Traffic Noise Impact Assessment Everleigh, Greenbank

RoL 10 Application

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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Executive Summary

ATP Consulting Engineers (ATP) was engaged by Mirvac to prepare a traffic noise impact assessment in support of the RoL 10 application for the *Everleigh* development in Greenbank.

The following report presents the results of the detailed road traffic noise propagation modelling considering Teviot Road, major noise source adjacent to the *Everleigh* Development and Anderson Drive which as a major internal arterial road within the boundaries of the development.

Traffic noise propagation modelling was carried out considering the future traffic flows for a planning horizon of 2051. Based on the results of the traffic noise impact assessment for the RoL 10 (Precincts 8 and 10) of the *Everleigh* development, the following is concluded:

- Teviot Road does not affect the noise amenity at the allotments within RoL 10 (Precincts 8 and 10).
- Anderson Drive has limited noise impact on the allotments at RoL 10 with only Lot 4001, within Precinct 10, impacted by traffic noise. The traffic noise impact is limited to the upper floor of two-storey (high-set) house.
- In accordance with the noise control strategy for the Everleigh development, the upper floor of any two-storey house at Lot 4001 must be subject of design and construction in accordance with QDC MP4.4 or AS3671-1989 to ensure compliance with the internal noise criteria from AS/NZS 2107:2016. In addition, the outdoor living area of any house at Lot 4001 must be located along the façade which has no direct view to Anderson Drive.
- If the private open space of the house to be constructed at Lot 4001 is located along the protected northern façade (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.
- All the other allotments with RoL 10 (Precincts 8 and 10) of *Everleigh* development are not affected by road traffic noise and the houses on these allotments do not require acoustic design to be façade.

Provided the recommended planning and design noise control measures are implemented in the construction of *Everleigh* development RoL 10, road traffic noise will not impose any further constraints on the establishment of this stage of the development.

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1. Introduction

1.1 Project background

ATP Consulting Engineers (ATP) was engaged by Mirvac to prepare a traffic noise impact assessment in support of the RoL 10 application for the *Everleigh* development in Greenbank.

The following report presents the results of the detailed road traffic noise propagation modelling considering Teviot Road, major noise source adjacent to the *Everleigh* Development and Anderson Drive which as a major internal arterial road within the boundaries of the development.

1.2 Study objectives

Study objectives are as follows:

- Site specific noise measurements near Teviot Road to obtain information about the existing noise levels. The measured traffic noise levels will be used for validation of the SoundPLAN noise propagation model.
- Development of a 3D traffic noise propagation model using SoundPLAN software considering the development layout and civil engineering design of RoL 10. The traffic flows along Teviot Road and higher order internal road Anderson Drive, to the year 2051 (ultimate planning horizon), will be considered in the SoundPLAN model.
- Calculation of the traffic noise levels at the facades and private open spaces of the future dwellings to be constructed at RoL 10.
- Based on the calculated traffic noise levels ATP Consulting will provide recommendations for noise control measures (i.e., acoustic barriers and advice on the architectural treatments to the building facades) to ensure compliance with the relevant external and internal noise criteria.
- Provision of a detailed acoustic report (traffic noise impact assessment) in a format required by EDQ and Logan City Council (LCC). The report will present the traffic noise assessment methodology, tabulated measured noise levels, calculated traffic noise levels, and recommendations for noise control measures.

1.3 Development plan

The approved *Everleigh* development is a master-planned community in Greenbank with frontage to Teviot Road to the west and Greenbank Road to the south. The subject site has a total area of 482.1 Ha. The site is located within the Greater Flagstone priority development area (PDA).

The development layout for RoL 10 (Precincts 8 and 10) is presented in Appendix A.

2. Existing Noise Amenity

2.1 Site-specific noise measurements

Noise monitoring was carried out adjacent to Teviot Road, to obtain information about the existing traffic and background noise levels.

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 (*Acoustics – Description and measurement of environmental noise*); and • Australian Standard AS 2702-1984 (*Acoustics – Methods for measurement of road traffic noise*).
Measurement location	The noise monitoring was carried out at the south-western boundary of the existing Lot 3 on SP297192. The measurement location was approximately 20m setback from Teviot Road The noise measurement location is presented in Figure 2.1, and the photos are presented in Appendix B.
Measurement period	Continuous noise monitoring was carried out 24 hours a day from 5 to 18 March 2020.
Measurement equipment	The following noise measurement equipment was used: • Environmental noise logger – ARL EL-315 (serial no. 15-203-537); and • Calibration – RION NC-74 Sound Level Calibrator (serial no. 34615224). The noise measurement instruments conform to Australian Standard AS IEC61672.1-2004. 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	Rainfall occurred on 6, 9, 10 and 12 March 2020. Noise data affected by periods of rainfall was excluded from the results. Full meteorological data for the monitoring period is presented in Appendix C.
Analysis of data	The noise measurement data was analysed to determine the following noise descriptor: • **$L_{10,18hr}$:** L_{10} 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 Measurement results

The results of the noise measurements undertaken from 5 to 18 March 2020 are presented in Table 2.2 and Appendix D.

Table 2.2 Noise measurement results

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)
5 Mar 2020 (Thu)	—	—	—	39
6 Mar 2020 (Fri)	64	67	52	36
7 Mar 2020 (Sat)	64	65	51	37
8 Mar 2020 (Sun)	62	65	49	38
9 Mar 2020 (Mon)	66	68	54	39
10 Mar 2020 (Tue)	64	68	53	39
11 Mar 2020 (Wed)	64	68	54	40
12 Mar 2020 (Thu)	65	68	55	41
13 Mar 2020 (Fri)	65	68	55	38
14 Mar 2020 (Sat)	64	66	52	39
15 Mar 2020 (Sun)	64	67	51	38
16 Mar 2020 (Mon)	64	68	52	39
17 Mar 2020 (Tue)	64	70	53	38
18 Mar 2020 (Wed)	63	67	52	39
Arithmetic Mean	64	67	52	39
Weekdays Only	64	68	53	39

Noise data disregarded due to rainfall.

3. Traffic Noise Criteria

3.1 External noise criteria

The development site is located within the Greater Flagstone PDA, a priority development area designated by Economic Development Queensland (EDQ).

There are no traffic noise criteria specific to the Greater Flagstone PDA. Traffic noise impact assessment for the Everleigh development should be carried out in accordance with the Department of Transport and Main Roads (TMR) *Road Traffic Noise Management: Code of Practice*.

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 3.0 (February 2022), 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	≤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))

The relevant façade adjusted[2] road traffic noise criterion for the building facades 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 60dB(A)$L_{10,18hr}$.

[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 a 10-year planning horizon, as the development is established, background noise levels in the vicinity of Teviot Road and Greenbank Road are expected to be greater than 40dB(A) $L_{90,8hr}$ between 10pm and 6am.

In case of exceedance of the external traffic noise criteria, architectural treatment has to be applied to the external facade of the building to protect the internal noise amenity of the residential dwellings

3.2 Internal noise criteria

Where the external noise criteria cannot be met, the residential dwellings must be designed to mitigate intrusion of traffic noise into habitable rooms. At the building approval stage, the dwellings at the affected allotments should be designed and constructed as per AS3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4.

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 3.2.

Table 3.2 Internal noise criteria (dwellings)

Type of occupancy	Maximum L_{Aeq}
Living areas	45 dB(A)
Sleeping areas	40 dB(A)

4. Traffic Noise Calculation Methodology

The traffic noise from Teviot Road and the Anderson Drive 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 Australia[4].

The ultimate planning horizon of 2051 was considered in the traffic noise propagation modelling. Detailed road traffic noise propagation modelling was carried out for the allotments located within RoL 10.

4.1 Traffic noise model – Validation (Year 2020)

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 calculating future road traffic noise levels.

Traffic flow data, as considered in the SoundPLAN validation model, is presented in Table 4.1.

Table 4.1 Traffic flow data for validation

Road	2006 Traffic Flow AADT[5]	2020 Traffic Flow AADT[6]	Heavy Vehicles (%)
Teviot Road	4,155	9,394	5.0

The additional factors and assumptions considered in the model are presented in Table 4.2.

Table 4.2 Data and assumptions – Model validation

Parameter	Data/Assumptions
Mean vehicle speed	• **Teviot Road:** 70 km/h north of Pub Lane and 80 km/h south of Pub Lane
Calculation procedure	• CoRTN (Calculation of Road Traffic Noise) • SoundPLAN grid spacing is 1m while the increment for angle of view is 1º
Road traffic volume for CoRTN procedure	• The CoRTN procedure requires 18 hours traffic volume data. Traffic volume for 18-hours (6:00am to midnight) was considered as 94% of the 24-hour AADT.
Road surface	• **Teviot Road:** Bituminous seal, requiring an adjustment of +3dB in the model
Noise logger	The noise logger was situated at a free field location with a microphone height of 1.2m above ground level.

The results of the SoundPLAN model validation are presented in Table 4.3 and in Appendix F.

[4] 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.
[5] Most recent traffic data available for Teviot Road and Greenbank Road was from a 2006/2007 study by the Department for Transport and Main Roads (TMR, 2010).
[6] Traffic flow growth rates of 6.0% per annum from 2006 to 2020, based on population data published by the Queensland Government Statisticians Office which indicates a growth rate of approximately 6% within the Greenbank Statistical Area 2.

Table 4.3 SoundPLAN validation results

Receiver	Measured* $L_{10(18\text{-hour})}$ dB(A)	Calculated* $L_{10(18\text{-hour})}$ dB(A)	Difference dB(A)	Validation Factor
Noise Logger – Location 1	64	64	0	N/A

**Free-field*

The calculated traffic noise levels are within ± 2 dBA tolerance limit; hence no correction factor is required.

4.2 Traffic noise model – Planning horizon (Year 2051)

Traffic noise calculations were carried out for an ultimate planning horizon of 2051. Traffic volumes for Teviot Road were sourced from the approved "Movement Network Infrastructure Master Plan" (3 March 2017) for the Everleigh development, prepared by MWH. Traffic volumes for Anderson Drive were sourced from the Precinct 9 Traffic Statement by Premise – Drawing WOS600 revision B dated 11 May 2021.

The daily traffic volumes for 2051 are presented in Table 4.4 and in Appendix E.

Table 4.4 Traffic flow data – 2051 planning horizon

Road	Road Segment	2051 Traffic Flow AADT	Heavy Vehicles (%)
Teviot Road	North of Leanne Court	38,063	5
Teviot Road	Leanne Court to Shopping centre northern access road	34,304	5
Teviot Road	Shopping centre northern access road to Pub Lane	34,978	5
Teviot Road	Pub Lane to Greenbank Road	24,681	5
Teviot Road	South of Greenbank Road	19,423	5
Anderson Drive	Teviot Road to Kessels Boulevard	15,274	3
Anderson Drive	Kessels Boulevard to "Park" Road	7,382	3
Anderson Drive	"Park" Road to Ivory Parkway	3,190	3

The various additional factors considered in the model are presented in Table 4.5.

Table 4.5 Data and assumptions – Planning horizon model

Parameter	Data/Assumptions
Mean vehicle speed	• **Teviot Road:** 70 km/h north of Pub Lane and 80 km/h south of Pub Lane • **Internal roads:** 50 km/h
Calculation procedure	• CoRTN (Calculation of Road Traffic Noise) • SoundPLAN grid spacing is 3m while the increment for angle of view is 1º
Road traffic volume for CoRTN procedure	• The CoRTN procedure requires 18 hours traffic volume data. Traffic volume for 18-hours (6:00am to midnight) was considered as 94% of the 24-hour AADT.
Road type and alignment	• **Teviot Road:** After road upgrade: Two lanes in each direction. Centreline of new road is same as existing road (Note: as explained in Section 1.1 of this report, the new alignment of Teviot Road will be different, and this noise assessment must be updated to consider the new road alignment once the finished surface levels for the new road design are made available). • **Anderson Drive:** Two lanes in each direction to the first roundabout, then one lane in each direction. • **Everleigh Drive:** One lane in each direction. • Source: - *Civil CAD Base File "X-MIRSGB BASE"* - *CAD Base – Leanne_Anderson 250521*
Road surface	• **Teviot Road:** Dense graded asphalt (after road upgrade) • **Anderson Drive and Everleigh Drive:** Dense graded asphalt. Dense graded asphalt requires no adjustment factor.
Development layout	• Source: - *Civil CAD Base File "X-MIRSGB BASE"*
Buildings	• Residential buildings on all lots were considered as one storey high with total height of 3.5m. • Front setbacks are 6.0m.
Receivers	**Façade noise levels** • Although buildings were considered as single-storey, receivers were allocated to ground (1.8m AGL) as well as upper floor (4.6m AGL) to calculate noise levels at potential two-storey houses. Note: *AGL: above ground level* • SoundPLAN adds +2.5dB(A) to the calculated noise levels when the receivers are attached to the buildings, thus the tabulated traffic noise levels are façade adjusted. **Private open spaces** • Receivers were placed at the outdoor living areas which are located at the ground floor at the rear of each dwelling (i.e., backyards). • Receivers were placed at a free-field location 4m from the building façades. • Receivers were placed at 1.5m AGL.
CoRTN correction factor	• Application of CoRTN correction factor of –1.7dB for receivers located 1m from building façades is considered in Australia, and –0.7dB for free-field receivers, as recommended by *TMR Code of Practice*.
Terrain	• Sourced from earthworks drawings by Premise: - *"2022-02-02 ROL10 Preliminary Design Surface 3d Triangles.dwg"*
Noise control measures	• Traffic noise levels were calculated with the noise control measures recommended in Section 6 of this report.

Overview of the SoundPLAN traffic noise model for RoL 10 is presented in Figure 4.1.

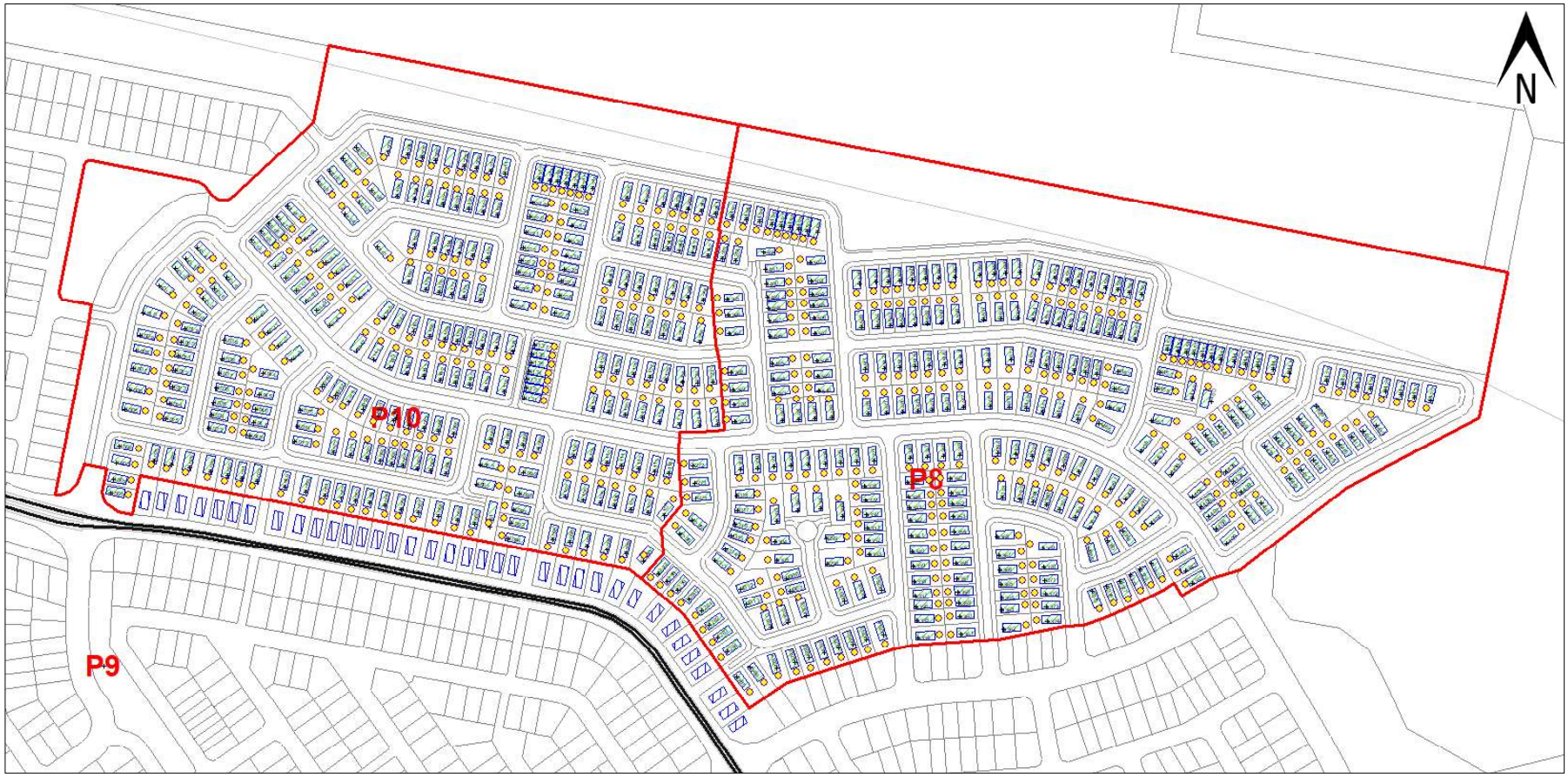


Figure 4.1 SoundPLAN traffic noise model – RoL 10

5. Calculated Traffic Noise Levels

The road traffic noise levels were calculated at the facades (ground and upper floors) and private open space (ground floor outdoor living area) of each dwelling.

The calculated noise levels were then assessed against the traffic noise criteria (≤ 63dB(A) $L_{10,18hr}$ facade adjusted for building facades; and ≤ 60dB(A) $L_{10,18hr}$ free field for private open spaces).

The calculated traffic noise levels at the allotments located within RoL 10 are presented in Table 5.1.

Table 5.1 Calculated traffic noise levels – RoL 10

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4001	62	Yes	64	No	56	Yes
RoL10_Lot 4002	58	Yes	60	Yes	51	Yes
RoL10_Lot 4003	55	Yes	58	Yes	50	Yes
RoL10_Lot 4004	53	Yes	56	Yes	47	Yes
RoL10_Lot 4005	50	Yes	53	Yes	47	Yes
RoL10_Lot 4006	49	Yes	52	Yes	46	Yes
RoL10_Lot 4007	48	Yes	51	Yes	45	Yes
RoL10_Lot 4008	47	Yes	50	Yes	45	Yes
RoL10_Lot 4009	47	Yes	50	Yes	44	Yes
RoL10_Lot 4010	47	Yes	49	Yes	44	Yes
RoL10_Lot 4011	46	Yes	48	Yes	44	Yes
RoL10_Lot 4012	45	Yes	48	Yes	44	Yes
RoL10_Lot 4013	44	Yes	47	Yes	44	Yes
RoL10_Lot 4014	44	Yes	47	Yes	43	Yes
RoL10_Lot 4015	43	Yes	47	Yes	41	Yes
RoL10_Lot 4016	44	Yes	47	Yes	41	Yes
RoL10_Lot 4017	44	Yes	47	Yes	42	Yes
RoL10_Lot 4018	44	Yes	48	Yes	42	Yes
RoL10_Lot 4019	45	Yes	48	Yes	42	Yes
RoL10_Lot 4020	44	Yes	48	Yes	42	Yes
RoL10_Lot 4021	45	Yes	48	Yes	43	Yes
RoL10_Lot 4022	45	Yes	49	Yes	43	Yes
RoL10_Lot 4023	46	Yes	49	Yes	43	Yes
RoL10_Lot 4024	47	Yes	50	Yes	44	Yes
RoL10_Lot 4025	47	Yes	50	Yes	45	Yes
RoL10_Lot 4026	49	Yes	52	Yes	47	Yes
RoL10_Lot 4027	49	Yes	52	Yes	48	Yes
RoL10_Lot 4028	49	Yes	52	Yes	48	Yes
RoL10_Lot 4029	49	Yes	51	Yes	47	Yes
RoL10_Lot 4030	49	Yes	51	Yes	47	Yes
RoL10_Lot 4031	49	Yes	51	Yes	46	Yes
RoL10_Lot 4032	49	Yes	52	Yes	47	Yes
RoL10_Lot 4033	48	Yes	50	Yes	46	Yes
RoL10_Lot 4034	46	Yes	50	Yes	45	Yes
RoL10_Lot 4035	45	Yes	50	Yes	45	Yes
RoL10_Lot 4036	46	Yes	49	Yes	45	Yes
RoL10_Lot 4037	46	Yes	49	Yes	44	Yes
RoL10_Lot 4038	45	Yes	49	Yes	43	Yes
RoL10_Lot 4039	45	Yes	48	Yes	43	Yes
RoL10_Lot 4040	45	Yes	47	Yes	43	Yes
RoL10_Lot 4041	45	Yes	47	Yes	43	Yes
RoL10_Lot 4042	45	Yes	47	Yes	43	Yes
RoL10_Lot 4043	45	Yes	47	Yes	43	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4044	45	Yes	48	Yes	42	Yes
RoL10_Lot 4045	45	Yes	48	Yes	43	Yes
RoL10_Lot 4046	45	Yes	48	Yes	43	Yes
RoL10_Lot 4047	45	Yes	49	Yes	43	Yes
RoL10_Lot 4048	47	Yes	49	Yes	44	Yes
RoL10_Lot 4049	50	Yes	53	Yes	49	Yes
RoL10_Lot 4050	50	Yes	52	Yes	48	Yes
RoL10_Lot 4051	49	Yes	52	Yes	48	Yes
RoL10_Lot 4052	49	Yes	52	Yes	47	Yes
RoL10_Lot 4053	49	Yes	52	Yes	48	Yes
RoL10_Lot 4054	50	Yes	52	Yes	48	Yes
RoL10_Lot 4055	50	Yes	53	Yes	49	Yes
RoL10_Lot 4056	51	Yes	53	Yes	49	Yes
RoL10_Lot 4057	51	Yes	54	Yes	50	Yes
RoL10_Lot 4058	52	Yes	55	Yes	50	Yes
RoL10_Lot 4059	52	Yes	55	Yes	51	Yes
RoL10_Lot 4060	52	Yes	55	Yes	51	Yes
RoL10_Lot 4061	51	Yes	54	Yes	49	Yes
RoL10_Lot 4062	47	Yes	50	Yes	44	Yes
RoL10_Lot 4063	45	Yes	47	Yes	43	Yes
RoL10_Lot 4064	46	Yes	49	Yes	42	Yes
RoL10_Lot 4065	47	Yes	49	Yes	42	Yes
RoL10_Lot 4066	47	Yes	49	Yes	42	Yes
RoL10_Lot 4067	47	Yes	49	Yes	42	Yes
RoL10_Lot 4068	46	Yes	49	Yes	42	Yes
RoL10_Lot 4069	47	Yes	49	Yes	42	Yes
RoL10_Lot 4070	47	Yes	49	Yes	42	Yes
RoL10_Lot 4071	47	Yes	49	Yes	43	Yes
RoL10_Lot 4072	47	Yes	49	Yes	43	Yes
RoL10_Lot 4073	48	Yes	50	Yes	46	Yes
RoL10_Lot 4074	46	Yes	49	Yes	45	Yes
RoL10_Lot 4075	45	Yes	48	Yes	44	Yes
RoL10_Lot 4076	44	Yes	46	Yes	43	Yes
RoL10_Lot 4077	45	Yes	47	Yes	43	Yes
RoL10_Lot 4078	45	Yes	47	Yes	43	Yes
RoL10_Lot 4079	44	Yes	46	Yes	43	Yes
RoL10_Lot 4080	44	Yes	46	Yes	42	Yes
RoL10_Lot 4081	44	Yes	46	Yes	42	Yes
RoL10_Lot 4082	44	Yes	45	Yes	42	Yes
RoL10_Lot 4083	44	Yes	45	Yes	42	Yes
RoL10_Lot 4084	44	Yes	45	Yes	42	Yes
RoL10_Lot 4085	44	Yes	45	Yes	42	Yes
RoL10_Lot 4086	44	Yes	46	Yes	42	Yes
RoL10_Lot 4087	44	Yes	46	Yes	42	Yes
RoL10_Lot 4088	44	Yes	46	Yes	42	Yes
RoL10_Lot 4089	44	Yes	47	Yes	43	Yes
RoL10_Lot 4090	45	Yes	48	Yes	43	Yes
RoL10_Lot 4091	46	Yes	50	Yes	44	Yes
RoL10_Lot 4092	47	Yes	51	Yes	44	Yes
RoL10_Lot 4093	49	Yes	53	Yes	46	Yes
RoL10_Lot 4094	53	Yes	56	Yes	48	Yes
RoL10_Lot 4095	53	Yes	56	Yes	52	Yes
RoL10_Lot 4096	53	Yes	56	Yes	51	Yes
RoL10_Lot 4097	52	Yes	55	Yes	51	Yes
RoL10_Lot 4098	52	Yes	55	Yes	51	Yes
RoL10_Lot 4099	52	Yes	55	Yes	51	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4100	51	Yes	54	Yes	42	Yes
RoL10_Lot 4101	46	Yes	48	Yes	41	Yes
RoL10_Lot 4102	46	Yes	48	Yes	41	Yes
RoL10_Lot 4103	46	Yes	49	Yes	41	Yes
RoL10_Lot 4104	46	Yes	49	Yes	41	Yes
RoL10_Lot 4105	46	Yes	49	Yes	41	Yes
RoL10_Lot 4106	46	Yes	49	Yes	42	Yes
RoL10_Lot 4107	47	Yes	50	Yes	43	Yes
RoL10_Lot 4108	45	Yes	47	Yes	43	Yes
RoL10_Lot 4109	45	Yes	47	Yes	43	Yes
RoL10_Lot 4110	45	Yes	47	Yes	43	Yes
RoL10_Lot 4111	45	Yes	47	Yes	43	Yes
RoL10_Lot 4112	45	Yes	47	Yes	43	Yes
RoL10_Lot 4113	45	Yes	47	Yes	43	Yes
RoL10_Lot 4114	45	Yes	46	Yes	39	Yes
RoL10_Lot 4115	42	Yes	43	Yes	39	Yes
RoL10_Lot 4116	42	Yes	44	Yes	39	Yes
RoL10_Lot 4117	43	Yes	44	Yes	38	Yes
RoL10_Lot 4118	43	Yes	44	Yes	39	Yes
RoL10_Lot 4119	43	Yes	44	Yes	39	Yes
RoL10_Lot 4120	43	Yes	45	Yes	38	Yes
RoL10_Lot 4121	43	Yes	45	Yes	40	Yes
RoL10_Lot 4122	43	Yes	45	Yes	38	Yes
RoL10_Lot 4123	40	Yes	42	Yes	39	Yes
RoL10_Lot 4124	40	Yes	42	Yes	39	Yes
RoL10_Lot 4125	41	Yes	42	Yes	39	Yes
RoL10_Lot 4126	41	Yes	42	Yes	39	Yes
RoL10_Lot 4127	41	Yes	42	Yes	39	Yes
RoL10_Lot 4128	41	Yes	42	Yes	39	Yes
RoL10_Lot 4129	41	Yes	43	Yes	40	Yes
RoL10_Lot 4130	41	Yes	43	Yes	41	Yes
RoL10_Lot 4131	43	Yes	44	Yes	40	Yes
RoL10_Lot 4132	41	Yes	44	Yes	40	Yes
RoL10_Lot 4133	41	Yes	44	Yes	40	Yes
RoL10_Lot 4134	41	Yes	44	Yes	40	Yes
RoL10_Lot 4135	41	Yes	43	Yes	39	Yes
RoL10_Lot 4136	41	Yes	43	Yes	39	Yes
RoL10_Lot 4137	41	Yes	43	Yes	40	Yes
RoL10_Lot 4138	43	Yes	44	Yes	40	Yes
RoL10_Lot 4139	43	Yes	44	Yes	40	Yes
RoL10_Lot 4140	43	Yes	44	Yes	39	Yes
RoL10_Lot 4141	43	Yes	44	Yes	39	Yes
RoL10_Lot 4142	43	Yes	44	Yes	39	Yes
RoL10_Lot 4143	43	Yes	44	Yes	39	Yes
RoL10_Lot 4144	43	Yes	44	Yes	40	Yes
RoL10_Lot 4145	43	Yes	45	Yes	39	Yes
RoL10_Lot 4146	44	Yes	45	Yes	40	Yes
RoL10_Lot 4147	44	Yes	45	Yes	39	Yes
RoL10_Lot 4148	44	Yes	46	Yes	40	Yes
RoL10_Lot 4149	44	Yes	46	Yes	40	Yes
RoL10_Lot 4150	44	Yes	46	Yes	40	Yes
RoL10_Lot 4151	44	Yes	46	Yes	39	Yes
RoL10_Lot 4152	45	Yes	46	Yes	40	Yes
RoL10_Lot 4153	44	Yes	46	Yes	42	Yes
RoL10_Lot 4154	44	Yes	46	Yes	41	Yes
RoL10_Lot 4155	41	Yes	46	Yes	41	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4156	41	Yes	45	Yes	41	Yes
RoL10_Lot 4157	41	Yes	45	Yes	40	Yes
RoL10_Lot 4158	41	Yes	44	Yes	40	Yes
RoL10_Lot 4159	42	Yes	44	Yes	40	Yes
RoL10_Lot 4160	41	Yes	44	Yes	40	Yes
RoL10_Lot 4161	41	Yes	44	Yes	39	Yes
RoL10_Lot 4162	41	Yes	44	Yes	40	Yes
RoL10_Lot 4163	42	Yes	44	Yes	40	Yes
RoL10_Lot 4164	42	Yes	44	Yes	41	Yes
RoL10_Lot 4165	43	Yes	44	Yes	41	Yes
RoL10_Lot 4166	43	Yes	44	Yes	41	Yes
RoL10_Lot 4167	43	Yes	44	Yes	41	Yes
RoL10_Lot 4168	43	Yes	44	Yes	41	Yes
RoL10_Lot 4169	42	Yes	44	Yes	41	Yes
RoL10_Lot 4170	42	Yes	43	Yes	41	Yes
RoL10_Lot 4171	42	Yes	43	Yes	41	Yes
RoL10_Lot 4172	42	Yes	43	Yes	40	Yes
RoL10_Lot 4173	42	Yes	43	Yes	40	Yes
RoL10_Lot 4174	42	Yes	43	Yes	38	Yes
RoL10_Lot 4175	42	Yes	43	Yes	37	Yes
RoL10_Lot 4176	42	Yes	43	Yes	38	Yes
RoL10_Lot 4177	42	Yes	43	Yes	38	Yes
RoL10_Lot 4178	42	Yes	43	Yes	38	Yes
RoL10_Lot 4179	42	Yes	43	Yes	37	Yes
RoL10_Lot 4180	42	Yes	44	Yes	41	Yes
RoL10_Lot 4181	42	Yes	44	Yes	40	Yes
RoL10_Lot 4182	42	Yes	43	Yes	40	Yes
RoL10_Lot 4183	42	Yes	43	Yes	40	Yes
RoL10_Lot 4184	42	Yes	43	Yes	40	Yes
RoL10_Lot 4185	42	Yes	43	Yes	40	Yes
RoL10_Lot 4186	42	Yes	43	Yes	40	Yes
RoL10_Lot 4187	42	Yes	43	Yes	36	Yes
RoL10_Lot 4188	41	Yes	42	Yes	36	Yes
RoL10_Lot 4189	41	Yes	42	Yes	36	Yes
RoL10_Lot 4190	41	Yes	42	Yes	36	Yes
RoL10_Lot 4191	41	Yes	42	Yes	36	Yes
RoL10_Lot 4192	41	Yes	42	Yes	36	Yes
RoL10_Lot 4193	41	Yes	42	Yes	37	Yes
RoL10_Lot 4194	41	Yes	43	Yes	38	Yes
RoL10_Lot 4195	41	Yes	43	Yes	39	Yes
RoL10_Lot 4196	40	Yes	43	Yes	39	Yes
RoL10_Lot 4197	41	Yes	43	Yes	38	Yes
RoL10_Lot 4198	41	Yes	43	Yes	40	Yes
RoL10_Lot 4199	42	Yes	43	Yes	40	Yes
RoL10_Lot 4200	40	Yes	43	Yes	40	Yes
RoL10_Lot 4201	41	Yes	43	Yes	39	Yes
RoL10_Lot 4202	40	Yes	43	Yes	39	Yes
RoL10_Lot 4203	41	Yes	42	Yes	40	Yes
RoL10_Lot 4204	41	Yes	43	Yes	40	Yes
RoL10_Lot 4205	41	Yes	43	Yes	40	Yes
RoL10_Lot 4206	41	Yes	43	Yes	40	Yes
RoL10_Lot 4207	41	Yes	43	Yes	40	Yes
RoL10_Lot 4208	41	Yes	43	Yes	40	Yes
RoL10_Lot 4209	41	Yes	42	Yes	40	Yes
RoL10_Lot 4210	41	Yes	42	Yes	40	Yes
RoL10_Lot 4211	41	Yes	42	Yes	39	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4212	41	Yes	42	Yes	39	Yes
RoL10_Lot 4213	41	Yes	42	Yes	39	Yes
RoL10_Lot 4214	41	Yes	42	Yes	39	Yes
RoL10_Lot 4215	41	Yes	42	Yes	40	Yes
RoL10_Lot 4216	41	Yes	42	Yes	39	Yes
RoL10_Lot 4217	41	Yes	42	Yes	40	Yes
RoL10_Lot 4218	41	Yes	42	Yes	38	Yes
RoL10_Lot 4219	40	Yes	42	Yes	39	Yes
RoL10_Lot 4220	41	Yes	42	Yes	39	Yes
RoL10_Lot 4221	41	Yes	42	Yes	39	Yes
RoL10_Lot 4222	40	Yes	42	Yes	39	Yes
RoL10_Lot 4223	40	Yes	42	Yes	39	Yes
RoL10_Lot 4224	41	Yes	42	Yes	39	Yes
RoL10_Lot 4225	41	Yes	42	Yes	39	Yes
RoL10_Lot 4226	41	Yes	42	Yes	39	Yes
RoL10_Lot 4227	41	Yes	42	Yes	39	Yes
RoL10_Lot 4228	41	Yes	42	Yes	39	Yes
RoL10_Lot 4229	41	Yes	42	Yes	39	Yes
RoL10_Lot 4230	40	Yes	42	Yes	38	Yes
RoL10_Lot 4231	40	Yes	42	Yes	39	Yes
RoL10_Lot 4232	41	Yes	42	Yes	39	Yes
RoL10_Lot 4233	41	Yes	42	Yes	38	Yes
RoL10_Lot 4234	40	Yes	42	Yes	39	Yes
RoL10_Lot 4235	41	Yes	42	Yes	39	Yes
RoL10_Lot 4236	41	Yes	42	Yes	39	Yes
RoL10_Lot 4237	41	Yes	41	Yes	39	Yes
RoL10_Lot 4238	40	Yes	41	Yes	39	Yes
RoL10_Lot 4239	40	Yes	41	Yes	39	Yes
RoL10_Lot 4240	40	Yes	41	Yes	39	Yes
RoL10_Lot 4241	40	Yes	41	Yes	35	Yes
RoL10_Lot 4242	40	Yes	41	Yes	36	Yes
RoL10_Lot 4243	40	Yes	41	Yes	36	Yes
RoL10_Lot 4244	40	Yes	41	Yes	36	Yes
RoL10_Lot 4245	40	Yes	41	Yes	36	Yes
RoL10_Lot 4246	40	Yes	41	Yes	36	Yes
RoL10_Lot 4247	41	Yes	41	Yes	37	Yes
RoL10_Lot 4248	41	Yes	42	Yes	40	Yes
RoL10_Lot 4249	41	Yes	42	Yes	40	Yes
RoL10_Lot 4250	41	Yes	42	Yes	39	Yes
RoL10_Lot 4251	41	Yes	42	Yes	39	Yes
RoL10_Lot 4252	41	Yes	42	Yes	39	Yes
RoL10_Lot 4253	41	Yes	42	Yes	39	Yes
RoL10_Lot 4254	41	Yes	41	Yes	39	Yes
RoL10_Lot 4255	41	Yes	41	Yes	36	Yes
RoL10_Lot 4256	40	Yes	41	Yes	37	Yes
RoL10_Lot 4257	41	Yes	41	Yes	37	Yes
RoL10_Lot 4258	41	Yes	42	Yes	37	Yes
RoL10_Lot 4259	41	Yes	42	Yes	37	Yes
RoL10_Lot 4260	41	Yes	42	Yes	37	Yes
RoL10_Lot 4261	41	Yes	42	Yes	38	Yes
RoL10_Lot 4262	41	Yes	42	Yes	35	Yes
RoL10_Lot 4263	40	Yes	41	Yes	36	Yes
RoL10_Lot 4264	40	Yes	41	Yes	37	Yes
RoL10_Lot 4265	40	Yes	41	Yes	38	Yes
RoL10_Lot 4266	40	Yes	41	Yes	38	Yes
RoL10_Lot 4267	40	Yes	41	Yes	38	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4268	40	Yes	41	Yes	39	Yes
RoL10_Lot 4269	40	Yes	42	Yes	38	Yes
RoL10_Lot 4270	40	Yes	42	Yes	38	Yes
RoL10_Lot 4271	41	Yes	43	Yes	41	Yes
RoL10_Lot 4272	42	Yes	45	Yes	43	Yes
RoL10_Lot 4273	44	Yes	46	Yes	43	Yes
RoL10_Lot 4274	45	Yes	47	Yes	42	Yes
RoL10_Lot 4275	45	Yes	48	Yes	43	Yes
RoL10_Lot 4276	52	Yes	55	Yes	51	Yes
RoL10_Lot 4277	45	Yes	48	Yes	50	Yes
RoL10_Lot 4278	52	Yes	55	Yes	51	Yes
RoL10_Lot 4279	52	Yes	55	Yes	50	Yes
RoL10_Lot 4280	52	Yes	56	Yes	49	Yes
RoL10_Lot 4281	51	Yes	55	Yes	50	Yes
RoL10_Lot 4282	51	Yes	55	Yes	50	Yes
RoL10_Lot 4283	52	Yes	56	Yes	52	Yes
RoL10_Lot 4284	53	Yes	56	Yes	51	Yes
RoL10_Lot 4285	53	Yes	56	Yes	50	Yes
RoL10_Lot 4286	51	Yes	55	Yes	49	Yes
RoL10_Lot 4287	50	Yes	54	Yes	49	Yes
RoL10_Lot 4288	50	Yes	53	Yes	48	Yes
RoL10_Lot 4289	49	Yes	53	Yes	47	Yes
RoL10_Lot 4290	48	Yes	52	Yes	47	Yes
RoL10_Lot 4291	48	Yes	52	Yes	47	Yes
RoL10_Lot 4292	48	Yes	51	Yes	46	Yes
RoL10_Lot 4293	47	Yes	51	Yes	45	Yes
RoL10_Lot 4294	46	Yes	51	Yes	43	Yes
RoL10_Lot 4295	44	Yes	48	Yes	42	Yes
RoL10_Lot 4296	43	Yes	49	Yes	42	Yes
RoL10_Lot 4297	45	Yes	49	Yes	39	Yes
RoL10_Lot 4298	44	Yes	47	Yes	38	Yes
RoL10_Lot 4299	43	Yes	46	Yes	39	Yes
RoL10_Lot 4300	42	Yes	45	Yes	39	Yes
RoL10_Lot 4301	42	Yes	45	Yes	39	Yes
RoL10_Lot 4302	43	Yes	45	Yes	40	Yes
RoL10_Lot 4303	43	Yes	46	Yes	43	Yes
RoL10_Lot 4304	44	Yes	47	Yes	44	Yes
RoL10_Lot 4305	45	Yes	48	Yes	45	Yes
RoL10_Lot 4306	47	Yes	49	Yes	45	Yes
RoL10_Lot 4307	47	Yes	50	Yes	42	Yes
RoL10_Lot 4308	45	Yes	50	Yes	42	Yes
RoL10_Lot 4309	46	Yes	52	Yes	43	Yes
RoL10_Lot 4310	47	Yes	52	Yes	43	Yes
RoL10_Lot 4311	46	Yes	51	Yes	43	Yes
RoL10_Lot 4312	46	Yes	50	Yes	45	Yes
RoL10_Lot 4313	47	Yes	50	Yes	43	Yes
RoL10_Lot 4314	45	Yes	49	Yes	43	Yes
RoL10_Lot 4315	45	Yes	48	Yes	42	Yes
RoL10_Lot 4316	44	Yes	48	Yes	42	Yes
RoL10_Lot 4317	44	Yes	47	Yes	40	Yes
RoL10_Lot 4318	43	Yes	46	Yes	41	Yes
RoL10_Lot 4319	43	Yes	45	Yes	41	Yes
RoL10_Lot 4320	42	Yes	45	Yes	41	Yes
RoL10_Lot 4321	42	Yes	44	Yes	40	Yes
RoL10_Lot 4322	42	Yes	44	Yes	40	Yes
RoL10_Lot 4323	42	Yes	43	Yes	40	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4324	41	Yes	43	Yes	39	Yes
RoL10_Lot 4325	41	Yes	42	Yes	39	Yes
RoL10_Lot 4326	41	Yes	42	Yes	39	Yes
RoL10_Lot 4327	40	Yes	42	Yes	40	Yes
RoL10_Lot 4328	41	Yes	43	Yes	40	Yes
RoL10_Lot 4329	42	Yes	43	Yes	40	Yes
RoL10_Lot 4330	42	Yes	44	Yes	42	Yes
RoL10_Lot 4331	43	Yes	45	Yes	43	Yes
RoL10_Lot 4332	44	Yes	46	Yes	44	Yes
RoL10_Lot 4333	45	Yes	47	Yes	42	Yes
RoL10_Lot 4334	45	Yes	49	Yes	41	Yes
RoL10_Lot 4335	47	Yes	49	Yes	41	Yes
RoL10_Lot 4336	46	Yes	49	Yes	41	Yes
RoL10_Lot 4337	46	Yes	48	Yes	40	Yes
RoL10_Lot 4338	45	Yes	48	Yes	39	Yes
RoL10_Lot 4339	45	Yes	47	Yes	38	Yes
RoL10_Lot 4340	42	Yes	46	Yes	37	Yes
RoL10_Lot 4341	42	Yes	45	Yes	37	Yes
RoL10_Lot 4342	41	Yes	44	Yes	37	Yes
RoL10_Lot 4343	41	Yes	44	Yes	36	Yes
RoL10_Lot 4344	41	Yes	43	Yes	36	Yes
RoL10_Lot 4345	40	Yes	43	Yes	38	Yes
RoL10_Lot 4346	40	Yes	41	Yes	37	Yes
RoL10_Lot 4347	39	Yes	41	Yes	38	Yes
RoL10_Lot 4348	39	Yes	41	Yes	37	Yes
RoL10_Lot 4349	39	Yes	40	Yes	36	Yes
RoL10_Lot 4350	38	Yes	41	Yes	35	Yes
RoL10_Lot 4351	38	Yes	41	Yes	35	Yes
RoL10_Lot 4352	38	Yes	41	Yes	35	Yes
RoL10_Lot 4353	38	Yes	41	Yes	36	Yes
RoL10_Lot 4354	38	Yes	42	Yes	36	Yes
RoL10_Lot 4355	39	Yes	43	Yes	38	Yes
RoL10_Lot 4356	41	Yes	44	Yes	40	Yes
RoL10_Lot 4357	42	Yes	46	Yes	41	Yes
RoL10_Lot 4358	44	Yes	47	Yes	42	Yes
RoL10_Lot 4359	45	Yes	48	Yes	43	Yes
RoL10_Lot 4360	47	Yes	48	Yes	44	Yes
RoL10_Lot 4361	46	Yes	48	Yes	39	Yes
RoL10_Lot 4362	44	Yes	47	Yes	38	Yes
RoL10_Lot 4363	43	Yes	47	Yes	36	Yes
RoL10_Lot 4364	42	Yes	46	Yes	36	Yes
RoL10_Lot 4365	42	Yes	46	Yes	36	Yes
RoL10_Lot 4366	42	Yes	45	Yes	35	Yes
RoL10_Lot 4367	41	Yes	43	Yes	35	Yes
RoL10_Lot 4368	40	Yes	42	Yes	37	Yes
RoL10_Lot 4369	39	Yes	42	Yes	36	Yes
RoL10_Lot 4370	39	Yes	42	Yes	36	Yes
RoL10_Lot 4371	39	Yes	43	Yes	37	Yes
RoL10_Lot 4372	39	Yes	43	Yes	38	Yes
RoL10_Lot 4373	40	Yes	43	Yes	39	Yes
RoL10_Lot 4374	40	Yes	44	Yes	39	Yes
RoL10_Lot 4375	40	Yes	42	Yes	38	Yes
RoL10_Lot 4376	39	Yes	42	Yes	38	Yes
RoL10_Lot 4377	39	Yes	42	Yes	37	Yes
RoL10_Lot 4378	38	Yes	42	Yes	37	Yes
RoL10_Lot 4379	38	Yes	41	Yes	37	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4380	37	Yes	41	Yes	38	Yes
RoL10_Lot 4381	39	Yes	41	Yes	37	Yes
RoL10_Lot 4382	39	Yes	40	Yes	35	Yes
RoL10_Lot 4383	38	Yes	40	Yes	35	Yes
RoL10_Lot 4384	36	Yes	41	Yes	37	Yes
RoL10_Lot 4385	38	Yes	41	Yes	37	Yes
RoL10_Lot 4386	39	Yes	42	Yes	34	Yes
RoL10_Lot 4387	40	Yes	41	Yes	35	Yes
RoL10_Lot 4388	39	Yes	41	Yes	34	Yes
RoL10_Lot 4389	39	Yes	41	Yes	34	Yes
RoL10_Lot 4390	39	Yes	41	Yes	35	Yes
RoL10_Lot 4391	39	Yes	41	Yes	35	Yes
RoL10_Lot 4392	39	Yes	41	Yes	37	Yes
RoL10_Lot 4393	39	Yes	41	Yes	37	Yes
RoL10_Lot 4394	39	Yes	40	Yes	37	Yes
RoL10_Lot 4395	38	Yes	40	Yes	37	Yes
RoL10_Lot 4396	38	Yes	39	Yes	36	Yes
RoL10_Lot 4397	38	Yes	39	Yes	36	Yes
RoL10_Lot 4398	38	Yes	39	Yes	35	Yes
RoL10_Lot 4399	38	Yes	39	Yes	35	Yes
RoL10_Lot 4400	37	Yes	39	Yes	34	Yes
RoL10_Lot 4401	36	Yes	39	Yes	34	Yes
RoL10_Lot 4402	36	Yes	39	Yes	34	Yes
RoL10_Lot 4403	36	Yes	39	Yes	34	Yes
RoL10_Lot 4404	37	Yes	40	Yes	34	Yes
RoL10_Lot 4405	37	Yes	39	Yes	32	Yes
RoL10_Lot 4406	38	Yes	39	Yes	32	Yes
RoL10_Lot 4407	38	Yes	39	Yes	33	Yes
RoL10_Lot 4408	38	Yes	40	Yes	34	Yes
RoL10_Lot 4409	38	Yes	40	Yes	35	Yes
RoL10_Lot 4410	36	Yes	39	Yes	35	Yes
RoL10_Lot 4411	36	Yes	39	Yes	36	Yes
RoL10_Lot 4412	38	Yes	38	Yes	35	Yes
RoL10_Lot 4413	36	Yes	38	Yes	34	Yes
RoL10_Lot 4414	36	Yes	38	Yes	35	Yes
RoL10_Lot 4415	36	Yes	38	Yes	35	Yes
RoL10_Lot 4416	36	Yes	38	Yes	35	Yes
RoL10_Lot 4417	36	Yes	37	Yes	35	Yes
RoL10_Lot 4418	36	Yes	37	Yes	35	Yes
RoL10_Lot 4419	35	Yes	37	Yes	34	Yes
RoL10_Lot 4420	36	Yes	36	Yes	35	Yes
RoL10_Lot 4421	36	Yes	37	Yes	34	Yes
RoL10_Lot 4422	36	Yes	37	Yes	34	Yes
RoL10_Lot 4423	36	Yes	37	Yes	34	Yes
RoL10_Lot 4424	36	Yes	37	Yes	34	Yes
RoL10_Lot 4425	36	Yes	37	Yes	34	Yes
RoL10_Lot 4426	36	Yes	37	Yes	34	Yes
RoL10_Lot 4427	36	Yes	37	Yes	33	Yes
RoL10_Lot 4428	35	Yes	37	Yes	33	Yes
RoL10_Lot 4429	35	Yes	37	Yes	33	Yes
RoL10_Lot 4430	36	Yes	37	Yes	33	Yes
RoL10_Lot 4431	36	Yes	37	Yes	34	Yes
RoL10_Lot 4432	36	Yes	38	Yes	33	Yes
RoL10_Lot 4433	35	Yes	38	Yes	33	Yes
RoL10_Lot 4434	36	Yes	38	Yes	35	Yes
RoL10_Lot 4435	36	Yes	38	Yes	34	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4436	38	Yes	39	Yes	34	Yes
RoL10_Lot 4437	38	Yes	39	Yes	34	Yes
RoL10_Lot 4438	38	Yes	39	Yes	35	Yes
RoL10_Lot 4439	36	Yes	38	Yes	35	Yes
RoL10_Lot 4440	36	Yes	38	Yes	35	Yes
RoL10_Lot 4441	36	Yes	38	Yes	35	Yes
RoL10_Lot 4442	36	Yes	37	Yes	34	Yes
RoL10_Lot 4443	35	Yes	37	Yes	34	Yes
RoL10_Lot 4444	35	Yes	37	Yes	34	Yes
RoL10_Lot 4445	36	Yes	37	Yes	34	Yes
RoL10_Lot 4446	36	Yes	37	Yes	34	Yes
RoL10_Lot 4447	36	Yes	37	Yes	34	Yes
RoL10_Lot 4448	36	Yes	37	Yes	35	Yes
RoL10_Lot 4449	36	Yes	37	Yes	34	Yes
RoL10_Lot 4450	36	Yes	37	Yes	34	Yes
RoL10_Lot 4451	36	Yes	37	Yes	34	Yes
RoL10_Lot 4452	36	Yes	37	Yes	34	Yes
RoL10_Lot 4453	36	Yes	37	Yes	34	Yes
RoL10_Lot 4454	36	Yes	37	Yes	34	Yes
RoL10_Lot 4455	36	Yes	37	Yes	34	Yes
RoL10_Lot 4456	36	Yes	37	Yes	32	Yes
RoL10_Lot 4457	37	Yes	37	Yes	33	Yes
RoL10_Lot 4458	37	Yes	37	Yes	34	Yes
RoL10_Lot 4459	37	Yes	38	Yes	33	Yes
RoL10_Lot 4460	37	Yes	38	Yes	33	Yes
RoL10_Lot 4461	37	Yes	38	Yes	34	Yes
RoL10_Lot 4462	37	Yes	38	Yes	35	Yes
RoL10_Lot 4463	37	Yes	38	Yes	34	Yes
RoL10_Lot 4464	36	Yes	38	Yes	34	Yes
RoL10_Lot 4465	37	Yes	38	Yes	35	Yes
RoL10_Lot 4466	38	Yes	39	Yes	35	Yes
RoL10_Lot 4467	38	Yes	39	Yes	35	Yes
RoL10_Lot 4468	38	Yes	39	Yes	35	Yes
RoL10_Lot 4469	38	Yes	39	Yes	36	Yes
RoL10_Lot 4470	38	Yes	39	Yes	36	Yes
RoL10_Lot 4471	39	Yes	39	Yes	36	Yes
RoL10_Lot 4472	38	Yes	40	Yes	36	Yes
RoL10_Lot 4473	39	Yes	40	Yes	36	Yes
RoL10_Lot 4474	39	Yes	40	Yes	37	Yes
RoL10_Lot 4475	39	Yes	40	Yes	37	Yes
RoL10_Lot 4476	40	Yes	41	Yes	37	Yes
RoL10_Lot 4477	40	Yes	41	Yes	38	Yes
RoL10_Lot 4478	40	Yes	41	Yes	37	Yes
RoL10_Lot 4479	40	Yes	41	Yes	37	Yes
RoL10_Lot 4480	41	Yes	42	Yes	38	Yes
RoL10_Lot 4481	41	Yes	42	Yes	39	Yes
RoL10_Lot 4482	41	Yes	43	Yes	37	Yes
RoL10_Lot 4483	40	Yes	42	Yes	37	Yes
RoL10_Lot 4484	40	Yes	41	Yes	36	Yes
RoL10_Lot 4485	40	Yes	41	Yes	37	Yes
RoL10_Lot 4486	40	Yes	40	Yes	37	Yes
RoL10_Lot 4487	40	Yes	40	Yes	36	Yes
RoL10_Lot 4488	40	Yes	40	Yes	36	Yes
RoL10_Lot 4489	39	Yes	40	Yes	36	Yes
RoL10_Lot 4490	39	Yes	40	Yes	36	Yes
RoL10_Lot 4491	39	Yes	40	Yes	36	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4492	39	Yes	40	Yes	38	Yes
RoL10_Lot 4493	40	Yes	41	Yes	38	Yes
RoL10_Lot 4494	40	Yes	41	Yes	38	Yes
RoL10_Lot 4495	40	Yes	40	Yes	38	Yes
RoL10_Lot 4496	40	Yes	40	Yes	38	Yes
RoL10_Lot 4497	40	Yes	40	Yes	38	Yes
RoL10_Lot 4498	39	Yes	40	Yes	38	Yes
RoL10_Lot 4499	39	Yes	40	Yes	38	Yes
RoL10_Lot 4500	39	Yes	40	Yes	38	Yes
RoL10_Lot 4501	39	Yes	40	Yes	37	Yes
RoL10_Lot 4502	39	Yes	40	Yes	36	Yes
RoL10_Lot 4503	39	Yes	40	Yes	36	Yes
RoL10_Lot 4504	38	Yes	40	Yes	36	Yes
RoL10_Lot 4505	39	Yes	40	Yes	36	Yes
RoL10_Lot 4506	39	Yes	40	Yes	37	Yes
RoL10_Lot 4507	39	Yes	40	Yes	36	Yes
RoL10_Lot 4508	39	Yes	40	Yes	37	Yes
RoL10_Lot 4509	39	Yes	40	Yes	37	Yes
RoL10_Lot 4510	39	Yes	41	Yes	37	Yes
RoL10_Lot 4511	39	Yes	40	Yes	37	Yes
RoL10_Lot 4512	39	Yes	40	Yes	37	Yes
RoL10_Lot 4513	39	Yes	40	Yes	37	Yes
RoL10_Lot 4514	38	Yes	39	Yes	37	Yes
RoL10_Lot 4515	38	Yes	39	Yes	36	Yes
RoL10_Lot 4516	38	Yes	39	Yes	36	Yes
RoL10_Lot 4517	38	Yes	39	Yes	36	Yes
RoL10_Lot 4518	38	Yes	39	Yes	36	Yes
RoL10_Lot 4519	38	Yes	38	Yes	36	Yes
RoL10_Lot 4520	38	Yes	38	Yes	36	Yes
RoL10_Lot 4521	37	Yes	38	Yes	36	Yes
RoL10_Lot 4522	37	Yes	38	Yes	35	Yes
RoL10_Lot 4523	37	Yes	38	Yes	35	Yes
RoL10_Lot 4524	37	Yes	38	Yes	35	Yes
RoL10_Lot 4525	37	Yes	38	Yes	33	Yes
RoL10_Lot 4526	37	Yes	37	Yes	33	Yes
RoL10_Lot 4527	37	Yes	37	Yes	33	Yes
RoL10_Lot 4528	37	Yes	37	Yes	34	Yes
RoL10_Lot 4529	37	Yes	37	Yes	34	Yes
RoL10_Lot 4530	37	Yes	38	Yes	34	Yes
RoL10_Lot 4531	37	Yes	38	Yes	34	Yes
RoL10_Lot 4532	37	Yes	38	Yes	33	Yes
RoL10_Lot 4533	37	Yes	38	Yes	34	Yes
RoL10_Lot 4534	37	Yes	38	Yes	35	Yes
RoL10_Lot 4535	38	Yes	38	Yes	36	Yes
RoL10_Lot 4536	38	Yes	38	Yes	36	Yes
RoL10_Lot 4537	38	Yes	38	Yes	36	Yes
RoL10_Lot 4538	38	Yes	39	Yes	36	Yes
RoL10_Lot 4539	38	Yes	39	Yes	36	Yes
RoL10_Lot 4540	38	Yes	39	Yes	36	Yes
RoL10_Lot 4541	38	Yes	39	Yes	36	Yes
RoL10_Lot 4542	39	Yes	39	Yes	36	Yes
RoL10_Lot 4543	39	Yes	39	Yes	36	Yes
RoL10_Lot 4544	39	Yes	39	Yes	36	Yes
RoL10_Lot 4545	39	Yes	39	Yes	37	Yes
RoL10_Lot 4546	39	Yes	40	Yes	37	Yes
RoL10_Lot 4547	39	Yes	40	Yes	37	Yes

Lot No.	Building Facades				Private Open Space	
	Ground Floor		Upper Floor			
	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) facade-adjusted	Compliance ≤63dB(A) $L_{10,18hr}$	$L_{10,18hr}$ dB(A) free-field	Compliance ≤60dB(A) $L_{10,18hr}$
RoL10_Lot 4548	39	Yes	39	Yes	37	Yes
RoL10_Lot 4549	39	Yes	39	Yes	37	Yes
RoL10_Lot 4550	39	Yes	39	Yes	37	Yes
RoL10_Lot 4551	38	Yes	39	Yes	37	Yes
RoL10_Lot 4552	38	Yes	39	Yes	37	Yes
RoL10_Lot 4553	38	Yes	39	Yes	37	Yes
RoL10_Lot 4554	38	Yes	39	Yes	36	Yes
RoL10_Lot 4555	38	Yes	38	Yes	36	Yes
RoL10_Lot 4556	37	Yes	38	Yes	36	Yes
RoL10_Lot 4557	38	Yes	38	Yes	36	Yes
RoL10_Lot 4558	37	Yes	38	Yes	36	Yes
RoL10_Lot 4559	37	Yes	38	Yes	36	Yes
RoL10_Lot 4560	37	Yes	38	Yes	35	Yes
RoL10_Lot 4561	37	Yes	37	Yes	35	Yes
RoL10_Lot 4562	37	Yes	37	Yes	35	Yes
RoL10_Lot 4563	37	Yes	37	Yes	35	Yes
RoL10_Lot 4564	37	Yes	37	Yes	35	Yes
RoL10_Lot 4565	36	Yes	37	Yes	35	Yes
RoL10_Lot 4566	36	Yes	37	Yes	35	Yes

Noise contour maps showing the traffic noise levels across RoL 10 are presented in Appendix G.

6. Discussion and Recommendations

Traffic noise propagation modelling was carried out considering the future traffic flows for a planning horizon of 2051. The results of the noise propagation modelling indicate that Teviot Road does not affects the noise amenity at the allotments within RoL 10 (Precincts 8 and 10).

Anderson Drive has limited noise impact on the allotments at RoL 10 with only Lot 4001, within Precinct 10, impacted by traffic noise. The traffic noise impact is limited to the upper floor of two-storey (high-set) house. In accordance with the noise control strategy for the Everleigh development, the upper floor of any two-storey house at Lot 4001 must be subject of design and construction in accordance with QDC MP4.4 or AS3671-1989 to ensure compliance with the internal noise criteria from AS/NZS 2107:2016. In addition, the outdoor living area of any house at Lot 4001 must be located along the façade which has no direct view to Anderson Drive.

If the private open space of the house to be constructed at Lot 4001 is located along the protected northern façade (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.

Typical layout showing outdoor living area located on the protected façade is presented in Figure 6.1.

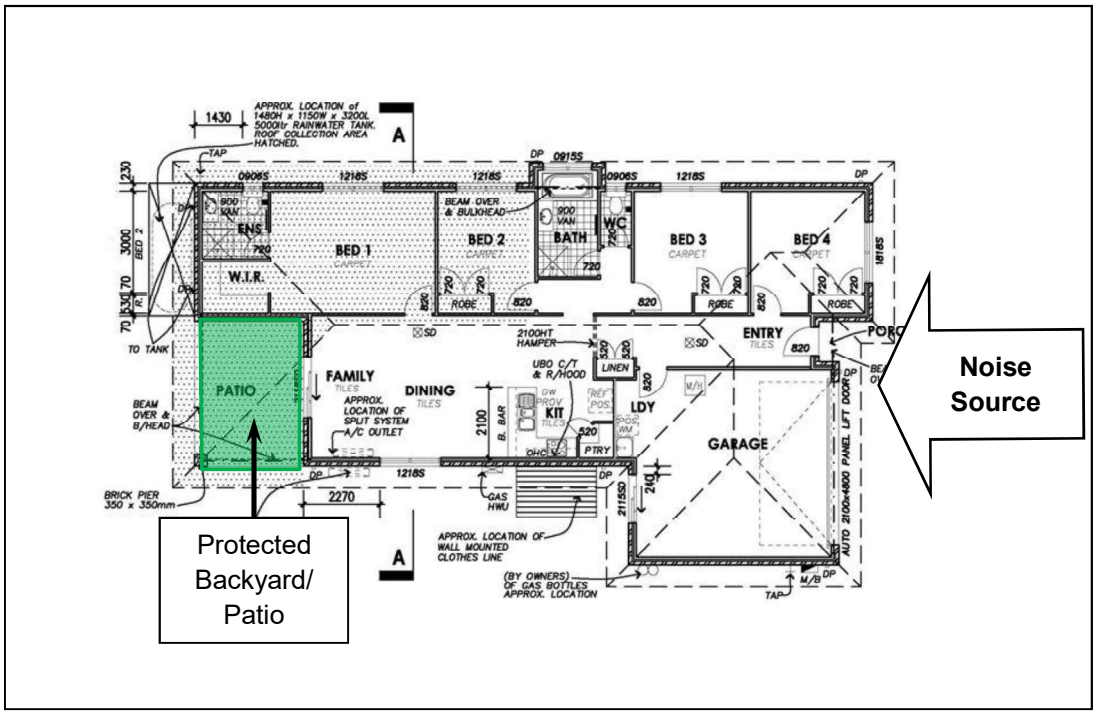


Figure 6.1 Outdoor living area on protected facade

All the other allotments with RoL 10 (Precincts 8 and 10) of *Everleigh* development are not affected by road traffic noise and the houses on these allotments do not require acoustic design to be façade.

Provided the recommended planning and design noise control measures are implemented in the construction of *Everleigh* development RoL 10, road traffic noise will not impose any further constraints on the establishment of this stage of the development.

7. Conclusions

Based on the results of the traffic noise impact assessment for the RoL 10 (Precincts 8 and 10) of the *Everleigh* development, the following is concluded:

- Teviot Road does not affect the noise amenity at the allotments within RoL 10 (Precincts 8 and 10).
- Anderson Drive has limited noise impact on the allotments at RoL 10 with only Lot 4001, within Precinct 10, impacted by traffic noise. The traffic noise impact is limited to the upper floor of two-storey (high-set) house.
- In accordance with the noise control strategy for the Everleigh development, the upper floor of any two-storey house at Lot 4001 must be subject of design and construction in accordance with QDC MP4.4 or AS3671-1989 to ensure compliance with the internal noise criteria from AS/NZS 2107:2016. In addition, the outdoor living area of any house at Lot 4001 must be located along the façade which has no direct view to Anderson Drive.
- If the private open space of the house to be constructed at Lot 4001 is located along the protected northern façade (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.
- All the other allotments with RoL 10 (Precincts 8 and 10) of *Everleigh* development are not affected by road traffic noise and the houses on these allotments do not require acoustic design to be façade.

Provided the recommended planning and design noise control measures are implemented in the construction of *Everleigh* development RoL 10, road traffic noise will not impose any further constraints on the establishment of this stage of the development.

8. References

- Australian Standard AS 1055.1:2018 (*Acoustics - Description and Measurement of Environmental Noise Part 1: General Procedures*)
- Australian Standard AS 1055.2:2018 (*Acoustics - Description and Measurement of Environmental Noise Part 2: Application to Specific Situations*)
- Australian Standard AS/NZS 2107:2016 (*Acoustics – Recommended design sound levels and reverberation times for building interiors*)
- Australian Standard ASIEC61672.1-2004 (*Electroacoustics - Sound level meters – Specifications*)
- Australian Standard *AS 3671-1989 (Acoustics – Road Traffic Noise Intrusion – Building siting and construction)*
- Department of State Development Infrastructure and Planning, *State Development Assessment Provisions* (Version 3.0), 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, *Development on land affected by environmental emissions*, Version 4, October 2017
- Logan City Council, 2015, *Logan Planning Scheme 2015*
- Queensland Government, 2010, '*Queensland Development Code (QDC) MP4.4 (Buildings in a Transport Noise Corridor)*'

Appendices

- Appendix A – RoL 10 Development Layout
- Appendix B – Site photos
- Appendix C – Meteorological data
- Appendix D – Noise measurement results
- Appendix E – Traffic volumes, 2051
- Appendix F – Validation of traffic noise model
- Appendix G – Traffic noise levels

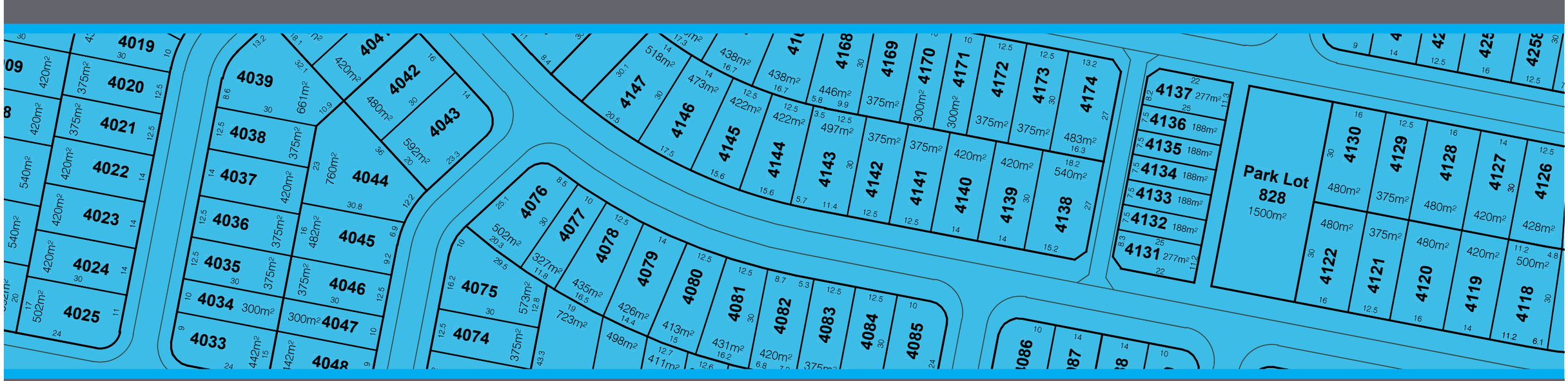
Appendix A – RoL 10 Development Layout

Everleigh

ROL 8 & ROL 10:
RECONFIGURATION OF A LOT PLANS

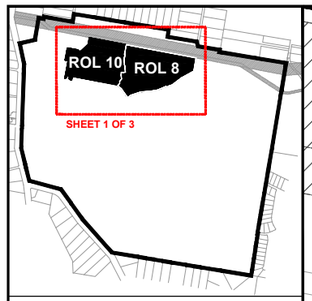
TEVIOT ROAD, EVERLEIGH

XX FEBRUARY 2022



mirvac

URBIS



LOCALITY DIAGRAM

LEGEND

GENERAL

- ROL Boundary
- Proposed Road Carriageways
- Proposed Lot Boundaries
- Major Linear Park
- Neighborhood Park
- Local Park / Pedestrian Link

RESIDENTIAL - STANDARD LOTS

HOUSE (ATTACHED)

- Front Loaded Terrace
- Potential Attached Dwelling (refer to House (Attached) Design Criteria which prevails to the extent of any inconsistency with this plan)

HOUSE (DETACHED)

- Villa
- Premium Villa
- Courtyard
- Premium Courtyard
- Traditional
- Premium Traditional

MULTIPLE RESIDENTIAL

- Potential Duplex Dwelling

NOTE:

- Balance lots, while not appearing on ROL 8: Reconfiguration of a Lot Plans, will be included on the relevant survey plans as development progresses.
- This ROL plan may be changed via compliance assessment in accordance with the ROL 8: Plan of Development - Design Criteria document.

FUTURE DEVELOPMENT

URBIS

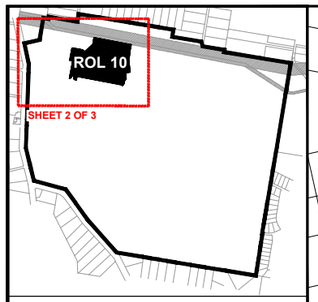
EVERLEIGH

RECONFIGURATION OF A LOT PLAN - ROL 8 / ROL 10 - SHEET 1 OF 3

Scale: 1:4,000 @ A3

0 50 100

PROJECT NO: P0018054
DATE: 21.02.2022
DRAWING NO: ROL8/10-1
REV: 02



LOCALITY DIAGRAM

LEGEND

GENERAL

- ROL 10 Boundary (19.86 ha)
- Proposed Road Carriageways
- Proposed Lot Boundaries
- Major Linear Park
- Neighbourhood Park
- Local Park / Pedestrian Link

RESIDENTIAL - STANDARD LOTS

HOUSE (ATTACHED)

- Front Loaded Terrace
- Rear Loaded Terrace
- Potential Attached Dwelling (refer to House (Attached) Design Criteria which prevails to the extent of any inconsistency with this plan)

HOUSE (DETACHED)

- Villa
- Premium Villa
- Courtyard
- Premium Courtyard
- Traditional
- Premium Traditional

MULTIPLE RESIDENTIAL

- Potential Duplex Dwelling

ROL 10 - YIELD SUMMARY

LOT TYPE		INDICATIVE LOT FRONTAGE	TOTAL LOTS	TOTAL %
	Front Loaded Terrace	7.5m wide	7 lots	*3%*
	Rear Loaded Terrace	7.5m wide	7 lots	*3%*
	Villa	10m wide	28 lots	*11%*
	Premium Villa	12.5m wide	64 lots	*24%*
	Courtyard	14m wide	83 lots	*32%*
	Premium Courtyard	16m wide	43 lots	*16%*
	Traditional	18m wide	22 lots	*8%*
	Premium Traditional	20m wide	8 lots	*3%*
TOTAL RESIDENTIAL LOTS			**262 lots**	***100%***
DENSITY (NET RESIDENTIAL DENSITY)			**15.25 dw/ha**	

NOTE:
- Balance lots, while not appearing on ROL 10: Reconfiguration of a Lot Plans, will be included on the relevant survey plans as development progresses.
- This ROL plan may be changed via compliance assessment in accordance with the ROL 10: Plan of Development - Design Criteria document.

FUTURE DEVELOPMENT

APPROVED DEVELOPMENT

Park Lot 826 18,855m²

Park Lot 825 2247m²

Park Lot 827 9766m²

Park Lot 824 2934m²

Park Lot 828 1500m²

PEDESTRIAN LINK

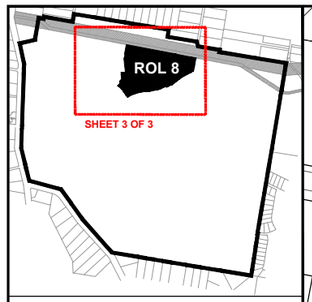
8m WIDE LANEWAY

10m WIDE DRIVEWAY

14m WIDE ROAD

15.5m WIDE ROAD

20m WIDE ROAD



LOCALITY DIAGRAM

LEGEND

GENERAL

- ROL 8 Boundary (23.97 ha)
- Proposed Road Carriageways
- Proposed Lot Boundaries
- Major Linear Park
- Pedestrian Link

RESIDENTIAL - STANDARD LOTS

HOUSE (ATTACHED)

- Front Loaded Terrace
- Potential Attached Dwelling (refer to House (Attached) Design Criteria which prevails to the extent of any inconsistency with this plan)

HOUSE (DETACHED)

- Villa
- Premium Villa
- Courtyard
- Premium Courtyard
- Traditional
- Premium Traditional

MULTIPLE RESIDENTIAL

- Potential Duplex Dwelling

ROL 8 - YIELD SUMMARY

LOT TYPE		INDICATIVE LOT FRONTAGE	TOTAL	
			LOTS	%
	Front Loaded Terrace	7.5m wide	13 lots	*4%*
	Rear Loaded Terrace	7.5m wide	0 lots	*0%*
	Villa	10m wide	45 lots	*15%*
	Premium Villa	12.5m wide	93 lots	*31%*
	Courtyard	14m wide	79 lots	*26%*
	Premium Courtyard	16m wide	55 lots	*18%*
	Traditional	18m wide	14 lots	*5%*
	Premium Traditional	20m wide	5 lots	*2%*
TOTAL RESIDENTIAL LOTS			**304 lots**	***100%***
DENSITY (NET RESIDENTIAL DENSITY)			**16.02 dw/ha**	

NOTE:
- Balance lots, while not appearing on ROL 8: Reconfiguration of a Lot Plans, will be included on the relevant survey plans as development progresses.
- This ROL plan may be changed via compliance assessment in accordance with the ROL 8: Plan of Development - Design Criteria document.

Park Lot 829
49,821m²

FUTURE DEVELOPMENT

URBIS

EVERLEIGH

RECONFIGURATION OF A LOT PLAN - ROL 8 - SHEET 3 OF 3

Scale: 1:2,500 @ A3

0 20 40 60 80 100

PROJECT NO: P0018054
DATE: 21.02.2022
DRAWING NO: ROL8/10-3
REV: 06

Appendix B – Site photos

Photo 1 – Noise monitoring location, looking south

Photo 2 – Noise monitoring location, looking west

Photo 3 – Noise monitoring location, looking north-west

Photo 4 – Noise monitoring location, looking north-east

Appendix C – Meteorological data

Greenbank (Defence), Queensland
March 2020 Daily Weather Observations

Australian Government
Bureau of Meteorology

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	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Su	17.6	32.5	0			NE	19	15:08	26.6	62		SW	7		32.4	45		NNE	4	
2	Mo	18.2	35.8	0			NNE	22	16:50	27.1	67		W	6		34.9	30		SSE	6	
3	Tu	18.7	33.5	0			NE	28	16:24	27.7	68		NE	2		32.3	46		ENE	11	
4	We	22.0	29.6	23.2			SE	28	12:05	22.8	99			Calm		28.5	61		E	11	
5	Th	20.0	31.0	1.2			NE	33	12:20	26.8	72		NE	4		29.8	51		NNE	15	
6	Fr	23.5	32.1	0.6			NNE	20	16:00	27.4	79		N	6		30.0	65		NNE	7	
7	Sa	23.2	30.6	4.0			SSE	24	17:34	27.9	76		S	6		28.1	66		SSE	9	
8	Su	19.9	29.4	0			SSE	31	11:09	25.3	57		S	7		27.8	49		SE	11	
9	Mo	19.9	21.5	5.2			ESE	26	14:29	20.3	98		S	2		20.3	97		SSE	4	
10	Tu	18.1	23.9	39.6			SE	26	17:07	21.1	87		S	7		22.5	78		SE	9	
11	We	17.3	27.3	2.8			SE	35	11:58	23.0	70		S	9		25.6	53		SE	7	
12	Th	17.5	24.7	0.2			SSE	30	11:48	23.4	64		S	11		23.3	69		SSE	7	
13	Fr	17.0	27.1	4.4			ESE	33	16:53	23.2	67		S	9		26.2	53		ESE	11	
14	Sa	14.7	28.8	0			SE	22	15:17	23.7	59		S	6		26.8	49		ESE	7	
15	Su	16.6	27.4	0			SSW	35	12:57	23.3	65		SSW	11		26.4	52		S	17	
16	Mo	16.1	27.7	0			SSE	33	09:49	22.8	53		SSW	9		27.0	41		SSW	9	
17	Tu	16.3	26.6	0			SE	33	14:04	22.6	61		S	9		26.1	45		SSE	9	
18	We	13.4	28.6	0			ESE	28	16:15	22.7	56		S	7		28.2	38		E	7	
19	Th	12.4	30.0	0			N	20	11:32	23.1	57		SW	6		28.5	39		E	2	
20	Fr	13.2	31.0	0			NNE	26	17:14	23.5	67		W	4		30.1	37		N	7	
21	Sa	14.7	33.4	0			E	28	15:28	24.5	65		WNW	9		32.2	38		ENE	11	
22	Su	17.8		0						26.4	66		ESE	4							
Statistics for the first 22 days of March 2020																					
	Mean	17.6	29.2							24.3	68			6		28.0	52			8	
	Lowest	12.4	21.5							20.3	53			Calm		20.3	30		E	2	
	Highest	23.5	35.8	39.6			#	35		27.9	99		#	11		34.9	97		S	17	
	Total			81.2																	

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

IDCJDW4156.202003 Prepared at 00:26 UTC on 22 Mar 2020

Appendix D – Noise measurement results

Unattended Noise Measurements
Everleigh, Greenbank - Location 1

Noise Levels - 18hr Day (Traffic Noise)

Logger Location - Southern-western boundary of existing Lot 3 on SP297192, approx. 20m setback from Teviot Road

ARL Environmental Noise Logger	
Logger Serial Number	15-203-537
Measurement Title	Everleigh - RoL 5
Measurement started at	05/03/2020 11:09 AM
Measurement stopped at	19/03/2020 06:34 AM
Frequency Weighting	A
Time Averaging	Fast
Statistical Interval	15 min
Pre-measurement Ref.	94.0
Post-measurement Ref.	94.0
Engineering Units	dB SPL

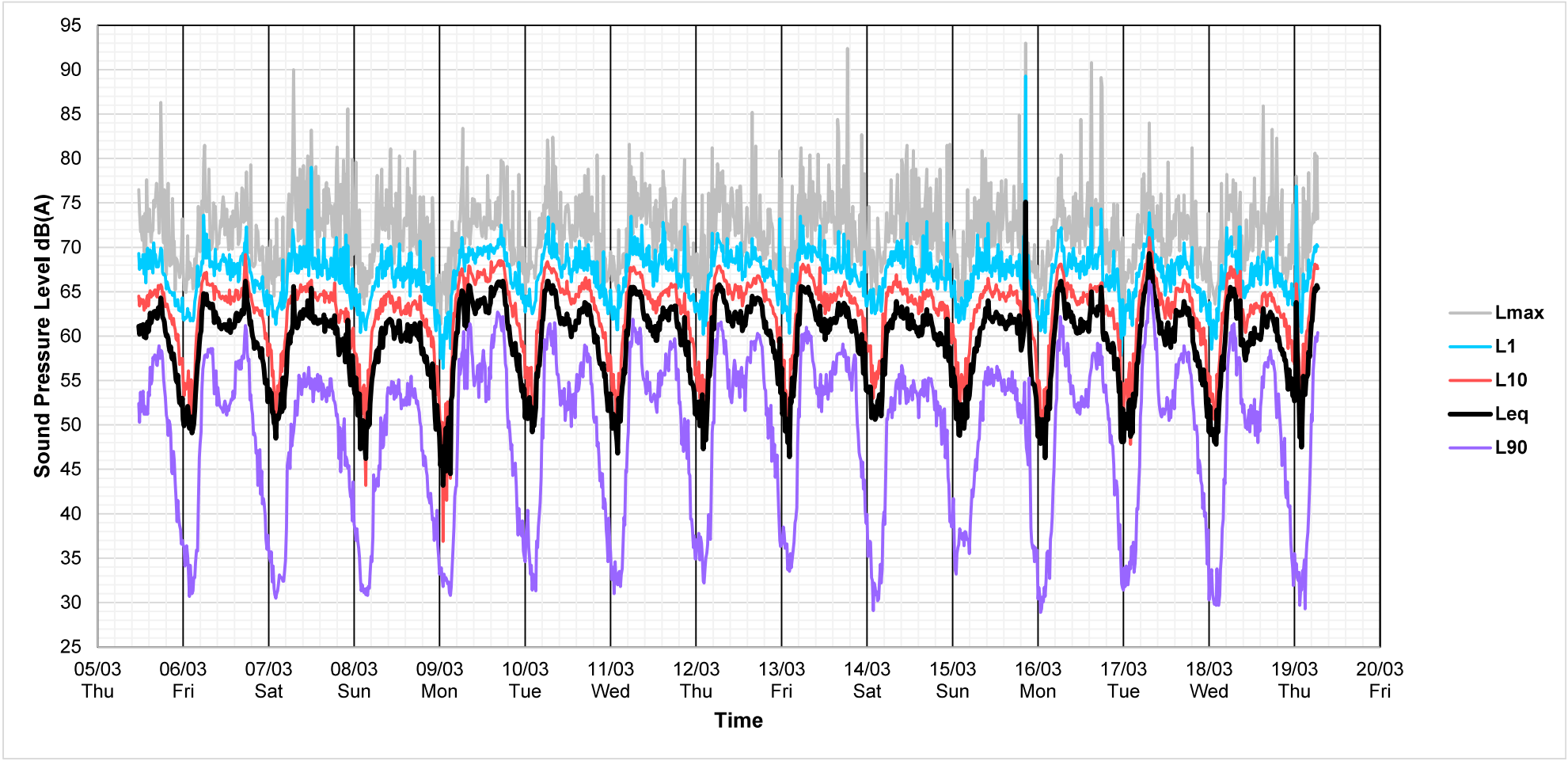
Note

— No noise data available

Rainfall recorded on this day

		$L_{A10,T}$			$L_{Aeq,T}$		$L_{A90,T}$	
Date	**Day**	**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**
5/03/2020	Thursday	—	—	—	—	54	—	39
6/03/2020	Friday	64	67	17:00	61	54	52	36
7/03/2020	Saturday	64	65	11:00	61	53	51	37
8/03/2020	Sunday	62	65	09:00	59	53	49	38
9/03/2020	Monday	66	68	16:00	62	55	54	39
10/03/2020	Tuesday	64	68	06:00	61	55	53	39
11/03/2020	Wednesday	64	68	06:00	61	55	54	40
12/03/2020	Thursday	65	68	06:00	62	56	55	41
13/03/2020	Friday	65	68	06:00	62	55	55	38
14/03/2020	Saturday	64	66	08:00	61	54	52	39
15/03/2020	Sunday	64	67	20:00	61	54	51	38
16/03/2020	Monday	64	68	06:00	61	54	52	39
17/03/2020	Tuesday	64	70	07:00	61	54	53	38
18/03/2020	Wednesday	63	67	06:00	60	56	52	39
Average		**64**	**67**		**61**	**54**	**52**	**39**
Average (weekdays only)		**64**	**68**		**61**	**55**	**53**	**39**

Unattended Noise Measurements
5 to 19 March 2020



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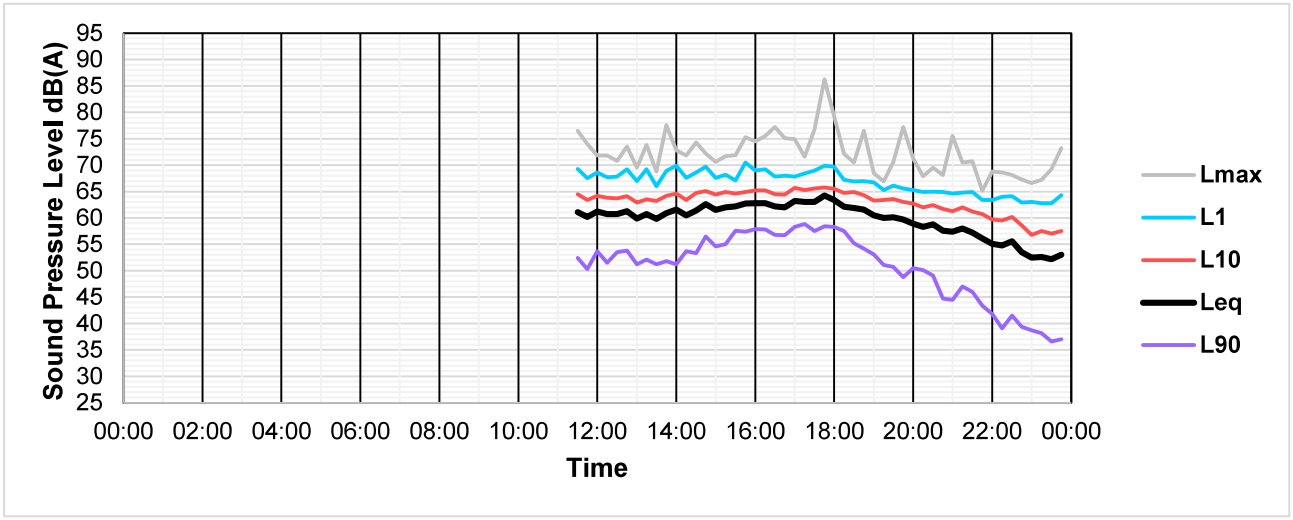

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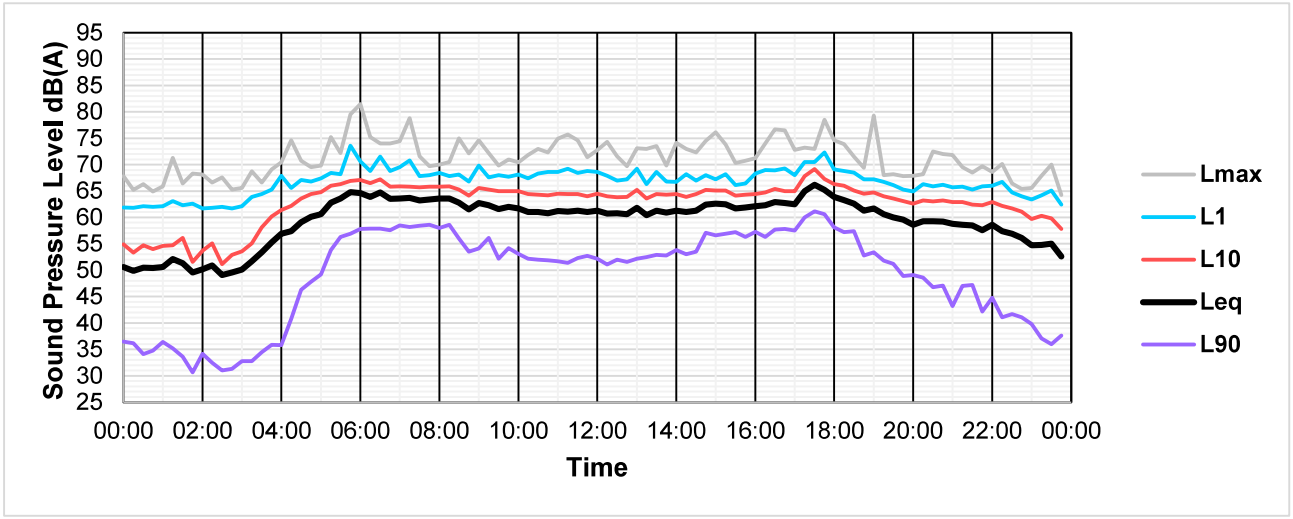

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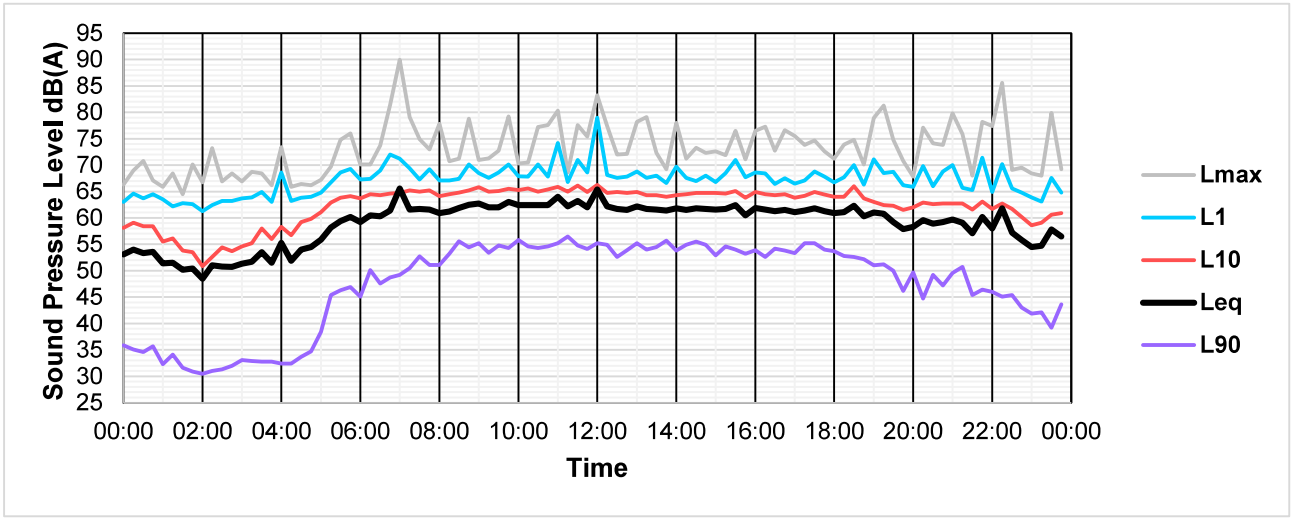
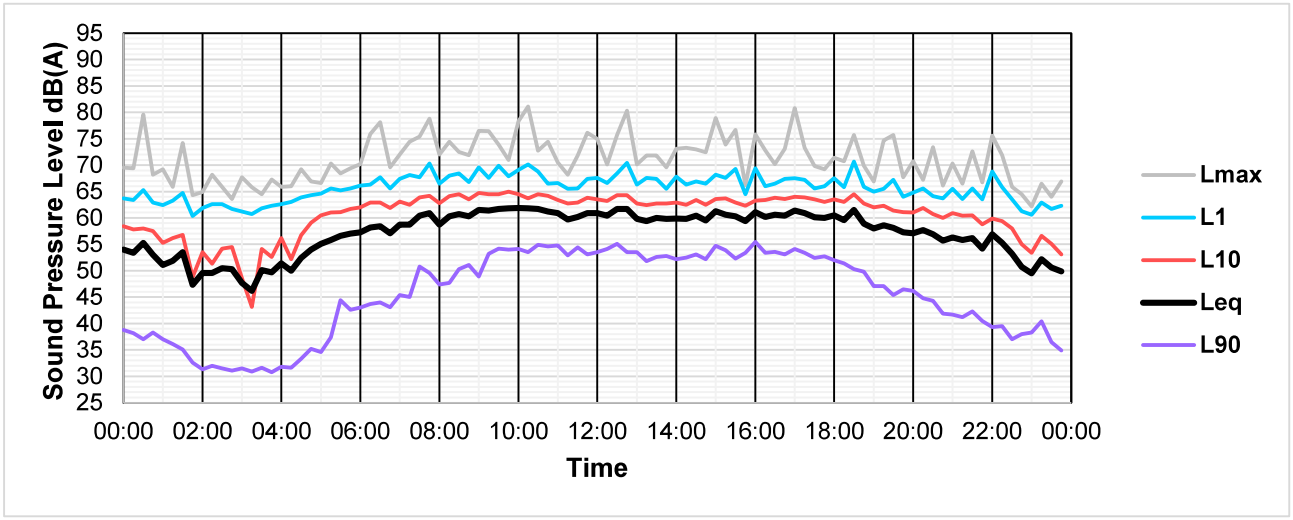


Unattended Noise Measurements
Sunday 8 March 2020



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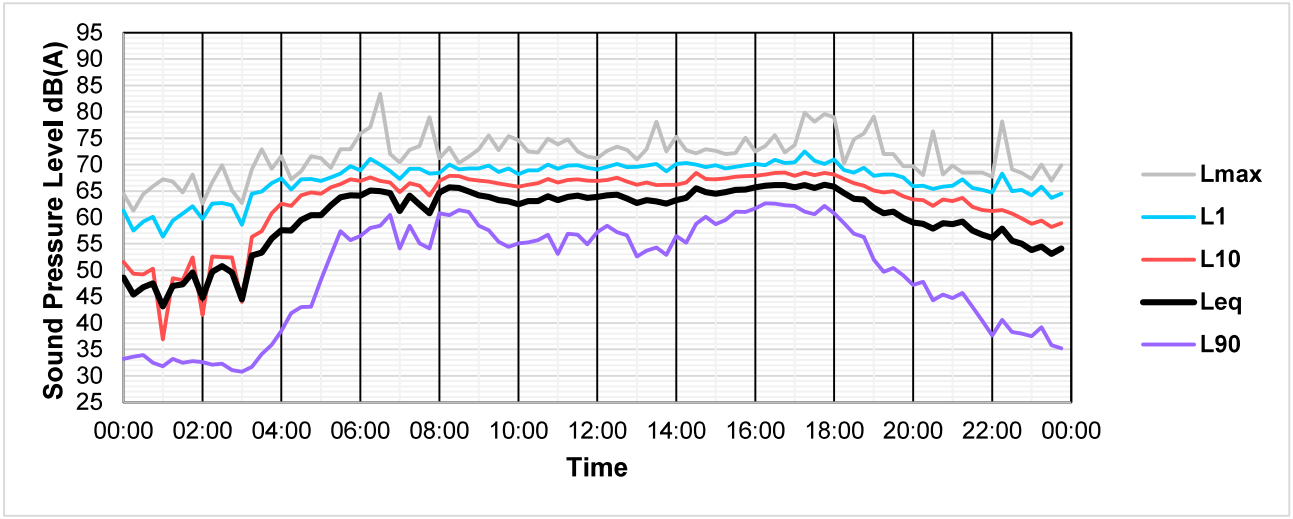

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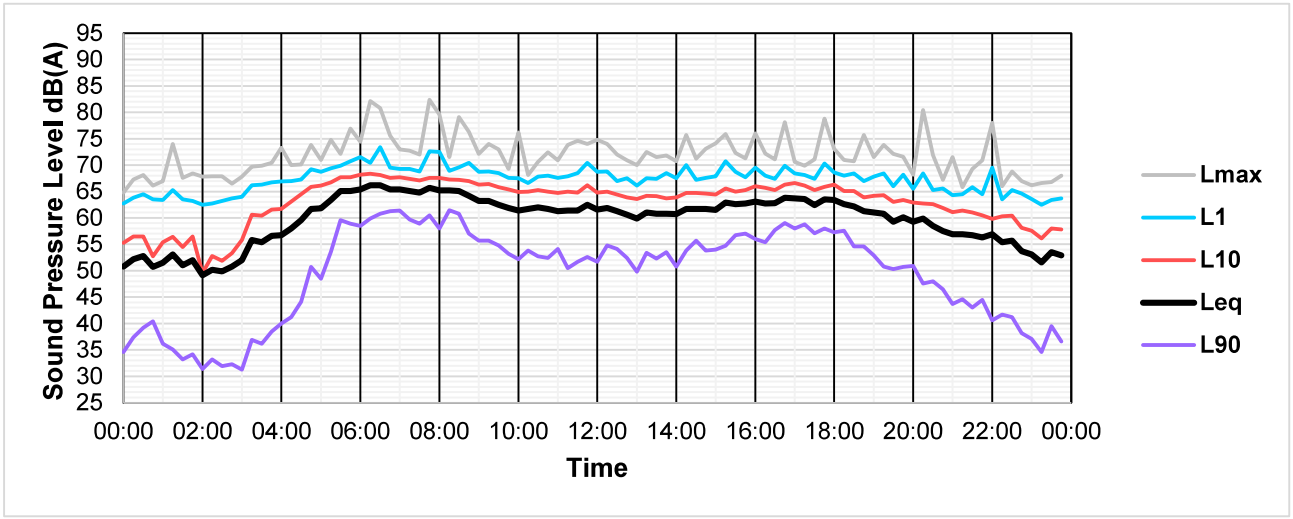

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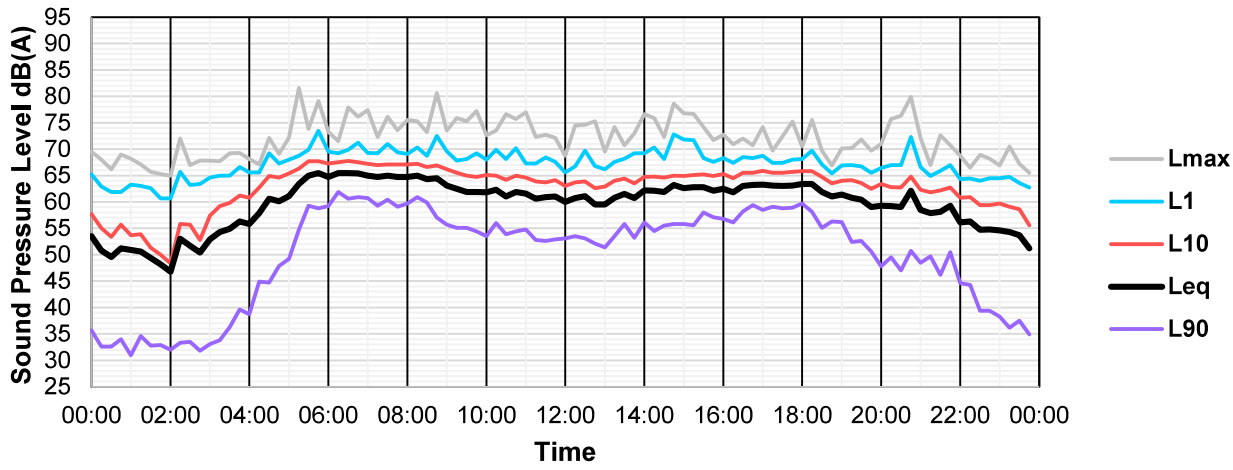

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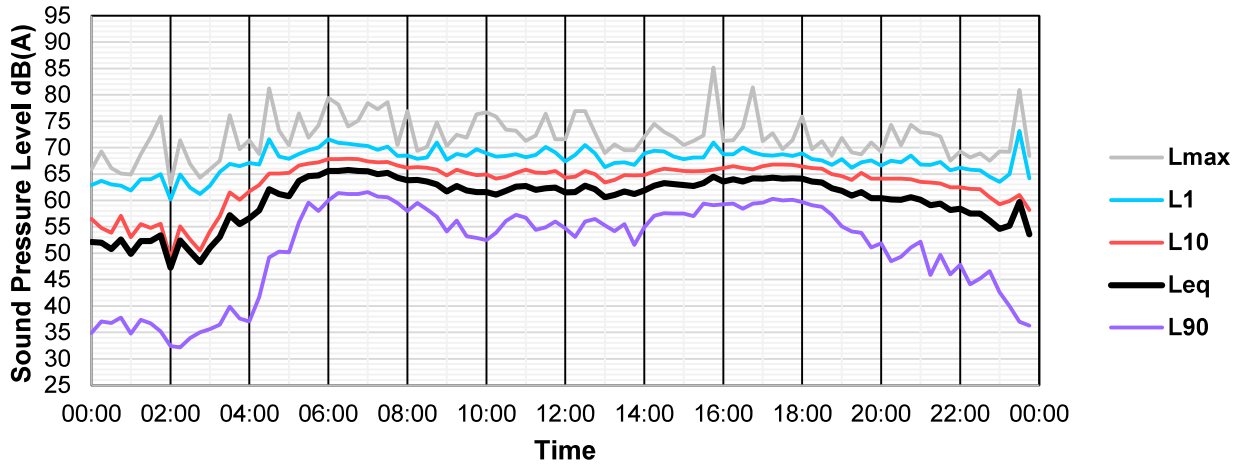

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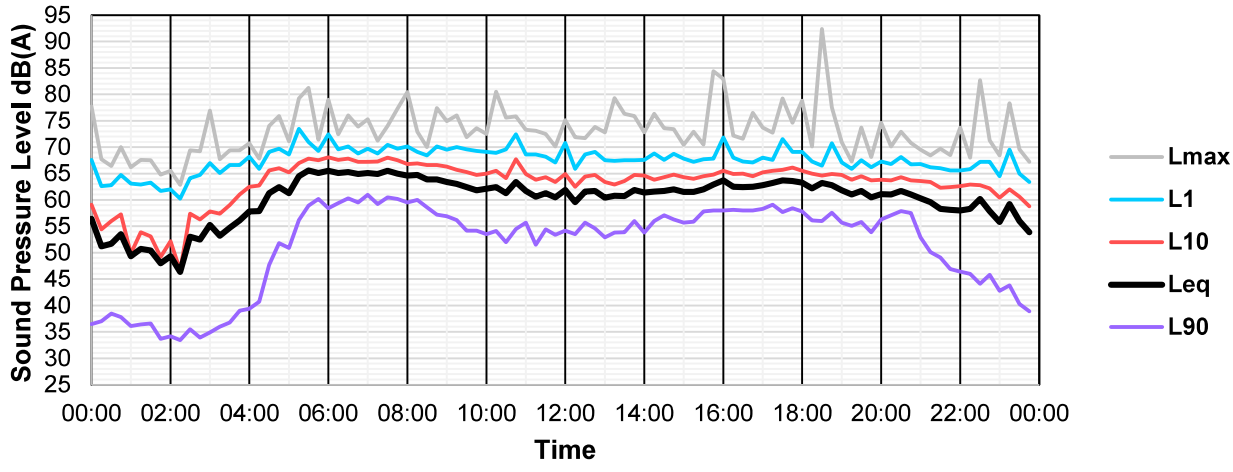

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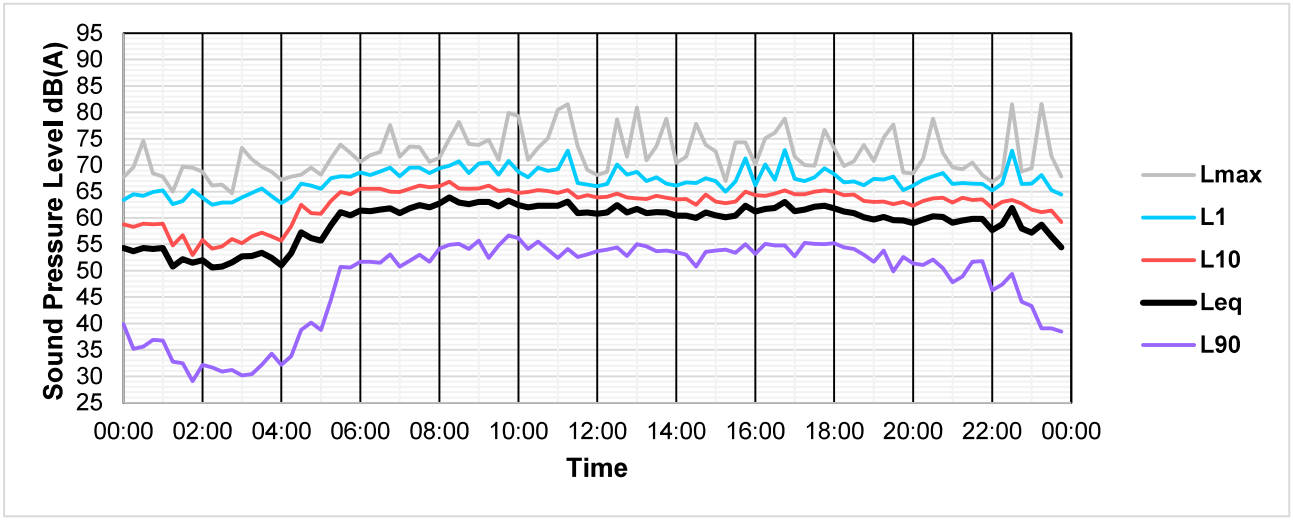

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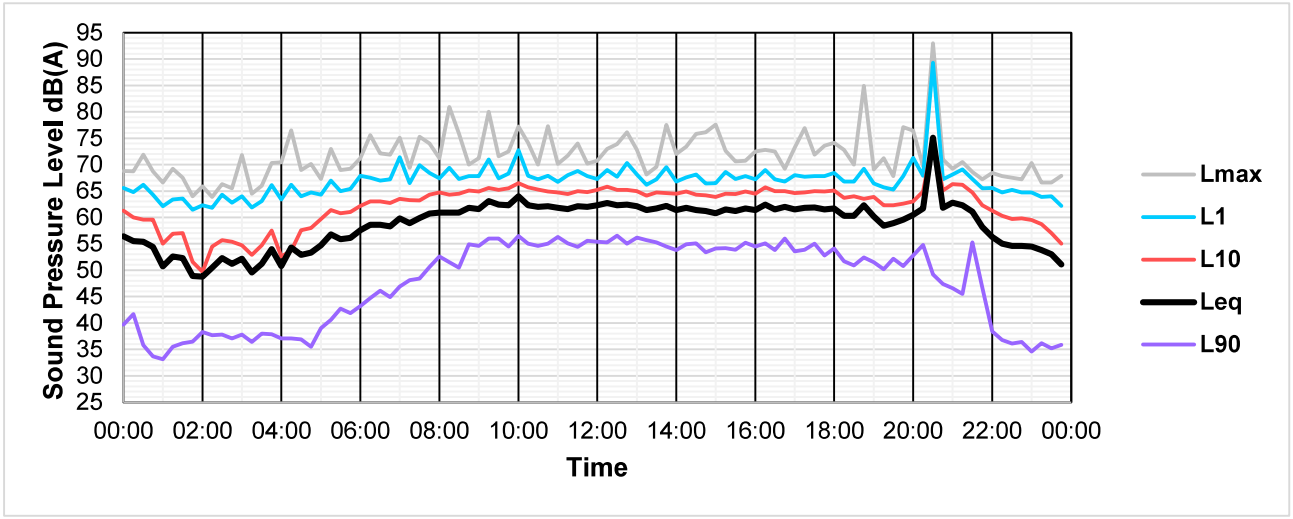

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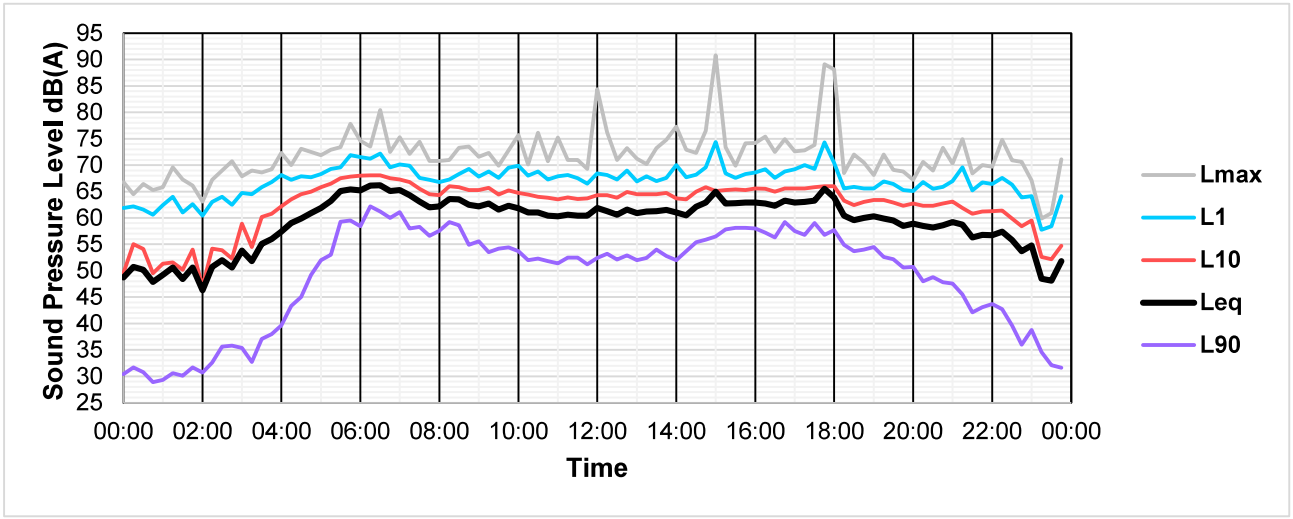

Unattended Noise Measurements
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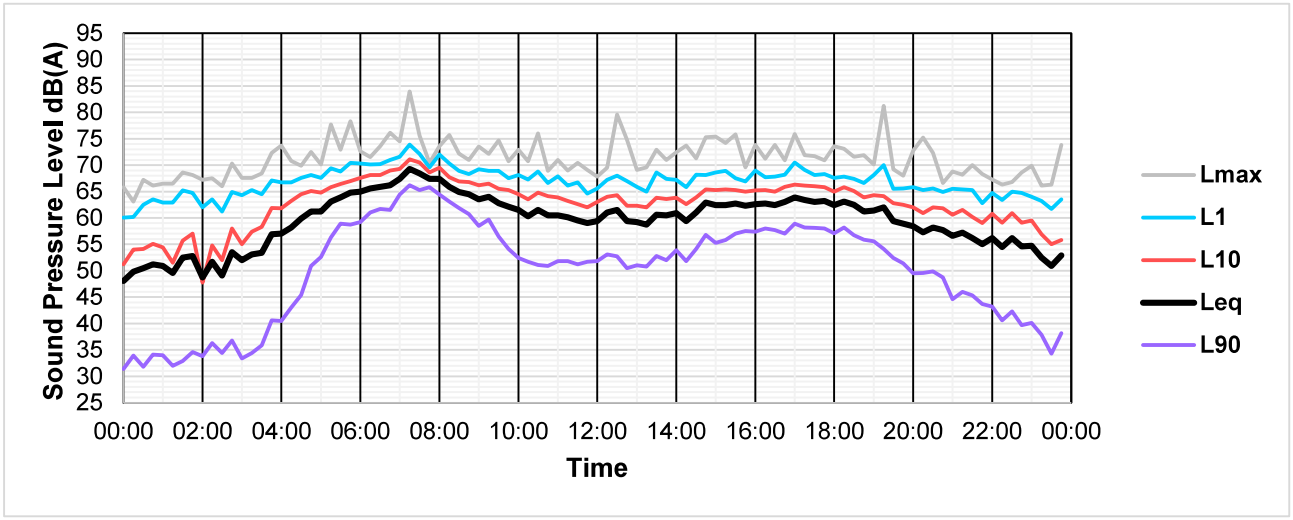

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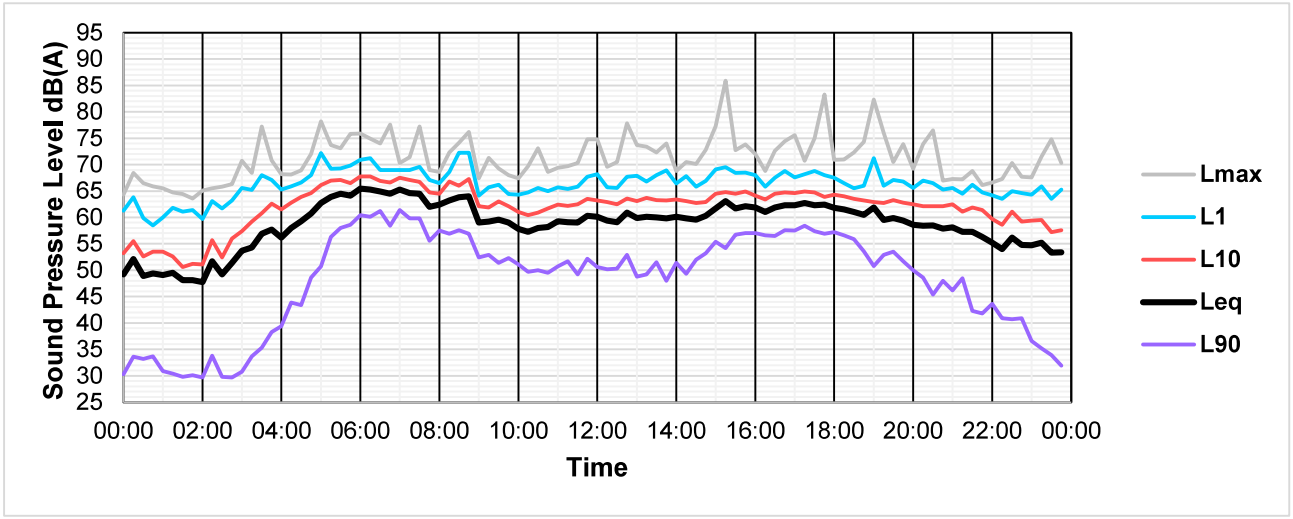

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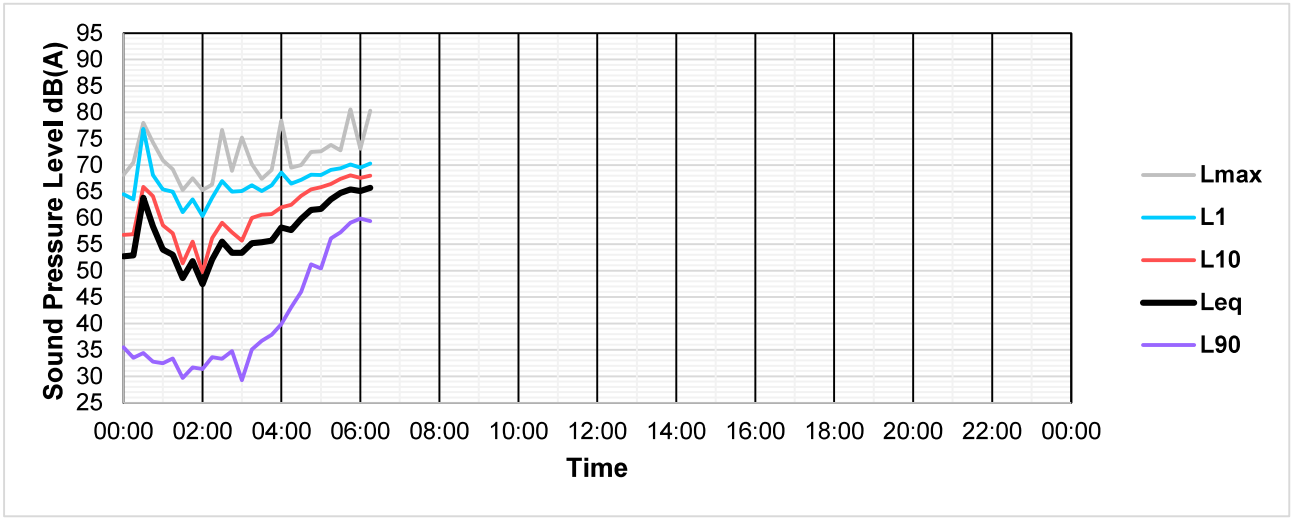


Appendix E – Traffic volumes, 2051

TRAFFIC STATEMENT – EVERLEIGH PRECINCT 9

11/05/2021

Bradley Jones RPEQ

Precinct 9 Traffic Statement-revB

1. INTRODUCTION

Premise was engaged by Mirvac to prepare a Traffic Statement for Everleigh Precinct 9 based on:

- Urbis Drawing No. P0018054 ROL05-1 rev08 "Everleigh: Reconfiguration of a Lot Plan – ROL 5"; and
- Premise Drawing Number MIRSGB-TD000-revB "Proposed Subdivision: Greenbank Road, Greenbank – Site Layout and Lot Count" (21/10/2020).

Precinct 9 consists of approximately 421 residential lots to the southeast of the Teviot Road / Leanne Court intersection, Greenbank. It is the extension of Everleigh Precinct 12 north of Everleigh Drive and includes extension of Leanne Court east of Teviot Road as Anderson Drive.

This statement includes:

- Forecast ultimate (2051) Teviot Road / Leanne Court / Anderson Drive (new road) intersection arrangement;
- Proposed Anderson Drive cross sections to accommodate ultimate (2051) traffic;
- Recommendation of a lot trigger for construction of the Anderson Drive leg of the Teviot Road / Leanne Court intersection;
- Forecast ultimate (2051) daily traffic volumes on Everleigh's connector street network; and
- Responses to Economic Development Queensland (EDQ) concerns regarding:
  - Intersection spacing on Anderson Drive;
  - Access to Precinct 9.

1.1 Background

Revision A of this Traffic Statement, dated 21 November 2020, was submitted with the development application to Economic Development Queensland (EDQ) as the assessment manager. Traffic Statement-revA differed from the current (revB) traffic statement in that:

- Traffic Statement-revA included identification of possible Anderson Drive configurations to provide access to a future neighbourhood centre on the northeast corner of the Tevior Road / Anderson Drive intersection. As the neighbourhood centre does not form part of the current development application, consideration of the neighbourhood centre has been removed from the current (revB) traffic statement; and
- Traffic modelling referred to in Traffic Statement-revA allowed trips produced by residential zones within Everleigh to be attracted to non-residential zones within Everleigh. As requested by EDQ, traffic modelling has been revised to match the MWH model assumption that residential trip generation is discounted by 25% to represent self-containment with no modelling of trips within Everleigh.

2. TEVIOT RD / LEANNE CT / ANDERSON DR INTERSECTION (2051)

Figure 1 is an extract form the approved Movement Network Infrastructure Master Plan (MNIMP) depicting the forecast ultimate (2051) Teviot Road / Leanne Court / Anderson Drive intersection. This arrangement has been used to develop the Ultimate Intersection Functional Layout Plans included within the ROL05 Engineering Services Report.

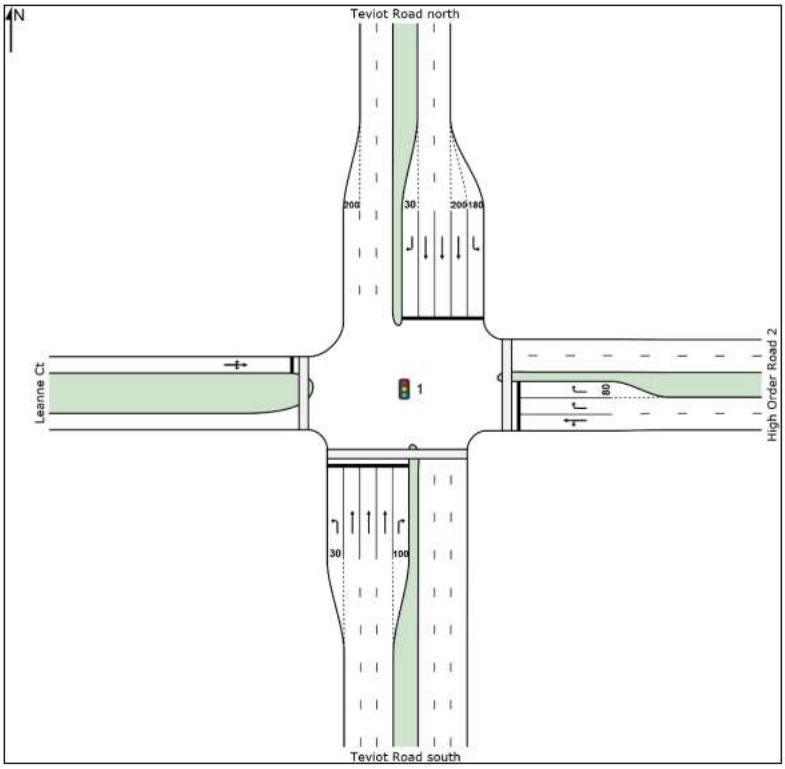


Figure 1: 2051 Teviot Road / Leanne Court / HOR2 (Anderson Drive) Intersection Layout

(Source – MWH Movement Network Infrastructure Master Plan)

3. ANDERSON DRIVE CROSS SECTION

Anderson Drive within Precinct 9 consists of two (2) sections being:

- Between Teviot Road and Kessels Boulevard; and
- East of Kessels Boulevard.
- Commentary on each of these sections is provided below.

Anderson Drive – Between Teviot Road and Kessels Boulevard

Figure 2 provides the MNIMP approved cross section of Anderson Drive between Teviot Road and Kessels Boulevard (described as Trunk Connector 1 in the MNIMP). The 28m wide road reserve has been provided for in the reconfiguration of a lot plans and the Internal Road Functional Plans included within the ROL05 Engineering Services Report.

Traffic Lanes	Traffic Lane Width	Bicycle Lane Width	Median Width	Verge Width	Vegetated Sound Buffer	Total Reserve Width	Road Speed	Residential Frontage
4	3.5m	N/A	4m	4 m	2m	28m	50km/h	No

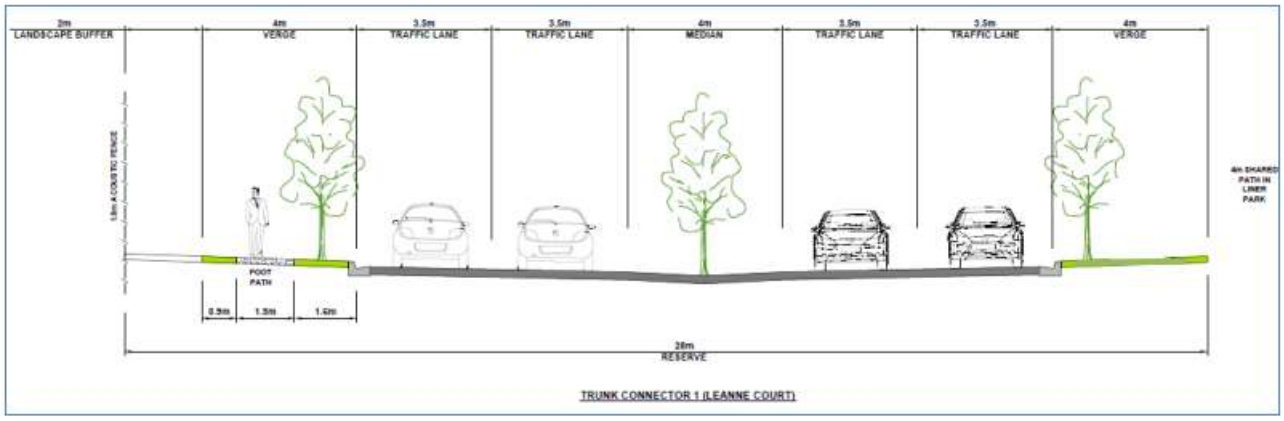


Figure 2: 2051 Trunk Connector 1 (Anderson Drive) Cross Section

(Source – MWH Movement Network Infrastructure Master Plan)

Figure 5 indicates a traffic volume of 15,274vpd for this section of Anderson Drive in the ultimate (2051) scenario. EDQ's "PDA Guideline No. 06: Street and Movement Network" (February 2019) suggests traffic volumes of 10,000vpd to 18,000vpd may be adequately serviced by a Trunk Connector with a 2-lane cross section (either divided or undivided) and no direct access. Accordingly, opportunity exists to reduce the Anderson Drive cross section from 4 to 2 lanes.

Conversely, we understand there is some uncertainty regarding:

- sub-regional traffic planning;
- traffic access, egress and intersection arrangements for the neighbourhood centre and State community health centre to be located north of Anderson Drive; and
- the ultimate design of the Teviot Road / Leanne Court / Anderson Drive Intersection (which requires design coordination with Council).

To provide maximum flexibility, it is recommended the approved 4-lane cross section be adopted as the base case, with opportunities to reduce traffic lanes to be confirmed in detail design and assessed by compliance assessment. Notes have been provided on the Road Functional Plans to this effect.

<u>Anderson Drive – East of Kessels Boulevard</u>

Figure 3 provides the MNIMP approved cross section of Anderson Drive east of Kessels Boulevard (described as Neighbourhood Connector 1 in the MNIMP). The 21m wide road reserve has been provided for in the reconfiguration of a lot plans and the Internal Road Functional Plans included within the ROL05 Engineering Services Report.

Traffic Lanes	Traffic Lane Width	Parking Lane	Median Width	Verge Width	Vegetated Sound Buffer	Total Reserve Width	Road Speed	Residential Frontage
2	3.5m	2.5m	N/A	4 - 5m	N/A	21m	50km/h	Yes

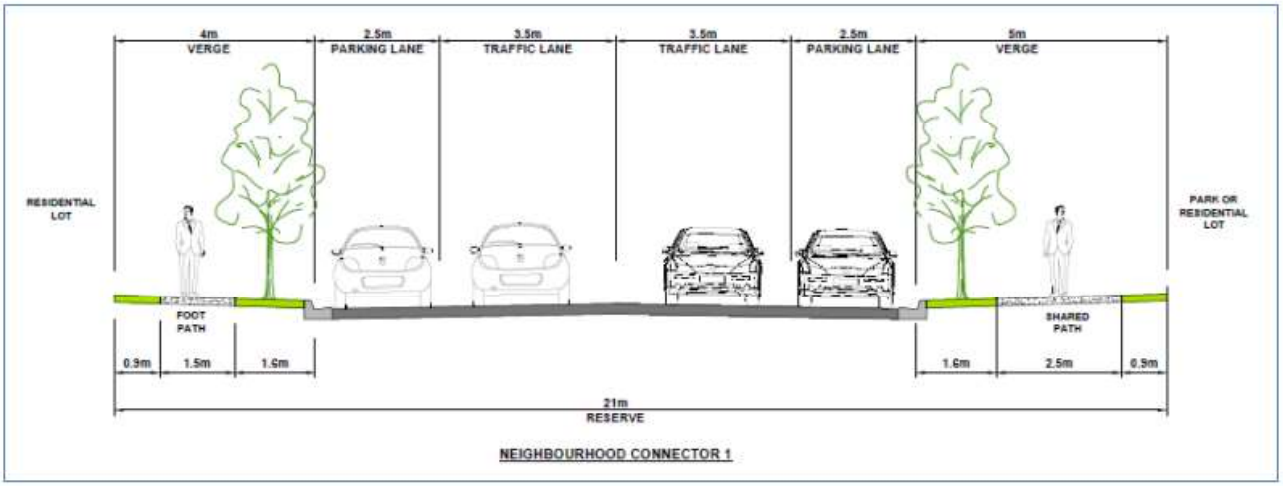


Figure 3: 2051 Neighbourhood Connector 1 (Anderson Drive) Cross Section

(Source – MWH Movement Network Infrastructure Master Plan)

Figure 5 indicates a traffic volume of 7,382vpd for this section of Anderson Drive in the ultimate (2051) scenario. EDQ's "PDA Guideline No. 06: Street and Movement Network" (February 2019) suggests traffic volumes 3,000vpd to 7,499vpd may be adequately serviced by a Neighbourhood Connector Street. Additionally, it is noted that traffic volumes of 7,500vpd to 10,000vpd may be adequately serviced by a Trunk Connector with an identical 2-lane cross section (either divided or undivided) and with direct access permitted. Accordingly, the proposed cross section for this part of Anderson Drive is considered appropriate and also capable of servicing up to a traffic volume of 10,000vpd.

4. LOT TRIGGER FOR ANDERSON DRIVE CONSTRUCTION

The trigger for construction of the Anderson Drive leg of the Teviot Road / Leanne Court intersection will be the Teviot Road / Everleigh Drive/ Pub Lane intersection, currently the only access to Everleigh, reaching capacity.

To assess the operation of the Teviot Road / Everleigh Drive / Pub Lane intersection, Premise has developed a spreadsheet traffic model of Everleigh and the surrounding road network. The model is generally based on the same assumptions as the AIMSUN model developed by MWH for the purpose of preparing "Movement Network Infrastructure Master Plan: Teviot Road, Greenbank" (MNIMP). The MNIMP was approved by EDQ on 9 August 2017 based on:

- 24-hour intersection traffic count data collected on Thursday 5 November 2015;
- Traffic generation rates and directional splits for land uses within Everleigh as agreed by MWH and Veitch Lister Consulting (VLC) on 25 January 2017;
- Growth rates of between 3% and 4%; and

- 25% discounting of trips produced by residential development within Everleigh to represent the communities self-containment.

Further to the above, the Premise traffic model is based on:

- Daily traffic generation rates for land uses within Everleigh which were not specified by MWH are based on the preferred hierarchy of data sources for traffic generation rates specified in the Department of Transport and Main Roads' (TMR's) "Guide to Traffic Impact Assessment" (GTIA); and
- An external trip distribution which was estimated based on the available information regarding the trip distribution in the MWH model.

While Premise has generally sort to keep its spreadsheet traffic model consistent with the MWH model, Premise has increased the number of trip generating zones within Everleigh from four (4) in the MWH model to 16 in the Premise model. EDQ acknowledges that this will provide a more refined traffic model and allow more realistic estimation of traffic on the network.

The Premise traffic model estimates traffic for each year from when traffic count data was collected (2015) until 2051 which was adopted as representative of ultimate traffic in MNIMP. As the model is calibrated to traffic counts conducted in November 2015, forecast traffic is representative of traffic in November of each year.

Advice from Mirvac is that Everleigh produced the first developed lots in 2019 with the current and forecast development rate being approximately 200 lots per annum. Forecast project milestones are:

- 365 sealed lots in December 2020;
- 509 sealed lots in December 2021; and
- 668 sealed lots in September 2022.

There is understood to be a six (6) to nine (9) month lag between the sealing of a lot and its occupation as a residential dwelling.

In light of the above, the Premise traffic model is based on:

- 300 sealed lots including 200 occupied lots in November 2020;
- 500 sealed lots including 400 occupied lots in November 2021; and
- 700 sealed lots including 600 occupied lots in November 2022.
- Only lots with occupied residential dwellings generate traffic in the Premise traffic model.

The Teviot Road / Everleigh Drive / Pub Lane intersection was analysed based on its existing lane and phase arrangement using SIDRA Intersection Version 9 (SIDRA). The pedestrian crossing of Teviot Road on the southern leg of the intersection was omitted from the analysis. It is expected that demand for this crossing movement will be low but, by including it in all signal cycles, the overall intersection capacity estimated by SIDRA was greatly reduced.

SIDRA analysis indicated that the critical peak hour for the existing Teviot Road / Everleigh Drive / Pub Lane intersection is the evening peak hour and that the intersection will reach its practical capacity (degree of saturation (DoS) ≥ 0.90) between November 2022 and November 2023.

To provide a more precise estimate of when the existing intersection would reach capacity, SIDRA's Design Life tool was used with growth rates chosen such that one (1) "year" as modelled by SIDRA represented one (1) month of Everleigh development and background traffic growth. By this process it was estimated that the intersection DoS during the critical evening peak hour will be:

- 0.90 in February 2023 with approximately 750 sealed lots and approximately 650 occupied lots. The DoS during the morning peak hour would be less than 0.90;
- 0.95 in June 2023 with approximately 810 sealed lots and approximately 710 occupied lots. The DoS during the morning peak hour would still be less than 0.90; and
- 1.00 (theoretical capacity) in January 2024 with approximately 930 sealed lots and approximately 830 occupied lots. The DoS during the morning peak hour would still be less than 0.90.

Based on the SIDRA analysis referred to above it is recommended that:

- Design of the Teviot Road / Leanne Court / Anderson Drive intersection be approved prior to sealing of the 751st lot within Everleigh, i.e. prior to the Teviot Road / Everleigh Drive / Pub Lane intersection reaching its practical capacity; and
- Construction of the Anderson Drive leg of the Teviot Road / Leanne Court intersection be completed prior to sealing of the 931st lot within Everleigh, i.e, prior to the Teviot Road / Everleigh Drive / Pub Lane intersection reaching its theoretical capacity.

5. FORECAST ULTIMATE (2051) TRAFFIC

Ultimate traffic on Everleigh's connector street network was forecast using the Premise traffic model. The modelled residential lot yield and distribution is as shown by Figure 4 extracted from Premise Drawing Number MIRSGB-TD000-revB. Based on advice from Mirvac:

- The school (P2.11) is expected to have an ultimate enrolment of 1,400 students; and
- The retail precinct (P13), also referred to as the Neighbourhood Centre, is expected to have an ultimate gross leasable area (GLA) of 7,600m^2.

Figure 5 shows estimated ultimate (2051) daily traffic volumes on Everleigh's connector street network

Figure 4 – Site layout and lot count (extracted from MIRSGB-TD000-revA)

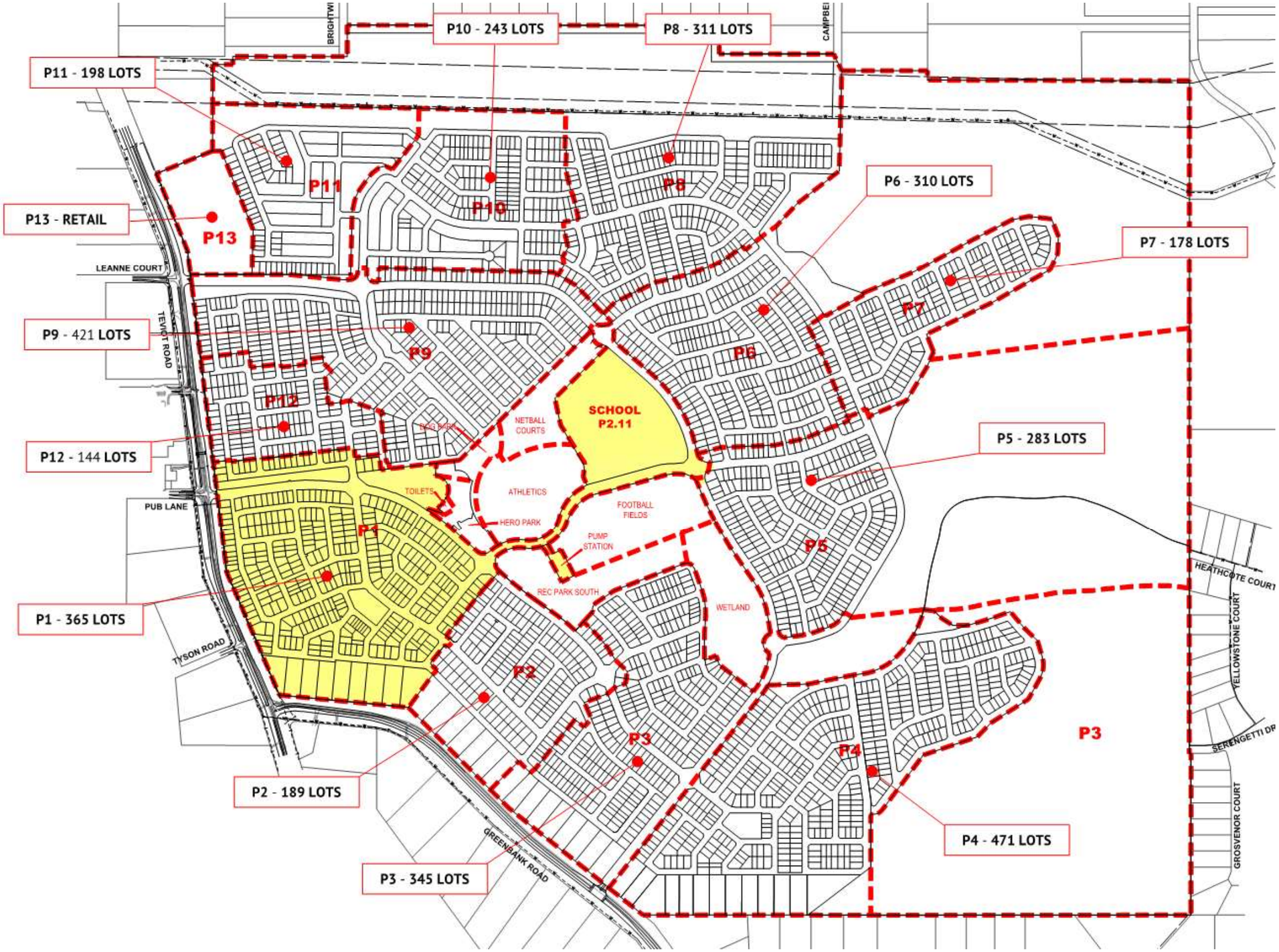


Figure 5 – Everleigh year 2051 traffic volumes

6. RESPONSE TO ECONOMIC DEVELOPMENT QUEENSLAND

6.1 Intersection Spacing

EDQ has queried the distance between the proposed roundabouts on Anderson Drive at Kessels Boulevard and the eastern end of Precinct 9 and have suggested an additional access point be provided for Precinct 9 between these two (2) roundabouts.

In response to EDQ's query, it should be noted that while vehicle connectivity between Anderson Drive and Precinct 9 is not provided to the east of Kessels Boulevard, connectivity for active transport modes is provided at three (3) points. In the context of the overall street and path network, the proposed active transport links provide direct access to local facilities and promote the use of active transport modes for access to local facilities such as parks and schools, and public transport. This type of network arrangement, sometimes referred to as a fused grid or filtered permeability, provides efficient external vehicle connectivity (to / from Teviot Road) with internal connectivity being more efficient for active transport than private vehicles. Research has found that this type of network increases walking, reduces travel by vehicles and results in better health outcomes than conventional urban street networks where private vehicles are given a similar level of access to active transport (https://www.vtpi.org/tdm/tdm116.htm).

6.2 Precinct 9 Access

EDQ have also queried traffic access / egress to / from Precinct 9 lots to the east of Kessels Boulevard. No guidance is provided in relation to these issues by PDA Guideline No. 06. Therefore, the following response has been prepared in accordance with Institute of Public Works Engineering Australasia, Queensland (IPWEAQ) guidelines including "Queensland Streets" and "Street Design Manual: Walkable Neighbourhoods".

Approximately 220 residential lots are proposed within Precinct 9 to the east of Kessels Boulevard. These lots will be accessed by two (2) intersections on Kessels Boulevard with one (1) approved for construction within Precinct 12 and the other proposed for construction within Precinct 9. Kessels Boulevard itself provides through connectivity between Everleigh Drive and Anderson Drive. Therefore, a single road closure or accident will not prohibit vehicle access to Precinct 9 lots.

The proposed access street layout servicing Precinct 9 lots utilises straight street alignments which provide legibility and improve wayfinding for visitors to the area. Travel distances between residential lots and the Kessels Boulevard neighbourhood connector are short. In the worst case, the residential lot is less than 700m from Kessels Boulevard which corresponds to approximately 60sec of travel time at 40km/h.

The above strategies comply with the recommendations of IPWEAQ guidelines.

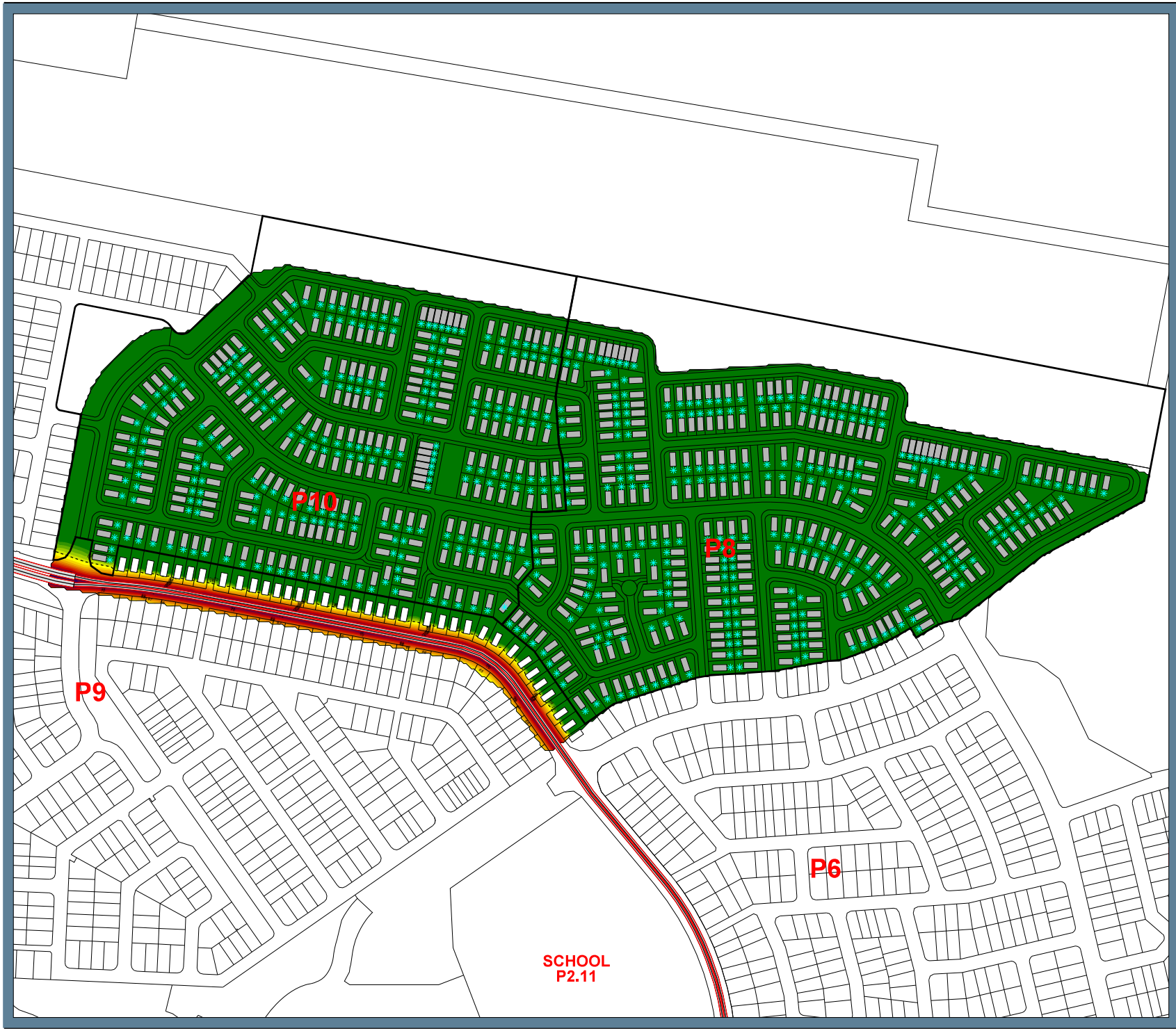
Premise

Forecast Average Weekday Traffic, 2051 (with Full SRIP)

Appendix F – Validation of traffic noise model

Receiver	Location	L10(18h) dB(A)
Noise logger_Teviot Road 2020	GF	64

Appendix G – Traffic noise levels – Grid Noise Maps



ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - RoL 10

Traffic Noise Modelling
Year 2051

Ground Floor
(1.8m AGL)

Traffic noise level
Facade adjusted
$L_{10(18hr)}$dB(A)

		<=	59
59	<	<=	60
60	<	<=	61
61	<	<=	62
62	<	<=	63
63	<	<=	64
64	<	<=	65
65	<	<=	66
66	<	<=	67
67	<	<=	68
68	<	<=	69
69	<	<=	70
70	<	<=	71
71	<	<=	72
72	<		

Legend

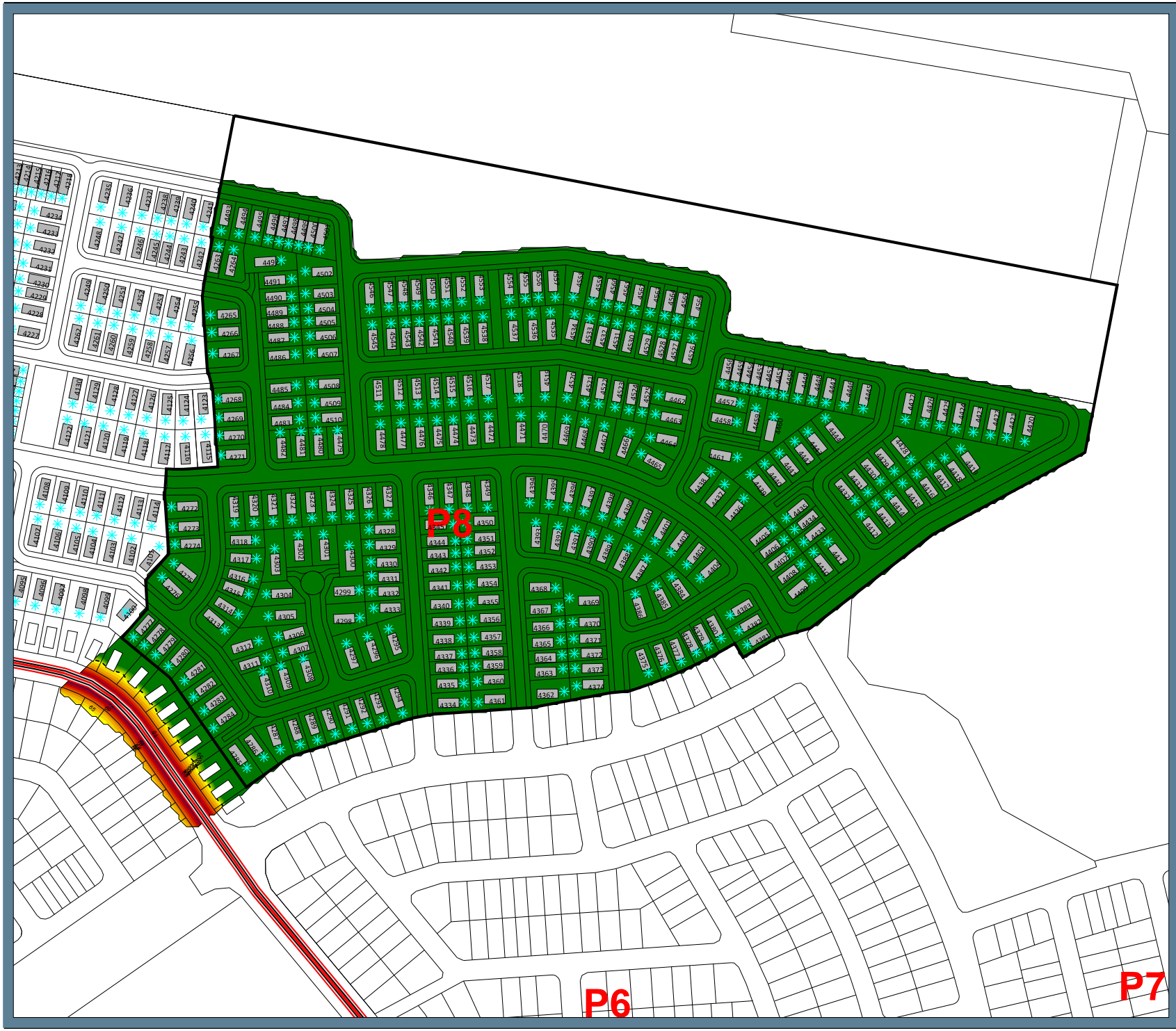
- Limit line - 63dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:6000

0 25 50 100 150 200 250 300 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2



ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P8

Traffic Noise Modelling
Year 2051

Ground Floor
(1.8m AGL)

Traffic noise level
Facade adjusted
$L_{10(18hr)}$dB(A)

	<=	59
59 <	<=	60
60 <	<=	61
61 <	<=	62
62 <	<=	63
63 <	<=	64
64 <	<=	65
65 <	<=	66
66 <	<=	67
67 <	<=	68
68 <	<=	69
69 <	<=	70
70 <	<=	71
71 <	<=	72
72 <		

Legend

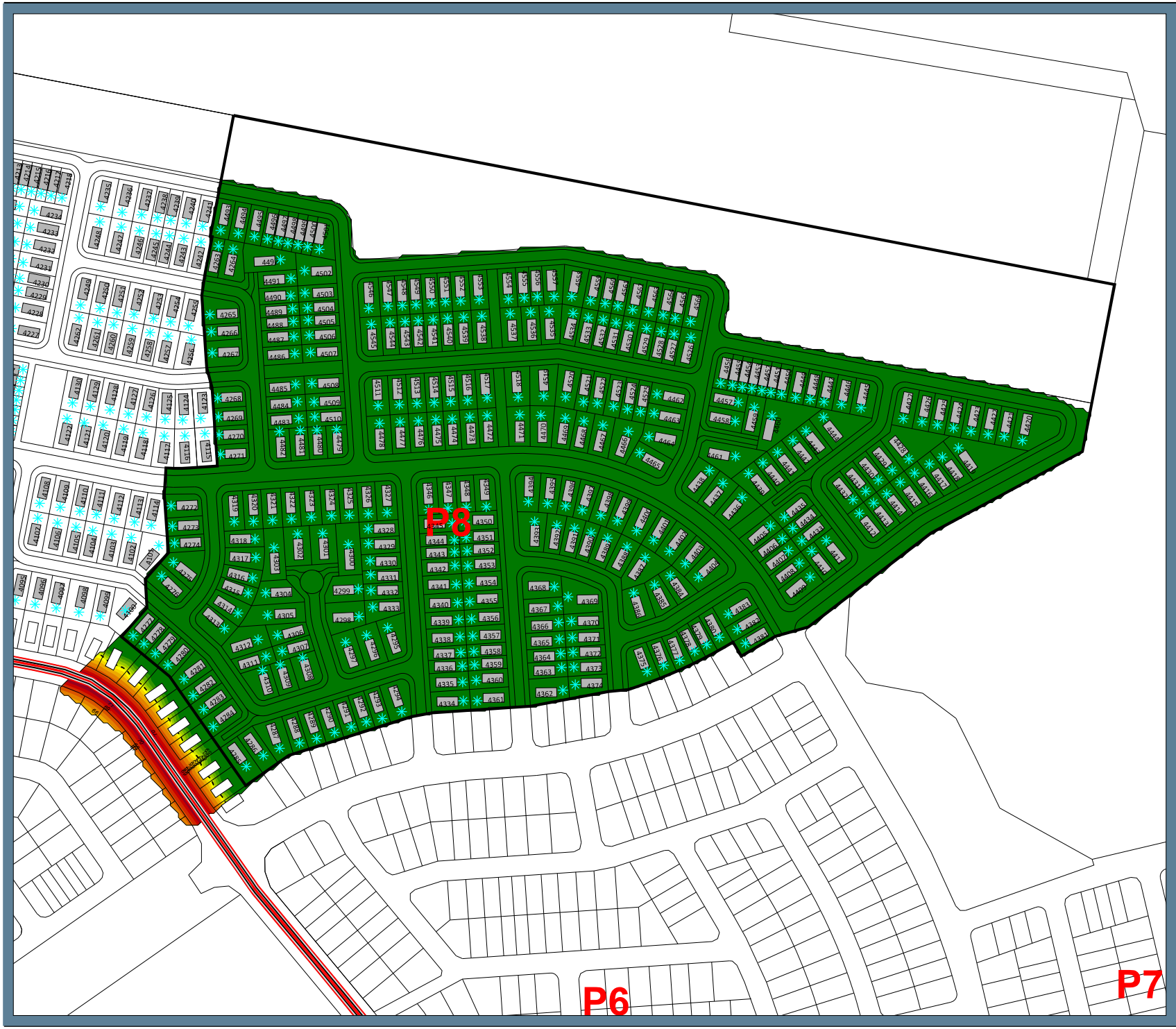
- Limit line - 63dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2



ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P8

Traffic Noise Modelling
Year 2051

First Floor
(4.6m AGL)

Traffic noise level
Facade adjusted
$L_{10(18hr)}$dB(A)

	<=	59
59 <	<=	60
60 <	<=	61
61 <	<=	62
62 <	<=	63
63 <	<=	64
64 <	<=	65
65 <	<=	66
66 <	<=	67
67 <	<=	68
68 <	<=	69
69 <	<=	70
70 <	<=	71
71 <	<=	72
72 <		

Legend

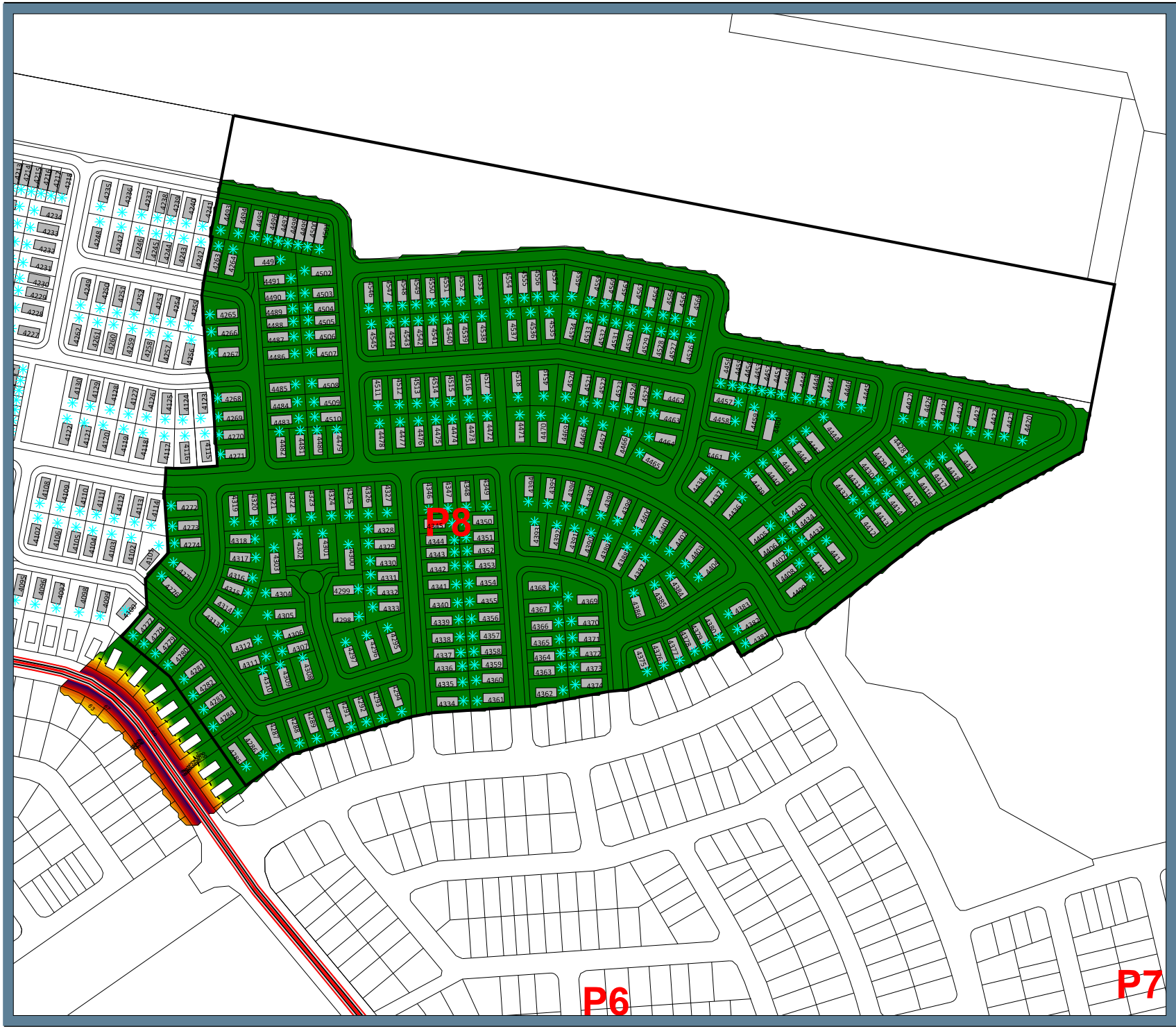
- Limit line - 63dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2



ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P8

Traffic Noise Modelling
Year 2051

Ground Floor Private Open Spaces
(1.5m AGL)

Traffic noise level
Free field
$L_{10(18hr)}$dB(A)

	<=	56
56 <	<=	57
57 <	<=	58
58 <	<=	59
59 <	<=	60
60 <	<=	61
61 <	<=	62
62 <	<=	63
63 <	<=	64
64 <	<=	65
65 <	<=	66
66 <	<=	67
67 <	<=	68
68 <	<=	69
69 <		

Legend

- Limit line - 60dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2

ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P10

Traffic Noise Modelling
Year 2051

Ground Floor
(1.8m AGL)

Traffic noise level
Facade adjusted
$L_{10(18hr)}$dB(A)

	<=	59
59 <	<=	60
60 <	<=	61
61 <	<=	62
62 <	<=	63
63 <	<=	64
64 <	<=	65
65 <	<=	66
66 <	<=	67
67 <	<=	68
68 <	<=	69
69 <	<=	70
70 <	<=	71
71 <	<=	72
72 <		

Legend

- Limit line - 63dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2

ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P10

Traffic Noise Modelling
Year 2051

First Floor
(4.6m AGL)

Traffic noise level
Facade adjusted
$L_{10(18hr)}$dB(A)

	<=	59
59 <	<=	60
60 <	<=	61
61 <	<=	62
62 <	<=	63
63 <	<=	64
64 <	<=	65
65 <	<=	66
66 <	<=	67
67 <	<=	68
68 <	<=	69
69 <	<=	70
70 <	<=	71
71 <	<=	72
72 <		

Legend

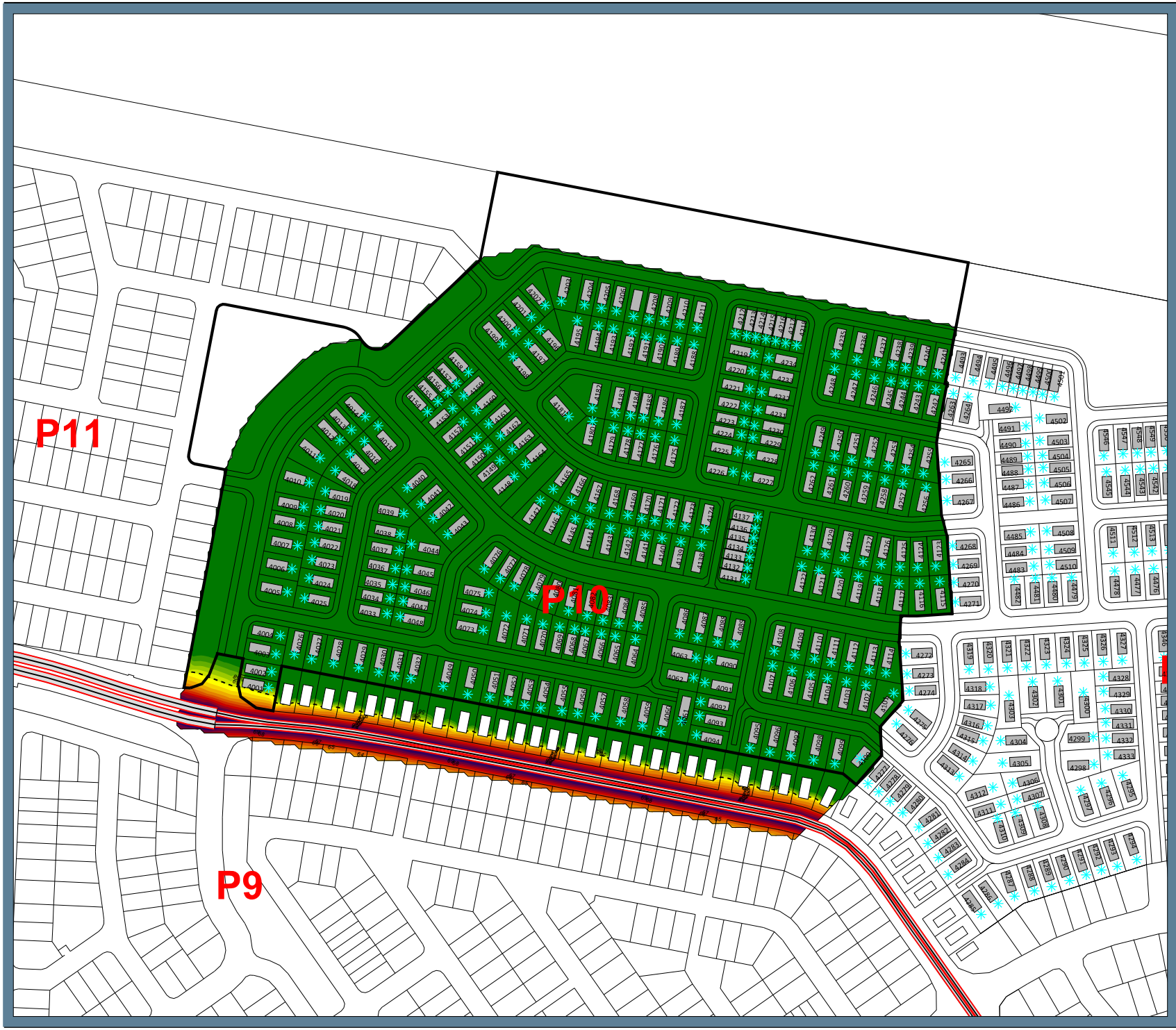
- Limit line - 63dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2



ATP CONSULTING ENGINEERS

ATP170617

Everleigh, Greenbank - P10

Traffic Noise Modelling
Year 2051

Ground Floor Private Open Spaces
(1.5m AGL)

Traffic noise level
Free field
$L_{10(18hr)}$dB(A)

		<=	56
56	<	<=	57
57	<	<=	58
58	<	<=	59
59	<	<=	60
60	<	<=	61
61	<	<=	62
62	<	<=	63
63	<	<=	64
64	<	<=	65
65	<	<=	66
66	<	<=	67
67	<	<=	68
68	<	<=	69
69	<		

Legend

- Limit line - 60dB(A) criteria
- Road noise emission line
- Road surface
- Building
- Auxiliary building
- Private open space

SCALE @ A4 1:4000

0 25 50 100 150 200 m

N

Grid Spacing: 3m
Project Engineer: Bradley Thompson
Created: 24/02/2022
Processed with SoundPLAN 8.2