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Traffic Noise Impact Assessment Everleigh, Greenbank

RoL 5 Application

Mirvac


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Executive Summary

ATP Consulting Engineers (ATP) was engaged by Mirvac to prepare a traffic noise impact assessment in support of the RoL 5 application for the Everleigh development in Greenbank.

This is Issue 5 of the report which has been prepared with consideration of the proposed new alignment and design surface levels for the Teviot Road upgrade. Teviot Road will be upgraded in the future and a new intersection will be constructed at Leanne Court and Anderson Drive, at the entry of RoL 5.

Previously, Issue 4 of the report was prepared with consideration of the revised bulk earthworks model by Premise. Premise was required to update the bulk earthworks for RoL 5 due to change in the retaining wall height criteria from EDQ. The Issue 4 report did not consider the design surface levels for the Teviot Road upgrade.

This is Issue 3 of the report considering the latest development layout and revised 2051 traffic volume estimates from Premise.

Previously, Issue 2 of the report was prepared considering the following information: Updated WOS traffic modelling data sketch and year 2051 traffic volume data; Precinct 9 3D surface file; and Civil CAD base file.

Potential noise impacts from commercial activities associated with the proposed Neighbourhood Centre, as well as activities at the school and recreation areas, are not part of this assessment and will require detailed assessment at a later stage.

Traffic noise propagation modelling was carried out considering the future traffic flows for a planning horizon of 2051. The results of the noise propagation modelling indicate that, without noise mitigation measures, the proposed dwellings at RoL 5 will be impacted by traffic noise from Teviot Road and Anderson Drive.

To mitigate traffic noise the following noise control measures must be implemented:

- Noise barriers must be constructed along Teviot Road and portion of Anderson Drive as presented in Figures 6.1 to 6.3 of this report.
- The noise barriers will ensure compliance with the traffic noise criteria at the ground floors of Lots 3001 to 3014, however the upper floors of these allotments will be impacted by traffic noise. The upper floors of Lots 3001 to 3014 must be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4.
- Noise barriers cannot be built at the front-loaded lots adjacent to Anderson Drive (Lots 3347 to 3418). The ground and upper floors of Lots 3347 to 3418 must be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4.

Provided the recommended planning and design noise control measures are implemented in the construction of Everleigh RoL 5, road traffic noise will not impose any further constraints on the establishment of the development.

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1. Introduction

1.1 Project background

ATP Consulting Engineers (ATP) was engaged by Mirvac to prepare a traffic noise impact assessment in support of the RoL 5 application for the Everleigh development in Greenbank.

This is Issue 5 of the report which has been prepared with consideration of the proposed new alignment and design surface levels for the Teviot Road upgrade. Teviot Road will be upgraded in the future and a new intersection will be constructed at Leanne Court and Anderson Drive, at the entry of RoL 5.

Previously, Issue 4 of the report was prepared with consideration of the revised bulk earthworks model by Premise. Premise was required to update the bulk earthworks for RoL 5 due to change in the retaining wall height criteria from EDQ. The Issue 4 report did not consider the design surface levels for the Teviot Road upgrade.

Previously, Issue 3 of the report was prepared considering the development layout dated 12 April 2021 and revised 2051 traffic volume estimates from Premise.

Previously, Issue 2 of the report was prepared considering the following information: Updated WOS traffic modelling data sketch and year 2051 traffic volume data; Precinct 9 3D surface file; and Civil CAD base file.

Potential noise impacts from commercial activities associated with the proposed Neighbourhood Centre, as well as activities at the school and recreation areas, are not part of this assessment and will require detailed assessment at a later stage.

1.2 Study objectives

Study objectives are as follows:

- Site specific noise measurements near Teviot Road to obtain information about the existing noise levels. The measured traffic noise levels will be used for validation of the SoundPLAN noise propagation model.
- Development of a 3D traffic noise propagation model using SoundPLAN software considering the development layout and civil engineering design of RoL 5. The traffic flows along Teviot Road and higher order internal road, to the year 2051 (ultimate planning horizon), will be considered in the SoundPLAN model.
- Calculation of the traffic noise levels at the facades and private open spaces of the future dwellings to be constructed at RoL 5.
- Based on the calculated traffic noise levels ATP Consulting will provide recommendations for noise control measures (i.e. acoustic barriers and advice on the architectural treatments to the building facades) to ensure compliance with the relevant external and internal noise criteria.

- Provision of a detailed acoustic report (traffic noise impact assessment) in a format required by EDQ and Logan City Council (LCC). The report will present the traffic noise assessment methodology, tabulated measured noise levels, calculated traffic noise levels, and recommendations for noise control measures.

1.3 Development plan

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

The development layout for RoL 5 is presented in Appendix A.

2. Existing Noise Amenity

2.1 Site-specific noise measurements

Noise monitoring was carried out at the western boundary of RoL 5, adjacent to Teviot Road, to obtain information about the existing traffic and background noise levels.

The noise measurement methodology is summarised in Table 2.1.

Table 2.1 Noise measurements

| | |
|---|--|
| Relevant legislation, standards and guidelines | <p>The noise measurements were carried out in accordance with:</p> <ul style="list-style-type: none"> • Australian Standard AS 1055:2018 (<i>Acoustics – Description and measurement of environmental noise</i>); and • Australian Standard AS 2702-1984 (<i>Acoustics – Methods for measurement of road traffic noise</i>). |
| Measurement location | <p>The noise monitoring was carried out at the south-western boundary of the existing Lot 3 on SP297192, which is located with the proposed RoL 5. The measurement location was approximately 20m setback from Teviot Road. The noise measurement location is presented in Figure 2.1, as well as the photos presented in Appendix B.</p> |
| Measurement period | <p>Continuous noise monitoring was carried out 24 hours a day from 5 to 18 March 2020.</p> |
| Measurement equipment | <p>The following noise measurement equipment was used:</p> <ul style="list-style-type: none"> • Environmental noise logger – ARL EL-315 (serial no. 15-203-537); and • Calibration – RION NC-74 Sound Level Calibrator (serial no. 34615224). <p>The noise measurement instruments conform to Australian Standard AS IEC61672.1-2004. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A).</p> |
| Meteorological conditions | <p>Rainfall occurred during on 6, 9, 10 and 12 March 2020. Noise data affected by periods of rainfall has been excluded from the results. Full meteorological data for the monitoring period is presented in Appendix C.</p> |
| Analysis of data | <p>The noise measurement data was analysed to determine the following noise descriptor:</p> <ul style="list-style-type: none"> • L_{10,18hr}: L₁₀ is the level of noise exceeded for 10% of any time period; L_{10,18hr} is the typical traffic noise descriptor, and is the arithmetic average of 18 hourly L_{10,1hr} levels over consecutive hours between 6am and 12am. |

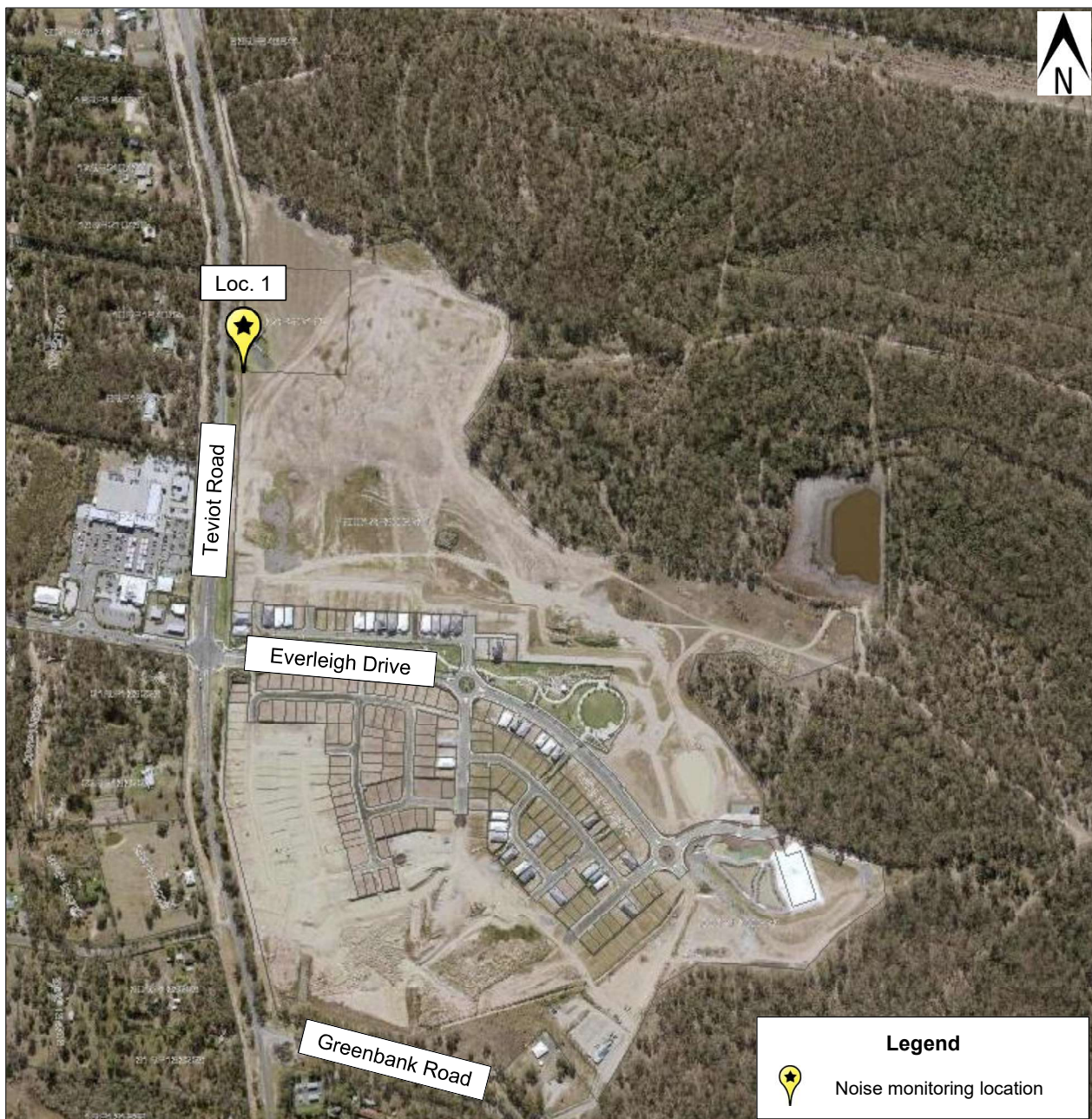


Figure 2.1 Noise measurement location

2.2 Measurement results

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

Table 2.2 Noise measurement results

| Date | Traffic Noise Levels | | Background Noise Levels | |
|------------------------|------------------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| | L _{10,18hr} (6am-12am) | L _{10,1hr max} (6am-12am) | L _{90,18hr} (6am-12am) | L _{90,8hr} (10pm-6am) |
| 5 Mar 2020 (Thu) | — | — | — | 39 |
| 6 Mar 2020 (Fri) | 64 | 67 | 52 | 36 |
| 7 Mar 2020 (Sat) | 64 | 65 | 51 | 37 |
| 8 Mar 2020 (Sun) | 62 | 65 | 49 | 38 |
| 9 Mar 2020 (Mon) | 66 | 68 | 54 | 39 |
| 10 Mar 2020 (Tue) | 64 | 68 | 53 | 39 |
| 11 Mar 2020 (Wed) | 64 | 68 | 54 | 40 |
| 12 Mar 2020 (Thu) | 65 | 68 | 55 | 41 |
| 13 Mar 2020 (Fri) | 65 | 68 | 55 | 38 |
| 14 Mar 2020 (Sat) | 64 | 66 | 52 | 39 |
| 15 Mar 2020 (Sun) | 64 | 67 | 51 | 38 |
| 16 Mar 2020 (Mon) | 64 | 68 | 52 | 39 |
| 17 Mar 2020 (Tue) | 64 | 70 | 53 | 38 |
| 18 Mar 2020 (Wed) | 63 | 67 | 52 | 39 |
| Arithmetic Mean | 64 | 67 | 52 | 39 |
| Weekdays Only | 64 | 68 | 53 | 39 |

Noise data disregarded due to rainfall.

3. Traffic Noise Criteria

3.1 External noise criteria

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

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

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

- Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP), *State Development Assessment Provisions (SDAP) version 2.6 (February 2020), State code 1: Development in state-controlled road environment*; and
- Department of Transport and Main Roads (TMR), *Policy for Development on Land Affected by Environmental Emissions from Transport and Transport Infrastructure Version 4 (October 2017)*.

The applicable criteria from the TMR Policy and the SDAP are presented in Table 3.1.

Table 3.1 External noise criteria for new residential development

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

The relevant façade adjusted² road traffic noise criterion for the building facades is 63dB(A)L_{10,18hr}³.

The designated private open spaces (outdoor living areas) have to comply with the free-field traffic noise criterion of 60dB(A)L_{10,18hr}.

¹ Includes caretaker's accommodation, community residence, dual occupancy, dwelling house, dwelling unit, multiple dwelling, relocatable home park, residential care facility, resort complex, retirement facility, rooming accommodation, short-term accommodation and tourist park.

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

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

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

3.2 Internal noise criteria

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

When carrying out acoustic design as per AS3671, it is recommended to adopt the internal noise criteria specified in AS/NZS 2107:2016 as presented in Table 3.2.

Table 3.2 Internal noise criteria (dwellings)

| Type of occupancy | Maximum L _{Aeq} |
|-------------------|-----------------------------|
| Living areas | 45 dB(A) |
| Sleeping areas | 40 dB(A) |

4. Traffic Noise Calculation Methodology

The traffic noise from Teviot Road and the Anderson Drive was calculated using SoundPLAN noise propagation modelling software as per the procedure specified in the UK Department of Transport Welsh Office *Method of Calculation of Road Traffic Noise* (CoRTN'88). This is an accepted traffic noise calculation procedure applied widely in Australia⁴.

Traffic noise levels have been calculated for the ultimate planning horizon of 2051. Detailed results are calculated for the allotments located within RoL 5.

4.1 Traffic noise model – Validation (Year 2020)

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

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

Table 4.1 Traffic flow data for validation

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

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

Table 4.2 Data and assumptions – Model validation

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

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

⁴ CoRTN (Calculation of Road Traffic Noise) is a widely accepted procedure in Australia for calculation of traffic noise and it is specifically recommended in QLD TMR's Code of Practice Volume 1, Section 4.3.2, Page 29.

⁵ Most recent traffic data available for Teviot Road and Greenbank Road was from a 2006/2007 study by the Department for Transport and Main Roads (TMR, 2010).

⁶ Traffic flow growth rates of 6.0% per annum from 2006 to 2020, based on population data published by the Queensland Government Statisticians Office which indicates a growth rate of approximately 6% within the Greenbank Statistical Area 2.

Table 4.3 SoundPLAN validation results

| Receiver | Measured* L _{10(18-hour)} dB(A) | Calculated* L _{10(18-hour)} dB(A) | Difference dB(A) | Validation Factor |
|---------------------------|--|--|---------------------|----------------------|
| Noise Logger – Location 1 | 64 | 64 | 0 | N/A |

*Free-field

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

4.2 Traffic noise model – Planning horizon (Year 2051)

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

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

Table 4.4 Traffic flow data – 2051 planning horizon

| Road | Road Segment | 2051 Traffic Flow AADT | Heavy Vehicles (%) |
|-----------------|--|------------------------------|--------------------------|
| Teviot Road | North of Leanne Court | 38,063 | 5 |
| Teviot Road | Leanne Court to Shopping centre northern access road | 34,304 | 5 |
| Teviot Road | Shopping centre northern access road to Pub Lane | 34,978 | 5 |
| Teviot Road | Pub Lane to Greenbank Road | 24,681 | 5 |
| Teviot Road | South of Greenbank Road | 19,423 | 5 |
| Anderson Drive | Teviot Road to Kessels Boulevard | 15,274 | 3 |
| Anderson Drive | Kessels Boulevard to "Park" Road | 7,382 | 3 |
| Anderson Drive | "Park" Road to Ivory Parkway | 3,190 | 3 |
| Everleigh Drive | Teviot Road to Kessels Boulevard | 12,364 | 3 |
| Everleigh Drive | Kessels Boulevard to Ivory Parkway | 4,912 | 3 |

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

Table 4.5 Data and assumptions – Planning horizon model

| Parameter | Data/Assumptions |
|---|--|
| Mean vehicle speed | <ul style="list-style-type: none"> • Teviot Road: 70 km/h north of Pub Lane and 80 km/h south of Pub Lane • Internal roads: 50 km/h |
| Calculation procedure | <ul style="list-style-type: none"> • CoRTN (Calculation of Road Traffic Noise) • SoundPLAN grid spacing is 1m while the increment for angle of view is 1° |
| Road traffic volume for CoRTN procedure | <ul style="list-style-type: none"> • The CoRTN procedure requires 18 hours traffic volume data. Traffic volume for 18-hours (6:00am to midnight) was considered as 94% of the 24 hour AADT. |
| Road type and alignment | <ul style="list-style-type: none"> • Teviot Road: After road upgrade: Two lanes in each direction. Centreline of new road is same as existing road (Note: as explained in Section 1.1 of this report, the new alignment of Teviot Road will be different and this noise assessment must be updated to consider the new road alignment once the finished surface levels for the new road design are made available). • Anderson Drive: Two lanes in each direction to the first roundabout, then one lane in each direction. • Everleigh Drive: One lane in each direction. • Source: <ul style="list-style-type: none"> - Civil CAD Base File "X-MIRSGB BASE" - CAD Base – Leanne_Anderson 250521 |
| Road surface | <ul style="list-style-type: none"> • Teviot Road: Dense graded asphalt (after road upgrade) • Anderson Drive and Everleigh Drive: Dense graded asphalt. Dense graded asphalt requires no adjustment factor. |
| Development layout | <ul style="list-style-type: none"> • Source: <ul style="list-style-type: none"> - Civil CAD Base File "X-MIRSGB BASE" |
| Buildings | <ul style="list-style-type: none"> • Residential buildings on all lots were considered as one storey high with total height of 3.5m. • Front setbacks are 6.0m. |
| Receivers | <p>Façade noise levels</p> <ul style="list-style-type: none"> • Although buildings were considered as single-storey, receivers were allocated to ground (1.8m AGL) as well as upper floor (4.6m AGL) to calculate noise levels at potential two-storey houses. Note: <i>AGL: above ground level</i> • 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. <p>Private open spaces</p> <ul style="list-style-type: none"> • Receivers were placed at the outdoor living areas which are located at the ground floor at the rear of each dwelling (i.e. backyards). • Receivers were placed at a free-field location 4m from the building façades. • Receivers were placed at 1.5m AGL. |
| CoRTN correction factor | <ul style="list-style-type: none"> • Application of CoRTN correction factor of –1.7dB for receivers located 1m from building façades is considered in Australia, and –0.7dB for free-field receivers, as recommended by <i>TMR Code of Practice</i>. |
| Terrain | <ul style="list-style-type: none"> • Sourced from earthworks drawings by Premise: <ul style="list-style-type: none"> - 2021-07-22 MIR003 ROL5 Design Surface Tin 3d Triangles - Precinct 9 Design Surface 3D Triangles "2020-10-28 PRECINCT 9 DESIGN TIN 3D TRIANGLES.dwg" - Whole of Site Bulk Earthworks Finished Surface Levels "WOS BEW FINISHED SURFACE SUPER 3D TRIANGLES.dwg" - Teviot Rd- design tins east side 20210729 |

| Parameter | Data/Assumptions |
|------------------------|---|
| Noise control measures | <ul style="list-style-type: none"> • Traffic noise levels were calculated with the noise control measures recommended in Section 6 of this report. |

Overview of the SoundPLAN traffic noise model for RoL 5 is presented in Figure 4.1.



Figure 4.1 SoundPLAN traffic noise model – RoL 5

5. Calculated Traffic Noise Levels

The road traffic noise levels were calculated at the facades (ground and upper floors) and private open space (ground floor outdoor living area) of each dwelling, considering the noise barriers as per Section 6 of this report.

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

5.1 Allotments within RoL 5

The calculated traffic noise levels at the allotments located within RoL 5 are presented in Table 5.1.

Table 5.1 Calculated traffic noise levels – RoL 5

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|--|---|--|---|---------------------------------------|---|
| | Ground Floor | | Upper Floor | | $L_{10,18\text{hr}}$ dB(A) free-field | Compliance $\leq 60\text{dB(A)}$ $L_{10,18\text{hr}}$ |
| | $L_{10,18\text{hr}}$ dB(A) facade-adjusted | Compliance $\leq 63\text{dB(A)}$ $L_{10,18\text{hr}}$ | $L_{10,18\text{hr}}$ dB(A) facade-adjusted | Compliance $\leq 63\text{dB(A)}$ $L_{10,18\text{hr}}$ | | |
| RoL 5 Lot 3001 | 60 | Yes | 67 | No | 57 | Yes |
| RoL 5 Lot 3002 | 60 | Yes | 67 | No | 58 | Yes |
| RoL 5 Lot 3003 | 61 | Yes | 68 | No | 59 | Yes |
| RoL 5 Lot 3004 | 61 | Yes | 69 | No | 59 | Yes |
| RoL 5 Lot 3005 | 61 | Yes | 69 | No | 59 | Yes |
| RoL 5 Lot 3006 | 62 | Yes | 69 | No | 60 | Yes |
| RoL 5 Lot 3007 | 62 | Yes | 69 | No | 60 | Yes |
| RoL 5 Lot 3008 | 62 | Yes | 69 | No | 60 | Yes |
| RoL 5 Lot 3009 | 61 | Yes | 69 | No | 60 | Yes |
| RoL 5 Lot 3010 | 61 | Yes | 70 | No | 60 | Yes |
| RoL 5 Lot 3011 | 60 | Yes | 65 | No | 58 | Yes |
| RoL 5 Lot 3012 | 60 | Yes | 64 | No | 58 | Yes |
| RoL 5 Lot 3013 | 60 | Yes | 64 | No | 57 | Yes |
| RoL 5 Lot 3014 | 60 | Yes | 64 | No | 58 | Yes |
| RoL 5 Lot 3015 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3016 | 58 | Yes | 61 | Yes | 55 | Yes |
| RoL 5 Lot 3017 | 56 | Yes | 61 | Yes | 54 | Yes |
| RoL 5 Lot 3018 | 56 | Yes | 60 | Yes | 54 | Yes |
| RoL 5 Lot 3019 | 56 | Yes | 60 | Yes | 53 | Yes |
| RoL 5 Lot 3020 | 57 | Yes | 60 | Yes | 53 | Yes |
| RoL 5 Lot 3021 | 57 | Yes | 60 | Yes | 53 | Yes |
| RoL 5 Lot 3022 | 57 | Yes | 60 | Yes | 53 | Yes |
| RoL 5 Lot 3023 | 57 | Yes | 60 | Yes | 53 | Yes |
| RoL 5 Lot 3024 | 57 | Yes | 60 | Yes | 54 | Yes |
| RoL 5 Lot 3025 | 56 | Yes | 59 | Yes | 55 | Yes |
| RoL 5 Lot 3026 | 56 | Yes | 59 | Yes | 55 | Yes |
| RoL 5 Lot 3027 | 56 | Yes | 59 | Yes | 55 | Yes |
| RoL 5 Lot 3028 | 56 | Yes | 59 | Yes | 55 | Yes |
| RoL 5 Lot 3029 | 56 | Yes | 60 | Yes | 55 | Yes |
| RoL 5 Lot 3030 | 61 | Yes | 63 | Yes | 54 | Yes |
| RoL 5 Lot 3031 | 61 | Yes | 63 | Yes | 53 | Yes |
| RoL 5 Lot 3032 | 61 | Yes | 63 | Yes | 53 | Yes |
| RoL 5 Lot 3033 | 61 | Yes | 63 | Yes | 53 | Yes |
| RoL 5 Lot 3034 | 55 | Yes | 59 | Yes | 52 | Yes |
| RoL 5 Lot 3035 | 55 | Yes | 59 | Yes | 52 | Yes |
| RoL 5 Lot 3036 | 55 | Yes | 58 | Yes | 52 | Yes |
| RoL 5 Lot 3037 | 55 | Yes | 58 | Yes | 52 | Yes |
| RoL 5 Lot 3038 | 55 | Yes | 58 | Yes | 52 | Yes |
| RoL 5 Lot 3039 | 55 | Yes | 57 | Yes | 51 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3040 | 55 | Yes | 57 | Yes | 51 | Yes |
| RoL 5 Lot 3041 | 55 | Yes | 57 | Yes | 51 | Yes |
| RoL 5 Lot 3042 | 55 | Yes | 57 | Yes | 51 | Yes |
| RoL 5 Lot 3043 | 55 | Yes | 56 | Yes | 52 | Yes |
| RoL 5 Lot 3044 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3045 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3046 | 52 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3047 | 52 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3048 | 52 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3049 | 52 | Yes | 56 | Yes | 51 | Yes |
| RoL 5 Lot 3050 | 53 | Yes | 56 | Yes | 51 | Yes |
| RoL 5 Lot 3051 | 53 | Yes | 57 | Yes | 51 | Yes |
| RoL 5 Lot 3052 | 53 | Yes | 57 | Yes | 52 | Yes |
| RoL 5 Lot 3053 | 54 | Yes | 58 | Yes | 52 | Yes |
| RoL 5 Lot 3054 | 60 | Yes | 62 | Yes | 54 | Yes |
| RoL 5 Lot 3055 | 60 | Yes | 63 | Yes | 53 | Yes |
| RoL 5 Lot 3056 | 60 | Yes | 63 | Yes | 53 | Yes |
| RoL 5 Lot 3057 | 60 | Yes | 62 | Yes | 53 | Yes |
| RoL 5 Lot 3058 | 54 | Yes | 57 | Yes | 51 | Yes |
| RoL 5 Lot 3059 | 53 | Yes | 56 | Yes | 51 | Yes |
| RoL 5 Lot 3060 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3061 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3062 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3063 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3064 | 53 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3065 | 53 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3066 | 53 | Yes | 54 | Yes | 51 | Yes |
| RoL 5 Lot 3067 | 52 | Yes | 54 | Yes | 51 | Yes |
| RoL 5 Lot 3068 | 52 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3069 | 52 | Yes | 54 | Yes | 51 | Yes |
| RoL 5 Lot 3070 | 53 | Yes | 54 | Yes | 51 | Yes |
| RoL 5 Lot 3071 | 53 | Yes | 55 | Yes | 51 | Yes |
| RoL 5 Lot 3072 | 53 | Yes | 55 | Yes | 52 | Yes |
| RoL 5 Lot 3073 | 53 | Yes | 56 | Yes | 52 | Yes |
| RoL 5 Lot 3074 | 53 | Yes | 56 | Yes | 52 | Yes |
| RoL 5 Lot 3075 | 54 | Yes | 57 | Yes | 53 | Yes |
| RoL 5 Lot 3076 | 60 | Yes | 62 | Yes | 54 | Yes |
| RoL 5 Lot 3077 | 60 | Yes | 62 | Yes | 53 | Yes |
| RoL 5 Lot 3078 | 60 | Yes | 62 | Yes | 52 | Yes |
| RoL 5 Lot 3079 | 59 | Yes | 62 | Yes | 52 | Yes |
| RoL 5 Lot 3080 | 53 | Yes | 56 | Yes | 50 | Yes |
| RoL 5 Lot 3081 | 53 | Yes | 56 | Yes | 50 | Yes |
| RoL 5 Lot 3082 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3083 | 53 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3084 | 53 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3085 | 52 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3086 | 52 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3087 | 52 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3088 | 52 | Yes | 53 | Yes | 51 | Yes |
| RoL 5 Lot 3089 | 51 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3090 | 51 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3091 | 51 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3092 | 51 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3093 | 51 | Yes | 55 | Yes | 49 | Yes |
| RoL 5 Lot 3094 | 51 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3095 | 52 | Yes | 56 | Yes | 50 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3096 | 60 | Yes | 62 | Yes | 52 | Yes |
| RoL 5 Lot 3097 | 59 | Yes | 61 | Yes | 51 | Yes |
| RoL 5 Lot 3098 | 58 | Yes | 61 | Yes | 50 | Yes |
| RoL 5 Lot 3099 | 58 | Yes | 60 | Yes | 51 | Yes |
| RoL 5 Lot 3100 | 53 | Yes | 56 | Yes | 50 | Yes |
| RoL 5 Lot 3101 | 52 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3102 | 52 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3103 | 51 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3104 | 51 | Yes | 53 | Yes | 49 | Yes |
| RoL 5 Lot 3105 | 51 | Yes | 53 | Yes | 49 | Yes |
| RoL 5 Lot 3106 | 51 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3107 | 50 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3108 | 50 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3109 | 50 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3110 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3111 | 49 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3112 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3113 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3114 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3115 | 49 | Yes | 53 | Yes | 47 | Yes |
| RoL 5 Lot 3116 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3117 | 50 | Yes | 54 | Yes | 48 | Yes |
| RoL 5 Lot 3118 | 50 | Yes | 55 | Yes | 49 | Yes |
| RoL 5 Lot 3119 | 50 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3120 | 50 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3121 | 51 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3122 | 52 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3123 | 51 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3124 | 51 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3125 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3126 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3127 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3128 | 51 | Yes | 52 | Yes | 50 | Yes |
| RoL 5 Lot 3129 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3130 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3131 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3132 | 50 | Yes | 52 | Yes | 49 | Yes |
| RoL 5 Lot 3133 | 50 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3134 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3135 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3136 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3137 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3138 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3139 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3140 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3141 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3142 | 50 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3143 | 49 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3144 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3145 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3146 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3147 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3148 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3149 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3150 | 50 | Yes | 51 | Yes | 49 | Yes |
| RoL 5 Lot 3151 | 50 | Yes | 51 | Yes | 46 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3152 | 50 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3153 | 50 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3154 | 50 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3155 | 50 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3156 | 50 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3157 | 49 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3158 | 47 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3159 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3160 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3161 | 47 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3162 | 47 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3163 | 47 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3164 | 47 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3165 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3166 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3167 | 49 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3168 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3169 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3170 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3171 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3172 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3173 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3174 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3175 | 49 | Yes | 50 | Yes | 48 | Yes |
| RoL 5 Lot 3176 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3177 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3178 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3179 | 48 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3180 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3181 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3182 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3183 | 48 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3184 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3185 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3186 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3187 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3188 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3189 | 46 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3190 | 48 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3191 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3192 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3193 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3194 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3195 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3196 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3197 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3198 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3199 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3200 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3201 | 48 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3202 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3203 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3204 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3205 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3206 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3207 | 48 | Yes | 50 | Yes | 45 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3208 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3209 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3210 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3211 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3212 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3213 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3214 | 48 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3215 | 49 | Yes | 52 | Yes | 45 | Yes |
| RoL 5 Lot 3216 | 49 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3217 | 50 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3218 | 51 | Yes | 53 | Yes | 50 | Yes |
| RoL 5 Lot 3219 | 51 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3220 | 49 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3221 | 50 | Yes | 53 | Yes | 49 | Yes |
| RoL 5 Lot 3222 | 49 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3223 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3224 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3225 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3226 | 49 | Yes | 51 | Yes | 48 | Yes |
| RoL 5 Lot 3227 | 48 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3228 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3229 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3230 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3231 | 47 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3232 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3233 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3234 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3235 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3236 | 46 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3237 | 45 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3238 | 45 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3239 | 45 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3240 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3241 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3242 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3243 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3244 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3245 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3246 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3247 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3248 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3249 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3250 | 47 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3251 | 47 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3252 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3253 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3254 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3255 | 48 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3256 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3257 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3258 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3259 | 48 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3260 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3261 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3262 | 47 | Yes | 51 | Yes | 45 | Yes |
| RoL 5 Lot 3263 | 47 | Yes | 50 | Yes | 46 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3264 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3265 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3266 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3267 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3268 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3269 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3270 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3271 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3272 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3273 | 45 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3274 | 45 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3275 | 46 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3276 | 46 | Yes | 49 | Yes | 44 | Yes |
| RoL 5 Lot 3277 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3278 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3279 | 47 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3280 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3281 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3282 | 46 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3283 | 46 | Yes | 49 | Yes | 46 | Yes |
| RoL 5 Lot 3284 | 46 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3285 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3286 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3287 | 47 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3288 | 47 | Yes | 50 | Yes | 47 | Yes |
| RoL 5 Lot 3289 | 47 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3290 | 47 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3291 | 47 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3292 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3293 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3294 | 46 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3295 | 46 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3296 | 46 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3297 | 46 | Yes | 50 | Yes | 45 | Yes |
| RoL 5 Lot 3298 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3299 | 46 | Yes | 49 | Yes | 45 | Yes |
| RoL 5 Lot 3300 | 47 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3301 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3302 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3303 | 49 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3304 | 46 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3305 | 46 | Yes | 50 | Yes | 46 | Yes |
| RoL 5 Lot 3306 | 47 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3307 | 48 | Yes | 51 | Yes | 47 | Yes |
| RoL 5 Lot 3308 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3309 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3310 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3311 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3312 | 48 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3313 | 54 | Yes | 56 | Yes | 53 | Yes |
| RoL 5 Lot 3314 | 53 | Yes | 55 | Yes | 51 | Yes |
| RoL 5 Lot 3315 | 52 | Yes | 55 | Yes | 50 | Yes |
| RoL 5 Lot 3316 | 51 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3317 | 51 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3318 | 50 | Yes | 54 | Yes | 49 | Yes |
| RoL 5 Lot 3319 | 51 | Yes | 54 | Yes | 49 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3320 | 51 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3321 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3322 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3323 | 50 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3324 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3325 | 49 | Yes | 53 | Yes | 47 | Yes |
| RoL 5 Lot 3326 | 49 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3327 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3328 | 48 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3329 | 49 | Yes | 52 | Yes | 47 | Yes |
| RoL 5 Lot 3330 | 49 | Yes | 52 | Yes | 48 | Yes |
| RoL 5 Lot 3331 | 50 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3332 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3333 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3334 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3335 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3336 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3337 | 49 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3338 | 50 | Yes | 53 | Yes | 48 | Yes |
| RoL 5 Lot 3339 | 51 | Yes | 54 | Yes | 50 | Yes |
| RoL 5 Lot 3340 | 50 | Yes | 54 | Yes | 48 | Yes |
| RoL 5 Lot 3341 | 49 | Yes | 54 | Yes | 48 | Yes |
| RoL 5 Lot 3342 | 49 | Yes | 54 | Yes | 48 | Yes |
| RoL 5 Lot 3343 | 51 | Yes | 55 | Yes | 49 | Yes |
| RoL 5 Lot 3344 | 52 | Yes | 56 | Yes | 49 | Yes |
| RoL 5 Lot 3345 | 53 | Yes | 57 | Yes | 50 | Yes |
| RoL 5 Lot 3346 | 55 | Yes | 58 | Yes | 52 | Yes |
| RoL 5 Lot 3347 | 65 | No | 66 | No | 55 | Yes |
| RoL 5 Lot 3348 | 65 | No | 66 | No | 51 | Yes |
| RoL 5 Lot 3349 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3350 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3351 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3352 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3353 | 64 | No | 66 | No | 51 | Yes |
| RoL 5 Lot 3354 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3355 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3356 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3357 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3358 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3359 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3360 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3361 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3362 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3363 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3364 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3365 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3366 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3367 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3368 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3369 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3370 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3371 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3372 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3373 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3374 | 64 | No | 66 | No | 51 | Yes |
| RoL 5 Lot 3375 | 64 | No | 66 | No | 50 | Yes |

| Lot No. | Building Facades | | | | Private Open Space | |
|----------------|---|--|---|--|--|--|
| | Ground Floor | | Upper Floor | | L _{10,18hr} dB(A) free-field | Compliance ≤60dB(A) L _{10,18hr} |
| | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | L _{10,18hr} dB(A) facade-adjusted | Compliance ≤63dB(A) L _{10,18hr} | | |
| RoL 5 Lot 3376 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3377 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3378 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3379 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3380 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3381 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3382 | 64 | No | 66 | No | 52 | Yes |
| RoL 5 Lot 3383 | 65 | No | 66 | No | 52 | Yes |
| RoL 5 Lot 3384 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3385 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3386 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3387 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3388 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3389 | 64 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3390 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3391 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3392 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3393 | 64 | No | 66 | No | 47 | Yes |
| RoL 5 Lot 3394 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3395 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3396 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3397 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3398 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3399 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3400 | 65 | No | 66 | No | 48 | Yes |
| RoL 5 Lot 3401 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3402 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3403 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3404 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3405 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3406 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3407 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3408 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3409 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3410 | 65 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3411 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3412 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3413 | 64 | No | 66 | No | 49 | Yes |
| RoL 5 Lot 3414 | 65 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3415 | 64 | No | 66 | No | 50 | Yes |
| RoL 5 Lot 3416 | 65 | No | 66 | No | 51 | Yes |
| RoL 5 Lot 3417 | 64 | No | 66 | No | 51 | Yes |
| RoL 5 Lot 3418 | 65 | No | 66 | No | 54 | Yes |
| RoL 5 Lot 3419 | 49 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3420 | 49 | Yes | 51 | Yes | 46 | Yes |
| RoL 5 Lot 3421 | 49 | Yes | 52 | Yes | 46 | Yes |

Noise contour maps showing the traffic noise levels across RoL 5 are presented in Appendix G.

6. Discussion and Recommendations

Traffic noise propagation modelling was carried out considering the future traffic flows for a planning horizon of 2051. The results of the noise propagation modelling indicate that, without noise mitigation measures, the proposed dwellings at RoL 5 will be impacted by traffic noise from Teviot Road and the major internal collector road (Anderson Drive).

A noise control strategy has been adopted in the planning of the Everleigh development. The general objectives of the noise control strategy are as follows:

1. Ensure that at all allotments, there is at least one private open space (outdoor living area) which complies with the traffic noise criterion of 60dB(A) $L_{10,18hr}$ (free-field).
2. Ensure compliance with the façade traffic noise criterion of 63dB(A) $L_{10,18hr}$ at all allotments where it is practical to do so (i.e. where noise barrier or acoustic setback is feasible). Typically, for traffic noise levels of 63dB(A) or lesser, standard construction of the building envelope is acceptable.
3. At allotments where noise barrier or acoustic setback is not feasible and traffic noise criterion of 63dB(A) $L_{10,18hr}$ is exceeded, the building envelope should be constructed in accordance with QDC MP4.4 or AS 3671-1989 to ensure compliance with the internal noise criteria from AS/NZS 2107:2016.

The proposed noise mitigation measures for RoL 5 are as follows:

- Noise barrier along Teviot Road;
- Noise barrier along Anderson Drive, at rear-loaded allotments where the outdoor living areas face the road;
- For front-loaded allotments on Anderson Drive, ensure that outdoor living areas are located on the protected façade;
- Acoustic setback along Anderson Drive (allotments separated from road by linear parks); and
- Acoustic design to be carried out at the building approval stage for any dwellings where the traffic noise criterion is exceeded. This may include upper floors of two storey houses and houses on front loaded allotments facing the internal collector road.

Summary of the recommended noise control measures is presented in Figures 6.1 and 6.2.

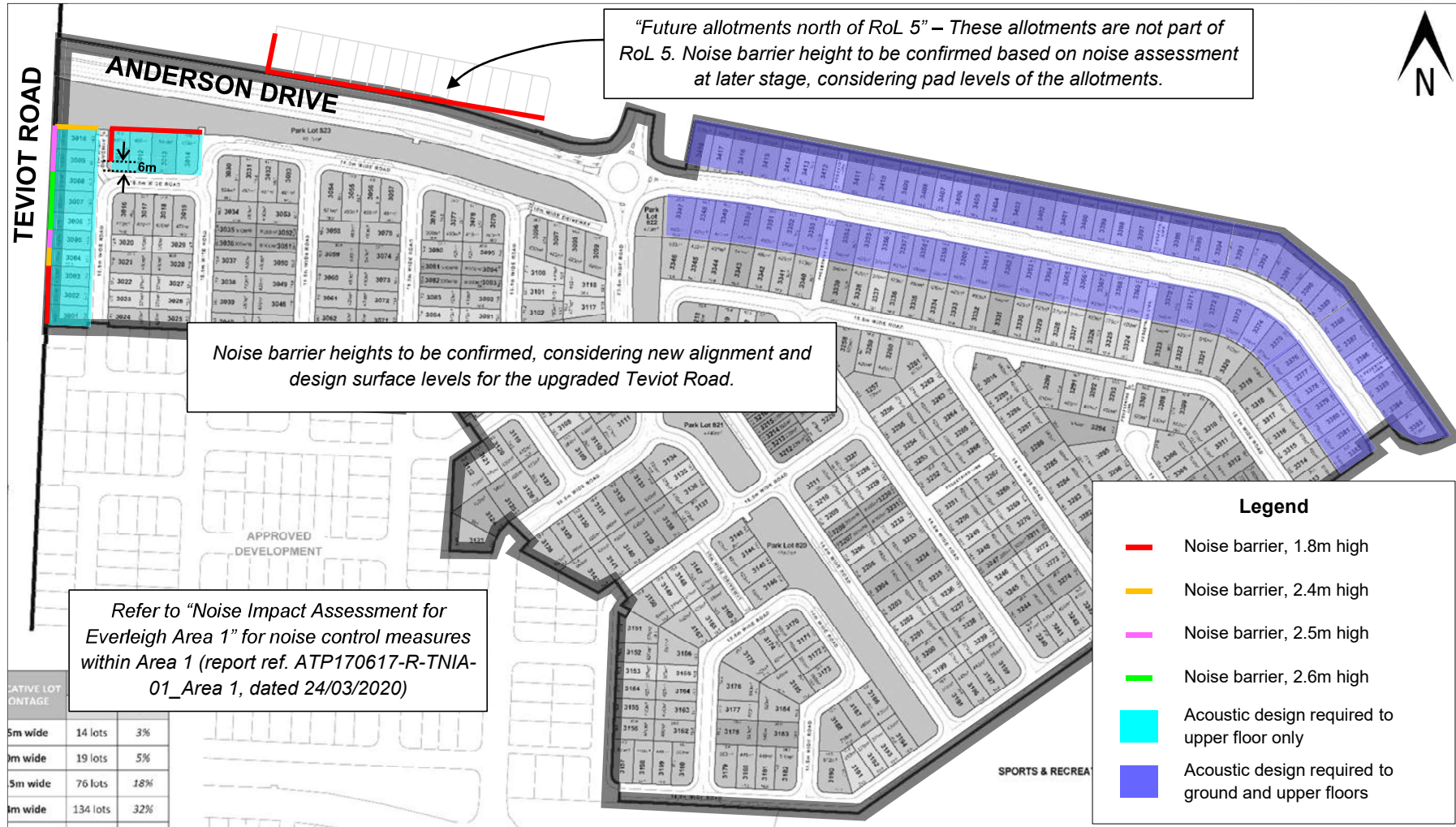


Figure 6.1 Noise control measures – RoL 5

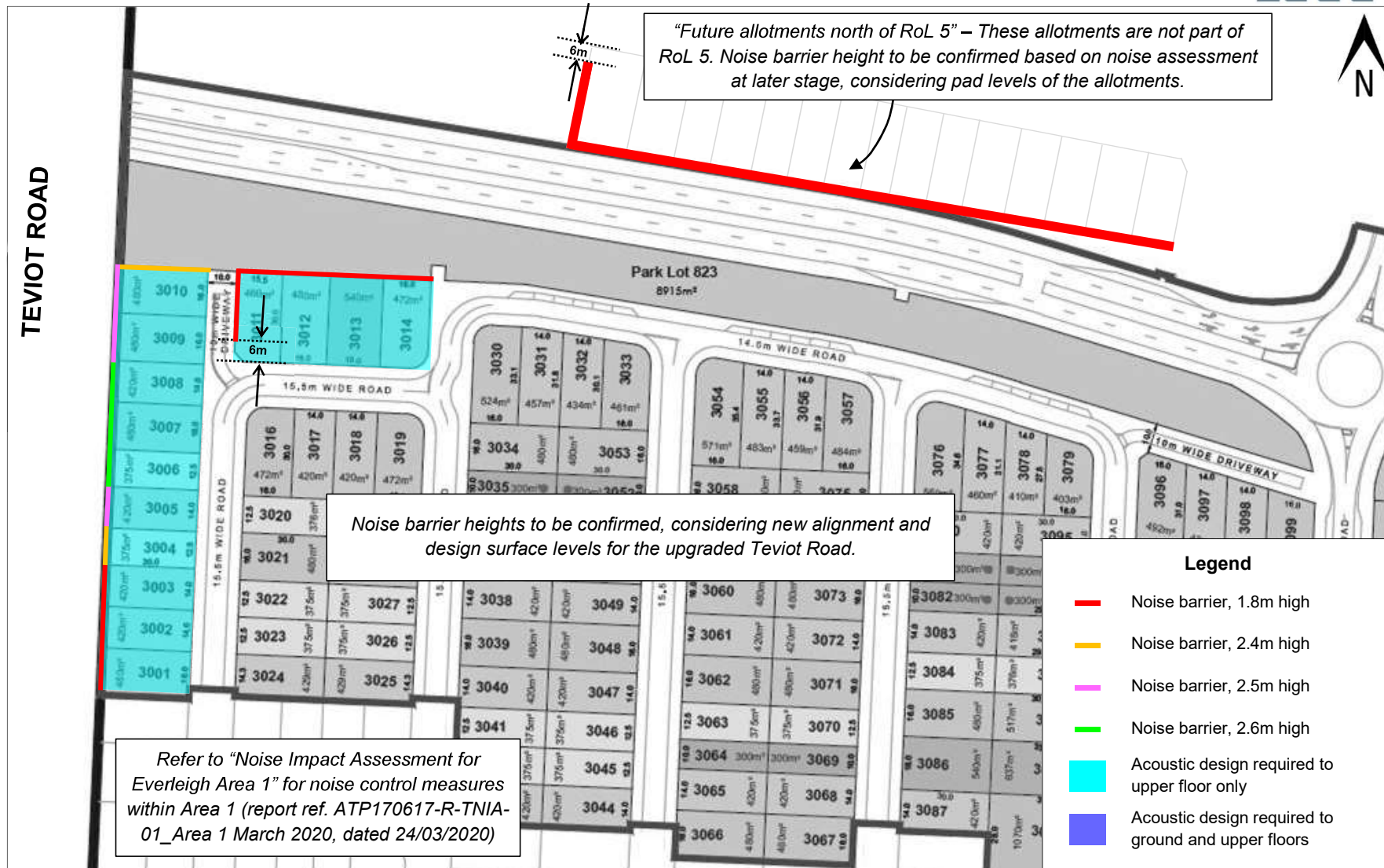


Figure 6.2 Noise barriers along Teviot Road and Anderson Drive

6.1 Noise barriers

6.1.1 Noise barrier along Teviot Road

The noise barrier generally follows the western site boundary along Teviot Road, with a return along Anderson Drive at Lot 3010. The alignment and height of the noise barrier is described in Table 6.1.

Table 6.1 Noise barrier along Teviot Road

| Location <i>Refer to Figure 6.2</i> | Description | Height of noise barrier |
|---|--|-------------------------|
| Western site boundary adjacent to Teviot Road | Lot 3001 to 3003 | 1.8m |
| | Lot 3004 | 2.4m |
| | Lot 3005 | 2.5m |
| | Lot 3006 to 3008 | 2.6m |
| | Lot 3009 to 3010 | 2.5m |
| Anderson Drive | Return along northern boundary of Lot 3010 | 2.4m |

Retaining walls will be constructed along the western site boundary with Teviot Road and the return along Anderson Drive. The noise barrier must be constructed on top of the retaining walls.

The recommended levels of the noise barrier and retaining walls are presented in Table 6.2.

Table 6.2 Noise barrier along Teviot Road – Levels

| Lot No. | Position (moving from south to north) | Pad level | Top of retaining wall, RL m | Retaining wall height, m | Noise barrier height, m | Top of noise barrier, RL m |
|---------|---------------------------------------|-----------|-----------------------------|--------------------------|-------------------------|----------------------------|
| 3001 | start | 69.80 | 71.85 | 2.05 | 1.80 | 73.65 |
| | end | 69.80 | 71.65 | 1.85 | 1.80 | 73.45 |
| 3002 | start | 69.90 | 71.65 | 1.75 | 1.80 | 73.45 |
| | end | 69.90 | 71.40 | 1.50 | 1.80 | 73.20 |
| 3003 | start | 70.00 | 71.40 | 1.40 | 1.80 | 73.20 |
| | end | 70.00 | 71.05 | 1.05 | 1.80 | 72.85 |
| 3004 | start | 70.10 | 71.05 | 0.95 | 2.40 | 73.45 |
| | end | 70.10 | 70.70 | 0.60 | 2.40 | 73.10 |
| 3005 | start | 70.15 | 70.70 | 0.55 | 2.50 | 73.20 |
| | end | 70.15 | 70.35 | 0.20 | 2.50 | 72.85 |
| 3006 | start | 70.25 | 70.35 | 0.10 | 2.60 | 72.95 |
| | end | 70.25 | 70.25 | 0.20 | 2.60 | 72.85 |
| 3007 | start | 70.30 | 70.30 | 0.25 | 2.60 | 72.90 |
| | end | 70.30 | 70.30 | 0.65 | 2.60 | 72.90 |
| 3008 | start | 70.45 | 70.45 | 0.80 | 2.60 | 73.05 |
| | end | 70.45 | 70.45 | 1.15 | 2.60 | 73.05 |
| 3009 | start | 70.20 | 70.20 | 0.90 | 2.50 | 72.70 |
| | end | 70.20 | 70.20 | 1.40 | 2.50 | 72.70 |
| 3010 | start | 70.20 | 70.20 | 1.40 | 2.50 | 72.70 |
| | corner | 70.20 | 70.20 | 1.95 | 2.50 | 72.70 |
| | end | 70.20 | 70.25 | 0.05 | 2.40 | 72.65 |

The minimum RLs at the top of the noise barriers are presented in Figure 6.3.

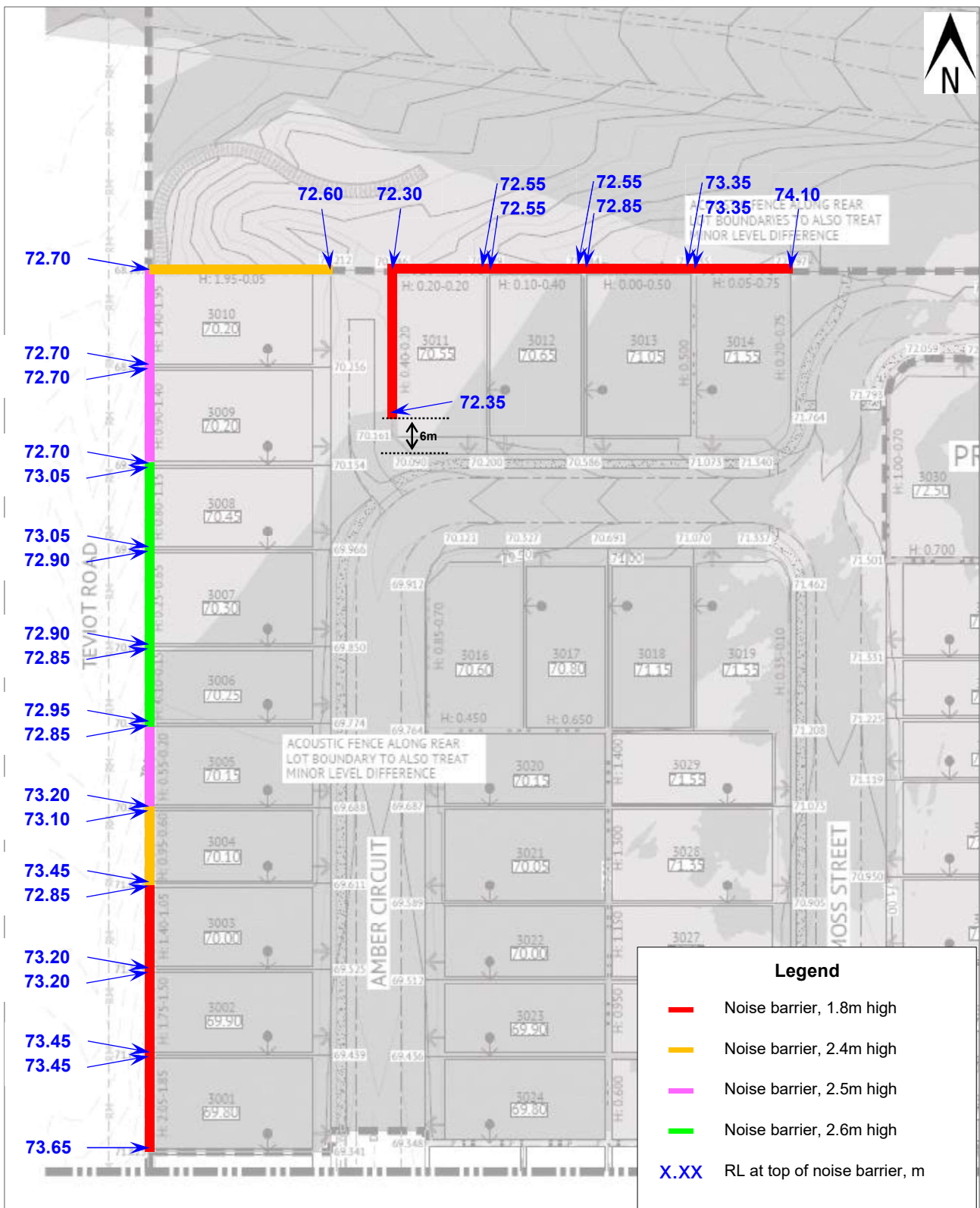


Figure 6.3 Noise barriers – Minimum RLs

At the southern end of the noise barrier (Lot 3001), the allotments sit below the height of Teviot Road and the road verge. As such, retaining walls will be constructed along Teviot Road. The noise barrier must be positioned on top of the retaining wall. Positioning the noise barrier on top of the retaining wall will maximise screening of road traffic noise. Locating the noise barrier on the site boundary, in close proximity to the noise sensitive outdoor living areas, will also maximise the “acoustic shadow”.

At the middle and northern end of the noise barrier, the height of the allotments is equal to or higher than Teviot Road and the road verge. As a result, the future dwellings will be less shielded from Teviot Road. The recommended height of the noise barrier ranges from 2.4m to 2.6m at this location.

6.1.2 Noise barriers along Anderson Drive

There are two noise barriers proposed along Anderson Drive:

- “Lot 3011 to 3014”

Northern boundary of RoL 5 allotments Lot 3011 to 3014, with return along the western boundary of Lot 3011

- “Unnamed future allotments north of RoL 5”

Southern boundary of unnamed future allotments, with return along the western boundary. The future allotments are located on northern side of Anderson Drive (outside the boundaries of RoL 5). Noise barrier height to be confirmed based on noise assessment at later stage, considering pad levels of the allotments.

The alignment and height of the noise barriers is described in Table 6.3.

Table 6.3 Noise barriers along Anderson Drive

| Location <i>Refer to Figure 6.2</i> | Description | Height of noise barrier |
|---|--|--------------------------------|
| Anderson Drive – Lot 3011 to 3014 | Return along western boundary of Lot 3011 | 1.8m |
| | Lot 3011 to 3014 | 1.8m |
| Anderson Drive – Future allotments north of RoL 5 | Return along western boundary of unnamed future allotment (refer to Figure 6.2) | 1.8m |
| | Unnamed future allotments (refer to Figure 6.2) | 1.8m |

Retaining walls will be constructed along the lot boundaries. The noise barriers must be constructed on top of the retaining walls.

The recommended levels of the noise barrier and retaining walls along Lot 3011 to 3014 are presented in Table 6.4.

Table 6.4 Noise barrier along Anderson Drive – Levels

| Lot No. | Position (moving from south to north, west to east) | Pad level | Top of retaining wall, RL m | Retaining wall height, m | Noise barrier height, m | Top of noise barrier, RL m |
|----------------|--|------------------|--|-------------------------------------|------------------------------------|---------------------------------------|
| 3011 | start | 70.55 | 70.55 | 0.40 | 1.80 | 72.35 |
| | corner | 70.55 | 70.50 | 0.20 | 1.80 | 72.30 |

| Lot No. | Position (moving from south to north, west to east) | Pad level | Top of retaining wall, RL m | Retaining wall height, m | Noise barrier height, m | Top of noise barrier, RL m |
|---------|---|-----------|-----------------------------------|-----------------------------|----------------------------|-------------------------------|
| | end | 70.55 | 70.75 | 0.20 | 1.80 | 72.55 |
| 3012 | start | 70.65 | 70.75 | 0.10 | 1.80 | 72.55 |
| | end | 70.65 | 71.05 | 0.40 | 1.80 | 72.85 |
| 3013 | start | 71.05 | 71.05 | 0.00 | 1.80 | 72.85 |
| | end | 71.05 | 71.55 | 0.50 | 1.80 | 73.35 |
| 3014 | start | 71.55 | 71.55 | 0.05 | 1.80 | 73.35 |
| | end | 71.55 | 72.30 | 0.75 | 1.80 | 74.10 |

The minimum RLs at the top of the noise barrier are presented in Figure 6.3.

Pad levels are not currently available for the unnamed future allotments located on the northern side of Anderson Drive (outside the boundaries of RoL 5). The noise barrier RLs at these future allotments must be confirmed based on noise assessment at later stage, considering pad levels of the allotments once they are available.

The noise barrier alignment, and the height of the noise barriers relative to the allotments, is presented in Figures 6.4 to 6.7.

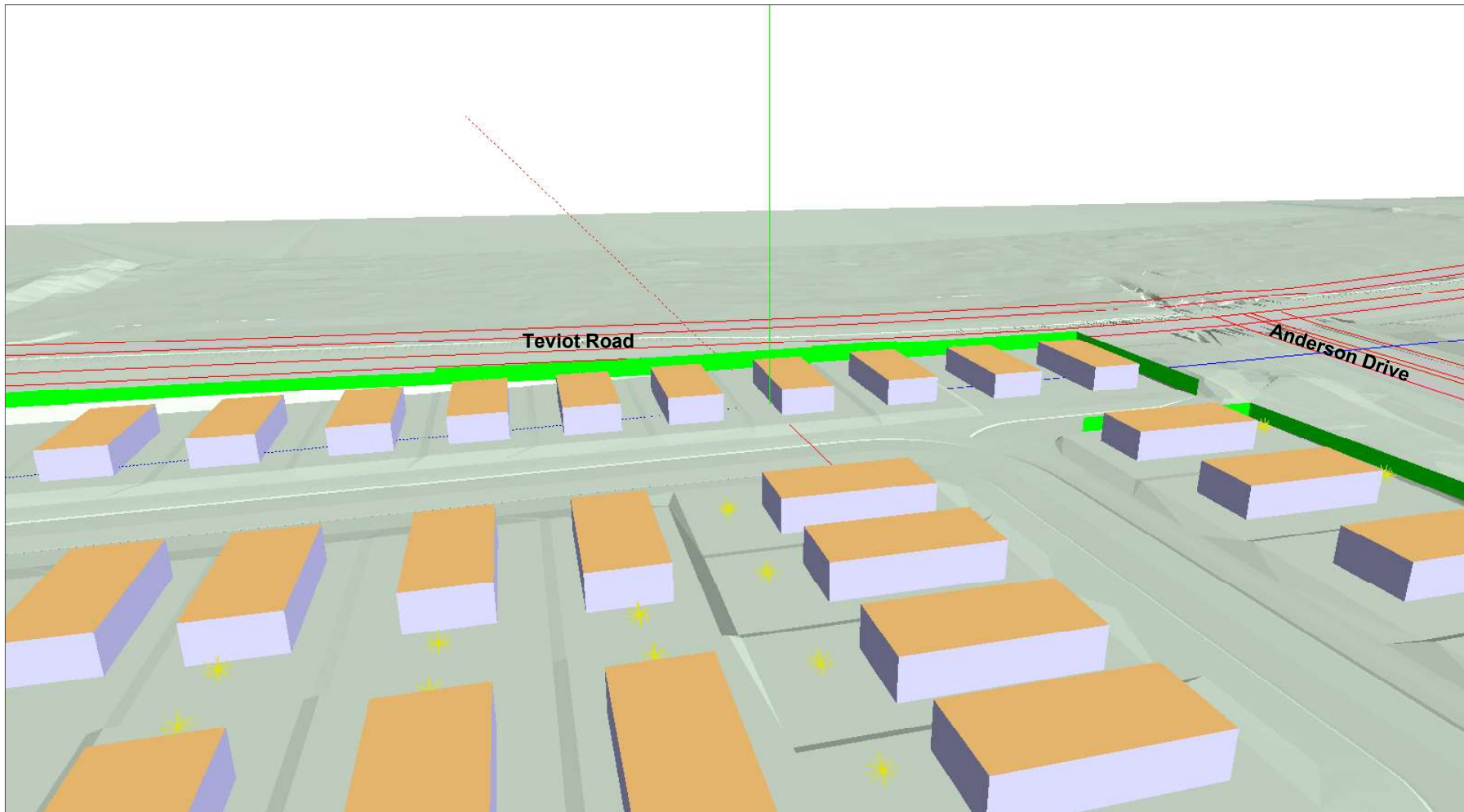


Figure 6.4 Noise barriers – 3d perspective 1

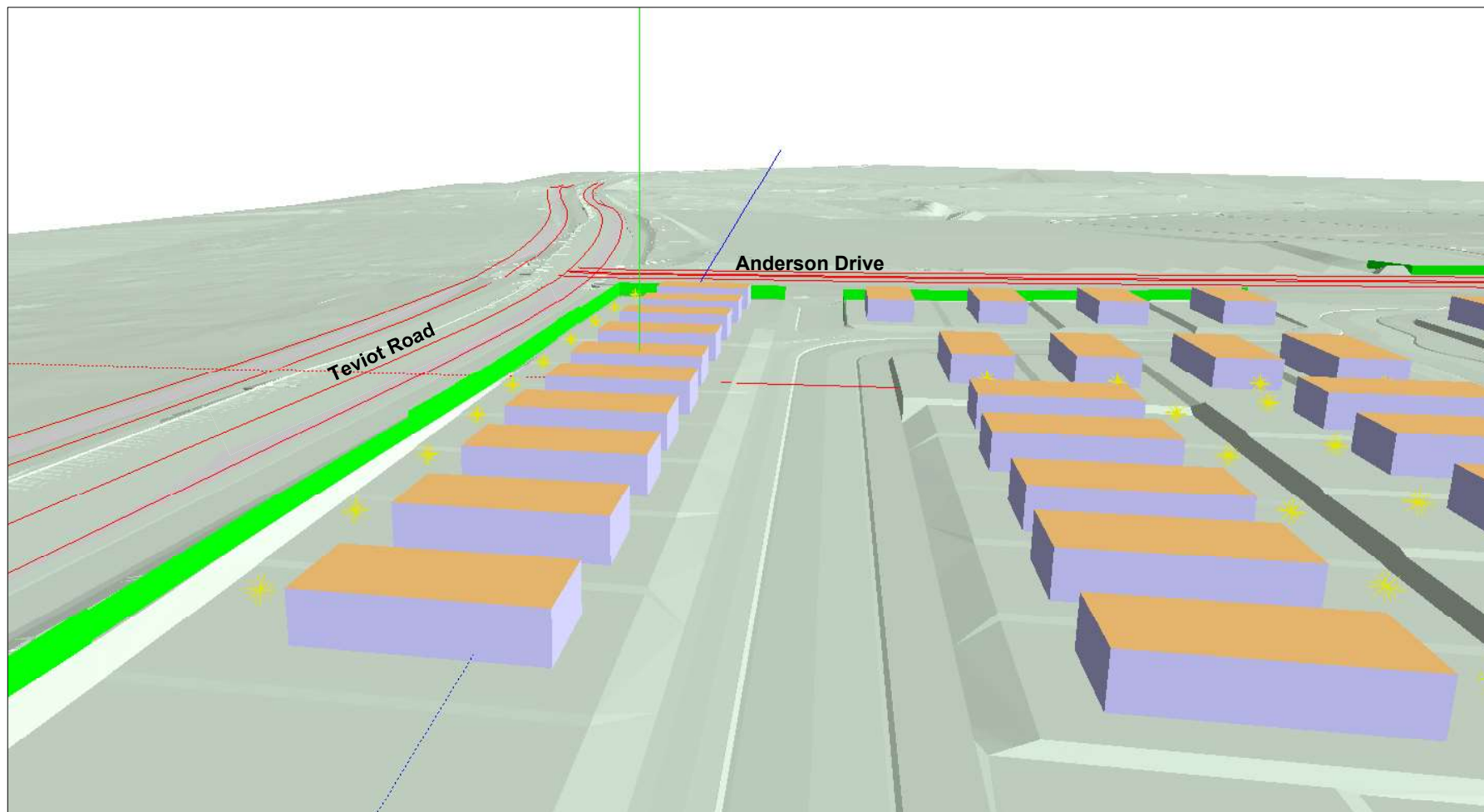


Figure 6.5 Noise barriers – 3d perspective 2

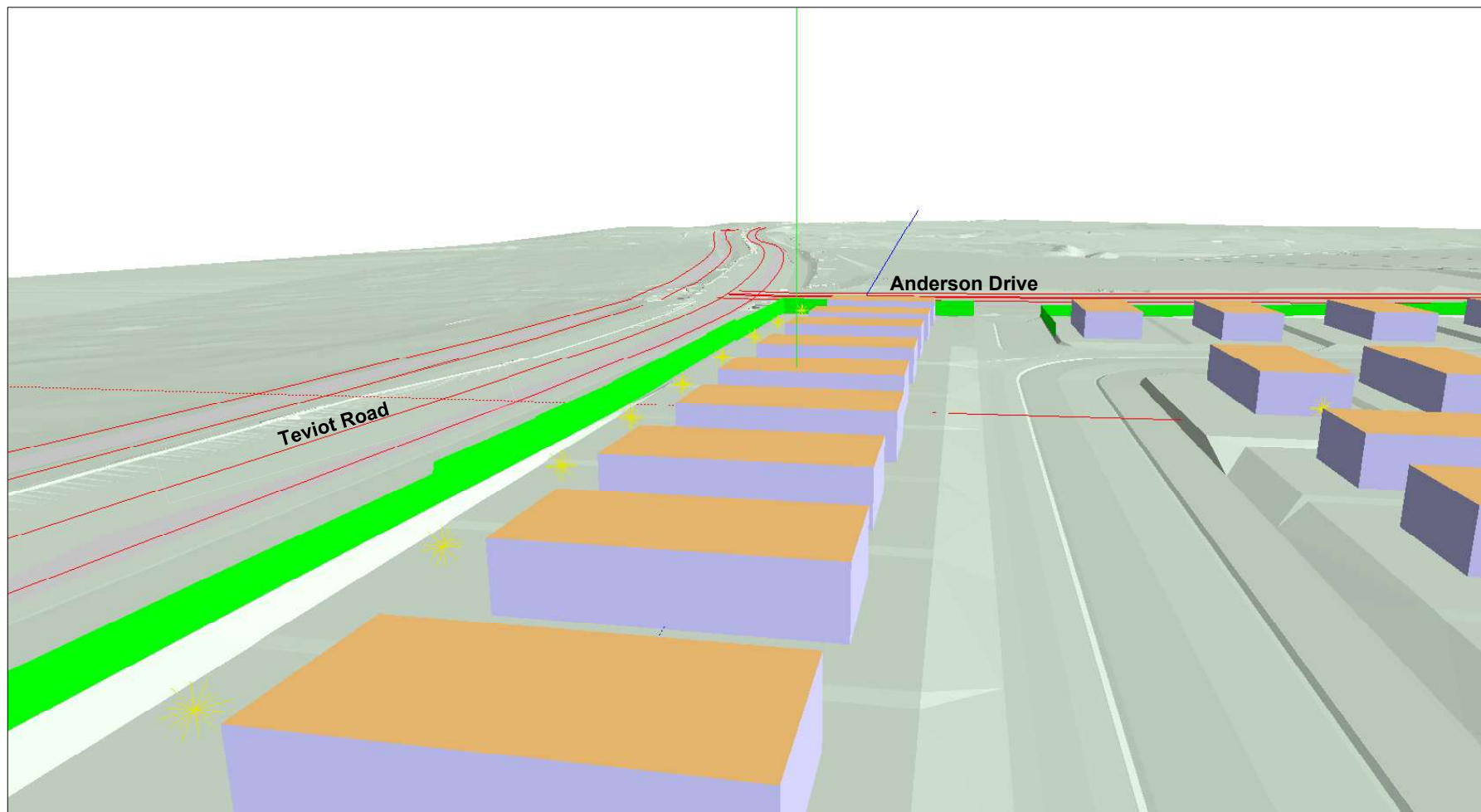


Figure 6.6 Noise barriers – 3d perspective 3



Figure 6.7 Noise barriers – 3d perspective 4

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

- Material with minimum surface density of 15kg/m^2 , e.g. timber palings with minimum thickness 20mm; fibre-cement sheeting with minimum thickness of 12mm; modular acoustic panels; 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.

A typical timber noise barrier fence construction is illustrated in Figure 6.8.

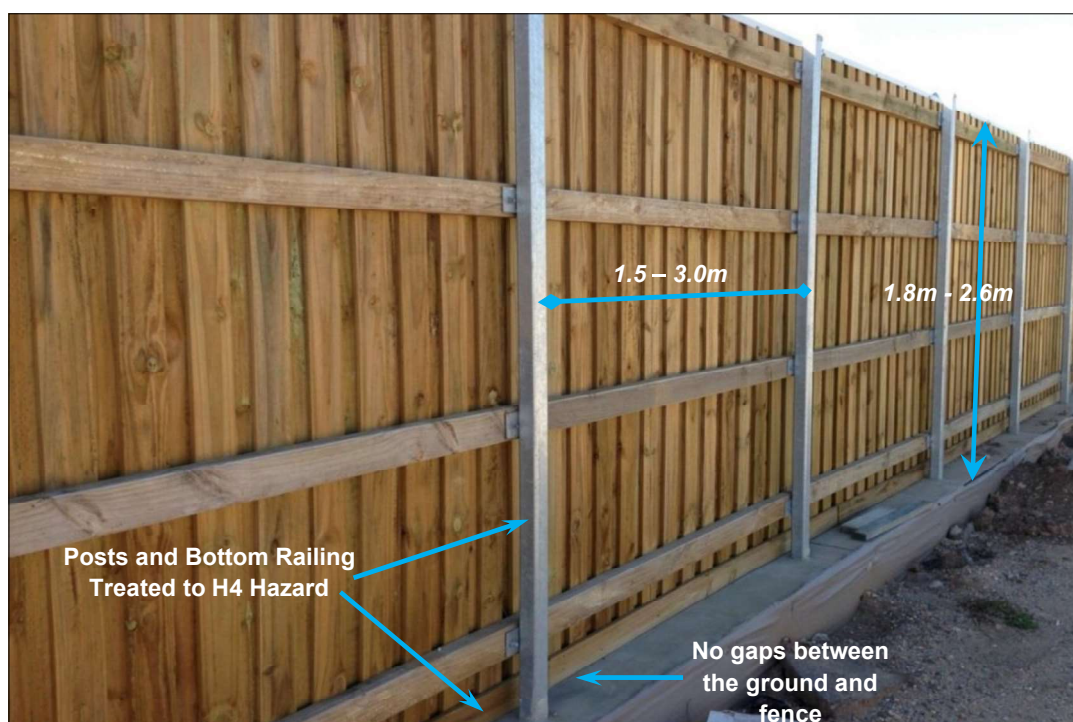


Figure 6.8 Typical timber noise barrier fence

6.2 Front loaded lots facing Anderson Drive

Front loaded lots facing Anderson Drive will have traffic noise impacts on the most exposed façade. The noise affected lots are identified in Figure 6.1.

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

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

Typical layout showing outdoor living area located on the protected façade is presented in Figure 6.9.

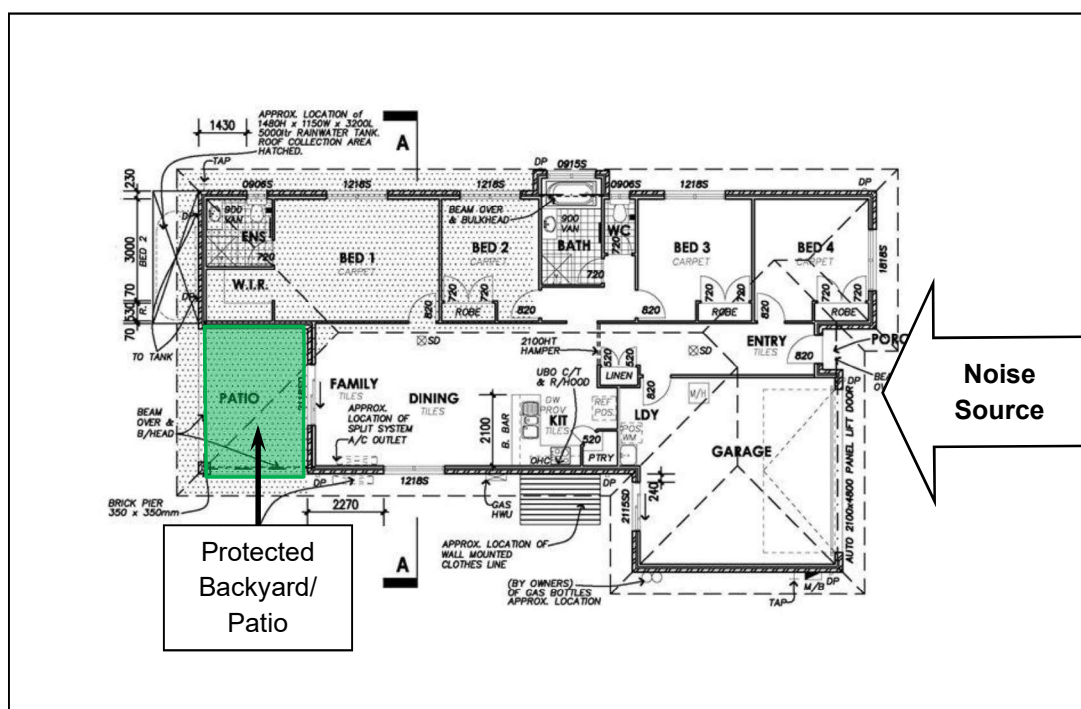


Figure 6.9 Outdoor living area on protected facade

6.3 Summary of lots requiring acoustic design

The results of the noise propagation modelling indicate that the proposed noise control strategy is effective at minimising the traffic noise impacts on the development.

Private Open Spaces – With the recommended noise mitigation measures in place, compliance with the traffic noise criterion for private open spaces can be achieved at all allotments.

Building Facades – Some allotments will require acoustic design to the building envelope to mitigate intrusion of traffic noise at the most exposed façade. Any allotments which are predicted to exceed the traffic noise criterion of 63dB(A) L_{10,18hr} will require acoustic design as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4. The following is concluded:

Ground floors

The traffic noise levels at the ground floors of the future dwellings will be compliant at all allotments, except the front-loaded lots facing Anderson Drive.

Upper floors

The noise control measures are primarily designed to protect the ground floors of the allotments. The traffic noise levels at the upper floors of future dwellings in close proximity to Teviot Road and Anderson Drive will exceed the traffic noise criterion.

The acoustic design requirements of the allotments located within RoL 5 are listed in Table 6.5.

Table 6.5 Acoustic design requirements

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-------------------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3001 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3002 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3003 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3004 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3005 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3006 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3007 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3008 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3009 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3010 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 3 |
| Lot 3011 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3012 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3013 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3014 | None | None | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3015 | None | None | None | None |
| Lot 3016 | None | None | None | None |
| Lot 3017 | None | None | None | None |
| Lot 3018 | None | None | None | None |
| Lot 3019 | None | None | None | None |
| Lot 3020 | None | None | None | None |
| Lot 3021 | None | None | None | None |
| Lot 3022 | None | None | None | None |
| Lot 3023 | None | None | None | None |
| Lot 3024 | None | None | None | None |
| Lot 3025 | None | None | None | None |
| Lot 3026 | None | None | None | None |
| Lot 3027 | None | None | None | None |
| Lot 3028 | None | None | None | None |
| Lot 3029 | None | None | None | None |
| Lot 3030 | None | None | None | None |
| Lot 3031 | None | None | None | None |
| Lot 3032 | None | None | None | None |
| Lot 3033 | None | None | None | None |
| Lot 3034 | None | None | None | None |
| Lot 3035 | None | None | None | None |
| Lot 3036 | None | None | None | None |
| Lot 3037 | None | None | None | None |
| Lot 3038 | None | None | None | None |
| Lot 3039 | None | None | None | None |
| Lot 3040 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3041 | None | None | None | None |
| Lot 3042 | None | None | None | None |
| Lot 3043 | None | None | None | None |
| Lot 3044 | None | None | None | None |
| Lot 3045 | None | None | None | None |
| Lot 3046 | None | None | None | None |
| Lot 3047 | None | None | None | None |
| Lot 3048 | None | None | None | None |
| Lot 3049 | None | None | None | None |
| Lot 3050 | None | None | None | None |
| Lot 3051 | None | None | None | None |
| Lot 3052 | None | None | None | None |
| Lot 3053 | None | None | None | None |
| Lot 3054 | None | None | None | None |
| Lot 3055 | None | None | None | None |
| Lot 3056 | None | None | None | None |
| Lot 3057 | None | None | None | None |
| Lot 3058 | None | None | None | None |
| Lot 3059 | None | None | None | None |
| Lot 3060 | None | None | None | None |
| Lot 3061 | None | None | None | None |
| Lot 3062 | None | None | None | None |
| Lot 3063 | None | None | None | None |
| Lot 3064 | None | None | None | None |
| Lot 3065 | None | None | None | None |
| Lot 3066 | None | None | None | None |
| Lot 3067 | None | None | None | None |
| Lot 3068 | None | None | None | None |
| Lot 3069 | None | None | None | None |
| Lot 3070 | None | None | None | None |
| Lot 3071 | None | None | None | None |
| Lot 3072 | None | None | None | None |
| Lot 3073 | None | None | None | None |
| Lot 3074 | None | None | None | None |
| Lot 3075 | None | None | None | None |
| Lot 3076 | None | None | None | None |
| Lot 3077 | None | None | None | None |
| Lot 3078 | None | None | None | None |
| Lot 3079 | None | None | None | None |
| Lot 3080 | None | None | None | None |
| Lot 3081 | None | None | None | None |
| Lot 3082 | None | None | None | None |
| Lot 3083 | None | None | None | None |
| Lot 3084 | None | None | None | None |
| Lot 3085 | None | None | None | None |
| Lot 3086 | None | None | None | None |
| Lot 3087 | None | None | None | None |
| Lot 3088 | None | None | None | None |
| Lot 3089 | None | None | None | None |
| Lot 3090 | None | None | None | None |
| Lot 3091 | None | None | None | None |
| Lot 3092 | None | None | None | None |
| Lot 3093 | None | None | None | None |
| Lot 3094 | None | None | None | None |
| Lot 3095 | None | None | None | None |
| Lot 3096 | None | None | None | None |
| Lot 3097 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3098 | None | None | None | None |
| Lot 3099 | None | None | None | None |
| Lot 3100 | None | None | None | None |
| Lot 3101 | None | None | None | None |
| Lot 3102 | None | None | None | None |
| Lot 3103 | None | None | None | None |
| Lot 3104 | None | None | None | None |
| Lot 3105 | None | None | None | None |
| Lot 3106 | None | None | None | None |
| Lot 3107 | None | None | None | None |
| Lot 3108 | None | None | None | None |
| Lot 3109 | None | None | None | None |
| Lot 3110 | None | None | None | None |
| Lot 3111 | None | None | None | None |
| Lot 3112 | None | None | None | None |
| Lot 3113 | None | None | None | None |
| Lot 3114 | None | None | None | None |
| Lot 3115 | None | None | None | None |
| Lot 3116 | None | None | None | None |
| Lot 3117 | None | None | None | None |
| Lot 3118 | None | None | None | None |
| Lot 3119 | None | None | None | None |
| Lot 3120 | None | None | None | None |
| Lot 3121 | None | None | None | None |
| Lot 3122 | None | None | None | None |
| Lot 3123 | None | None | None | None |
| Lot 3124 | None | None | None | None |
| Lot 3125 | None | None | None | None |
| Lot 3126 | None | None | None | None |
| Lot 3127 | None | None | None | None |
| Lot 3128 | None | None | None | None |
| Lot 3129 | None | None | None | None |
| Lot 3130 | None | None | None | None |
| Lot 3131 | None | None | None | None |
| Lot 3132 | None | None | None | None |
| Lot 3133 | None | None | None | None |
| Lot 3134 | None | None | None | None |
| Lot 3135 | None | None | None | None |
| Lot 3136 | None | None | None | None |
| Lot 3137 | None | None | None | None |
| Lot 3138 | None | None | None | None |
| Lot 3139 | None | None | None | None |
| Lot 3140 | None | None | None | None |
| Lot 3141 | None | None | None | None |
| Lot 3142 | None | None | None | None |
| Lot 3143 | None | None | None | None |
| Lot 3144 | None | None | None | None |
| Lot 3145 | None | None | None | None |
| Lot 3146 | None | None | None | None |
| Lot 3147 | None | None | None | None |
| Lot 3148 | None | None | None | None |
| Lot 3149 | None | None | None | None |
| Lot 3150 | None | None | None | None |
| Lot 3151 | None | None | None | None |
| Lot 3152 | None | None | None | None |
| Lot 3153 | None | None | None | None |
| Lot 3154 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3155 | None | None | None | None |
| Lot 3156 | None | None | None | None |
| Lot 3157 | None | None | None | None |
| Lot 3158 | None | None | None | None |
| Lot 3159 | None | None | None | None |
| Lot 3160 | None | None | None | None |
| Lot 3161 | None | None | None | None |
| Lot 3162 | None | None | None | None |
| Lot 3163 | None | None | None | None |
| Lot 3164 | None | None | None | None |
| Lot 3165 | None | None | None | None |
| Lot 3166 | None | None | None | None |
| Lot 3167 | None | None | None | None |
| Lot 3168 | None | None | None | None |
| Lot 3169 | None | None | None | None |
| Lot 3170 | None | None | None | None |
| Lot 3171 | None | None | None | None |
| Lot 3172 | None | None | None | None |
| Lot 3173 | None | None | None | None |
| Lot 3174 | None | None | None | None |
| Lot 3175 | None | None | None | None |
| Lot 3176 | None | None | None | None |
| Lot 3177 | None | None | None | None |
| Lot 3178 | None | None | None | None |
| Lot 3179 | None | None | None | None |
| Lot 3180 | None | None | None | None |
| Lot 3181 | None | None | None | None |
| Lot 3182 | None | None | None | None |
| Lot 3183 | None | None | None | None |
| Lot 3184 | None | None | None | None |
| Lot 3185 | None | None | None | None |
| Lot 3186 | None | None | None | None |
| Lot 3187 | None | None | None | None |
| Lot 3188 | None | None | None | None |
| Lot 3189 | None | None | None | None |
| Lot 3190 | None | None | None | None |
| Lot 3191 | None | None | None | None |
| Lot 3192 | None | None | None | None |
| Lot 3193 | None | None | None | None |
| Lot 3194 | None | None | None | None |
| Lot 3195 | None | None | None | None |
| Lot 3196 | None | None | None | None |
| Lot 3197 | None | None | None | None |
| Lot 3198 | None | None | None | None |
| Lot 3199 | None | None | None | None |
| Lot 3200 | None | None | None | None |
| Lot 3201 | None | None | None | None |
| Lot 3202 | None | None | None | None |
| Lot 3203 | None | None | None | None |
| Lot 3204 | None | None | None | None |
| Lot 3205 | None | None | None | None |
| Lot 3206 | None | None | None | None |
| Lot 3207 | None | None | None | None |
| Lot 3208 | None | None | None | None |
| Lot 3209 | None | None | None | None |
| Lot 3210 | None | None | None | None |
| Lot 3211 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3212 | None | None | None | None |
| Lot 3213 | None | None | None | None |
| Lot 3214 | None | None | None | None |
| Lot 3215 | None | None | None | None |
| Lot 3216 | None | None | None | None |
| Lot 3217 | None | None | None | None |
| Lot 3218 | None | None | None | None |
| Lot 3219 | None | None | None | None |
| Lot 3220 | None | None | None | None |
| Lot 3221 | None | None | None | None |
| Lot 3222 | None | None | None | None |
| Lot 3223 | None | None | None | None |
| Lot 3224 | None | None | None | None |
| Lot 3225 | None | None | None | None |
| Lot 3226 | None | None | None | None |
| Lot 3227 | None | None | None | None |
| Lot 3228 | None | None | None | None |
| Lot 3229 | None | None | None | None |
| Lot 3230 | None | None | None | None |
| Lot 3231 | None | None | None | None |
| Lot 3232 | None | None | None | None |
| Lot 3233 | None | None | None | None |
| Lot 3234 | None | None | None | None |
| Lot 3235 | None | None | None | None |
| Lot 3236 | None | None | None | None |
| Lot 3237 | None | None | None | None |
| Lot 3238 | None | None | None | None |
| Lot 3239 | None | None | None | None |
| Lot 3240 | None | None | None | None |
| Lot 3241 | None | None | None | None |
| Lot 3242 | None | None | None | None |
| Lot 3243 | None | None | None | None |
| Lot 3244 | None | None | None | None |
| Lot 3245 | None | None | None | None |
| Lot 3246 | None | None | None | None |
| Lot 3247 | None | None | None | None |
| Lot 3248 | None | None | None | None |
| Lot 3249 | None | None | None | None |
| Lot 3250 | None | None | None | None |
| Lot 3251 | None | None | None | None |
| Lot 3252 | None | None | None | None |
| Lot 3253 | None | None | None | None |
| Lot 3254 | None | None | None | None |
| Lot 3255 | None | None | None | None |
| Lot 3256 | None | None | None | None |
| Lot 3257 | None | None | None | None |
| Lot 3258 | None | None | None | None |
| Lot 3259 | None | None | None | None |
| Lot 3260 | None | None | None | None |
| Lot 3261 | None | None | None | None |
| Lot 3262 | None | None | None | None |
| Lot 3263 | None | None | None | None |
| Lot 3264 | None | None | None | None |
| Lot 3265 | None | None | None | None |
| Lot 3266 | None | None | None | None |
| Lot 3267 | None | None | None | None |
| Lot 3268 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-----------------------|-------------------------------------|-----------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3269 | None | None | None | None |
| Lot 3270 | None | None | None | None |
| Lot 3271 | None | None | None | None |
| Lot 3272 | None | None | None | None |
| Lot 3273 | None | None | None | None |
| Lot 3274 | None | None | None | None |
| Lot 3275 | None | None | None | None |
| Lot 3276 | None | None | None | None |
| Lot 3277 | None | None | None | None |
| Lot 3278 | None | None | None | None |
| Lot 3279 | None | None | None | None |
| Lot 3280 | None | None | None | None |
| Lot 3281 | None | None | None | None |
| Lot 3282 | None | None | None | None |
| Lot 3283 | None | None | None | None |
| Lot 3284 | None | None | None | None |
| Lot 3285 | None | None | None | None |
| Lot 3286 | None | None | None | None |
| Lot 3287 | None | None | None | None |
| Lot 3288 | None | None | None | None |
| Lot 3289 | None | None | None | None |
| Lot 3290 | None | None | None | None |
| Lot 3291 | None | None | None | None |
| Lot 3292 | None | None | None | None |
| Lot 3293 | None | None | None | None |
| Lot 3294 | None | None | None | None |
| Lot 3295 | None | None | None | None |
| Lot 3296 | None | None | None | None |
| Lot 3297 | None | None | None | None |
| Lot 3298 | None | None | None | None |
| Lot 3299 | None | None | None | None |
| Lot 3300 | None | None | None | None |
| Lot 3301 | None | None | None | None |
| Lot 3302 | None | None | None | None |
| Lot 3303 | None | None | None | None |
| Lot 3304 | None | None | None | None |
| Lot 3305 | None | None | None | None |
| Lot 3306 | None | None | None | None |
| Lot 3307 | None | None | None | None |
| Lot 3308 | None | None | None | None |
| Lot 3309 | None | None | None | None |
| Lot 3310 | None | None | None | None |
| Lot 3311 | None | None | None | None |
| Lot 3312 | None | None | None | None |
| Lot 3313 | None | None | None | None |
| Lot 3314 | None | None | None | None |
| Lot 3315 | None | None | None | None |
| Lot 3316 | None | None | None | None |
| Lot 3317 | None | None | None | None |
| Lot 3318 | None | None | None | None |
| Lot 3319 | None | None | None | None |
| Lot 3320 | None | None | None | None |
| Lot 3321 | None | None | None | None |
| Lot 3322 | None | None | None | None |
| Lot 3323 | None | None | None | None |
| Lot 3324 | None | None | None | None |
| Lot 3325 | None | None | None | None |

| Lot No. | Ground Floor | | First Floor | |
|----------|-------------------------------|-------------------------------------|-------------------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3326 | None | None | None | None |
| Lot 3327 | None | None | None | None |
| Lot 3328 | None | None | None | None |
| Lot 3329 | None | None | None | None |
| Lot 3330 | None | None | None | None |
| Lot 3331 | None | None | None | None |
| Lot 3332 | None | None | None | None |
| Lot 3333 | None | None | None | None |
| Lot 3334 | None | None | None | None |
| Lot 3335 | None | None | None | None |
| Lot 3336 | None | None | None | None |
| Lot 3337 | None | None | None | None |
| Lot 3338 | None | None | None | None |
| Lot 3339 | None | None | None | None |
| Lot 3340 | None | None | None | None |
| Lot 3341 | None | None | None | None |
| Lot 3342 | None | None | None | None |
| Lot 3343 | None | None | None | None |
| Lot 3344 | None | None | None | None |
| Lot 3345 | None | None | None | None |
| Lot 3346 | None | None | None | None |
| Lot 3347 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3348 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3349 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3350 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3351 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3352 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3353 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3354 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3355 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3356 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3357 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3358 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3359 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3360 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3361 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3362 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3363 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3364 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |

| Lot No. | Ground Floor | | First Floor | |
|----------|-------------------------------|-------------------------------------|-------------------------------|-------------------------------------|
| | Acoustic requirements | Equivalent Noise Category QDC MP4.4 | Acoustic requirements | Equivalent Noise Category QDC MP4.4 |
| Lot 3394 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3395 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3396 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3397 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3398 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3399 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3400 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3401 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3402 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3403 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3404 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3405 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3406 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3407 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3408 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3409 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3410 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3411 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3412 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3413 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3414 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3415 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3416 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3417 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3418 | Acoustic design; or QDC MP4.4 | Noise Category 2 | Acoustic design; or QDC MP4.4 | Noise Category 2 |
| Lot 3419 | None | None | None | None |
| Lot 3420 | None | None | None | None |
| Lot 3421 | None | None | None | None |

For any dwellings where the traffic noise criterion is exceeded, the most practical approach is acoustic treatment to the building envelope (external walls, windows and roof/ceiling). At the building approval stage, the houses on the affected allotments should be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4 to mitigate intrusion of traffic noise into habitable rooms.

Provided the recommended planning and design noise control measures are implemented in the construction of Everleigh RoL 5, road traffic noise will not impose any further constraints on the establishment of the development.

7. Conclusions

Based on the results of the traffic noise impact assessment for the RoL 5 of the Everleigh development, the following is concluded:

- Noise barriers must be constructed along Teviot Road and portion of Anderson Drive as presented in Figures 6.1 to 6.3 of this report.
- The noise barriers will ensure compliance with the traffic noise criteria at the ground floors of Lots 3001 to 3014, however the upper floors of these allotments will be impacted by traffic noise. The upper floors of Lots 3001 to 3014 must be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4.
- Noise barriers cannot be built at the front-loaded lots adjacent to Anderson Drive (Lots 3347 to 3418). The ground and upper floors of Lots 3347 to 3418 must be designed and constructed as per AS 3671-1989 (floor-plan specific acoustic design) or acceptable forms of construction from QDC MP4.4.

Provided the recommended planning and design noise control measures are implemented in the construction of Everleigh RoL 5, road traffic noise will not impose any further constraints on the establishment of the development.

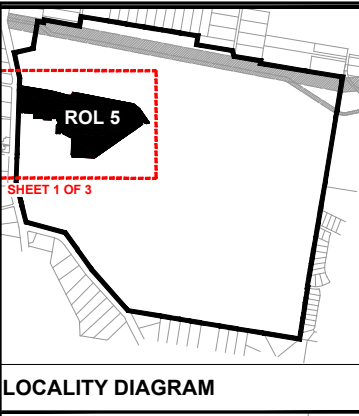
8. References

- Australian Standard AS 1055.1:2018 (*Acoustics - Description and Measurement of Environmental Noise Part 1: General Procedures*)
- Australian Standard AS 1055.2:2018 (*Acoustics - Description and Measurement of Environmental Noise Part 2: Application to Specific Situations*)
- Australian Standard AS/NZS 2107:2016 (*Acoustics – Recommended design sound levels and reverberation times for building interiors*)
- Australian Standard ASIEC61672.1-2004 (*Electroacoustics - Sound level meters – Specifications*)
- Australian Standard AS 3671-1989 (*Acoustics – Road Traffic Noise Intrusion – Building siting and construction*)
- Department of State Development Infrastructure and Planning, *State Development Assessment Provisions* (Version 2.6), February 2020
- Department of Transport and Main Roads, 2013, *Transport Noise Management: Code of Practice, Volume 1 – Road Traffic Noise*
- Department of Transport and Main Roads, *Development on land affected by environmental emissions*, Version 4, October 2017
- Logan City Council, 2015, *Logan Planning Scheme 2015*
- Queensland Government, 2010, 'Queensland Development Code (QDC) MP4.4 (*Buildings in a Transport Noise Corridor*)'

Appendices

- Appendix A – RoL 5 lot layout
- Appendix B – Site photos
- Appendix C – Meteorological data
- Appendix D – Noise measurement results
- Appendix E – Traffic volumes, 2051
- Appendix F – Validation of traffic noise model
- Appendix G – Traffic noise levels

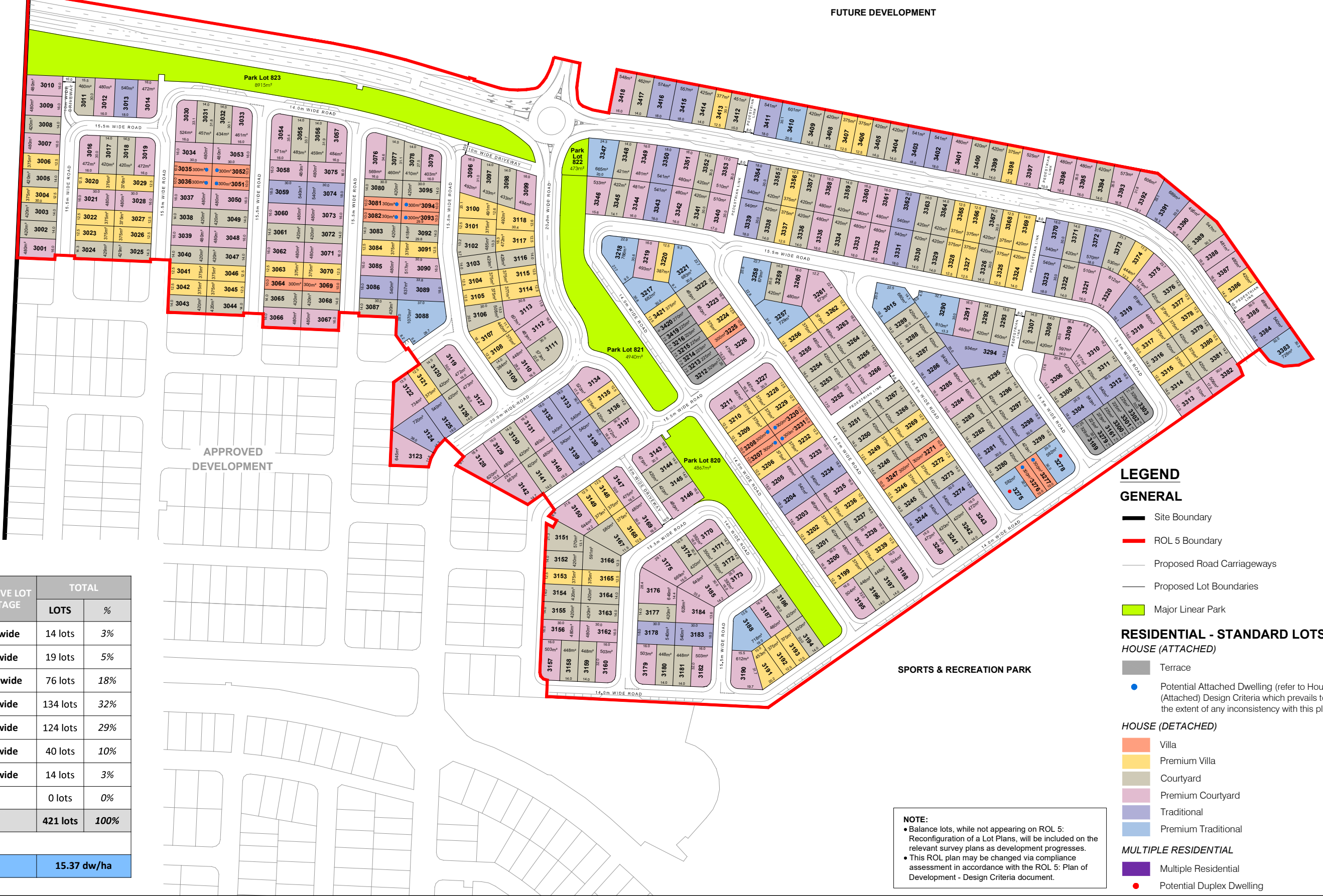
Appendix A – RoL 5 lot layout



LOCALITY DIAGRAM

ROL 5 - YIELD SUMMARY

| LOT TYPE | INDICATIVE LOT FRONTAGE | TOTAL | |
|--|-------------------------|--------------------|-------------|
| | | LOTS | % |
| Terrace | 7.5m wide | 14 lots | 3% |
| Villa | 10m wide | 19 lots | 5% |
| Premium Villa | 12.5m wide | 76 lots | 18% |
| Courtyard | 14m wide | 134 lots | 32% |
| Premium Courtyard | 16m wide | 124 lots | 29% |
| Traditional | 18m wide | 40 lots | 10% |
| Premium Traditional | 20m wide | 14 lots | 3% |
| Interface Lots | | 0 lots | 0% |
| TOTAL RESIDENTIAL LOTS | | 421 lots | 100% |
| DENSITY (NET RESIDENTIAL DENSITY) | | 15.37 dw/ha | |



LEGEND

GENERAL

- Site Boundary
- ROL 5 Boundary
- Proposed Road Carriageways
- Proposed Lot Boundaries
- Major Linear Park

RESIDENTIAL - STANDARD LOTS

HOUSE (ATTACHED)

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

HOUSE (DETACHED)

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

MULTIPLE RESIDENTIAL

- Multiple Residential
- Potential Duplex Dwelling

NOTE:

- Balance lots, while not appearing on ROL 5: Reconfiguration of a Lot Plans, will be included on the relevant survey plans as development progresses.
- This ROL plan may be changed via compliance assessment in accordance with the ROL 5: Plan of Development - Design Criteria document.

Appendix B – Site photos



Photo 1 – Noise monitoring location, looking south



Photo 2 – Noise monitoring location, looking west



Photo 3 – Noise monitoring location, looking north-west



Photo 4 – Noise monitoring location, looking north-east

Appendix C – Meteorological data

Greenbank (Defence), Queensland

March 2020 Daily Weather Observations



Australian Government
Bureau of Meteorology

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

Appendix D – Noise measurement results



**Unattended Noise Measurements
Everleigh, Greenbank - Location 1
Noise Levels - 18hr Day (Traffic Noise)**

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

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

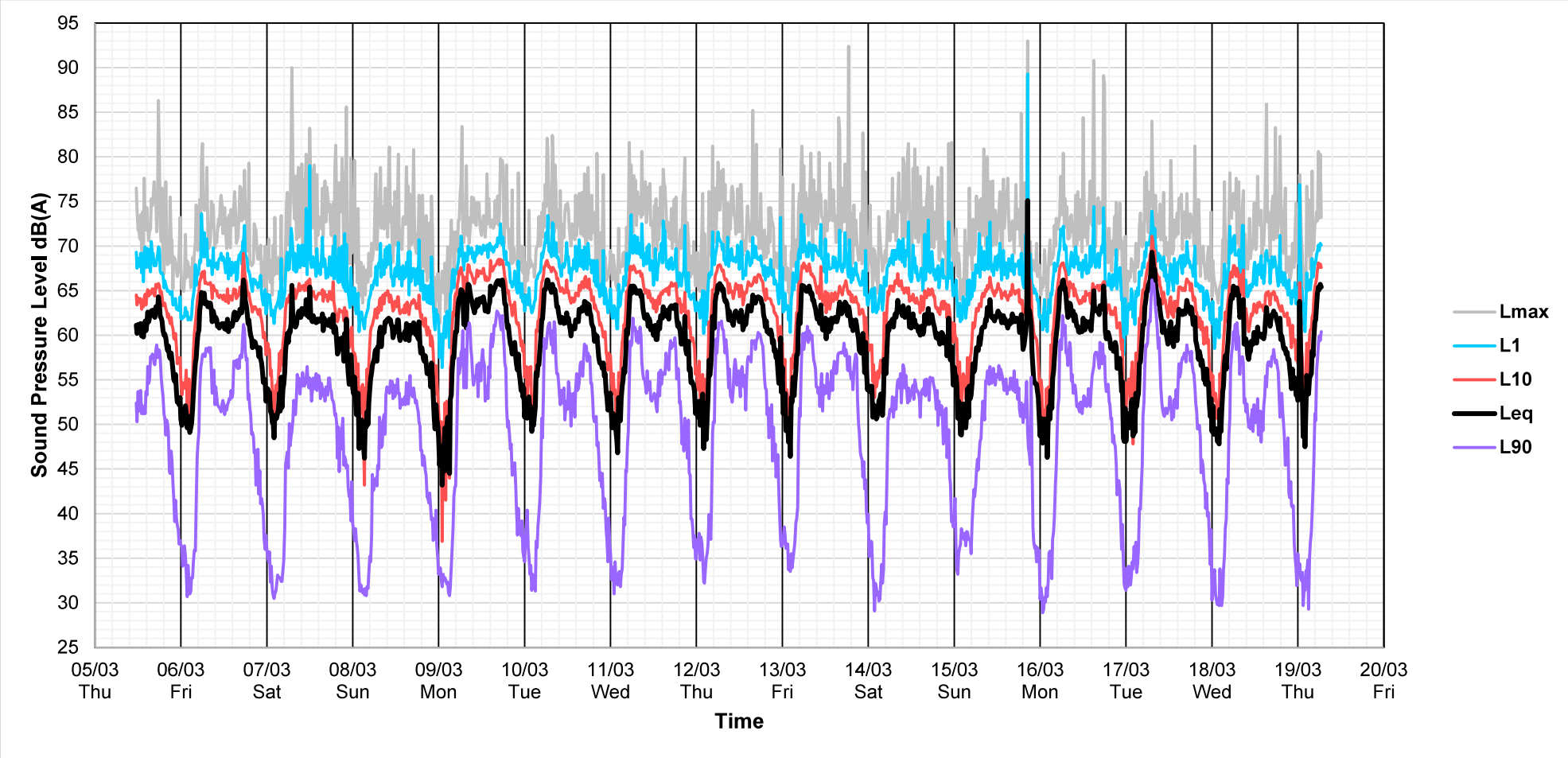
Note

— No noise data available

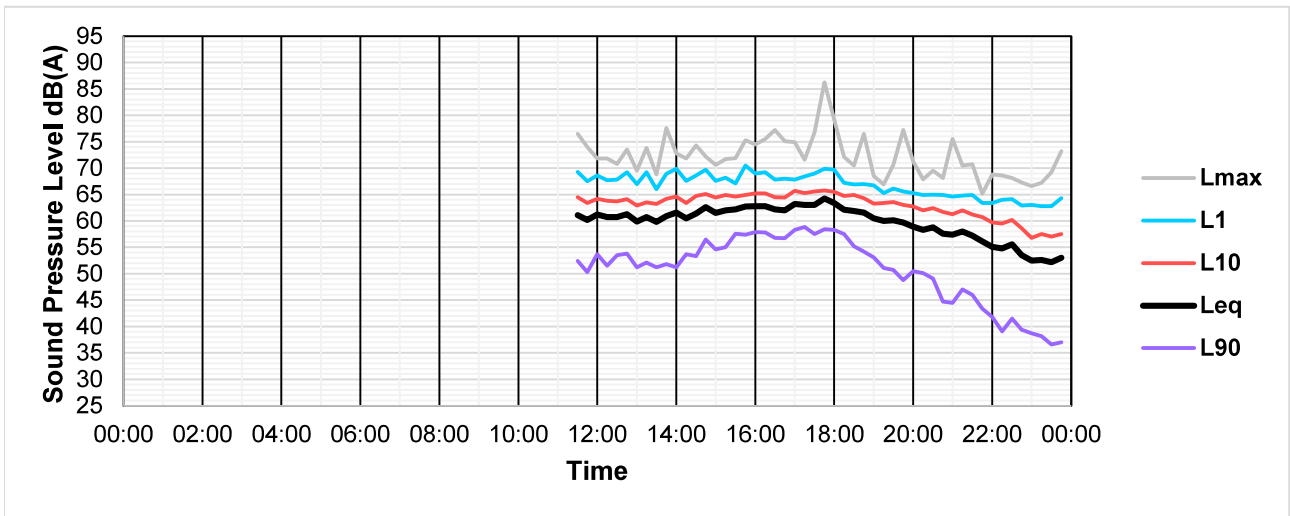
■ Rainfall recorded on this day

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

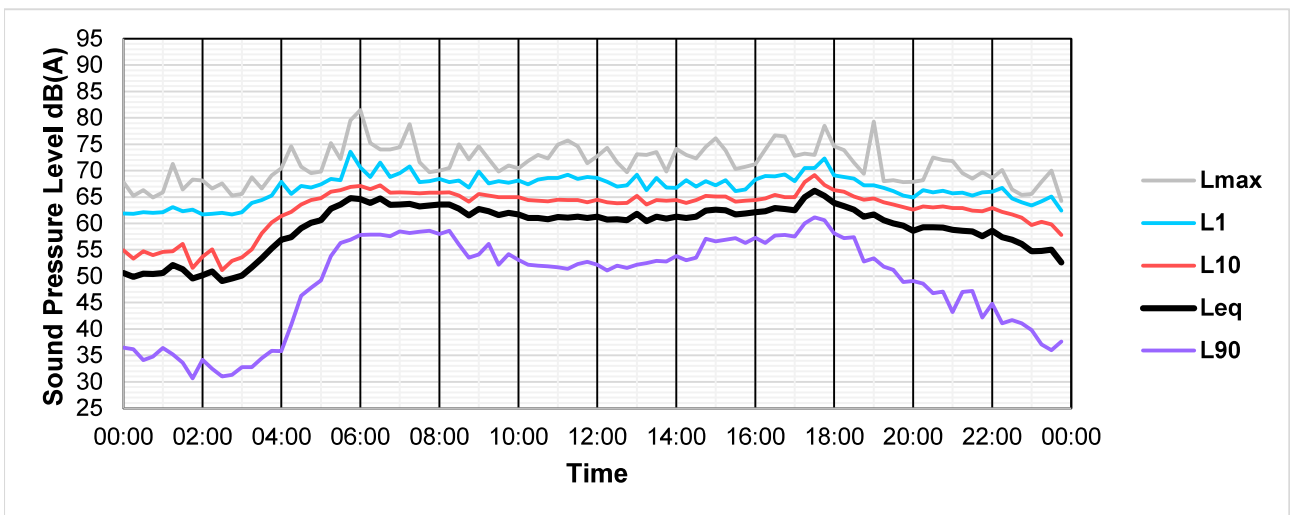
Unattended Noise Measurements 5 to 19 March 2020



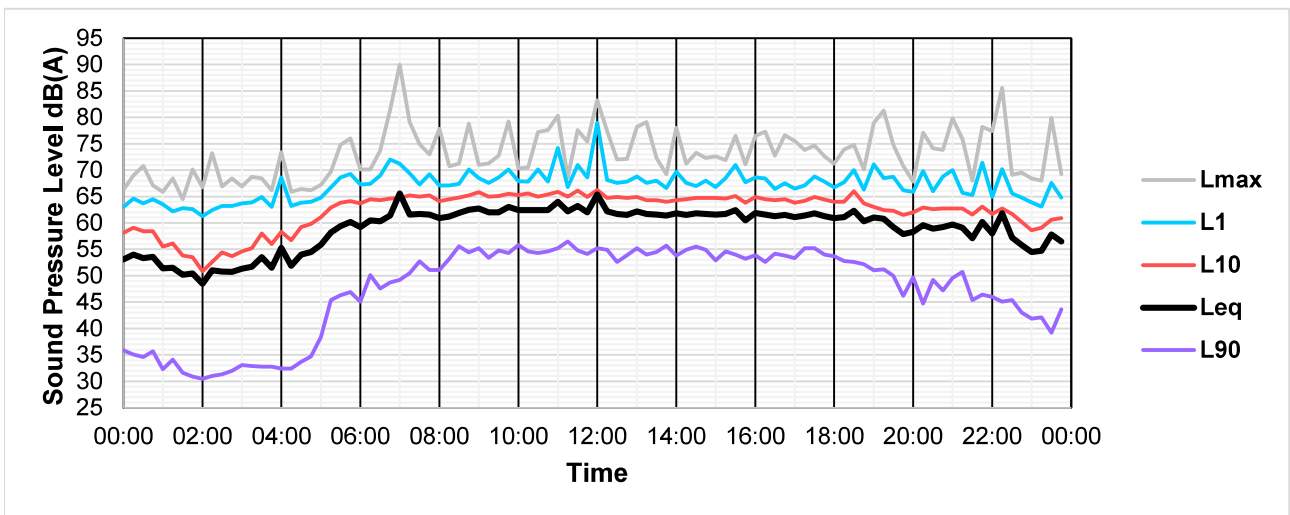
Unattended Noise Measurements Thursday 5 March 2020



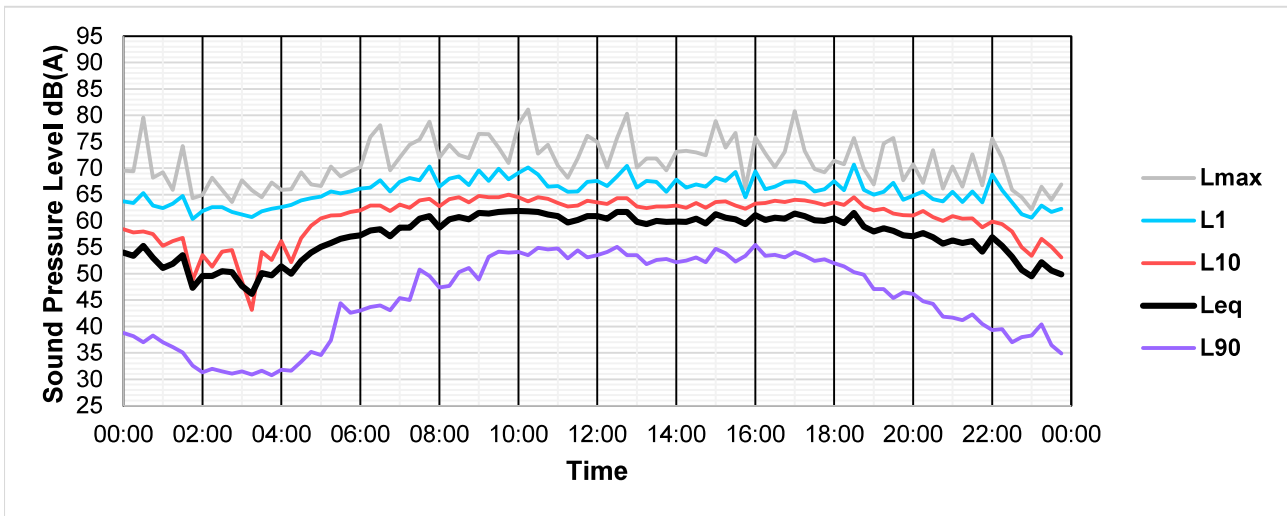
Unattended Noise Measurements Friday 6 March 2020



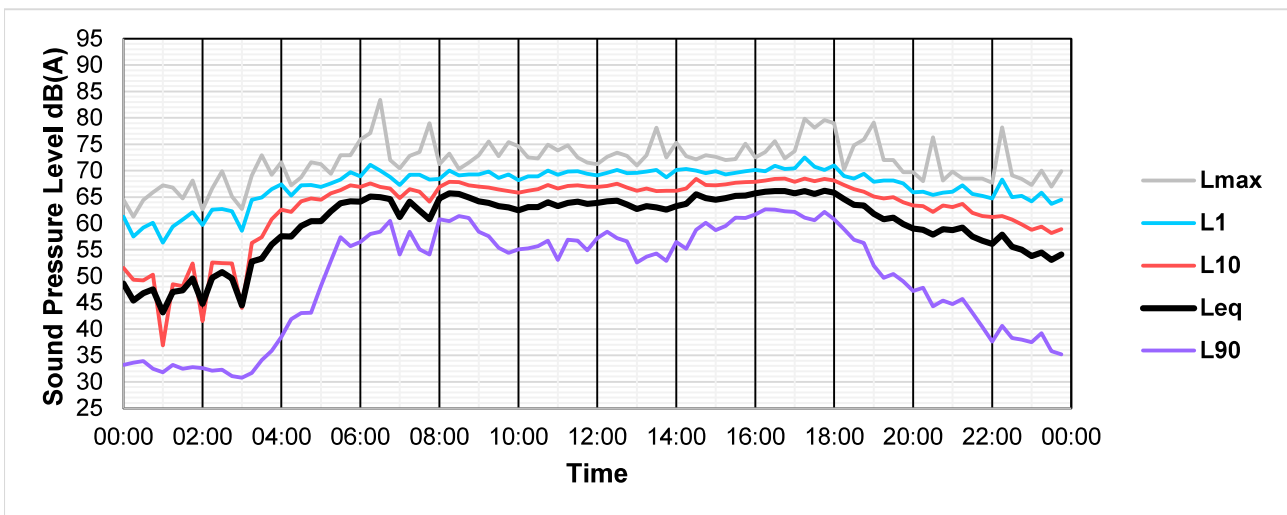
Unattended Noise Measurements Saturday 7 March 2020



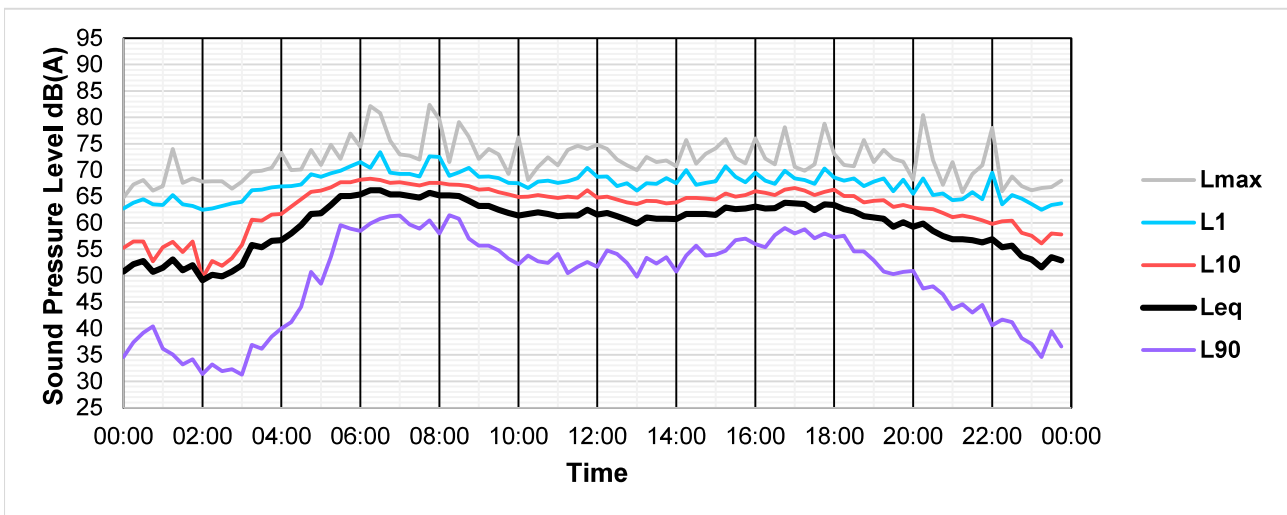
Unattended Noise Measurements Sunday 8 March 2020



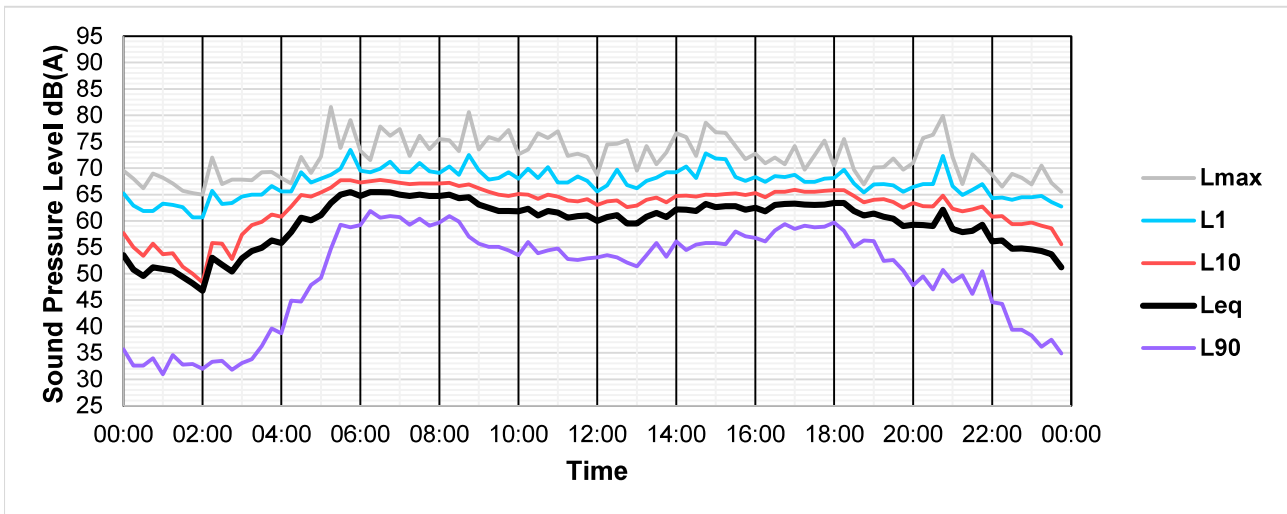
Unattended Noise Measurements Monday 9 March 2020



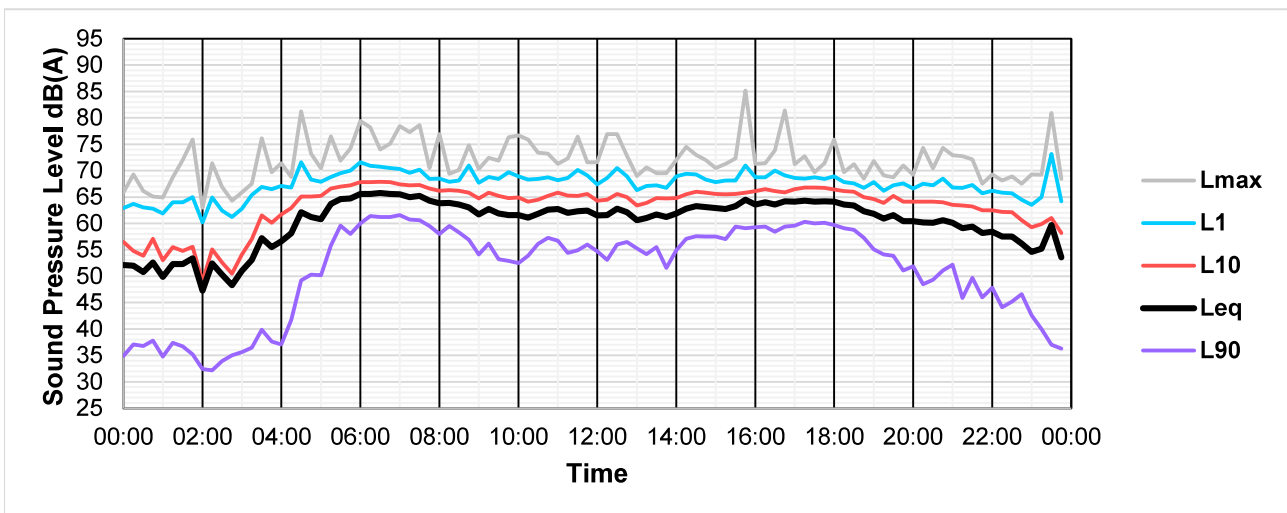
Unattended Noise Measurements Tuesday 10 March 2020



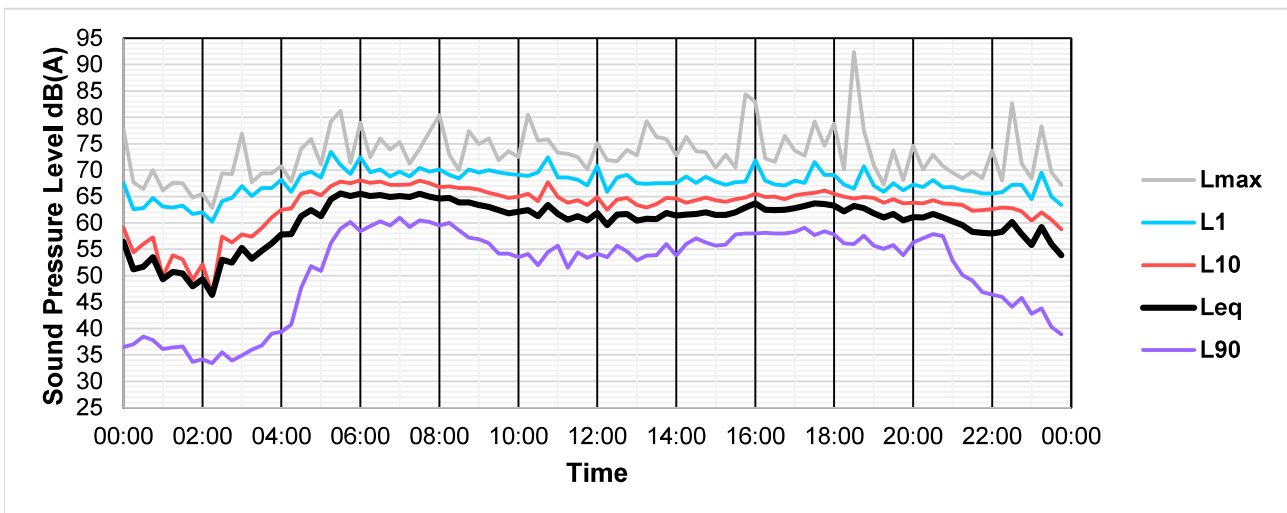
Unattended Noise Measurements Wednesday 11 March 2020



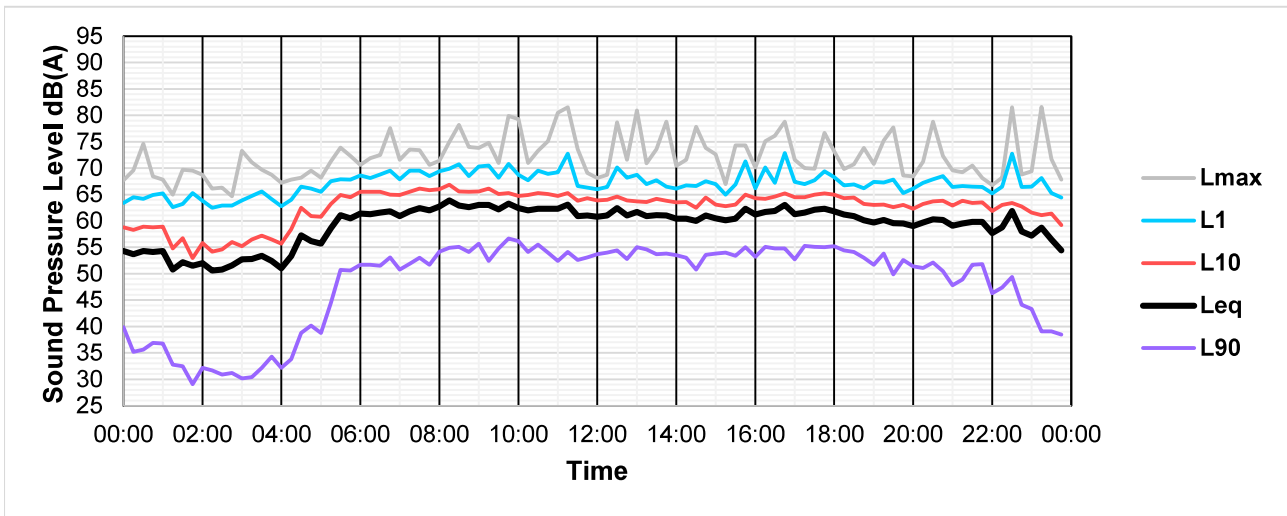
Unattended Noise Measurements Thursday 12 March 2020



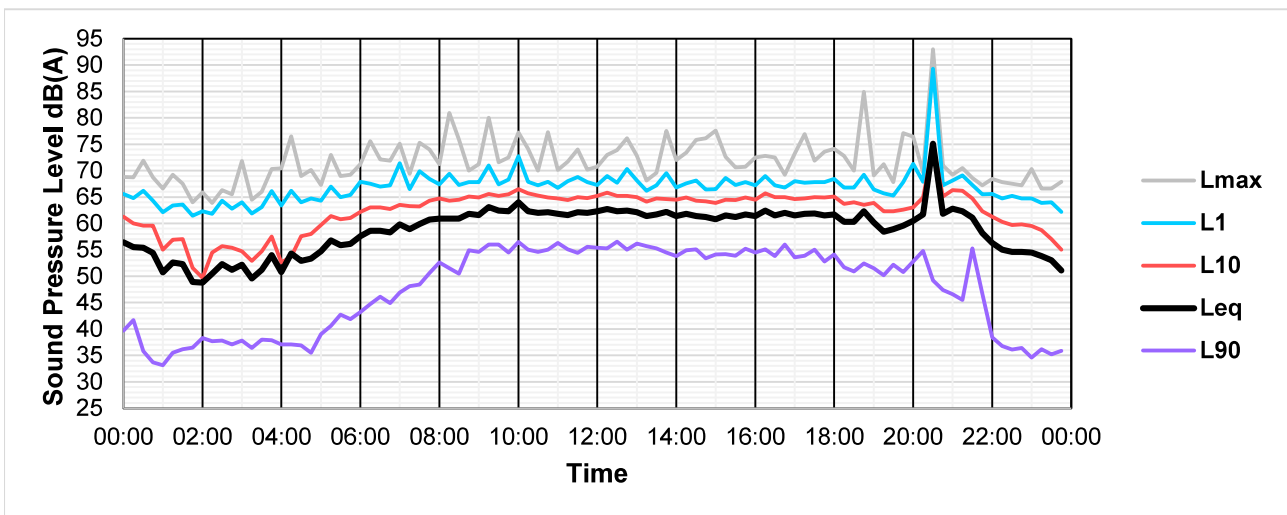
Unattended Noise Measurements Friday 13 March 2020



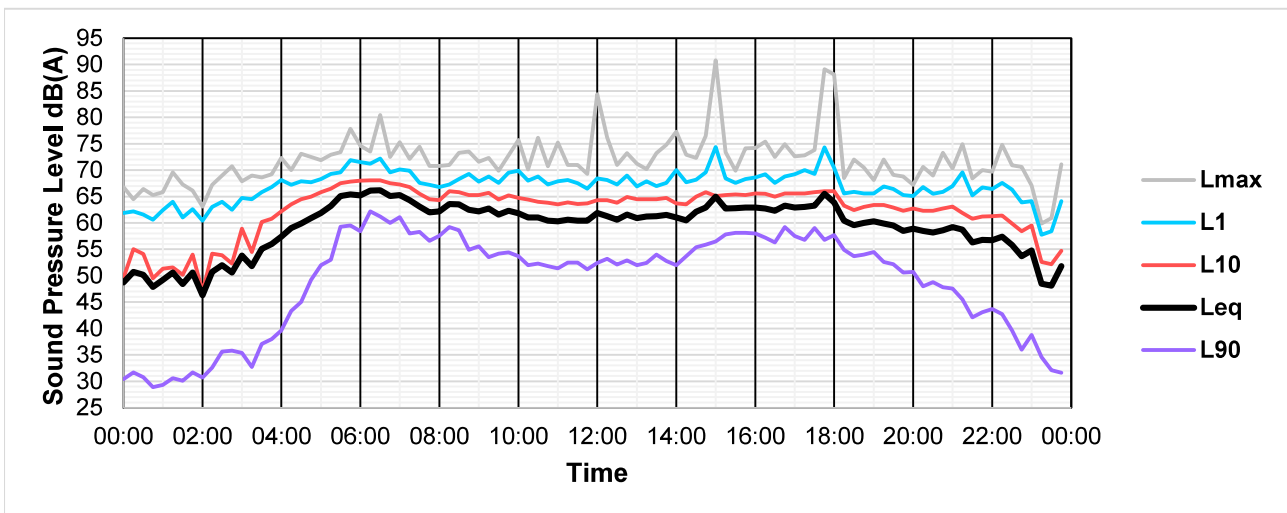
Unattended Noise Measurements Saturday 14 March 2020



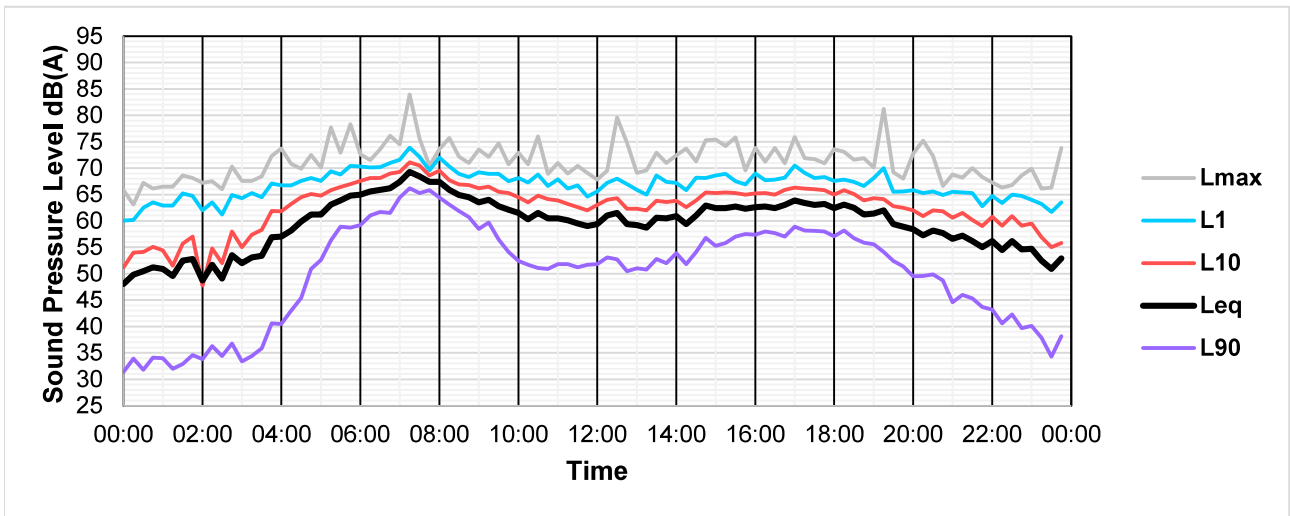
Unattended Noise Measurements Sunday 15 March 2020



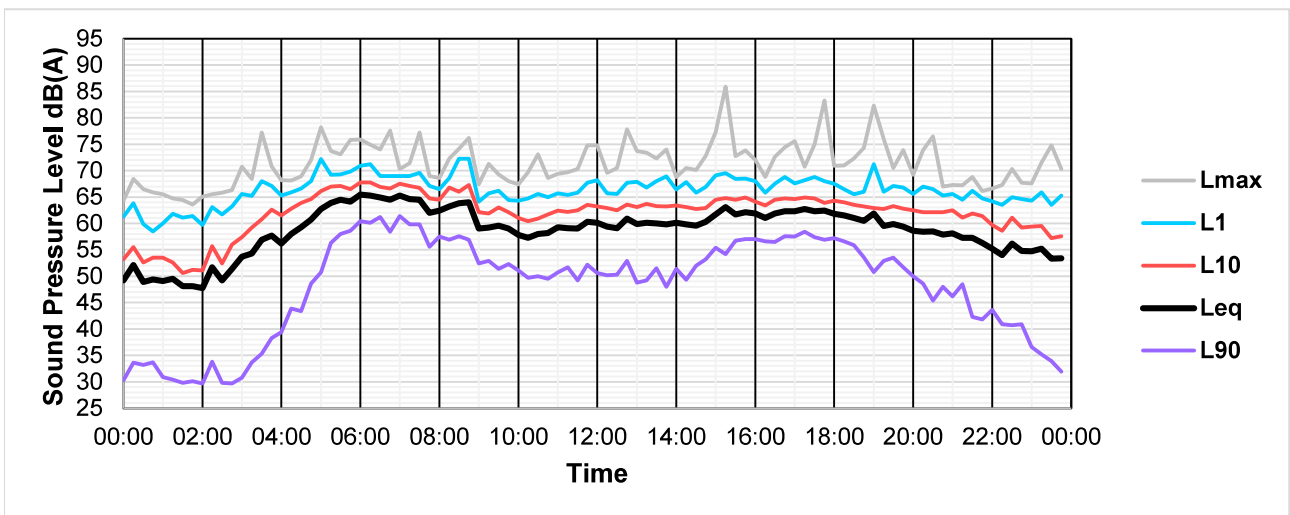
Unattended Noise Measurements Monday 16 March 2020



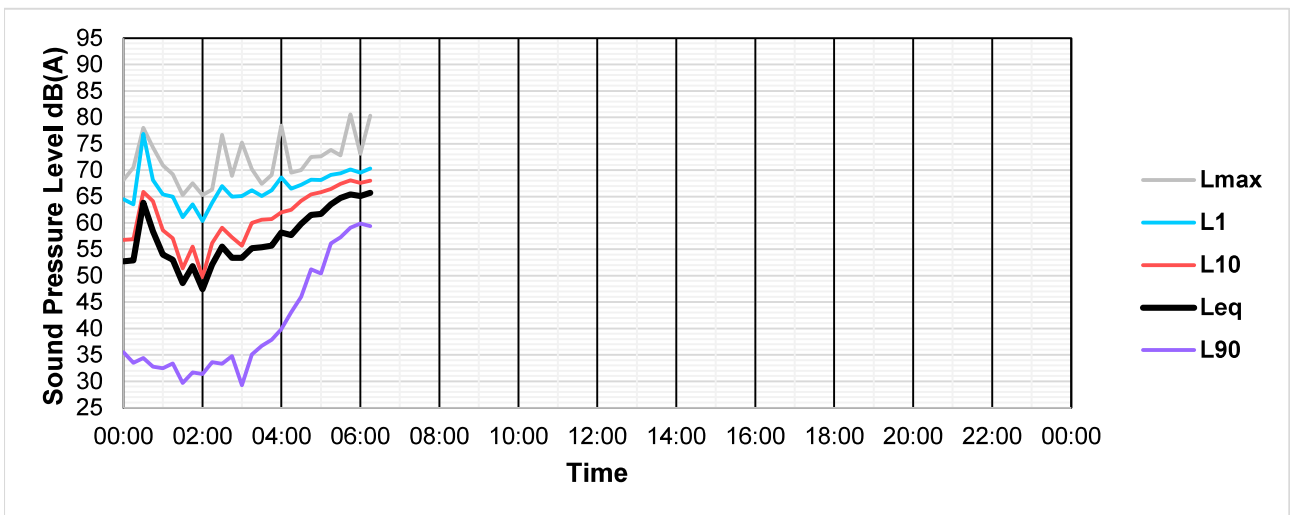
Unattended Noise Measurements Tuesday 17 March 2020



Unattended Noise Measurements Wednesday 18 March 2020



Unattended Noise Measurements Thursday 19 March 2020



Appendix E – Traffic volumes, 2051

TRAFFIC STATEMENT – EVERLEIGH PRECINCT 9

11/05/2021

Bradley Jones RPEQ

Precinct 9 Traffic Statement-revB

1. INTRODUCTION

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

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

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

This statement includes:

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

1.1 Background

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

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

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

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

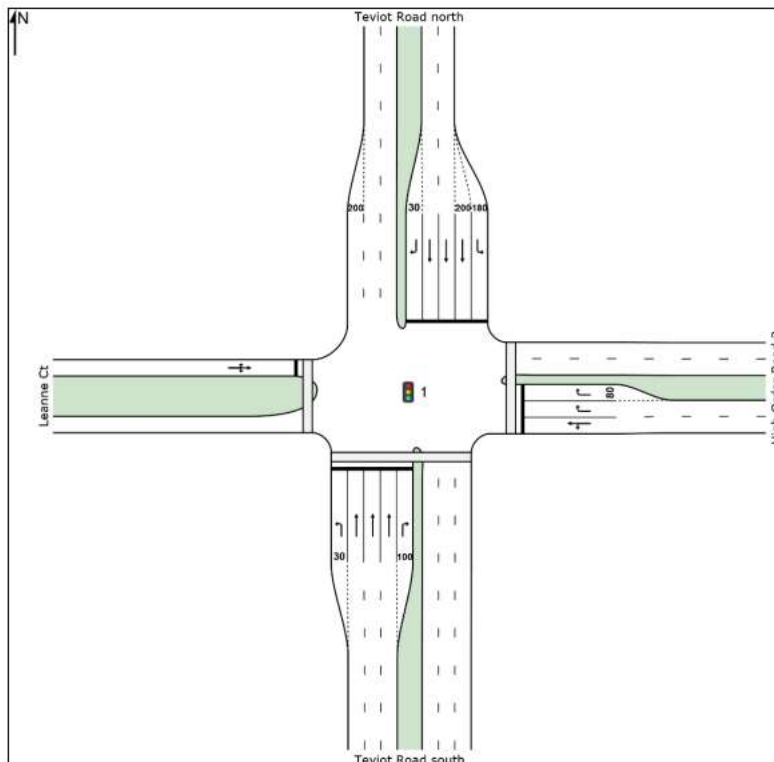


Figure 1: 2051 Teviot Road / Leanne Court / HOR2 (Anderson Drive) Intersection Layout

(Source – MWH Movement Network Infrastructure Master Plan)

3. ANDERSON DRIVE CROSS SECTION

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

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

Anderson Drive – Between Teviot Road and Kessels Boulevard

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

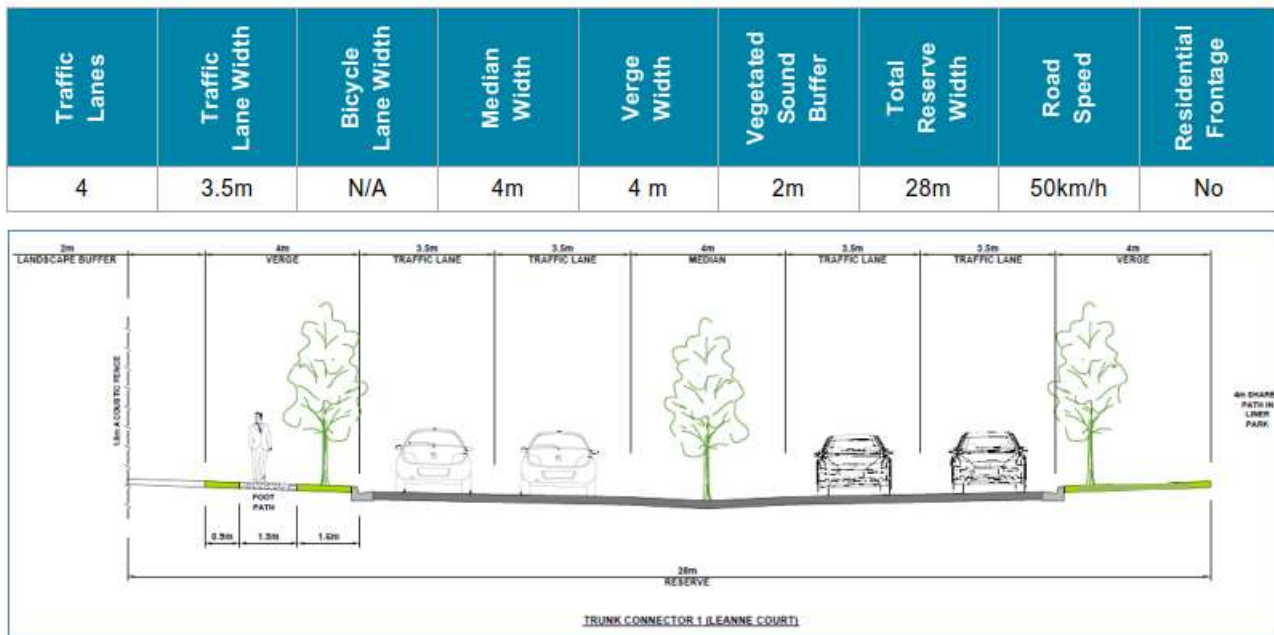


Figure 2: 2051 Trunk Connector 1 (Anderson Drive) Cross Section

(Source – MWH Movement Network Infrastructure Master Plan)

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

Conversely, we understand there is some uncertainty regarding:

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

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

Anderson Drive – East of Kessels Boulevard

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

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

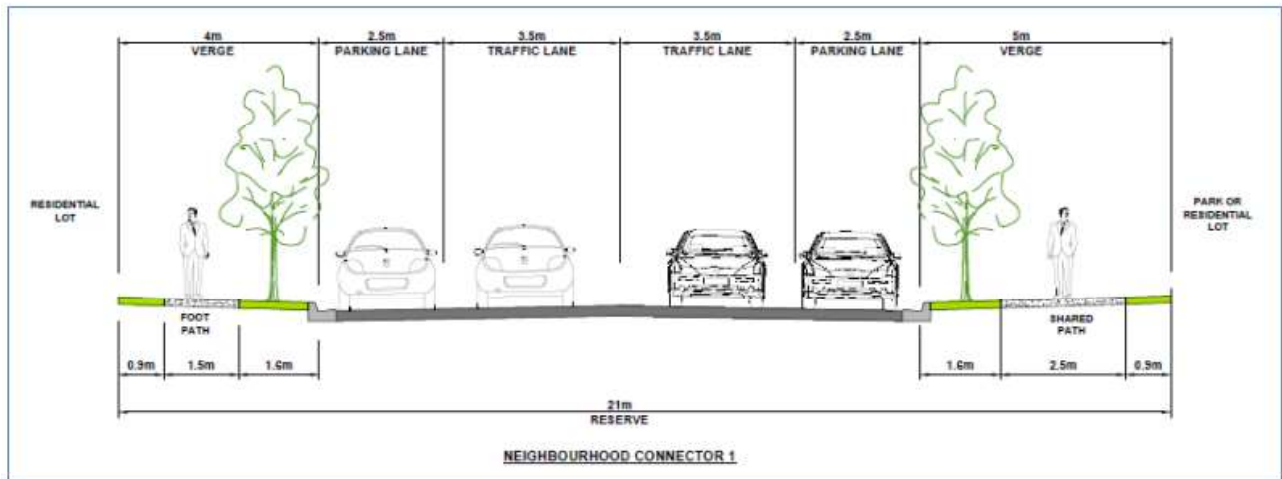


Figure 3: 2051 Neighbourhood Connector 1 (Anderson Drive) Cross Section

(Source – MWH Movement Network Infrastructure Master Plan)

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

4. LOT TRIGGER FOR ANDERSON DRIVE CONSTRUCTION

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5. FORECAST ULTIMATE (2051) TRAFFIC

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

- The school (P2.11) is expected to have an ultimate enrolment of 1,400 students; and
- The retail precinct (P13), also referred to as the Neighbourhood Centre, is expected to have an ultimate gross leasable area (GLA) of 7,600m².

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

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

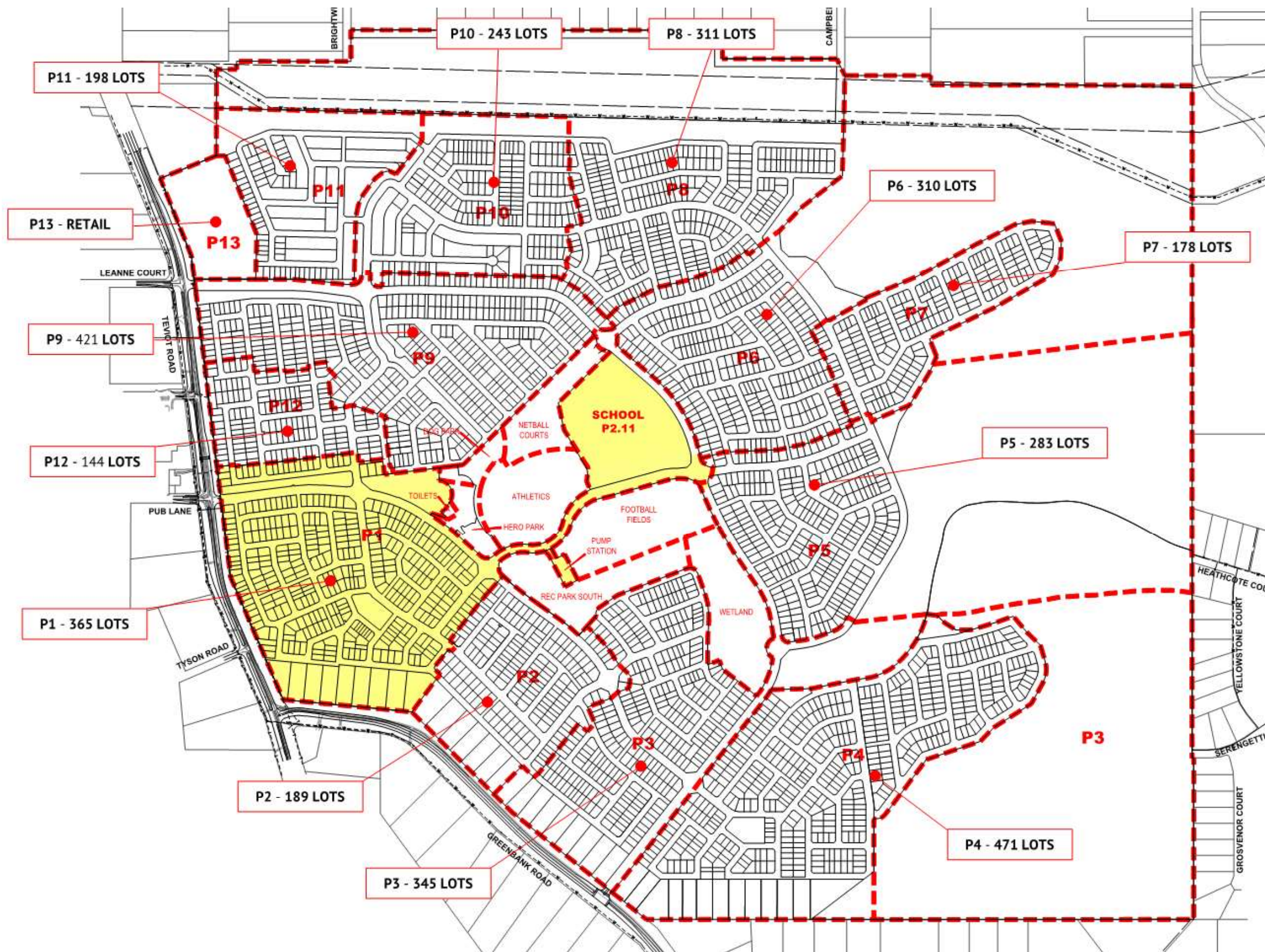


Figure 5 – Everleigh year 2051 traffic volumes



6. RESPONSE TO ECONOMIC DEVELOPMENT QUEENSLAND

6.1 Intersection Spacing

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

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

6.2 Precinct 9 Access

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

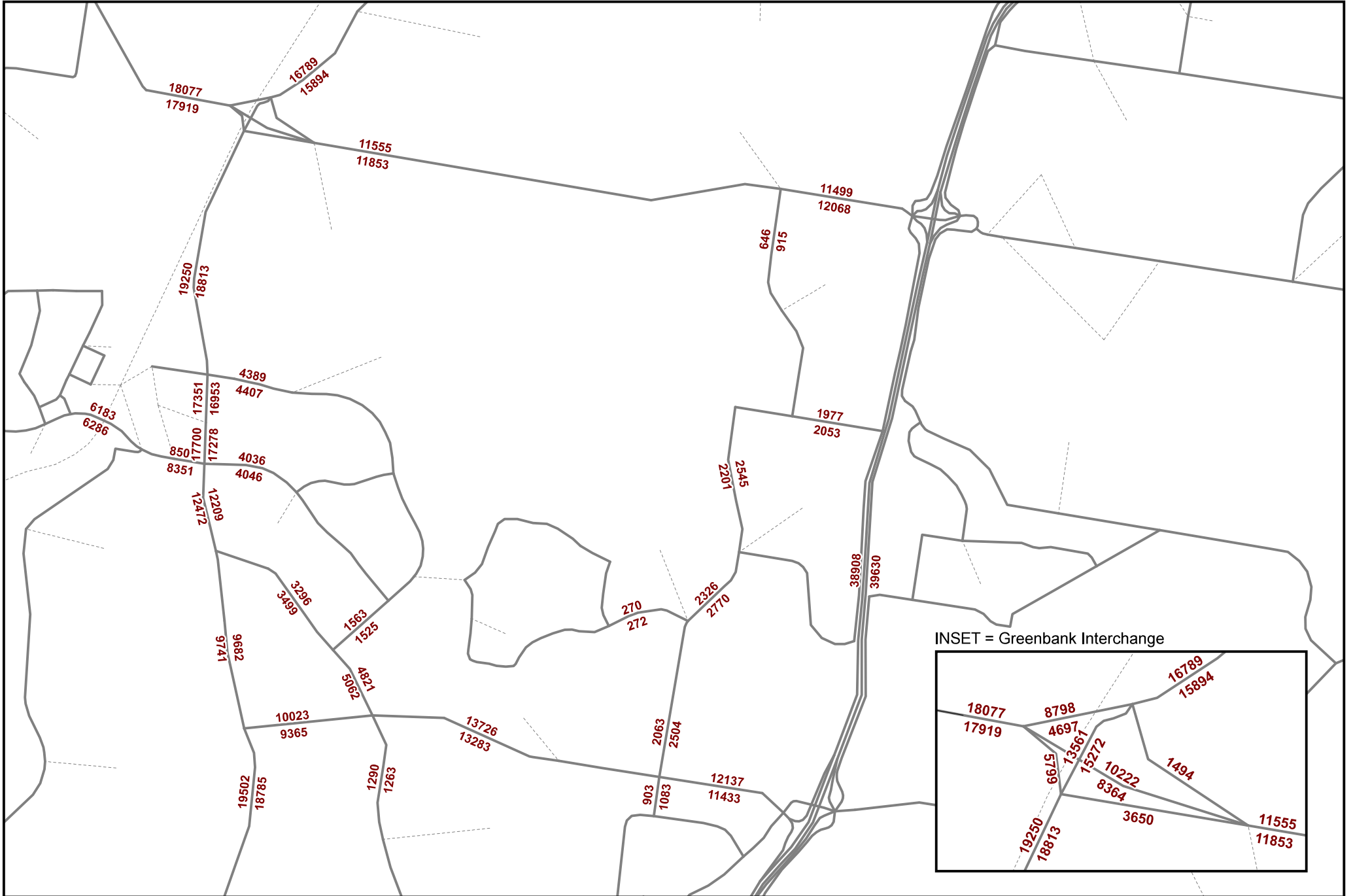
Approximately 220 residential lots are proposed within Precinct 9 to the east of Kessels Boulevard. These lots will be accessed by two (2) intersections on Kessels Boulevard with one (1) approved for construction within Precinct 12 and the other proposed for construction within Precinct 9. Kessels Boulevard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

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

The above strategies comply with the recommendations of IPWEAQ guidelines.



Premise



Forecast Average Weekday Traffic, 2051 (with Full SRIP)



Appendix F – Validation of traffic noise model

Everleigh, Greenbank - RoL 5 Application
Traffic noise validation model, Year 2020

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

| |
|--|
| |
|--|



ATP Consulting Engineers

Appendix G – Traffic noise levels

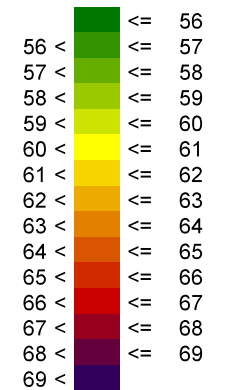
Everleigh, Greenbank - RoL 5

**Traffic Noise Modelling
Year 2051**

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

With Noise Barriers

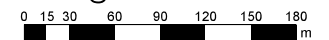
Traffic noise level
Free field
 $L_{10}(18hr)dB(A)$



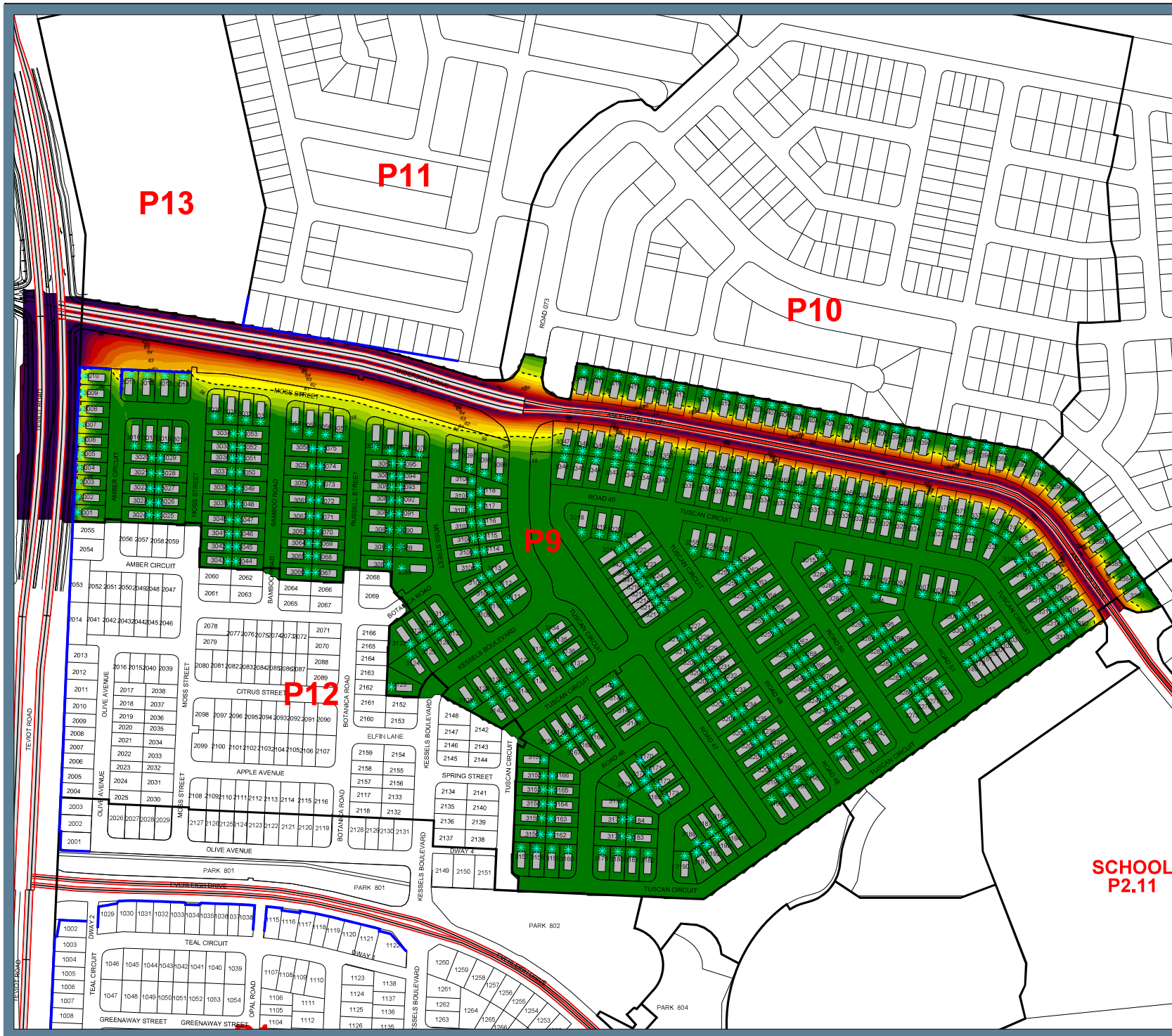
Legend

- Limit line - 60dB(A) criteria
- Road noise emission line
- ▭ Road surface
- ▭ Noise barrier
- ▭ Building
- * Private open space

SCALE @ A4 1:5000



Grid Spacing: 3m
Project Engineer: Sam Fraser
Created: 6/08/2021
Processed with SoundPLAN 8.2



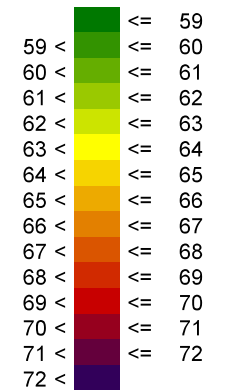
Everleigh, Greenbank - RoL 5

**Traffic Noise Modelling
Year 2051**

**Ground Floor
(1.8m AGL)**

With Noise Barriers

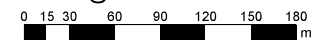
Traffic noise level
Facade adjusted
 $L_{10(18hr)}dB(A)$



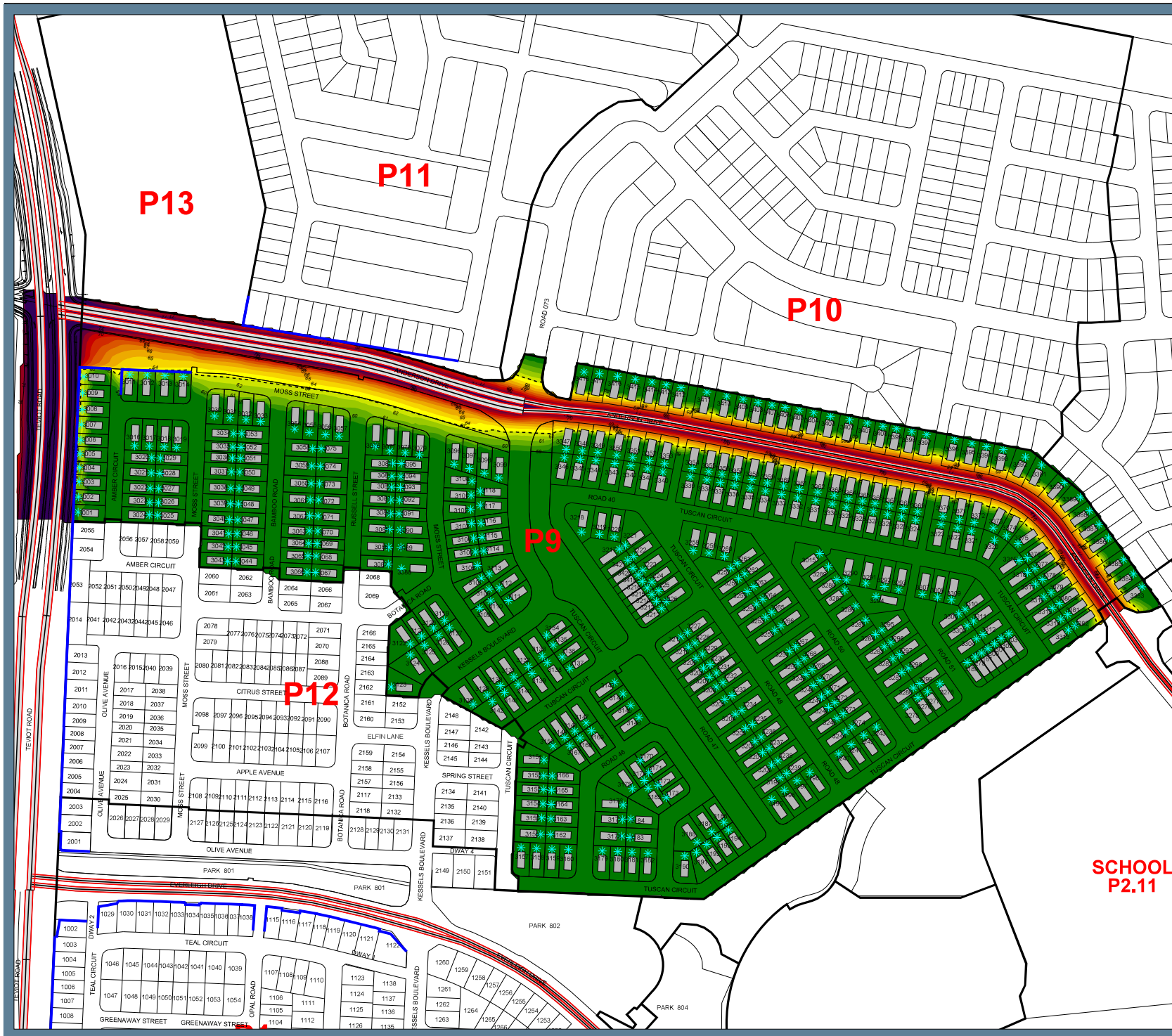
Legend

- Limit line - 63dB(A) criteria
- Road noise emission line
- ▭ Road surface
- ▭ Noise barrier
- ▭ Building
- * Private open space

SCALE @ A4 1:5000



Grid Spacing: 3m
Project Engineer: Sam Fraser
Created: 6/08/2021
Processed with SoundPLAN 8.2



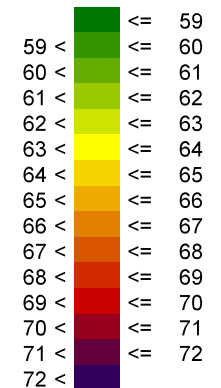
Everleigh, Greenbank - RoL 5

**Traffic Noise Modelling
Year 2051**

**First Floor
(4.6m AGL)**

With Noise Barriers

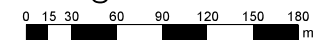
Traffic noise level
Facade adjusted
L_{10(18hr)}dB(A)



Legend

- Limit line - 63dB(A) criteria
- Road noise emission line
- ▭ Road surface
- ▭ Noise barrier
- ▭ Building
- * Private open space

SCALE @ A4 1:5000



Grid Spacing: 10m
Project Engineer: Sam Fraser
Created: 6/08/2021
Processed with SoundPLAN 8.2

