

Road Traffic Noise Assessment

Reconfiguration of Lot (ROL05)

Kindira, Monarch Glen – Precinct 103 & 104



Monarch Glen No 1 Pty Ltd

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Prepared by:	Bojan Todorovski
Position:	Senior Engineer - Acoustics
Signed:	
Date:	21 July 2026

Approved by:	Sasho Temelkoski RPEQ 13551
Position:	Manager - Acoustics
Signed:	
Date:	21 July 2026

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Recipients are responsible for eliminating all superseded documents in their possession.

Gold Coast

34 Lakefront Crescent
Varsity Lakes, QLD 4227
Ph: (07) 5593 0487

Brisbane

Unit 34, 30 Anstey Street
Albion, QLD 4010
Ph: (07) 3256 1747

Melbourne

Brunswick East
VIC 3057
Ph: 0403 964 150

E-mail: admin@atpconsulting.com.au

Internet: www.atpconsulting.com.au

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Executive Summary

ATP Consulting Engineers (ATP) was engaged to prepare a road traffic noise assessment in support of the Reconfiguration of Lot (RoL) application for ROL05 (Precincts 103 and 104) of the proposed residential subdivision Kindira in Monarch Glen.

The extent of the proposed development pertains to a portion of the land identified as Lot 2 on SP351245 at Homestead Drive in Monarch Glen.

The assessment results indicate that traffic noise from the internal connector roads will affect a number of proposed allotments, with the highest noise levels occurring at lots with direct frontage to the internal neighbourhood connector road. Based on the results presented in Table 3.6, exceedances of the façade traffic noise criterion are limited to Precinct 103 and occur at ground floor façades of Lots 13001 to 13007 and upper floor façades of Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185. Exceedances of the private open space criterion are also identified at Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185.

The calculated façade noise levels have been used to assign Queensland Development Code (QDC) MP4.4 noise categories across the development. The affected allotments generally fall within Noise Categories 1 and 2, with Category 2 applying to the most exposed upper floor façades where the 63 dB(A) $L_{A10,18hr}$ façade criterion is exceeded.

Allotments within Precinct 104 are compliant with both the façade traffic noise criterion of 63 dB(A) $L_{A10,18hr}$ and the private open space criterion of 60 dB(A) $L_{A10,18hr}$. These allotments generally fall within QDC MP4.4 Noise Category 1 at the most exposed façades and can adopt standard building construction without the need for additional acoustic treatment.

For allotments within Precinct 103, façade noise levels at or below 63 dB(A) $L_{A10,18hr}$ are considered to achieve the relevant external noise criterion and can similarly adopt standard construction, notwithstanding that some façades may correspond to QDC MP4.4 Noise Category 1. Where façade noise levels exceed this criterion, including the Category 2 façades identified in Table 3.6, acoustic treatment of the building envelope will be required, which can be achieved through either the acceptable forms of construction under QDC MP4.4 or floor-plan specific acoustic design in accordance with AS3671.

For front-loaded allotments with direct exposure to the internal connector roads, private open space compliance can be achieved through appropriate site planning, including locating outdoor living areas on the protected side of the dwelling or within a suitably shielded courtyard configuration.

The assessment demonstrates that traffic noise impacts across the development are localised to allotments adjacent to the internal connector roads within Precinct 103 and can be effectively managed through a combination of building design and site planning measures.

Provided the recommended planning and design traffic noise control measures are implemented in the construction of ROL05 (Precincts 103 and 104) within Kindira, Monarch Glen, road traffic noise from the internal connector roads will not impose any further acoustic constraints on the establishment of the proposed development.

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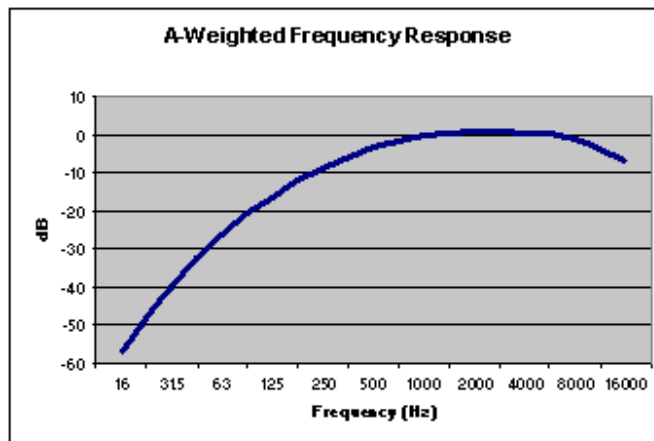
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Appendix A – ROL05 Development Plan
Appendix B – Site Photos
Appendix C – Meteorological Data
Appendix D – Noise Measurement Results
Appendix E – RTNA Noise Contours (Year 2066)

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 building's 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 a road traffic noise assessment in support of the Reconfiguration of Lot (ROL05) application for Precincts 103 and 104 of the proposed residential subdivision at Kindira, Monarch Glen.

The extent of the proposed development pertains to a portion of the land identified as Lot 2 on SP351245 at Homestead Drive in Monarch Glen.

This report presents the results of detailed road traffic noise propagation modelling for the internal connector road network between Precincts 103 and 104, including the trunk connector road and neighbourhood connector roads within the boundaries of the development.

Traffic noise propagation modelling was carried out considering the future traffic flows of the internal connector roads for the ultimate 2066 planning horizon. The 2066 planning horizon was adopted based on the traffic forecast information prepared by Bitzios Consulting, as it represents the ultimate development traffic scenario for the internal connector roads.

1.2 Study Objectives

Study objectives are as follows:

- Development of a 3D traffic noise propagation model using SoundPLAN software and considering the latest development layout and civil engineering design of Precincts 103 and 104 of the Monarch Glen Estate and future traffic flows along the major arterial roads within and surrounding the development.
- Calculation of traffic noise levels for the ultimate 2066 planning horizon at the facades and private open spaces of future dwellings to be constructed within Precincts 103 and 104 of Kindira, Monarch Glen.
- Recommendations for planning and design traffic noise control measures to demonstrate compliance with the applicable criteria in the TMR Policy and SDAP State Code 1.

1.3 Site Description

The proposed Precincts 103 and 104 of Kindira, Monarch Glen are located within the local government area of Logan City Council (LCC) and the Greater Flagstone PDA, with a total area of approximately 54.14 ha.

The proposed development site will be subdivided into 670 new allotments as per the development layout presented in Appendix A.

2. Existing Noise Amenity

2.1 Site-specific Noise Measurements

Noise monitoring was carried out at the proposed development site at the Monarch Glen Estate to obtain information about the existing background noise levels.

It is important to note that, at the time the noise measurements were taken, the area was not yet developed. The noise monitoring site primarily consisted of bushland and uninhabited land. The background noise monitoring was conducted approximately 360m south of any developed land and more than 1km from any major transport noise corridor.

The background noise measurements were carried out to provide a baseline indication of the existing noise amenity before the establishment of Kindira, Monarch Glen. Following completion of the proposed development, the noise environment in the vicinity of the internal connector roads is expected to be influenced by the developed road network and residential activity. Accordingly, the road traffic noise assessment has relied on the 2066 traffic forecasts for the internal connector roads rather than the existing undeveloped background noise environment. The noise measurement methodology is summarised in Table 2.1.

Table 2.1 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	Background noise monitoring The noise measurements were carried out at the east boundary of the allotment (Lot 2 on SP351245). The noise measurement location is presented in Figure 2.1 and in Appendix B.
Measurement period	Continuous noise monitoring was carried out 24 hours a day from 27 April to 5 May 2024 for the overall masterplan of Monarch Glen Estate before the establishment of the development.
Measurement equipment	The noise measurements were carried out using the following equipment: - Environmental noise logger – ARL EL (Serial No. 15-203-537); and - Sound level calibrator – Rion NC 74. The noise measurement instruments conform to ASIEC61672.1-2004 and the measurements were undertaken in accordance with AS1055-1997 and AS2702-1984. Calibration was performed before and after field measurements, with a calibration drift of <0.1dB.
Meteorological conditions	The meteorological conditions during the monitoring period were mostly fine, with no inclement weather conditions. The meteorological data for the noise measurement period are presented in Appendix C.

Analysis of data

The noise measurement data was analysed to determine the following road traffic noise descriptor:

- **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.

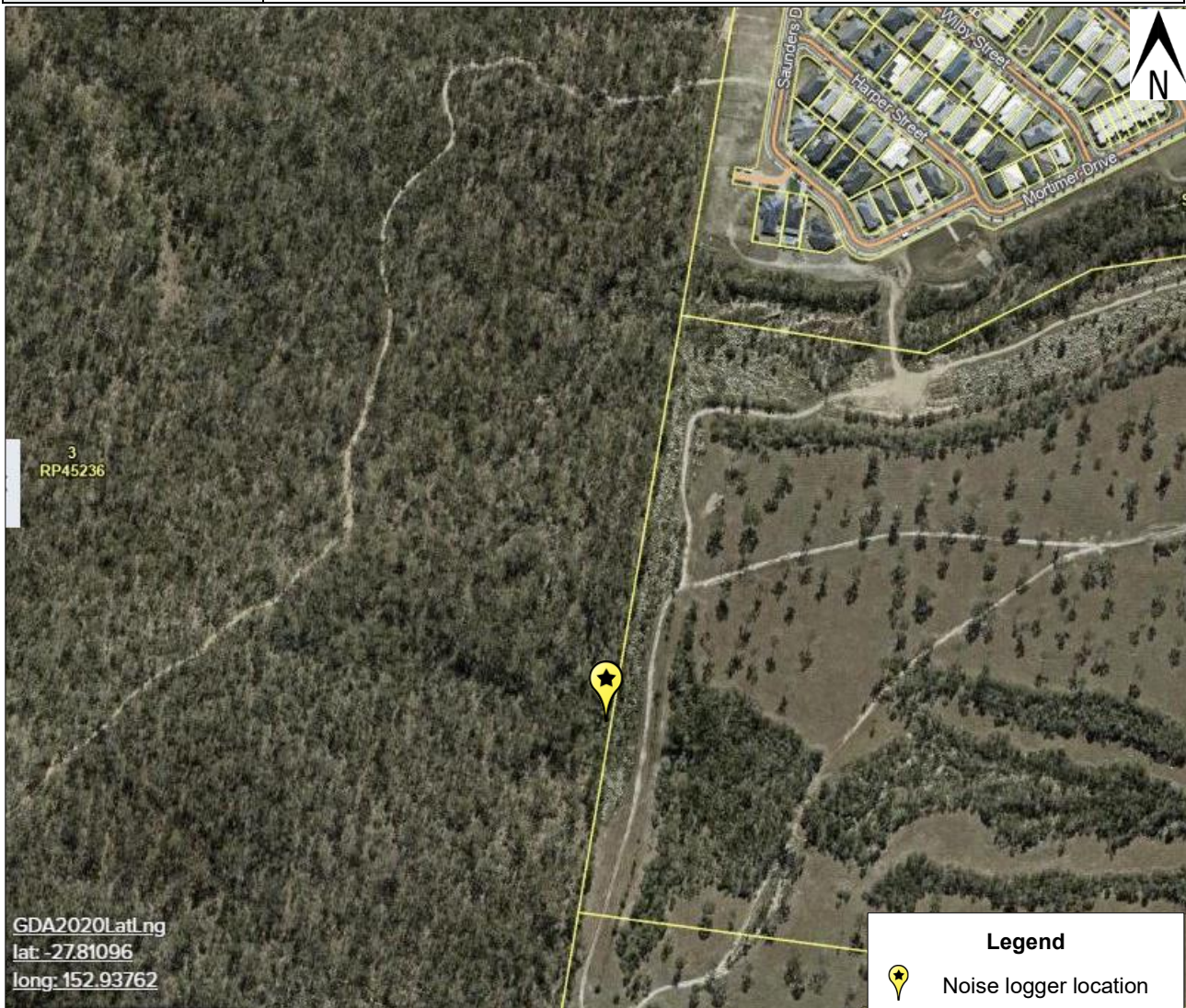


Figure 2.1 Noise measurement location

2.2 Noise Measurement Results

The results of the unattended noise measurements, carried out at the subject site from 27 April to 5 May 2024 are presented in Table 2.2.

Table 2.2 Noise measurement results

Date	L _{A10,T}		L _{Aeq,T}		L _{A90,T}	
	18hr day 6am- 12am	1hr max 6am- 12am	18hr day 6am- 12am	8hr night 10pm- 6am	18hr day 6am- 12am	8hr night 10pm- 6am
27 Apr 2024 (Sat)	—	—	—	27	—	24
28 Apr 2024 (Sun)	39	46	37	27	31	24
29 Apr 2024 (Mon)	39	43	37	28	31	25
30 Apr 2024 (Tue)	38	44	37	27	30	24
1 May 2024 (Wed)	45	52	42	38	37	34
2 May 2024 (Thu)	42	49	40	36	35	32
3 May 2024 (Fri)	43	53	41	33	36	29
4 May 2024 (Sat)	39	42	37	27	32	23
5 May 2024 (Sun)	36	41	35	25	28	22
Arithmetic Average (Weekdays only)	41	47	39	32	33	29

Rainfall recorded on this day. Data measured during periods of inclement weather was disregarded in the determination of background noise levels.

Full summary of the noise measurement data, including full 1-hour measurement data is presented in Appendix D.

3. Road Traffic Noise Assessment

3.1 External Noise Criteria

The proposed residential subdivision development is located within the Greater Flagstone PDA, a priority development area designated by Economic Development Queensland (EDQ), within the local government of Logan City Council (LCC).

There are no project-specific traffic noise criteria within the Greater Flagstone PDA or LCC planning framework. The traffic noise impact assessment has therefore been carried out with reference to the Department of Transport and Main Roads (TMR) Road Traffic Noise Management: Code of Practice, together with the TMR Policy and SDAP State Code 1 criteria summarised below.

The relevant traffic noise criteria are provided in the following documents:

- Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP), *State Development Assessment Provisions (SDAP) version 3.6 (May 2026), 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 criteria from the TMR Policy and the SDAP are presented in Table 3.1.

Table 3.1 External noise criteria for new residential development

Transport infrastructure	Development type	Location within development	Environmental criteria
State-controlled Road	Accommodation activities ¹	All facades	≤60 dB(A) L _{10,18hr} facade corrected (measured L _{90,8hr} free field between 10pm and 6am ≤ 40dB(A))
			≤63 dB(A) L _{10,18hr} facade corrected (measured L _{90,8hr} free field between 10pm and 6am > 40dB(A))
		Outdoor spaces for passive recreation	≤57 dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and 10pm ≤ 45dB(A))
			≤60 dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and 10pm > 45dB(A))

The relevant façade adjusted² road traffic noise criterion for the building façades is 63dB(A)L_{10,18hr}³. The designated private open spaces (outdoor living areas) have to comply with the free-field traffic noise criterion of 60 dB(A)L_{10,18hr}⁴.

¹ 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.

² The façade adjusted noise criteria contains +2.5dB(A) adjustment factor for the sound energy that is result of the reflection of the sound wave from the hard surface of typical buildings. This adjustment is applicable for areas within 3m from a hard reflective vertical surface.

³ Within the ultimate planning horizon (year 2066), as the development is established, background noise levels in the vicinity of the major arterial internal roads are expected to be greater than 40dB(A) L_{90,8hr} between 10pm and 6am.

⁴ Within the ultimate planning horizon (year 2066), as the development is established, background noise levels in the vicinity of the major arterial internal roads are expected to be greater than 45dB(A) L_{90,18hr} between 6am and 10pm.

3.1.1 Queensland Development Code (QDC) MP4.4

Where the external traffic noise criteria are exceeded, building envelope acoustic treatment is to be applied to the relevant façades of future dwellings to protect internal noise amenity.

The applicable building envelope acoustic treatment can be selected using *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 level, QDC MP4.4 assigns five road traffic noise categories and corresponding acceptable forms of construction, as presented in Table 3.2.

Table 3.2 QDC MP4.4 noise categories

Noise category	Level of transport noise* LA10,18hr 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.

The noise categories applicable to the allotments within the Kindira Estate will be determined in this report.

3.2 Internal noise criteria

As an alternative to the deemed-to-comply construction specifications from QDC MP4.4, the buildings can be constructed as per the advice of a qualified acoustical engineer. At building approval stage, detailed acoustic design specifications, in accordance with AS3671-1989, can be provided for the construction of the external walls, windows and roof/ceilings.

When carrying out acoustic design as per AS3671, it is recommended to adopt the internal noise criteria specified in AS/NZS 2107:2016 as presented in Table 3.3.

Table 3.3 Internal noise criteria (dwellings)

Type of occupancy	Design sound level LAeq
Living areas	35 to 45 dB(A)
Sleeping areas	35 to 40 dB(A)

3.3 Traffic Noise Calculation Methodology

The traffic noise from the internal trunk road cutting between Precincts 103 and 104 was calculated using SoundPLAN noise propagation modelling software as per the procedure specified in the UK Department of Transport Welsh Office *Method of Calculation of Road Traffic Noise* (CoRTN'88). This is an accepted traffic noise calculation procedure applied widely in Australia⁵.

The ultimate planning horizon of year 2066 was considered in the traffic noise propagation modelling. Detailed road traffic noise propagation modelling was carried out for the allotments located within both precincts (Precincts 103 and 104).

3.3.1 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 mode) of the proposed development prepared by Stantec (Ref. No.:304702212-001, dated 17 July 2026). - 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 proposed subdivision made by Saunders Havill Group (11731 P 69 Rev G – PRO 01) dated 15 July 2026. The development plans are presented in Appendix A.
Buildings	Physical buildings at the proposed development are not included in the model as the application seeks approval for reconfiguration of lot only and no approval of building footprints are proposed.
Road traffic	- Two (2) internal connector roads were included in the modelling, (trunk connector and neighbourhood connector road) with alignment determined based on road design contours provided by Stantec. - Traffic volumes, speed limits, and heavy vehicle percentage for the trunk road links were sourced from the traffic forecast report by Bitzios Consulting (Ref:P7284.003R Kindira Monarch Glen ROL05 TIA Ver. 003, dated 20 July 2026) - 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 façade-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).

⁵ CoRTN (Calculation of Road Traffic Noise) is a widely accepted procedure in Australia for calculation of traffic noise and it is specifically recommended in QLD TMR's Code of Practice Volume 1, Section 4.3.2, Page 29.

	- 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.

3.3.2 Traffic Noise Model Planning Horizon (Year 2066)

Traffic noise calculations were carried out for the ultimate 2066 planning horizon. Traffic volumes for the internal connector roads were sourced from the Bitzios Consulting report (Ref:P7284.003R Kindira Monarch Glen ROL05 TIA Ver. 003, dated 20 July 2026).

The daily traffic volumes for 2066 are presented in Table 3.5.

Table 3.5 Traffic flow data – 2066 planning horizon

Road	2066 Traffic Flow AADT				Heavy Vehicles (%)
	District Sports Park (DS1)	Precinct P103	State Primary School	Precinct P104	
Trunk Connector	7,677	-	-	-	1.1
	-	-	-	2,026	1.5
	-	-	2,191	-	1.2
Kindira Drive (Neighbourhood Connector)	6,200	-	-	-	1.2
	-	6,390	-	-	1.2
	-	-	6,937	-	1.1

An excerpt from the 3D SoundPLAN traffic noise model for the planning horizon (year 2066) is presented in Figure 3.1.

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.

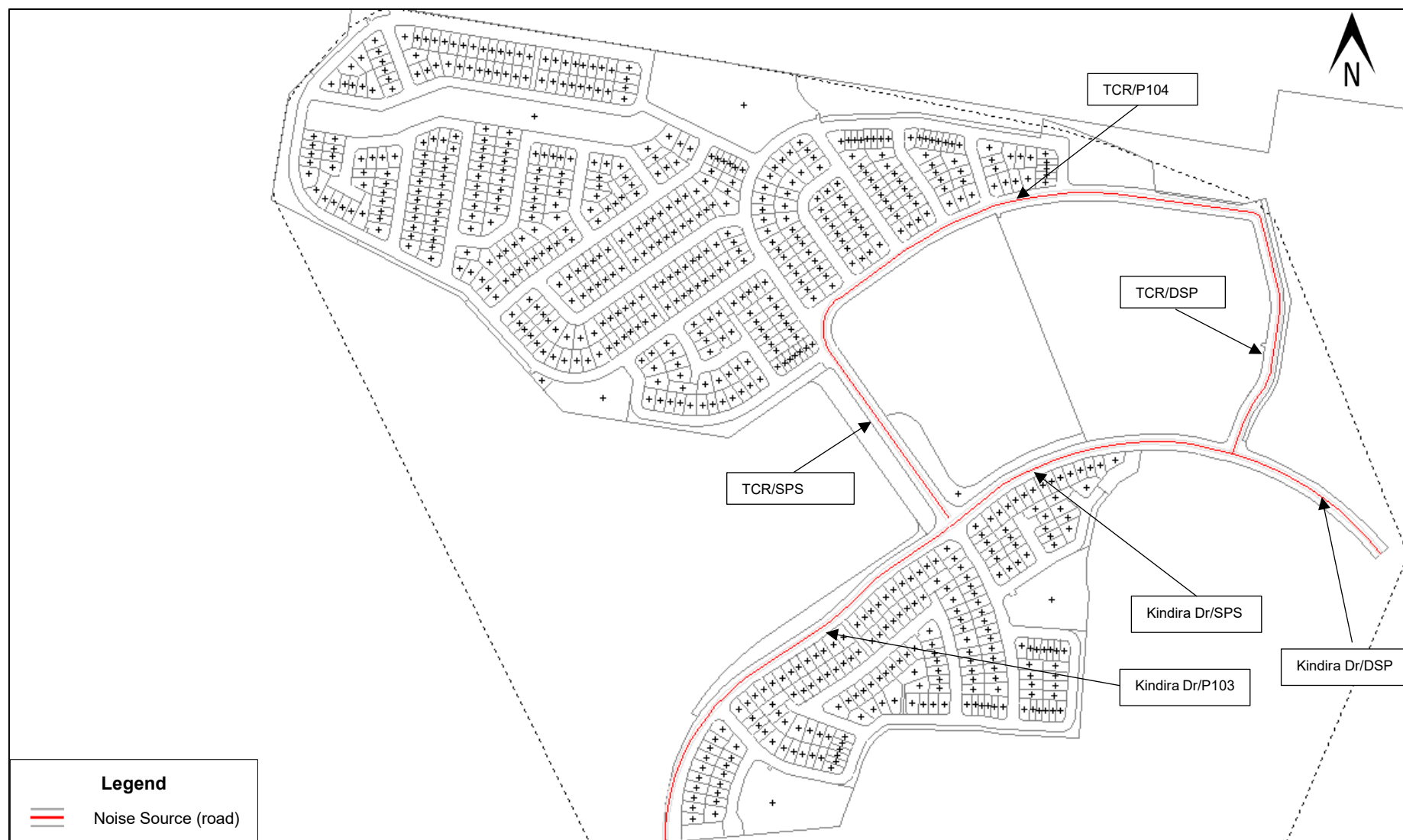


Figure 3.1 Excerpt from 3D SoundPLAN traffic noise model (year 2066)

3.4 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 on the ground floors of future dwellings.

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

The traffic noise levels are presented as noise contour maps and are tabulated relative to compliance with the traffic noise criteria, along with the corresponding QDC MP4.4 Noise Categories applicable at the façades of future dwellings.

Summary of the results at the noise affected lots are presented in Table 3.6. The future allotments that fall under QDC MP4.4 Noise Category 0 are not presented in the table.

Table 3.6 Traffic noise calculation results (Year 2066)

Lot no.	Building façades (façade-adjusted)				Private open spaces (free-field) (1.5m AGL)
	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
Precinct 103					
13001	No	Category 2	No	Category 2	No
13002	No	Category 2	No	Category 2	No
13003	No	Category 2	No	Category 2	No
13004	No	Category 2	No	Category 2	No
13005	No	Category 2	No	Category 2	No
13006	No	Category 2	No	Category 2	No
13007	No	Category 2	No	Category 2	No
13008	Yes	Category 1	No	Category 2	No
13009	Yes	Category 1	No	Category 2	No
13010	Yes	Category 1	No	Category 2	No
13011	Yes	Category 1	No	Category 2	No
13012	Yes	Category 1	No	Category 2	No
13013	Yes	Category 1	No	Category 2	No
13014	Yes	Category 1	No	Category 2	No
13015	Yes	Category 1	No	Category 2	No
13016	Yes	Category 0	Yes	Category 1	Yes
13036	Yes	Category 0	Yes	Category 1	Yes

Lot no.	Building façades (façade-adjusted)				Private open spaces (free-field) (1.5m AGL)
	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
13075	Yes	Category 0	Yes	Category 1	Yes
13076	Yes	Category 1	No	Category 2	No
13077	Yes	Category 1	No	Category 2	No
13078	Yes	Category 1	No	Category 2	No
13079	Yes	Category 1	No	Category 2	No
13080	Yes	Category 1	No	Category 2	No
13081	Yes	Category 1	No	Category 2	No
13082	Yes	Category 1	No	Category 2	No
13083	Yes	Category 1	No	Category 2	No
13084	Yes	Category 1	No	Category 2	No
13085	Yes	Category 1	No	Category 2	No
13086	Yes	Category 1	No	Category 2	No
13087	Yes	Category 1	No	Category 2	No
13088	Yes	Category 1	No	Category 2	No
13089	Yes	Category 1	No	Category 2	No
13090	Yes	Category 1	No	Category 2	No
13091	Yes	Category 1	No	Category 2	No
13092	Yes	Category 1	No	Category 2	No
13093	Yes	Category 1	No	Category 2	No
13094	Yes	Category 1	No	Category 2	No
13095	Yes	Category 1	No	Category 2	No
13096	Yes	Category 1	No	Category 2	No
13097	Yes	Category 1	No	Category 2	No
13098	Yes	Category 1	No	Category 2	No
13099	Yes	Category 1	No	Category 2	No
13100	Yes	Category 1	No	Category 2	No
13183	Yes	Category 1	No	Category 2	No
13184	Yes	Category 1	No	Category 2	No
13185	Yes	Category 1	No	Category 2	No

Lot no.	Building façades (façade-adjusted)				Private open spaces (free-field) (1.5m AGL)
	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
13186	Yes	Category 1	Yes	Category 1	Yes
13187	Yes	Category 1	Yes	Category 1	Yes
13188	Yes	Category 1	Yes	Category 1	Yes
13189	Yes	Category 1	Yes	Category 1	Yes
13190	Yes	Category 1	Yes	Category 1	Yes
13191	Yes	Category 1	Yes	Category 1	Yes
13192	Yes	Category 1	Yes	Category 1	Yes
Precinct 104					
14001	Yes	Category 1	Yes	Category 1	Yes
14358	Yes	Category 1	Yes	Category 1	Yes
14391	Yes	Category 1	Yes	Category 1	Yes
14392	Yes	Category 1	Yes	Category 1	Yes
14393	Yes	Category 1	Yes	Category 1	Yes
14394	Yes	Category 1	Yes	Category 1	Yes
14395	Yes	Category 1	Yes	Category 1	Yes
14411	Yes	Category 1	Yes	Category 1	Yes
14412	Yes	Category 1	Yes	Category 1	Yes
14413	Yes	Category 1	Yes	Category 1	Yes
14414	Yes	Category 1	Yes	Category 1	Yes
14439	Yes	Category 1	Yes	Category 1	Yes
14440	Yes	Category 1	Yes	Category 1	Yes
14441	Yes	Category 1	Yes	Category 1	Yes
14458	Yes	Category 1	Yes	Category 1	Yes
14459	Yes	Category 1	Yes	Category 1	Yes
14460	Yes	Category 1	Yes	Category 1	Yes
14461	Yes	Category 1	Yes	Category 1	Yes
14462	Yes	Category 1	Yes	Category 1	Yes

4. Discussions and Recommendations

Traffic noise propagation modelling was carried out considering the future traffic flows on the internal and external road network for Precincts 103 and 104 for the ultimate 2066 planning horizon.

The results of the road traffic noise assessment (refer Section 3.4) indicate that traffic noise impacts are localised to a number of allotments within Precinct 103 adjacent to the internal trunk connector road and associated neighbourhood connector roads. Precinct 104 allotments listed in Table 3.6 fall within QDC MP4.4 Noise Category 1 at the most exposed façades but comply with the external façade and private open space criteria.

All allotments within Precinct 104 comply with the façade traffic noise criterion of 63 dB(A) $L_{10,18hr}$ and the private open space criterion of 60 dB(A) $L_{10,18hr}$, and no additional acoustic treatment or noise control measures are required on the basis of the external criteria.

Based on the assessment results, ATP recommends that the noise control strategy outlined in this report be adopted for the future planning and development of Precincts 103 and 104. The general noise control objectives are set out below.

1. Ensure that at all allotments, there is at least one private open space (outdoor living area) which complies with the traffic noise criterion of 60 dB(A) $L_{10,18hr}$ (free-field).
2. Ensure compliance with the façade traffic noise criterion of 63 dB(A) $L_{10,18hr}$ at all allotments where it is practical to do so (i.e. where acoustic setback is feasible). Typically, for traffic noise levels of 63dB(A) or lesser, standard construction of the building envelope is acceptable.
3. At allotments where noise barrier or acoustic setback is not feasible (i.e. on the allotments with direct access from the road), and traffic noise criterion of 63 dB(A) $L_{10,18hr}$ is exceeded, the building envelope should be constructed in accordance with AS3671-1989 to ensure compliance with the internal noise criteria from AS/NZS2107-2016.

Exceedances of the traffic noise criteria were identified at the following allotments:

- **Precinct 103:**

- Ground floor façades: Lots 13001 to 13007;
- Upper floor façades and private open spaces: Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185.

4.1 Noise Mitigation Measures

4.1.1 Building Envelope Acoustic Treatment

The noise-affected façades identified in Table 3.6, including the ground floor façades of Lots 13001 to 13007 and upper floor façades of Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185, are to be designed in accordance with AS3671-1989 or the acceptable forms of construction under QDC MP4.4 to mitigate traffic noise ingress.

At the building approval stage, future houses at the noise affected lots should be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or using acceptable forms of construction from QDC MP4.4 to mitigate intrusion of traffic noise into habitable rooms.

4.1.2 Front loaded lots facing Internal Connector Roads

At the front-loaded lots facing the internal trunk road, it is recommended to locate the private open spaces at the rear of the houses. Provided that the private open spaces are located along the protected rear façades (facing away from the road), or in a protected courtyard recessed into the side of the buildings, compliance with the traffic noise criterion will be achieved. These are presented in Figure 4.1.



Figure 4.1 Front loaded noise affected lots

Typical layout showing outdoor living area located on the protected façade is presented in Figure 4.2.

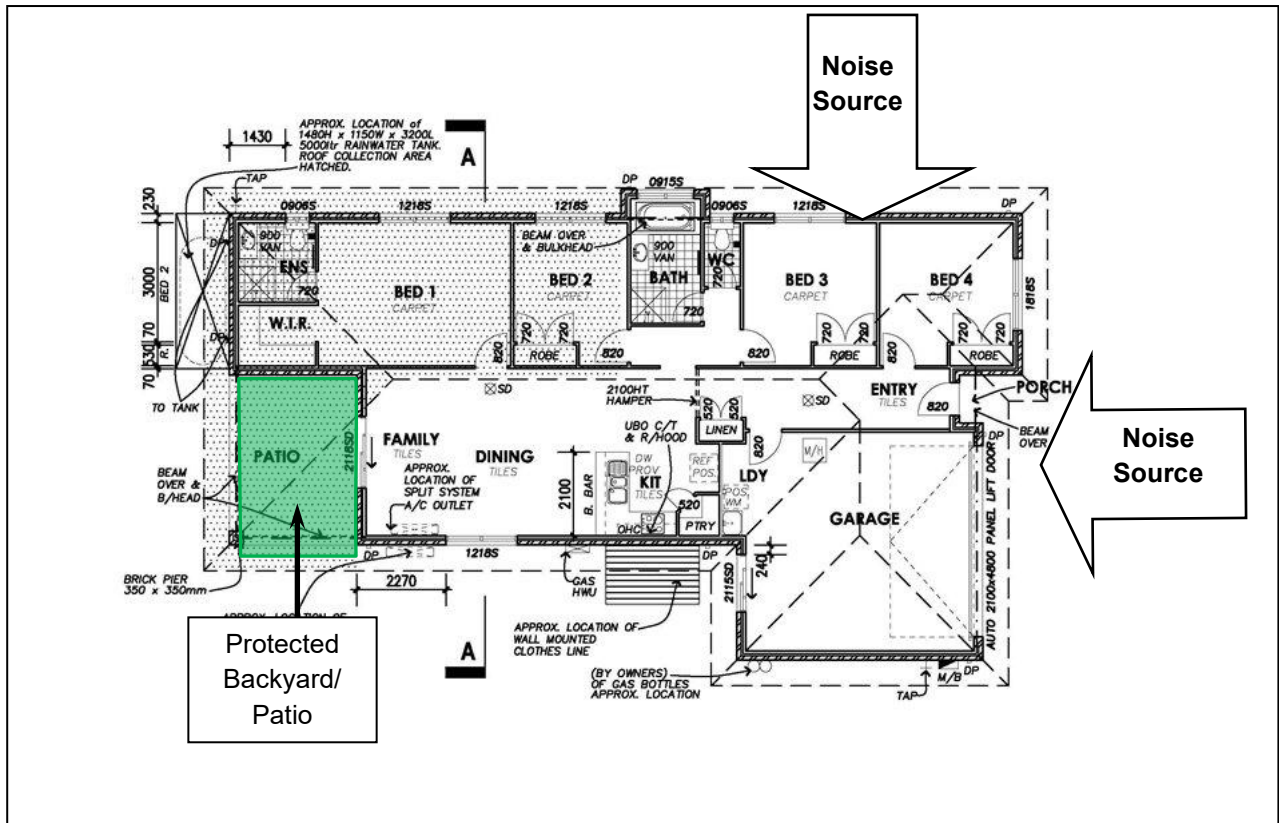


Figure 4.2 Outdoor living area on protected façade

5. Conclusions

Based on the results of the Road Traffic Noise Assessment for the Reconfiguration of Lot (RoL) application for ROL05 (Precincts 103 and 104) of the Kindira, Monarch Glen, the following is concluded:

- The proposed development will be impacted by traffic noise from the internal connector roads, based on the traffic flows predicted for the ultimate 2066 planning horizon.
- The results of the noise propagation modelling indicate that several allotments within Precinct 103 will be impacted by traffic noise from the internal connector roads. Based on Table 3.6, exceedances of the façade criterion are identified at ground floor façades of Lots 13001 to 13007 and upper floor façades of Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185. Exceedances of the private open space criterion are identified at Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185. All allotments within Precinct 104 are compliant with the façade traffic noise criterion of 63 dB(A) $L_{A10,18hr}$ and the private open space criterion of 60 dB(A) $L_{A10,18hr}$.
- Based on the assessment results, ATP recommends that the noise control strategy outlined in this report be adopted for the future planning and development of Precincts 103 and 104. The general noise control objectives are set out below:
 - Ensure that at all allotments, there is at least one private open space (outdoor living area) which complies with the traffic noise criterion of 60 dB(A) $L_{A10,18hr}$ (free-field).
 - Achieve compliance with the façade traffic noise criterion of 63 dB(A) $L_{A10,18hr}$ at all allotments where practical. Allotments with façade noise levels at or below 63 dB(A) $L_{A10,18hr}$ are considered to achieve the relevant external noise criterion and can adopt standard construction of the building envelope, notwithstanding that some façades may correspond to QDC MP4.4 Noise Category 1.
 - Where façade noise levels exceed 63 dB(A) $L_{A10,18hr}$, acoustic treatment of the building envelope will be required. This can be achieved through either the acceptable forms of construction specified in QDC MP4.4 or project-specific acoustic design in accordance with AS3671-1989 to ensure compliance with the internal noise criteria of AS/NZS 2107.
- The noise-affected façades identified in Table 3.6, including the ground floor façades of Lots 13001 to 13007 and upper floor façades of Lots 13001 to 13015, Lots 13076 to 13100, and Lots 13183 to 13185, are to be designed in accordance with AS3671-1989 or the acceptable forms of construction under QDC MP4.4 to mitigate traffic noise ingress.
- At the building approval stage, dwellings at the noise-affected allotments should be designed and constructed in accordance with AS3671-1989 (floor-plan specific acoustic design) or using the acceptable forms of construction under QDC MP4.4 to achieve compliance with the internal noise criteria.

- At the front-loaded lots facing the internal trunk road, it is recommended to locate the private open spaces at the rear of the houses. Provided that the private open spaces are located along the protected rear façades (facing away from the road), or in a protected courtyard recessed into the side of the buildings, compliance with the traffic noise criterion will be achieved. These are presented in Figure 4.1.
- For front-loaded allotments adjacent to the internal trunk connector road, it is recommended that private open space areas be located to the rear of the dwelling or within a protected courtyard configuration. Where private open spaces are located along shielded façades (facing away from the road) or within recessed courtyard areas, compliance with the private open space criterion will be achieved.

Provided the recommended planning and design traffic noise control measures are implemented in the construction of ROL05 (Precincts 103 and 104) within Kindira, Monarch Glen, road traffic noise from the internal connector roads will not impose any further acoustic constraints on the establishment of the proposed development.

6. 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 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 State Development, Manufacturing, Infrastructure and Planning, 2020, *State Development Assessment Provisions* (Version 3.0), effective February 2022
- 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)
- Economic Development Queensland - *Greater Flagstone PDA Development Scheme*
- Logan City Council - *Logan Planning Scheme 2015*
- International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*)
- Queensland Government, 2015, '*Queensland Development Code (QDC) MP4.4 (Buildings in a Transport Noise Corridor)*'
- *State Code 1: Development in a state-controller road environment SDAP v3.6*

7. Appendices

- Appendix A – ROL05 Development Plan
- Appendix B – Site Photos
- Appendix C – Meteorological Data
- Appendix D – Noise Measurement Results
- Appendix E – RTNA Noise Contours (Year 2066)

Appendix A – ROL05 Development Plan

ROL5: RECONFIGURATION OF A LOT PLAN

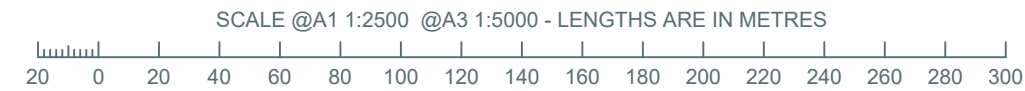


LEGEND

- Site Boundary
- Precinct Boundary

DEVELOPMENT STATISTICS					
RESIDENTIAL ALLOTMENTS		Typical Width	No. Lots	%	Net Area
16m Deep Lots					
Urban Lots	U16	16.0m	9	1.3%	0.252 ha
Sub Total			9	1.3%	0.252 ha
RESIDENTIAL ALLOTMENTS		Typical Width	No. Lots	%	Net Area
25m Deep Lots					
Terrace - Front Loaded	T25	8.5m	29	4.3%	0.707 ha
Villa	V25	11.2m	4	0.6%	0.131 ha
Premium Villa	PV25	12.5m	15	2.2%	0.671 ha
Courtyard	C25	14m	12	1.8%	0.603 ha
Premium Courtyard	PC25	16m	3	0.4%	0.149 ha
Sub Total			63	9.4%	2.261 ha
RESIDENTIAL ALLOTMENTS		Typical Width	No. Lots	%	Net Area
28m Deep Lots					
Terrace - Front Loaded	T28	8.5m	30	4.5%	0.824 ha
Villa	V28	11.2m	55	8.2%	1.874 ha
Premium Villa	PV28	12.5m	84	12.5%	3.128 ha
Courtyard	C28	14m	45	6.7%	2.001 ha
Premium Courtyard	PC28	16m	14	2.1%	0.702 ha
Sub Total			228	34.0%	8.529 ha
RESIDENTIAL ALLOTMENTS		Typical Width	No. Lots	%	Net Area
30m Deep Lots					
Villa	V30	11.2m	103	15.4%	3.694 ha
Premium Villa	PV30	12.5m	148	22.1%	5.968 ha
Courtyard	C30	14m	68	10.1%	3.253 ha
Premium Courtyard	PC30	16m	13	1.9%	0.707 ha
Sub Total			332	49.6%	13.622 ha
RESIDENTIAL ALLOTMENTS		Typical Width	No. Lots	%	Net Area
32m Deep Lots					
Villa	V32	11.2m	10	1.5%	0.380 ha
Premium Villa	PV32	12.5m	13	1.9%	0.560 ha
Courtyard	C32	14m	13	1.9%	0.673 ha
Premium Courtyard	PC32	16m	2	0.3%	0.117 ha
Sub Total			38	5.7%	1.730 ha
Total Allotments			670	100%	26.394 ha
Land Budget			Area (Ha)	%	
Area of Subject Site / Stage			69.286 ha	—	
Net Residential Area (no roads)			26.394 ha	38.1%	
Linear Park / Pedestrian Linkage			9.169 ha	13.2%	
Neighbourhood Recreation Park			0.511 ha	0.7%	
Road Areas			16.987 ha	24.5%	
Major Road Areas			1.036 ha	1.5%	
Utility Lot 14986			0.032 ha	0.0%	
School Lot 14983			6.649 ha	9.6%	
District Sports Park Lot 14982			8.508 ha	12.3%	
Total Area			69.286 ha	100%	
Average Lot Size (m²)			393.9 m²		
Net Density (dw/ha)			15.3 dw/ha		

THIS RAL & POD PACKAGE WAS PREPARED AS A CONCEPTUAL LAYOUT ONLY. THE INFORMATION HEREON IS NOT SUITABLE FOR ANY OTHER PURPOSE.



Appendix B – Site Photos



Photo 1: Noise Measurement Location



Photo 2: Noise Measurement Location

Appendix C – Meteorological Data

Beaudesert, Queensland
April 2024 Daily Weather Observations

Observations from a site in Drumley Street, about 1.5 km northwest of the town centre.

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	Mo	17.9	27.3	0			ENE	17	15:58	22.4	81			Calm	1020.6	23.8	75		NE	6	1017.4
2	Tu	17.9	29.9	0.6			N	19	15:06	24.1	74		SSW	2	1019.0	29.1	52		N	6	1013.9
3	We	19.3	31.9	0			E	31	17:45	25.3	77		WNW	2	1017.4	30.0	57		N	6	1014.1
4	Th	20.5	26.0	32.0			SW	26	11:06	20.7	95		SSW	11	1019.0	21.6	88		WNW	7	1016.6
5	Fr	18.8	24.0	6.0			SSW	15	01:48	22.4	87		S	4	1017.8	23.4	91		E	4	1014.4
6	Sa	20.2	29.8	8.6			SW	15	10:58	23.1	88		SW	2	1017.1	28.4	63		NNE	4	1012.7
7	Su	21.9	30.2	2.8			NNE	24	08:51	22.1	91		NE	11	1012.8	28.4	65		NW	4	1008.0
8	Mo	18.8	30.4	2.2			SSW	17	10:25	24.1	64		SSW	6	1011.8	30.1	41		WSW	2	1008.0
9	Tu	17.9	29.2	0			SW	31	12:13	22.9	78		WSW	6	1008.7	28.4	41		SW	11	1004.7
10	We	10.7	27.2	0			SW	30	12:03	19.9	50		SW	4	1011.3	26.7	36		SSW	11	1009.6
11	Th	11.2	27.6	0			SW	24	15:04	21.2	54		SSW	7	1017.6	27.0	48		SSW	13	1015.1
12	Fr	12.4	27.6	0			WSW	26	13:45	21.8	67		SSW	13	1020.2	26.9	49		SE	7	1016.8
13	Sa	12.4	28.2	0			ENE	26	14:49	21.0	77			Calm	1022.1	25.4	60		ENE	13	1018.7
14	Su	16.5	28.7	0			E	22	15:43	23.1	71			Calm	1023.8	28.1	47		ESE	7	1020.2
15	Mo	13.9	29.0	0			ENE	19	16:16	21.4	76		SW	2	1024.7	28.1	45		NNW	6	1021.4
16	Tu	14.2	28.9	0			NNE	15	16:42	21.9	84		SW	2	1024.3	28.3	48		N	6	1019.6
17	We	14.2	28.8	0			ENE	24	15:35	21.6	79		SSW	4	1023.1	26.9	58		NE	9	1019.0
18	Th	15.6	26.9	0			WSW	28	21:11	20.3	91		SSW	2	1019.1	26.4	56		N	6	1013.9
19	Fr	12.6	28.2	9.2			E	22	15:37	19.9	86		SW	2	1015.8	27.3	41		WSW	2	1012.8
20	Sa	12.1	24.3	0			SSW	31	18:28	21.1	68		S	13	1018.6	21.2	65		SSW	7	1016.9
21	Su	16.5	21.0	11.8			SSW	20	09:04	21.1	78		SSW	11	1020.2	19.8	88		SW	11	1019.5
22	Mo	15.1	25.1	8.0			S	37	12:31	19.2	88		S	9	1024.0	23.9	61		SE	11	1021.5
23	Tu	13.9	25.7	0.4			ENE	26	14:32	20.9	84		WSW	7	1023.8	24.5	58		E	11	1020.7
24	We	13.1	27.2	0			SW	13	09:59	20.8	79		SW	7	1020.7	25.8	44		W	6	1016.4
25	Th	11.5	27.2	0			SW	24	13:01	19.8	78			Calm	1017.6	25.6	52		SSW	11	1014.3
26	Fr	14.8	24.3	0			SW	22	10:36	20.5	75		S	7	1020.1	23.0	59		E	7	1018.5
27	Sa	12.0	24.2	0.4			SE	28	16:03	20.6	67		S	15	1024.3	22.3	66		S	7	1022.2
28	Su	12.6	25.8	6.4			ESE	33	16:24	20.7	77		SSW	11	1026.1	24.3	59		ESE	13	1022.8
29	Mo	12.4	26.8	0			ESE	20	12:40	20.7	81		SSW	6	1025.2	24.8	53		ENE	6	1021.2
30	Tu	10.6	27.1	0			NE	20	15:46	18.6	84		SSW	2	1022.9	23.5	60		ENE	11	1019.6
Statistics for April 2024																					
Mean		15.1	27.3							21.4	77			5	1019.7	25.8	57			7	1016.4
Lowest		10.6	21.0							18.6	50			Calm	1008.7	19.8	36		WSW	2	1004.7
Highest		21.9	31.9	32.0			S	37		25.3	95		S	15	1026.1	30.1	91		#	13	1022.8
Total				88.4																	

Beaudesert, Queensland
May 2024 Daily Weather Observations

Observations from a site in Drumley Street, about 1.5 km northwest of the town centre.

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	We	12.4	23.8	0			S	39	11:42	20.8	67		S	17	1023.8	22.8	58		S	13	1021.9
2	Th	16.3	24.3	0			SE	33	15:06	20.1	69		S	13	1024.9	24.0	52		S	15	1022.9
3	Fr	16.0	22.7	0			E	30	12:44	19.0	75		S	11	1025.4	19.8	80		SE	4	1022.4
4	Sa	13.7	23.6	3.0			ENE	22	15:20	18.4	87		S	7	1022.1	23.1	65		E	6	1018.4
5	Su	14.8	26.2	0.6			S	20	19:26	18.7	87		SW	6	1020.1	25.4	55		NNE	6	1015.9
6	Mo	12.5	24.5	0.4			S	31	13:35	20.3	79		SW	7	1020.5	23.4	51		SSW	15	1018.4
7	Tu	14.6	23.9	0			SE	31	15:52	20.8	75		SSW	11	1023.3	22.0	69		SE	15	1021.6
8	We	13.3	23.8	0.2			SW	28	10:50	19.6	73		SSW	11	1026.7	23.1	52		SE	15	1023.6
9	Th	14.4	24.3	0			ESE	28	12:54	20.5	73		SSW	9	1027.0	21.6	68		SE	9	1025.5
10	Fr	13.0	25.1	0			S	31	12:41	19.9	78		SW	11	1027.3	24.2	50		ESE	9	1023.7
11	Sa	13.3	25.9	0			WSW	17	10:09	18.7	86		SW	6	1024.2	23.9	67		ENE	9	1020.2
12	Su	15.5	24.5	0.2			S	39	18:04	17.6	95			Calm	1020.7	23.4	70		NW	4	1016.2
13	Mo	9.5	24.6	0.4			NNW	13	15:01	13.2	97			Calm	1019.8	24.4	42		N	6	1016.7
14	Tu	8.8	25.6	1.8			SSW	22	10:31	17.6	80		W	2	1024.1	24.9	53		SSW	13	1021.7
15	We	10.8	25.8	11.2			ESE	20	12:24	20.3	77		SW	7	1026.8	23.4	56		ESE	11	1024.3
16	Th	15.4	20.6	0			SE	15	15:46	17.6	97		SW	4	1027.6	20.4	84		S	2	1024.3
17	Fr	11.5	22.9	4.8			SSW	22	14:13	19.1	88		SW	6	1023.3	20.4	79		SSW	4	1019.5
18	Sa	9.7	24.7	3.2			S	35	21:07	16.6	94			Calm	1017.9	23.6	43		S	9	1012.5
19	Su	11.3	21.2	0			SSW	43	10:48	17.4	52		SSW	15	1018.1	20.6	46		SSW	15	1015.8
20	Mo	6.4	22.7	0			WSW	22	10:38	15.2	72		SW	7	1021.0	22.1	33		SSW	6	1018.1
21	Tu	4.8	23.5	0			SW	26	14:45	16.4	71			Calm	1022.8	21.8	52		SW	17	1020.7
22	We	10.4	23.2	0			SW	26	12:08	17.2	72		SW	6	1024.4	22.5	51		SW	11	1021.1
23	Th	5.5	23.7	0			SW	22	14:51	15.8	84		W	4	1025.5	22.6	41		SW	15	1022.9
24	Fr	6.0	24.3	0			SE	20	14:22	14.9	84		SSW	2	1025.9	21.8	58		SE	7	1023.1
25	Sa	12.6	22.0	0			WNW	13	15:03	17.1	83		NW	4	1026.6	21.2	69		W	9	1023.3
26	Su	10.8	24.3	4.2			ENE	13	14:21	17.1	88		SSW	2	1025.1	22.2	59		NE	6	1021.6
27	Mo	9.3	24.8	0.2			NE	15	16:14	15.4	88			Calm	1025.1	23.9	46			Calm	1021.8
28	Tu	10.3	24.7	0			SW	15	11:37	15.3	89			Calm	1027.1	23.0	55		ESE	4	1024.6
29	We	9.7	24.7	0			E	24	15:48	17.9	85			Calm	1028.8	23.3	55		ESE	11	1025.8
30	Th	10.1	24.3	0			E	22	14:22	16.7	83		SSW	4	1028.7	20.1	81		N	9	1024.9
31	Fr	13.8	25.8	0.4			NNE	19	13:55	18.0	97			Calm	1024.9	23.8	59		NNE	7	1020.9
Statistics for May 2024																					
Mean		11.5	24.1							17.8	81			5	1024.2	22.7	58			9	1021.1
Lowest		4.8	20.6							13.2	52			Calm	1017.9	19.8	33			Calm	1012.5
Highest		16.3	26.2	11.2			SSW	43		20.8	97		S	17	1028.8	25.4	84		SW	17	1025.8
Total				30.6																	

Observations were drawn from Beaudesert Drumley Street {station 040983}

Appendix D – Noise Measurement Results



Unattended Noise Measurements
Monarch Glen, Undullah

Noise Levels - 18hr Day (Traffic Noise)

Logger Location - Eastern boundary of
overall development

ARL Environmental Noise Logger
Logger Serial Number 15-203-537
Measurement Title Undullah Monarh Glen
Measurement started at 27/04/2024 9:19
Measurement stopped at 7/05/2024 8:57
Frequency Weighting A
Time Averaging Fast
Statistical Interval 15 min
Pre-measurement Ref. 94.0
Post-measurement Ref. 94.0
Engineering Units dB SPL

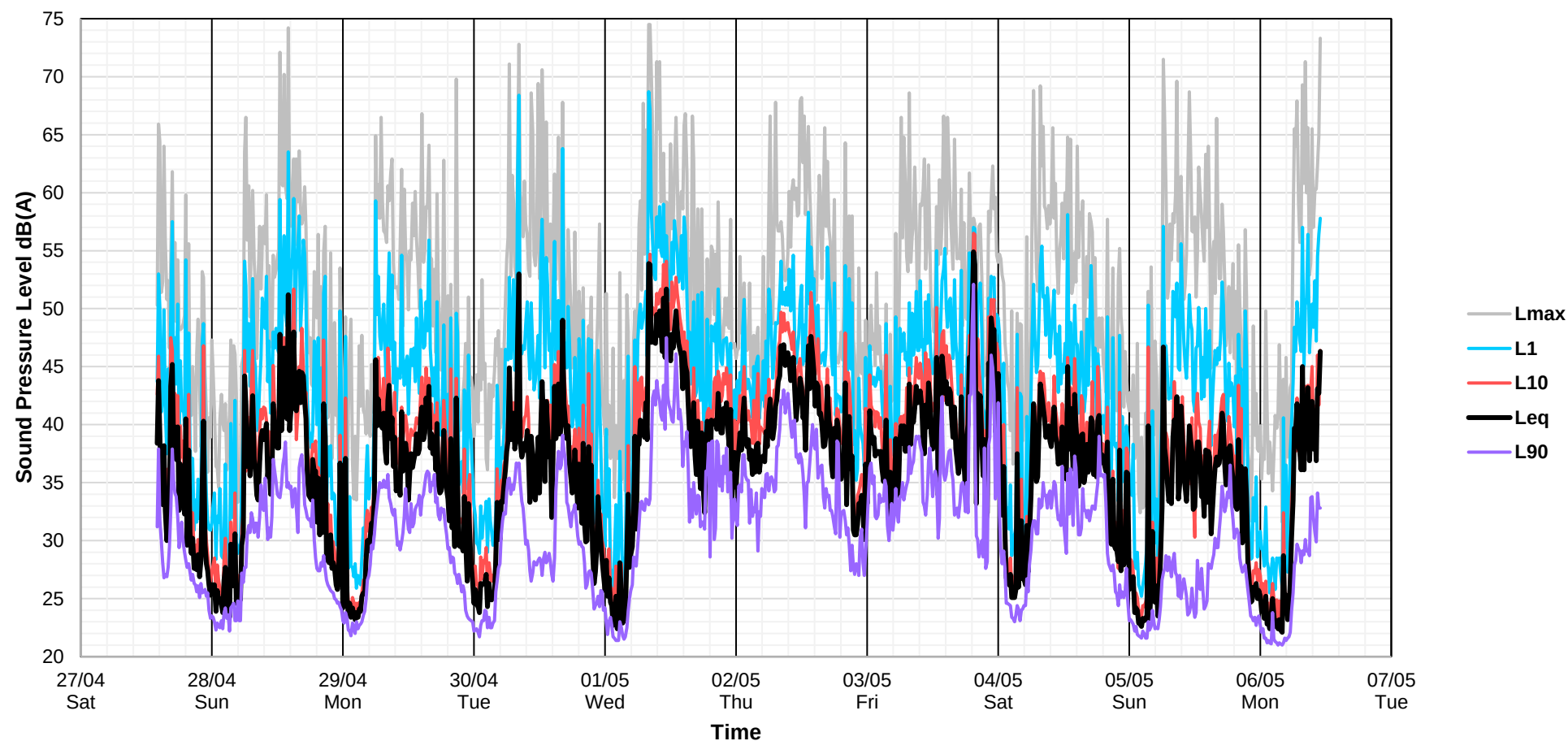
Date	Day	L _{A10,T}			L _{Aeq,T}		L _{A90,T}	
		18hr day 6am-12am	1hr max 6am-12am	Time for 1hr max	18hr day 6am-12am	8hr night 10pm-6am	18hr day 6am-12am	8hr night 10pm-6am
27/04/2024	Saturday	—	—	—	—	27	—	24
28/04/2024	Sunday	39	46	16:00	37	27	31	24
29/04/2024	Monday	39	43	15:00	37	28	31	25
30/04/2024	Tuesday	38	44	16:00	37	27	30	24
1/05/2024	Wednesday	45	52	10:00	42	38	37	34
2/05/2024	Thursday	42	49	08:00	40	36	35	32
3/05/2024	Friday	43	53	19:00	41	33	36	29
4/05/2024	Saturday	39	42	08:00	37	27	32	23
5/05/2024	Sunday	36	41	08:00	35	25	28	22
Average		40	45		38	30	32	26
Average (weekdays only)		41	47		39	32	33	29

Note

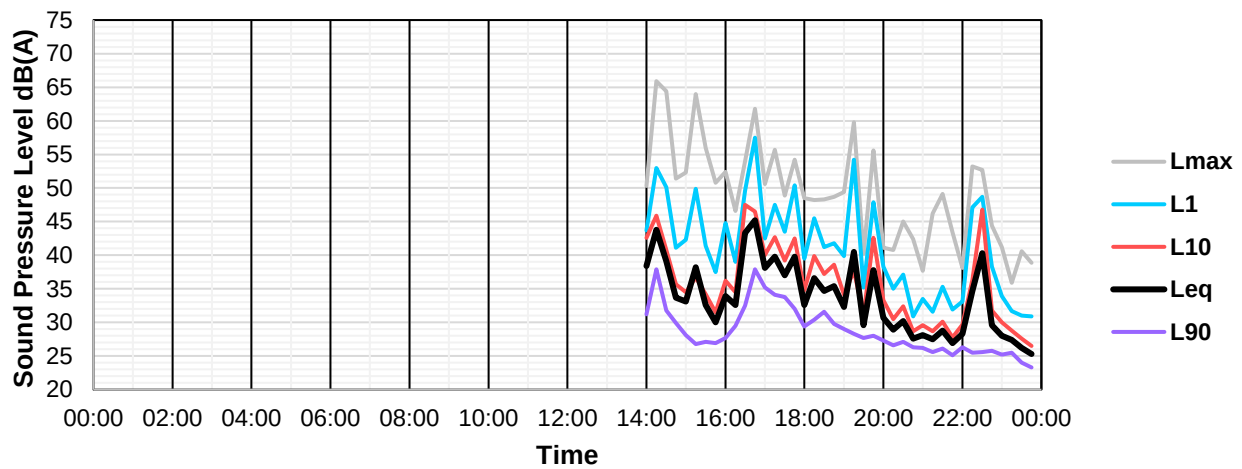
— No noise data available

■ Rainfall recorded on this day

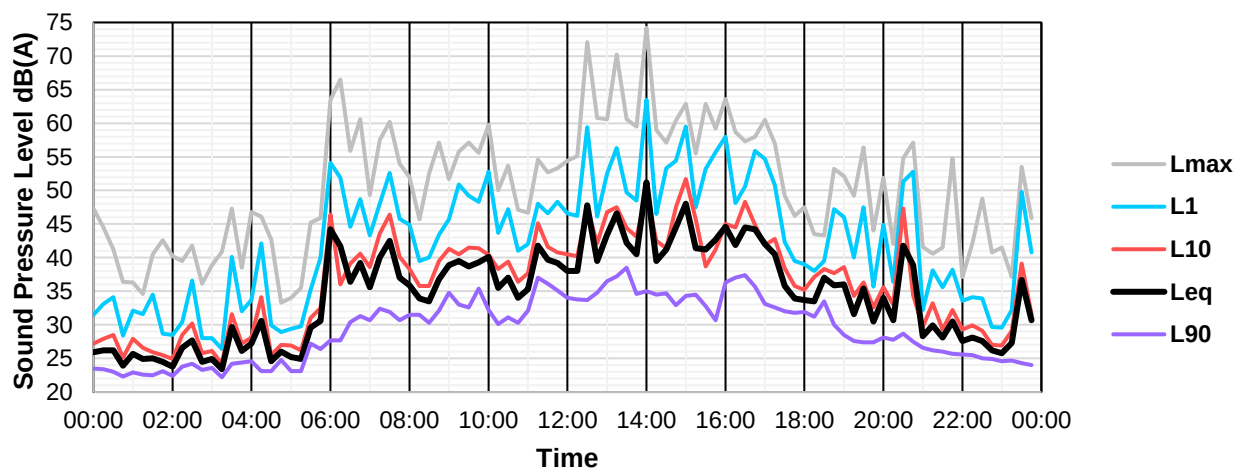
Unattended Noise Measurements 27 April to 6 May 2024



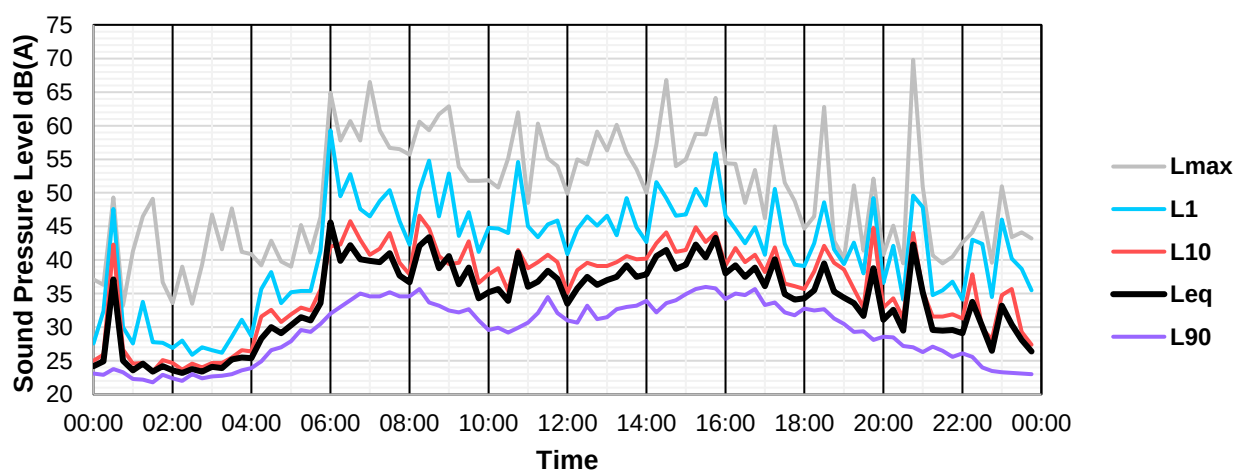
Unattended Noise Measurements Saturday 27 April 2024



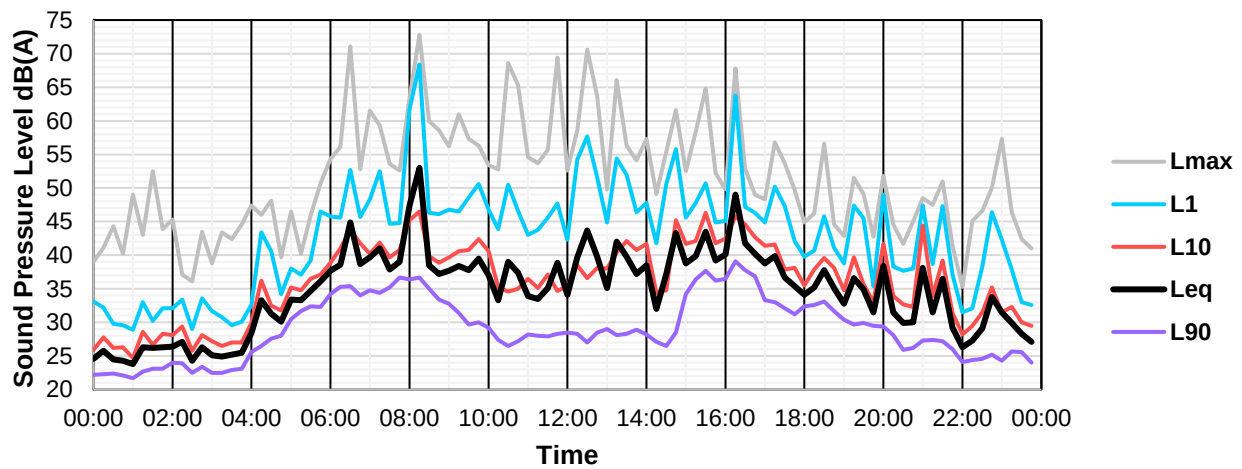
Unattended Noise Measurements Sunday 28 April 2024



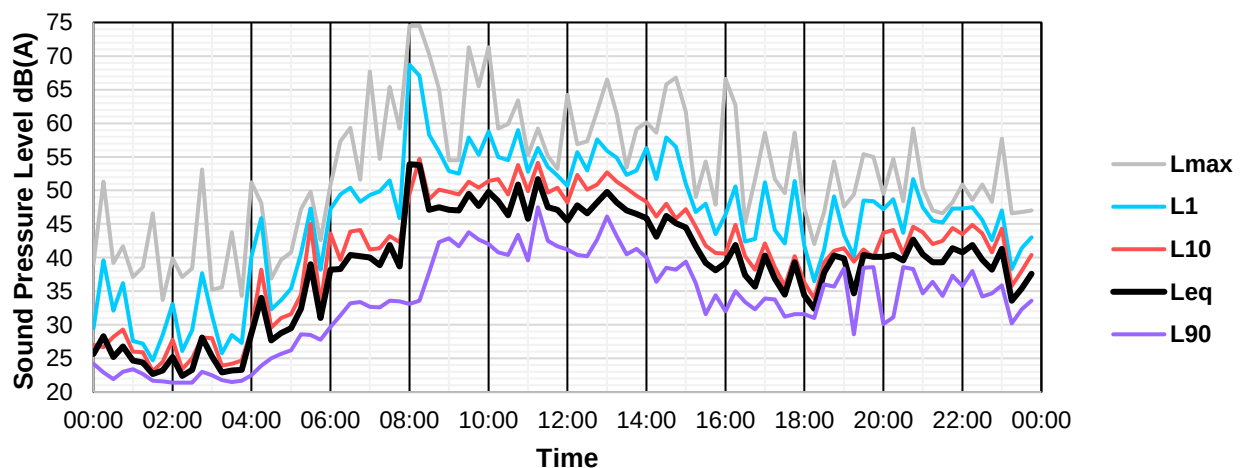
Unattended Noise Measurements Monday 29 April 2024



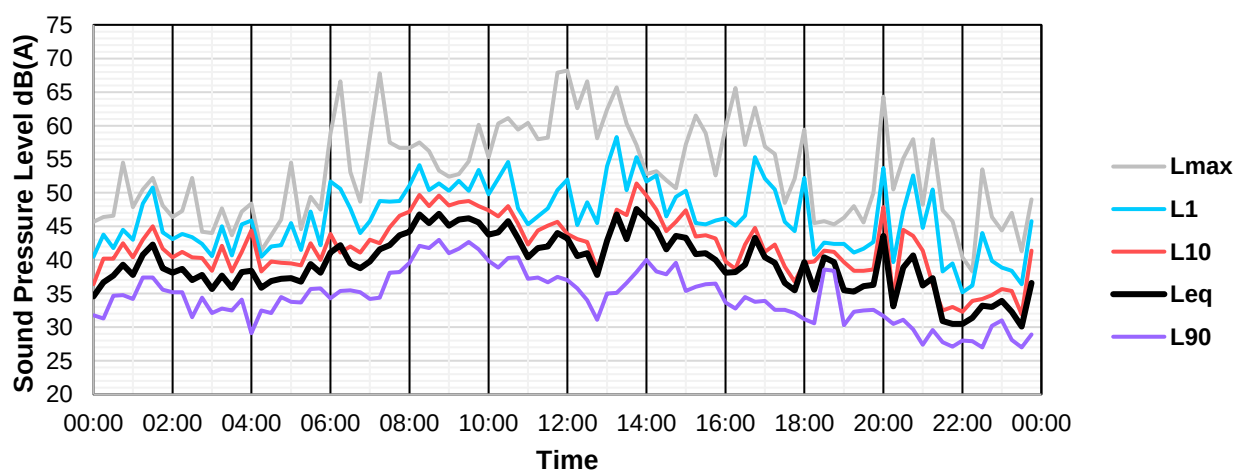
Unattended Noise Measurements Tuesday 30 April 2024



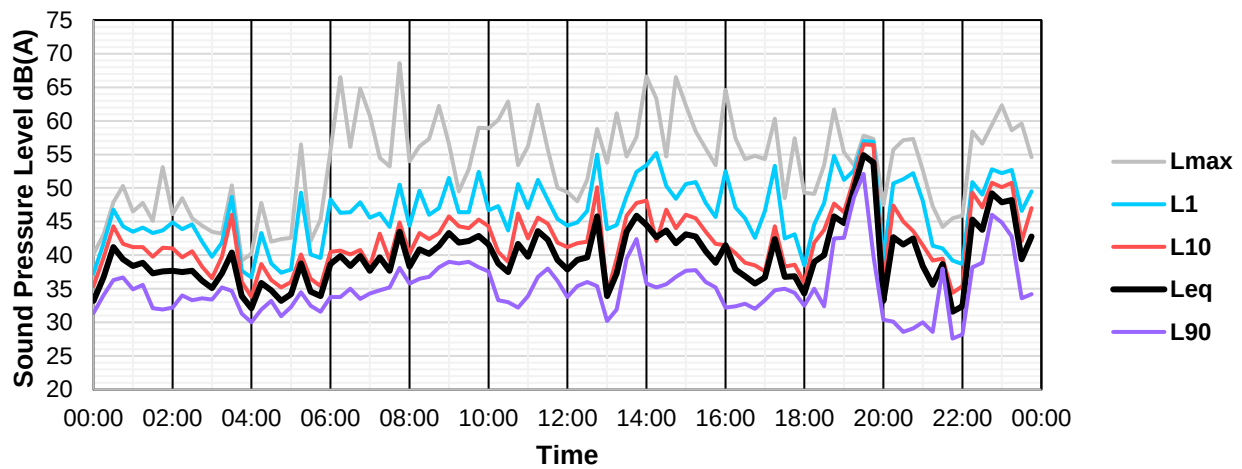
Unattended Noise Measurements Wednesday 1 May 2024



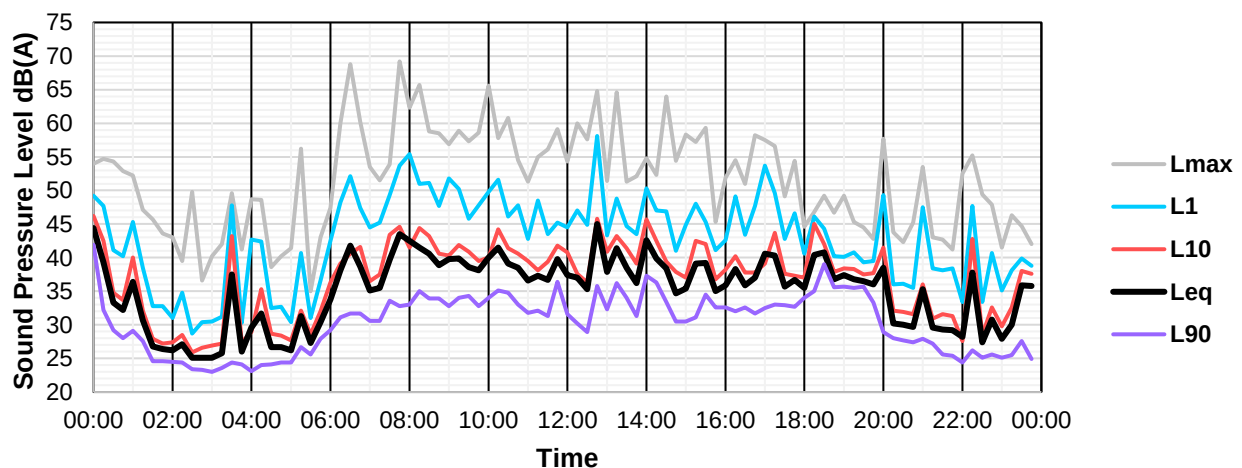
Unattended Noise Measurements Thursday 2 May 2024



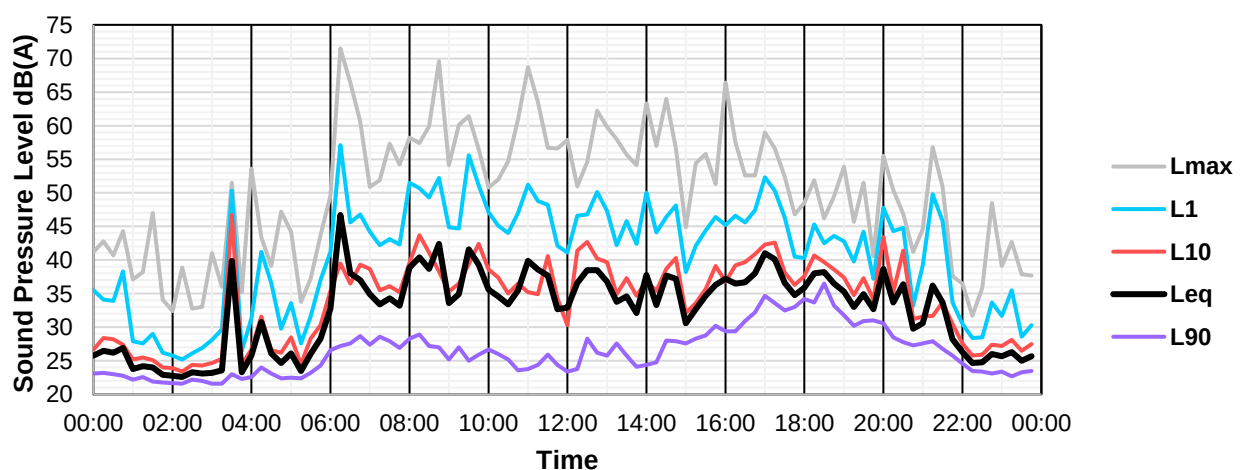
Unattended Noise Measurements Friday 3 May 2024



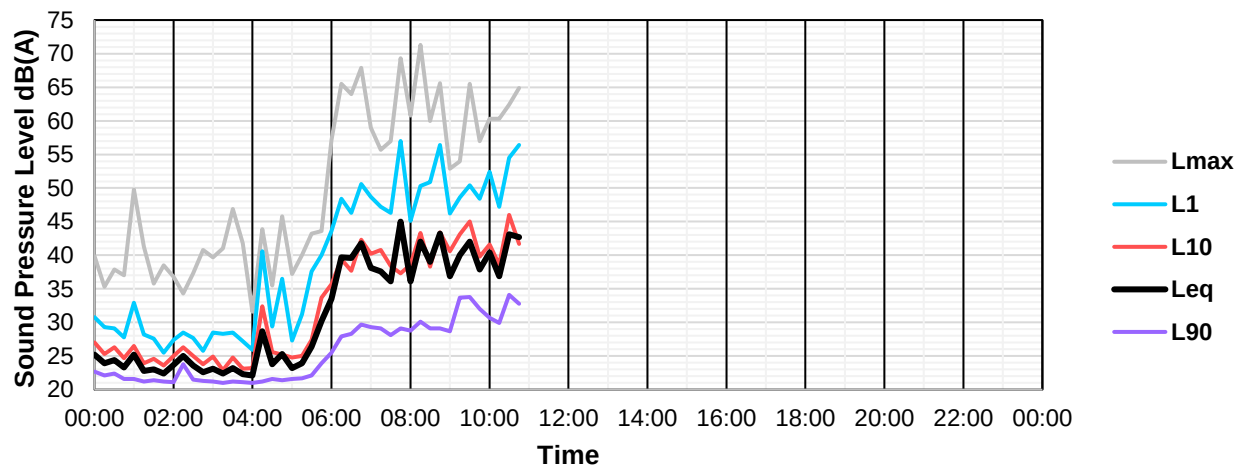
Unattended Noise Measurements Saturday 4 May 2024



Unattended Noise Measurements Sunday 5 May 2024



Unattended Noise Measurements Monday 6 May 2024



Appendix E – RTNA Noise Contours (Year 2066)



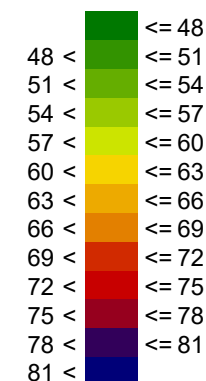
ATP240148

**Proposed Development
Monarch Glen_Precincts 103 & 104**

**Traffic Noise Modelling
Year 2066**

Ground Floor (1.8m AGL)

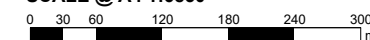
Traffic noise level
Facade-adjusted
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

- Limit line - 63dB(A) criteria
- Line
- ▬ Road

SCALE @ A4 1:6850



Grid Spacing: 2m
Project Engineer: Bojan Todorovski
Created: 8/06/2026
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1



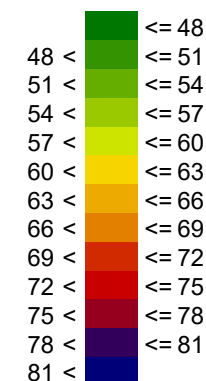
ATP240148

**Proposed Development
Monarch Glen_Precincts 103 & 104**

**Traffic Noise Modelling
Year 2066**

First Floor (4.6m AGL)

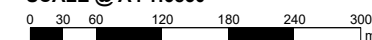
Traffic noise level
Facade-adjusted
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

- Limit line - 63dB(A) criteria
- Line
- == Road

SCALE @ A4 1:6850



Grid Spacing: 2m
Project Engineer: Bojan Todorovski
Created: 21/06/2026
Processed with SoundPLAN 9.1

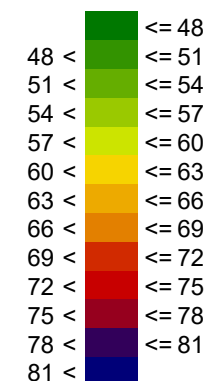
¹ As per procedure of TMR Code of Practice Volume 1

Proposed Development Monarch Glen_Precincts 103 & 104

Traffic Noise Modelling
Year 2066

POS (1.5m AGL)

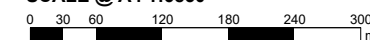
Traffic noise level
Free-field
Adjusted for Queensland Conditions¹
L_{10,18hr} dB(A)



Legend

- Limit line - 60dB(A) criteria
- Line
- ▬ Road

SCALE @ A4 1:6850



Grid Spacing: 2m
Project Engineer: Bojan Todorovski
Created: 21/06/2026
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1





ATP240148

**Proposed Development
Monarch Glen_Precincts 103 & 104**

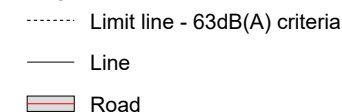
**Traffic Noise Modelling
Year 2066**

Ground Floor (1.8m AGL)

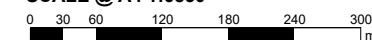
**QDC MP4.4 Noise Category
Facade-adjusted
Adjusted for Queensland Conditions¹**



Legend



SCALE @ A4 1:6850



Grid Spacing: 2m
Project Engineer: Bojan Todorovski
Created: 21/06/2026
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1





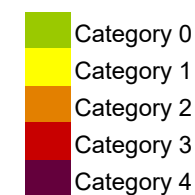
ATP240148

**Proposed Development
Monarch Glen_Precincts 103 & 104**

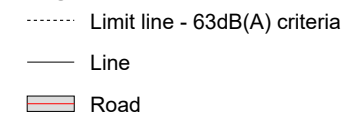
**Traffic Noise Modelling
Year 2066**

First Floor (4.6m AGL)

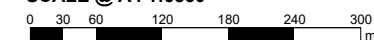
**QDC MP4.4 Noise Category
Facade-adjusted
Adjusted for Queensland Conditions¹**



Legend



SCALE @ A4 1:6850



Grid Spacing: 2m
Project Engineer: Bojan Todorovski
Created: 21/06/2026
Processed with SoundPLAN 9.1

¹ As per procedure of TMR Code of Practice Volume 1

