

Traffic Noise Impact Assessment

Ridgeview Residential Development
Stages 8 to 12

Lot 101 on SP297314, Raynbird Road, Narangba

Satterley


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Executive Summary

ATP Consulting Engineers (ATP) was engaged by Satterley to prepare a traffic noise impact assessment (NIA) for the Ridgeview residential development at Lot 101 on SP297314 Raynbird Road in Narangba.

A portion of the development is located within a haulage buffer as Raynbird Road is one of two haulage roads for the Boral quarry located approximately 3km west of the development. The Key Resource Area transport route (*haulage road*) is marked with a 100m wide buffer zone (either side) to trigger consideration of current and future traffic noise along the haulage road.

This report has been prepared in support of RAL Application for Stages 8 to 12 of the Ridgeview development.

This is Issue 2 of the report considering the latest development layout dated 24 May 2022, and latest earthworks dated 11 July 2022.

Traffic noise impact assessment for the proposed development has been carried out in accordance with the Moreton Bay Regional Council *Planning Scheme Policy – Noise*.

Within a 10-year planning horizon, at the time of full establishment of the residential development, there is a potential for traffic noise impact on the future dwellings on the allotments nearest to Raynbird Road.

In accordance with the adopted streetscape strategy for the development, it is proposed to construct noise barriers along Raynbird Road to protect the development from traffic noise impacts.

The recommended noise barriers are to be constructed along the southern boundary of Lots 1266 to 1278, and be of varying height, with the top of the noise barrier 2.0m to 3.8m above the finished surface level along the edge of the allotment. The alignment and heights of the noise barrier fences are presented in Table 6.1 and Figure 6.1 of this report.

The primary objective of the recommended noise barriers is to provide an acceptable level of noise amenity at the private open spaces (backyards) and to protect the ground floors of the future dwellings.

The results of the traffic noise modelling indicate that, with the proposed noise barriers, the noise levels at the private open spaces are in compliance with the criteria of 57dB(A) L_{10,18hr} (free-field) at all allotments within a 10-year planning horizon.

However, the ground and upper floors of some allotments nearest to Raynbird Road will be exposed to residual traffic noise, although the traffic noise impact is relatively minor:

- At the ground floors, 13 allotments nearest to Raynbird Road will be subject to external façade traffic noise levels corresponding to QDC Noise Category 1.
- At the upper floors, 3 allotments will be subject to Noise Category 1; and 10 allotments will be subject to Noise Category 2.

The dwellings must be built to comply with QDC MP4.4 Noise Categories listed in Table 6.2 of this report or, alternatively, be acoustically designed in accordance with AS3671-1989.

Provided the recommended planning and design noise control measures are implemented in the construction of the residential development, the road traffic noise from Raynbird Road will not impose any further constraints on the establishment of the development.

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Acoustics Glossary

A-weighting	Correction to sound levels to mimic the response of the human ear at low sound frequencies.
AADT	Annual average daily traffic. The total traffic flow over a 24 hour period along a specific segment of road.
Decibel (dB)	(1) Degree of loudness (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level. A unit used to express relative difference in power or intensity, between two acoustic signals, equal to ten times the common logarithm of the ratio of the two levels, one of which is a standard reference value.
dB(A)	The A-weighted sound pressure level.
Façade adjusted	The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the buildings facades are “façade-adjusted”.
Free-field	Noise level without any reflected sound from buildings or other hard, reflective surfaces (except for the ground plane).
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_{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.
Sound pressure	The fluctuations in air, measured in Pascals (Pa).
Sound Pressure Level, L_p (SPL)	Logarithmic measure of sound pressure on a decibel scale, referenced to the human hearing threshold of 2×10^{-5} Pa.
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 by Satterley to prepare a traffic noise impact assessment (NIA) for the Ridgeview residential development at Lot 101 on SP297314 Raynbird Road in Narangba.

A portion of the development is located within a haulage buffer as Raynbird Road is one of two haulage roads for the Boral quarry located approximately 3km west of the development. The Key Resource Area transport route (*haulage road*) is marked with a 100m wide buffer zone (either side) to trigger consideration of current and future traffic noise along the haulage road.

This report has been prepared in support of RAL Application for Stages 8 to 12 of the Ridgeview development.

This is Issue 2 of the report considering the latest development layout dated 24 May 2022, and latest earthworks dated 11 July 2022.

1.2 Study Objectives

Study objectives are as follows:

- Site-specific noise measurements using automated noise loggers to obtain data on the existing traffic noise levels over a typical seven day period.
- Consideration of the relevant performance outcomes and traffic noise criteria applicable to the proposed development.
- Development of a 3D noise propagation model considering the development layout and future road traffic along Raynbird Road.
- Assessment of traffic noise levels ($L_{10,18hr}$) from Raynbird Road, within a 10-year planning horizon, at the facades and private open spaces of the proposed dwellings.
- Recommendation of traffic noise mitigation measures.

1.3 Subject site

The Ridgeview development is located along Raynbird Road in Narangba on the land described as Lot 101 on SP297314, within the Moreton Bay Regional Council local government area.

The location of the development and the Key Resource Transport Corridor buffer zone is presented in Figure 1.1.

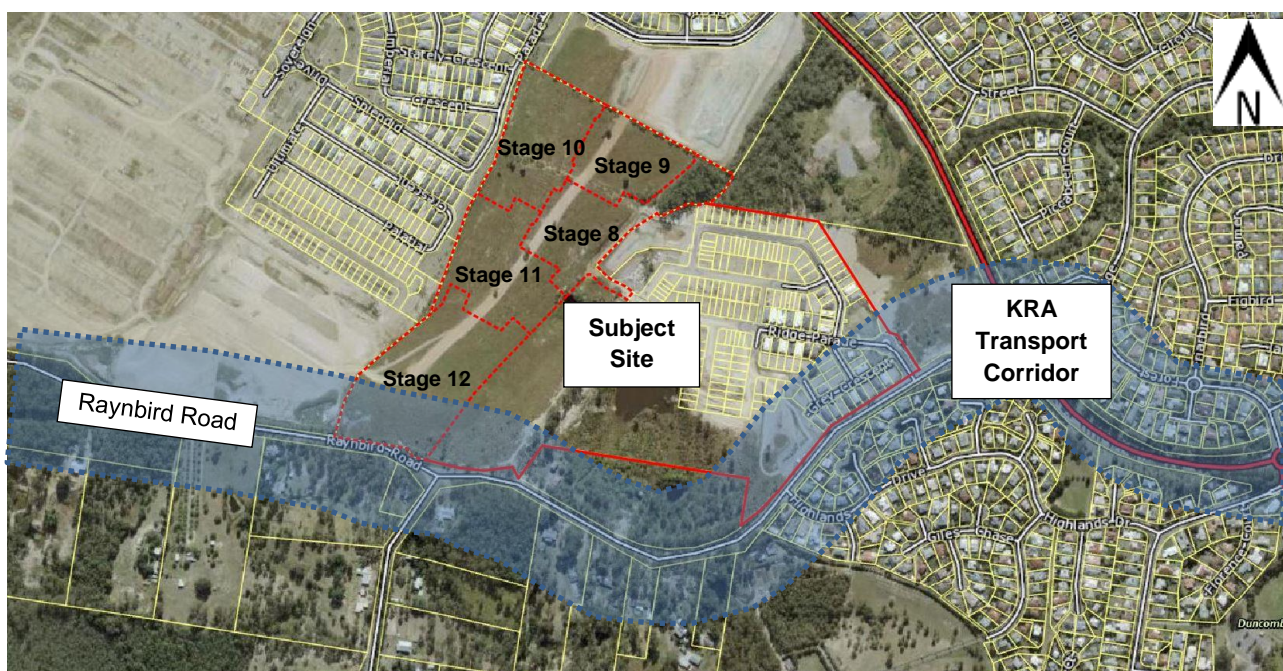


Figure 1.1 Site Location and KRA Transport Corridor

The development is located within a residential zone with the proposed dwellings consisting of one or two storeys. Each dwelling will have a patio or backyard area which will qualify as a private open space. Passive recreation area for the development is also provided with parklands at various locations.

The proposed subdivision layout and earthworks design for Stages 8 to 12 of the Ridgeview development is presented in Appendix A.

2. Existing Noise Amenity

2.1 Noise Measurement Location

Noise monitoring was carried out at the subject site to obtain information about the existing traffic noise levels for model validation. The noise monitoring locations are presented in Table 2.1.

Table 2.1 Noise Measurement Locations

Name	Location	Distance from edge of road	Measurement Period	Instrument
Location 1	75m west of Browns Creek Road	13m from Raynbird Road	28 September to 6 October 2017	ARL Ngara environmental noise logger
Location 2	120m east of Highlands Drive	7m from Raynbird Road	26 May to 1 June 2018	ARL Ngara environmental noise logger

The noise measurement locations are presented in Figure 2.1 and site photos are presented in Appendix B.

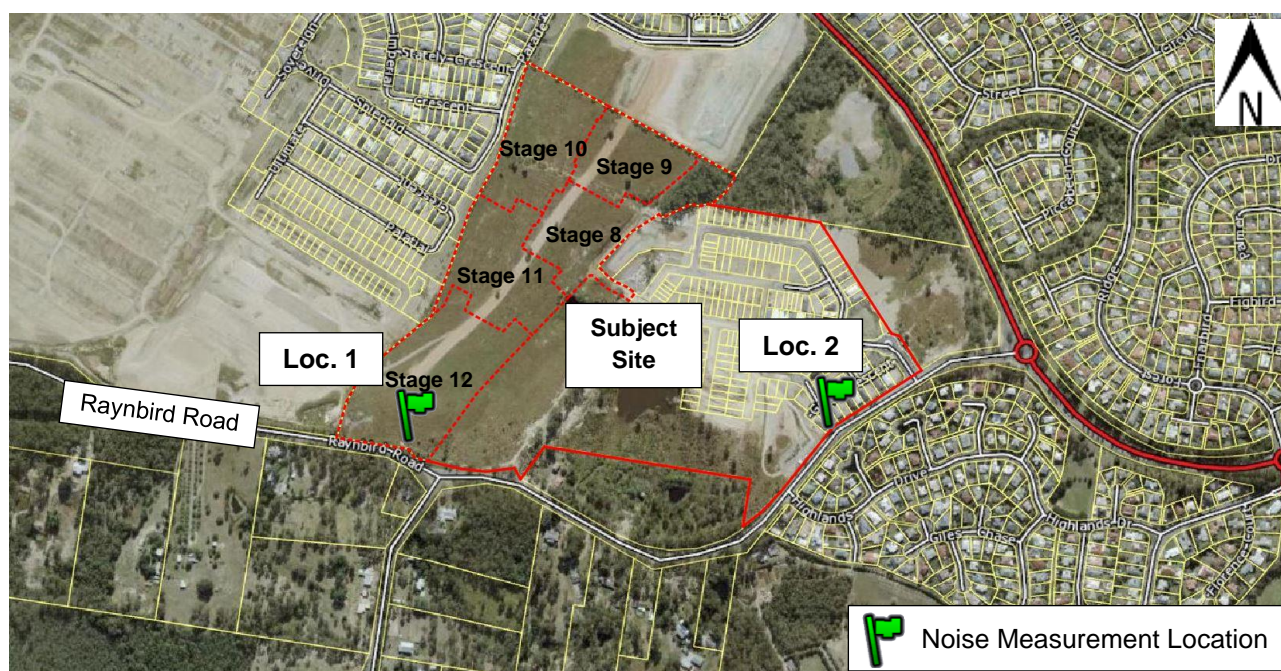


Figure 2.1 Noise Measurement Location

The speed limit along Raynbird Road is 70km/h past the monitoring location, reducing to 60km/h to the east¹. The different vehicle speeds have been factored into the noise propagation modelling as per the CoRTN procedure (refer to Section 4.1 of this report).

The eastern boundary of the development is separated from Oakey Flat Road by distance of at least 175m. Due to the large separation distance, the proposed development will not be impacted by traffic

¹ Speed limit on Raynbird Road is 70km/h at the western section (375m west of Highlands Drive) and 60km/h at the eastern section of the development.

noise from Oakey Flat Road. This is supported by observations made on site by ATP, which show that the dominant noise source is intermittent pass-by of vehicles on Raynbird Road.

2.2 Instrument Used

The noise measurements were carried out using the following instruments:

- Environmental Noise Logger – ARL Ngara (S/N 87811d and 87811c); and
- Sound Level Calibrator – NC 74.

The noise measurement instruments conform to AS/NZS IEC61672.1-2019 and the measurements were undertaken in accordance with AS1055-1997 and AS2702-1984. A calibration drift of <0.1 dB(A) was observed between the pre and post measurement calibrations of the instrument.

2.3 Meteorological Conditions

Light rainfall was experienced during part of the noise monitoring periods, on 2 to 3 October 2017 and 26 to 29 May 2018. The noise data recorded during periods with rain was excluded.

The meteorological data² for the noise measurement period are presented in Appendix C.

2.4 Noise Measurement Results

The results of the noise measurements at Location 1 are presented in Table 2.2 and in Appendix D.

Table 2.2 Noise Measurement Results – Location 1

Date	Day	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)
28 September 2017	Thursday	61	68	40	33
29 September 2017	Friday	60	65	39	31
30 September 2017	Saturday	59	64	37	30
1 October 2017	Sunday	57	63	38	32
2 October 2017	Monday	57	64	43	39
3 October 2017	Tuesday	60	67	40	36
4 October 2017	Wednesday	60	65	40	34
5 October 2017	Thursday	60	65	40	35
Arithmetic Mean		59	65	40	34
Arithmetic Mean – weekdays, fine weather		60	66	40	33

² Daily weather observation data sourced from www.bom.gov.au for Redcliffe weather station (Id 040958).

The results of the noise measurements at Location 2 are presented in Table 2.3 and in Appendix D.

Table 2.3 Noise Measurement Results – Location 2

Date	Day	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)
26 May 2018	Saturday	64	70	41	32
27 May 2018	Sunday	62	71	39	33
28 May 2018	Monday	65	73	40	37
29 May 2018	Tuesday	65	72	40	30
30 May 2018	Wednesday	66	72	43	31
31 May 2018	Thursday	65	71	42	31
Arithmetic Mean		64	71	41	32
Arithmetic Mean – weekdays, fine weather		65	71	43	31

3. Traffic Noise Criteria

3.1 External Traffic Noise Levels

The proposed development is located along Raynbird Road which is a designated haulage road under Key Resource Area - KRA 46 administration by Moreton Bay Regional Council.

Traffic noise impacts on the noise sensitive development need to be assessed in accordance with the Planning Scheme Policy (Noise), effective 29 January 2020. The Noise Policy outlines the noise criteria applicable to the development.

The external traffic noise levels at the proposed development will be assessed using the following documents:

- Queensland Development Code (QDC) Mandatory Part 4.4 (*Buildings in a transport noise corridor*). The proposed dwellings must be built to comply with QDC MP4.4, which specifies the acoustic requirements for building construction based on the traffic noise levels predicted at the external facades. This assessment will identify the QDC MP4.4 noise category applicable to each dwelling at the proposed development.
- In addition the assessment is to address the requirement for each dwelling to have a private open space that meets the criteria specified in the Department of Transport and Main Roads (TMR) *Development Affected by Environmental Emissions from Transport Policy, Version 4* (October 2017).

The applicable criteria from the QDC MP 4.4 and the TMR Policy 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		
			Criteria	Category	QDC MP4.4 Category
Haul Road	Residential	Building facades	L _{10,18hr} at 1m from the façade of the proposed building dB(A)	≥73	QDC MP4.4 Category 4
			68 - 72	QDC MP4.4 Category 3	
			63 - 67	QDC MP4.4 Category 2	
			58 - 62	QDC MP4.4 Category 1	
		Private open spaces of accommodation activities ³	≤57dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and midnight ≤ 45dB(A))		
	≤60dB(A) L _{10,18hr} free field (measured L _{90,18hr} free field between 6am and midnight > 45dB(A))				

³ TMR Policy – Table 3: State Controlled Road or Multi-modal Corridor which does not include a railway
 “Accommodation activity” 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

The noise criteria for accommodation activities depends on the background noise levels at the development. The noise criteria applicable to quiet areas (e.g. rural) is more stringent compared to areas with higher background noise levels (e.g. urban areas).

The existing background noise levels between 6am and midnight are lower than 45dB(A) $L_{90,18hr}$. Therefore, the external noise criterion for private open spaces is:

- Private open spaces (free-field): $\leq 57\text{dB(A)} L_{10,18hr}$.

3.2 Queensland Development Code (QDC) MP4.4

Buildings located in a transport noise corridor must be built to comply with QDC MP4.4. Under QDC MP4.4, the external façade traffic noise levels are grouped into five noise categories. Buildings located within Noise Category 1 or greater require acoustic treatment to the building envelope as per the deemed-to-comply specifications set out in QDC MP4.4. The traffic noise categories are presented in Table 3.2.

Table 3.2 QDC Noise Categories

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

*Measured at 1m from building facade

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

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. The engineer can carry out floor plan specific acoustic design in accordance with AS 3671-1989 and provide acoustic design specifications for the external walls, windows and roof/ceiling to ensure compliance with the internal noise criteria from AS/NZS 2107:2016.

3.3 Internal Noise Criteria

In case of exceeding the external noise criteria, the internal criteria as specified in AS/NZS 2107:2016 must be achieved. The recommended design sound levels ($L_{Aeq,T}$ dB(A)) for noise sensitive places near major roads are presented in Table 3.3.

Table 3.3 Residential Internal Design Sound Levels

Type of building	Type of occupancy	Design sound level ($L_{Aeq,T}$) range
Residential building	Living Areas	35 to 45 dB(A)
	Sleeping Areas	35 to 40 dB(A)
	Working Areas	35 to 45 dB(A)

4. Traffic Noise Calculation Methodology

Traffic noise levels at the proposed development, within a planning horizon of 10 years (year 2031⁴), were calculated using SoundPLAN noise propagation modelling software.

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

4.1 Modelling Assumptions

The assumptions and data used in the traffic noise propagation model are presented in Table 4.1.

Table 4.1 Data and Assumptions – Traffic Noise Model

Terrain	<ul style="list-style-type: none"> Elevation data for the property was sourced from the concept bulk earthworks plans prepared by Peak Urban (Project No. 20-0192, Rev 3), dated 11 July 2022, which are presented in Appendix A. Elevation data for the surrounding were obtained from Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre elevation data. Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas.
Buildings	<ul style="list-style-type: none"> Single storey buildings (height 3.5m) were modelled within the development. Noise levels have been calculated at the ground floor, as well as potential upper floors (should two storey buildings be established).
Road Traffic	<ul style="list-style-type: none"> Current traffic volumes were sourced from the Moreton Bay Regional Council data (2015). Refer to Appendix E. Future traffic volumes (AADT 24 hr volumes) for the year 2028 have been provided by the project's traffic consultant. The traffic volumes consider background growth in addition to traffic generated by the proposed development and the Sovereign Drive development upon completion. Traffic volumes for the 10 year planning horizon (year 2031) were calculated from the 2028 traffic volumes, assuming 5% growth per annum. Raynbird Road has one lane in each direction. Speed limit on Raynbird Road is 70km/h at the western section (375m west of Highlands Drive) and 60km/h at the eastern section of the development. Pavement surface type on Raynbird Road is dense graded asphalt. 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. CoRTN Calibration Factors for Queensland Conditions were considered in this assessment, as per the procedure from the TMR CoP Vol. 1⁵: <ul style="list-style-type: none"> Adjustment of -1.7dB was applied to the calculated façade traffic noise levels; and Adjustment of -0.7dB was applied to the calculated free-field traffic noise levels. Noise emission line for passenger vehicles (Austroads Class 1 and 2) is 0.5m above road surface. Noise emission line for heavy vehicles (Austroads Class 3 and up) engine noise is 1.5m above road surface. CoRTN correction factor of -0.8dB is applicable to the heavy vehicle engine noise source. Noise emission line for heavy vehicles (Austroads Class 3 and up) exhaust noise is 3.6m above road surface. CoRTN correction factor of -8.0dB is applicable to the heavy vehicle exhaust noise source.

⁴ 10 years after the development is established.

⁵ 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.

Receivers	<ul style="list-style-type: none"> • Building Facades: Receivers were attached to the most exposed facades of each building at the proposed development. Receivers are placed at a height of 1.5m above each floor level (ground floor as well as potential upper floors). • 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: Receiver was placed at 1.5m above ground level within the backyard areas on the ground floor. • 2.0m grid spacing was used for calculation of noise contour maps.
Noise Mitigation Measures	<ul style="list-style-type: none"> • The recommended noise mitigation measures are presented in Section 6 of this report. • The allotments along Raynbird Road in Stage 12 (Lots 1266 to 1278) will be protected from traffic noise by noise barriers.

4.2 Road Noise Model Validation

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

Traffic flow data, as considered in the SoundPLAN validation model, is presented in Table 4.2.

Table 4.2 Traffic Flow Data for Validation

Road	2015 Traffic Flow AADT ⁶	2017 Traffic Flow AADT ⁷	2018 Traffic Flow AADT	Heavy Vehicles (%)
Raynbird Road	1,530	1,687	1,771	17.2%

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

Table 4.3 SoundPLAN Validation Results

Measurement Location	Measured* L _{10,18hr} dB(A)	Calculated* L _{10,18hr} dB(A)	Difference dB	Validation Factor
Location 1	60	60	0	N/A
Location 2	65	65	0	N/A

*Free field

The calculated road traffic noise level is within the acceptable tolerance of ± 2 dB(A), thus there is no need for the addition of a validation factor to the road traffic noise levels within the planning horizon (year 2031).

⁶ Traffic count site: ATC1 – Raynbird Road 150m West of Highlands Drive. Data provided by Moreton Bay Regional Council.

⁷ 2017 and 2018 traffic flows have been calculated from the 2015 traffic flows, with allowance for 5.0% growth per year.

4.3 Traffic Noise Calculation Model (Year 2031)

The road traffic noise calculations were carried out for a planning horizon of 2031. The projected traffic flow on Raynbird Road is presented in Table 4.4.

Table 4.4 Traffic Flow Data for 10 Year Planning Horizon

Road	Section	2031 Traffic Flow AADT	Heavy Vehicles (%)
Raynbird Road	West of western site access road	5360	17.2%
	Western site access road to Highland Drive	5013	17.2%
	Highlands Drive to eastern site access road	5591	17.2%
	Eastern site access road to Oakey Flat Road	9840	17.2%

Overview of the SoundPLAN model is presented in Figure 4.1 and Figure 4.2.



Figure 4.1 SoundPLAN Traffic Noise Model – Overview

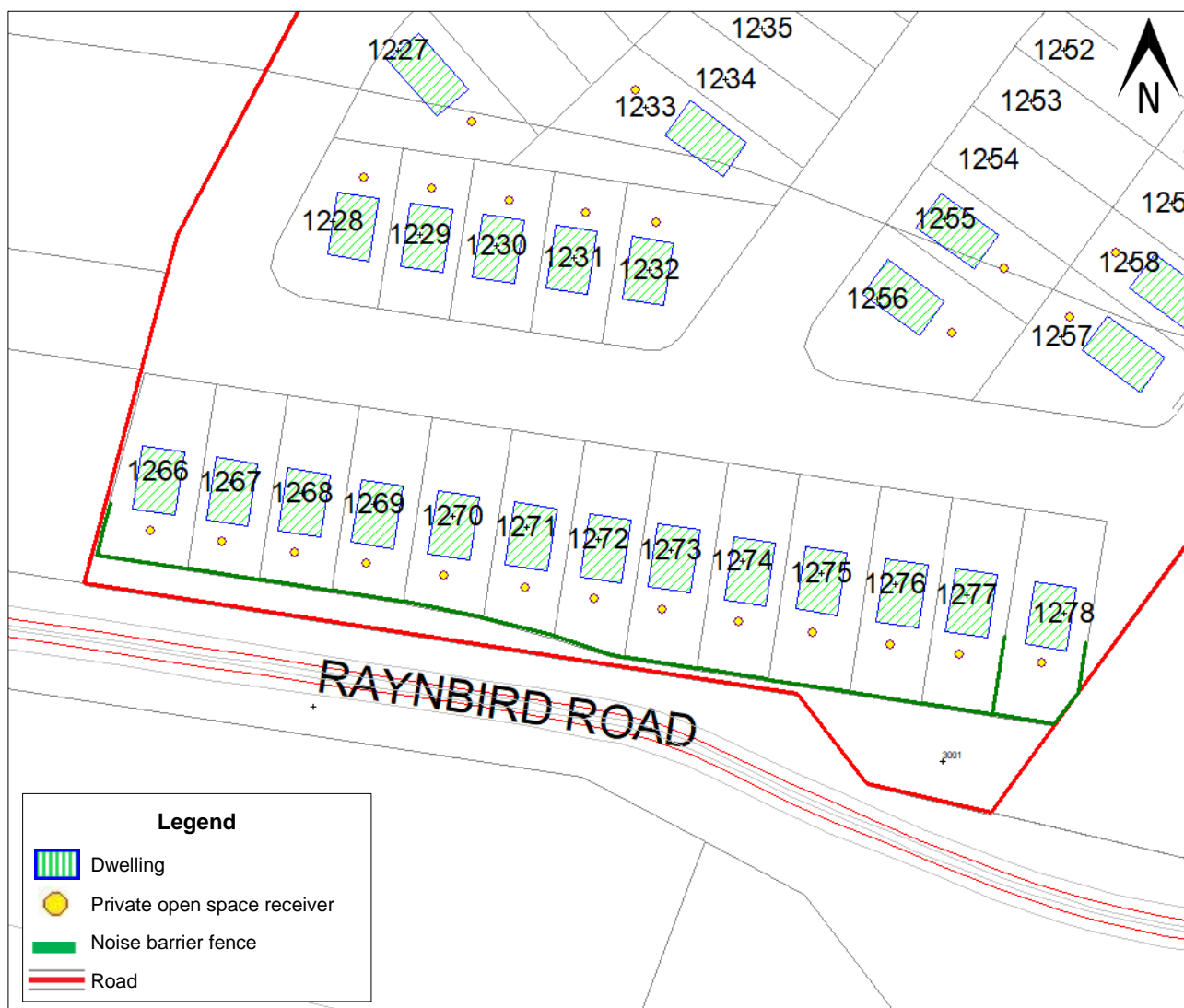


Figure 4.2 SoundPLAN Traffic Noise Model – Detail 1

The traffic noise model considers private open spaces at the locations shown in Figure 4.2, for assessment against the relevant noise criteria for private open spaces.

The finished pad levels of the allotments along Raynbird Road, as considered in the SoundPLAN model, are presented in Table 4.5.

Table 4.5 Finished Pad Levels of Allotments

Lot No.	Pad level, RL (AHD, m) Centre of lot
Lot 1266	72.00
Lot 1267	71.50
Lot 1268	71.70
Lot 1269	71.90
Lot 1270	71.50
Lot 1271	71.20

Lot No.	Pad level, RL (AHD, m) Centre of lot
Lot 1272	70.30
Lot 1273	69.30
Lot 1274	68.20
Lot 1275	66.80
Lot 1276	65.30
Lot 1277	64.30
Lot 1278	62.80

5. Calculated Traffic Noise Levels

5.1 Detached Dwellings

The highest calculated traffic noise levels at the proposed dwellings, with the recommended noise barrier fences in place, are presented in Table 5.1.

Table 5.1 Traffic Noise Levels at Building Facades – Year 2031

Lot No.	Ground Floor		Upper Floor	
	Calculated traffic noise level L _{10,18hr} dB(A)*	Noise Category QDC MP4.4	Calculated traffic noise level L _{10,18hr} dB(A)*	Noise Category QDC MP4.4
Lot 1227	43	Category 0	50	Category 0
Lot 1228	53	Category 0	55	Category 0
Lot 1229	53	Category 0	55	Category 0
Lot 1230	54	Category 0	56	Category 0
Lot 1231	54	Category 0	56	Category 0
Lot 1232	55	Category 0	56	Category 0
Lot 1233	51	Category 0	54	Category 0
Lot 1255	54	Category 0	56	Category 0
Lot 1256	56	Category 0	57	Category 0
Lot 1257	55	Category 0	57	Category 0
Lot 1258	54	Category 0	55	Category 0
Lot 1266	59	Category 1	65	Category 2
Lot 1267	58	Category 1	65	Category 2
Lot 1268	59	Category 1	65	Category 2
Lot 1269	59	Category 1	65	Category 2
Lot 1270	58	Category 1	64	Category 2
Lot 1271	59	Category 1	64	Category 2
Lot 1272	59	Category 1	63	Category 2
Lot 1273	59	Category 1	63	Category 2
Lot 1274	59	Category 1	63	Category 2
Lot 1275	58	Category 1	63	Category 2
Lot 1276	58	Category 1	62	Category 1
Lot 1277	59	Category 1	62	Category 1
Lot 1278	59	Category 1	62	Category 1

*facade adjusted

5.2 Private Open Spaces

The calculated traffic noise levels at the private open spaces of the proposed dwellings, with the recommended noise barrier fences in place, are presented in Table 5.2.

Table 5.2 Traffic Noise Levels at Private Open Spaces – Year 2031

Lot No.	Calculated traffic noise level L _{10,18hr} dB(A)*	Compliance with ≤57dB(A) L _{10,18hr} criterion?
Lot 1227 POS	41	Yes
Lot 1228 POS	44	Yes
Lot 1229 POS	44	Yes

Lot No.	Calculated traffic noise level L _{10,18hr} dB(A)*	Compliance with ≤57dB(A) L _{10,18hr} criterion?
Lot 1230 POS	45	Yes
Lot 1231 POS	45	Yes
Lot 1232 POS	51	Yes
Lot 1233 POS	46	Yes
Lot 1255 POS	53	Yes
Lot 1256 POS	55	Yes
Lot 1257 POS	51	Yes
Lot 1258 POS	48	Yes
Lot 1266 POS	56	Yes
Lot 1267 POS	55	Yes
Lot 1268 POS	56	Yes
Lot 1269 POS	56	Yes
Lot 1270 POS	56	Yes
Lot 1271 POS	56	Yes
Lot 1272 POS	56	Yes
Lot 1273 POS	56	Yes
Lot 1274 POS	56	Yes
Lot 1275 POS	56	Yes
Lot 1276 POS	56	Yes
Lot 1277 POS	56	Yes
Lot 1278 POS	56	Yes

**free field*

The noise levels at the private open spaces are within the criteria of 57dB(A) L_{10,18hr} (free-field) at all allotments, considering the proposed noise barriers and pad levels.

Full tabulated results of the calculated traffic noise levels are presented in Appendix G.

Noise contours showing the propagation of traffic noise across the development site are presented in Appendix H.

6. Discussion and Recommendations

Within a 10-year planning horizon, at the time of full establishment of the residential development, there is a potential for traffic noise impact on the future dwellings on the allotments nearest to Raynbird Road. In accordance with the adopted streetscape strategy for the development, it is proposed to construct noise barriers along Raynbird Road to protect the development from traffic noise impacts.

The recommended noise barriers are to be constructed along the southern boundary of Lots 1266 to 1278, and be of varying height, with the top of the noise barrier 2.0m to 3.8m above the finished surface level along the edge of the allotment.

The RLs at the base and top of the proposed noise barriers, as well as the pad levels of the allotments, are presented in Table 6.1.

Table 6.1 Proposed Noise Barrier RLs – Stage 12

x, m (Easting)	y, m (Northing)	Lot No.	Pad level, RL (AHD, m) Centre of lot	Base of noise barrier fence RL (AHD, m)	Noise barrier height, m	Top of noise barrier, RL (AHD, m)
<i>Along property boundary facing Raynbird Road</i>						
491858.74	6993044.86	1266	72.00	72.18	2.40	74.58
491857.51	6993040.36	1266	72.00	72.00	2.40	74.40
491856.28	6993035.86	1266	72.00	71.92	2.40	74.32
491871.63	6993033.53	1266	72.00	71.43	2.40	73.83
491872.13	6993033.46	1267	71.50	71.37	2.40	73.77
491883.87	6993031.68	1267	71.50	71.20	2.40	73.60
491884.59	6993031.60	1268	71.70	71.20	2.40	73.60
491896.26	6993029.86	1268	71.70	71.19	2.40	73.59
491896.93	6993029.78	1269	71.90	71.18	2.40	73.58
491908.62	6993027.96	1269	71.90	72.00	2.40	74.40
491909.34	6993027.83	1270	71.50	71.92	2.40	74.32
491922.32	6993025.16	1270	71.50	71.22	2.40	73.62
491922.93	6993025.01	1271	71.20	71.16	2.40	73.56
491934.58	6993022.04	1271	71.20	71.00	2.40	73.40
491935.14	6993021.93	1272	70.30	71.09	2.80	73.89
491944.74	6993018.75	1272	70.30	70.34	2.80	73.14
491946.57	6993018.43	1272	70.30	70.07	2.80	72.87
491947.26	6993018.31	1273	69.30	70.00	2.80	72.80
491959.01	6993016.52	1273	69.30	69.50	2.80	72.30
491959.73	6993016.43	1274	68.20	68.49	3.60	72.09
491971.26	6993014.53	1274	68.20	68.02	3.60	71.62
491971.99	6993014.41	1275	66.80	67.00	3.80	70.80
491985.18	6993012.41	1275	66.80	66.51	3.80	70.31
491985.85	6993012.28	1276	65.30	66.24	3.80	70.04
491997.63	6993010.51	1276	65.30	65.74	3.80	69.54

x, m (Easting)	y, m (Northing)	Lot No.	Pad level, RL (AHD, m) Centre of lot	Base of noise barrier fence RL (AHD, m)	Noise barrier height, m	Top of noise barrier, RL (AHD, m)
491998.29	6993010.40	1277	64.30	64.72	3.80	68.52
492009.90	6993008.62	1277	64.30	64.06	3.80	67.86
492010.57	6993008.49	1278	62.80	63.00	3.60	66.60
492020.73	6993006.99	1278	62.80	62.51	3.60	66.11
492024.87	6993012.38	1278	62.80	62.50	2.80	65.30
492026.13	6993020.93	1278	62.80	62.50	2.40	64.90
<i>Along property boundary between Lots 1227 and 1228</i>						
492009.90	6993008.62	1277	64.30	64.06	2.00	66.06
492012.18	6993021.88	1277	64.30	64.00	2.00	66.00

The recommended alignment and RLs of the top of the noise barrier at Stage 12 (Lots 1266 to 1278) is presented in Figure 6.1.



Figure 6.1 Noise Barrier Alignment – Stage 12

Acceptable form of construction for the noise barrier is as follows:

- Material with minimum surface density of 12.5kg/m^2 , e.g. timber palings with minimum thickness 22mm; compressed fibre-cement sheeting with minimum thickness of 9mm; masonry; and aerated concrete.
- The noise barrier should be free of any gaps. If the noise barrier is constructed of timber palings, planks should have minimum 35mm overlap.
- The noise barrier should be of durable construction.

Typical construction of a timber acoustic fence is illustrated in Figure 6.2.

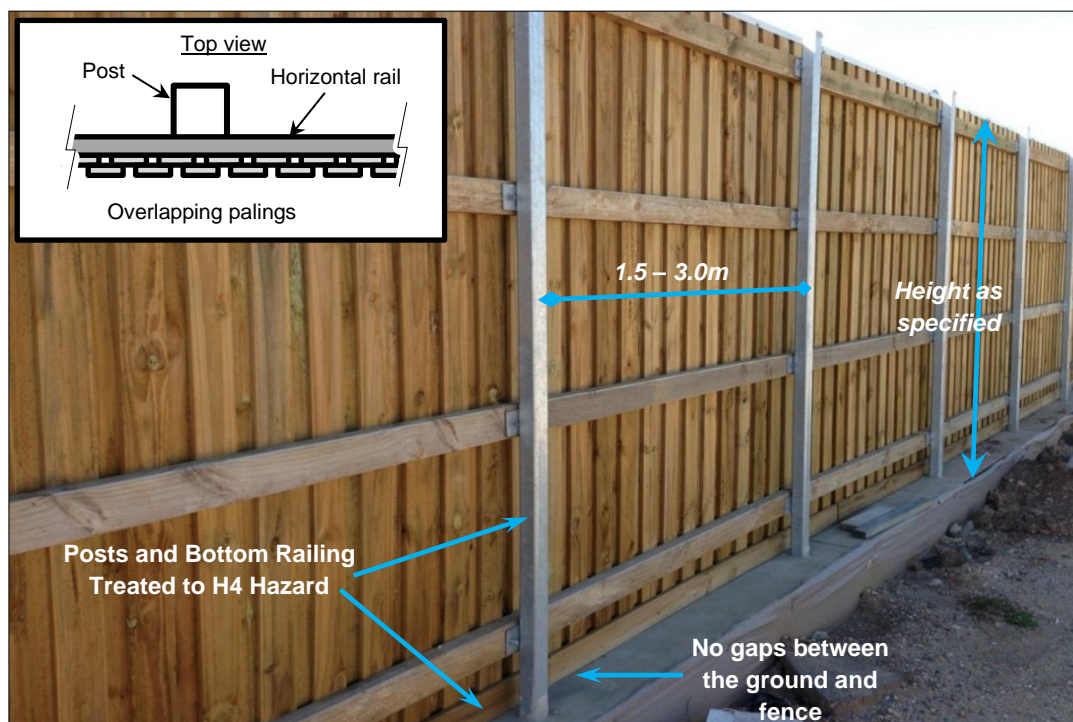


Figure 6.2 Typical Timber Acoustic Fence

The primary objective of the recommended noise barriers is to provide an acceptable level of noise amenity at the private open spaces (backyards) and to protect the ground floors of the future dwellings.

The results of the traffic noise modelling indicate that, with the proposed noise barriers, the noise levels at the private open spaces are in compliance with the criteria of $57\text{dB(A)} L_{10,18\text{hr}}$ (free-field) at all allotments within a 10-year planning horizon.

However, the ground and upper floors of some allotments nearest to Raynbird Road will be exposed to residual traffic noise, although the traffic noise impact is relatively minor:

- At the ground floors, 13 allotments nearest to Raynbird Road will be subject to external façade traffic noise levels corresponding to QDC Noise Category 1.

- At the upper floors, 3 allotments will be subject to Noise Category 1; and 10 allotments will be subject to Noise Category 2.

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

- **Option 1:** Implementation of the 'acceptable forms of construction' specified in Queensland Development Code (QDC) Mandatory Part 4.4 (*Buildings in a Transport Noise Corridor*). The buildings should be constructed to comply with the Noise Categories presented in Table 6.1.
- **Option 2:** Floor plan specific acoustic design in accordance with AS3671-1989 to ensure compliance with the internal noise criteria from AS/NZS 2107:2016.

The acoustic requirements applicable to each dwelling are presented in Table 6.2.

Table 6.2 Acoustic Requirements for Building Construction

Lot No.	Ground Floor	Upper Floor
	Noise Category QDC MP4.4	Noise Category QDC MP4.4
Lot 1227	Category 0	Category 0
Lot 1228	Category 0	Category 0
Lot 1229	Category 0	Category 0
Lot 1230	Category 0	Category 0
Lot 1231	Category 0	Category 0
Lot 1232	Category 0	Category 0
Lot 1233	Category 0	Category 0
Lot 1255	Category 0	Category 0
Lot 1256	Category 0	Category 0
Lot 1257	Category 0	Category 0
Lot 1258	Category 0	Category 0
Lot 1266	Category 1	Category 2
Lot 1267	Category 1	Category 2
Lot 1268	Category 1	Category 2
Lot 1269	Category 1	Category 2
Lot 1270	Category 1	Category 2
Lot 1271	Category 1	Category 2
Lot 1272	Category 1	Category 2
Lot 1273	Category 1	Category 2
Lot 1274	Category 1	Category 2
Lot 1275	Category 1	Category 2
Lot 1276	Category 1	Category 1
Lot 1277	Category 1	Category 1
Lot 1278	Category 1	Category 1

Provided the recommended planning and design noise control measures are implemented in the construction of the residential development, the road traffic noise from Raynbird Road will not impose any further constraints on the establishment of the residential development.

7. Conclusions

Based on the results of the noise impact assessment for Stages 8 to 12 of the Ridgeview development at Raynbird Road at Narangba, the following is concluded:

- Within a 10-year planning horizon, there is a potential for traffic noise impact on the future dwellings on the allotments nearest to Raynbird Road.
- In accordance with the adopted streetscape strategy for Raynbird Road, it is recommended to construct noise barrier fences as per Figure 6.1 of this report.
- The primary objective of the recommended noise barriers is to provide an acceptable level of noise amenity at the private open spaces (backyards) and to protect the ground floors of the future dwellings.
- The ground and upper floors of some allotments nearest to Raynbird Road will be exposed to residual traffic noise. The dwellings must be built to comply with QDC MP4.4 Noise Categories listed in Table 6.2 of this report or, alternatively, be acoustically designed in accordance with AS3671-1989.

Provided the recommended planning and design noise control measures are implemented in the construction of the residential development, the road traffic noise from Raynbird Road will not impose any further constraints on the establishment of the development.

8. References

- Australian Standard AS 1055-2018 (*Acoustics - Description and Measurement of Environmental Noise*)
- Australian Standard AS/NZS 2107:2016 (*Acoustics – Recommended design sound levels and reverberation times for building interiors*)
- Australian Standard AS 2702-1984 (*Acoustics – Methods for the Measurement of Road Traffic Noise*)
- Australian Standard AS 3671:1989 (*Acoustics – Road Traffic Noise Intrusion – Building sitting and construction*)
- Australian Standard AS/NZS IEC61672.1-2019 (*Electroacoustics - Sound level meters – Specifications*)
- Department of Transport and Main Roads, *Development Affected by Environmental Emissions from Transport Policy, Version 4 (October 2017)*
- Moreton Bay Regional Council, 2020, *Planning Scheme Policy - Noise*
- Queensland Development Code (QDC), *Mandatory Part 4.4 (Buildings in a Transport Noise Corridor)*



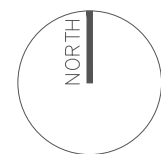
Appendix A – Proposed Development

LEGEND

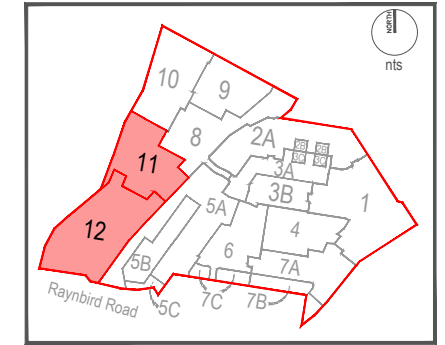
Site boundary	
Stage boundary	
Drainage reserve	
Approx. Road widening	

STAGING LOT SUMMARY

Stage 11	47
Stage 12	78
Total number of lots	125



KEY DIAGRAM



CLIENT



PROJECT

Master Plan

Stages 11+12

Raynbird Road, Narangba

AMENDMENTS:		DATE:
A	Original	27.04.2021
B	IR Changes	11.11.2021
C	Increase 21m depth lots to 21.5m	24.11.2021
D	Amend lot 1278 + Stage Boundary	09.12.2021
E	Amend lot 1278 + Stage Boundary	16.02.2022
F	Add Road widening Lot 3001	06.05.2022
G	Add Type A+B lots - Stage 11	24.05.2022
H		
DESIGNED:	KS	DATE: 24.05.2022
DRAWN:	KS	DATE: 24.05.2022
SCALE:	1:4,000 @ A3	1 of 1

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18-0084-PS22	G

LEGEND

Site boundary	
Stage boundary	
Drainage reserve	
Approx. Road widening	

STAGING LOT SUMMARY

Stage 11	47
Stage 12	78
Total number of lots	125

DEVELOPMENT SUMMARY - LOTS

Total number of Residential lots	125
Total number of Drainage reserve lots	1
Total number of Road widening lots	1
Total number of lots	127

DENSITY

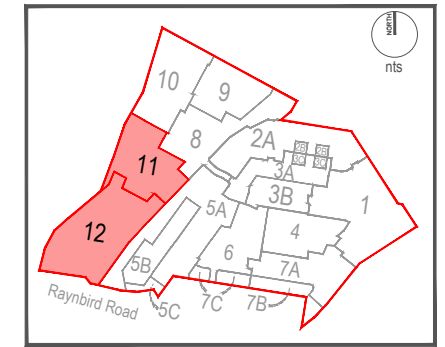
Total number of Residential lots	125
Approx. area (excluding lots 1099+ 3001)	7.0ha
Approx. Density	17.8du/ha

YIELD SUMMARY

MBRC Lot Type	Lot Frontage	Number of Lots	%
Type A	7.5m	2	1.6%
Type B	>7.5m-10m	16	12.8%
Type C	>10m-12.5m	73	58.4%
Type D	>12.5m-18m	31	24.8%
Type E	>18.0m-32.0m	3	2.4%
Type F	32.0m+	0	0.0%
Total		125	100%



KEY DIAGRAM



CLIENT



PROJECT

Plan of Subdivision

Stages 11+12

Raynbird Road, Narangba

AMENDMENTS:

A	Original	DATE:
B	IR Changes	27.04.2021
C	Increase 21m depth lots to 21.5m	11.11.2021
D	Amend lot 1278 + Stage Boundary	24.11.2021
E	Amend lot 1278 + Stage Boundary	09.12.2021
F	Amend lot 1278 + Stage Boundary	16.02.2022
G	Add Road widening Lot 3001	06.05.2022
H	Add Type A+B lots - Stage 11	24.05.2022

DESIGNED: KS DATE: 24.05.2022

DRAWN: KS DATE: 24.05.2022

SCALE: 1:2,000 @ A3 1 of 1

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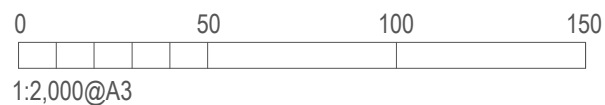
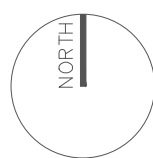
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LEGEND

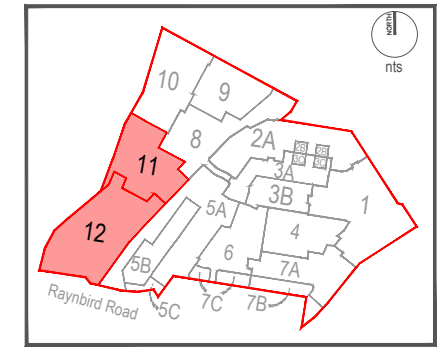
Site boundary	
Stage boundary	
Drainage reserve	
Approx. Road widening	

LEGEND - Setbacks

Lots with a frontage 12.5m or less	
Mandatory Built to Boundary Wall (BTB)	
Mandatory Driveway Location	
Mandatory Paired Driveway Location	



KEY DIAGRAM



CLIENT



PROJECT

Plan of Development

Stages 11+12

Raynbird Road, Narangba

AMENDMENTS:

A	Original	DATE:	27.04.2021
B	IR Changes	DATE:	11.11.2021
C	Increase 21m depth lots to 21.5m	DATE:	24.11.2021
D	Amend lot 1278 + Stage Boundary	DATE:	09.12.2021
E	Amend lot 1278 + Stage Boundary	DATE:	16.02.2022
F	Add Road widening Lot 3001	DATE:	06.05.2022
G	Add Type A+B lots - Stage 11	DATE:	24.05.2022
H			

DESIGNED: KS DATE: 24.05.2022

DRAWN: KS DATE: 24.05.2022

SCALE: 1:2,000 @ A3 1 of 1

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ISSUE:

G

LEGEND

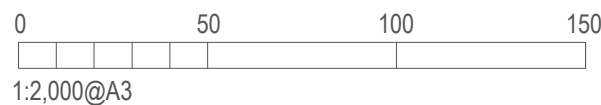
Site boundary	
Stage boundary	
Drainage reserve	
Approx. Road widening	

LEGEND - Setbacks

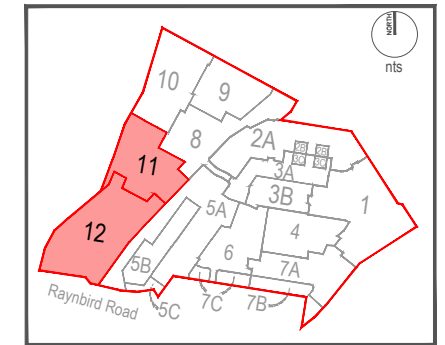
Lots with a frontage 12.5m or less	
Mandatory Driveway Location	
Possible On-street Car Parking	
Mandatory Paired Driveway Location	

ON STREET PARKING PROVISION

Lots with frontages 12.5m or less (0.5 spaces per lot)	91
Lots with a frontages of greater than 12.5 metres (1.0 spaces per lot)	34
Total number of on street parking required	79.5
Total number of on street parking shown on plan	80



KEY DIAGRAM



CLIENT



PROJECT

On-street Parking Plan

Stages 11+12

Raynbird Road, Narangba

AMENDMENTS:

A	Original	DATE: 27.04.2021
B	IR Changes	11.11.2021
C	Increase 21m depth lots to 21.5m	24.11.2021
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F	Add Road widening Lot 3001	06.05.2022
G	Add Type A+B lots - Stage 11	24.05.2022
H		

DESIGNED: KS DATE: 24.05.2022

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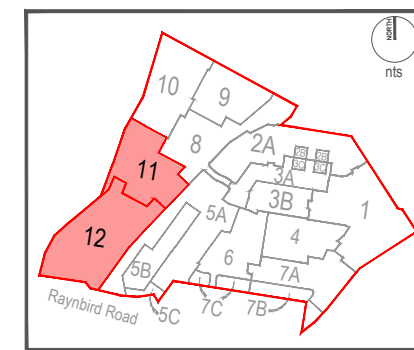
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18-0084-PG5

ISSUE:

G

KEY DIAGRAM



CLIENT



PROJECT

Path Hierarchy Plan

Stages 11+12

Raynbird Road, Narangba

AMENDMENTS:		DATE:
A	Original	27.04.2021
B	IR Changes	11.11.2021
C	Increase 21m depth lots to 21.5m	24.11.2021
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H		
DESIGNED:	KS	DATE: 24.05.2022
DRAWN:	KS	DATE: 24.05.2022
SCALE:	1:2,000 @ A3	1 of 1

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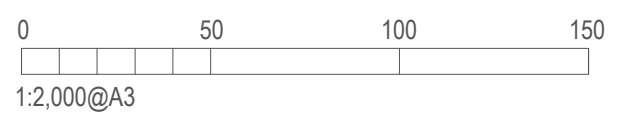
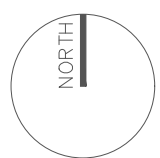
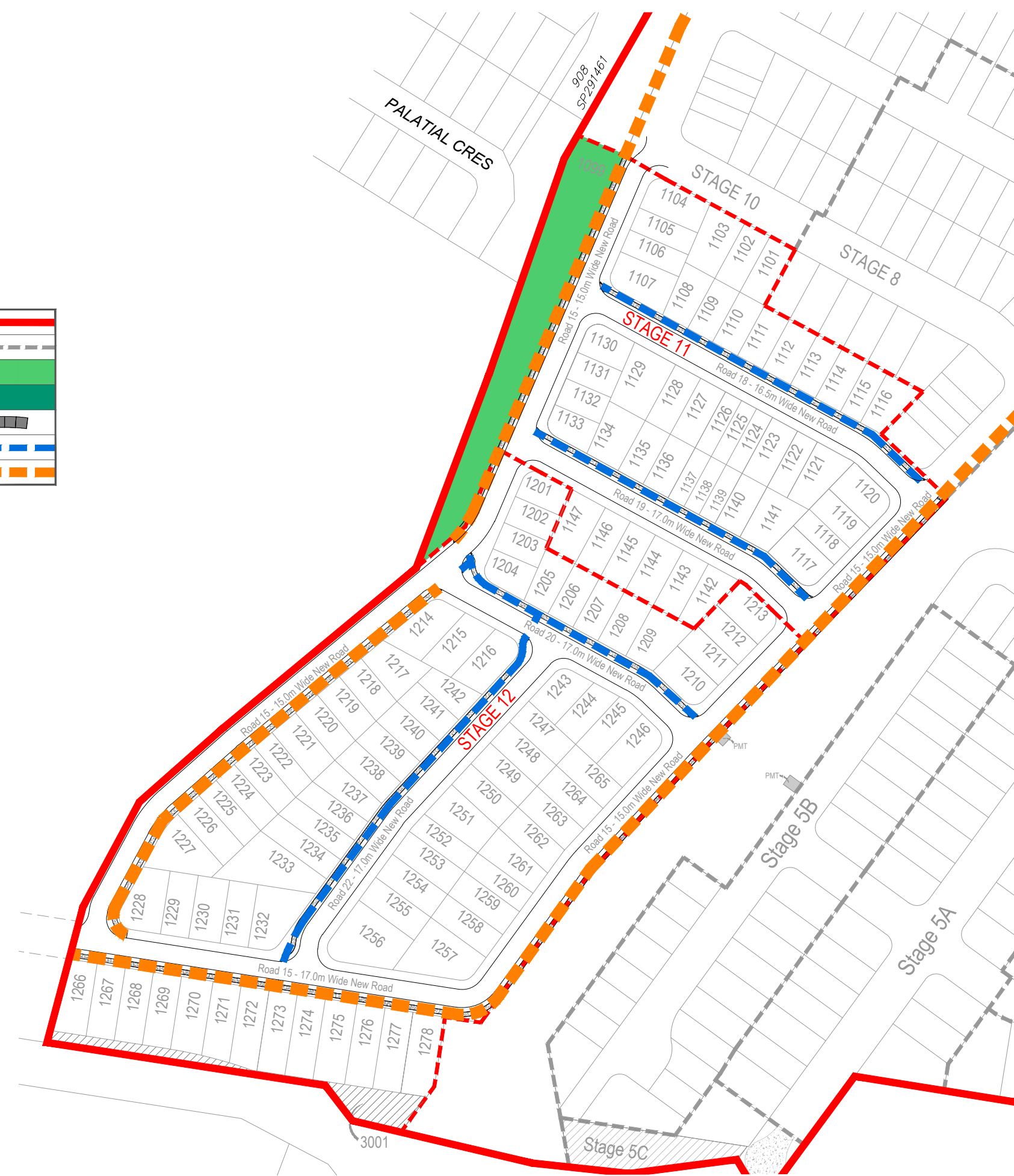
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DRAWING NUMBER:	ISSUE:
18-0084-PG6	G

LEGEND

Site boundary	
Stage boundary	
Drainage reserve	
MSES (approx.)	
Indicative Bin Pads	
Pathway 1.5m Wide	
Pathway 2.0m Wide	



PROPOSED RESIDENTIAL DEVELOPMENT

RIDGEVIEW - STAGES 11-12 ROL

RAYNBIRD ROAD, NARANGBA

FOR 'SATTERLEY PROPERTY GROUP PTY LTD'

DRAWING LIST

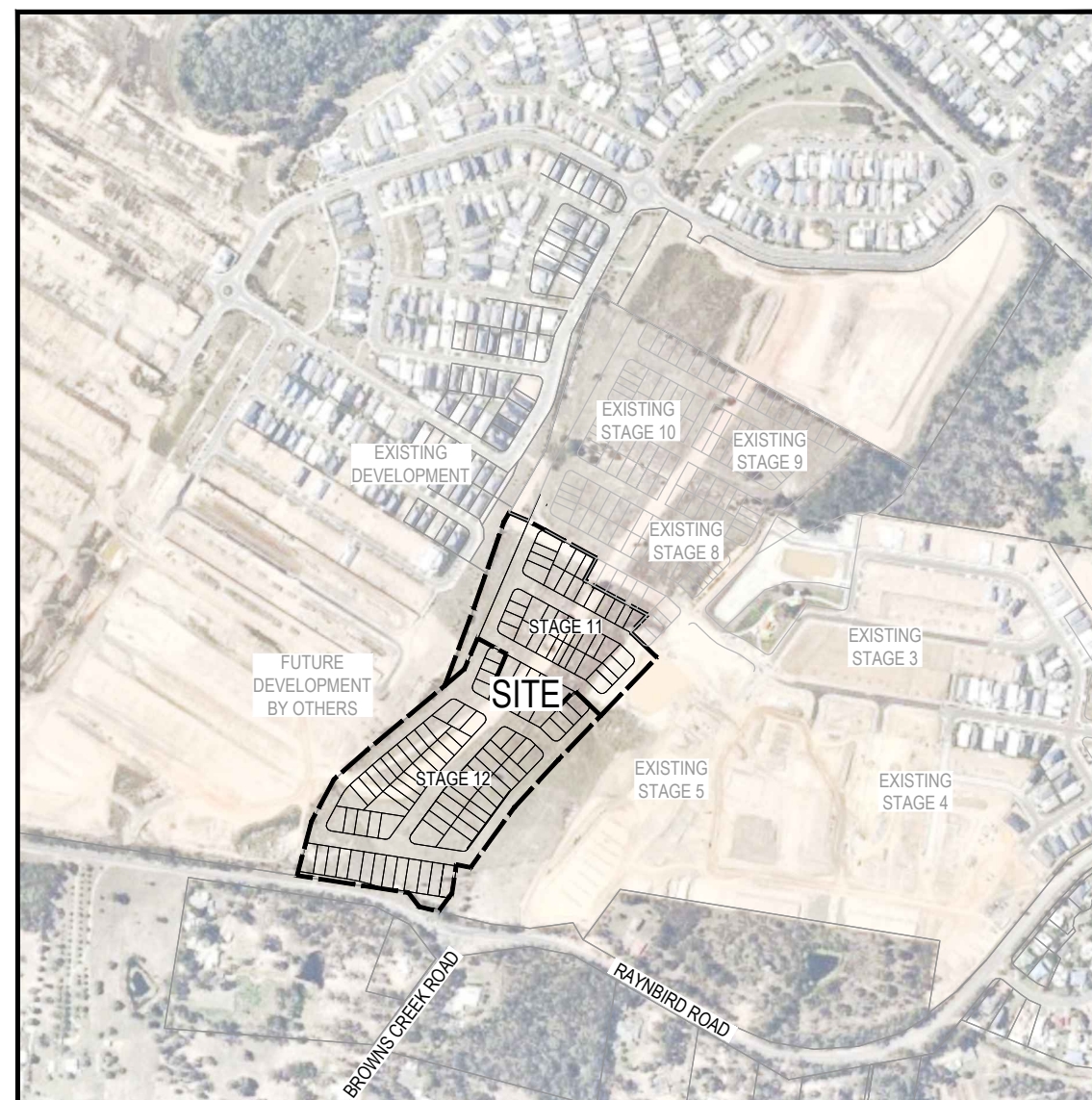
20-0192-P2000 COVER PLAN

EARTHWORKS, ROADWORKS AND DRAINAGE

20-0192-P2001 OVERALL LAYOUT PLAN
 20-0192-P2002 CONCEPT BULK EARTHWORKS LAYOUT SHEET 1 OF 2
 20-0192-P2003 CONCEPT BULK EARTHWORKS LAYOUT SHEET 2 OF 2
 20-0192-P2004 CONCEPT BULK EARTHWORKS OVERALL SITE SECTIONS
 20-0192-P2005 CONCEPT BULK EARTHWORKS SECTIONS
 20-0192-P2006 CONCEPT ROADWORKS AND DRAINAGE LAYOUT SHEET 1 OF 2
 20-0192-P2007 CONCEPT ROADWORKS AND DRAINAGE LAYOUT SHEET 2 OF 2

SEWERAGE AND WATER RETICULATION

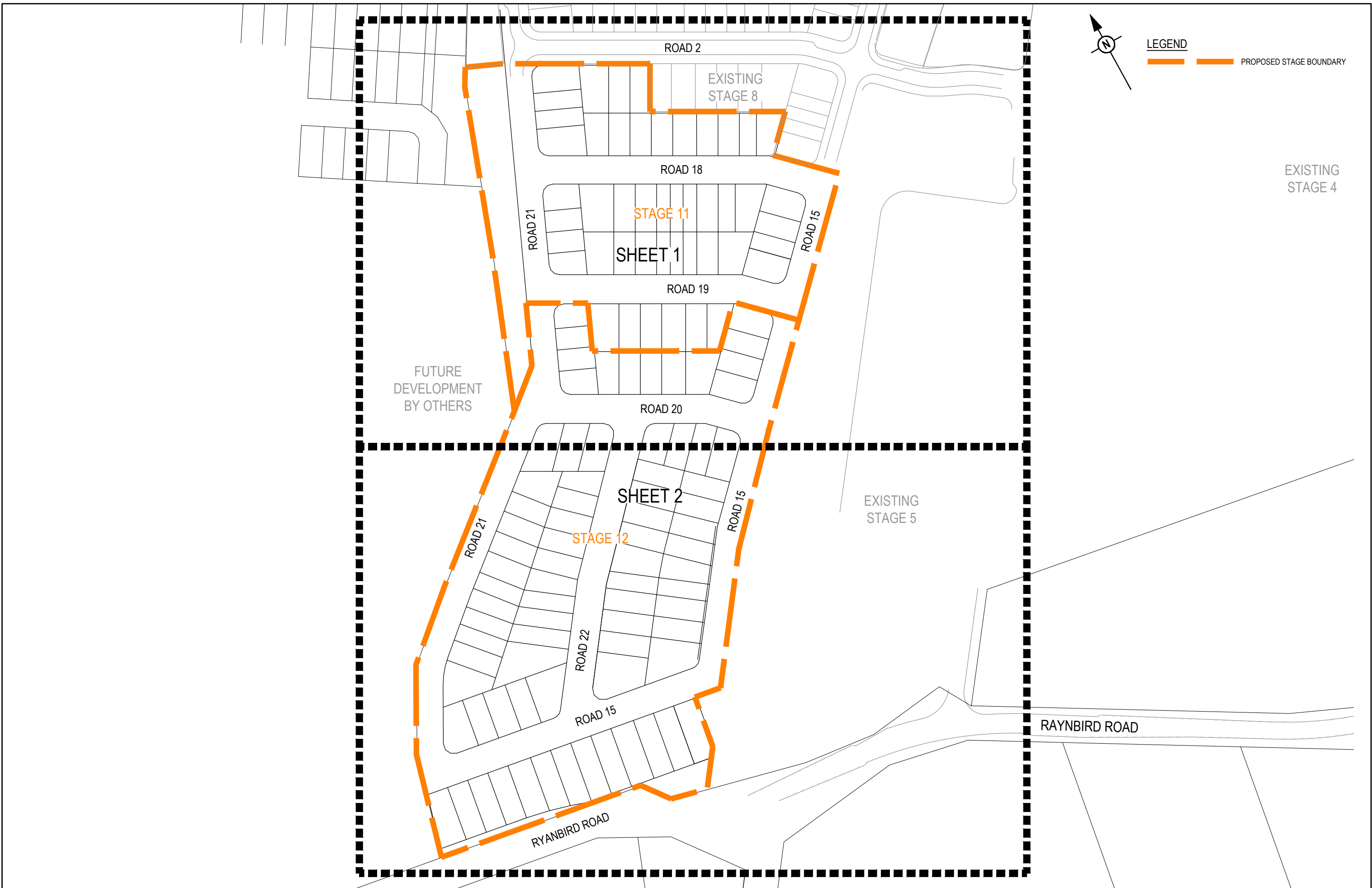
20-0192-P2008 CONCEPT WATER AND SEWERAGE LAYOUT SHEET 1 OF 2
 20-0192-P2009 CONCEPT WATER AND SEWERAGE LAYOUT SHEET 2 OF 2



LOCALITY PLAN
 SCALE 1:4000 (A1)
 SCALE 1:8000 (A3)

PROJECT INFORMATION SUMMARY:	
No. OF LOTS =	127
AREA OF SITE =	15.13 ha
RP DESCRIPTION	LOT 3003 ON SP316783
DATUM LEVEL AND LOCATION	PM 101150 RL 47.028 AHD
LOCAL AUTHORITY:	MORETON BAY REGIONAL COUNCIL
COUNCIL REFERENCE NUMBER:	DA/2021/1926

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE					
1	21.10.21	CS	CS	ORIGINAL ISSUE		FOR DEVELOPMENT APPLICATION NOT FOR CONSTRUCTION	SCALE 1:4000 40 0 40 80 120 160 200 A1 1:8000	SATTERLEY PROPERTY GROUP PTY LTD ASSOCIATED CONSULTANT PEAKURBAN PTY LTD (07) 3532 1300	RIDGEVIEW STAGES 11 -12 ROL RAYNBIRD ROAD, NARANGBA	COVER PLAN					
2	17.02.22	AS	AS	DRAWING LIST AMENDED, LOT BOUNDARY AMENDED	DESIGN						APPROVED	TROY SCHULTZ RPEQ 20631	PROJECT No. 20-0192	DRAWING No. P2000	REVISION 3
3	11.07.22	KP	KP	LOT LAYOUT UPDATED											
FOR AND ON BEHALF OF PEAKURBAN PTY LTD							ENQUIRIES@PEAKURBAN.COM.AU								



REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	14.12.21	AS	AS	LOT BOUNDARIES UPDATED
3	17.02.22	AS	AS	LOT 1278 BOUNDARY AND SURROUNDING DESIGN AMENDED
4	11.07.22	KP	KP	LOT LAYOUT UPDATED

FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION
 DRAWN: TROY SCHULTZ
 STATUS: APPROVED
 RPEQ 20631
 FOR AND ON BEHALF OF PEAKURBAN PTY LTD

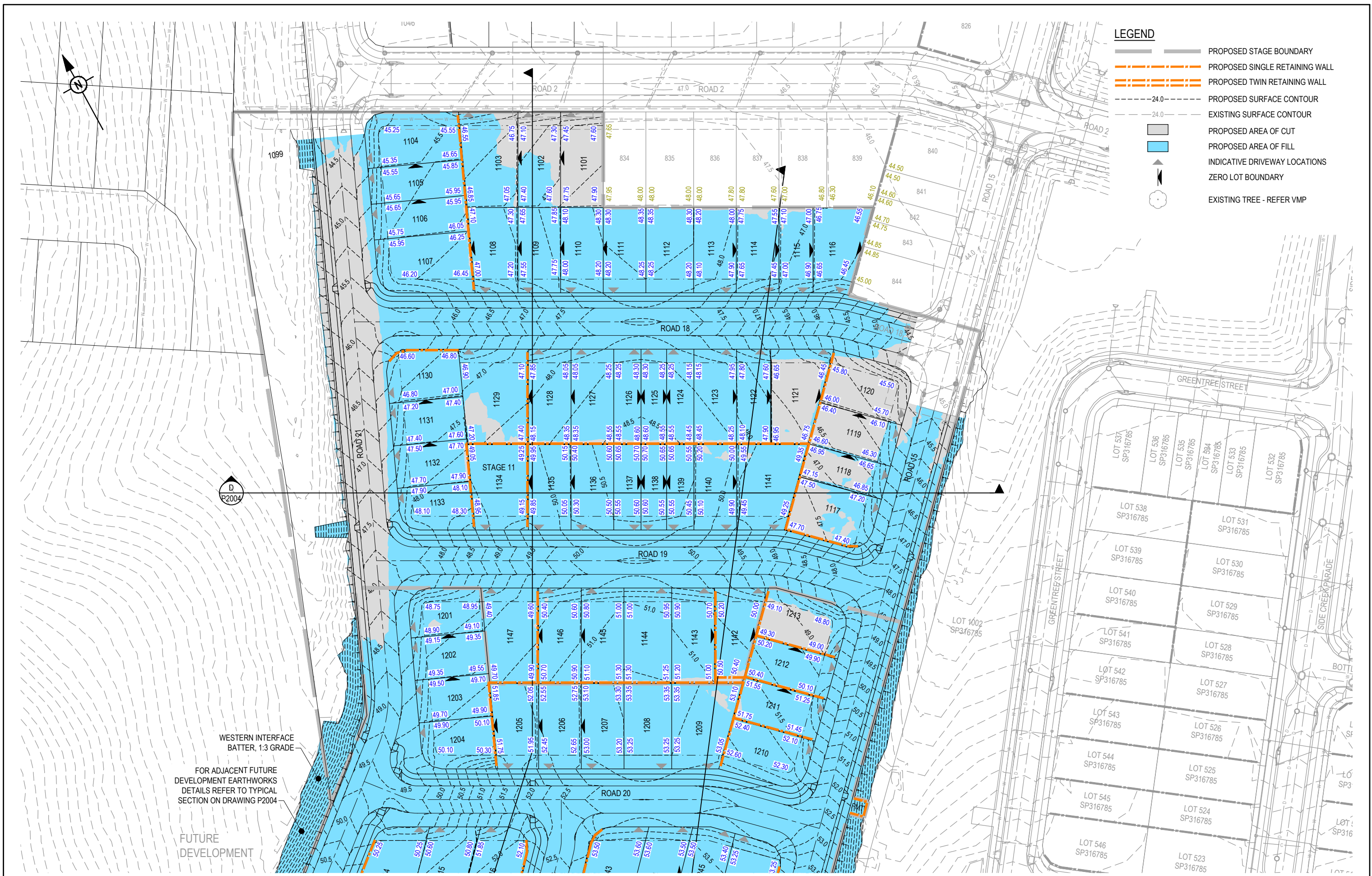


SCALE: 1:1500, 1:3000
 30 20 10 0 30 60 A1 A3

CLIENT: **SATTERLEY PROPERTY GROUP PTY LTD**
 ASSOCIATED CONSULTANT: PEAKURBAN PTY LTD (07) 3532 1300

PROJECT NAME: **RIDGEVIEW STAGES 11-12 ROL**
 RAYNBIRD ROAD, NARANGBA

DRAWING TITLE: **OVERALL LAYOUT PLAN**
 PROJECT No: 20-0192
 DRAWING No: P2001
 REVISION: 4



REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	17.02.22	AS	AS	DRAWING TITLE AMENDED
3	11.07.22	KP	KP	LOT LAYOUT, PAD LEVELS UPDATED

FOR DEVELOPMENT APPLICATION NOT FOR CONSTRUCTION	STATUS
DESIGN APPROVED TROY SCHULTZ	RPEQ 20631
FOR AND ON BEHALF OF PEAKURBAN PTY LTD	

PEAKURBAN
Achieve more.

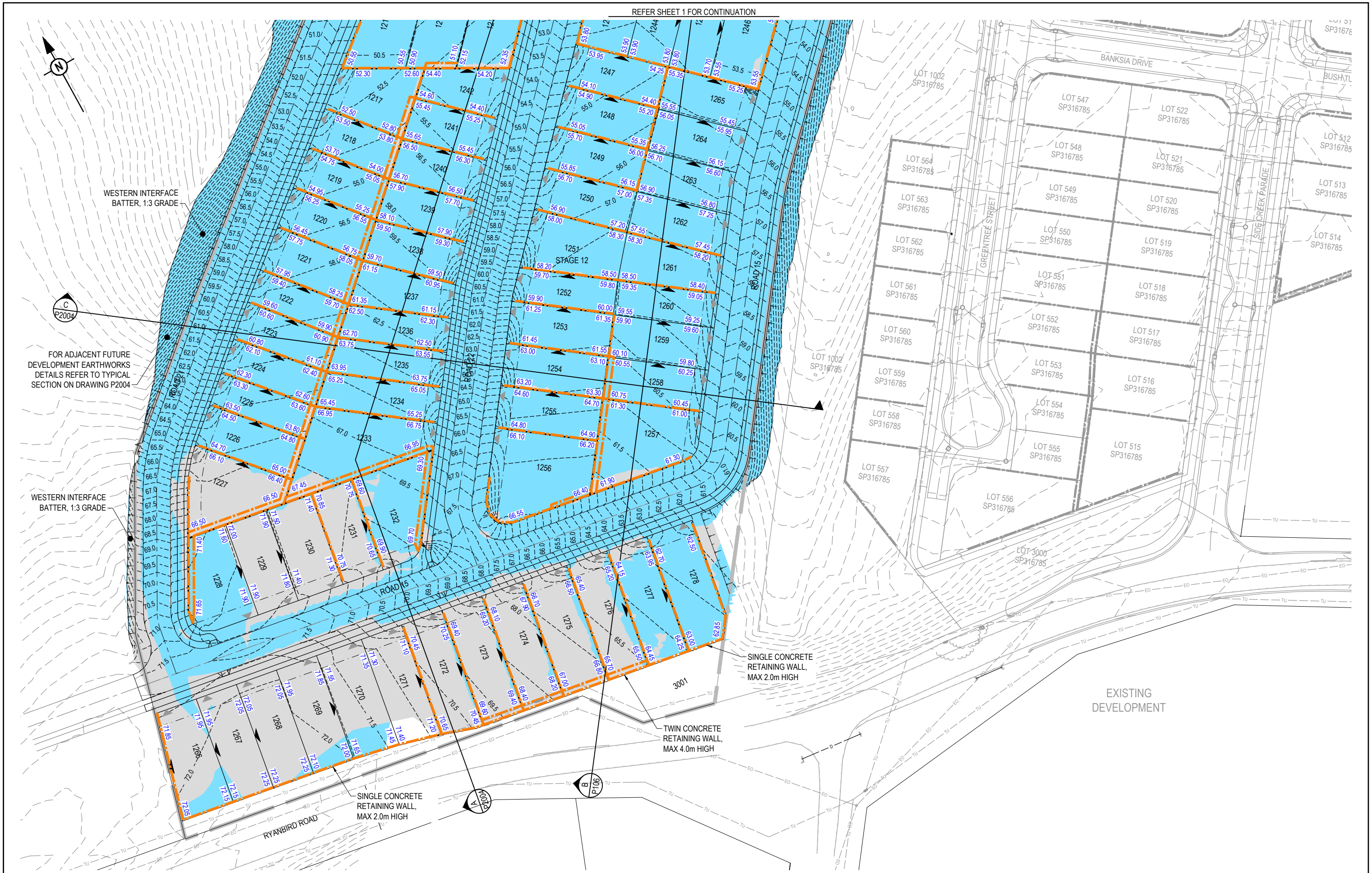
ENQUIRIES@PEAKURBAN.COM.AU

SCALE	1:500 10 5 0 10 20 A1
	1:1000

CLIENT	SATTERLEY PROPERTY GROUP PTY LTD
ASSOCIATED CONSULTANT	PEAKURBAN PTY LTD (07) 3532 1300

PROJECT NAME	RIDGEVIEW STAGES 11 - 12 ROL
	RAYNBIRD ROAD, NARANGBA

DRAWING TITLE	CONCEPT BULK EARTHWORKS LAYOUT SHEET 1 OF 2
PROJECT No.	20-0192
DRAWING No.	P2002
REVISION	3



REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	14.12.21	AS	AS	DESIGN AND BOUNDARY AROUND LOT 1278 AMENDED
3	17.02.22	AS	AS	LOT 1278 BOUNDARY AND SURROUNDING DESIGN AMENDED
4	11.07.22	KP	KP	LOT LAYOUT, PAD LEVELS UPDATED

DRAWN	STATUS
FOR DEVELOPMENT APPLICATION NOT FOR CONSTRUCTION	
DESIGN APPROVED TROY SCHULTZ	RPEQ 20631

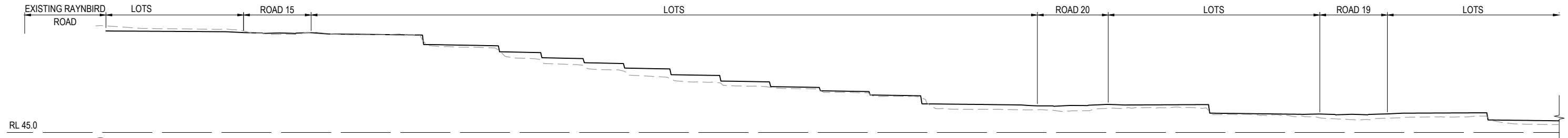
PEAKURBAN
Achieve more.
ENQUIRIES@PEAKURBAN.COM.AU

SCALE
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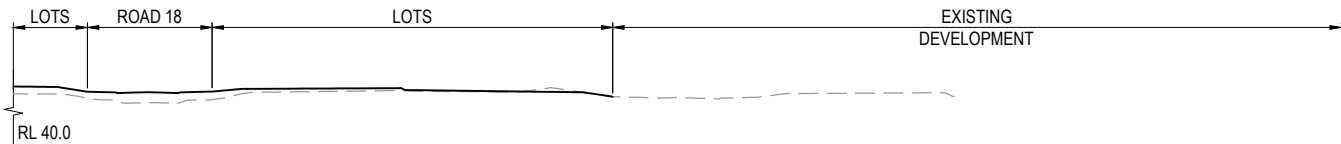
CLIENT
SATTERLEY PROPERTY GROUP PTY LTD
ASSOCIATED CONSULTANT PEAKURBAN PTY LTD (07) 3532 1300

PROJECT NAME
RIDGEVIEW STAGES 11 -12 ROL
RAYNBIRD ROAD, NARANGBA

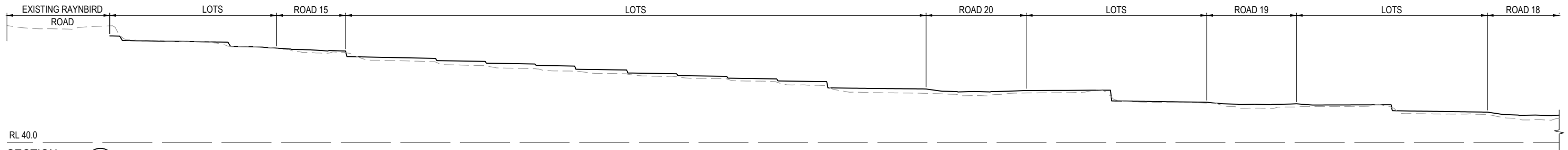
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CONCEPT BULK EARTHWORKS LAYOUT SHEET 2 OF 2		
PROJECT No. 20-0192	DRAWING No. P2003	REVISION 4



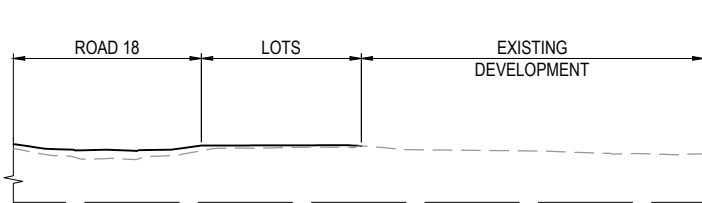
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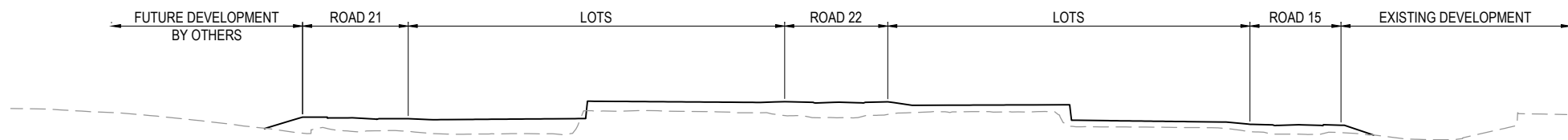
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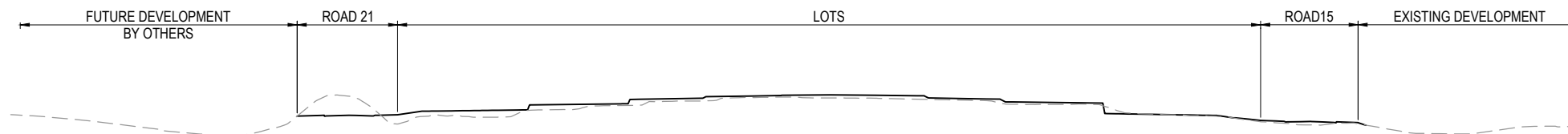
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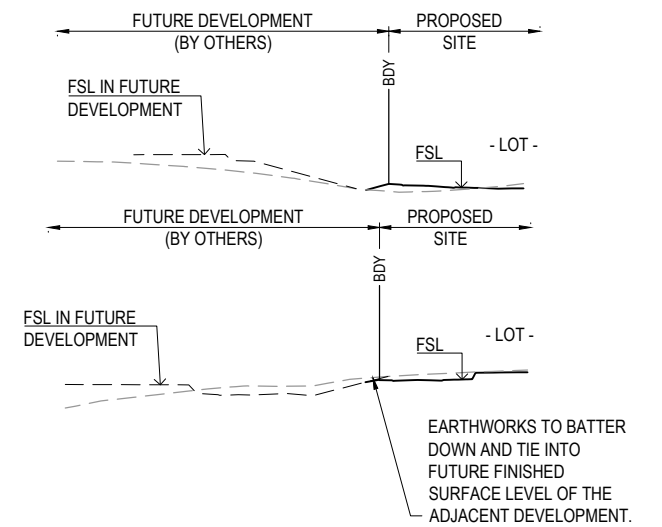
SECTION B
SCALE 1:500 (A1) P2002/3



SECTION C
SCALE 1:500 (A1) P2002/3



SECTION D
SCALE 1:500 (A1) P2002/3



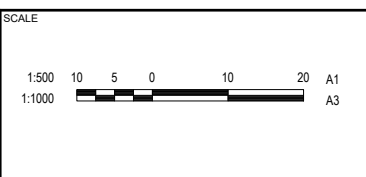
TYPICAL SECTION -
PROPOSED SITE TO ADJACENT DEVELOPMENT
N.T.S

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	11.07.22	KP	KP	LOT LAYOUT, PAD LEVELS UPDATED

**FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION**

DESIGN APPROVED
TROY SCHULTZ RPEQ 20631

FOR AND ON BEHALF OF PEAKURBAN PTY LTD



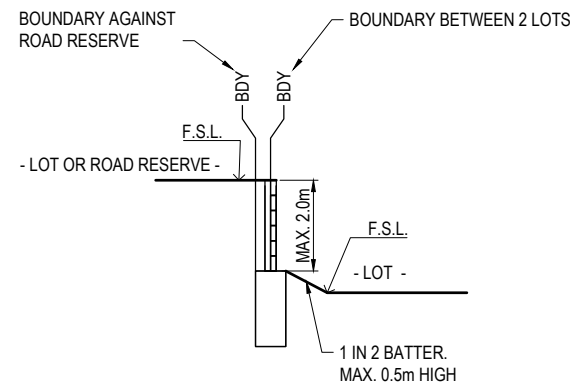
CLIENT
**SATTERLEY PROPERTY
GROUP PTY LTD**

ASSOCIATED CONSULTANT
PEAKURBAN PTY LTD
(07) 3532 1300

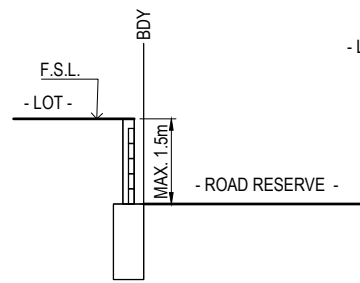
PROJECT NAME
**RIDGEVIEW
STAGES 11 -12 ROL**

RAYNBIRD ROAD,
NARANGBA

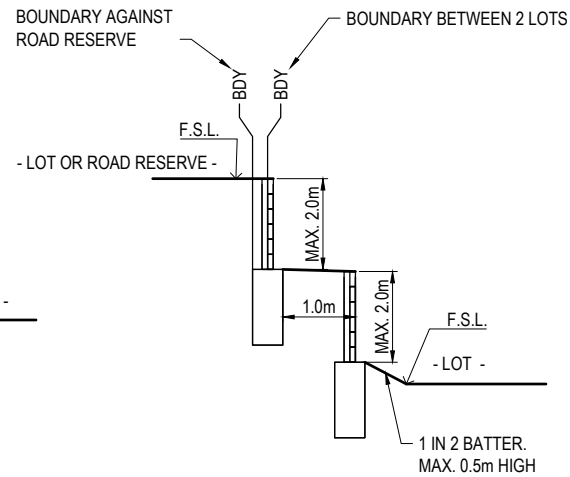
DRAWING TITLE		
CONCEPT BULK EARTHWORKS OVERALL SITE SECTIONS		
PROJECT No. 20-0192	DRAWING No. P2004	REVISION 2



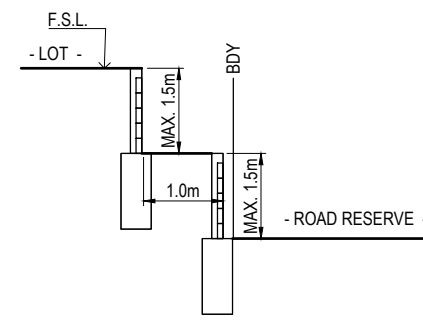
TYPICAL SECTION -
SINGLE WALL INTO LOTS
N.T.S



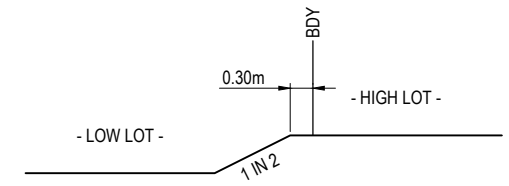
TYPICAL SECTION -
SINGLE WALL INTO ROAD RESERVE
N.T.S



TYPICAL SECTION -
TWO TIER WALL INTO LOTS
N.T.S

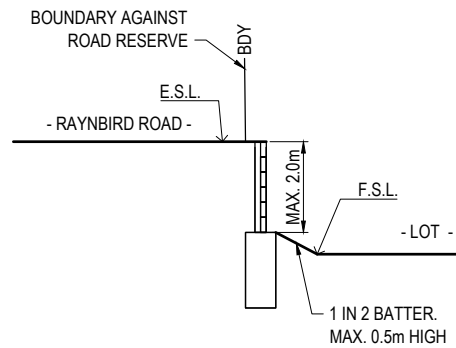


TYPICAL SECTION -
TWO TIER WALL INTO ROAD RESERVE
N.T.S



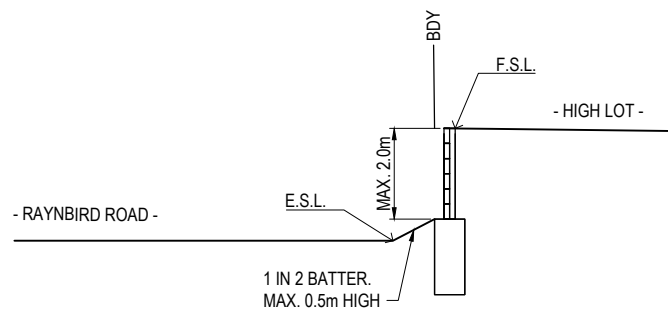
TYPICAL STEP BETWEEN LOTS DETAIL
N.T.S

- RETAINING WALL NOTES:**
1. ALL RETAINING WALLS ARE TO BE STRUCTURALLY DESIGNED AND CERTIFIED. FORMS 15 AND 16 ARE TO BE PROVIDED.
 2. DESIGN OF WALLS TO CONSIDER ALL LOADS (FENCES, DWELLINGS ETC) AND ASSOCIATED IMPACTS FROM ANY ADJACENT SERVICES - FOOTING DEPTHS TO BE EXTENDED AS REQUIRED.
 3. GEOTECHNICAL CONDITIONS ARE TO BE CONFIRMED AND APPROPRIATELY CONSIDERED FOR ALL WALLS.
 4. REFER LANDSCAPE DRAWINGS FOR FURTHER INFORMATION ON RETAINING WALLS, PARTICULARLY RELATING TO FINISHES.
 5. TEMPORARY SAFETY FENCING TO BE INSTALLED BEHIND ALL WALLS 1.0m HIGH AND GREATER.
 6. WALLS TO BE DESIGNED TO ACCOMMODATE A SURCHARGE SUITABLE FOR A RESIDENTIAL HOUSE IMMEDIATELY BEHIND THE WALL. REFER TYPICAL DETAIL.

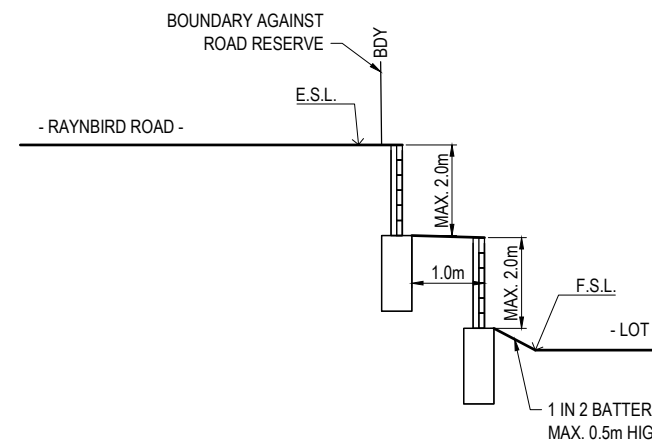


TYPICAL SECTION - SINGLE WALL WITH
ACOUSTIC BARRIER INTO LOTS
N.T.S

NOTE:
REFER TO ACOUSTIC REPORT AS
WELL AS LANDSCAPING ARCHITECT'S
DRAWINGS FOR FENCING, PLANTING
AND WALL DETAILS.



TYPICAL SECTION - SINGLE WALL WITH
ACOUSTIC BARRIER INTO ROAD RESERVE
N.T.S



TYPICAL SECTION -
TWIN WALL WITH ACOUSTIC BARRIER INTO LOTS
N.T.S

REV	DATE	DESIGN	DRAWN	REVISION DETAILS	DRAWN	STATUS	SCALE	CLIENT	PROJECT NAME	DRAWING TITLE				
1	21.10.21	CS	CS	ORIGINAL ISSUE										
2	11.07.22	KP	KP	TYPICAL SECTIONS WITH ACOUSTIC BARRIERS UPDATED										
<p>FOR DEVELOPMENT APPLICATION NOT FOR CONSTRUCTION</p> <p>DESIGN APPROVED TROY SCHULTZ RPEQ 20631</p> <p>FOR AND ON BEHALF OF PEAKURBAN PTY LTD</p>							<p>PEAKURBAN Achieve more.</p> <p>ENQUIRIES@PEAKURBAN.COM.AU</p>		<p>SATTERLEY PROPERTY GROUP PTY LTD</p> <p>ASSOCIATED CONSULTANT PEAKURBAN PTY LTD (07) 3532 1300</p>		<p>RIDGEVIEW STAGES 11 -12 ROL</p> <p>RAYNBIRD ROAD, NARANGBA</p>		<p>CONCEPT BULK EARTHWORKS SECTIONS</p> <p>PROJECT No. 20-0192 DRAWING No. P2005 REVISION 2</p>	



- LEGEND**
- PROPOSED STAGE BOUNDARY
 - - - PROPOSED ROAD CONTROL LINE
 - - - PROPOSED KERB INVERT LINE
 - - - EXISTING KERB INVERT LINE
 - - - EXISTING EDGE OF BITUMEN
 - ▭ PROPOSED NEW ROAD PAVEMENT
 - ▭ PROPOSED CONCRETE PATH AND PRAM RAMP
 - ↑ INDICATIVE DRIVEWAY LOCATION
 - - - ZERO LOT BOUNDARY
 - - - FINISHED SURFACE CONTOUR
 - PROPOSED STORMWATER DRAINAGE PIPE
 - - - EXISTING STORMWATER DRAINAGE PIPE
 - PROPOSED RETAINING WALL
 - - - PROPOSED SEWERAGE MAIN
 - - - EXISTING SEWERAGE MAIN
 - - - PROPOSED WATER MAIN
 - - - EXISTING WATER MAIN
 - EXISTING TREE - REFER VMP

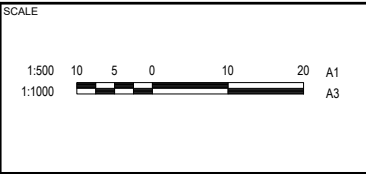
REFER SHEET 2 FOR CONTINUATION

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	08.04.22	JV	SC	ROAD 20 DRAINAGE LINE MOVED
3	11.07.22	KP	KP	LOT LAYOUT UPDATED

**FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION**

DESIGN APPROVED
TROY SCHULTZ RPEQ 20631

FOR AND ON BEHALF OF PEAKURBAN PTY LTD



CLIENT
SATTERLEY PROPERTY GROUP PTY LTD

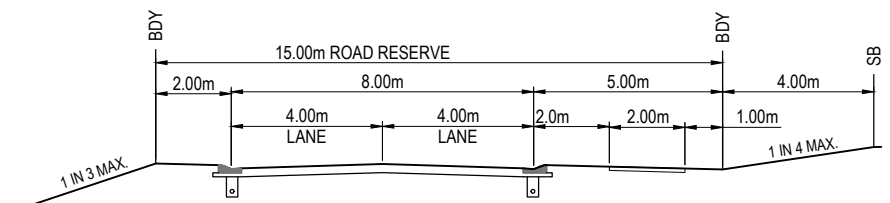
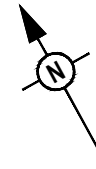
ASSOCIATED CONSULTANT
PEAKURBAN PTY LTD
(07) 3532 1300

PROJECT NAME
RIDGEVIEW STAGES 11-12 ROL

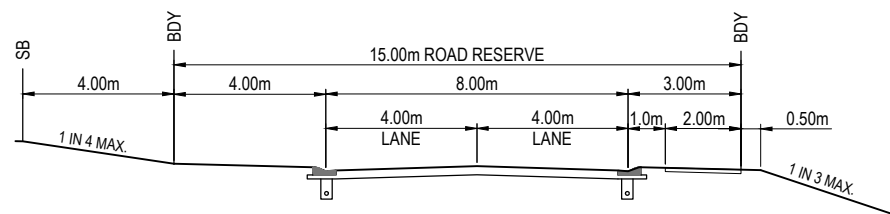
RAYNBIRD ROAD, NARANGBA

DRAWING TITLE
CONCEPT ROADWORKS AND DRAINAGE LAYOUT SHEET 1 OF 2

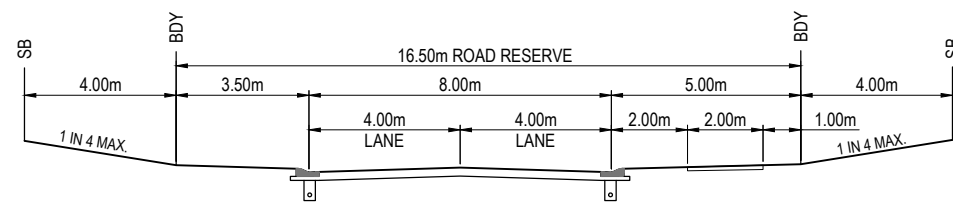
PROJECT No. **20-0192**
DRAWING No. **P2006**
REVISION **3**



**ROAD 21 - 15.0m WIDE LIVING RESIDENTIAL
TYPICAL SECTION ALONG WESTERN BOUNDARY**
1:100 (A1)
1:200 (A3)



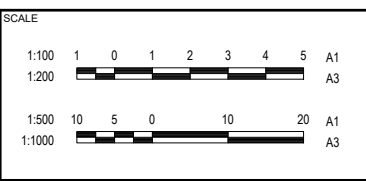
**ROAD 15 - 15.0m WIDE LIVING RESIDENTIAL
TYPICAL SECTION ALONG PARK / DRAINAGE SWALE**
1:100 (A1)
1:200 (A3)



**ROAD 15 - 16.50m WIDE LIVING RESIDENTIAL
TYPICAL SECTION**
1:100 (A1)
1:200 (A3)

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	14.12.21	AS	AS	DESIGN AND BOUNDARY AROUND LOT 1278 AMENDED, SCALE BAR ADDED
3	17.02.22	AS	AS	LOT 1278 BOUNDARY AND SURROUNDING DESIGN AMENDED
4	11.07.22	KP	KP	LOT LAYOUT UPDATED

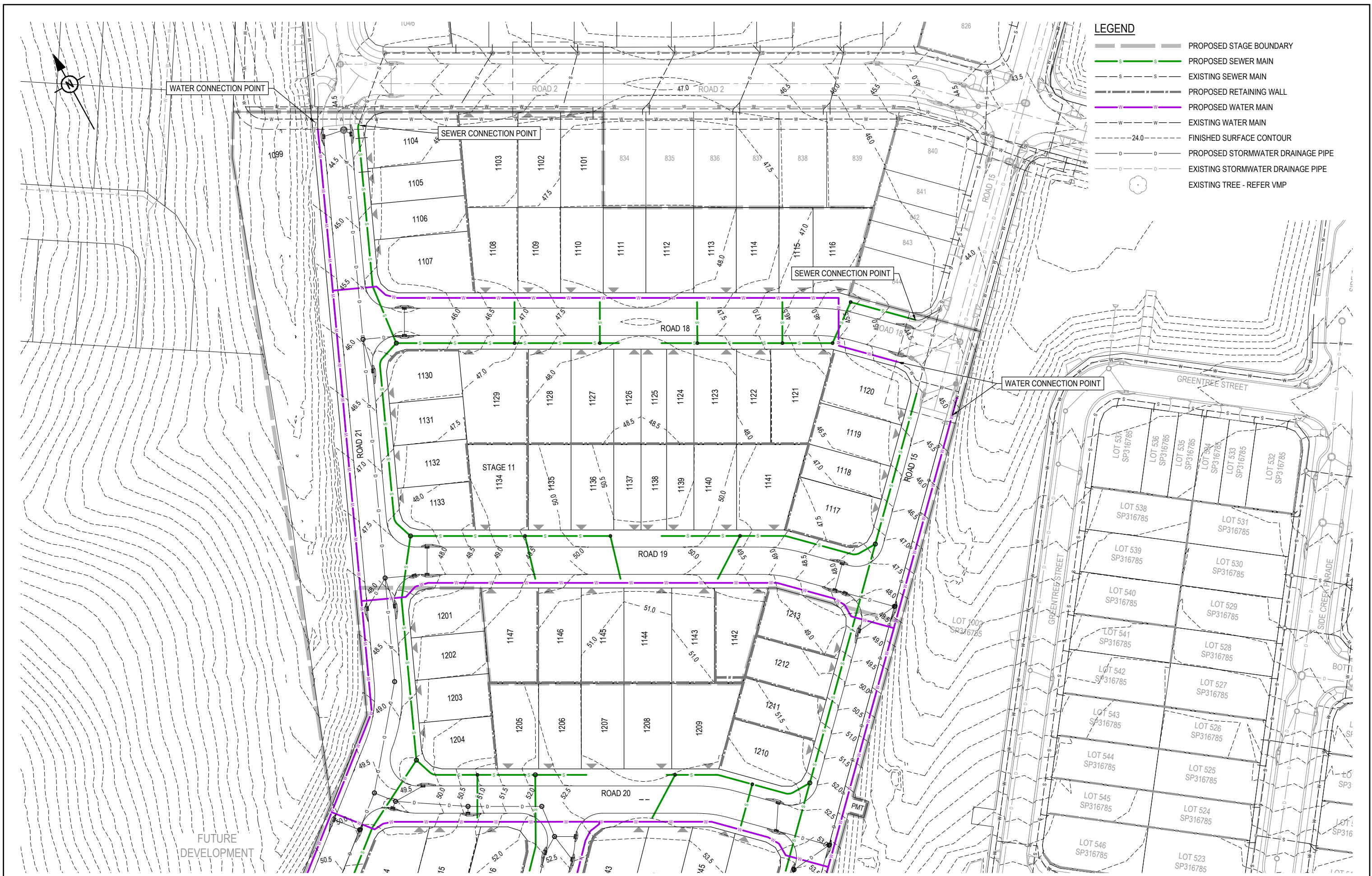
DRAWN	STATUS
FOR DEVELOPMENT APPLICATION NOT FOR CONSTRUCTION	
DESIGN APPROVED TROY SCHULTZ RPEQ 20631	



CLIENT
SATTERLEY PROPERTY GROUP PTY LTD
ASSOCIATED CONSULTANT
PEAKURBAN PTY LTD
(07) 3532 1300

PROJECT NAME
RIDGEVIEW STAGES 11 - 12 ROL
RAYNBIRD ROAD,
NARANGBA

DRAWING TITLE		
CONCEPT ROADWORKS AND DRAINAGE LAYOUT SHEET 2 OF 2		
PROJECT No. 20-0192	DRAWING No. P2007	REVISION 4



LEGEND

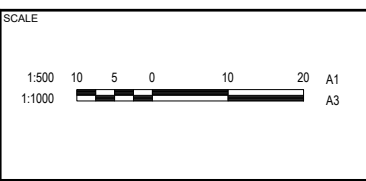
- PROPOSED STAGE BOUNDARY
- PROPOSED SEWER MAIN
- EXISTING SEWER MAIN
- PROPOSED RETAINING WALL
- PROPOSED WATER MAIN
- EXISTING WATER MAIN
- FINISHED SURFACE CONTOUR
- PROPOSED STORMWATER DRAINAGE PIPE
- EXISTING STORMWATER DRAINAGE PIPE
- EXISTING TREE - REFER VMP

REV	DATE	DESIGN	DRAWN	REVISION DETAILS
1	21.10.21	CS	CS	ORIGINAL ISSUE
2	11.07.22	KP	KP	LOT LAYOUT UPDATED

**FOR DEVELOPMENT APPLICATION
NOT FOR CONSTRUCTION**

DESIGN APPROVED
TROY SCHULTZ RPEQ 20631

FOR AND ON BEHALF OF PEAKURBAN PTY LTD



CLIENT
SATTERLEY PROPERTY GROUP PTY LTD

ASSOCIATED CONSULTANT
PEAKURBAN PTY LTD
(07) 3532 1300

PROJECT NAME
RIDGEVIEW STAGES 11-12 ROL

RAYNBIRD ROAD, NARANGBA

DRAWING TITLE
CONCEPT WATER AND SEWERAGE LAYOUT SHEET 1 OF 2

PROJECT No. **20-0192** DRAWING No. **P2008** REVISION **2**

Appendix B – Site Photos



Photo 1: Noise monitoring location 1



Photo 2: Noise monitoring location 1



Photo 3: Noise monitoring location 2



Photo 4: Noise monitoring location 2

Appendix C – Meteorological Data

Redcliffe, Queensland

September 2017 Daily Weather Observations

Most observations from Talobilla Park, but wind from Redcliffe Jetty.



Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain mm	Evap mm	Sun hours	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	Fr	11.8	20.7	0					18.3	51		S	15	1024.0	19.9	44		E	19	1019.1	
2	Sa	13.5	22.6	0			NE	26	16:06	19.1	49	S	13	1023.3	20.8	53		NE	19	1018.6	
3	Su	13.3	25.2	0			N	44	16:58	20.4	63	NW	11	1020.8	23.3	57		NE	28	1014.7	
4	Mo	18.1	29.7	0			N	48	15:36	21.8	63	NNE	17	1014.8	23.4	65		NNE	31	1009.3	
5	Tu	15.6	27.8	0			NNE	39	16:45	22.3	21	SW	17	1016.6	27.3	13		NW	22	1012.4	
6	We	12.9	26.5	0					19.9	23	WSW	35	1018.3	25.6	14		W	20	1014.5		
7	Th	14.0	26.2	0					20.5	28	SW	11	1021.0	24.4	26		ENE	15	1016.7		
8	Fr	10.4	26.1	0					19.9	28	WSW	19	1020.5	25.7	14		WSW	28	1015.3		
9	Sa	10.6	23.3	0					19.5	27	SSW	20	1021.3	20.6	38		ESE	28	1018.5		
10	Su	12.2	22.5	0					19.3	45	S	13	1023.4	20.9	51		NE	22	1019.4		
11	Mo	12.5	24.5	0					20.0	58	SE	9	1021.9	22.4	60		NNE	33	1017.0		
12	Tu	15.0	25.9	0			NNE	37	17:24	20.7	68	N	17	1019.6	23.0	67		NNE	31	1015.3	
13	We	18.0	25.9	0			NNE	56	16:22	22.1	61	NNE	17	1016.3	24.1	63		NNE	39	1010.5	
14	Th	20.0	23.2	0					20.2	43	WSW	24	1012.5	21.6	23		WSW	35	1012.5		
15	Fr	8.7	21.4	0					17.4	28	SSW	13	1023.3	20.5	29		ENE	22	1019.8		
16	Sa	9.4	24.7	0					20.5	35	E	6	1023.6	22.3	53		NE	35	1018.0		
17	Su	13.2	23.0	0					20.9	58	SSE	30	1024.6	21.3	56		ESE	30	1022.8		
18	Mo	17.7	23.3	0			NE	33	18:02	20.8	53	SSE	9	1027.6	21.3	49		NE	20	1022.9	
19	Tu	12.5	25.5	0					20.2	56	NW	7	1022.3	23.8	59		NE	31	1016.3		
20	We	16.2	23.3	0			SE	48	04:54	21.8	55	SSE	26	1019.4	22.0	60		ESE	30	1015.3	
21	Th	16.4	24.2	0			NNE	37	15:52	22.2	60	SE	6	1019.9	22.8	60		NNE	28	1015.8	
22	Fr	19.5	26.4	0			N	59	19:04	23.7	63	NNE	22	1019.1	23.1	71		NNE	37	1014.6	
23	Sa	16.8	27.4	1.4			NNE	43	16:11	22.1	63	NNE	17	1017.3	25.1	61		NNE	31	1011.9	
24	Su	19.8	28.4	0			NNE	56	15:06	23.6	60	N	20	1013.9	25.2	63		NNE	43	1008.6	
25	Mo	20.5	28.5	0			N	56	15:19	24.8	55	NNE	15	1014.1	26.3	61		N	41	1009.1	
26	Tu	19.1	27.1	0			SSE	39	13:11	25.3	62	ENE	9	1014.1	23.5	61		SE	24	1013.1	
27	We	19.9	24.8	0			SSE	37	00:15	22.0	65	E	15	1018.5	22.4	77		ESE	20	1014.4	
28	Th	20.4	30.0	0			N	44	15:42	24.5	62	N	22	1013.3	28.1	56		N	31	1007.5	
29	Fr	20.2	33.7	0			NE	33	14:36	29.7	30	SE	11	1015.4	30.8	31		NE	30	1011.0	
30	Sa	18.6	33.2	0			ESE	43	15:17	29.1	23	S	22	1015.1	30.1	25		ENE	15	1011.6	
Statistics for September 2017																					
Mean		15.6	25.8						21.8	48			16	1019.2	23.7	48			27	1014.9	
Lowest		8.7	20.7						17.4	21		#	6	1012.5	19.9	13		ENE	15	1007.5	
Highest		20.5	33.7	1.4			N	59	29.7	68		WSW	35	1027.6	30.8	77		NNE	43	1022.9	
Total				1.4																	

Observations were drawn from Redcliffe (station 040958)

This Automatic Weather Station (AWS) is located in Talobilla Park, and sources its wind measurements from an anemometer on Redcliffe jetty.

IDCJDW4099.201709 Prepared at 13:05 GMT on 7 Oct 2017
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<http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

Redcliffe, Queensland

October 2017 Daily Weather Observations

Most observations from Talobilla Park, but wind from Redcliffe Jetty.



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					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Su	19.5	23.7	0			SSE	48	17:09	23.2	43		SE	24	1020.6	21.4	68		SSE	33	1019.4
2	Mo	17.0	22.2	3.4			ENE	46	23:00	21.0	67		ENE	26	1023.4	19.9	79		ENE	31	1020.4
3	Tu	16.2	23.6	36.0			SE	37	03:10	18.3	93		SW	13	1022.4	22.9	76		ENE	17	1018.7
4	We	18.2	24.5	10.0			ESE	31	14:30	22.3	74		SSE	15	1020.3	23.6	75		E	26	1016.8
5	Th	19.7	26.6	0			NNE	35	17:57	23.7	64		SSE	15	1019.5	24.9	67		ESE	19	1015.2
6	Fr	19.3	28.4	0			NNE	41	15:24	24.4	69		NE	13	1016.5	27.3	64		NNE	30	1011.8
7	Sa	20.4	23.2	0			SSE	54	02:18	22.0	64		SSE	35	1020.5	22.0	63		SSE	26	1019.1
8	Su	18.2	24.7	0			NNE	30	16:29	22.6	65		SE	7	1021.1	23.4	64		NE	19	1016.9
9	Mo	20.2	29.0	0			NE	37	14:13	23.3	73		NNW	9	1015.5	25.6	70		NE	31	1010.0
10	Tu	21.0	31.5	0.2			ESE	37	14:40	29.0	60		SE	13	1013.5	25.5	77		ESE	28	1012.2
11	We	22.7		0						24.3	78		SSE	11	1018.1						
Statistics for the first 11 days of October 2017																					
Mean		19.3	25.7							23.1	68			16	1019.2	23.6	70			26	1016.0
Lowest		16.2	22.2							18.3	43		SE	7	1013.5	19.9	63		ENE	17	1010.0
Highest		22.7	31.5	36.0			SSE	54		29.0	93		SSE	35	1023.4	27.3	79		SSE	33	1020.4
Total				49.6																	

Observations were drawn from Redcliffe (station 040958)

This Automatic Weather Station (AWS) is located in Talobilla Park, and sources its wind measurements from an anemometer on Redcliffe jetty.

IDCJDW4099.201710 Prepared at 00:26 GMT on 11 Oct 2017
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<http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

Redcliffe, Queensland

May 2018 Daily Weather Observations

Most observations from Talobilla Park, but wind from Redcliffe Jetty.



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					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Tu	15.3	24.3	0			SE	46	14:27	21.2	57		SSW	17	1024.0	23.2	55		SSE	35	1021.8
2	We	17.0	25.2	0			SSE	35	01:53	21.5	66		SSW	19	1023.2	23.3	57		SSE	28	1019.7
3	Th	16.6	26.1	0			SSW	22	05:01	22.4	64		S	17	1021.5	23.9	59		E	11	1018.2
4	Fr	17.1	26.4	0			NE	30	15:18	22.6	67		W	9	1021.0	24.8	61		NE	22	1017.3
5	Sa	18.2	25.8	0			SSE	57	17:21	23.5	67		S	17	1023.6	24.0	59		SSE	43	1022.8
6	Su	16.5	25.2	0			SSE	50	14:14	21.6	56		SSW	24	1027.4	23.5	53		SSE	41	1024.5
7	Mo	18.2	24.4	0			SE	39	00:01	23.5	56		SE	30	1024.6	22.9	63		SE	30	1020.9
8	Tu	18.3	22.8	24.2			SE	41	14:12	20.2	92		S	17	1021.4	20.4	85		SSE	28	1018.7
9	We	17.8	26.3	3.4			SSW	31	02:57	21.1	72		SW	15	1019.7	24.5	60		ENE	11	1015.9
10	Th	15.0	27.4	0			NNW	33	23:21	20.8	74		SSE	9	1018.3	26.9	33		NNE	13	1012.9
11	Fr	16.7	22.8	0			WSW	50	09:17	18.9	39		WSW	28	1015.1	22.1	24		W	22	1012.7
12	Sa	11.5	22.1	0						16.0	40		WNW	15	1016.0	21.8	29		W	19	1012.2
13	Su	12.2	23.5	0						17.6	51		W	15	1018.0	23.2	34		SE	11	1015.1
14	Mo	11.5	23.6	0						19.5	52		S	11	1020.8	21.4	49		E	11	1017.6
15	Tu	13.1	23.4	0						19.0	57		SSW	17	1021.0	21.5	48		E	15	1018.6
16	We	12.9	23.0	0						18.8	61		SSW	20	1023.4	21.5	48		SE	30	1021.0
17	Th	14.0	22.3	0						19.2	59		S	20	1023.9	20.4	68		SSE	33	1021.4
18	Fr	15.1	22.6	0.2			SSW	24	06:39	19.7	62		SSW	13	1022.7	21.4	59		ENE	9	1019.4
19	Sa	12.0	23.1	0						17.9	69		S	11	1022.1	21.8	42		ESE	9	1019.5
20	Su	12.1	25.3	0						19.1	68		E	6	1021.7	24.8	26		NNW	17	1017.6
21	Mo	10.5	23.6	0						17.9	45		SW	13	1021.4	22.3	42		E	6	1018.3
22	Tu	11.4	24.3	0						18.0	41		W	11	1021.5	23.5	33		ENE	15	1016.9
23	We	12.3	23.9	0						19.7	50		SW	15	1022.7	22.0	56		SE	31	1021.2
24	Th	14.2	23.3	0			S	26	09:56	19.3	67		SSW	15	1023.9	21.5	57		SE	19	1020.3
25	Fr	15.0	22.9	0			SSE	50	19:16	19.4	65		SSW	17	1024.2	21.8	60		SE	22	1022.3
26	Sa	15.9	22.8	0			SSE	52	21:51	19.6	57		SSW	22	1027.1	19.1	71		S	33	1025.0
27	Su	15.2	21.4	0.2			SE	41	10:22	19.2	67		S	28	1026.5	20.9	68		S	19	1023.4
28	Mo	15.3	22.1	8.8			SE	41	16:04	17.7	83		SSW	20	1024.6	19.1	77		SSE	31	1021.8
29	Tu	15.7	22.3	13.6			SSE	35	00:02	17.8	84		SW	17	1022.2	20.4	65		E	6	1019.0
30	We	13.1	24.5	0			WSW	37	22:05	17.8	79		SSW	6	1020.1	23.2	60		NE	15	1015.7
31	Th	10.1	21.2	0						13.7	46		W	17	1021.1	20.9	26		W	15	1017.2
Statistics for May 2018																					
Mean		14.5	23.8							19.5	61			16	1022.1	22.3	52			20	1019.0
Lowest		10.1	21.2							13.7	39		#	6	1015.1	19.1	24		E	6	1012.2
Highest		18.3	27.4	24.2			SSE	57		23.5	92		SE	30	1027.4	26.9	85		SSE	43	1025.0
Total				50.4																	

Observations were drawn from Redcliffe (station 040958)

This Automatic Weather Station (AWS) is located in Talobilla Park, and sources its wind measurements from an anemometer on Redcliffe jetty.

IDCJDW4099.201805 Prepared at 13:02 UTC on 2 Jun 2018
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<http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf>

Appendix D – Noise Monitoring Results

**Unattended Noise Measurements
Location 1**



Traffic Noise Levels

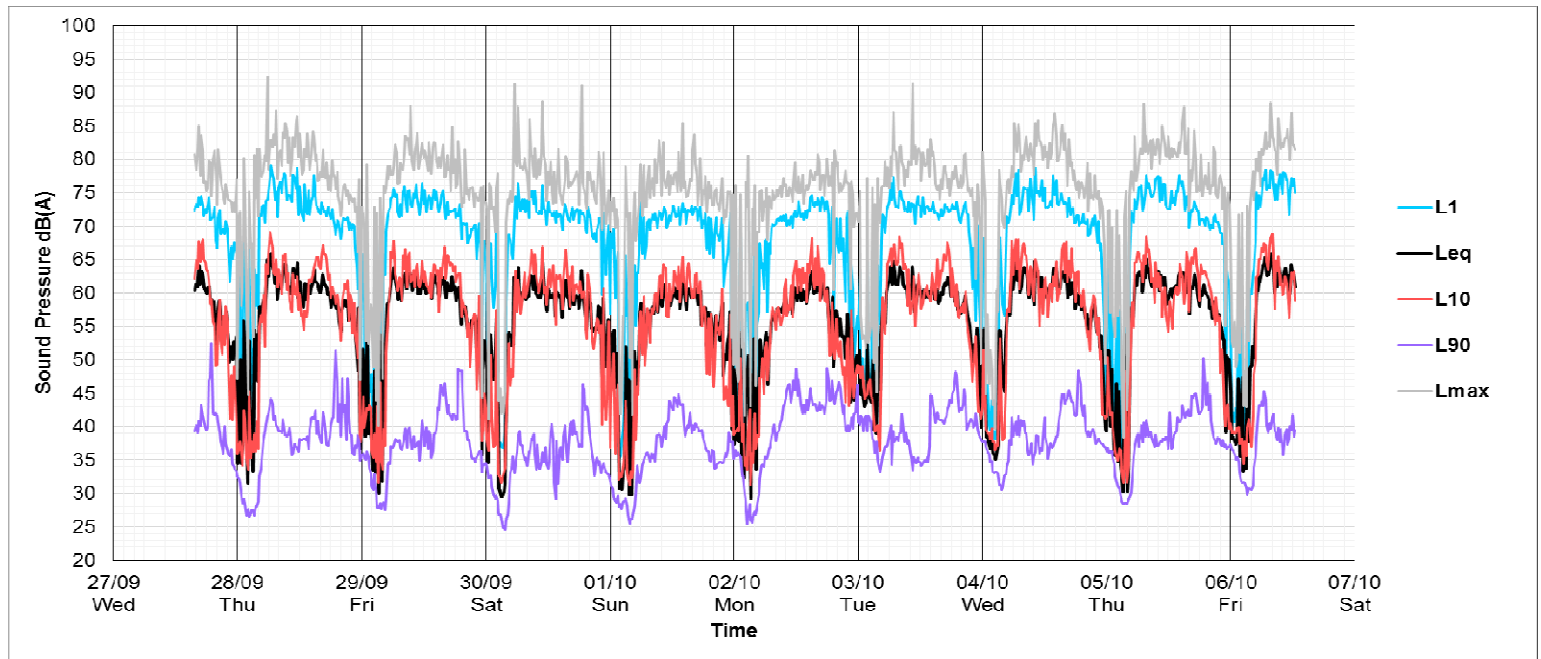
Logger Location 1 - Raynbird Road, 75m west of Browns Creek Road 13m setback from edge of Raynbird Road

ARL Environmental Noise Logger
 Logger Serial Number 8780d2
 Measurement Title 20170927_152123
 Measurement started at 27/09/2017 - 15:21:25
 Measurement stopped at 06/10/2017 - 15:29:20
 Frequency Weighting A
 Time Averaging Fast
 Statistical Interval 15 min
 Pre-measurement Ref. 94.0
 Post-measurement Ref. 94.0
 Engineering Units dB SPL

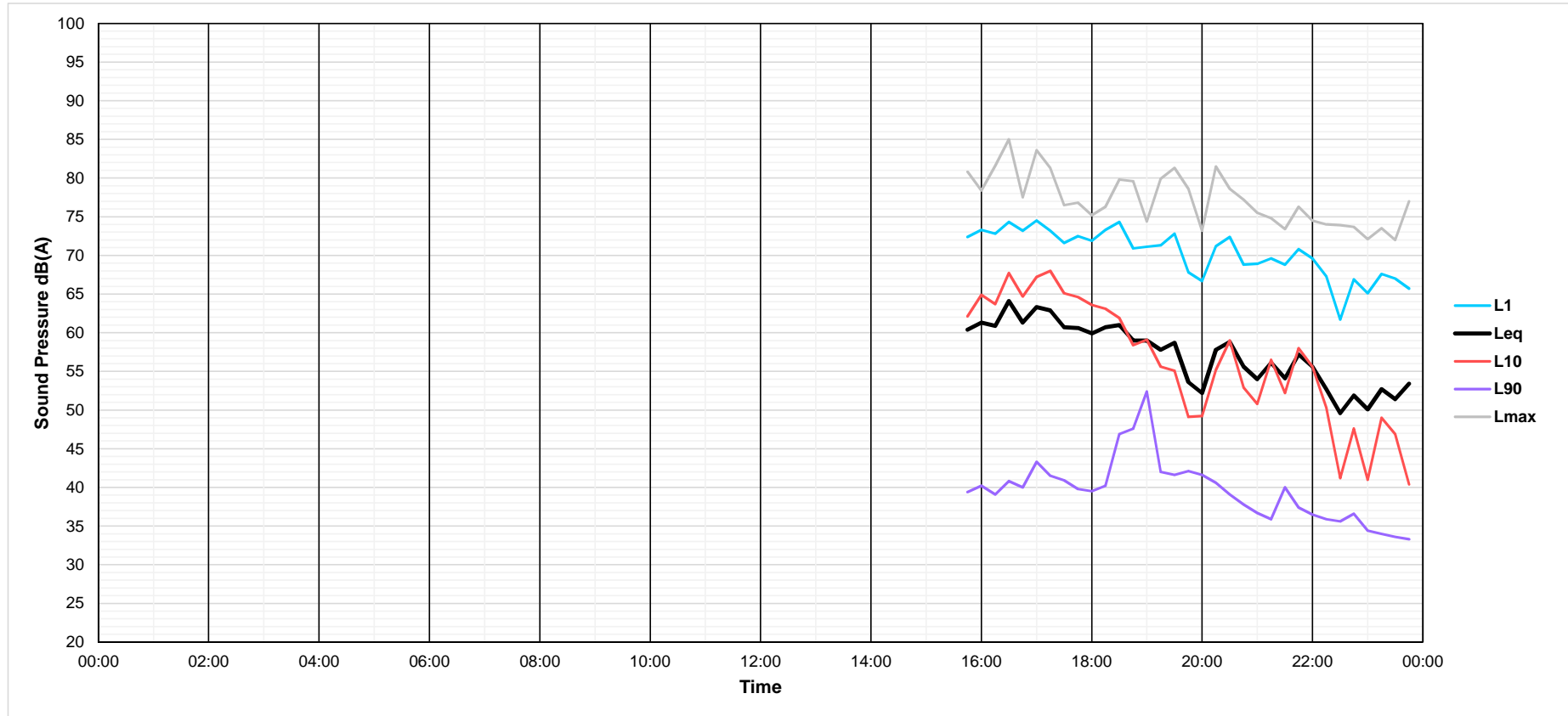
Date	Day	L _{A10,T}			L _{Aeq,T}		L _{A90,T}	
		18hr day 6am-12am	1hr max 6am-12am	Time for 1hr max	18hr day 6am-12am	8hr night 10pm-6am	18hr day 6am-12am	8hr night 10pm-6am
28/09/2017	Thursday	61	68	6:45	60	48	40	33
29/09/2017	Friday	60	65	16:45	59	48	39	31
30/09/2017	Saturday	59	64	9:45	59	46	37	30
1/10/2017	Sunday	57	63	10:45	57	45	38	32
2/10/2017	Monday	57	64	15:45	57	49	43	39
3/10/2017	Tuesday	60	67	8:45	59	48	40	36
4/10/2017	Wednesday	60	65	8:45	59	46	40	34
5/10/2017	Thursday	60	65	6:45	60	47	40	35
Average		59	65		59	47	40	34
Average - weekdays, fine weather		60	66		60	47	40	33

Note

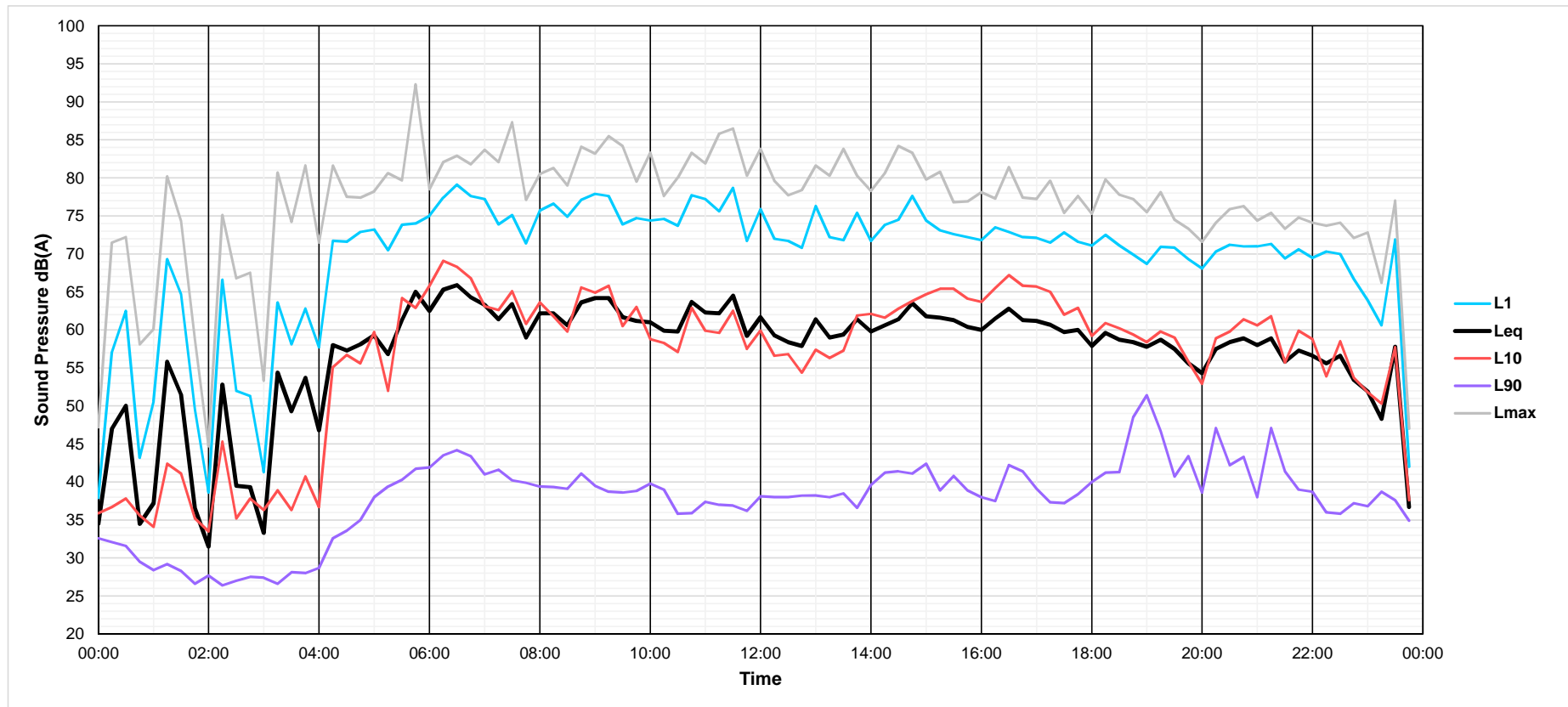
- No noise data available
- Rainfall recorded on this day



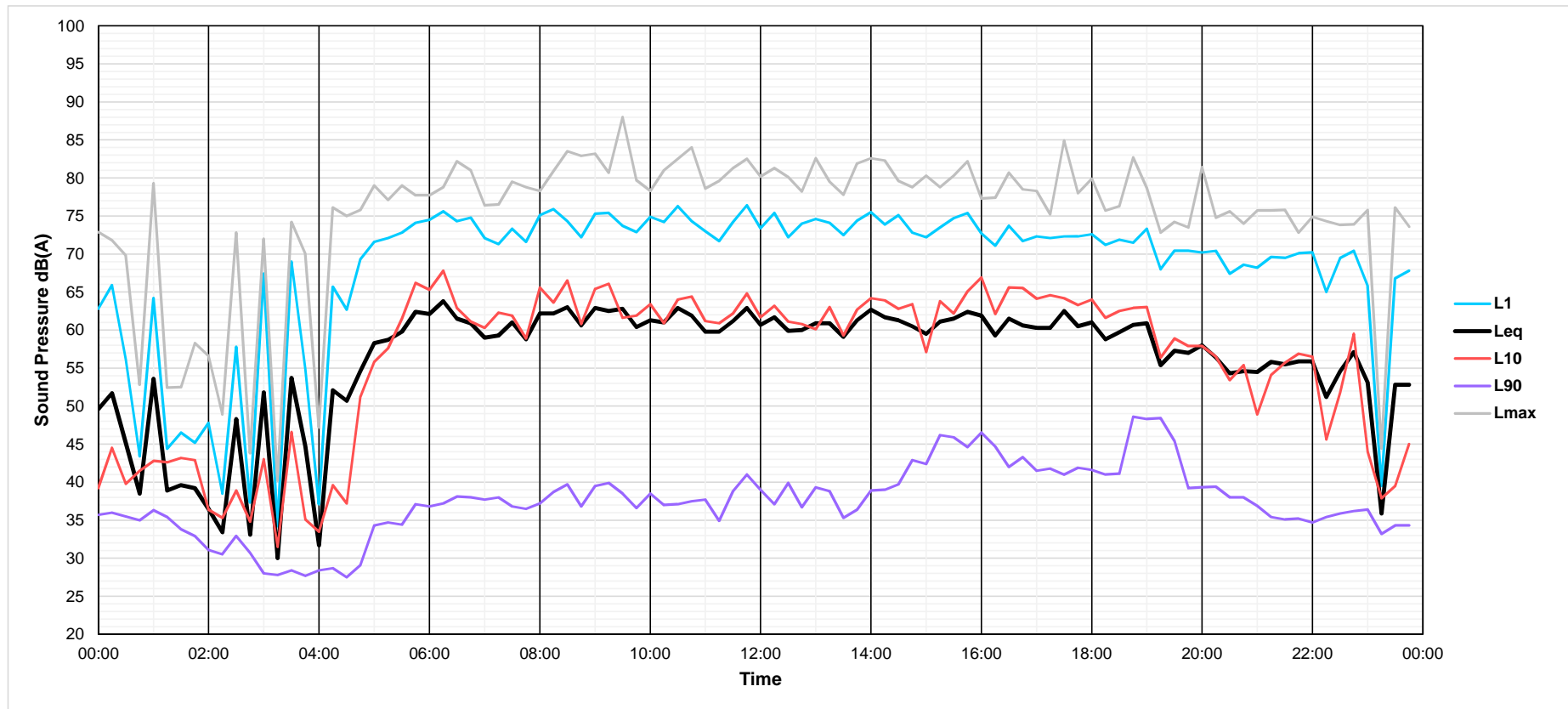
Unattended Noise Measurements - Location 1
Wednesday 27 September 2017



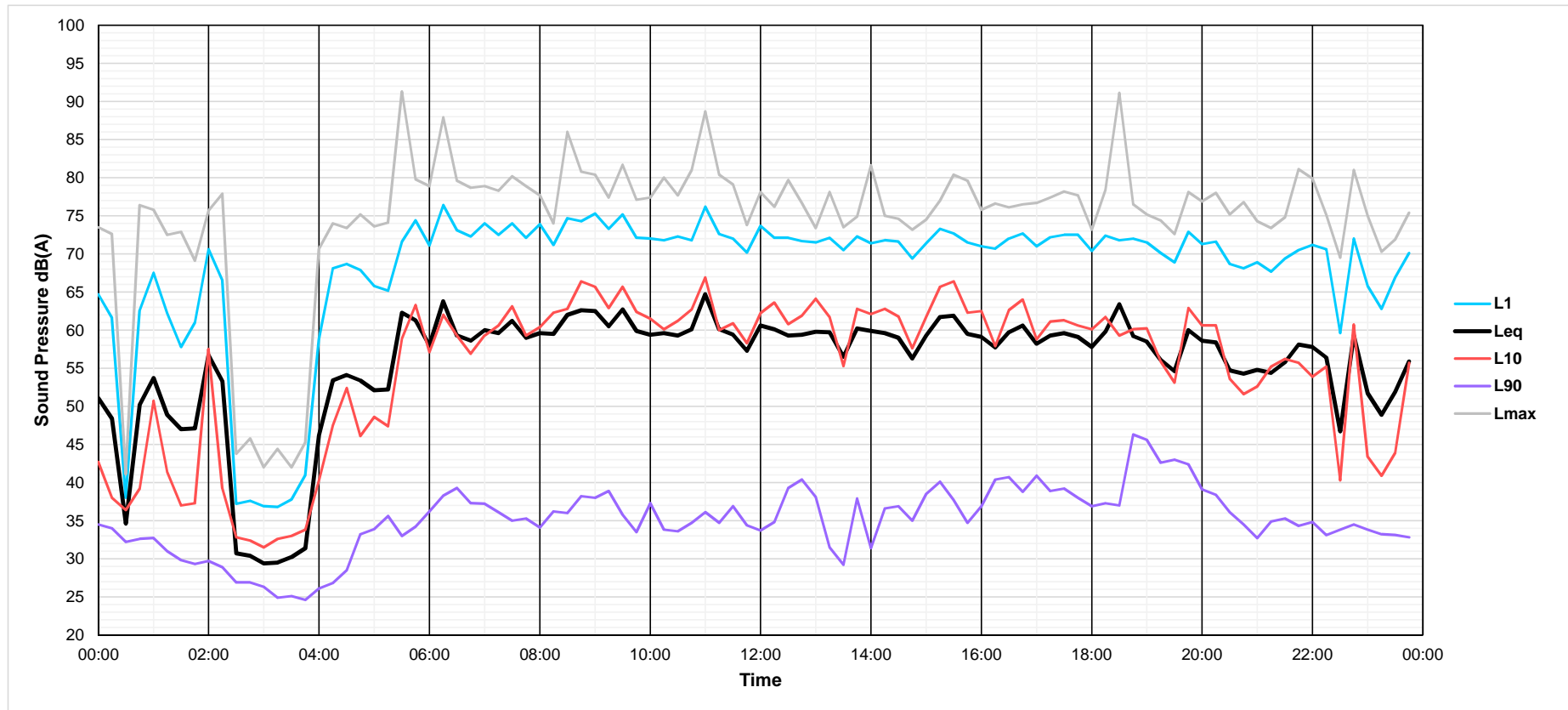
Unattended Noise Measurements - Location 1
Thursday 28 September 2017



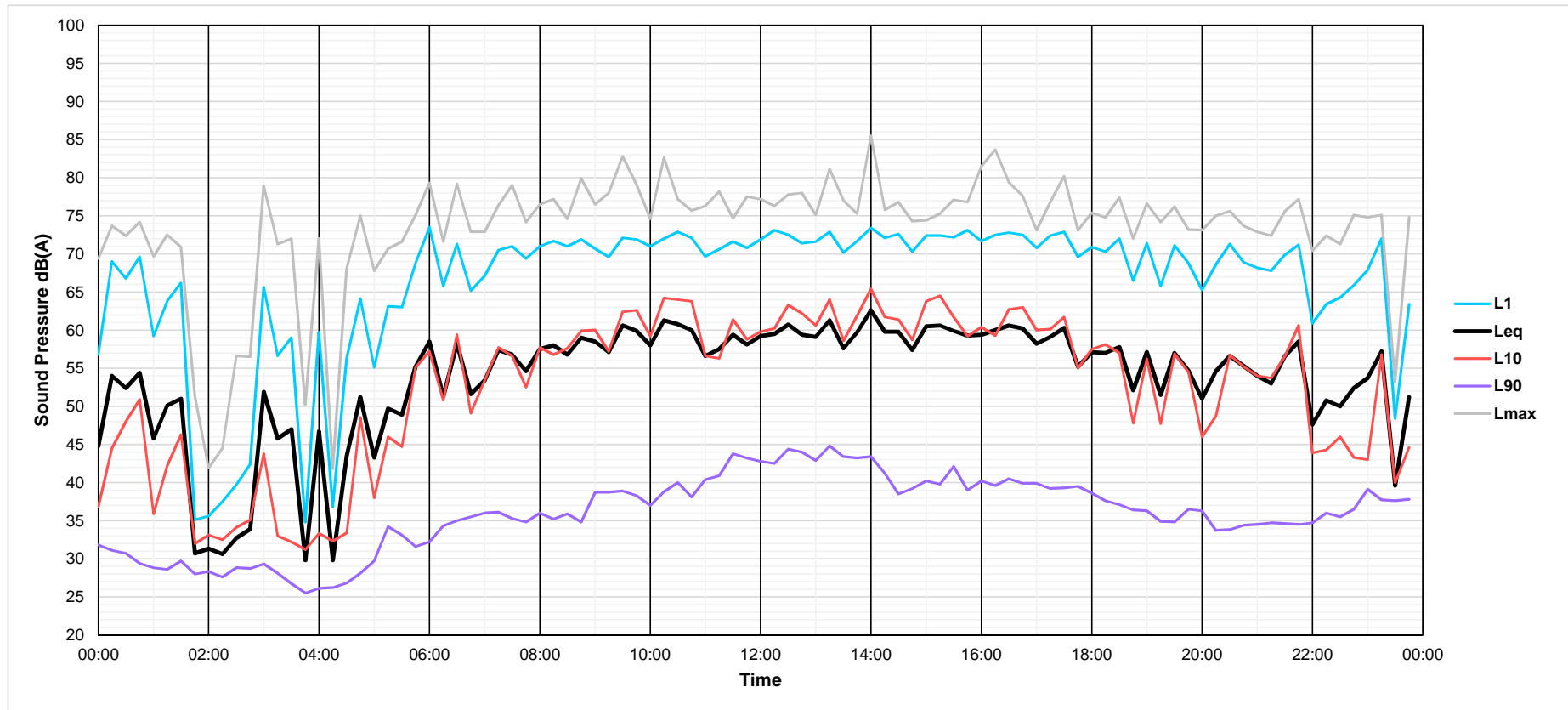
Unattended Noise Measurements - Location 1
Friday 29 September 2017



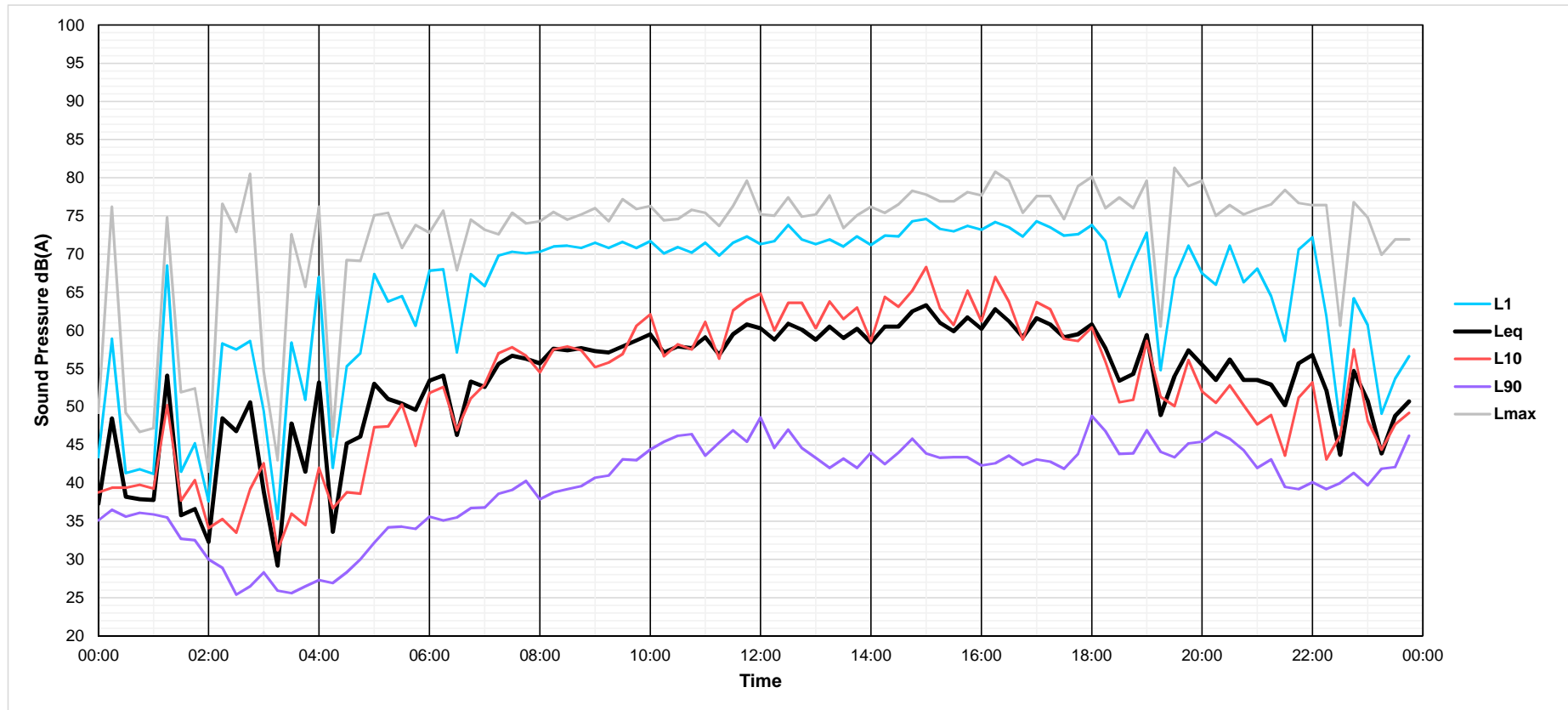
Unattended Noise Measurements - Location 1
Saturday 30 September 2017



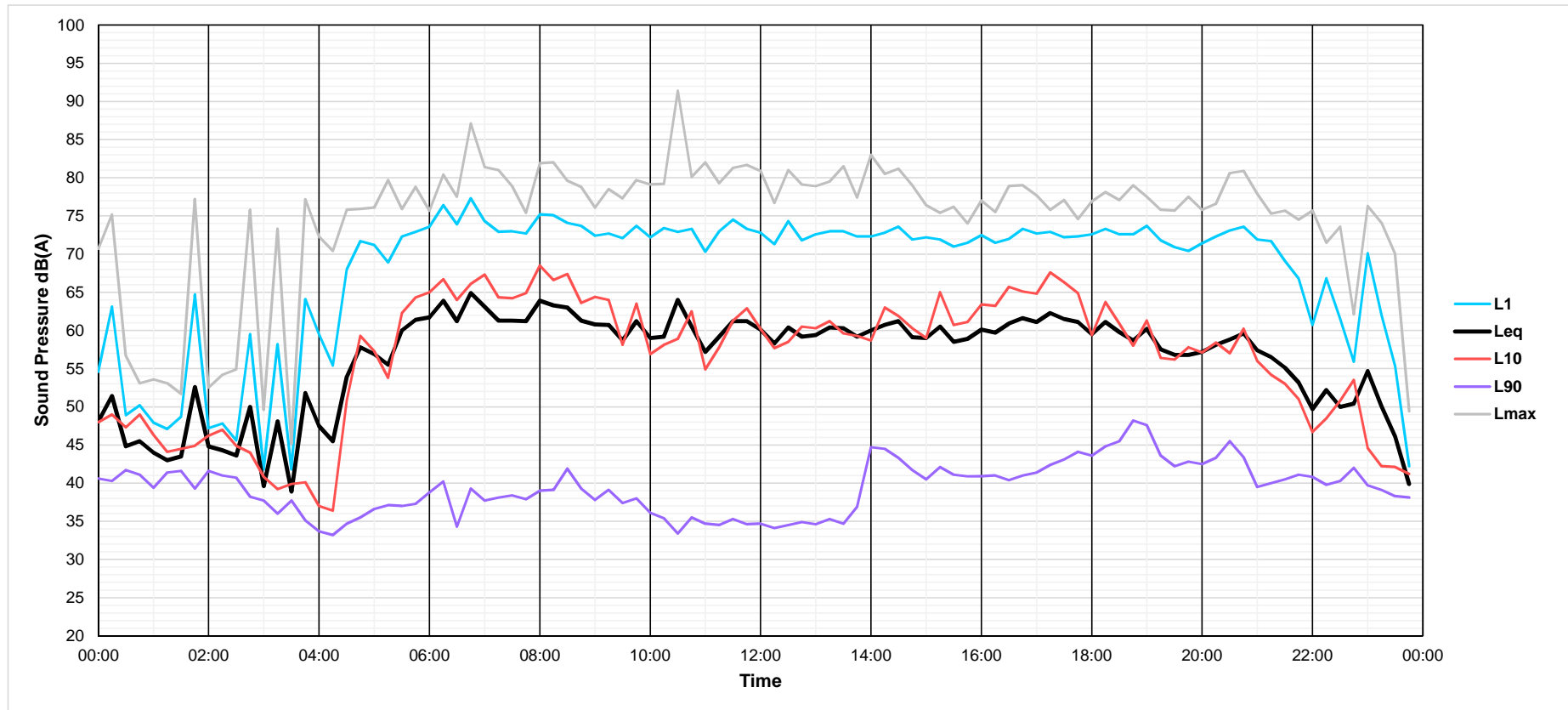
Unattended Noise Measurements - Location 1
Sunday 1 October 2017



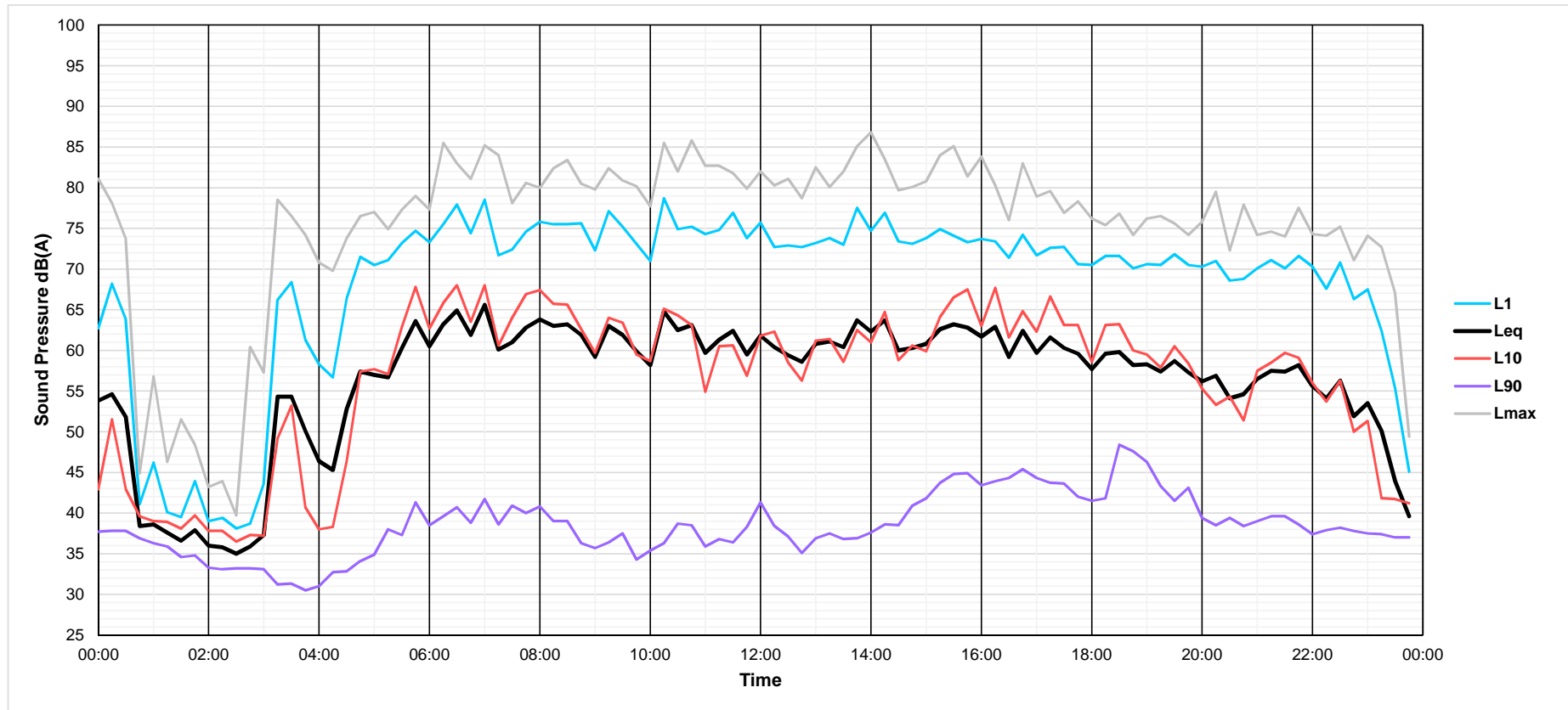
Unattended Noise Measurements - Location 1
Monday 2 October 2017



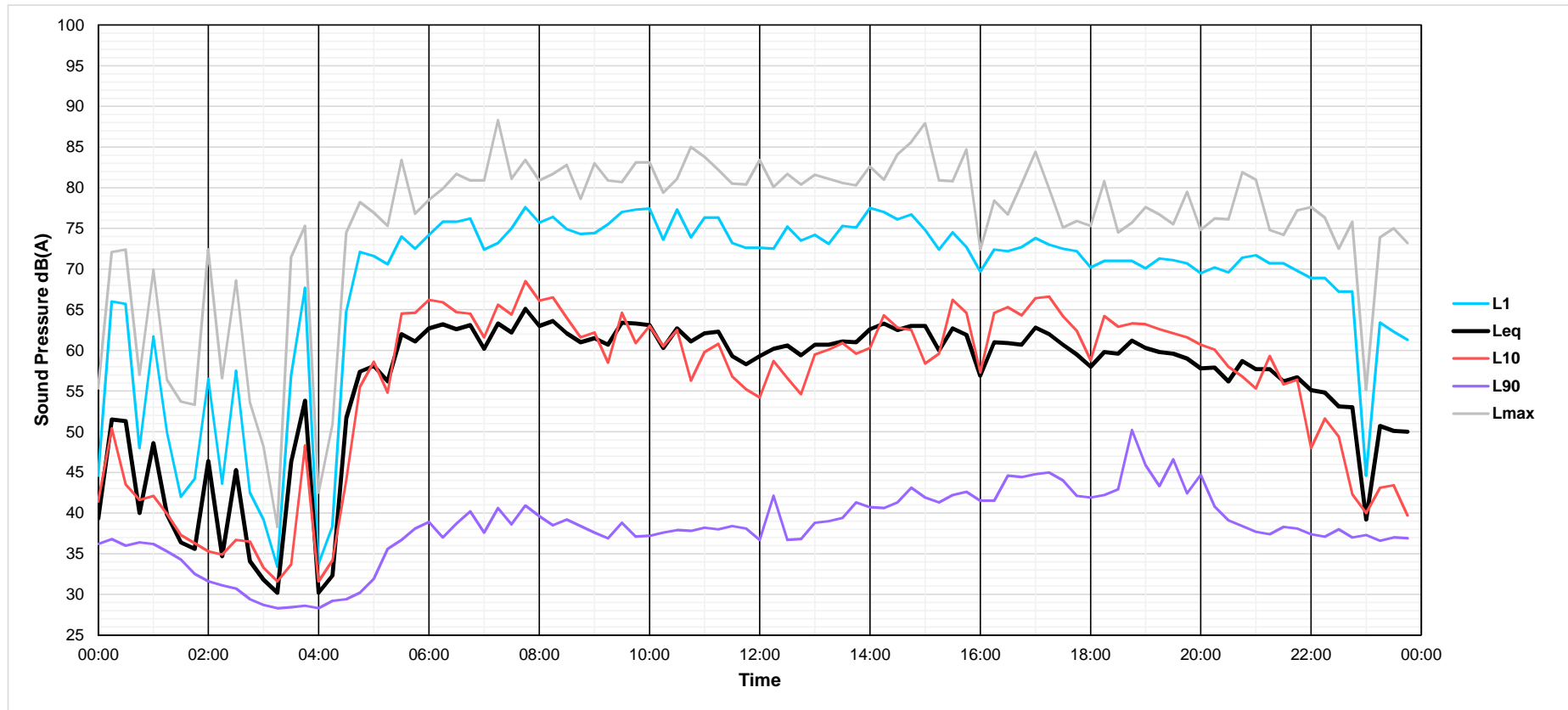
Unattended Noise Measurements - Location 1
Tuesday 3 October 2017



Unattended Noise Measurements - Location 1
Wednesday 4 October 2017



Unattended Noise Measurements - Location 1
Thursday 5 October 2017



Unattended Noise Measurements

Location 2

Traffic Noise Levels



**Logger Location 2 - Raynbird Road,
120m east of Highlands Drive
7m setback from edge of Raynbird Road**

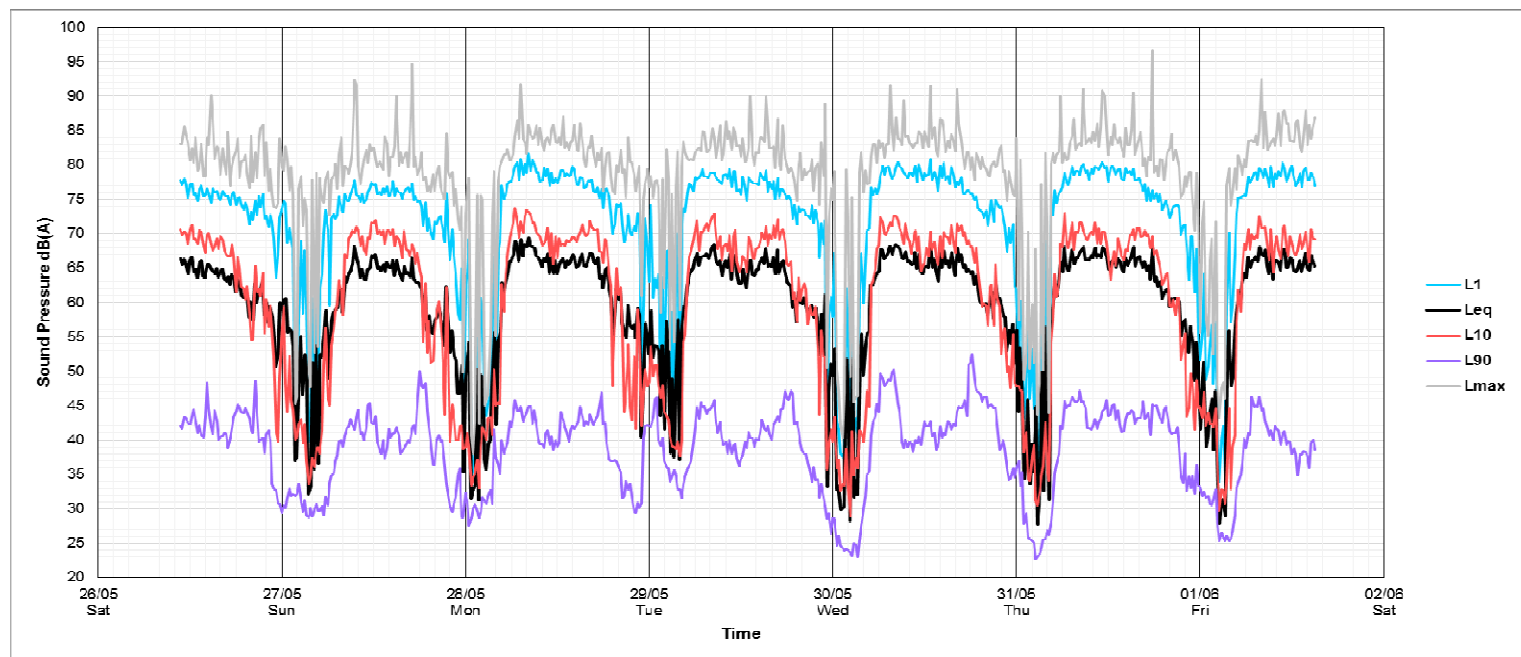
ARL Environmental Noise Logger

Logger Serial Number 87811c
 Measurement Title 20180526_102614
 Measurement started at 26/05/2018 - 10:26:15
 Measurement stopped at 01/06/2018 - 15:05:46
 Frequency Weighting A
 Time Averaging Fast
 Statistical Interval 15 min
 Pre-measurement Ref. 94.0
 Post-measurement Ref. 94.0
 Engineering Units dB SPL

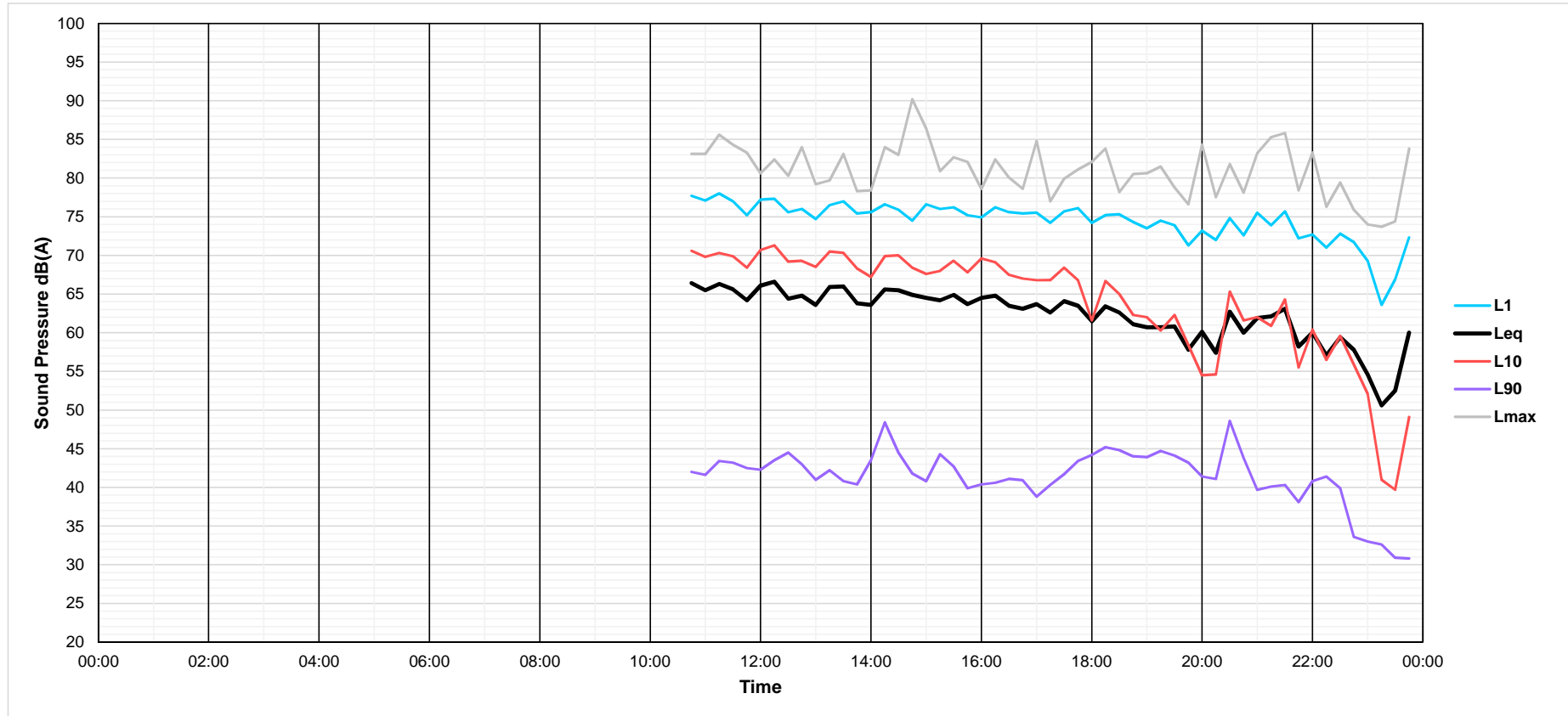
Note

- No noise data available
- Rainfall recorded on this day

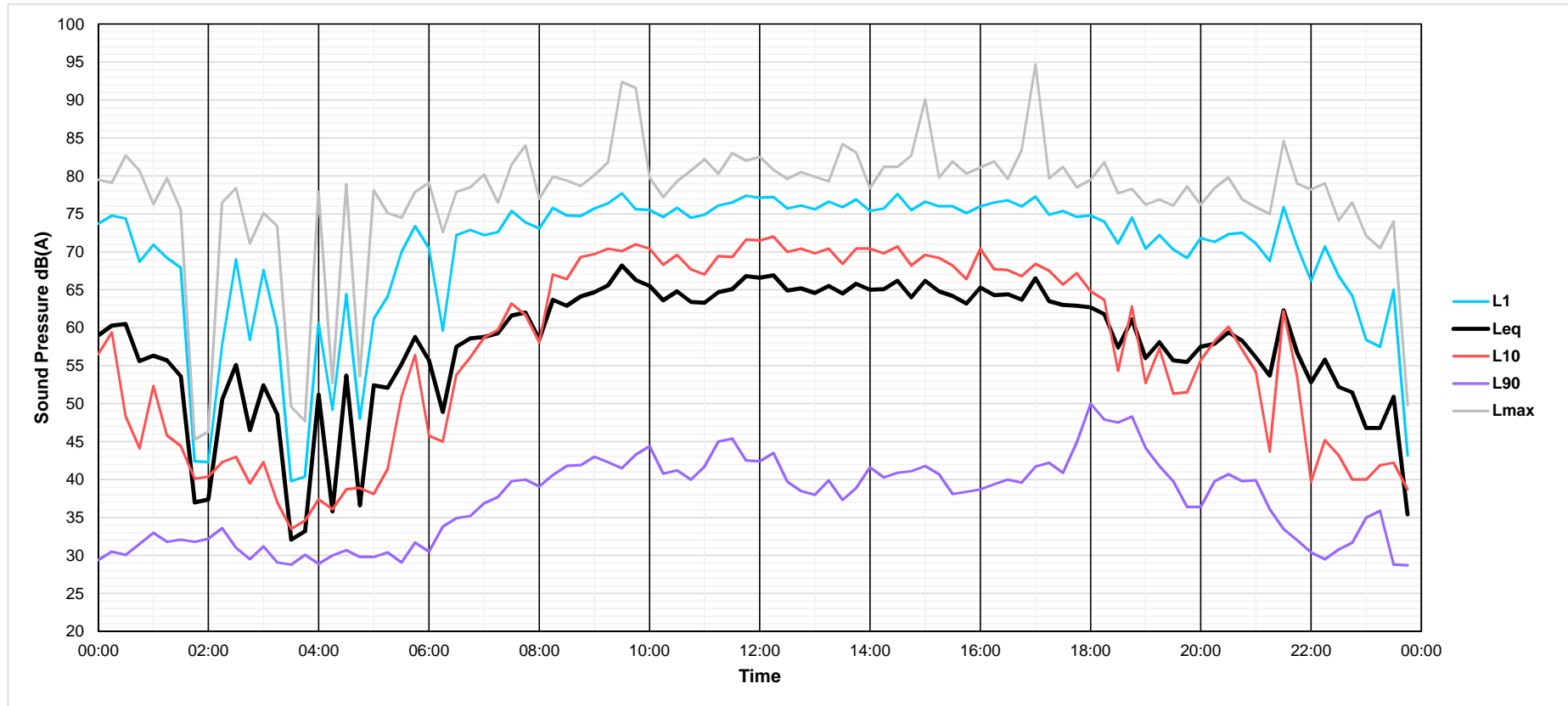
Date	Day	L _{A10,T}			L _{Aeq,T}		L _{A90,T}	
		18hr day 6am-12am	1hr max 6am-12am	Time for 1hr max	18hr day 6am-12am	8hr night 10pm-6am	18hr day 6am-12am	8hr night 10pm-6am
26/05/2018	Saturday	64	70	12:45	62	51	41	32
27/05/2018	Sunday	62	71	12:45	61	48	39	33
28/05/2018	Monday	65	73	8:45	63	53	40	37
29/05/2018	Tuesday	65	72	8:45	63	48	40	30
30/05/2018	Wednesday	66	72	8:45	64	49	43	31
31/05/2018	Thursday	65	71	8:45	64	48	42	31
Average		64	71		63	50	41	32
Average - weekdays, fine weather		65	71		64	48	43	31



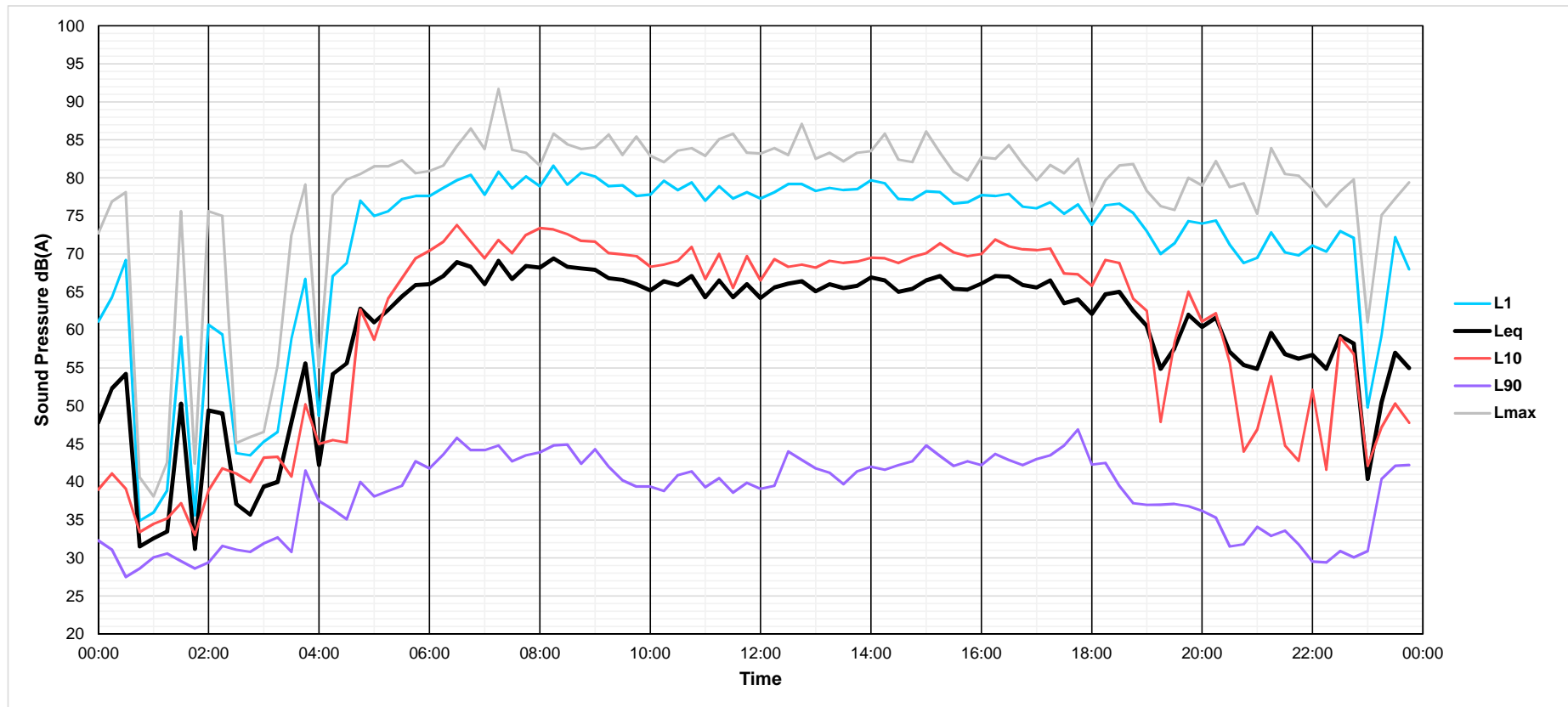
Unattended Noise Measurements - Location 2
Saturday 26 May 2018



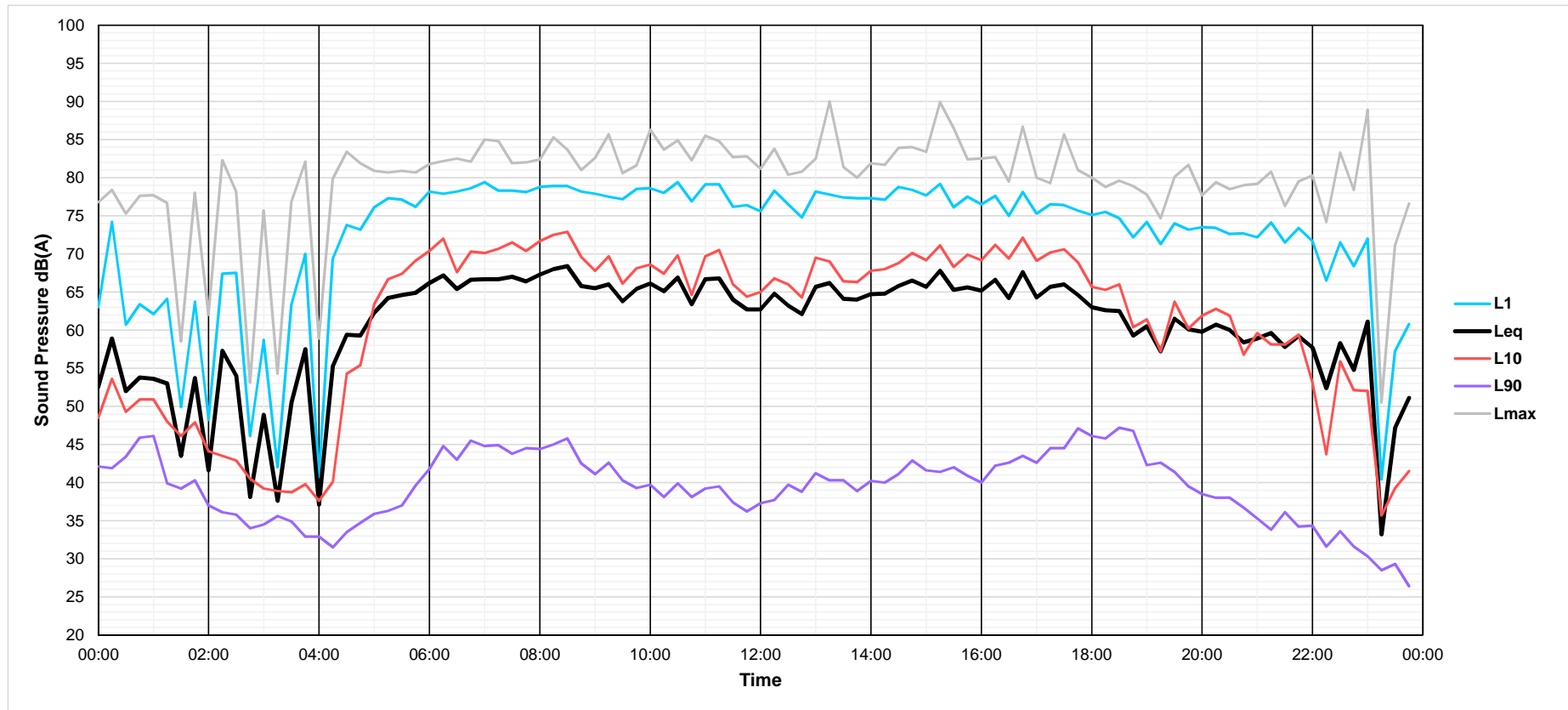
Unattended Noise Measurements - Location 2
Sunday 27 May 2018



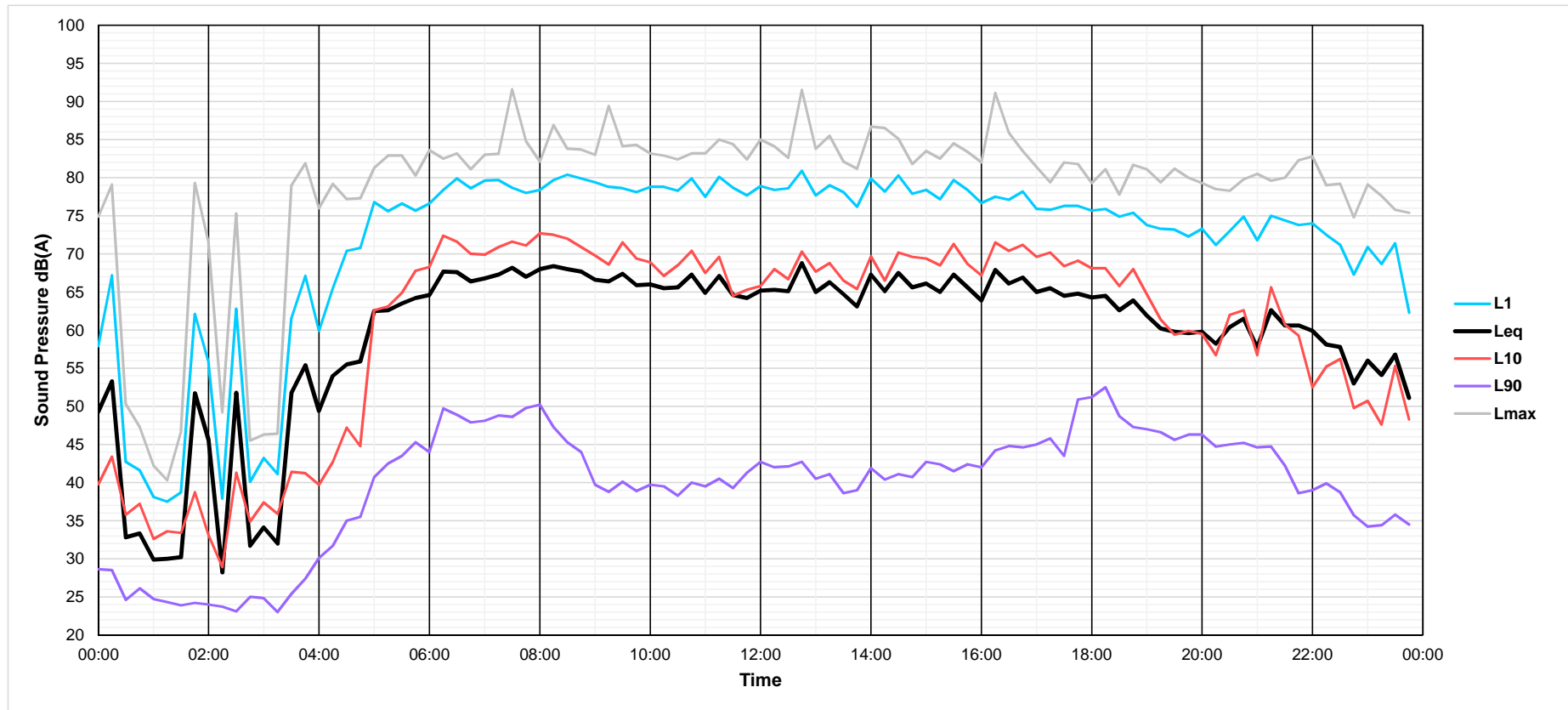
Unattended Noise Measurements - Location 2
Monday 28 May 2018



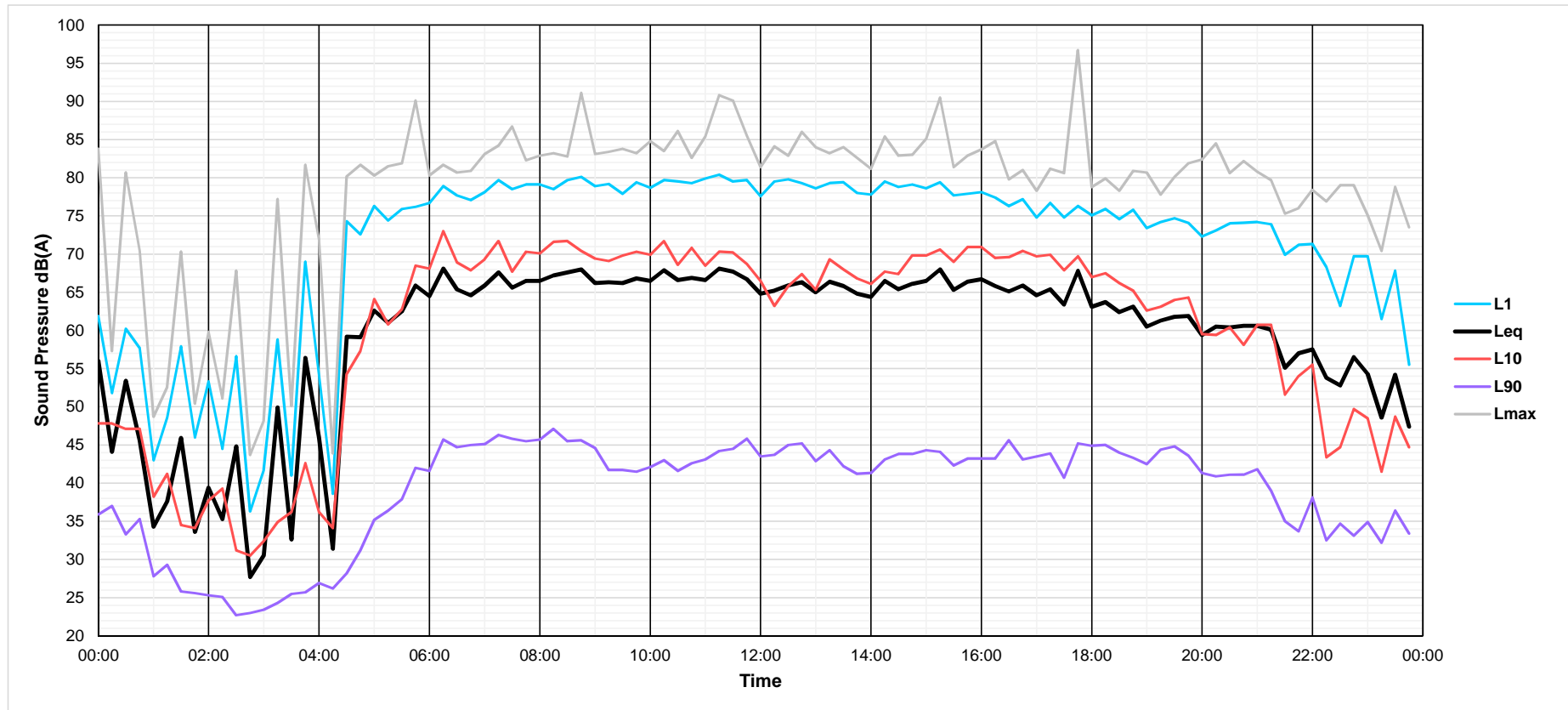
Unattended Noise Measurements - Location 2
Tuesday 29 May 2018



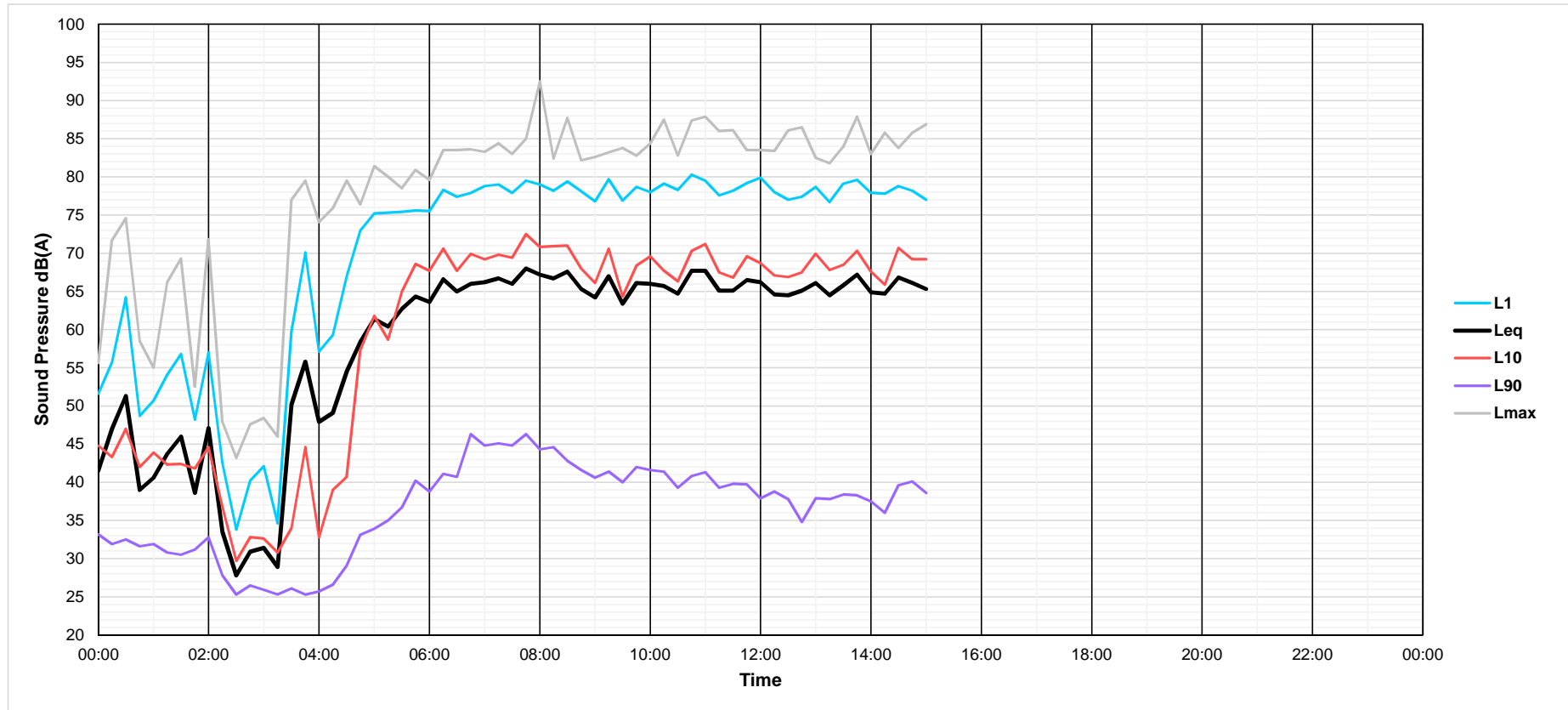
Unattended Noise Measurements - Location 2
Wednesday 30 May 2018



Unattended Noise Measurements - Location 2
Thursday 31 May 2018



Unattended Noise Measurements - Location 2
Friday 1 June 2018



Appendix E – Moreton Bay Regional Council – Traffic Count Data

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-5 -- English (ENA)

Datasets:

Site: [ATC 1] RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Attribute: NARANGBA
Direction: 6 - West bound A>B, East bound B>A. Lane: 0
Survey Duration: 8:55 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015,
Zone:
File: narangba2ATC 102Nov2015.EC0 (Plus)
Identifier: HK41AEZ0 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015 (11.0853)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: East (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 7963 / 16138 (49.34%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-5

Site: ATC 1.0.1WE
Description: RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(E) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages		
								1 - 5	1 - 7	
0000-0100	2.0	2.0	2.0	2.0	4.5	2.0	10.0	2.7	3.9	
0100-0200	1.0	2.0	2.0	0.0	1.0	3.0	1.5	1.1	1.5	
0200-0300	1.0	0.0	1.0	2.0	1.0	0.5	1.5	1.0	1.0	
0300-0400	4.5	3.0	5.0	5.0	4.0	2.0	3.0	4.3	3.6	
0400-0500	13.5	12.0	14.0	12.0	12.0	5.0	3.5	12.7	9.6	
0500-0600	25.5	28.0	26.0	17.0	20.5	11.5	8.5	23.3	18.5	
0600-0700	65.5	46.0	45.0	46.0	48.5	33.0	13.0	52.1	41.5	
0700-0800	55.0	73.0	64.0	64.0	75.0	42.0	18.0	65.9	52.8	
0800-0900	47.5	75.0	76.0	38.5	68.0	69.0	39.0	57.4	56.3	
0900-1000	33.0	56.0	54.0	51.0	51.5	68.0	53.0	47.6	51.9	
1000-1100	24.0	41.0	36.0	45.5	47.5	53.0	39.0	38.9	41.3	
1100-1200	46.0	43.0	40.0	45.0	55.0	56.5	44.5	47.0	48.3	
1200-1300	39.0	25.0	31.0	38.0	43.0	49.5	32.5	36.7	38.3	
1300-1400	43.0	36.0	39.0	39.5	45.0	36.0	38.5	41.0	39.6	
1400-1500	60.0	47.0	53.0	54.0	61.5	46.5	50.5	55.9	53.2	
1500-1600	69.0	72.0	60.0	50.0	59.0	47.0	43.5	59.9	54.5	
1600-1700	58.0	50.0	50.0	49.5	58.0	42.5	45.0	53.3	49.8	
1700-1800	50.0	48.0	33.0	53.0	41.5	34.0	39.5	45.7	42.5	
1800-1900	38.0	30.0	20.0	29.5	38.5	25.5	28.0	32.0	30.1	
1900-2000	23.0	13.0	22.0	20.0	22.0	18.5	16.0	20.3	19.2	
2000-2100	22.0	24.0	14.0	22.0	23.0	10.5	19.5	21.4	19.1	
2100-2200	14.0	16.0	17.0	22.0	18.5	10.5	13.0	18.3	15.9	
2200-2300	11.0	14.0	6.0	6.5	19.5	13.0	12.0	11.9	12.1	
2300-2400	4.0	5.0	1.0	5.5	6.5	12.5	2.5	4.9	5.8	
Totals										
0700-1900	562.5	596.0	556.0	557.5	643.5	569.5	471.0	581.2	558.5	
0600-2200	687.0	695.0	654.0	667.5	755.5	642.0	532.5	693.3	654.2	
0600-0000	702.0	714.0	661.0	679.5	781.5	667.5	547.0	710.0	672.1	
0000-0000	749.5	761.0	711.0	717.5	824.5	691.5	575.0	755.2	710.3	
AM Peak	0600	0800	0800	0700	0700	0800	0900			
	65.5	75.0	76.0	64.0	75.0	69.0	53.0			
PM Peak	1500	1500	1500	1400	1400	1200	1400			
	69.0	72.0	60.0	54.0	61.5	49.5	50.5			

* - No data.

MetroCount Traffic Executive Class Speed Matrix

ClassMatrix-6 -- English (ENA)

Datasets:

Site: [ATC 1] RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Attribute: NARANGBA
Direction: 6 - West bound A>B, East bound B>A. **Lane:** 0
Survey Duration: 8:55 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015,
Zone:
File: narangba2ATC 102Nov2015.EC0 (Plus)
Identifier: HK41AEZ0 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015 (11.0853)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: East (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 7963 / 16138 (49.34%)

Class Speed Matrix

ClassMatrix-6

Site: ATC 1.0.1WE
Description: RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(E) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

km/h	Class												Total	
	SV 1	SVT 2	TB2 3	TB3 4	T4 5	ART3 6	ART4 7	ART5 8	ART6 9	BD 10	DRT 11	TRT 12		
10- 20	5	.	1	.	.	.	.	.	.	.	.	.	6	0.1%
20- 30	33	1	1	18	1	.	.	.	.	.	.	.	54	0.7%
30- 40	41	2	1	10	.	.	3	.	.	.	.	.	57	0.7%
40- 50	183	11	9	1	.	.	.	7	2	.	.	.	213	2.7%
50- 60	1482	63	78	26	1	4	6	3	173	102	.	.	1938	24.3%
60- 70	3121	92	162	51	6	3	16	2	169	139	.	.	3761	47.2%
70- 80	1513	37	58	16	.	.	2	.	9	13	.	.	1648	20.7%
80- 90	235	1	7	.	.	.	2	.	.	.	.	.	245	3.1%
90-100	35	.	.	.	.	.	.	.	.	.	.	.	35	0.4%
100-110	6	.	.	.	.	.	.	.	.	.	.	.	6	0.1%
110-120	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
120-130	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
130-140	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
140-150	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
150-160	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
Total	6654	207	317	122	8	7	29	5	358	256	0	0	7963	
	83.6%	2.6%	4.0%	1.5%	0.1%	0.1%	0.4%	0.1%	4.5%	3.2%	0.0%	0.0%		

MetroCount Traffic Executive Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-5 -- English (ENA)

Datasets:

Site: [ATC 1] RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Attribute: NARANGBA
Direction: 6 - West bound A>B, East bound B>A. Lane: 0
Survey Duration: 8:55 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015,
Zone:
File: narangba2ATC 102Nov2015.EC0 (Plus)
Identifier: HK41AEZ0 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015 (11.0853)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 8165 / 16138 (50.59%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-5

Site: ATC 1.0.1WE
Description: RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(W) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages		
								1 - 5	1 - 7	
0000-0100	3.0	4.0	7.0	1.0	1.0	5.0	8.5	2.9	4.3	
0100-0200	1.0	0.0	1.0	1.0	2.0	4.0	4.0	1.1	2.2	
0200-0300	1.0	0.0	0.0	0.0	0.5	1.5	1.5	0.4	0.8	
0300-0400	1.0	0.0	2.0	1.0	0.5	1.0	0.5	0.9	0.8	
0400-0500	9.0	6.0	9.0	7.0	8.0	3.5	0.5	8.0	5.8	
0500-0600	40.0	47.0	37.0	29.0	37.0	21.5	6.5	38.1	29.4	
0600-0700	46.0	31.0	38.0	42.0	44.5	26.5	7.0	41.7	32.6	
0700-0800	39.0	32.0	42.0	39.0	38.5	35.0	17.0	38.3	33.8	
0800-0900	31.5	49.0	50.0	25.5	51.0	57.0	35.5	39.4	41.7	
0900-1000	26.5	43.0	35.0	45.5	54.0	59.0	40.5	41.3	44.1	
1000-1100	22.0	39.0	43.0	39.0	41.0	46.0	46.0	35.8	39.2	
1100-1200	44.0	35.0	31.0	38.5	54.0	53.0	50.0	42.1	45.5	
1200-1300	53.0	33.0	37.0	39.0	53.0	48.5	43.0	43.9	44.5	
1300-1400	50.0	46.0	32.0	36.5	38.0	47.0	52.5	39.6	43.3	
1400-1500	51.0	57.0	56.0	55.5	58.5	42.5	46.5	56.0	51.8	
1500-1600	99.0	75.0	68.0	79.0	71.5	43.0	54.0	77.6	67.0	
1600-1700	67.0	68.0	68.0	58.0	68.0	49.0	47.0	65.0	58.8	
1700-1800	63.0	72.0	54.0	56.5	65.0	38.5	43.5	61.7	54.2	
1800-1900	48.0	34.0	33.0	37.5	45.5	34.0	30.0	40.1	37.2	
1900-2000	29.0	30.0	30.0	35.5	26.0	27.0	25.5	30.3	28.8	
2000-2100	32.0	22.0	14.0	26.0	32.0	24.0	22.5	26.3	25.2	
2100-2200	22.0	17.0	18.0	33.5	27.5	11.5	12.0	25.6	20.5	
2200-2300	11.0	11.0	11.0	10.5	20.5	17.0	8.5	13.6	13.3	
2300-2400	6.0	5.0	7.0	6.5	6.0	7.5	4.5	6.1	6.1	
Totals										
0700-1900	594.0	583.0	549.0	549.5	638.0	552.5	505.5	580.7	561.1	
0600-2200	723.0	683.0	649.0	686.5	768.0	641.5	572.5	704.5	668.3	
0600-0000	740.0	699.0	667.0	703.5	794.5	666.0	585.5	724.2	687.6	
0000-0000	795.0	756.0	723.0	742.5	843.5	702.5	607.0	775.7	730.9	
AM Peak	0600	0800	0800	0900	1100	0900	1100			
	46.0	49.0	50.0	45.5	54.0	59.0	50.0			
PM Peak	1500	1500	1600	1500	1500	1600	1500			
	99.0	75.0	68.0	79.0	71.5	49.0	54.0			

* - No data.

MetroCount Traffic Executive Class Speed Matrix

ClassMatrix-6 -- English (ENA)

Datasets:

Site: [ATC 1] RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Attribute: NARANGBA
Direction: 6 - West bound A>B, East bound B>A. **Lane:** 0
Survey Duration: 8:55 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015,
Zone:
File: narangba2ATC 102Nov2015.EC0 (Plus)
Identifier: HK41AEZ0 MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015 (11.0853)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: West (bound), P = East, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 8165 / 16138 (50.59%)

Class Speed Matrix

ClassMatrix-6

Site: ATC 1.0.1WE
Description: RAYNBIRD RD 150M WEST OF HIGHLANDS DR
Filter time: 8:56 Thursday, 22 October 2015 => 10:58 Monday, 2 November 2015
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(W) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

km/h	Class												Total	
	SV 1	SVT 2	TB2 3	TB3 4	T4 5	ART3 6	ART4 7	ART5 8	ART6 9	BD 10	DRT 11	TRT 12		
10- 20	9	.	.	1	1	.	.	.	.	.	.	.	11	0.1%
20- 30	22	2	2	4	2	.	.	.	2	.	.	.	34	0.4%
30- 40	86	9	9	7	.	.	2	.	3	1	.	.	117	1.4%
40- 50	322	13	45	30	2	1	2	2	29	23	.	.	469	5.7%
50- 60	1205	49	145	51	5	3	14	1	139	82	1	.	1695	20.8%
60- 70	3102	84	383	32	4	17	15	3	195	107	.	.	3942	48.3%
70- 80	1356	25	189	10	.	7	1	.	28	26	.	.	1642	20.1%
80- 90	171	1	29	1	.	1	.	.	.	.	.	.	203	2.5%
90-100	37	.	3	.	.	.	.	.	.	.	.	.	40	0.5%
100-110	8	.	.	.	.	.	.	.	.	.	.	.	8	0.1%
110-120	3	.	.	.	.	.	.	.	.	.	.	.	3	0.0%
120-130	1	.	.	.	.	.	.	.	.	.	.	.	1	0.0%
130-140	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
140-150	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
150-160	.	.	.	.	.	.	.	.	.	.	.	.	0	0.0%
Total	6322	183	805	136	14	29	34	6	396	239	1	0	8165	
	77.4%	2.2%	9.9%	1.7%	0.2%	0.4%	0.4%	0.1%	4.8%	2.9%	0.0%	0.0%		

Appendix F – Validation of Traffic Noise Model

Raynbird Road, Narangba
Traffic Noise Validation Model, Year 2017

Receiver	Location	L10(18h) dB(A)
Validation_Location 1	GF	60

Raynbird Road, Narangba
Traffic Noise Validation Model, Year 2018

Receiver	Location	L10(18h) dB(A)
Validation_Location 2	GF	65

Appendix G – 2031 Traffic Noise Model

Raynbird Road - Haulage Road
Calculated 2031 Road Traffic Noise Levels
at Building Facades

Receiver	Floor	Facade	L10(18h) dB(A)	
Lot 1227	GF	NW	41	
	F 1		49	
Lot 1227	GF	SW	43	
	F 1		47	
Lot 1227	GF	SE	43	
	F 1		47	
Lot 1227	GF	NE	43	
	F 1		50	
Lot 1228	GF	N	42	
	F 1		54	
Lot 1228	GF	W	49	
	F 1		55	
Lot 1228	GF	S	53	
	F 1		55	
Lot 1228	GF	E	47	
	F 1		55	
Lot 1229	GF	N	42	
	F 1		55	
Lot 1229	GF	W	48	
	F 1		55	
Lot 1229	GF	S	53	
	F 1		55	
Lot 1229	GF	E	48	
	F 1		55	
Lot 1230	GF	N	43	
	F 1		55	
Lot 1230	GF	W	47	
	F 1		55	
Lot 1230	GF	S	54	
	F 1		56	
Lot 1230	GF	E	50	
	F 1		55	
Lot 1231	GF	N	43	
	F 1		55	
Lot 1231	GF	W	47	
	F 1		56	
Lot 1231	GF	S	54	
	F 1		56	
Lot 1231	GF	E	51	
	F 1		56	
Lot 1232	GF	N	43	
	F 1		56	
Lot 1232	GF	W	47	
	F 1		56	
Lot 1232	GF	S	55	
	F 1		56	
Lot 1232	GF	E	55	
	F 1		56	
Lot 1233	GF	NW	43	
	F 1		54	

Raynbird Road - Haulage Road
Calculated 2031 Road Traffic Noise Levels
at Building Facades

Receiver	Floor	Facade	L10(18h) dB(A)	
Lot 1233	GF	SW	50	
	F 1		54	
Lot 1233	GF	SE	51	
	F 1		54	
Lot 1233	GF	NE	46	
	F 1		54	
Lot 1255	GF	NW	44	
	F 1		55	
Lot 1255	GF	SW	53	
	F 1		55	
Lot 1255	GF	SE	54	
	F 1		56	
Lot 1255	GF	NE	44	
	F 1		55	
Lot 1256	GF	NW	45	
	F 1		56	
Lot 1256	GF	SW	55	
	F 1		57	
Lot 1256	GF	SE	56	
	F 1		57	
Lot 1256	GF	NE	47	
	F 1		56	
Lot 1257	GF	NW	46	
	F 1		56	
Lot 1257	GF	SW	55	
	F 1		56	
Lot 1257	GF	SE	55	
	F 1		57	
Lot 1257	GF	NE	44	
	F 1		56	
Lot 1258	GF	NW	45	
	F 1		55	
Lot 1258	GF	SW	52	
	F 1		55	
Lot 1258	GF	SE	54	
	F 1		55	
Lot 1258	GF	NE	44	
	F 1		55	
Lot 1266	GF	N	47	
	F 1		61	
Lot 1266	GF	W	57	
	F 1		63	
Lot 1266	GF	S	59	
	F 1		65	
Lot 1266	GF	E	55	
	F 1		63	
Lot 1267	GF	N	47	
	F 1		60	
Lot 1267	GF	W	54	
	F 1		62	

Raynbird Road - Haulage Road
Calculated 2031 Road Traffic Noise Levels
at Building Facades

Receiver	Floor	Facade	L10(18h) dB(A)	
Lot 1267	GF	S	58	
	F 1		65	
Lot 1267	GF	E	54	
	F 1		63	
Lot 1268	GF	N	47	
	F 1		60	
Lot 1268	GF	W	54	
	F 1		63	
Lot 1268	GF	S	59	
	F 1		65	
Lot 1268	GF	E	53	
	F 1		63	
Lot 1269	GF	N	47	
	F 1		61	
Lot 1269	GF	W	54	
	F 1		63	
Lot 1269	GF	S	59	
	F 1		65	
Lot 1269	GF	E	53	
	F 1		63	
Lot 1270	GF	N	47	
	F 1		60	
Lot 1270	GF	W	53	
	F 1		62	
Lot 1270	GF	S	58	
	F 1		64	
Lot 1270	GF	E	54	
	F 1		62	
Lot 1271	GF	N	47	
	F 1		61	
Lot 1271	GF	W	53	
	F 1		62	
Lot 1271	GF	S	59	
	F 1		64	
Lot 1271	GF	E	54	
	F 1		62	
Lot 1272	GF	N	47	
	F 1		61	
Lot 1272	GF	W	52	
	F 1		62	
Lot 1272	GF	S	59	
	F 1		63	
Lot 1272	GF	E	55	
	F 1		62	
Lot 1273	GF	N	47	
	F 1		61	
Lot 1273	GF	W	51	
	F 1		61	
Lot 1273	GF	S	59	
	F 1		63	

Raynbird Road - Haulage Road
Calculated 2031 Road Traffic Noise Levels
at Building Facades

Receiver	Floor	Facade	L10(18h) dB(A)
Lot 1273	GF	E	55
	F 1		62
Lot 1274	GF	N	47
	F 1		61
Lot 1274	GF	W	52
	F 1		62
Lot 1274	GF	S	59
	F 1		63
Lot 1274	GF	E	57
	F 1		62
Lot 1275	GF	N	47
	F 1		61
Lot 1275	GF	W	52
	F 1		61
Lot 1275	GF	S	58
	F 1		63
Lot 1275	GF	E	57
	F 1		62
Lot 1276	GF	N	47
	F 1		61
Lot 1276	GF	W	52
	F 1		61
Lot 1276	GF	S	58
	F 1		62
Lot 1276	GF	E	56
	F 1		62
Lot 1277	GF	N	47
	F 1		61
Lot 1277	GF	W	52
	F 1		61
Lot 1277	GF	S	59
	F 1		62
Lot 1277	GF	E	58
	F 1		62
Lot 1278	GF	N	47
	F 1		61
Lot 1278	GF	W	53
	F 1		61
Lot 1278	GF	S	59
	F 1		62
Lot 1278	GF	E	58
	F 1		61

Raynbird Road - Haulage Road
 Calculated 2031 Road Traffic Noise Levels
 at Private Open Spaces

Receiver	Floor	
Lot 1227 POS	GF	
Lot 1228 POS	GF	
Lot 1229 POS	GF	
Lot 1230 POS	GF	
Lot 1231 POS	GF	
Lot 1232 POS	GF	
Lot 1233 POS	GF	
Lot 1255 POS	GF	
Lot 1256 POS	GF	
Lot 1257 POS	GF	
Lot 1258 POS	GF	
Lot 1266 POS	GF	
Lot 1267 POS	GF	
Lot 1268 POS	GF	
Lot 1269 POS	GF	
Lot 1270 POS	GF	
Lot 1271 POS	GF	
Lot 1272 POS	GF	
Lot 1273 POS	GF	
Lot 1274 POS	GF	
Lot 1275 POS	GF	
Lot 1276 POS	GF	
Lot 1277 POS	GF	
Lot 1278 POS	GF	

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Appendix H – 2031 Grid Noise Map Contours

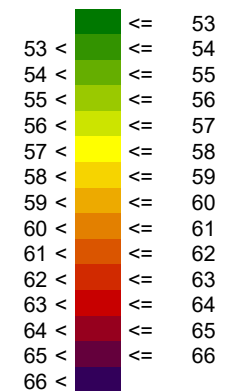
**Ridgeview, Narangba
Stages 8-12**

**Traffic Noise Modelling
Year 2031**

**Ground Floor Private Open Spaces
(1.5m AGL)**

With Noise Barriers

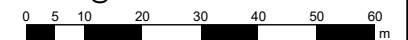
Traffic noise level
Free field
L_{10,18hr} dB(A)



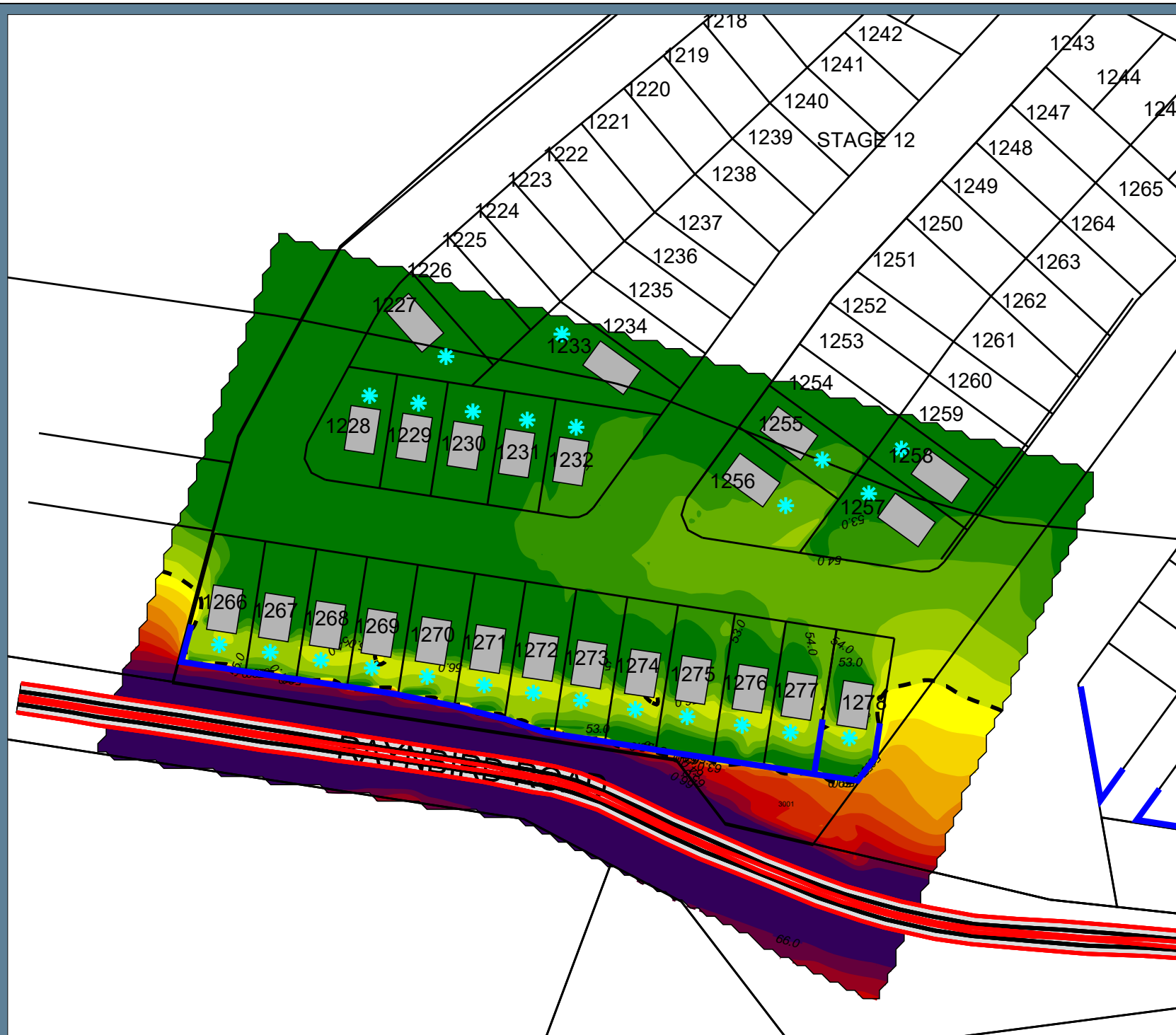
Legend

- Dwelling
- Limit line - 57dB(A) criteria
- Noise barrier
- Point receiver - Private open space
- Road noise emission line
- Road surface

SCALE @ A4 1:1300



Grid Spacing: 2m
Project Engineer: Aidan Daniels
Created: 3/08/2022
Processed with SoundPLAN 8.2



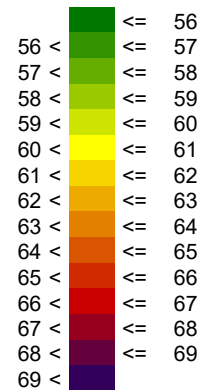
**Ridgeview, Narangba
Stages 8-12**

**Traffic Noise Modelling
Year 2031**

**Ground Floor
(1.8m AGL)**

With Noise Barriers

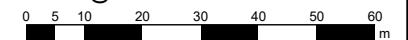
Traffic noise level
Facade adjusted
 $L_{10(18hr)}$ dB(A)



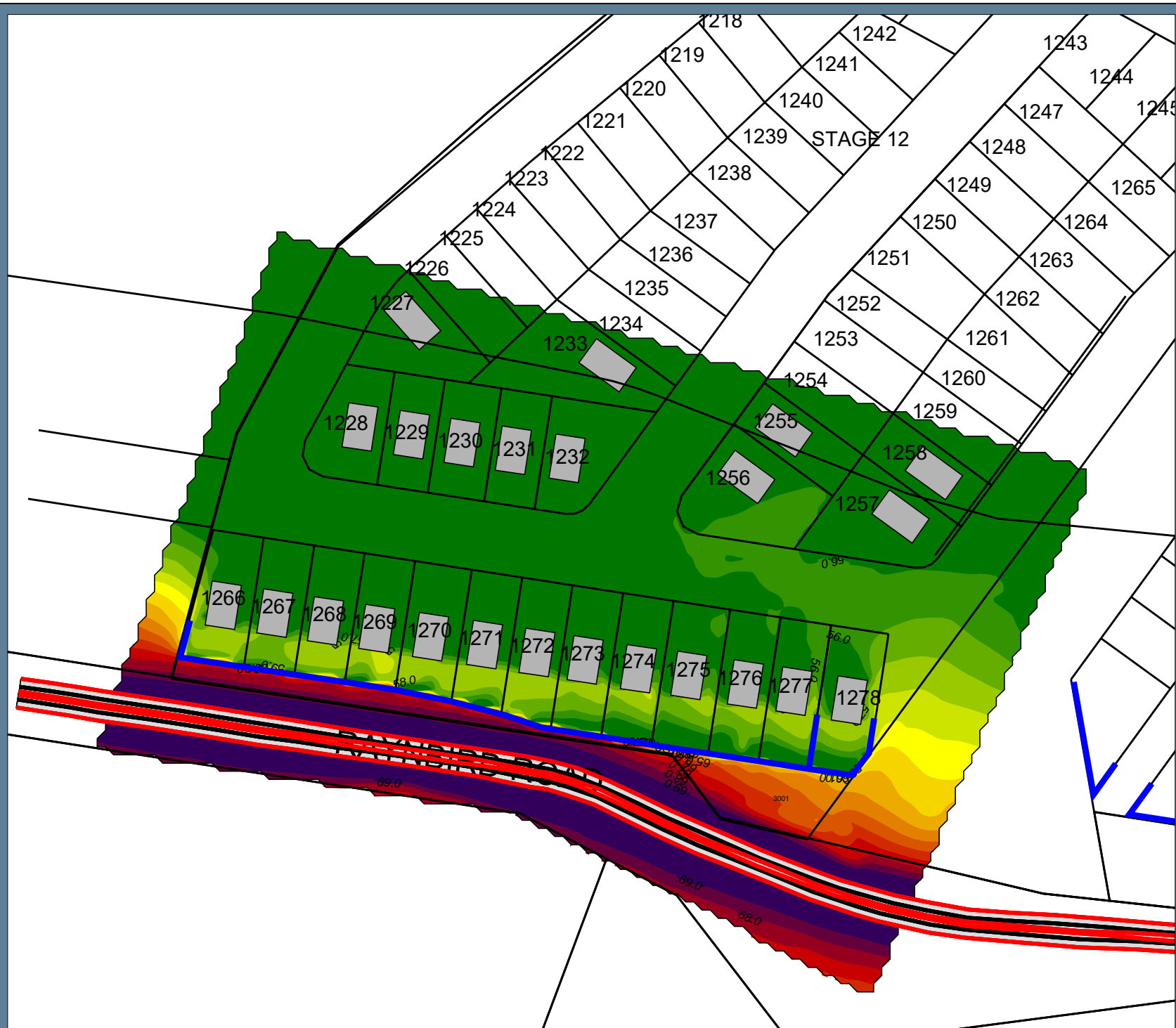
Legend

- Dwelling
- Noise barrier
- Road noise emission line
- Road surface

SCALE @ A4 1:1300



Grid Spacing: 2m
Project Engineer: Aidan Daniels
Created: 3/08/2022
Processed with SoundPLAN 8.2



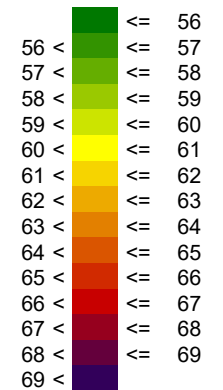
**Ridgeview, Narangba
Stages 8-12**

**Traffic Noise Modelling
Year 2031**

**First Floor
(4.6m AGL)**

With Noise Barriers

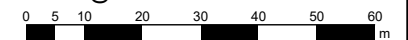
Traffic noise level
Facade adjusted
L_{10(18hr)}dB(A)



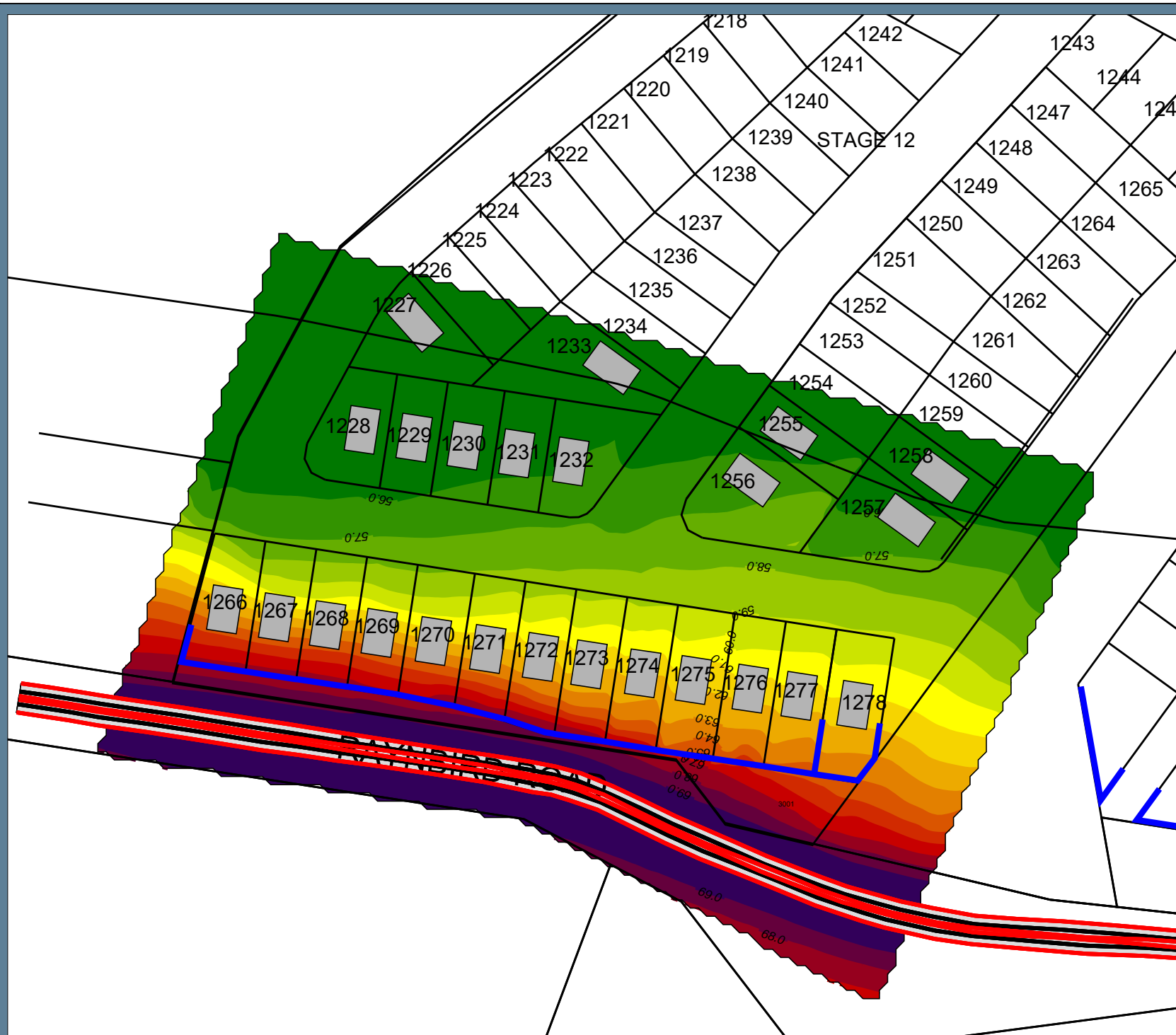
Legend

- Dwelling
- Noise barrier
- Road noise emission line
- Road surface

SCALE @ A4 1:1300



Grid Spacing: 2m
Project Engineer: Aidan Daniels
Created: 3/08/2022
Processed with SoundPLAN 8.2



**Ridgeview, Narangba
Stages 8-12**

**Traffic Noise Modelling
Year 2031**

**Ground Floor
(1.8m AGL)**

With Noise Barriers

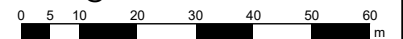
QDC MP4.4 Noise Category



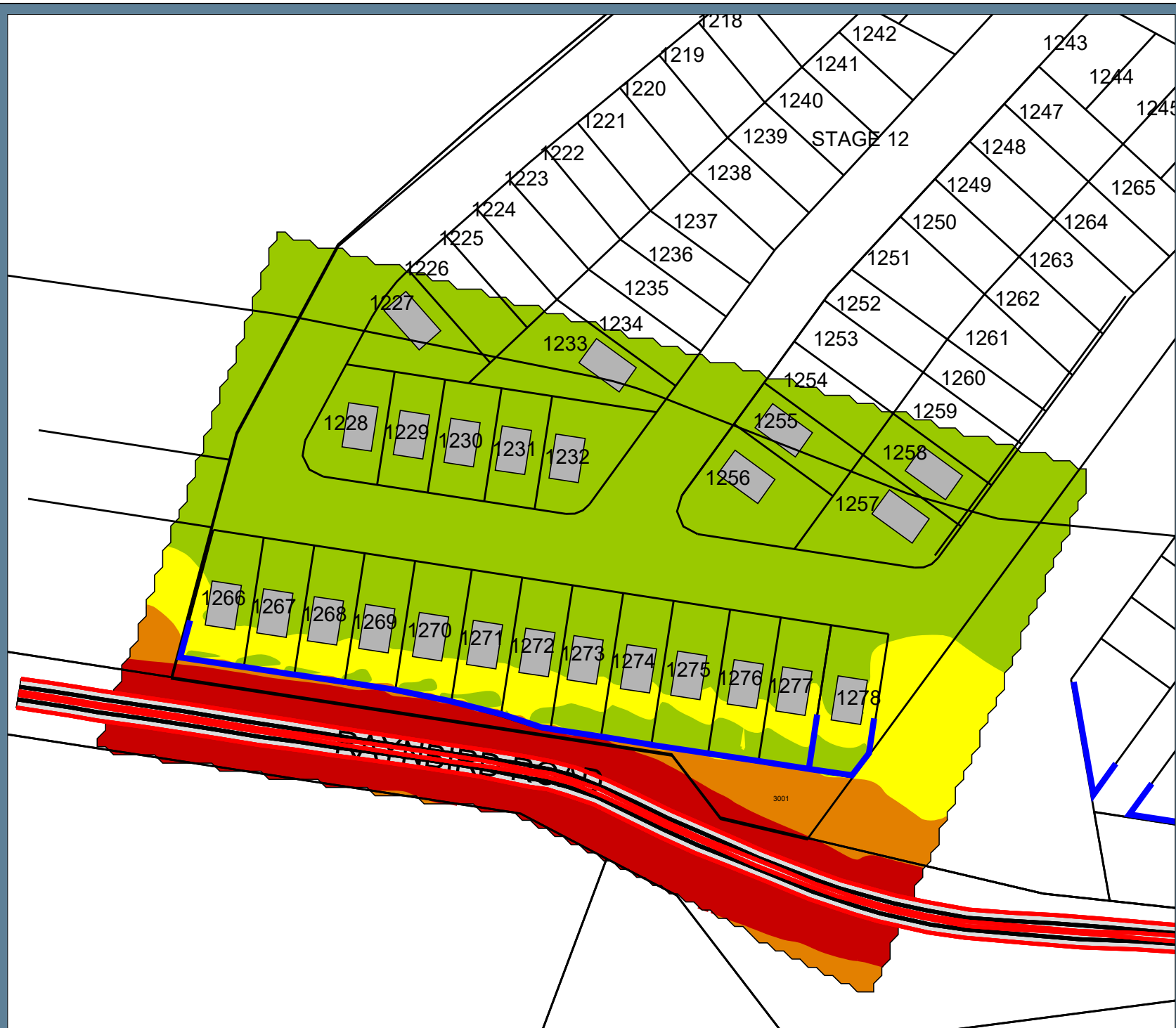
Legend

- Dwelling
- Noise barrier
- Road noise emission line
- Road surface

SCALE @ A4 1:1300



Grid Spacing: 2m
Project Engineer: Aidan Daniels
Created: 3/08/2022
Processed with SoundPLAN 8.2



**Ridgeview, Narangba
Stages 8-12**

**Traffic Noise Modelling
Year 2031**

**First Floor
(4.6m AGL)**

With Noise Barriers

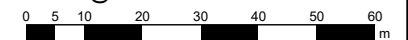
QDC MP4.4 Noise Category



Legend

- Dwelling
- Noise barrier
- Road noise emission line
- Road surface

SCALE @ A4 1:1300



Grid Spacing: 2m
Project Engineer: Aidan Daniels
Created: 3/08/2022
Processed with SoundPLAN 8.2

