacted by the traffic noise from the Logan City Council (LCC) controlled Yarrabilba Drive and therefore they are required to have solid balustrades to the upper floor balconies facing Yarrabilba Road.

The results of the noise propagation modelling indicate exceedance of the façade criteria at several townhouses due to the impact of traffic noise from Waterford - Tamborine Road, Camp Cable Road and Yarrabilba Drive. The proposed townhouses affected by road traffic noise emissions ($\geq 58\text{dB(A)}$ $L_{10,18\text{hr}}$ (facade adjusted)) must be designed and constructed as per acceptable forms of construction specified in Schedule 2 of QDC MP4.4.

The townhouses subject to QDC MP4.4 noise categories are summarised in Table 3.7 of this report. It should be noted that there are no acoustic design requirements for Noise Category 0 of QDCMP4.4.

There are two options available for architectural treatment to the building façades, as follows:

- **Option 1:** Implementation of the ‘acceptable forms of construction’ specified in Queensland Development Code (QDC) Mandatory Part 4.4 (*Buildings in a Transport Noise Corridor*) as per the noise categories presented in Table 3.7 of this report.
- **Option 2:** Floor plan specific acoustic design, in accordance with AS3671-1989, to ensure compliance with the internal noise criteria.

Detailed acoustic design specifications will be provided at building approval (BA) stage when the floor plans of the townhouses affected by traffic noise, as presented in Table 3.7, will be finalised.

5.2 Commercial/Operational Noise Impact Assessment

The proposed townhouse development at 9-11 Adler Circuit is located adjacent to existing commercial operations. To the south of the site is *Containers for Change*, Yarrabilba an existing recycling depot. Further to the south-east is an existing childcare centre (*Grand Kids Early Learning Centre*).

Site specific noise measurements and commercial/operational noise propagation modelling were carried out to assess noise impact from the recycling depot and the childcare centre on the proposed townhouses. The results of the commercial/operational noise assessment indicate that some of the proposed townhouses are affected by noise levels higher than the relevant noise criteria from EPP (Noise). The dominant noise impact is from the commercial/operational noise emissions from the *Containers for Change*, Yarrabilba.

To prevent commercial/operational noise impacts the façades of the affected townhouses must be designed and constructed to comply with the internal noise criteria from *AS/NZS2107:2016* when the windows are closed.

The townhouses which are affected by the commercial/operational noise and require acoustic design are listed in Table 5.1.

Table 5.1 Townhouses requiring acoustic design

Commercial/Operational Noise	
	• Townhouse 3 • Townhouse 4 • Townhouse 5

Detailed floor plan specific design as per AS3671-1989 is required for each of the impacted townhouses at the building approval stage.

6. Conclusions

Based on the results of the road traffic and commercial/operational noise impact assessment for the proposed residential development over Lot 11 on SP296372, No. 9-11 Adler Circuit in Yarrabilba, the following is concluded:

- The road traffic from the state-controlled Waterford – Tamborine Road and Camp Cable Road as well as from the locally controlled Yarrabilba Drive, as per the traffic flows predicted within a planning horizon to Year 2037, impacts on the ground and the upper floor of the proposed townhouses 6 to 14 and to the upper floor only of the townhouses 15 to 17.
- All proposed townhouses contain at least one private open space which complies with the 60dB(A) $L_{10,18hr}$ criteria from the state-controlled roads, accessible from the living areas.
- Townhouses 13-17 are however impacted by the traffic noise from the Logan City Council (LCC) controlled Yarrabilba Drive and therefore they are required to have solid balustrades to the upper floor balconies facing Yarrabilba Road.
- The future townhouses listed in Table 3.7 of this report are impacted by traffic noise that corresponds with Noise Categories 1, 2 and 3 of QDC MP4.4, and therefore architectural treatment is required to the building façades.
- There are two options available for architectural treatment to the building façades, as follows:
 - **Option 1:** Implementation of the 'acceptable forms of construction' specified in Queensland Development Code (QDC) Mandatory Part 4.4 (Buildings in a Transport Noise Corridor) as per the noise categories presented in Table 3.7 of this report.
 - **Option 2:** Floor plan specific acoustic design, in accordance with AS3671-1989, to ensure compliance with the internal noise criteria.
- Detailed acoustic design specifications will be provided at building approval (BA) stage when the floor plans of the townhouses affected by traffic noise, as resented in Table 3.7 of this report, will be finalised.
- The proposed townhouse development at 9-11 Adler Circuit is located adjacent to existing commercial operations. To the south of the site is *Containers for Change*, Yarrabilba an existing recycling depot. Further to the south-east is an existing childcare centre (*Grand Kids Early Learning Centre*).
- The results of the commercial/operational noise assessment indicate that some of the proposed townhouses are affected by noise levels higher than the relevant noise criteria from EPP (Noise). The dominant noise impact is from the commercial/operational noise emissions from the *Containers for Change*, Yarrabilba.
- The townhouses which are affected by the commercial/operational noise and require acoustic design are listed in Table 5.1 of this report.

- To prevent commercial/operational noise impacts the façades of the townhouses 3, 4 and 5, as presented in Table 5.1 of this report, must be designed and constructed to comply with the internal noise criteria from *AS/NZS2107-2016* when the windows are closed.

Provided the recommended acoustic upgrades to the building facades of the road traffic and commercial/operational noise impacted townhouses are implemented at detailed design and construction, the residential development at 9-11 Adler Circuit in Yarrabilba can be established as per the proposed development layout.

7. References

- Australian Standard AS1055-2018 (*Acoustics - Description and Measurement of Environmental Noise*)
- Australian Standard AS2702-1984 (*Acoustics – Methods for the Measurement of Road Traffic Noise*)
- Australian Standard AS3671-1989 (*Acoustics - Road traffic noise intrusion - Building siting and construction*)
- Australian Standard AS/NZS2107:2016 (*Acoustics - Recommended design sound levels and reverberation times for building interiors*)
- Australian Standard AS/NZS IEC61672.1-2019 (*Electroacoustics - Sound level meters – Specifications*)
- Department of Environment and Heritage Protection, 2020, *Noise Measurement Manual*
- Department of Transport and Main Roads, 2013, *Transport Noise Management: Code of Practice, Volume 1 – Road Traffic Noise*
- Department of Transport and Main Roads, 2017, *Development Affected by Environmental Emissions from Transport Policy* (Version 4)
- International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*)
- Queensland Government, 2025, 'State Development Assessment Provisions (SDAP) State Code 1: *Development in a state-controlled environment*
- Queensland Government, 2015, 'Queensland Development Code (QDC) MP4.4 (*Buildings in a Transport Noise Corridor*)'
- Queensland Government, 2022, 'Yarrabilba Priority Development Area Development Scheme

8. Appendices

Appendix A – Development Layout

Appendix B – Site Photos

Appendix C – Meteorological Data

Appendix D – Noise Measurement Results

Appendix E – RTNA Validation (Year 2025)

Appendix F – RTNA Noise Contour Maps (Year 2037)

Appendix G – ONIA Tabulated Noise Levels

Appendix H – ONIA Noise Contour Maps

Appendix A – Development Layout

Lot 11 ADLER CIRCUIT, YARRABILBA





DEVELOPMENT SUMMARY

REAL PROPERTY DESCRIPTION

9-11 Adler Circuit,
YARRABILBA, QLD 4207

LOT/PLAN LOT 11 SP 296372

TOTAL SITE AREA: 5,262.8m²
LEASE A: 736.4m²
TOTAL DEVELOPABLE AREA: 4,526.4m²

OPEN SPACE AREA: 1605m² (35.5% of site)
COMMUNAL OPEN SPACE: 211.9m² (4.7% of site)
PRIVATE OPEN SPACE: 686m² (15.2% of site)

DEEP PLANTING
TOTAL DEEP PLANTING: 988m² (21.8% of site)

SITE COVER: 1,837m² (40.6% of site)

TOWNHOUSE MIX

TYPE A (3 bedroom): 16
TYPE B (3 bedroom): 5

TOTAL DU's: 21

CARPARKING PROVIDED

RESIDENT: 42
VISITOR: 5

TOTAL: 45

LEGEND

- TOWNHOUSE (TYPE A) - 2 STOREY
3 BED + 2 BATH + 2 CARS
- TOWNHOUSE (TYPE B) - 2 STOREY
3 BED + 2 BATH + 2 CARS
- RETAINING WALL



REDDOOR
ARCHITECTURE



YARRABILBA DRIVE

WATERFORD TAMBORINE ROAD

LEASE A

COS
212m²

DRIVEWAY 3

LOT 10

BUILDING 4

BUILDING 1

LOT 12

ADLER CIRCUIT



REDDOOR
ARCHITECTURE

YARRABILBA DRIVE

WATERFORD TAMBORINE ROAD

LEASE A

LOT 10

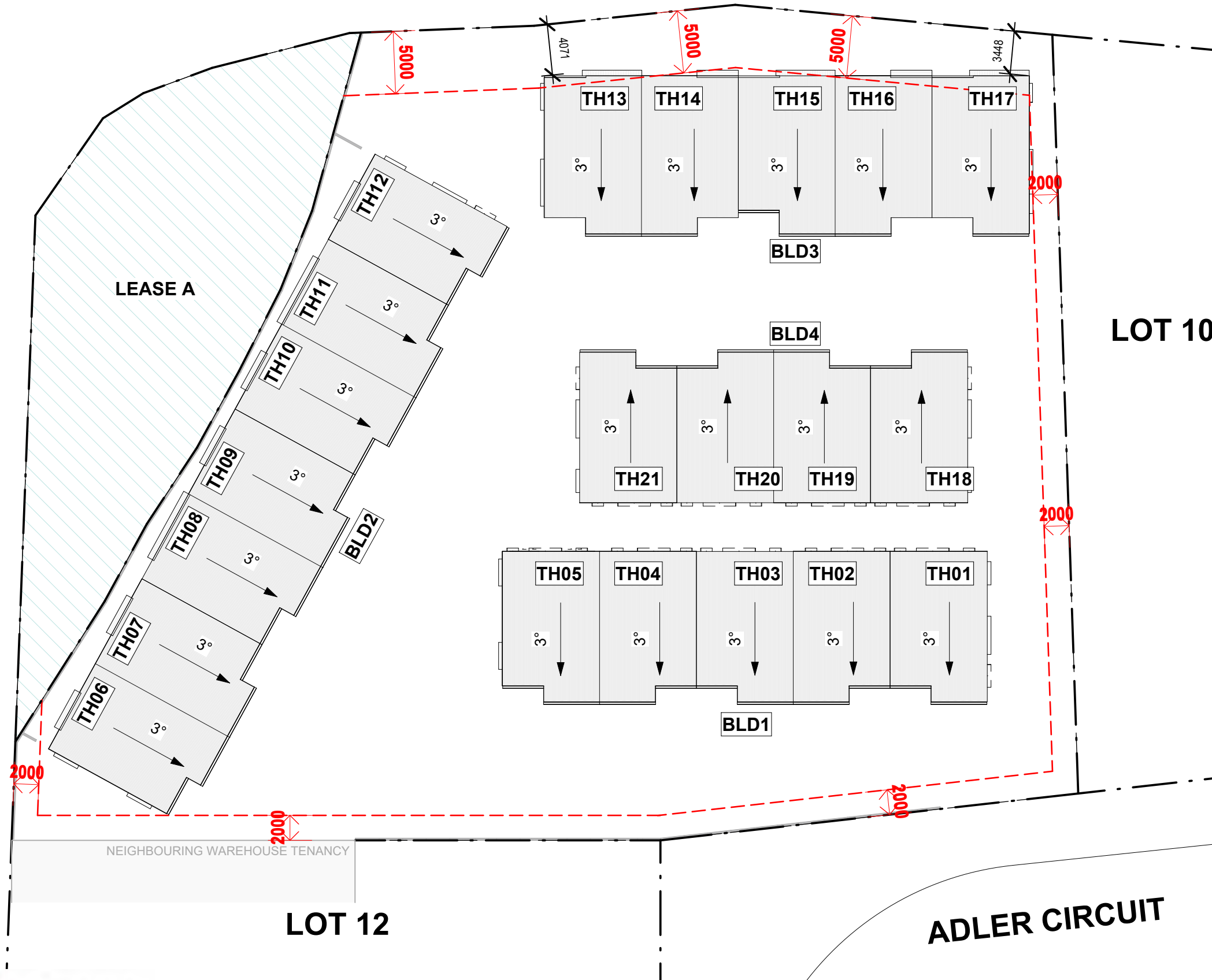
LOT 12

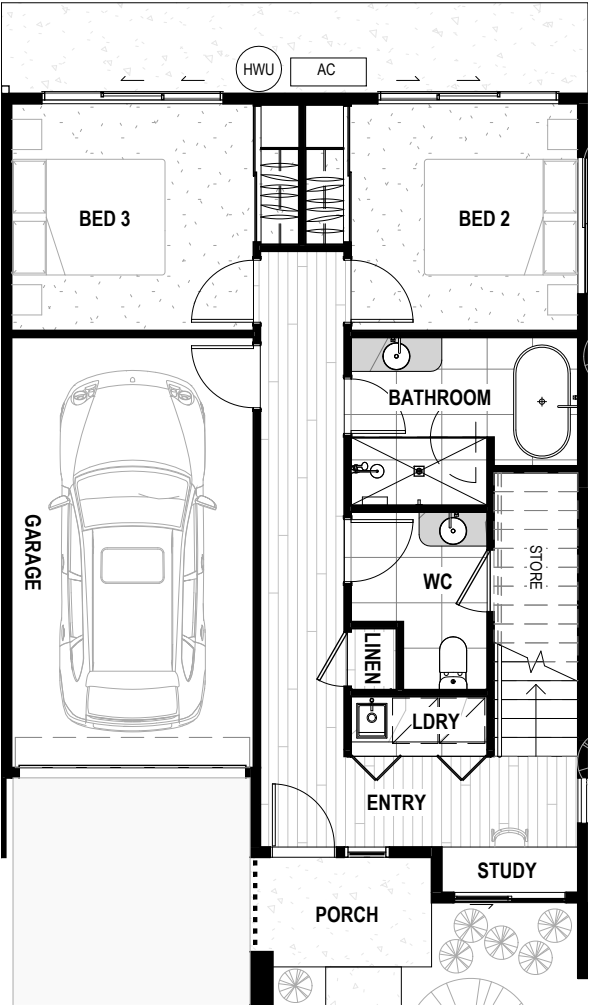
ADLER CIRCUIT

NEIGHBOURING WAREHOUSE TENANCY

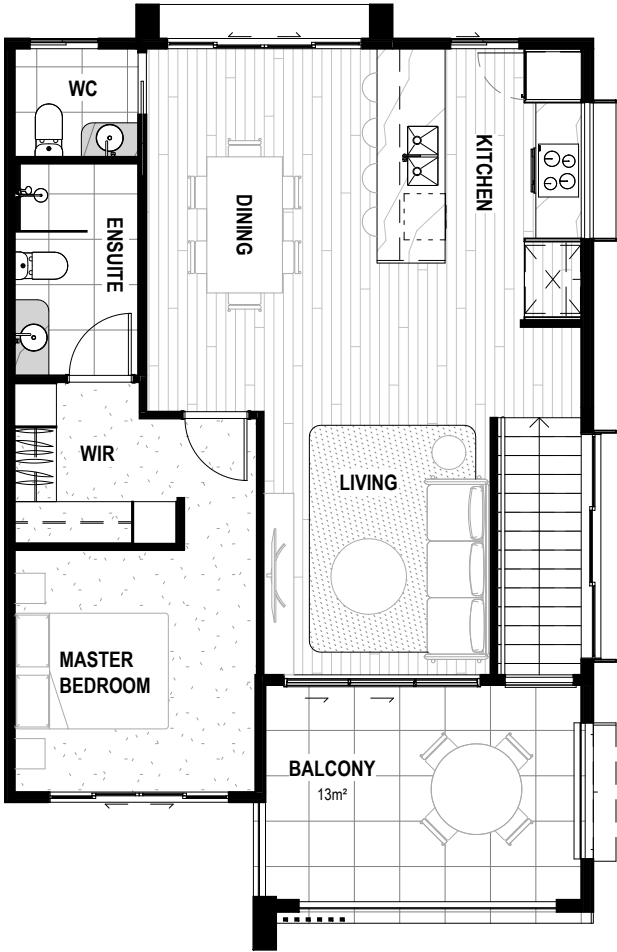


REDDOOR
ARCHITECTURE

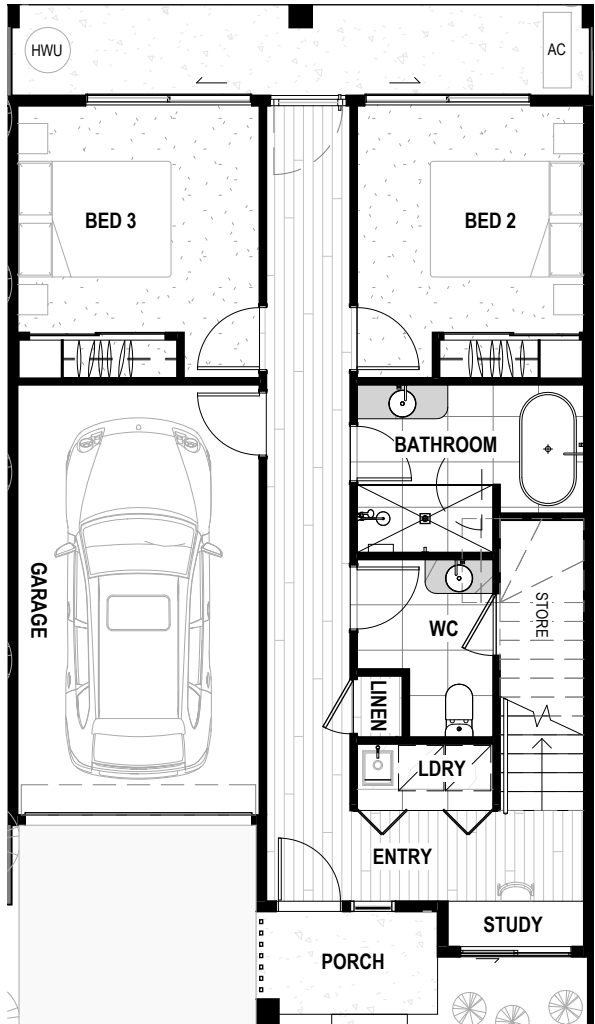




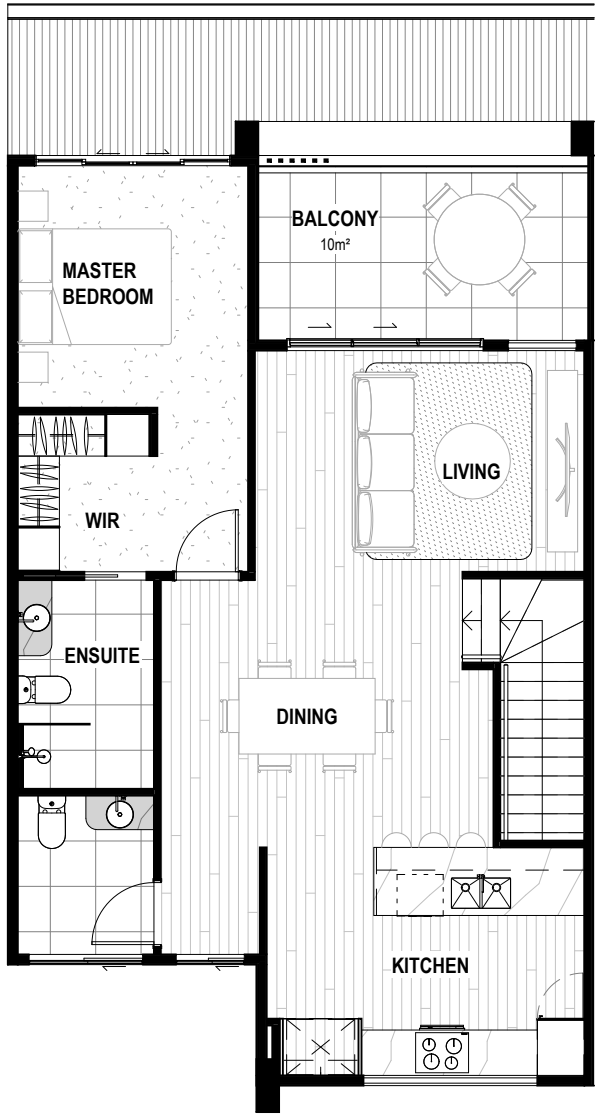
GF TYPICAL UNIT LAYOUT PLAN - GROUND FLOOR (TYPE A)
1 : 100@A3



L1 TYPICAL UNIT LAYOUT PLAN - FIRST FLOOR (TYPE A)
1 : 100@A3



GF TYPICAL UNIT LAYOUT PLAN - GROUND FLOOR (TYPE B)
1 : 100@A3



L1 TYPICAL UNIT LAYOUT PLAN - FIRST FLOOR (TYPE B)
1 : 100@A3

YARRABILBA DRIVE

FENCE TYPE LEGEND

- FENCE TYPE (TF)**
1.8m HIGH TIMBER PALING FENCE WITH VERTICAL BUTT JOINED PALINGS, PAINTED BLACK
- FENCE TYPE (TF-RW)**
1.8m HIGH TIMBER PALING FENCE WITH VERTICAL BUTT JOINED PALINGS, PAINTED BLACK & ON TOP OF CONCRETE SLEEPER RETAINING WALL
- FENCE TYPE (MP)**
1.8m HIGH RENDERED MASONRY PIER, WHITE
- FENCE TYPE (BF)**
1.8m HIGH AL. BATTEN FENCE WITH ALUMINIUM POSTS, (50% TRANSPARENT) POWDER COATED BLACK
- FENCE TYPE (BF-RW)**
1.8m HIGH AL. BATTEN FENCE WITH ALUMINIUM POSTS, (50% TRANSPARENT) POWDER COATED BLACK, ON TOP OF CONCRETE SLEEPER RETAINING WALL
- FENCE GATE TYPE (BG)**
1.6m HIGH AL. BATTEN FENCE GATE WITH ALUMINIUM POSTS, POWDER COATED BLACK

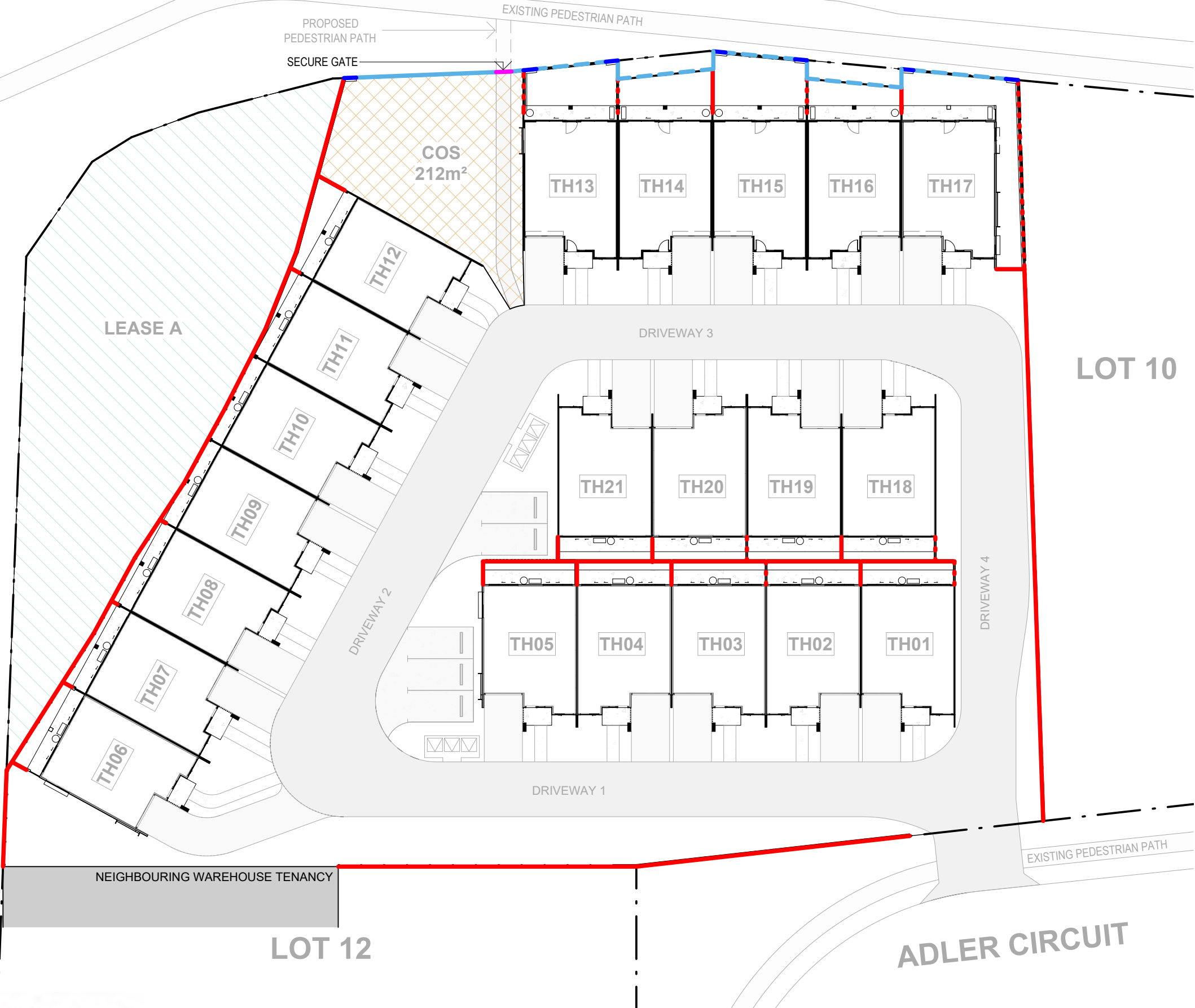
WATERFORD TAMBORINE ROAD

LEASE A

LOT 12

LOT 10

ADLER CIRCUIT



YARRABILBA DRIVE

Area Schedule (Deep Planting)	
Name	Area
DEEP PLANTING	988 m ²
	988 m ²

LEGEND



DEEP PLANTING

WATERFORD TAMBORINE ROAD



YARRABILBA DRIVE



Area Schedule (Private Open Space)		
Name	Level	Area
TH01	GROUND FLOOR	15 m ²
TH01	LEVEL 1	13 m ²
		28 m ²
TH02	GROUND FLOOR	15 m ²
TH02	LEVEL 1	13 m ²
		28 m ²
TH03	GROUND FLOOR	15 m ²
TH03	LEVEL 1	13 m ²
		28 m ²
TH04	GROUND FLOOR	15 m ²
TH04	LEVEL 1	13 m ²
		28 m ²
TH05	GROUND FLOOR	15 m ²
TH05	LEVEL 1	13 m ²
		28 m ²
TH06	GROUND FLOOR	18 m ²
TH06	LEVEL 1	13 m ²
		31 m ²
TH07	GROUND FLOOR	14 m ²
TH07	LEVEL 1	13 m ²
		28 m ²
TH08	GROUND FLOOR	13 m ²
TH08	LEVEL 1	13 m ²
		26 m ²
TH09	GROUND FLOOR	10 m ²
TH09	LEVEL 1	13 m ²
		23 m ²
TH10	GROUND FLOOR	10 m ²
TH10	LEVEL 1	13 m ²
		23 m ²
TH11	GROUND FLOOR	13 m ²
TH11	LEVEL 1	13 m ²
		26 m ²
TH12	GROUND FLOOR	22 m ²
TH12	LEVEL 1	14 m ²
		36 m ²
TH13	GROUND FLOOR	35 m ²
TH13	LEVEL 1	11 m ²
		45 m ²
TH14	GROUND FLOOR	29 m ²
TH14	LEVEL 1	11 m ²
		40 m ²
TH15	GROUND FLOOR	41 m ²
TH15	LEVEL 1	11 m ²
		52 m ²
TH16	GROUND FLOOR	24 m ²
TH16	LEVEL 1	11 m ²
		34 m ²
TH17	GROUND FLOOR	63 m ²
TH17	LEVEL 1	11 m ²
		74 m ²
TH18	GROUND FLOOR	15 m ²
TH18	LEVEL 1	13 m ²
		28 m ²
TH19	GROUND FLOOR	15 m ²
TH19	LEVEL 1	13 m ²
		28 m ²
TH20	GROUND FLOOR	15 m ²
TH20	LEVEL 1	13 m ²
		28 m ²
TH21	GROUND FLOOR	15 m ²
TH21	LEVEL 1	13 m ²
		28 m ²
		692 m ²

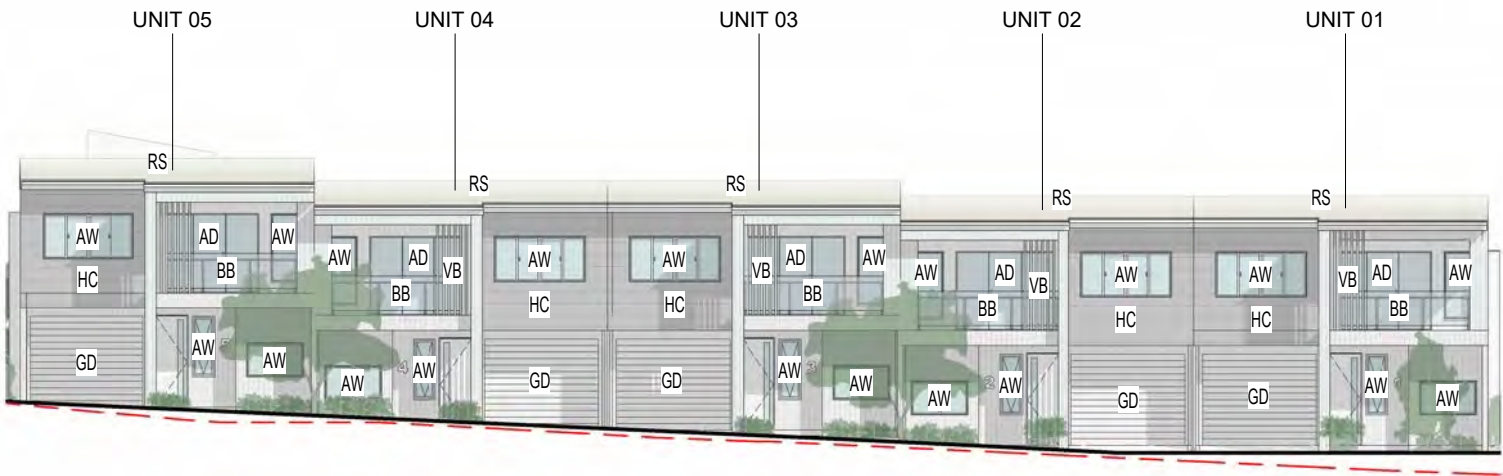


YARRABILBA DRIVE

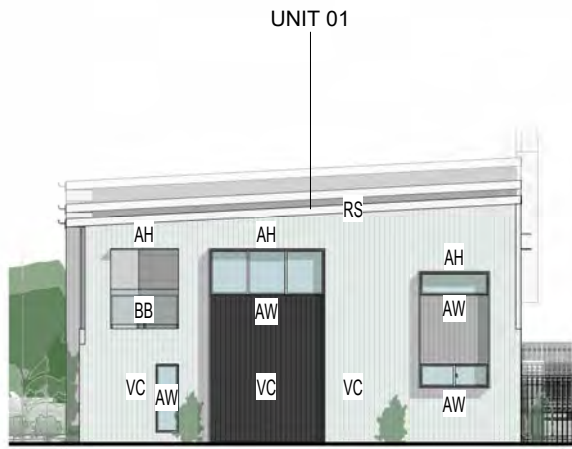


Area Schedule (Private Open Space)		
Name	Level	Area
TH01	GROUND FLOOR	15 m²
TH01	LEVEL 1	13 m²
		28 m²
TH02	GROUND FLOOR	15 m²
TH02	LEVEL 1	13 m²
		28 m²
TH03	GROUND FLOOR	15 m²
TH03	LEVEL 1	13 m²
		28 m²
TH04	GROUND FLOOR	15 m²
TH04	LEVEL 1	13 m²
		28 m²
TH05	GROUND FLOOR	15 m²
TH05	LEVEL 1	13 m²
		28 m²
TH06	GROUND FLOOR	18 m²
TH06	LEVEL 1	13 m²
		31 m²
TH07	GROUND FLOOR	14 m²
TH07	LEVEL 1	13 m²
		28 m²
TH08	GROUND FLOOR	13 m²
TH08	LEVEL 1	13 m²
		26 m²
TH09	GROUND FLOOR	10 m²
TH09	LEVEL 1	13 m²
		23 m²
TH10	GROUND FLOOR	10 m²
TH10	LEVEL 1	13 m²
		23 m²
TH11	GROUND FLOOR	13 m²
TH11	LEVEL 1	13 m²
		26 m²
TH12	GROUND FLOOR	22 m²
TH12	LEVEL 1	14 m²
		36 m²
TH13	GROUND FLOOR	35 m²
TH13	LEVEL 1	11 m²
		45 m²
TH14	GROUND FLOOR	29 m²
TH14	LEVEL 1	11 m²
		40 m²
TH15	GROUND FLOOR	41 m²
TH15	LEVEL 1	11 m²
		52 m²
TH16	GROUND FLOOR	24 m²
TH16	LEVEL 1	11 m²
		34 m²
TH17	GROUND FLOOR	63 m²
TH17	LEVEL 1	11 m²
		74 m²
TH18	GROUND FLOOR	15 m²
TH18	LEVEL 1	13 m²
		28 m²
TH19	GROUND FLOOR	15 m²
TH19	LEVEL 1	13 m²
		28 m²
TH20	GROUND FLOOR	15 m²
TH20	LEVEL 1	13 m²
		28 m²
TH21	GROUND FLOOR	15 m²
TH21	LEVEL 1	13 m²
		28 m²
		692 m²

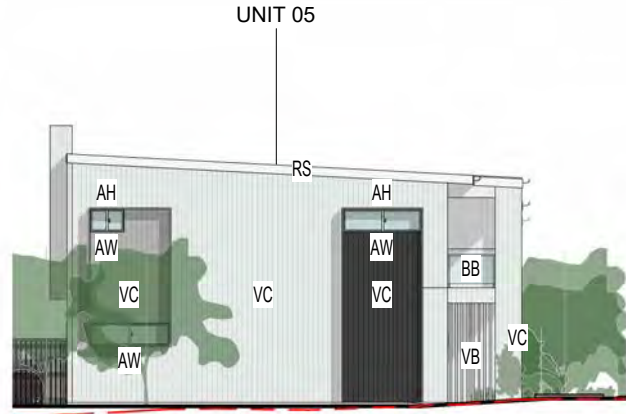




1.1 - BUILDING 1 - FRONT ELEVATION (INTERNAL STREET)
1 : 200@A3



1.2 - BUILDING 1 - SIDE 1 ELEVATION
1 : 200@A3



1.3 - BUILDING 1 - SIDE 2 ELEVATION
1 : 200@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

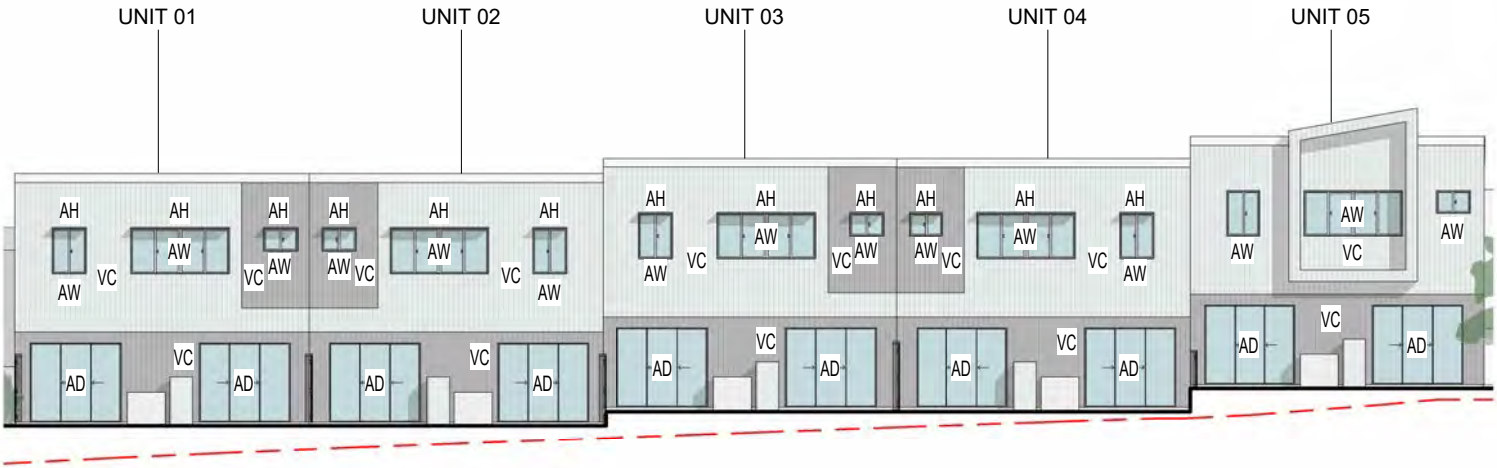
POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

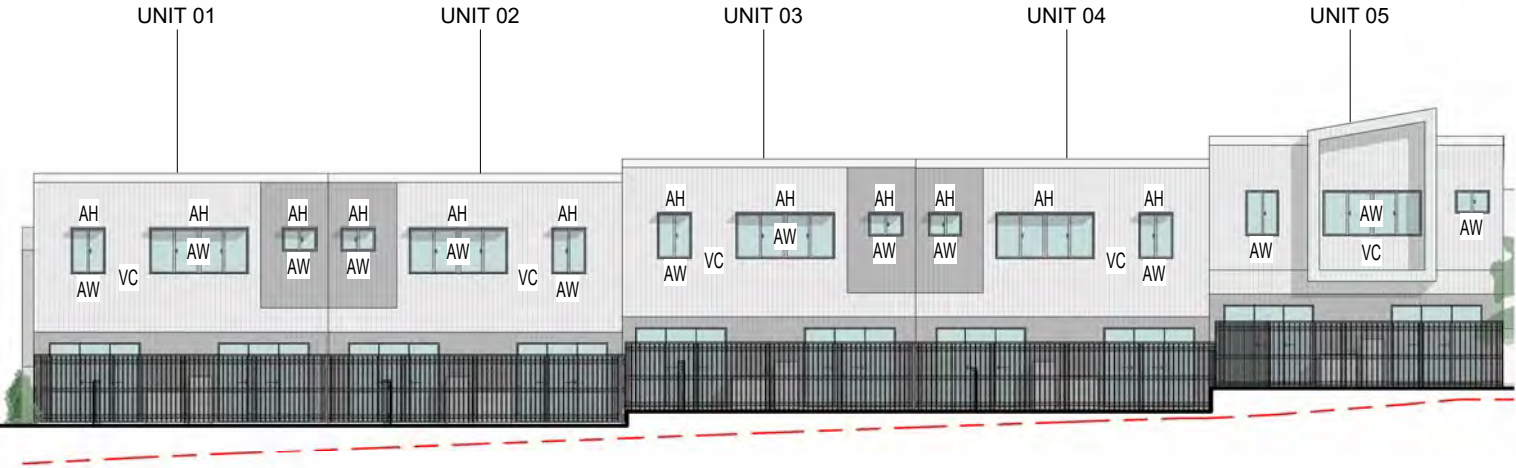
LEGEND

--- NATURAL GROUND LINE



1.4 BUILDING 1 - REAR ELEVATION
1 : 200@A3

FENCING HIDDEN IN REAR ELEVATION FOR CLARITY



1.5 BUILDING 1 - REAR ELEVATION - FENCING
1 : 200@A3

FENCING SHOWN IN REAR ELEVATION FOR ACCUARACY

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

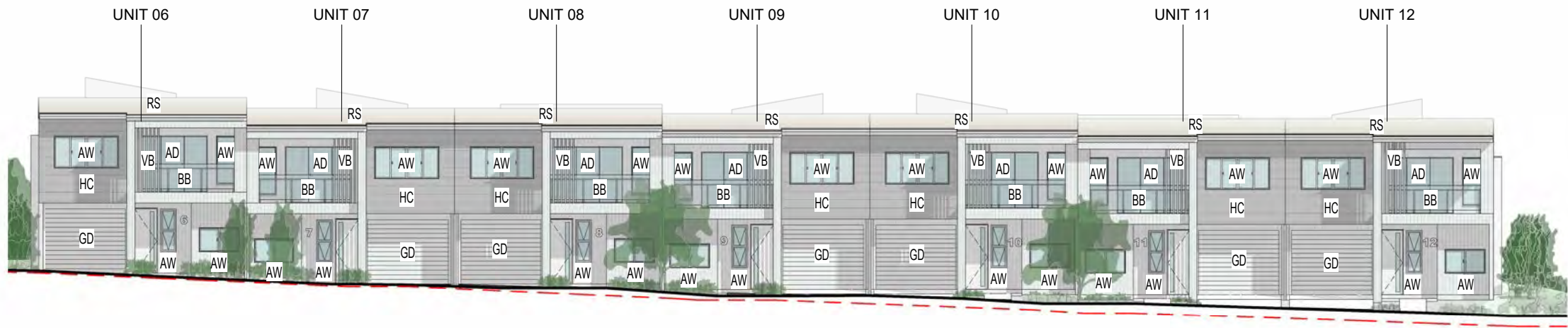
POWDER COATED
WHITE

MATERIAL LEGEND

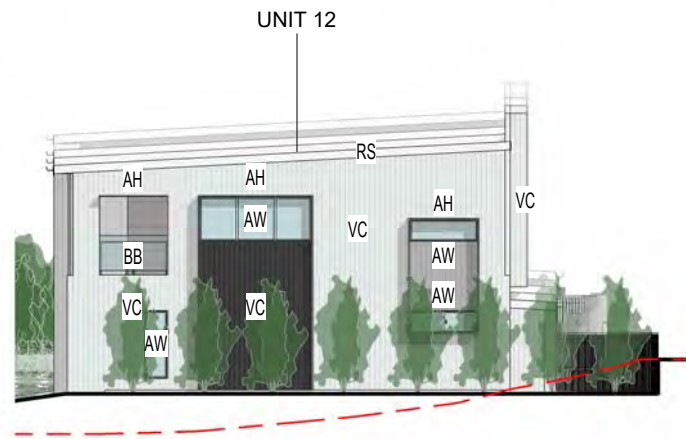
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AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

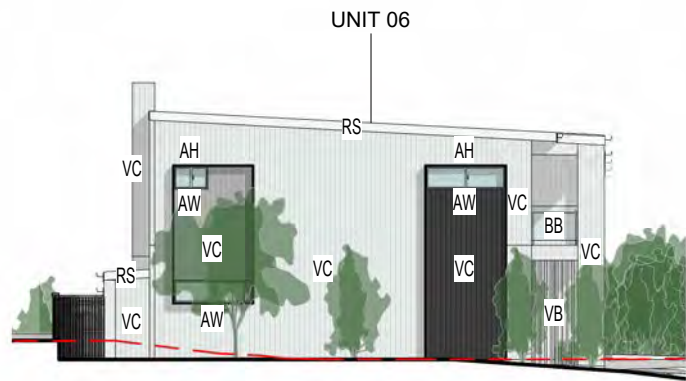
NATURAL GROUND LINE



2.1 BUILDING 2 - FRONT ELEVATION (INTERNAL STREET)
1 : 200@A3



2.2 BUILDING 2 - SIDE 1 ELEVATION
1 : 200@A3



2.3 BUILDING 2 - SIDE 2 ELEVATION
1 : 200@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

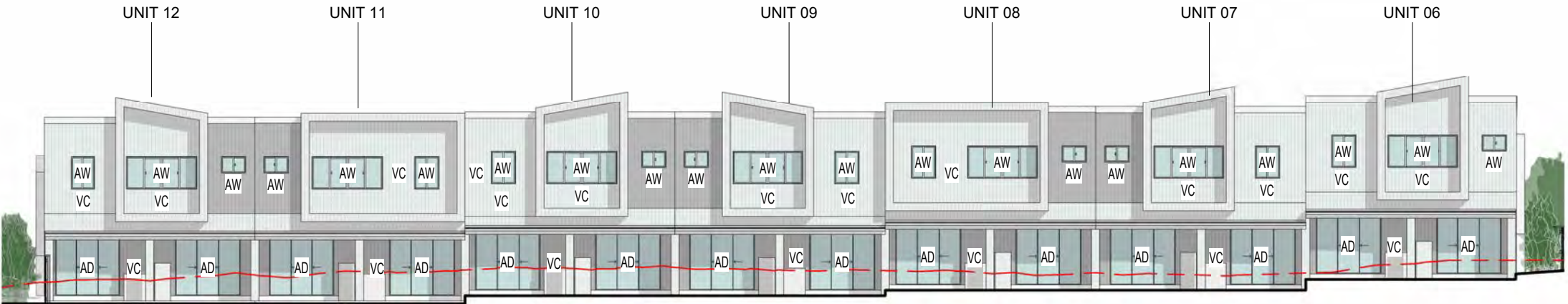
POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

--- NATURAL GROUND LINE



2.4 BUILDING 2 - REAR ELEVATION (WATERFORD TAMBORINE RD)
- 1 : 200@A3

FENCING HIDDEN IN REAR ELEVATION FOR CLARITY

PAINT COLOUR LEGEND

WALLS

- DULUX LEXICON HALF (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR
- DULUX TRANQUIL RETREAT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR
- DULUX COLORBOND MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

ROOF & GUTTERS

- DULUX COLORBOND SURFMIST (OR SIMILAR)
- DULUX LEXICON HALF (OR SIMILAR)

DOOR & WINDOW FRAMES

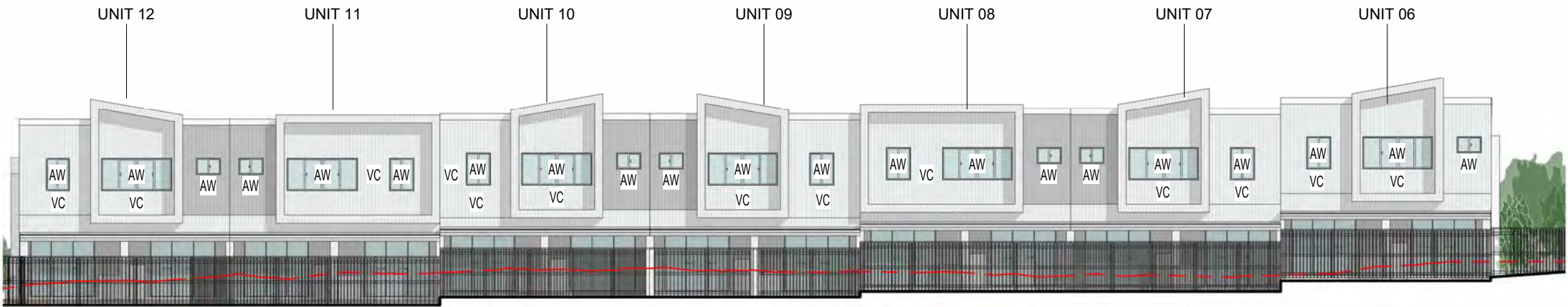
- POWDER COATED WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

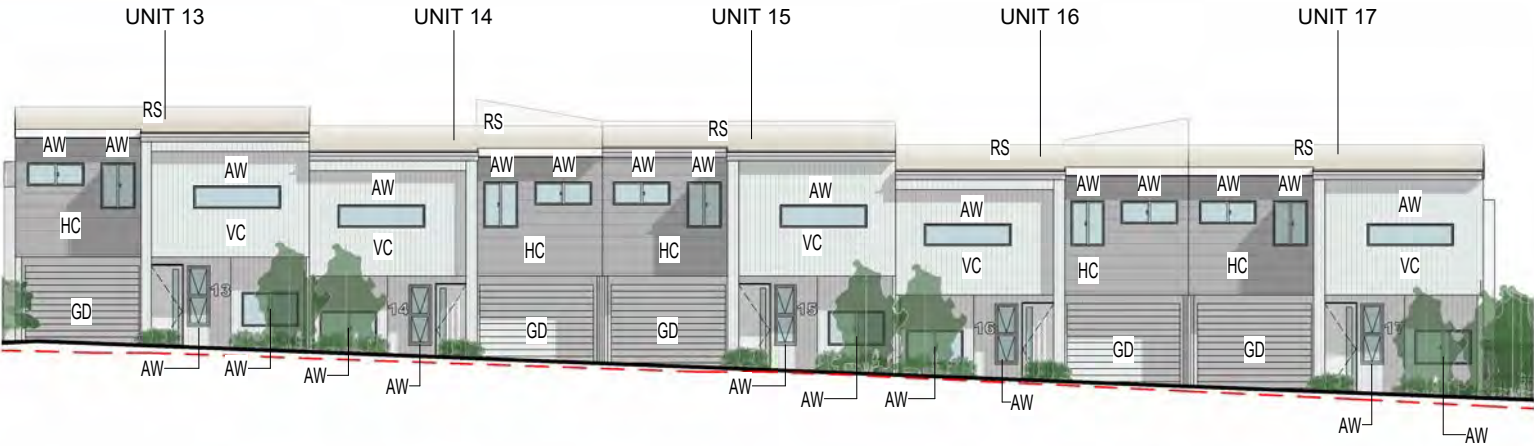
LEGEND

- NATURAL GROUND LINE

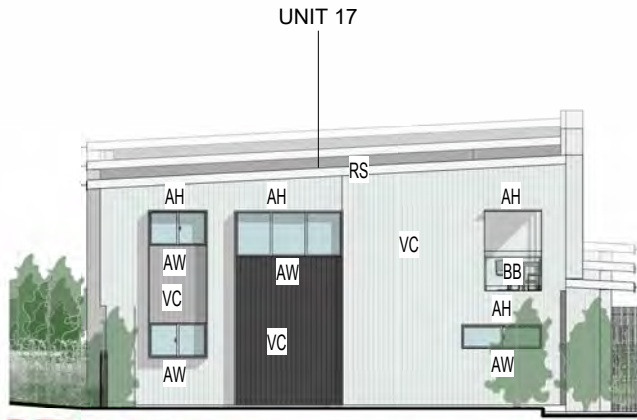


2.5 BUILDING 2 - REAR ELEVATION (WATERFORD TAMBORINE RD) - FENCING
- 1 : 200@A3

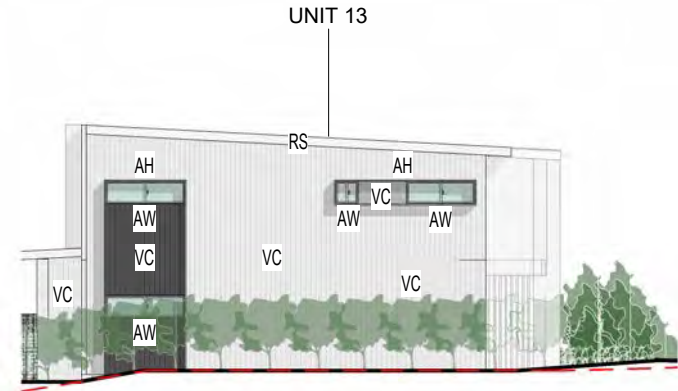
FENCING SHOWN IN REAR ELEVATION FOR ACCUARACY



3.1 BUILDING 3 - FRONT ELEVATION (INTERNAL STREET)
1 : 200@A3



3.2 BUILDING 3 - SIDE 1 ELEVATION
1 : 200@A3



3.4 BUILDING 3 - SIDE 2 ELEVATION
1 : 200@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

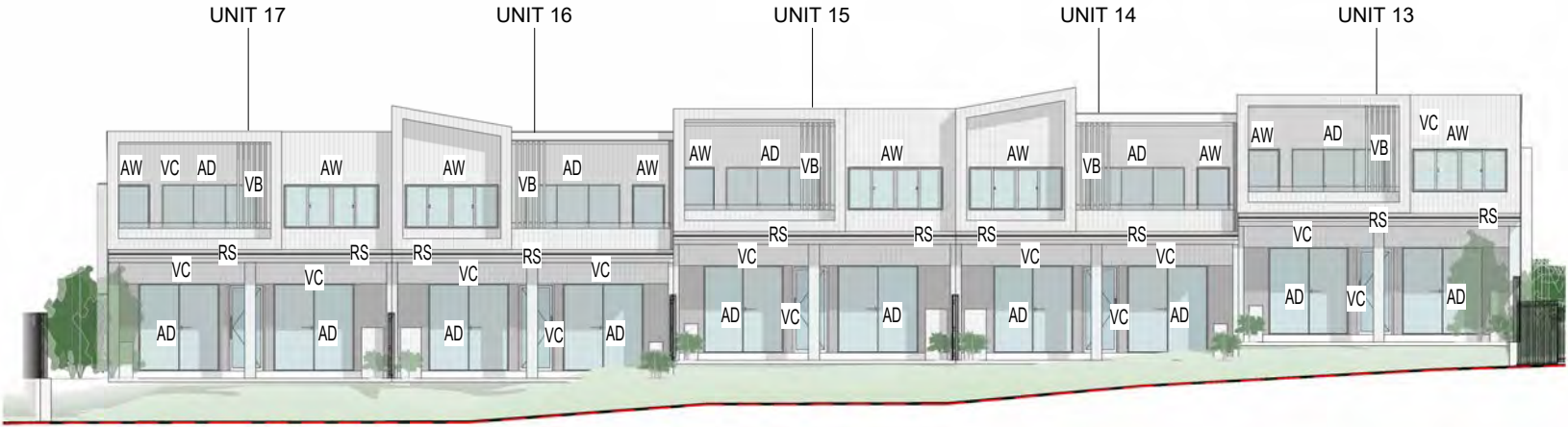
POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

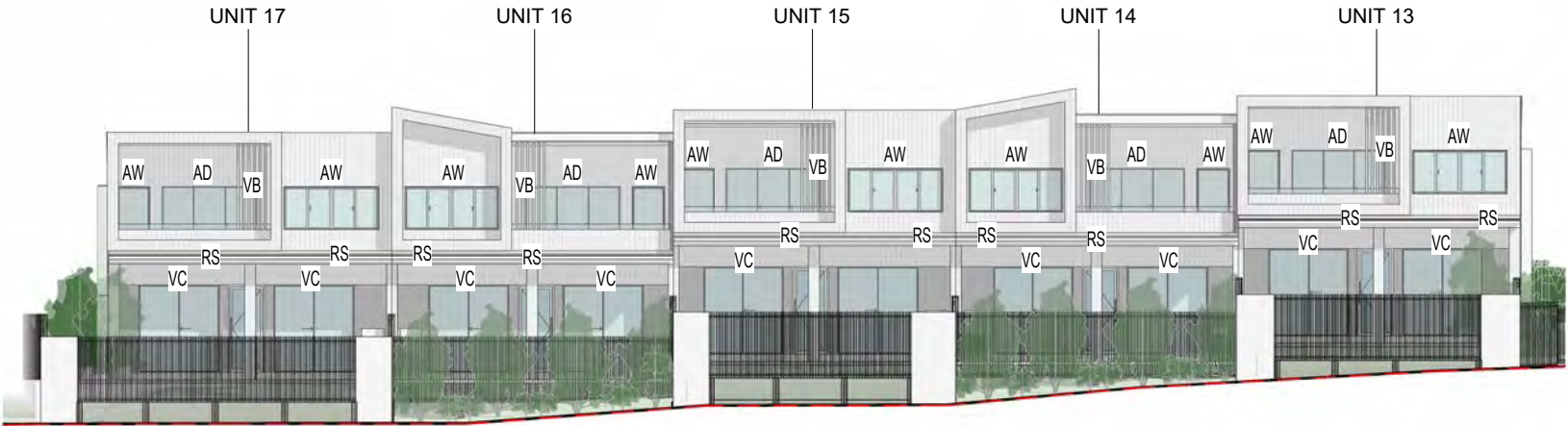
LEGEND

--- NATURAL GROUND LINE



3.4 BUILDING 3 - REAR ELEVATION (YARRABILBA DR)
1 : 200@A3

FENCING HIDDEN IN REAR ELEVATION FOR CLARITY



3.5 BUILDING 3 - REAR ELEVATION (YARRABILBA DR) - FENCING
1 : 200@A3

FENCING SHOWN IN REAR ELEVATION FOR ACCURACY

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

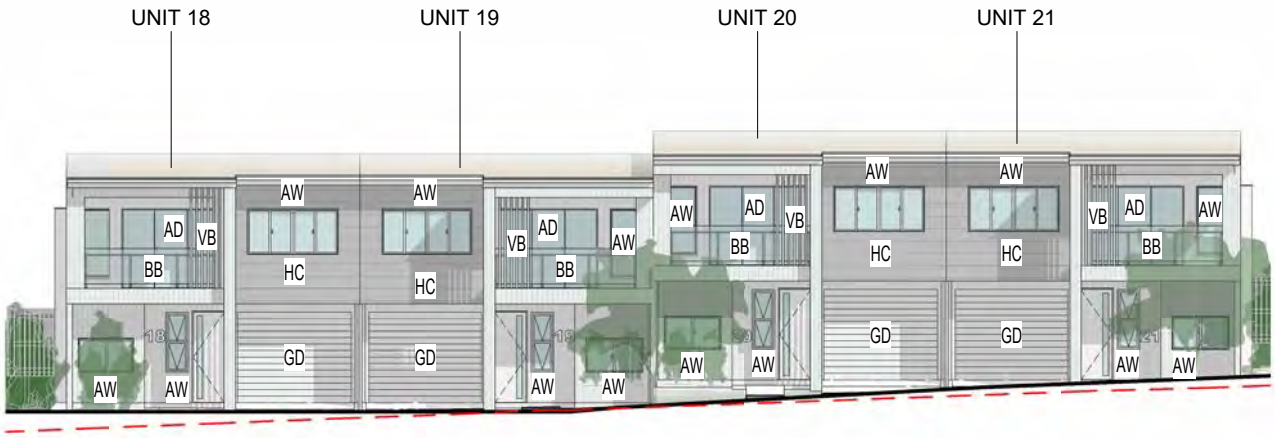
POWDER COATED
WHITE

MATERIAL LEGEND

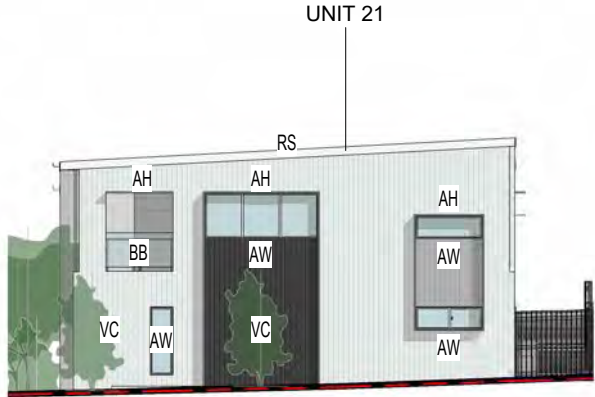
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AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

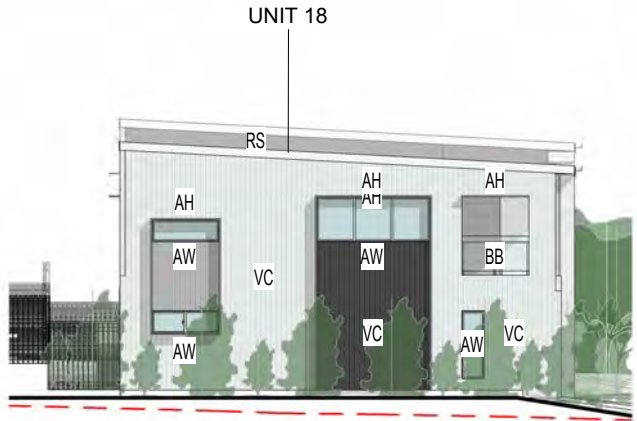
--- NATURAL GROUND LINE



4.1 BUILDING 4 - FRONT ELEVATION (INTERNAL STREET)
1 : 200@A3



4.2 BUILDING 4 - SIDE 1 ELEVATION
1 : 200@A3



4.3 BUILDING 4 - SIDE 2 ELEVATION
1 : 200@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

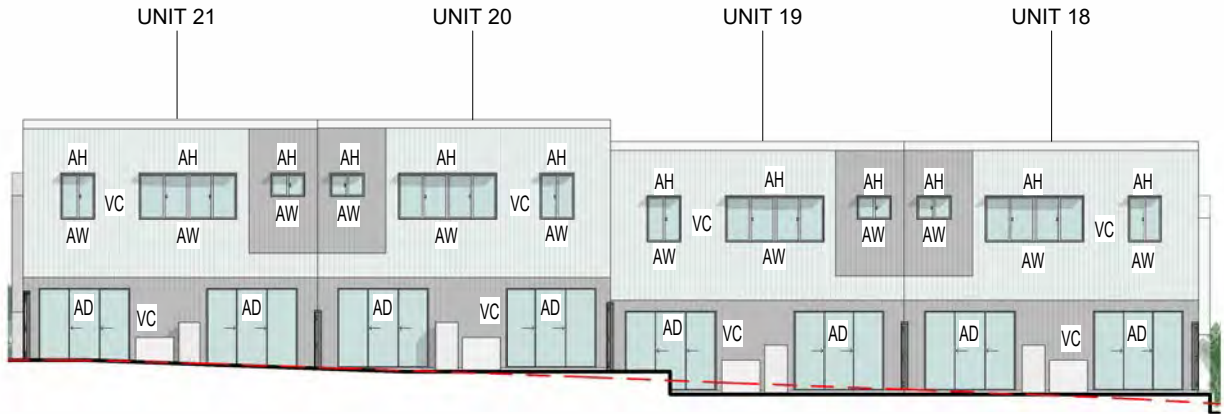
POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

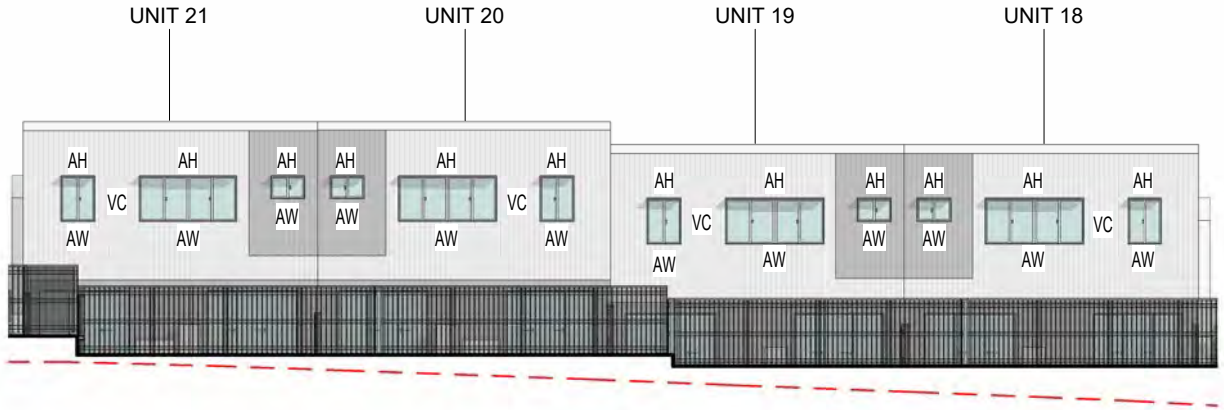
LEGEND

--- NATURAL GROUND LINE



4.4 BUILDING 4 - REAR ELEVATION
- 1 : 200@A3

FENCING HIDDEN IN REAR ELEVATION FOR CLARITY



4.5 BUILDING 4 - REAR ELEVATION - FENCING
- 1 : 200@A3

FENCING SHOWN IN REAR ELEVATION FOR ACCUARACY

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

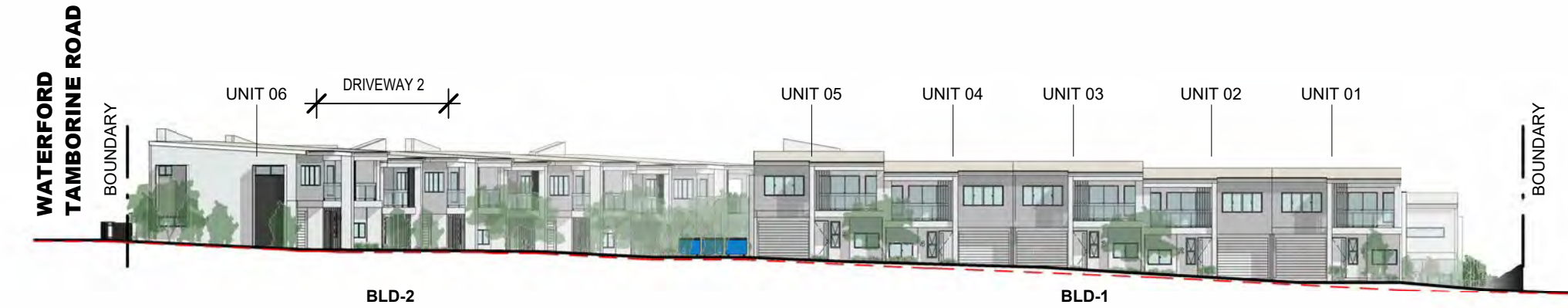
POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

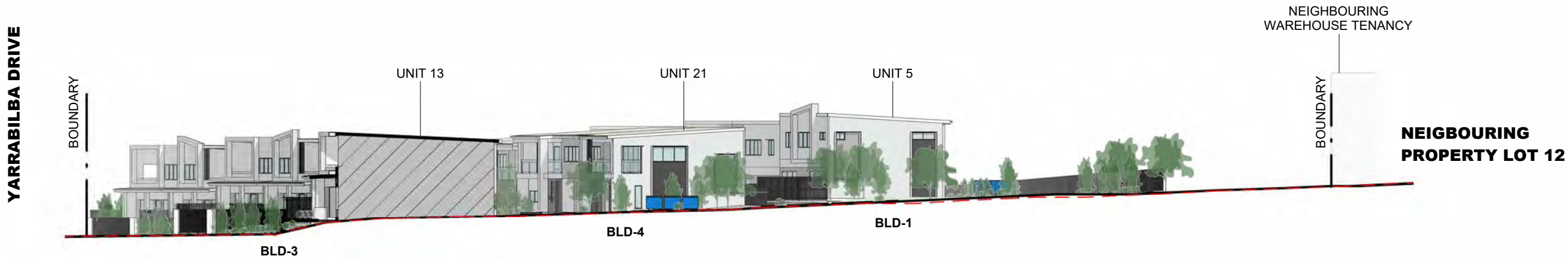
--- NATURAL GROUND LINE



1 INTERNAL ELEVATION - DRIVEWAY 1 (NORTH)
1 : 350@A3



2 INTERNAL ELEVATION - DRIVEWAY 2 (WEST)
1 : 350@A3



3 INTERNAL ELEVATION - DRIVEWAY 2 (EAST)
1 : 350@A1

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX COLORBOND MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND SURFMIST (OR SIMILAR)

DULUX LEXICON HALF (OR SIMILAR)

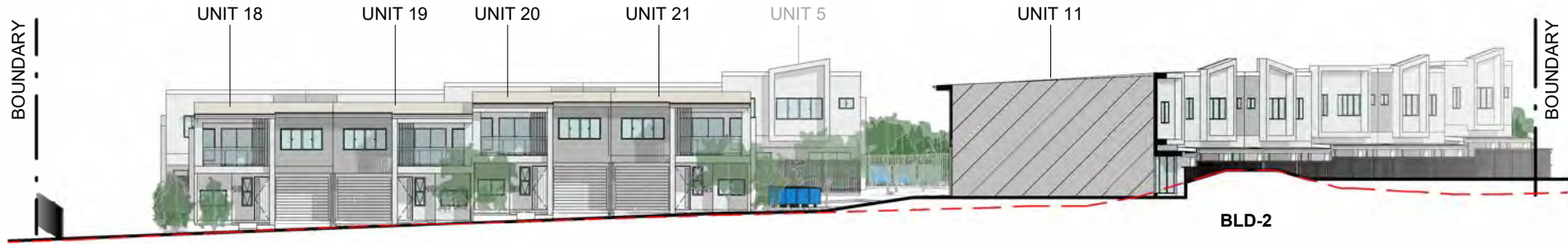
DOOR & WINDOW FRAMES

POWDER COATED WHITE

LEGEND

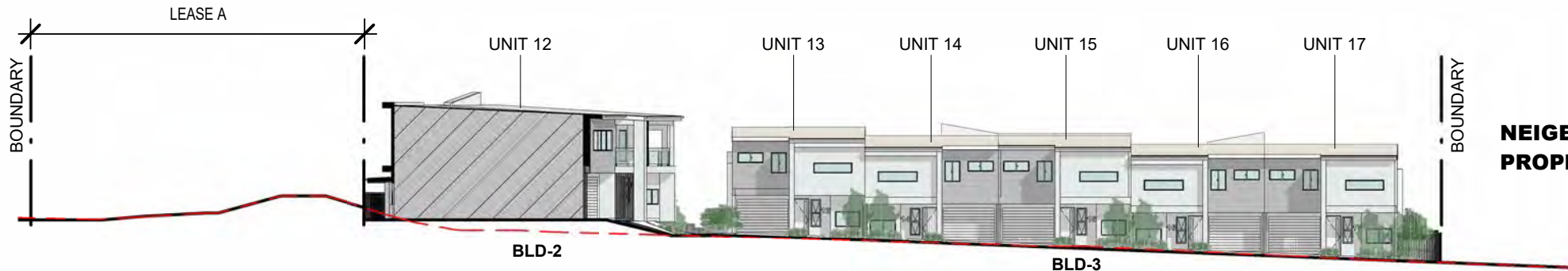
NATURAL GROUND LINE

NEIGBOURING
PROPERTY LOT 10



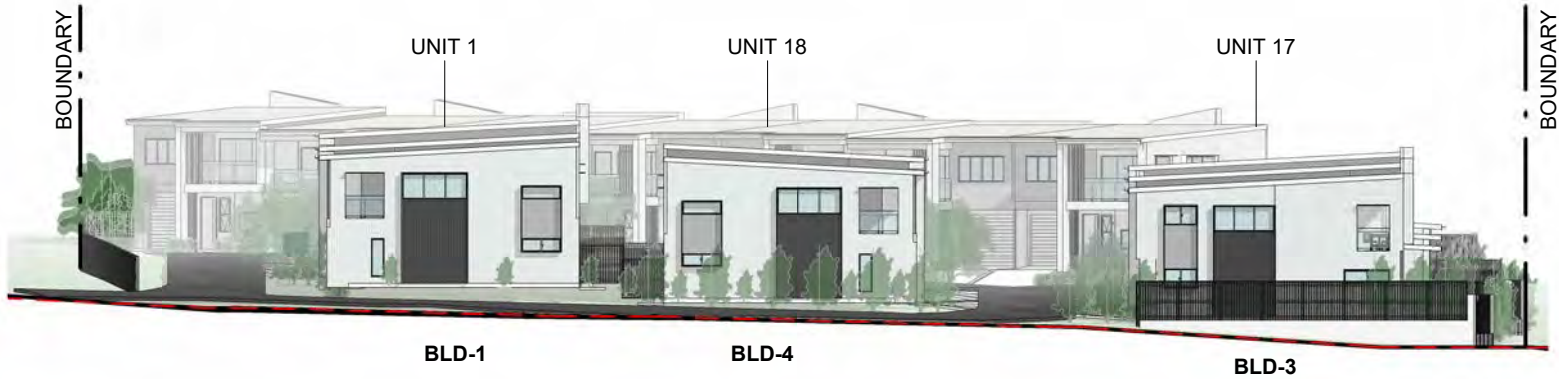
4 INTERNAL ELEVATION - DRIVEWAY 3 (SOUTH)
1 : 350@A3

WATERFORD
TAMBORINE ROAD



5 INTERNAL ELEVATION - DRIVEWAY 3 (NORTH)
1 : 350@A3

ADLER CIRCUIT



6 INTERNAL ELEVATION - DRIVEWAY 4 (WEST)
1 : 350@A1

WATERFORD
TAMBORINE ROAD

NEIGBOURING
PROPERTY LOT 10

YARRABILBA DRIVE

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

POWDER COATED
WHITE

LEGEND

--- NATURAL GROUND LINE

NEIGHBOURING
PROPERTY LOT 10



WATERFORD
TAMBORINE ROAD

7
-
EXTERNAL ELEVATION - YARRABILBA DRIVE
1 : 350@A3



PAINT COLOUR LEGEND

WALLS

- DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR
- DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR
- DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

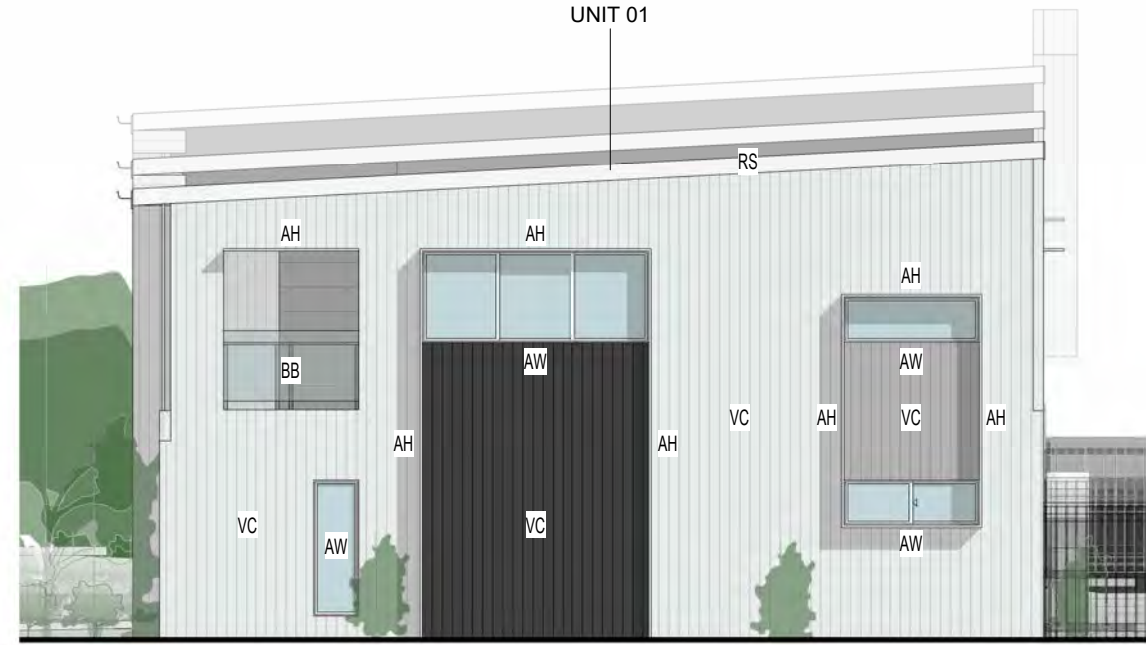
- DULUX COLORBOND
SURFMIST (OR SIMILAR)
- DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

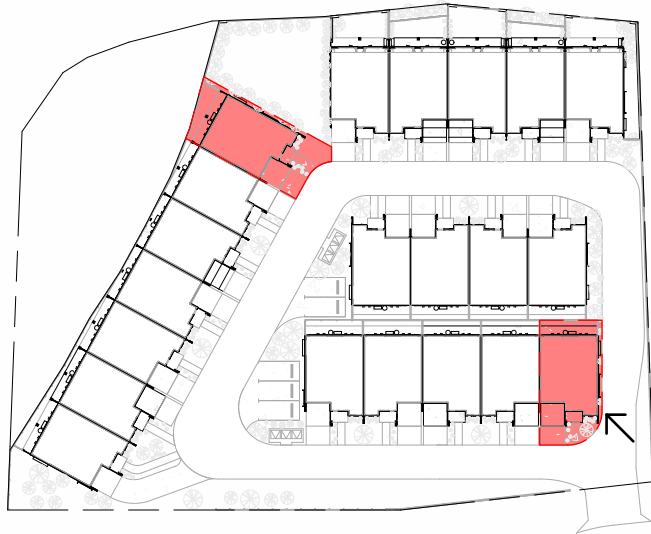
- POWDER COATED
WHITE

LEGEND

- NATURAL GROUND LINE



1 TYPICAL SIDE ELEVATION (BUILDING 1 - TYPE A)
1 : 100@A3



A SITE PLAN - KEY PLAN (TYPE A - UNIT 1)
1 : 1000@A3



2 TYPICAL 3D PERSPECTIVE (BUILDING 1 - TYPE A)
@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED
TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

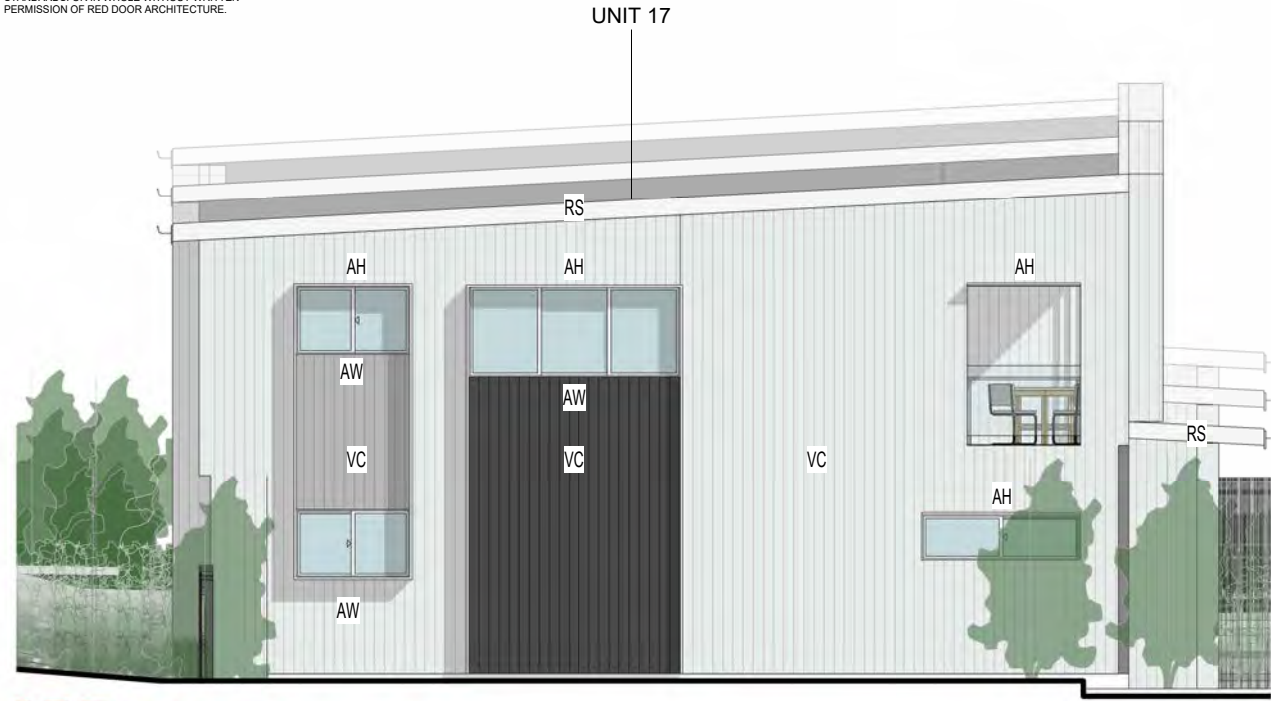
POWDER COATED
WHITE

MATERIAL LEGEND

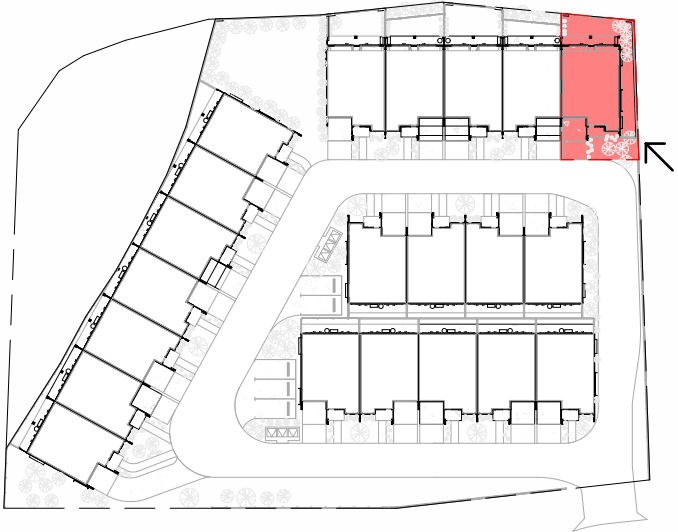
AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

NATURAL GROUND LINE



1 TYPICAL SIDE ELEVATION (BUILDING 3 - TYPE B)
1 : 100@A3



B SITE PLAN - KEY PLAN (TYPE B - UNIT 17)
1 : 1000@A3



2 TYPICAL 3D PERSPECTIVE (BUILDING 3 - TYPE B)
@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX COLORBOND MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND SURFMIST (OR SIMILAR)

DULUX LEXICON HALF (OR SIMILAR)

DOOR & WINDOW FRAMES

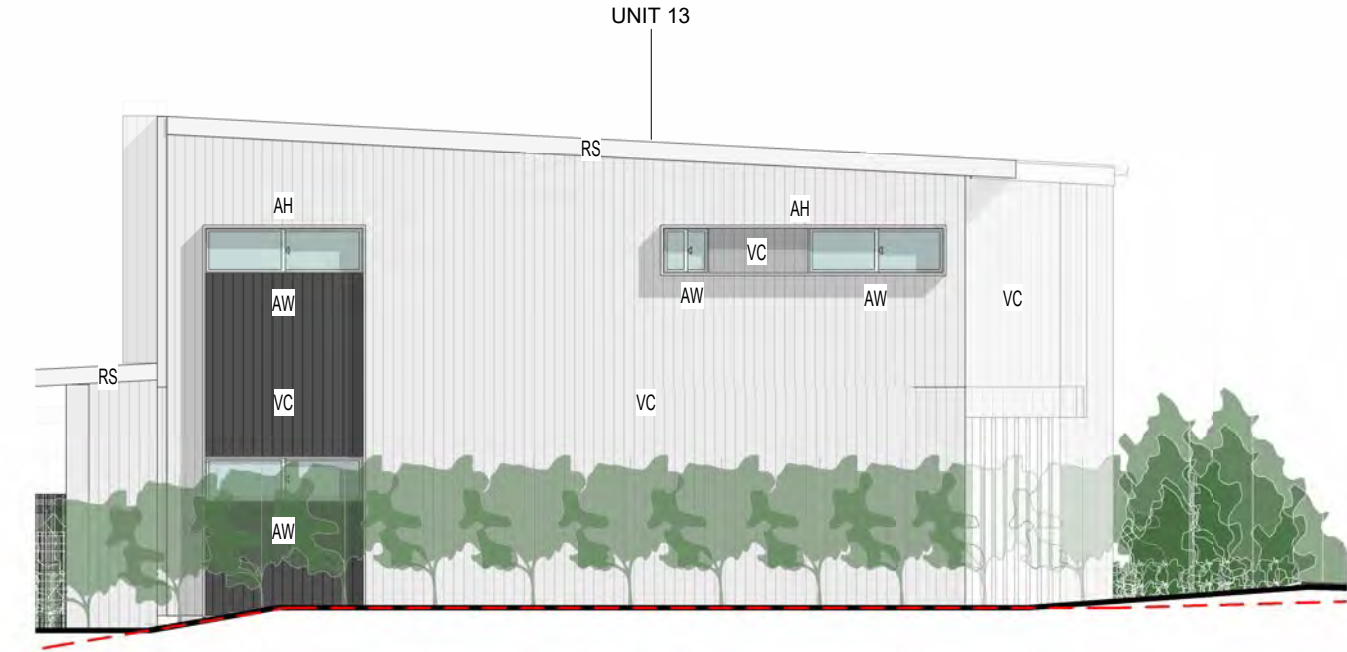
POWDER COATED WHITE

MATERIAL LEGEND

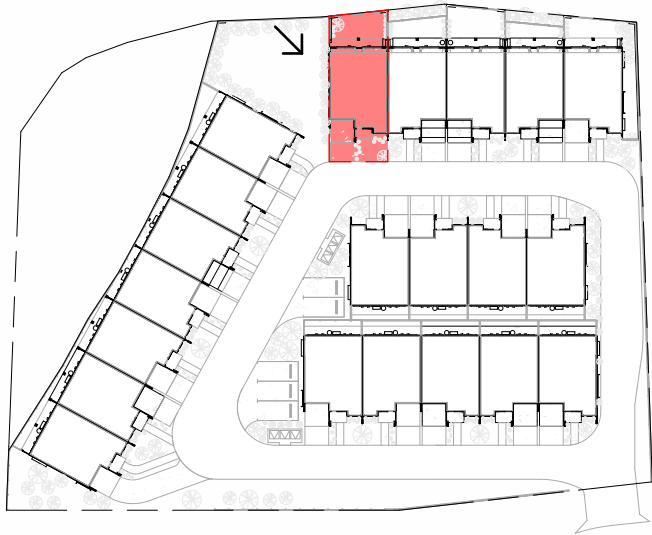
AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

NATURAL GROUND LINE



1 TYPICAL SIDE ELEVATION (BUILDING 3 - TYPE B SIDE 2)
1 : 100@A3



B2 SITE PLAN - KEY PLAN (TYPE B - UNIT 13)
1 : 1000@A3

PAINT COLOUR LEGEND

WALLS

DULUX LEXICON HALF
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX TRANQUIL RETREAT
(OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

DULUX COLORBOND
MONUMENT (OR SIMILAR)

NOTE: PROJECTIONS TO BE POWDERCOATED TO MATCH PAINT COLOUR

ROOF & GUTTERS

DULUX COLORBOND
SURFMIST (OR SIMILAR)

DULUX LEXICON HALF
(OR SIMILAR)

DOOR & WINDOW FRAMES

POWDER COATED
WHITE

MATERIAL LEGEND

AD	ALUMINIUM FRAMED SLIDING DOOR
AH	ALUMINIUM HOOD FEATURE
AW	ALUMINIUM FRAMED WINDOW
BB	BALCONY BALUSTRADE
GD	COLORBOND GARAGE DOOR
HC	HORIZONTAL WALL CLADDING
RS	COLORBOND ROOF SHEETING
VB	VERTICAL BATTEN SCREEN
VC	VERTICAL WALL CLADDING

LEGEND

--- NATURAL GROUND LINE



EXPRESSED WINDOW
HOODS SURROUNDING
WINDOWS

2 TYPICAL 3D PERSPECTIVE (BUILDING 3 - TYPE B SIDE 2)
@A3

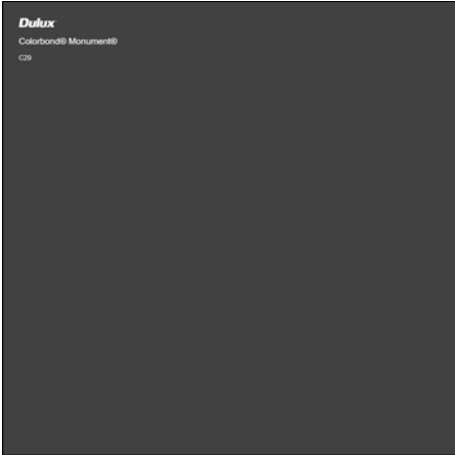
COLOUR LEGEND



PAINT
DULUX - LEXICON HALF
4W / SW1G2



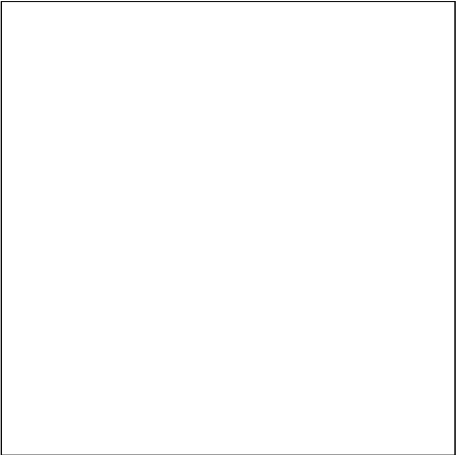
PAINT
DULUX - TRANQUIL RETREAT
GR24 / SN4G1



PAINT
DULUX - MONUMENT
C29



POWDERCOATED - PAINT
DULUX - SURFMIST
C1

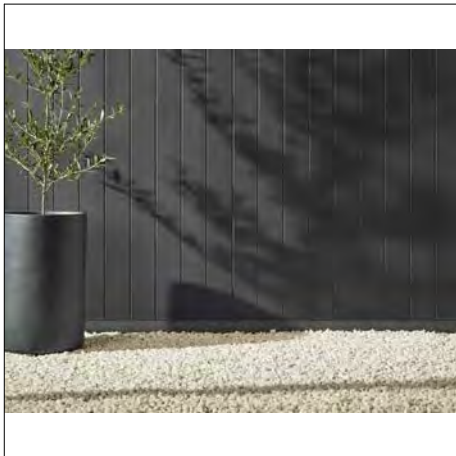


POWDERCOATED - PAINT
WHITE

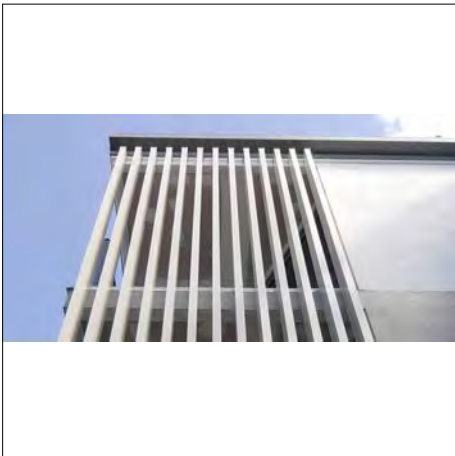
MATERIAL LEGEND



PAINTED FC (FIBER CEMENT)
HORIZONTAL CLADDING
JAMES HARDIE - STRIA (325mm)



PAINTED FC (FIBER CEMENT)
VERTICAL CLADDING
JAMES HARDIE - AXON (133mm)



VERTICAL BATTEN SCREEN



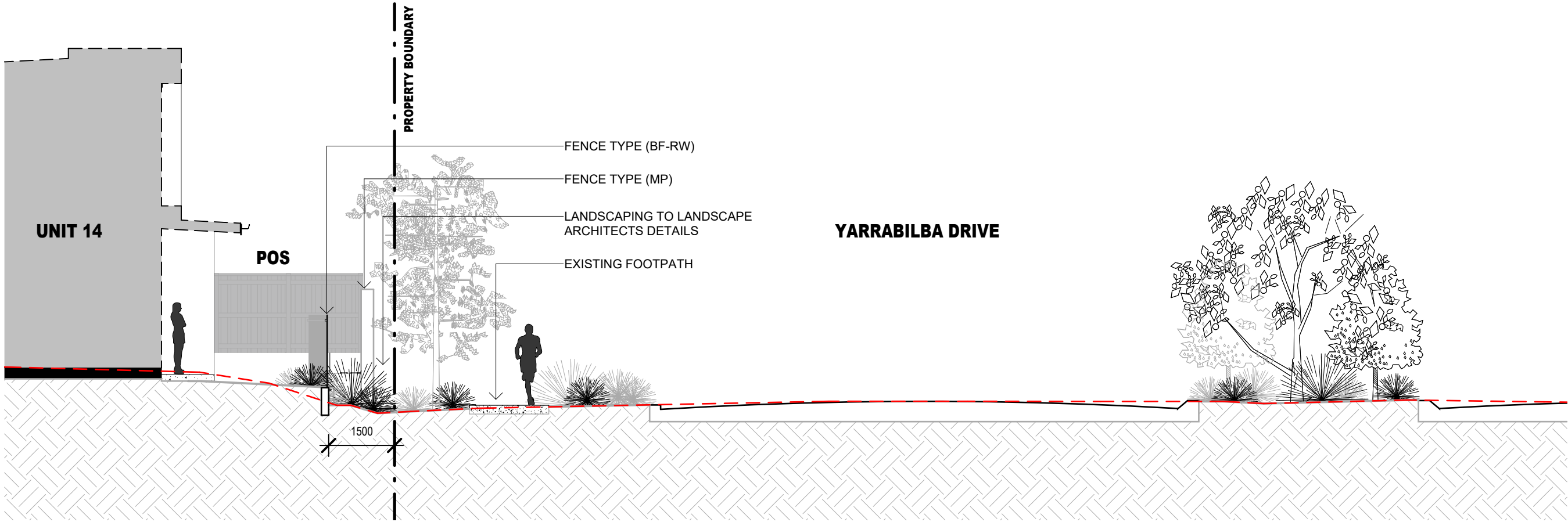
GLASS BALUSTRADE



COLORBOND STEEL ROOFING

LEGEND

--- NATURAL GROUND LINE



1 SITE SECTION - YARRABILBA DRIVE
- 1 : 100@A3







Appendix B – Site Photos



Photo 1: Unattended noise measurement location (view due West)



Photo 2: Unattended noise measurement location (view due East)



Photo 3: Attended noise measurement location at the boundary with the recycling depot



Photo 4: Attended noise measurement location opposite the childcare centre

Appendix C – Meteorological Data

Greenbank (Defence), Queensland
July 2025 Daily Weather Observations

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Tu	10.6	20.5	2.2			WNW	37	16:16	15.0	80		NW	9		19.4	37		WNW	13	
2	We	8.9	18.8	0			WNW	59	12:36	12.1	58		WNW	15		18.1	45		W	20	
3	Th	6.1	20.2	0			WNW	41	13:13	13.3	54		NW	13		19.8	28		W	22	
4	Fr	3.6	21.6	0			WNW	20	02:00	12.7	64		WNW	4		21.3	37		NNW	4	
5	Sa	4.0	22.7	0			NE	24	12:21	12.2	81			Calm		21.3	55		ENE	7	
6	Su	11.3	23.9	0			NNE	22	12:34	15.9	94			Calm		23.6	56		N	6	
7	Mo	11.4	22.0	8.0			WNW	26	14:53	17.2	85		WNW	6		21.4	32		WNW	13	
8	Tu	2.7	21.6	0			NNW	17	12:23	12.2	73		W	7		21.4	36		NW	7	
9	We	5.9	23.2	0.2			WNW	17	11:12	10.0	99			Calm		22.9	58		NNW	4	
10	Th	9.3	23.3	0			W	39	13:07	17.1	81		WNW	7		22.9	35		WNW	13	
11	Fr	2.6	21.9	0			W	19	09:24	12.5	55		WNW	9		21.7	28		WNW	7	
12	Sa	2.9	21.3	0			SW	17	10:31	12.1	72			Calm		21.1	32		SSW	2	
13	Su	2.1	21.4	0			WSW	17	11:05	10.9	84		WNW	4		20.9	41		NNW	6	
14	Mo	3.5	22.9	0			W	20	11:20	13.5	58		NW	9		22.2	32		ESE	2	
15	Tu	1.9	18.7	0			NW	15	12:04	11.7	78			Calm		18.3	52		NE	2	
16	We	4.3	23.5	0			ENE	19	15:50	13.9	78			Calm		22.1	49		ENE	7	
17	Th	5.9	23.6	0			NNE	20	12:24	12.4	95			Calm		23.2	53		N	7	
18	Fr	10.0	21.0	2.6			ESE	17	17:27	14.8	100		SSE	7		19.6	79		ESE	4	
19	Sa	6.0	20.8	12.8			SSW	28	13:12	14.0	85		NNE	4		20.0	51		S	11	
20	Su	5.1	23.0	0			SSW	26	10:24	15.1	84			Calm		18.1	80		ENE	2	
21	Mo	11.0	22.0	0			SSE	26	15:52	15.3	81		S	6		20.5	56		SSE	7	
22	Tu	8.7	22.5	0.2			NNE	15	15:11	14.5	98		SSE	6		20.0	69		NE	6	
23	We	10.7	22.5	0.2			SW	37	16:10	14.9	100			Calm		21.2	72			Calm	
24	Th	6.7	19.6	28.6			W	20	08:55	11.7	75		W	11		19.3	32		SSW	4	
25	Fr	1.6	20.7	0			NE	20	13:08	10.6	81		NW	2		19.8	51		E	7	
26	Sa	7.2	19.7	0			NNE	17	21:09	14.5	86			Calm		16.2	96		NW	2	
27	Su	13.4	20.6	21.4			W	46	13:05	16.4	73		WNW	7		19.7	39		W	20	
28	Mo	5.7	19.8	0.2			W	44	14:12	14.6	62		W	11		19.1	36		WSW	20	
29	Tu	2.7	20.5	0			SSW	13	10:52	11.0	74		W	6		19.1	37			Calm	
30	We	8.9	24.4	0			W	30	15:28	15.5	71			Calm		23.7	49		NW	7	
31	Th	5.6	20.1	0			W	24	09:44	13.2	64		W	11		18.6	47		W	11	
Statistics for July 2025																					
Mean		6.5	21.6							13.6	78			4		20.5	48			7	
Lowest		1.6	18.7							10.0	54			Calm		16.2	28			Calm	
Highest		13.4	24.4	28.6			WNW	59		17.2	100		WNW	15		23.7	96		W	22	
Total				76.4																	

Observations were drawn from Greenbank (Defence) {station 140009}

Appendix D – Noise Measurement Results



Unattended Noise Measurements
9 - 11 Adler Circuit

Environmental Noise Levels Day, Evening and Night

Logger Location - North-western
boundary of lot

ARL Environmental Noise Logger
Logger Serial Number 8780D2
Measurement Title 20250714_104032
Measurement started at 14/07/2025 - 10:40:33
Measurement stopped at 22/07/2025 - 10:36:03
Frequency Weighting A
Time Averaging Fast
Statistical Interval 15 min
Pre-measurement Ref. 94.0
Post-measurement Ref. 94.0
Engineering Units dB SPL

		L _{Aeq,T} dB(A)			L _{A01,T} dB(A)			L _{A10,T} dB(A)			L _{A90,T} dB(A)		
Date	Day	D	E	N	D	E	N	D	E	N	D	E	N
14/07/2025	Monday	—	58	53	—	67	62	—	60	56	—	52	44
15/07/2025	Tuesday	61	57	54	70	67	63	63	59	56	54	50	44
16/07/2025	Wednesday	61	58	53	69	67	62	63	59	56	55	50	44
17/07/2025	Thursday	61	59	54	69	69	63	62	60	56	54	52	45
18/07/2025	Friday	61	61	55	70	69	65	63	62	57	54	53	44
19/07/2025	Saturday	61	59	55	71	67	64	63	60	57	53	51	46
20/07/2025	Sunday	61	57	54	70	67	63	63	59	56	54	50	44
21/07/2025	Monday	61	58	53	69	67	62	63	59	56	55	50	44
Average		61	58	54	70	67	63	63	59	56	54	51	44

Note

— No noise data available

Day (D): 7:00am to 6:00pm

Evening (E): 6:00pm to 10:00pm

Night (N): 10:00pm to 7:00am

Rainfall recorded on this day



Unattended Noise Measurements
9 - 11 Adler Circuit

Noise Levels - 18hr Day (Traffic Noise)

Logger Location - North-western
boundary of lot

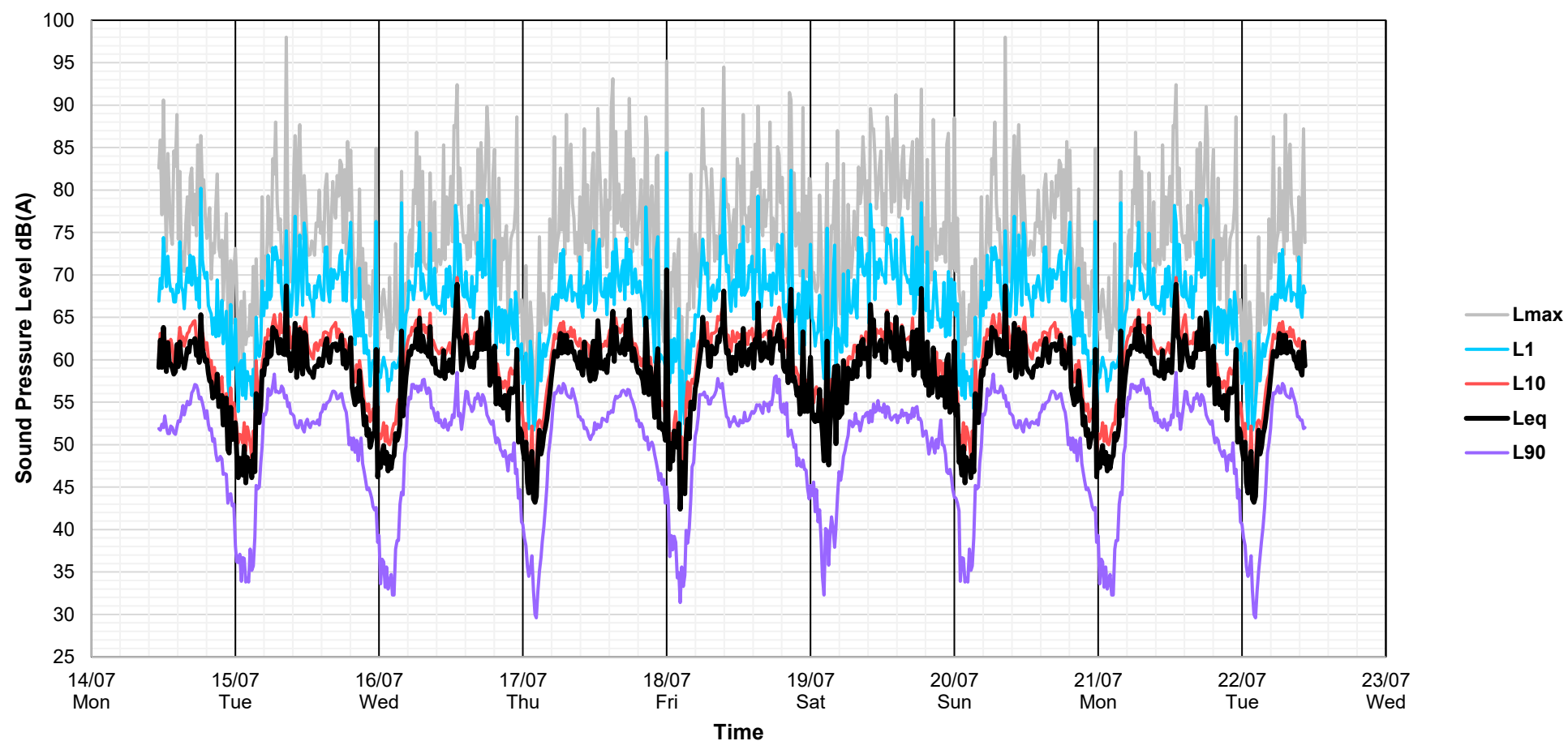
ARL Environmental Noise Logger
Logger Serial Number 8780D2
Measurement Title 20250714_104032
Measurement started at 14/07/2025 - 10:40:33
Measurement stopped at 22/07/2025 - 10:36:03
Frequency Weighting A
Time Averaging Fast
Statistical Interval 15 min
Pre-measurement Ref. 94.0
Post-measurement Ref. 94.0
Engineering Units dB SPL

Date	Day	L _{A10,T}			L _{Aeq,T}		L _{A90,T}	
		18hr day 6am-12am	1hr max 6am-12am	Time for 1hr max	18hr day 6am-12am	8hr night 10pm-6am	18hr day 6am-12am	8hr night 10pm-6am
14/07/2025	Monday	—	—	—	—	52	—	42.7
15/07/2025	Tuesday	60.9	64.3	06:00	59	53	52.2	42.2
16/07/2025	Wednesday	61.3	65.0	13:00	60	52	52.8	42.7
17/07/2025	Thursday	61.2	63.9	06:00	60	53	52.9	43.1
18/07/2025	Friday	62.2	65.2	18:00	61	55	53.3	43.1
19/07/2025	Saturday	61.2	63.5	13:00	60	54	52.2	44.3
20/07/2025	Sunday	60.9	64.3	06:00	59	53	52.2	42.2
21/07/2025	Monday	61.3	65.0	13:00	60	52	52.8	42.7
Average		61.2	64.3		60	53	52.5	42.8
Average (weekdays only)		61.2	64.5		60	52	52.7	42.7

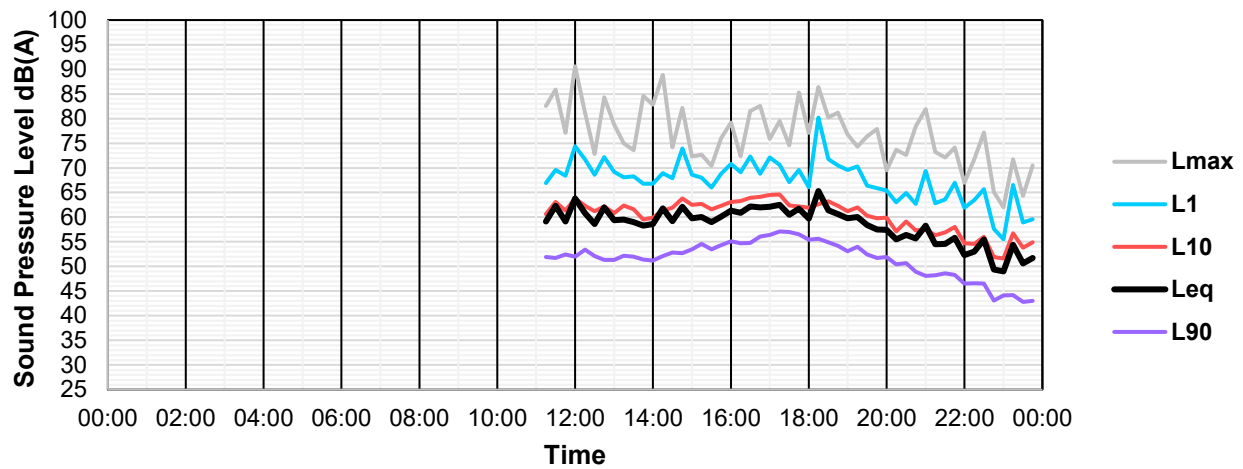
Note

- No noise data available
- Rainfall recorded on this day

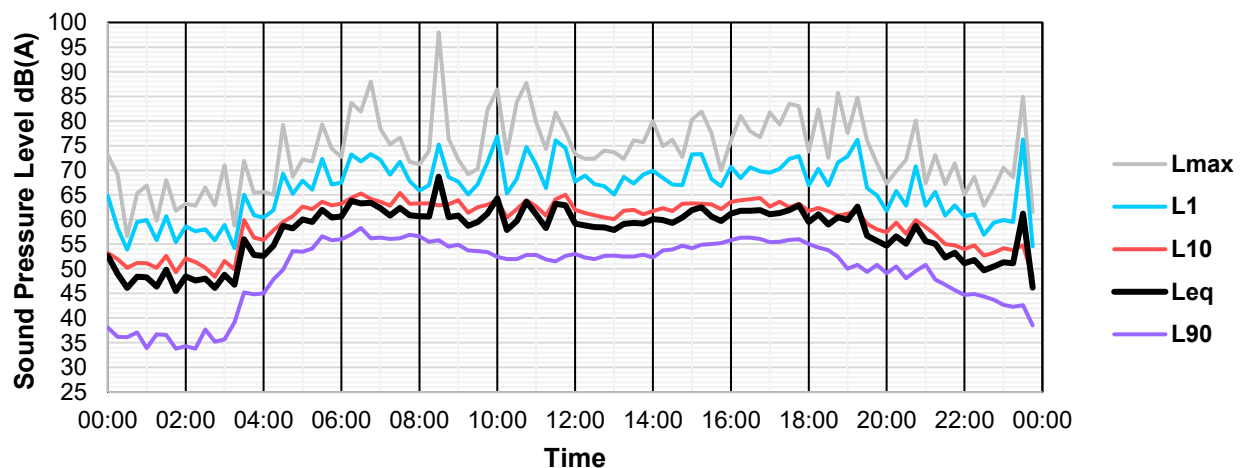
Unattended Noise Measurements 14 to 22 July 2025



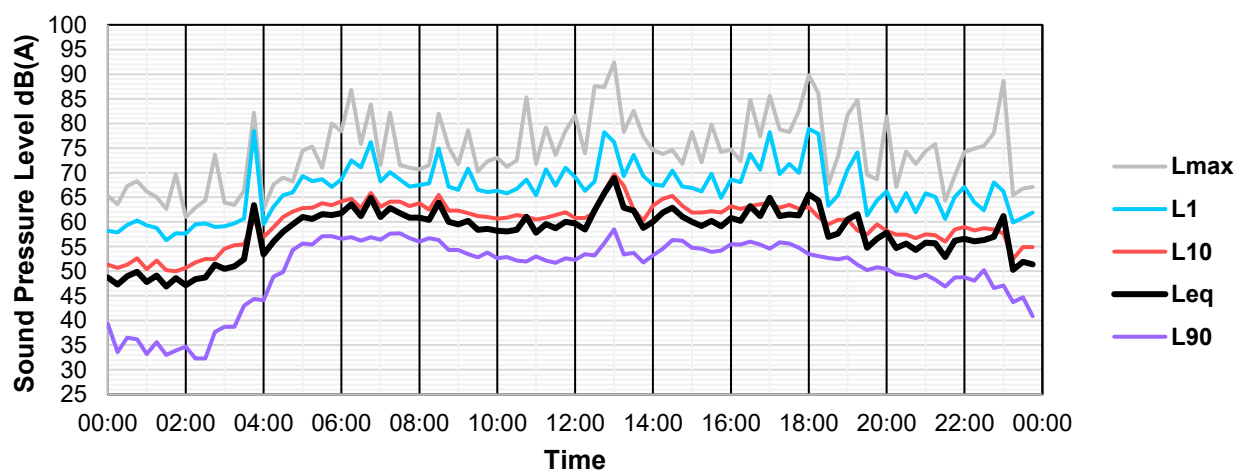
Unattended Noise Measurements Monday 14 July 2025



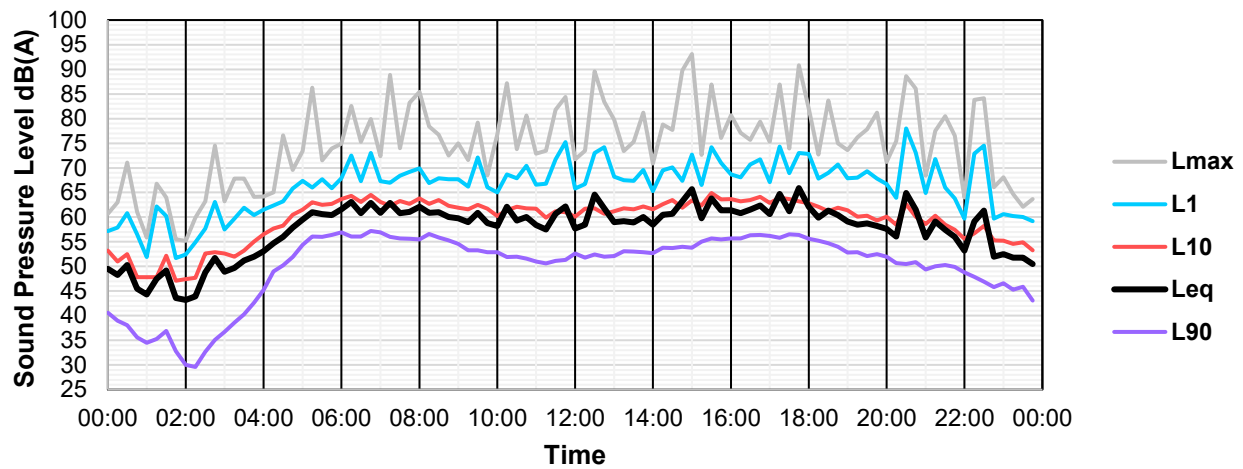
Unattended Noise Measurements Tuesday 15 July 2025



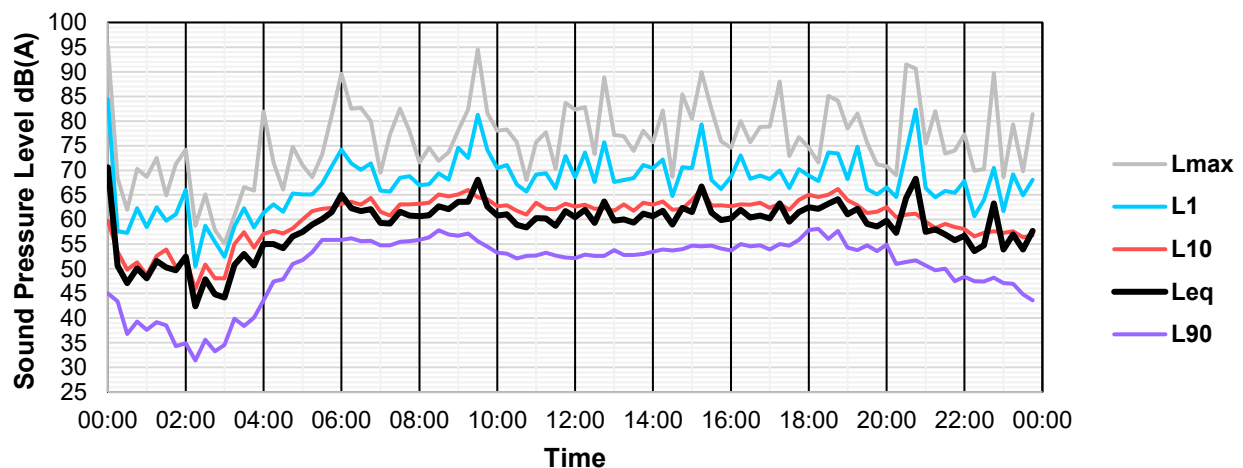
Unattended Noise Measurements Wednesday 16 July 2025



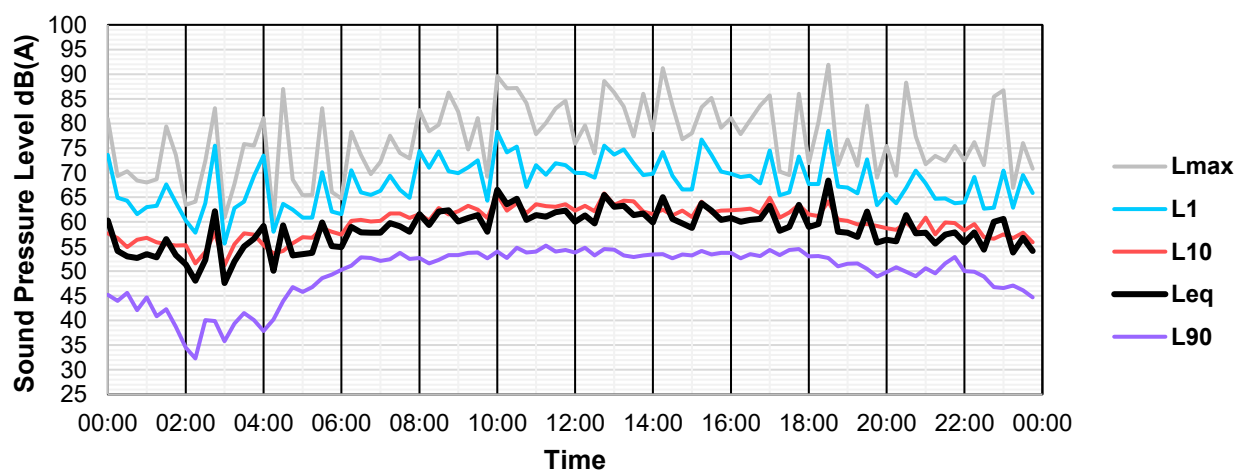
Unattended Noise Measurements Thursday 17 July 2025



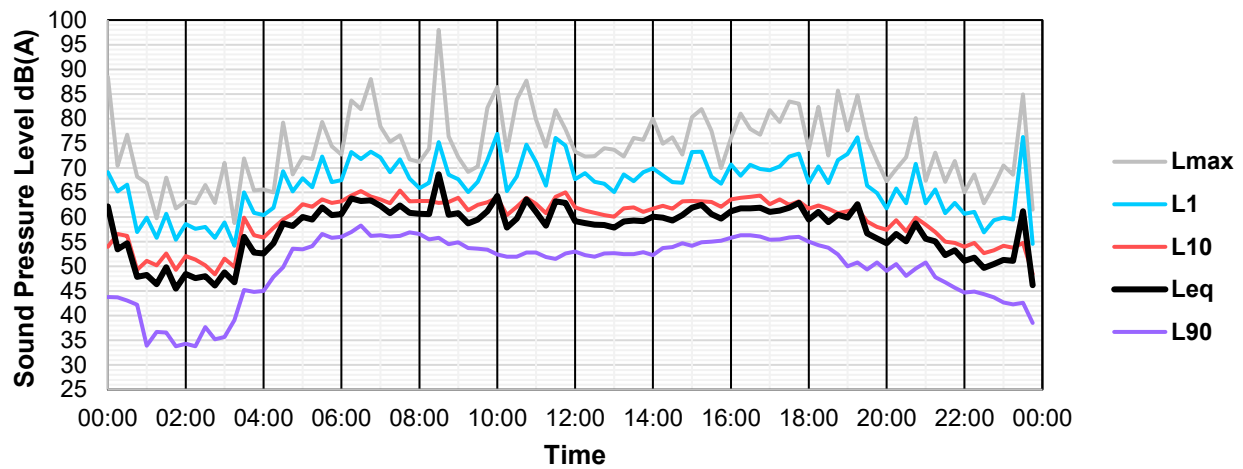
Unattended Noise Measurements Friday 18 July 2025



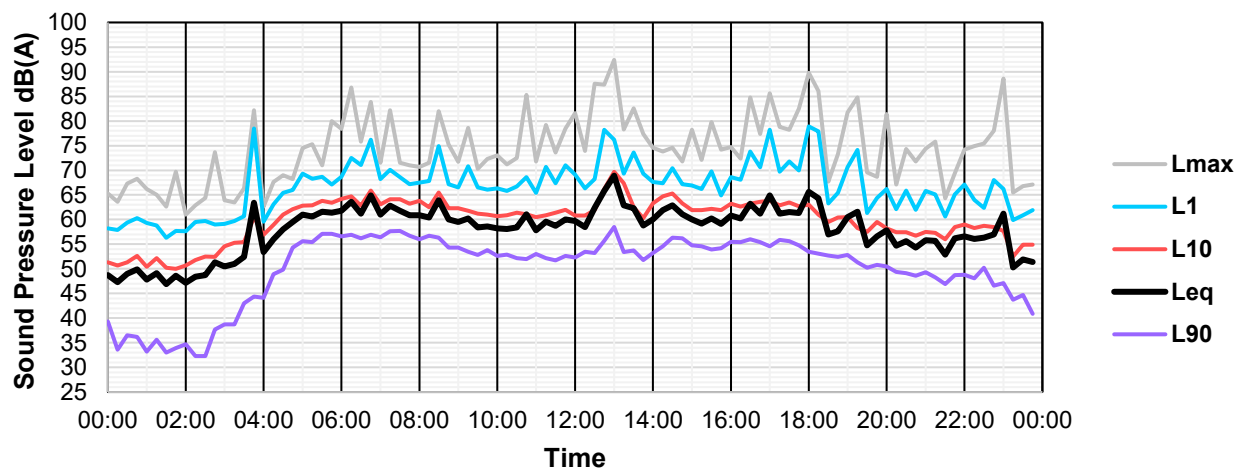
Unattended Noise Measurements Saturday 19 July 2025



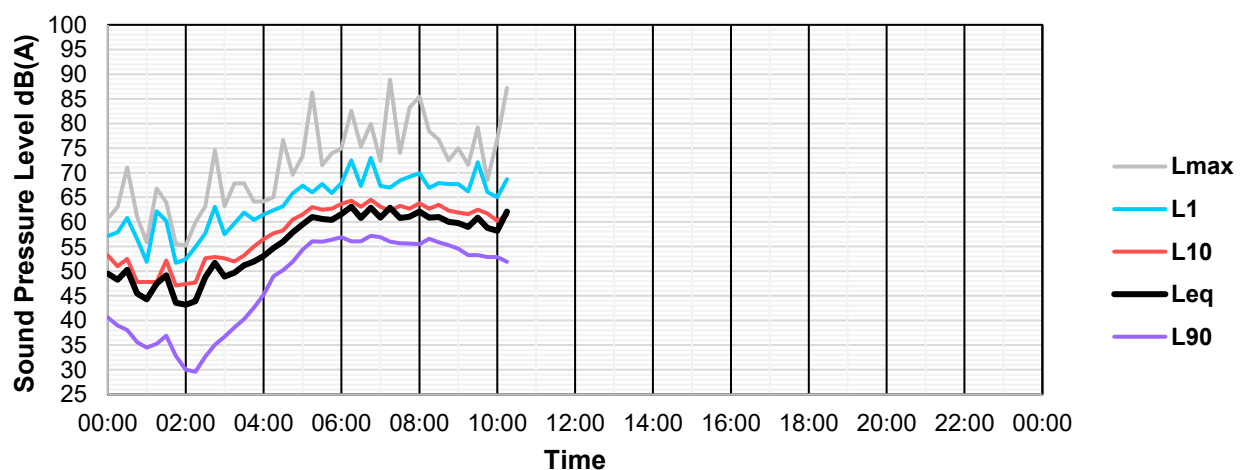
Unattended Noise Measurements Sunday 20 July 2025



Unattended Noise Measurements Monday 21 July 2025



Unattended Noise Measurements Tuesday 22 July 2025



Appendix E – RTNA Validation (Year 2025)

Proposed Residential Subdivision
9 - 11 Adler Circuit, Yarrabilba
Calculated Traffic Noise Levels
RTNA Validation

Receiver Name	L10(18h) dB(A)
RTNA validation	62.9



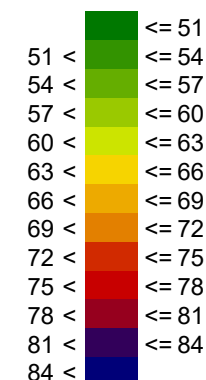
Appendix F – RTNA Noise Contour Maps (Year 2037)

Proposed Development 9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

Ground Floor (1.8m AGL)
Facade

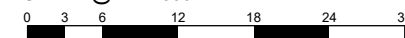
Traffic noise level
Facade-adjusted
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

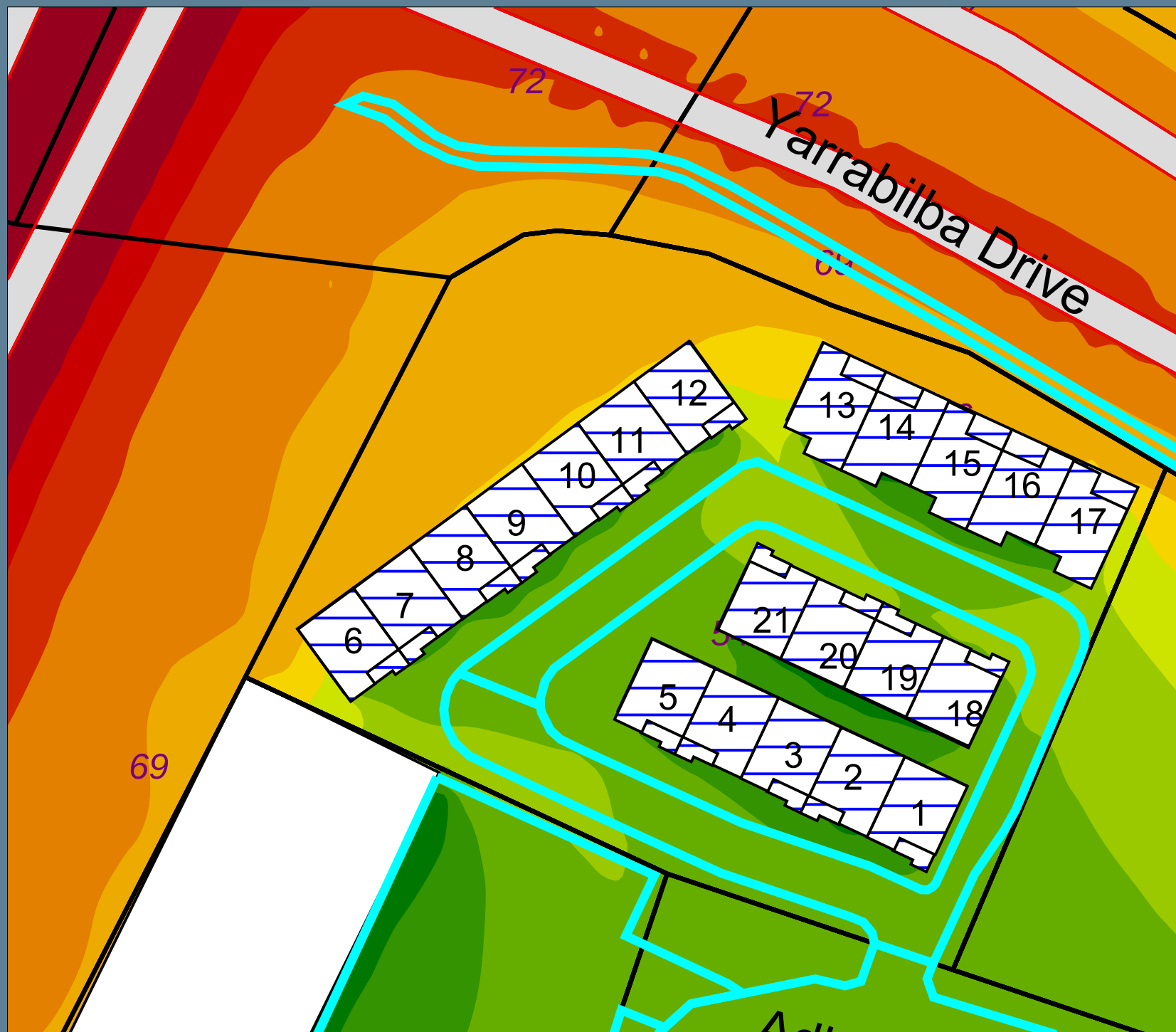
- Road noise emission line
- Road surface
- Existing buildings
- Proposed Townhouses
- Paved surface
- Line

SCALE @ A4 1:600



Grid Spacing: 2.0m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1

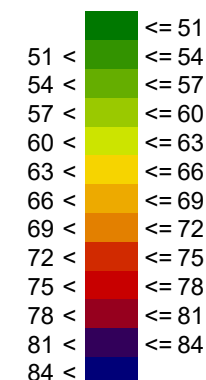


Proposed Development 9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

First Floor (4.8m AGL)
Facade

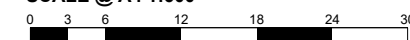
Traffic noise level
Facade-adjusted
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

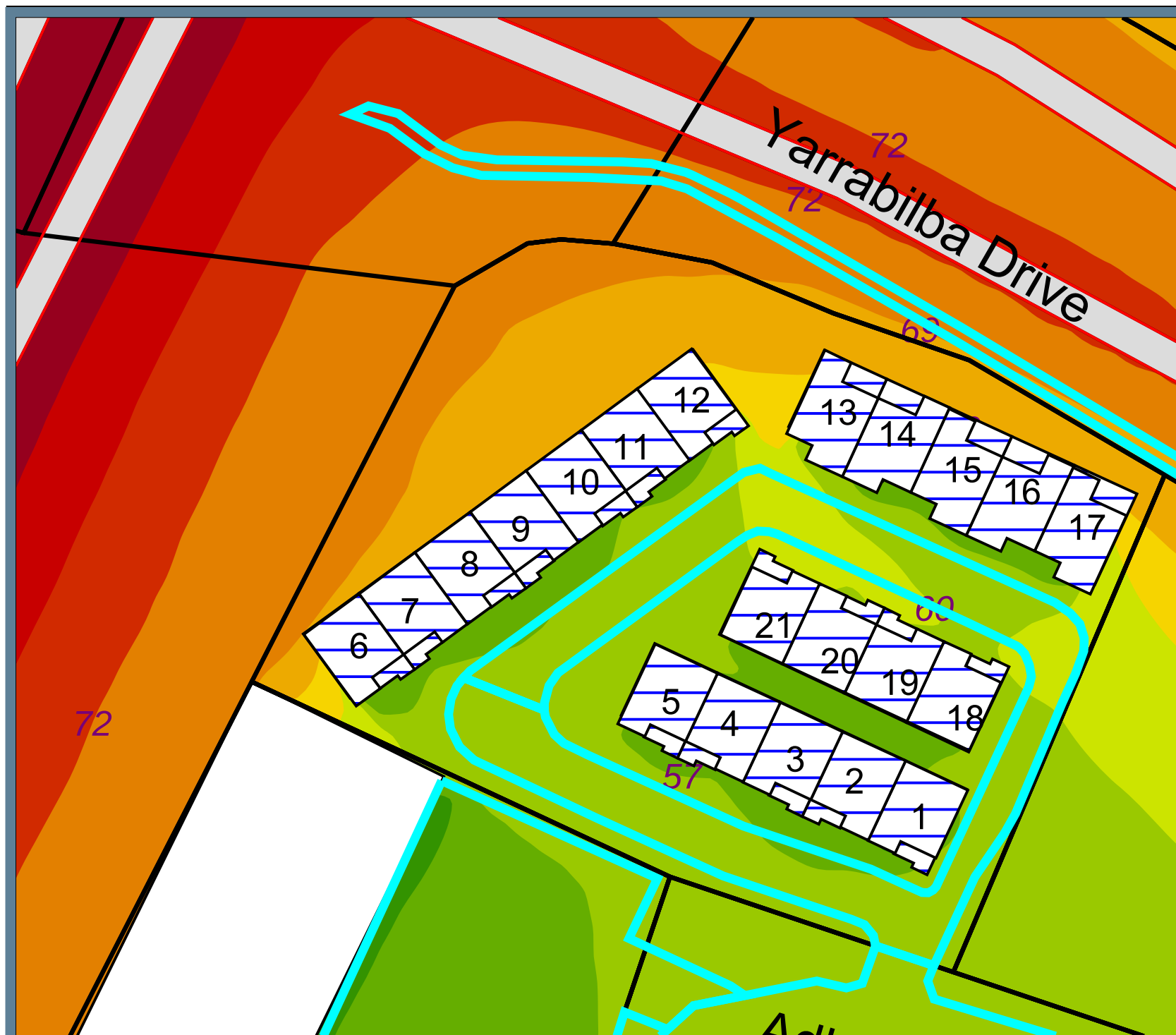
- Road noise emission line
- Road surface
- Existing buildings
- Proposed Townhouses
- Paved surface
- Line

SCALE @ A4 1:600



Grid Spacing: 2.0m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1

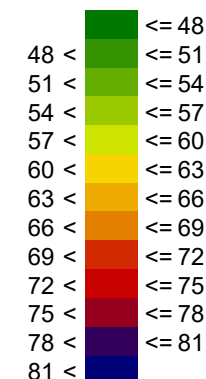


Proposed Development 9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

Ground Floor (1.5m AGL)
Private Open Space

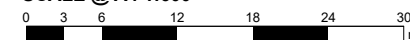
Traffic noise level
Free field
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

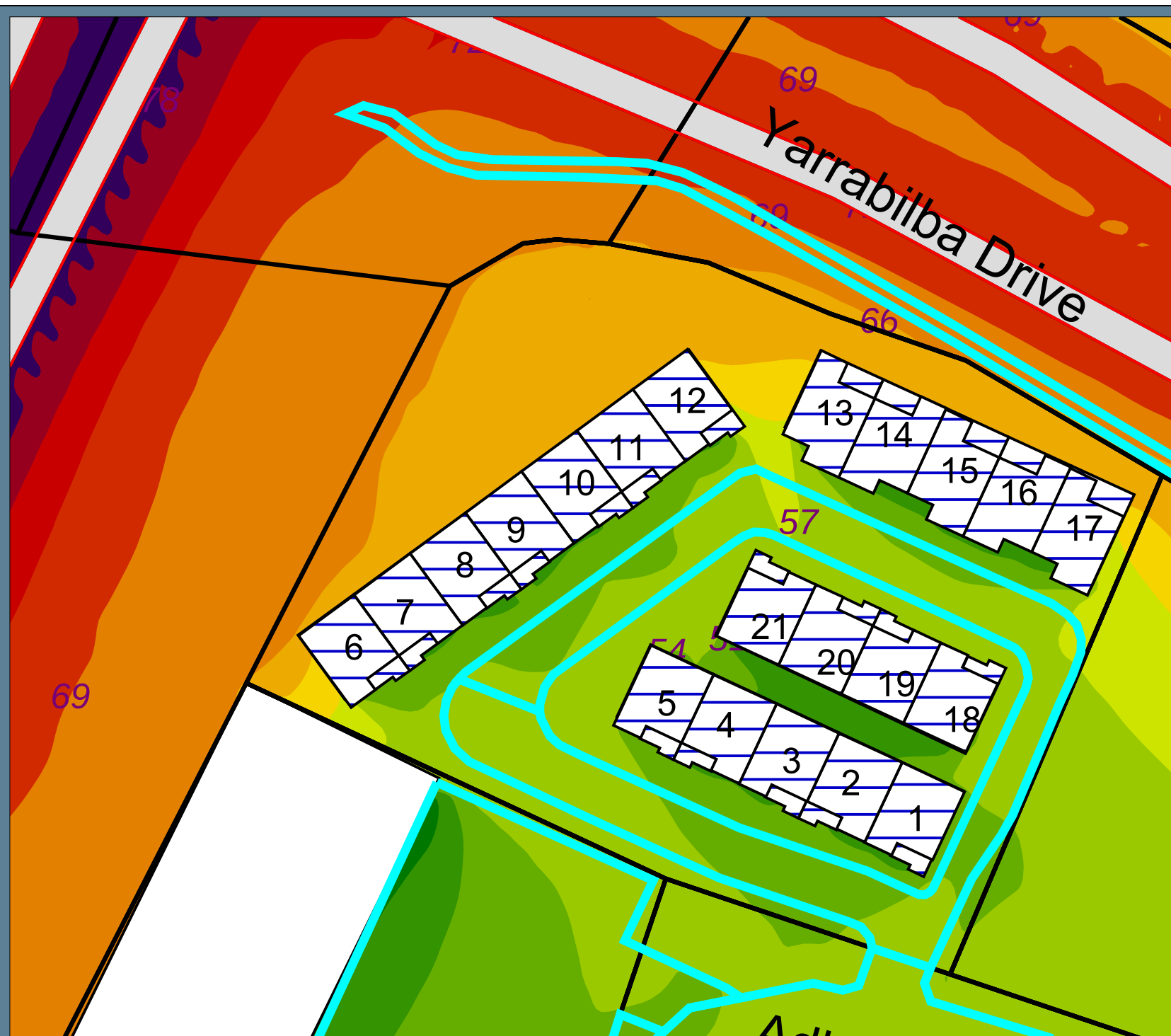
- Road noise emission line
- Road surface
- Existing buildings
- Proposed Townhouses
- Paved surface
- Line

SCALE @ A4 1:600



Grid Spacing: 2.0m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1

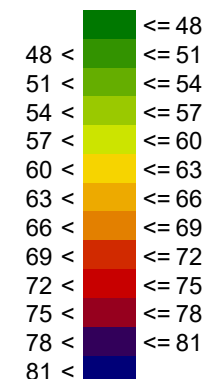


Proposed Development 9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

First Floor (4.5m AGL)
Private Open Space

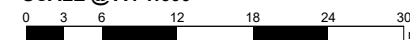
Traffic noise level
Free field
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

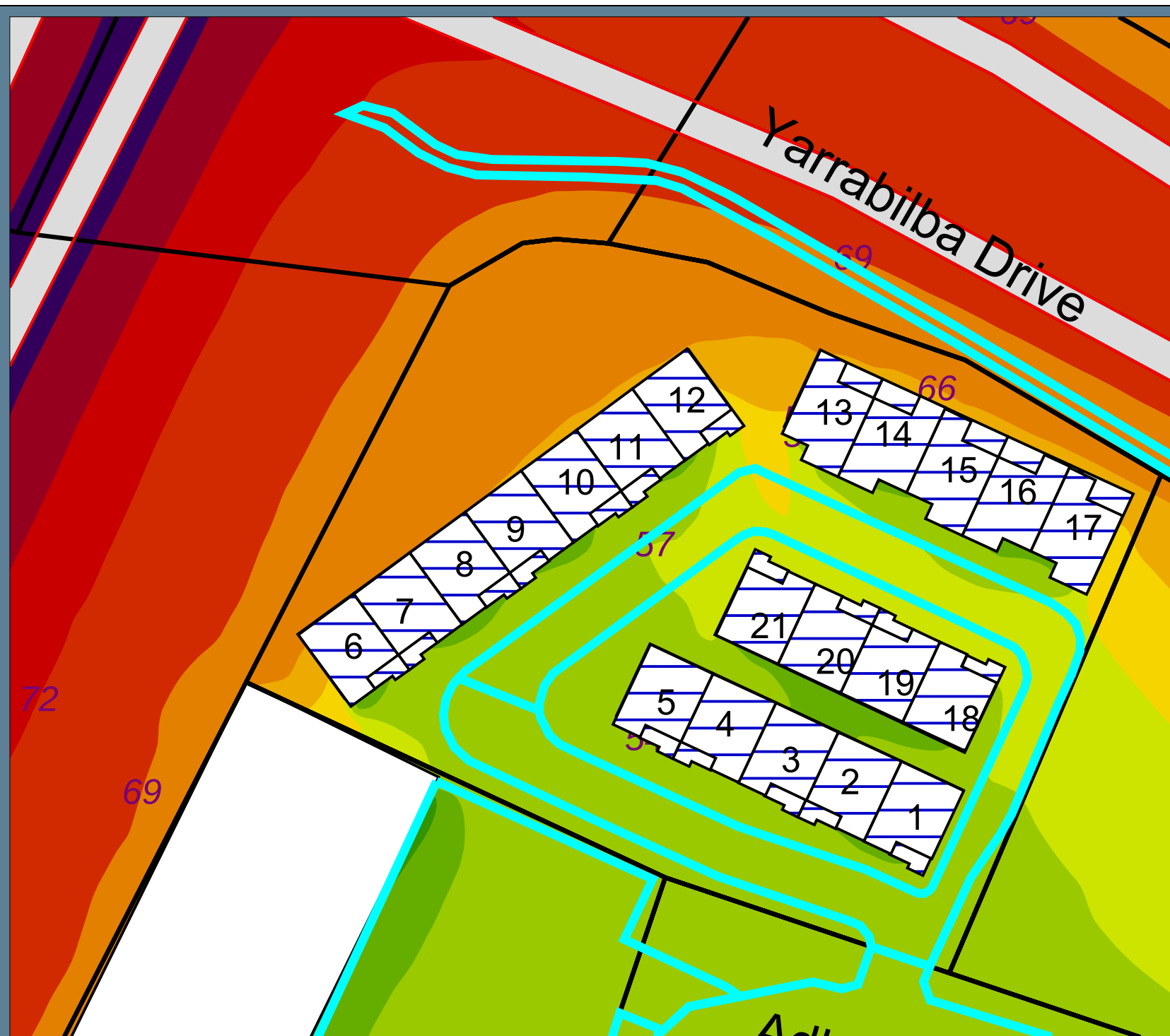
- Road noise emission line
- Road surface
- Existing buildings
- Proposed Townhouses
- Paved surface
- Line

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1



Proposed Development 9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

Ground Floor (1.8m AGL)
Facade

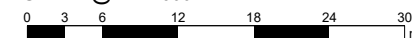
QDC MP4.4 Noise Category
Facade-adjusted
Adjusted for Queensland Conditions¹



Legend

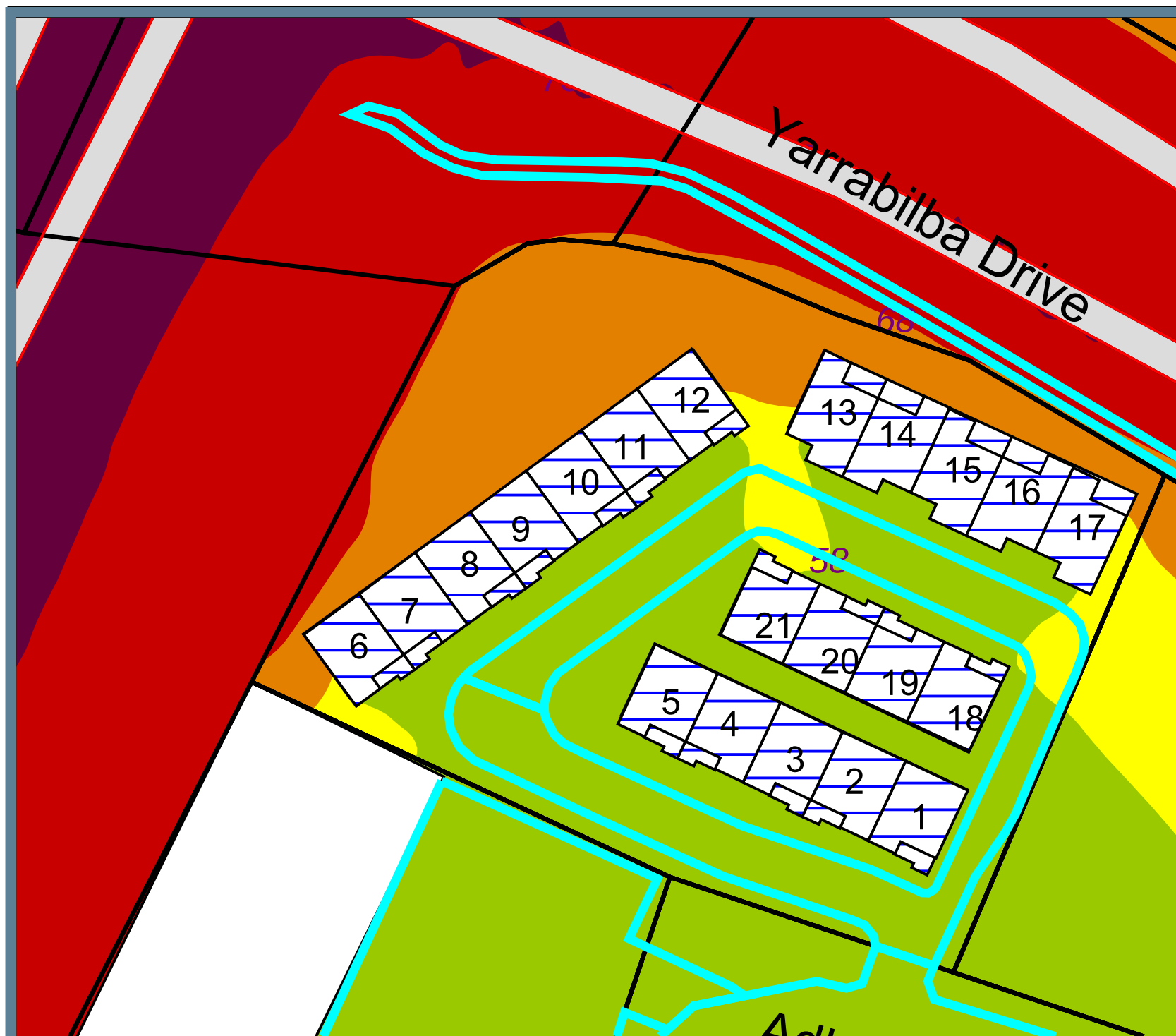
-  Road noise emission line
-  Road surface
-  Existing buildings
-  Proposed Townhouses
-  Paved surface
-  Line

SCALE @ A4 1:600



Grid Spacing: 2.0m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1





ATP250631

Proposed Development
9-11 Adler Circuit Yarrabilba

Traffic Noise Modelling
Year 2037

First Floor (4.8m AGL)
Facade

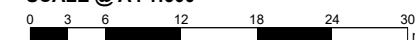
QDC MP4.4 Noise Category
Facade-adjusted
Adjusted for Queensland Conditions¹



Legend

- Road noise emission line
- ▬ Road surface
- ▭ Existing buildings
- ▨ Proposed Townhouses
- ▭ Paved surface
- Line

SCALE @ A4 1:600



Grid Spacing: 2.0m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1

Appendix G – ONIA Tabulated Noise Levels

Proposed Development at 9-11 Adler Circuit Yarrabilba
Predicted Operational Noise Levels on Townhouses
From Activities at Adjacent Development

Acoustic Quality Objectives (T = 1hr)

Receiver Name	Floor	Facade	Leq 1hr Day dB(A)	Leq 1hr Evening dB(A)	Leq 1hr Night dB(A)
TH01	GF	SE	40		
TH01	GF	NE	32		
TH01	GF	SW	49		
TH01	GF	SW	46		
TH01	GF	SE	41		
TH01	GF	SW	49		
TH01	GF	NE	34		
TH01	GF	SW	48		
TH02	GF	SW	50		
TH02	GF	SW	50		
TH02	GF	SW	50		
TH02	GF	SW	49		
TH02	GF	SW	47		
TH02	GF	NE	34		
TH02	GF	NE	33		
TH03	GF	NE	32		
TH03	GF	SW	51		
TH03	GF	SW	50		
TH03	GF	SW	51		
TH03	GF	NE	34		
TH03	GF	SW	51		
TH04	GF	SW	53		
TH04	GF	SW	52		
TH04	GF	SW	52		
TH04	GF	SW	51		
TH04	GF	NE	35		
TH04	GF	NE	33		
TH05	GF	NW	52		
TH05	GF	NE	33		
TH05	GF	SW	54		
TH05	GF	NW	52		
TH05	GF	SW	53		
TH05	GF	SW	53		
TH05	GF	NE	35		
TH05	GF	SW	53		
TH06	GF	SW	31		
TH06	GF	NW	28		
TH06	GF	SE	37		
TH06	GF	SE	38		
TH06	GF	SW	32		
TH06	GF	SE	36		
TH06	GF	NW	28		
TH06	GF	SE	38		
TH07	GF	SE	39		
TH07	GF	SE	39		
TH07	GF	SE	44		
TH07	GF	SE	40		



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Proposed Development at 9-11 Adler Circuit Yarrabilba
Predicted Operational Noise Levels on Townhouses
From Activities at Adjacent Development

Acoustic Quality Objectives (T = 1hr)

Receiver Name	Floor	Facade	Leq 1hr Day dB(A)	Leq 1hr Evening dB(A)	Leq 1hr Night dB(A)
TH07	GF	SE	43		
TH07	GF	NW	27		
TH07	GF	NW	27		
TH08	GF	NW	26		
TH08	GF	SE	44		
TH08	GF	SE	43		
TH08	GF	SE	43		
TH08	GF	NW	26		
TH08	GF	SE	44		
TH09	GF	SE	48		
TH09	GF	SE	46		
TH09	GF	SE	50		
TH09	GF	SE	46		
TH09	GF	SE	45		
TH09	GF	NW	25		
TH09	GF	NW	25		
TH10	GF	NW	26		
TH10	GF	SE	49		
TH10	GF	SE	45		
TH10	GF	SE	50		
TH10	GF	NW	26		
TH10	GF	SE	50		
TH11	GF	SE	50		
TH11	GF	SE	50		
TH11	GF	SE	48		
TH11	GF	SE	46		
TH11	GF	SE	43		
TH11	GF	NW	26		
TH11	GF	NW	27		
TH12	GF	NE	26		
TH12	GF	NW	23		
TH12	GF	SE	47		
TH12	GF	SE	39		
TH12	GF	NE	28		
TH12	GF	SE	48		
TH12	GF	NW	26		
TH12	GF	SE	47		
TH13	GF	NW	45		
TH13	GF	NE	26		
TH13	GF	SW	46		
TH13	GF	NW	45		
TH13	GF	SW	45		
TH13	GF	SW	45		
TH13	GF	NE	26		
TH13	GF	SW	45		
TH13	GF	SE	27		
TH13	GF	NE	30		
TH14	GF	SW	41		



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Proposed Development at 9-11 Adler Circuit Yarrabilba
Predicted Operational Noise Levels on Townhouses
From Activities at Adjacent Development

Acoustic Quality Objectives (T = 1hr)

Receiver Name	Floor	Facade	Leq 1hr Day dB(A)	Leq 1hr Evening dB(A)	Leq 1hr Night dB(A)
TH14	GF	SW	41		
TH14	GF	SW	39		
TH14	GF	SW	39		
TH14	GF	SW	37		
TH14	GF	NE	26		
TH14	GF	NE	24		
TH14	GF	NW	28		
TH14	GF	NE	26		
TH15	GF	NE	24		
TH15	GF	SW	38		
TH15	GF	SW	39		
TH15	GF	SW	35		
TH15	GF	NE	25		
TH15	GF	SW	36		
TH15	GF	SE	26		
TH15	GF	NE	25		
TH16	GF	SW	40		
TH16	GF	SW	39		
TH16	GF	SW	40		
TH16	GF	SW	40		
TH16	GF	NE	24		
TH16	GF	NE	24		
TH16	GF	NW	27		
TH16	GF	NE	24		
TH17	GF	SE	40		
TH17	GF	NE	32		
TH17	GF	SW	40		
TH17	GF	SW	40		
TH17	GF	SE	40		
TH17	GF	SW	40		
TH17	GF	NE	32		
TH17	GF	SW	40		
TH17	GF	SE	34		
TH17	GF	NE	32		
TH18	GF	SE	42		
TH18	GF	NE	29		
TH18	GF	SW	35		
TH18	GF	NE	34		
TH18	GF	SE	41		
TH18	GF	NE	29		
TH18	GF	NE	34		
TH18	GF	NE	38		
TH18	GF	SW	33		
TH19	GF	NE	32		
TH19	GF	NE	36		
TH19	GF	SW	33		
TH19	GF	NE	32		



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Proposed Development at 9-11 Adler Circuit Yarrabilba
Predicted Operational Noise Levels on Townhouses
From Activities at Adjacent Development

Acoustic Quality Objectives (T = 1hr)

Receiver Name	Floor	Facade	Leq 1hr Day dB(A)	Leq 1hr Evening dB(A)	Leq 1hr Night dB(A)
TH19	GF	SW	34		
TH19	GF	NE	38		
TH20	GF	NE	35		
TH20	GF	SW	35		
TH20	GF	NE	36		
TH20	GF	NE	39		
TH20	GF	NE	37		
TH20	GF	NE	41		
TH20	GF	SW	33		
TH21	GF	NE	41		
TH21	GF	NW	38		
TH21	GF	NE	41		
TH21	GF	SW	33		
TH21	GF	NW	40		
TH21	GF	NE	41		
TH21	GF	SW	36		
TH21	GF	NE	42		



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Appendix H – ONIA Noise Contour Maps

Proposed Development 9-11 Adler Circuit Yarrabilba

Noise Levels Impacting Proposed Development

Acoustic Quality Objectives Ground Floor (1.8m AGL)

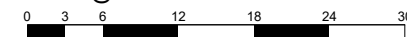
Operational noise level
Leq,adj,1hr Day dB(A)

	<= 46
46 <	<= 49
49 <	<= 52
52 <	<= 55
55 <	<= 58
58 <	<= 61
61 <	<= 64
64 <	<= 67
67 <	<= 70
70 <	<= 73
73 <	<= 76
76 <	<= 79
79 <	<= 82
82 <	<= 85

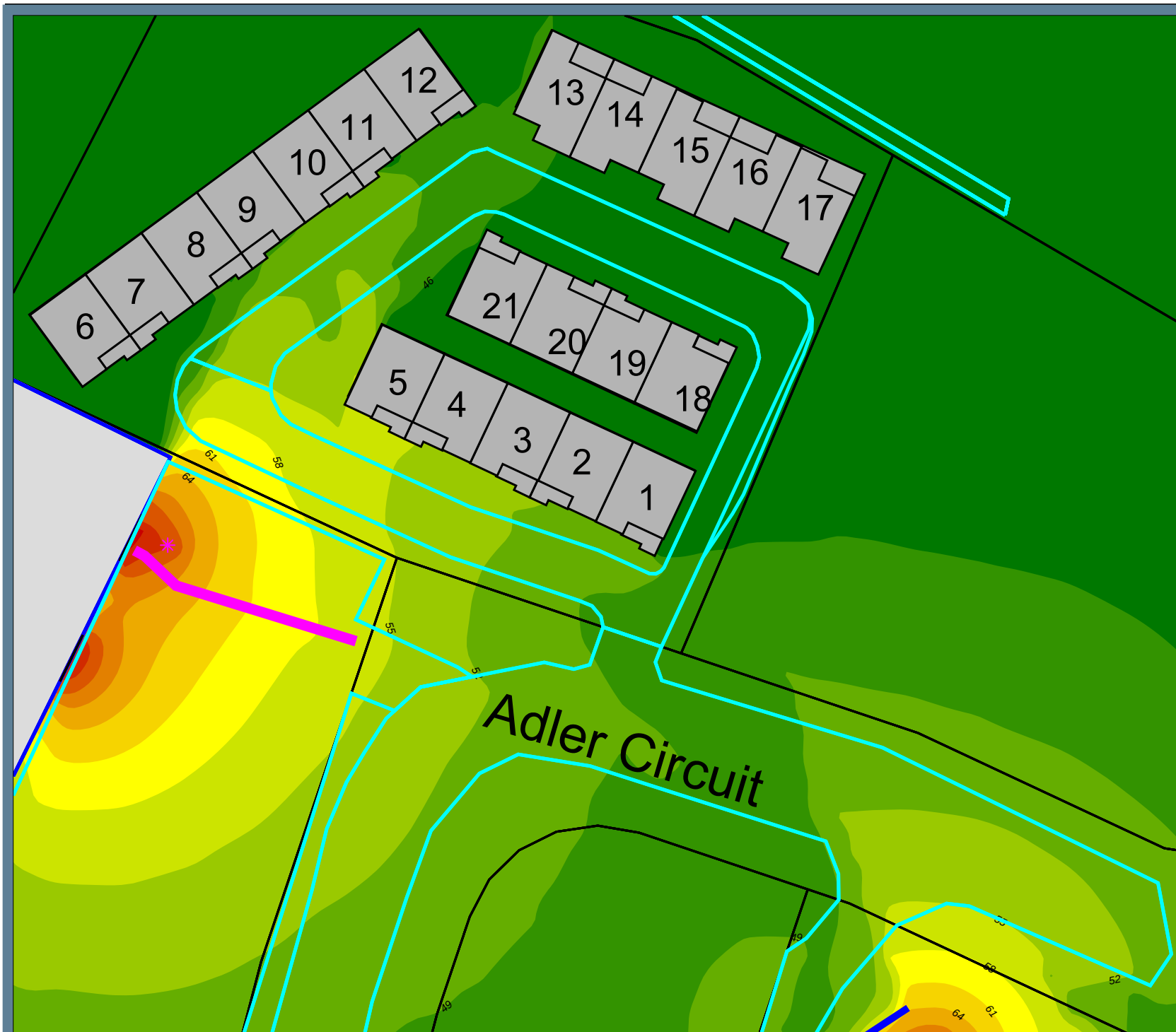
Legend

-  Point source
-  Paved surface
-  Proposed Development
-  Existing Buildings
-  Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1





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**Proposed Development
9-11 Adler Circuit Yarrabilba**

**Noise Levels Impacting
Proposed Development**

**Acoustic Quality Objectives
Ground Floor
(1.8m AGL)**

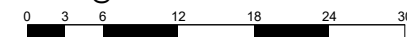
Operational noise level
Leq,adj,1hr Evening dB(A)

	<= 46
46 <	<= 49
49 <	<= 52
52 <	<= 55
55 <	<= 58
58 <	<= 61
61 <	<= 64
64 <	<= 67
67 <	<= 70
70 <	<= 73
73 <	<= 76
76 <	<= 79
79 <	<= 82
82 <	<= 85
85 <	

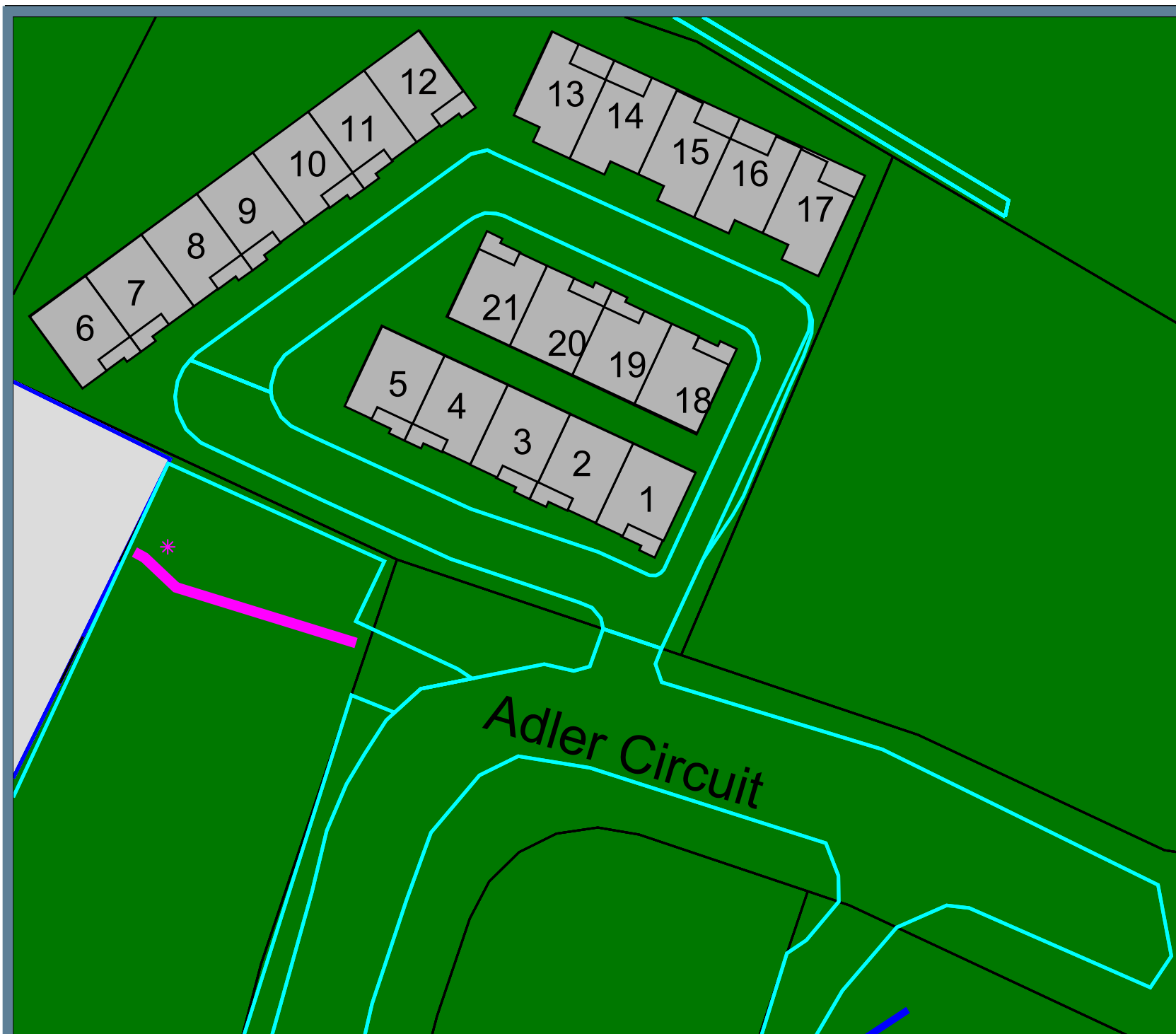
Legend

- * Point source
- Paved surface
- Proposed Development
- Existing Buildings
- Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1





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**Proposed Development
9-11 Adler Circuit Yarrabilba**

**Noise Levels Impacting
Proposed Development**

**Acoustic Quality Objectives
Ground Floor
(1.8m AGL)**

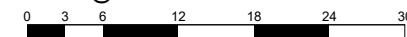
Operational noise level
Leq,adj,1hr Night dB(A)

	<= 37
37 <	<= 40
40 <	<= 43
43 <	<= 46
46 <	<= 49
49 <	<= 52
52 <	<= 55
55 <	<= 58
58 <	<= 61
61 <	<= 64
64 <	<= 67
67 <	<= 70
70 <	<= 73
73 <	<= 76
76 <	

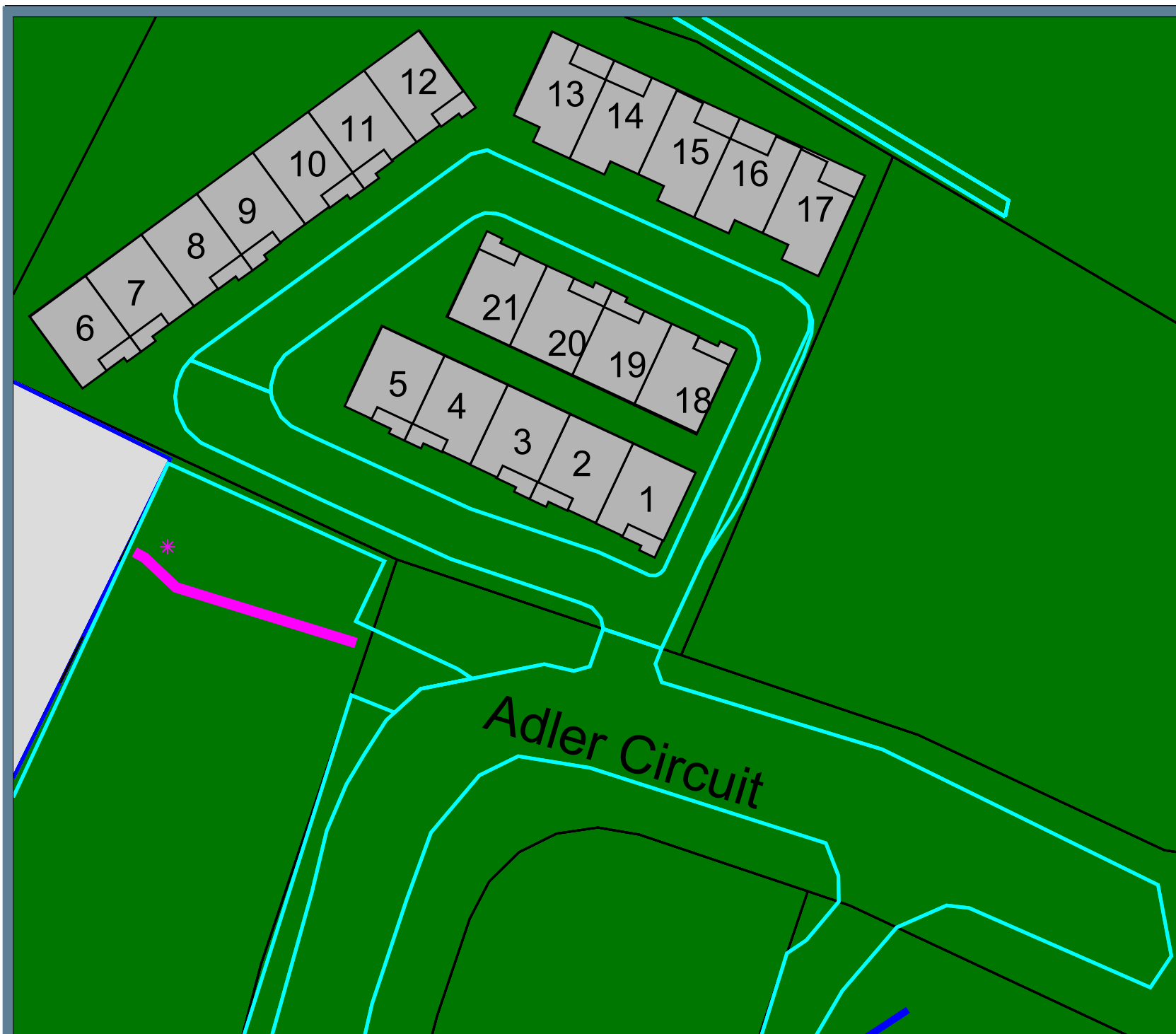
Legend

- * Point source
- Paved surface
- Proposed Development
- Existing Buildings
- Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

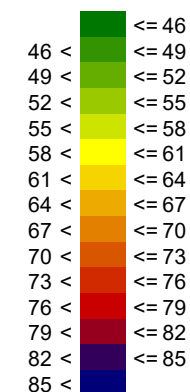


Proposed Development 9-11 Adler Circuit Yarrabilba

Noise Levels Impacting Proposed Development

Acoustic Quality Objectives First Floor (4.8m AGL)

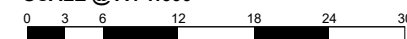
Operational noise level
Leq,adj,1hr Day dB(A)



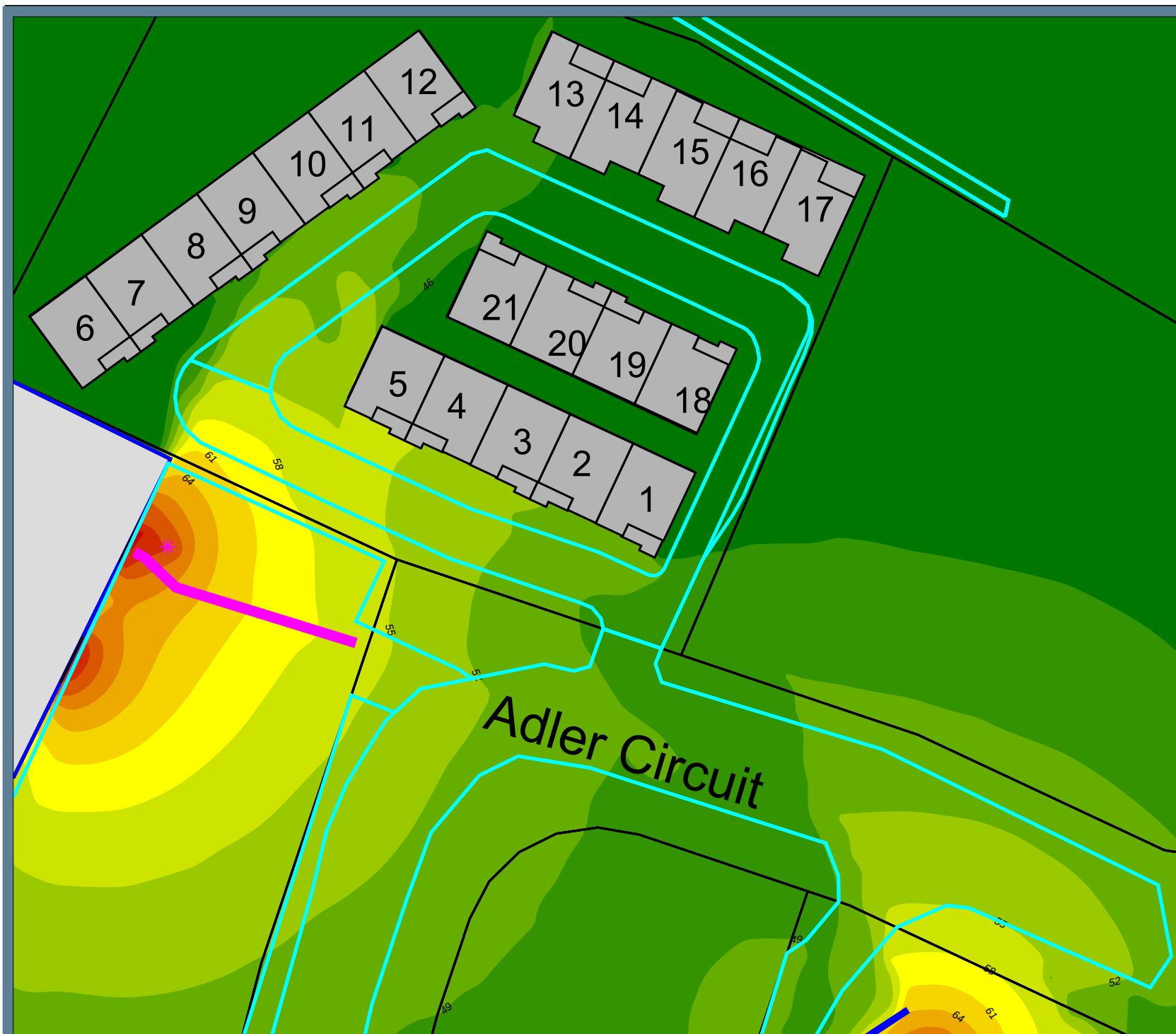
Legend

-  Point source
-  Paved surface
-  Proposed Development
-  Existing Buildings
-  Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1





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**Proposed Development
9-11 Adler Circuit Yarrabilba**

**Noise Levels Impacting
Proposed Development**

**Acoustic Quality Objectives
First Floor
(4.8m AGL)**

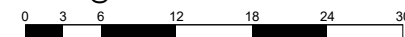
Operational noise level
Leq,adj,1hr Evening dB(A)

	<= 46
46 <	<= 49
49 <	<= 52
52 <	<= 55
55 <	<= 58
58 <	<= 61
61 <	<= 64
64 <	<= 67
67 <	<= 70
70 <	<= 73
73 <	<= 76
76 <	<= 79
79 <	<= 82
82 <	<= 85
85 <	

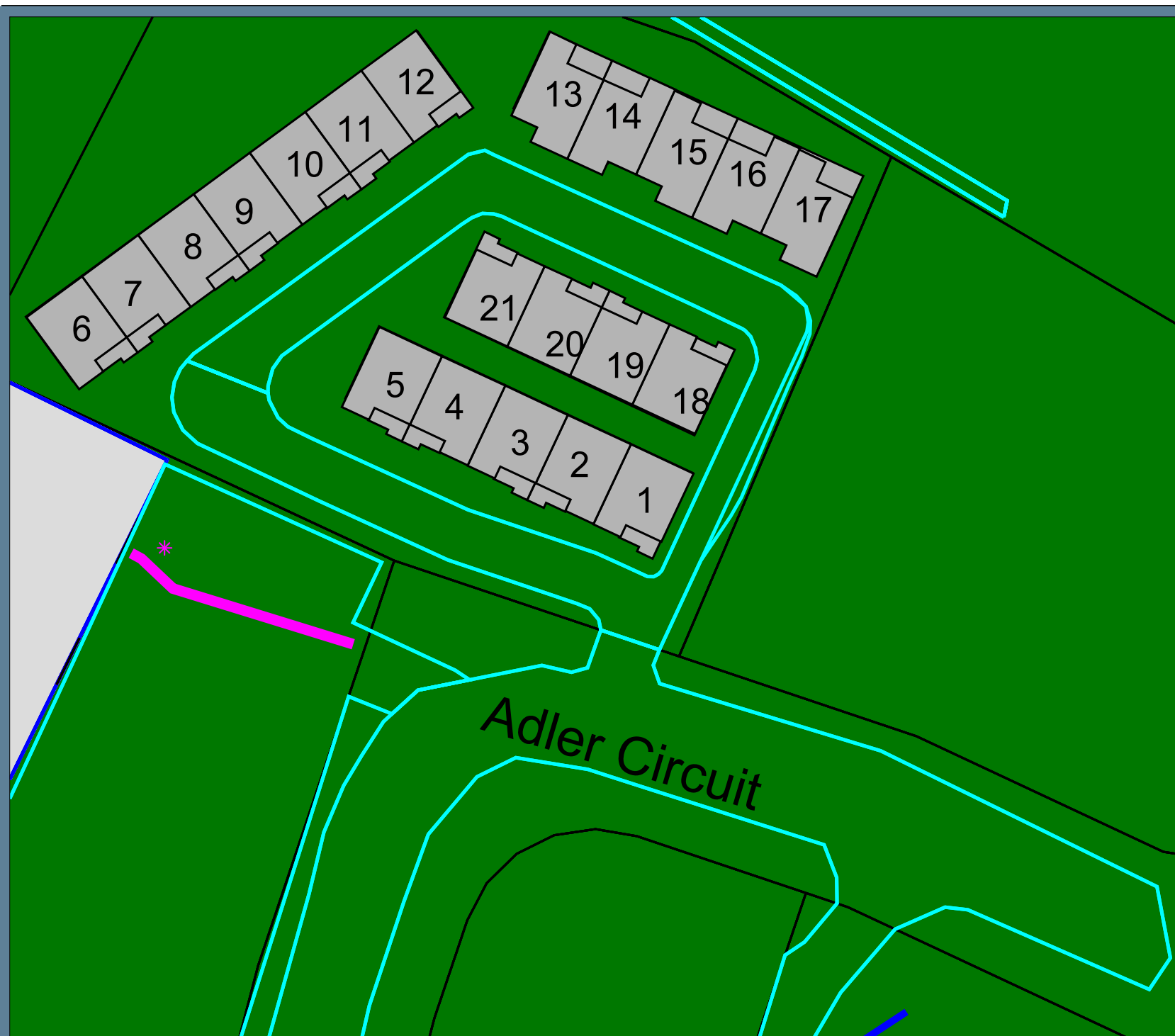
Legend

- * Point source
- Paved surface
- Proposed Development
- Existing Buildings
- Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

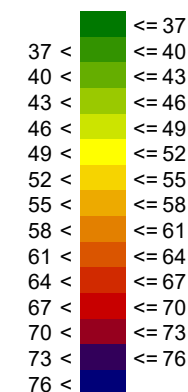


Proposed Development 9-11 Adler Circuit Yarrabilba

Noise Levels Impacting Proposed Development

Acoustic Quality Objectives First Floor (4.8m AGL)

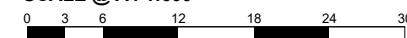
Operational noise level
Leq,adj,1hr Night dB(A)



Legend

-  Point source
-  Paved surface
-  Proposed Development
-  Existing Buildings
-  Vehicle movements

SCALE @ A4 1:600



Grid Spacing: 0.5m
Project Engineer: Liam von Holt
Created: 8/09/2025
Processed with SoundPLAN 9.1

