Colliers

Noise Impact Assessment Report

The Village - Stage 7C and 7D Residential Subdivision

At Abbott Street, Oonoonba

On behalf of Economic Development Queensland

24GCA0050 R01_2

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Revision Record

No.	Author	Reviewed/Approved	Description	Date
A.	J. Fox MAAS		Internal review	27/02/2025
0.	J. Fox MAAS		Issued to client	27/02/2025
1.	D. Prostamo-Brown	A. Ashworth MAAS	Revised lot layout	19/09/2025
2.	J. Fox MAAS		Revision 2	30/10/2025

Executive Summary

Colliers (formally TTM) conducted a noise impact assessment of Stage 7C and 7D of The Village development located at Abbott Street, Oonoonba.

The noise assessment considered rail noise from the adjacent corridor and road traffic noise from Lakeside Drive. While some road traffic noise is experienced from the State-controlled road Abbott Street, rail noise impacts the eastern side of the development at a much higher level (QDC MP4.4 Noise Category 4 compared to Noise Category 2), and therefore a road traffic noise assessment of Abbott Street was deemed to be not required.

Noise measurements were previously undertaken to establish the existing rail noise environment at the site. SoundPLAN noise modelling was conducted to verify the measured and predict future rail noise levels at the development. Rail noise levels were assessed in accordance with the State Development Assessment Provisions State Code 2 and QDC MP4.4. Compliance with the outdoor rail noise criteria of L_{max} 84dB(A) was achieved with the inclusion of the proposed acoustic barrier. Building treatment requirements for rail noise range from QDC MP4.4 Noise Category 1 to 4.

Road traffic noise from Lakeside Drive was assessed at the site in accordance with State Code 1. Noise levels were predicted to exceed the free-field outdoor criteria at the most exposed lots. An acoustic barrier was recommended along the southern boundary to achieve compliance at the lots. Building treatment requirements for road traffic noise range from QDC MP4.4 Noise Category 0 to 2. Therefore, future building treatment requirements were based on the rail noise impacts in all instances.

Compliance with the criteria outlined in Section 5 is predicted to be achieved based on the implementation of the recommendations outlined in Section 8 of this report.

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1 Introduction

1.1 Background

Colliers (formally TTM) was engaged by Economic Development Queensland to undertake a noise impact assessment of Stage 7C and 7D of The Village development located at Abbott Street, Oonoonba. The report assesses the potential noise impact from the adjacent rail and road traffic noise sources on the development.

TTM previously prepared an acoustic report for the development in October 2018. This report is generally a revision to that TTM report ref: 14BRA0091 R02_4 based on the current site conditions, layout and acoustic barrier alignment.

1.2 References

This report is based on the following:

- State Development Assessment Provisions (SDAP) Version 3.0 – State Code 1.
- State Development Assessment Provisions (SDAP) Version 3.0 – State Code 2.
- Queensland Development Code (QDC) MP4.4 – Buildings in a Transport Noise Corridor (August 2015).
- Development information provided by Economic Development Queensland.
- Train movement information provided by Queensland Rail (QR).
- Site inspection, noise measurements, analysis and calculations conducted by Colliers.

1.3 Scope

The assessment includes the following:

- Description of the site;
- Measurement of existing rail noise levels and statement of the assessment criteria;
- Prediction of future rail noise levels at the development;
- Prediction of future road traffic noise levels from Lakeside Drive at the development;
- Analysis of predicted noise levels;
- Details of the noise control recommendations to be incorporated to achieve predicted compliance.

2 Site Description

2.1 Site Location

The Oonoonba Urban Development Area is approximately 4km south of the Townsville City Centre. The site is bounded by the Ross River to the west and north, a rail corridor and Abbott Street to the east, and the suburb of Idalia to the south.

The site is described by the following:

- Lot 5000 SP302846
- Lakeside Drive, Oonoonba

The site locality is shown in Figure 1.

Figure 1: Site Locality

2.2 Acoustic Environment

The site is primarily affected by railway noise associated with the North Coast Rail Line, which separates the site from Abbott Street. While some road traffic noise is experienced from Abbott Street, rail noise impacts the development at a much higher level (QDC MP4.4 Noise Category 4 compared to Noise Category 2), and therefore rail noise is the primary consideration on the eastern aspect of the site. The southern part of the site is also potentially noise affected by road traffic on Lakeside Drive. Noise from this road is therefore included in the assessment.

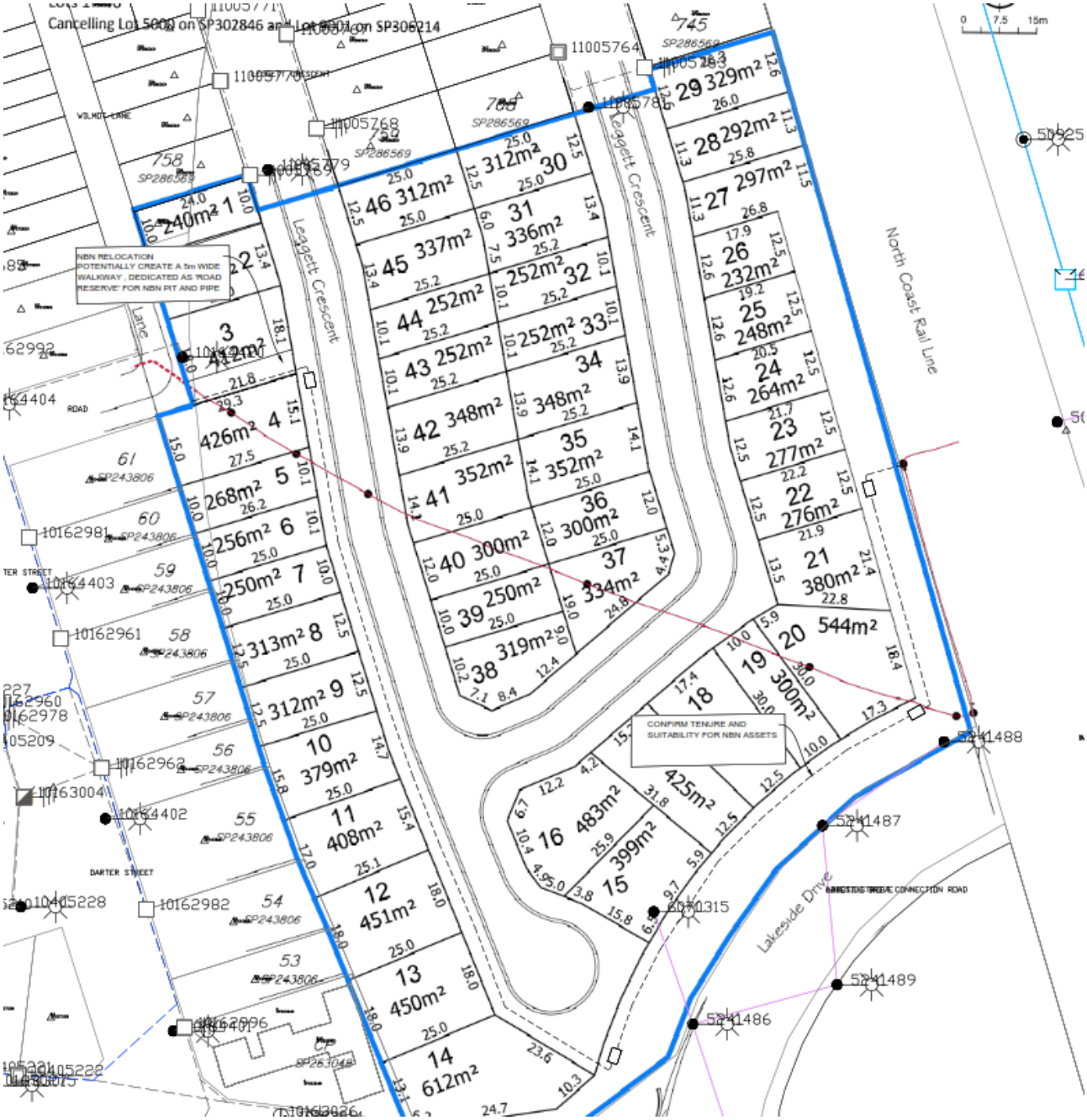
It is understood that freight trains will in future, be diverted to a new rail corridor east of the existing corridor. The Townsville Eastern Access Rail Corridor (TEARC) is a proposed freight line which will connect the North Coast Line directly into the Port of Townsville. The construction of this line is likely to reduce the number and type of trains which currently pass the development site. The timing of construction of the Townsville Eastern Access Rail Corridor is currently unknown and therefore the current use of the rail line is represented in this noise assessment.

3 Proposed Development

3.1 Proposal Description

The proposal is for the development of the Stage 7C and 7D residential subdivision in the Oonoonba Urban Development Area. The current Concept Plan of the site is shown in Figure 2 below.

Figure 2: Proposed Development Concept Plan



4 Noise Measurements

4.1 Equipment

The following equipment was used to measure existing rail noise levels:

- RION NA-28 Sound Level Meter (SLM) (SN# 01060055).
- RION NA-74 Sound Calibrator (SN# 35073393).

All equipment was calibrated by a National Association of Testing Authorities (NATA) accredited laboratory. The equipment was field calibrated before and after the measurement session. No significant drift from the reference signal was recorded.

4.2 Attended Rail Noise Measurements

Rail noise measurements were conducted during Colliers (formally TTM) initial involvement in the Oonoonba project. Attended noise measurements of train passes were conducted during separate site visits to Oonoonba on the 22nd and 30th July 2010 and 18th February 2015. The SLM was positioned at multiple locations to obtain representative measurements of trains passing the site and at the bridge northeast of the site. The SLM was located in a free-field position approximately 1.5 metres above ground level and directed at the nearest point to the track. The measurement locations are shown in Figure 3.

Figure 3: Rail Noise Measurement Locations

Noise measurements were conducted using "A" weighting, "Fast' response, and 5-minute statistical intervals. Statistics recorded included the L_{Amax}, SEL\LAE, and L_{Aeq}. The SEL or LAE is the sound exposure level. A parameter closely related to L_{Aeq} for assessment of train events that have similar characteristics but are of different duration. The LAE value contains the same amount of acoustic energy over a 'normalised' one second period as the actual noise event under consideration.

The measurements were conducted generally in accordance with Australian Standards AS1055 and AS2377. Weather conditions during the attended measurements were fine with light winds.

4.3 Results of Measurements

4.3.1 Rail Noise Levels

Measurements of 18 individual train passes were recorded along the North Coast Rail Line over 3 separate site visits to Oonoonba. The measured noise levels are summarised in Table 1.

The Department of Transport and Main Roads *Interim Guideline – Operational Railway Noise and Vibration* defines the single event maximum sound pressure level as the arithmetic average of maximum levels from the highest 15 single events over a 24-hour period. Based on previously provided rail noise modelling guidelines from DTMR, where attended noise measurements are used in calculating the single event maximum sound pressure level, the number of events used in the averaging should reflect the proportion of the total daily events. Therefore, based on the obtained 18 measurements of the previously scheduled 45 trains per day, the averaging is based on the highest 40% (7) of noise measurements, as detailed in Table 1.

Table 1: Measured Noise Levels from Passing Trains

Day/Date	Train Type	Direction of Travel	Measurement Distance (m)	Maximum Noise Level, L_{max} dB(A)	Instantaneous Noise Level, SEL dB(A)
Thursday, 22/07/2010	Freight	South	10	82	88
	Freight	South	10	78	88
	Diesel engine	North	7	91	92
	Freight	North	7	87	94
	Freight	North	55	75	85
	Freight	South	15	91	94
	Freight	North	18	79	89
	Freight	North	6	83	92
	Diesel engine	North	6	82	86
Friday, 30/07/2010	Freight	North	20	76	84
	Freight	South	17	92	91
	Freight	North	20	76	84
	Passenger (diesel)	North	20	80	88
	Freight	South	17	91	96
	Freight	South	17	79	85

Day/Date	Train Type	Direction of Travel	Measurement Distance (m)	Maximum Noise Level, L_{max} dB(A)	Instantaneous Noise Level, SEL dB(A)
	Freight	North	20	74	80
Wednesday, 18/02/2015	Freight	South	10	77	82
	Freight	South	10	82	85
Single Event Maximum Sound Pressure Level corrected to 10m				**89 (88.5)**	-

5 Noise Criteria

5.1 Rail Noise

5.1.1 State Development Assessment Provisions

The site is within the transport noise corridor of the North Coast Rail Line and is required to be assessed in accordance with Version 3.0 of the State Development Assessment Provisions (SDAP) *State Code 2* and the *Queensland Development Code Part MP4.4 (QDC)*. The noise assessment requirements for the creation of new residential lots are summarised in Table 2 below.

Table 2: SDAP State Code 2 – Rail Noise Criteria

Performance Outcomes	Acceptable Outcomes
Involving the creation of 6 or more new residential lots adjacent to a railway or type 2 multi-modal corridor	
PO40 Reconfiguring a lot minimises free field noise intrusion from a railway.	**AO40.1** Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Civil Engineering Standard Specification QR-CTS-Part 41 – Part 41, Design and Construction of Noise Fences/Barriers; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR **AO40.2** Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.

Table 2 of State Code 2: Maximum free field acoustic levels	
2.1: Private open space for residential lots	a. ≤62 dB(A) Leq (24 hour) free field OR b. ≤84 dB(A) (single event maximum sound pressure level) free field

5.1.2 Queensland Development Code

The Queensland Development Code Part MP 4.4 - 'Buildings in a Transport Noise Corridor' August 2015 (QDC) specifies Noise Categories to ensure that habitable rooms of residential buildings are adequately protected from transport noise.

The Noise Categories list the minimum acoustic R_W ratings for each building component to comply with the indoor sound criteria. The triggers for each noise category are summarised in Table 3. Details regarding the noise categories and acceptable forms of construction can be found in Schedule 1 and 2 of the QDC.

Table 3: Rail Noise Category Levels - QDC MP4.4 (Schedule 3)

Noise Category	Single event maximum noise* L_{Amax} for railway land
Category 4	≥ 85 dB(A)
Category 3	80 – 84 dB(A)
Category 2	75 – 79 dB(A)
Category 1	70 – 74 dB(A)
Category 0	≤ 69 dB(A)

*Measured at 1m from the façade of the proposed or existing building.

5.2 Road Traffic Noise

The site is within the transport noise corridor of Lakeside Drive (State-controlled road) and is required to be assessed in accordance with Version 3.0 of the State Development Assessment Provisions (SDAP) State Code 1 and the Queensland Development Code Part MP 4.4 (QDC).

While some road traffic noise is experienced from the State-controlled road Abbott Street, rail noise impacts the development at a much higher level (QDC MP4.4 Noise Category 4 compared to Noise Category 2), and therefore rail noise is the primary consideration on the eastern aspect of the site. Therefore, a road traffic noise assessment of Abbott Street is not required.

5.2.1 State Development Assessment Provisions

The State Development Assessment Provisions *State Code 1: Development in a state-controlled road environment* outlines an external free-field noise criteria for developments involving the creation of 6 or more new residential lots. The noise assessment requirements are summarised in Table 4 below.

Table 4: SDAP State Code 1– Road Traffic Noise Criteria

Performance Outcomes	Acceptable Outcomes
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor	

PO38
Reconfiguring a lot minimises free field noise intrusion from a state-controlled road.
	AO38.1 Development provides a noise barrier or earth mound which is designed, sited and constructed:
	• to achieve the maximum free field acoustic levels in reference table 2 (item 2.1);
	• in accordance with:
	  • Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013;
	  • Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019
	  • Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020
	
	OR
	
	AO38.2 Development achieves the maximum free field acoustic level in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.

Table 2 of State Code 1: Maximum free field acoustic levels	
2.1: Private open space for residential lots	a. ≤57 dB(A) $L_{10\ (18\ hour)}$ free field (measured $L_{90\ (18\ hour)}$ free field between 6am and 12 midnight ≤45 dB(A)) OR b. ≤60 dB(A) $L_{10\ (18\ hour)}$ free field (measured $L_{90\ (18\ hour)}$ free field between 6am and 12 midnight >45 dB(A))

5.2.2 Queensland Development Code

The Queensland Development Code Part MP 4.4 - 'Buildings in a Transport Noise Corridor' August 2015 (QDC) specifies Noise Categories to ensure that habitable rooms of residential buildings are adequately protected from transport noise.

The Noise Categories list the minimum acoustic R_W ratings for each building component to comply with the indoor sound levels of AS2107[1]. The triggers for each noise category are summarised in Table 5. Details regarding the noise categories and acceptable forms of construction can be found in Schedule 1 and 2 of the QDC.

[1] Australian Standard *AS2107:2016 Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors*

Table 5: Road Traffic Noise Category Levels - QDC MP4.4 (Schedule 3)

Noise Category	Level of Transport Noise* $L_{A10, 18Hour}$ for State-Controlled Roads and Designated Local Government Roads
Category 4	≥ 73 dB(A)
Category 3	68 – 72 dB(A)
Category 2	63 – 67 dB(A)
Category 1	58 – 62 dB(A)
Category 0	≤ 57 dB(A)

*Measured at 1m from the façade of the proposed or existing building.

6 Rail Noise Assessment

6.1 Rail Volumes

Rail volumes for a selection of dates were provided by Queensland Rail (email correspondence dated 20/05/2024) which indicates that there was an average 24 train passes per day in the latter half of 2023. Based on the QR information, 92% of those train passes are said to be freight trains.

Colliers have been advised by QR that all services are subject to alteration, addition and cancellation which may vary the number of actual trains passing on a daily basis. Due to confidentiality QR was unable to provide details of any future plans to upgrade the rail corridor or provide ultimate rail traffic volumes.

6.2 Noise Model

6.2.1 Noise Modelling Parameters

Rail noise predictions were conducted using 'SoundPLAN v9.1'. The basis of the SoundPLAN model is as follows:

Table 6: Rail Noise Modelling Parameters

Description	Value
Modelling program	SoundPLAN v9.1
Noise modelling standard	Nordic Rail Prediction Method (Kilde 67/130)
Angle increment	1^{O}
Grid spacing (noise maps)	2m squares
Train frequency	24 trains per day (approximate)
Train speed	40-60 km/h (approximate)
Ground contours	Natural surface contours provided by EDQ Stantec 'Oonoonba PDA Noise Barrier' proposed barrier and ground design levels
Noise source height above grade	Locomotive engines – 4.0m above top of track (3.5m plus default 0.5m from SoundPLAN rail source) Passenger and freight wagon – 0.5m above top of track
Ground floor receiver height	1.8m above ground level
First floor receiver height	4.6m above ground level
Façade correction	+2.5dB(A)

6.2.2 Noise Model Verification

The single event maximum noise level at the attended noise measurement location was verified in the noise model prior to modelling noise impacts at the development. Table 7 presents the results of the noise model verification. The SoundPLAN prediction is shown in Appendix B.

Table 7: Comparison between Measured and Modelled Rail Noise Level

SLM Location	Measured Single Event Maximum, L_{max}	Predicted Single Event Maximum, L_{max}	Required Correction
10m from rail line	88.5	88.6	0

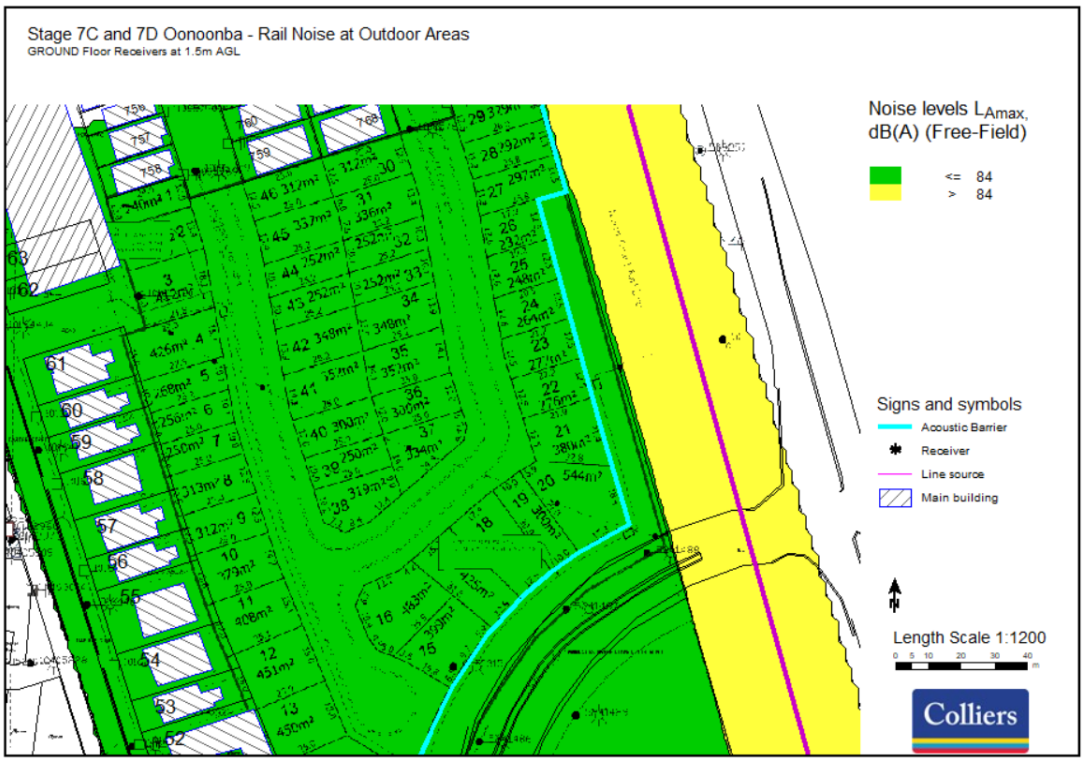
The modelled levels are within the acceptable 2dB tolerance of the measured levels and therefore no correction is required.

6.3 Predicted Rail Noise Levels

Noise modelling was conducted to determine rail noise levels at Stage 7C and 7D of the development. An existing acoustic barrier is located along the rail corridor north of the site which also extends approximately 35m into the site. EDQ propose to continue the acoustic barrier into the site to reduce the acoustic treatment requirements for future buildings within Stage 7C and 7D.

Figure 4 below presents the predicted free-field L_{max} rail noise levels compared to the outdoor criteria of 84dB(A).

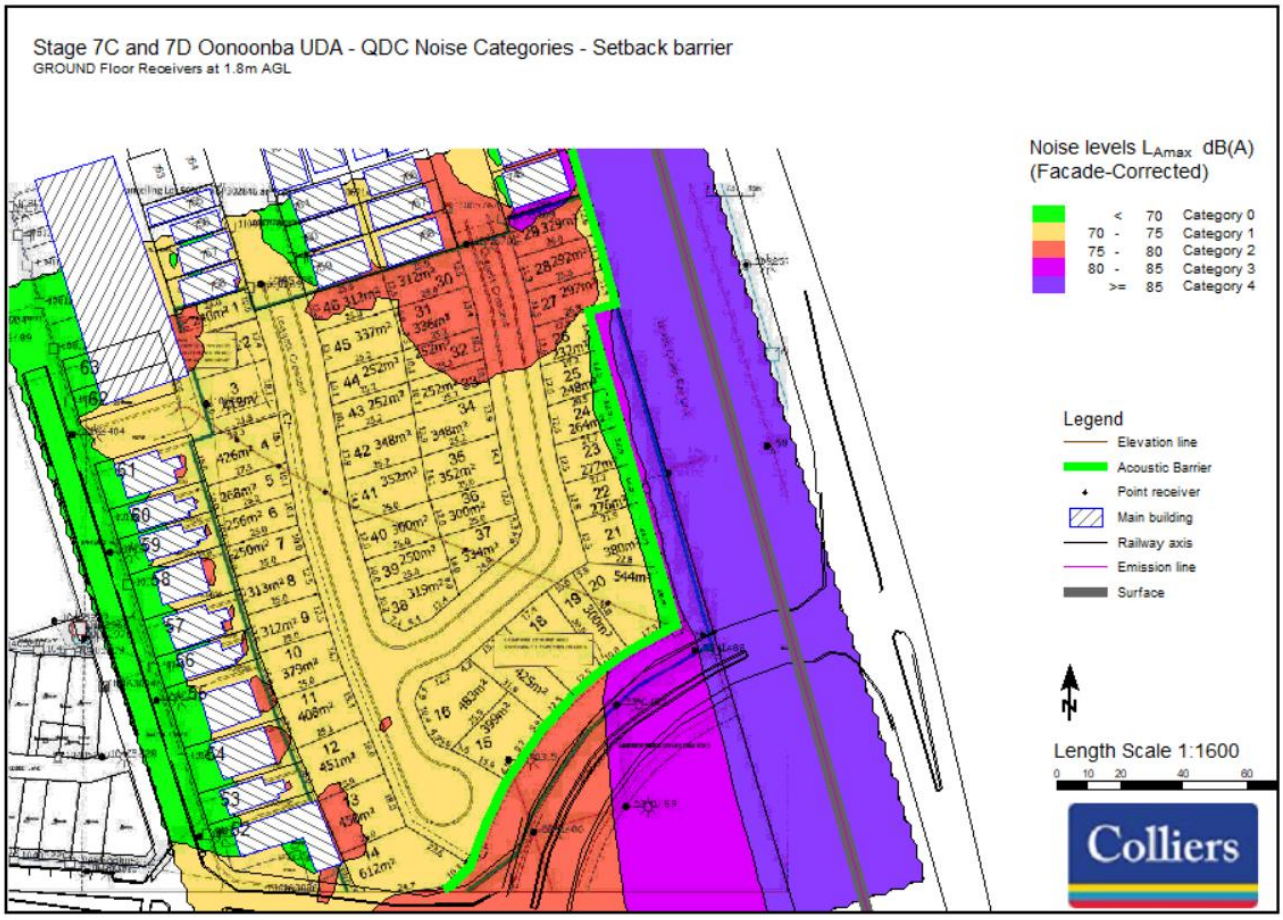
Figure 4: Predicted Rail Noise Levels Compared to the Free-Field Outdoor Criteria



Rail noise levels are predicted to comply with the outdoor criteria of L_{max} 84dB(A) (P40 of State Code 2) with inclusion of the acoustic barrier recommended in Section 8.1.

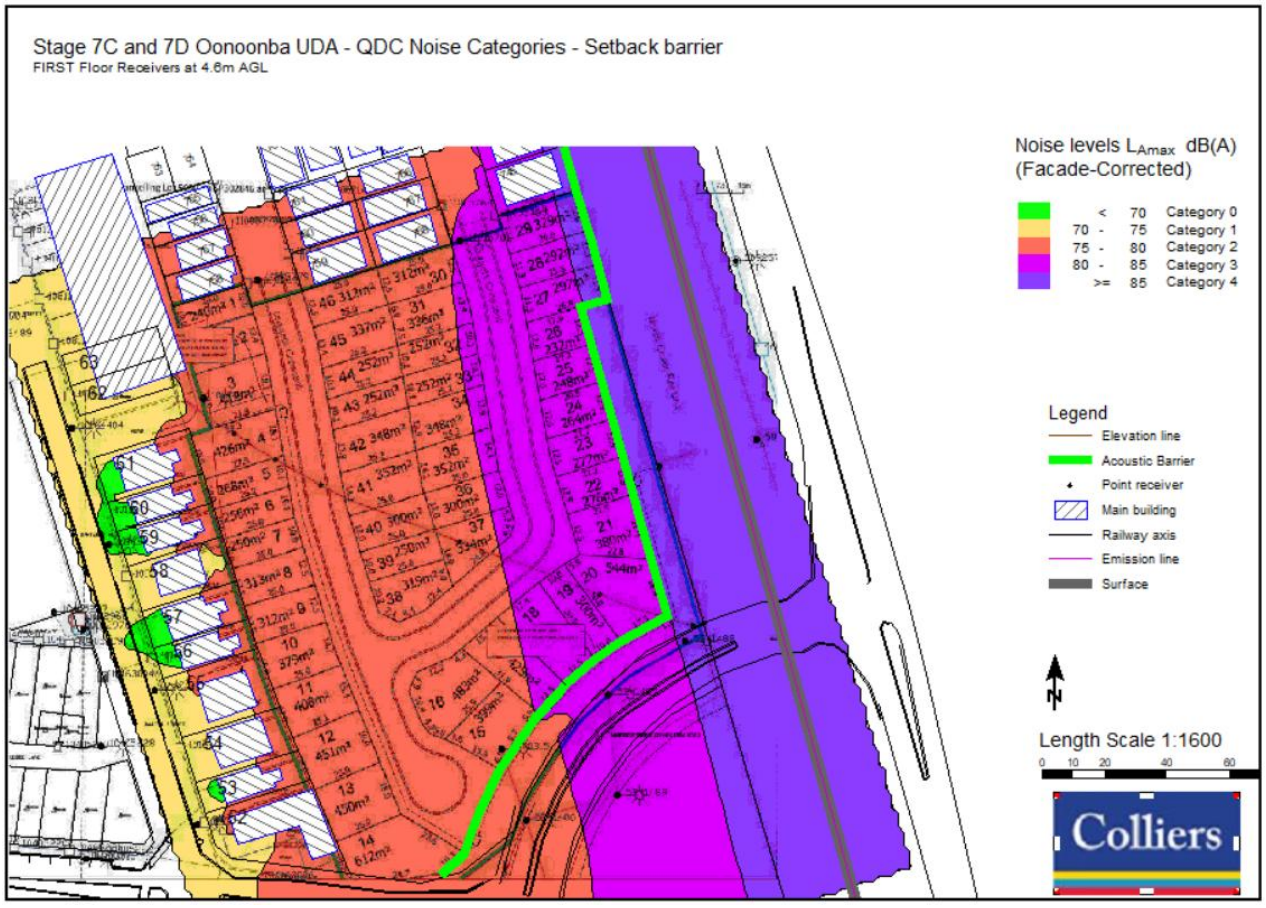
Rail noise contours are presented in the following figures for the purpose of determining future QDC MP4.4 acoustic building treatment requirements at the development.

Figure 5: Predicted QDC MP4.4 Rail Noise Levels – Ground Floor



With inclusion of the acoustic barrier, the acoustic treatments for the ground floor level of future dwellings are predicted to be no greater than QDC MP4.4 Noise Category 2.

Figure 6: Predicted QDC MP4.4 Rail Noise Levels – First Floor



For the upper floor level (first floor) of dwellings, the acoustic treatment requirements for future dwellings are predicted to range between QDC MP4.4 Noise Category 2 and Noise Category 4. It is therefore recommended that 2-storey dwellings are avoided on the eastern part of the site.

Details of dwelling construction requirements in accordance with the QDC MP4.4 are outlined in Section 8.

7 Road Traffic Noise Assessment

An assessment of road traffic noise from Lakeside Drive was conducted to determine the acoustic treatment requirements for predicted compliance with the criteria. While some road traffic noise is experienced from the State-controlled road Abbott Street, rail noise impacts the eastern side of the development at a much higher level (QDC MP4.4 Noise Category 4 compared to Noise Category 2), and therefore a road traffic noise assessment of Abbott Street is not required.

7.1 Assessment Criteria

The lower external noise criteria as outlined in Section 5.2.1 was applied to this development in absence of ambient road traffic noise monitoring data. Therefore, the following external road traffic noise limits apply to the development:

- Outdoor free-field noise: An external noise level of 57 dB(A) $L_{A10\,(18\ hour)}$ free-field.

7.2 Traffic Volumes

Table 8 presents the forecast traffic volumes and percentage heavy vehicles for Lakeside Drive which were provided by Urbis traffic engineers.

Table 8: Traffic Volumes used in the Noise Model

Road	Traffic Volumes (AADT)	Heavy Vehicles (%)
	2039 Background Traffic + Development	
Lakeside Drive	19,935	1.0

The 18-hour traffic volumes used in the noise model are taken to be 95% of the AADT (Annual Average Daily Traffic).

7.3 Noise Model

7.3.1 Noise Modelling Parameters

Road traffic noise predictions were conducted using 'SoundPLAN v9.1', a CoRTN based modelling program. The basis of the 'SoundPLAN' model is as follows:

Table 9: Road Traffic Noise Modelling Parameters

Description	Value
Noise modelling standard	CoRTN
Angle increment	1 ^{o}
Grid spacing (noise maps)	2m squares
Road surface type	Impervious (+0dB)

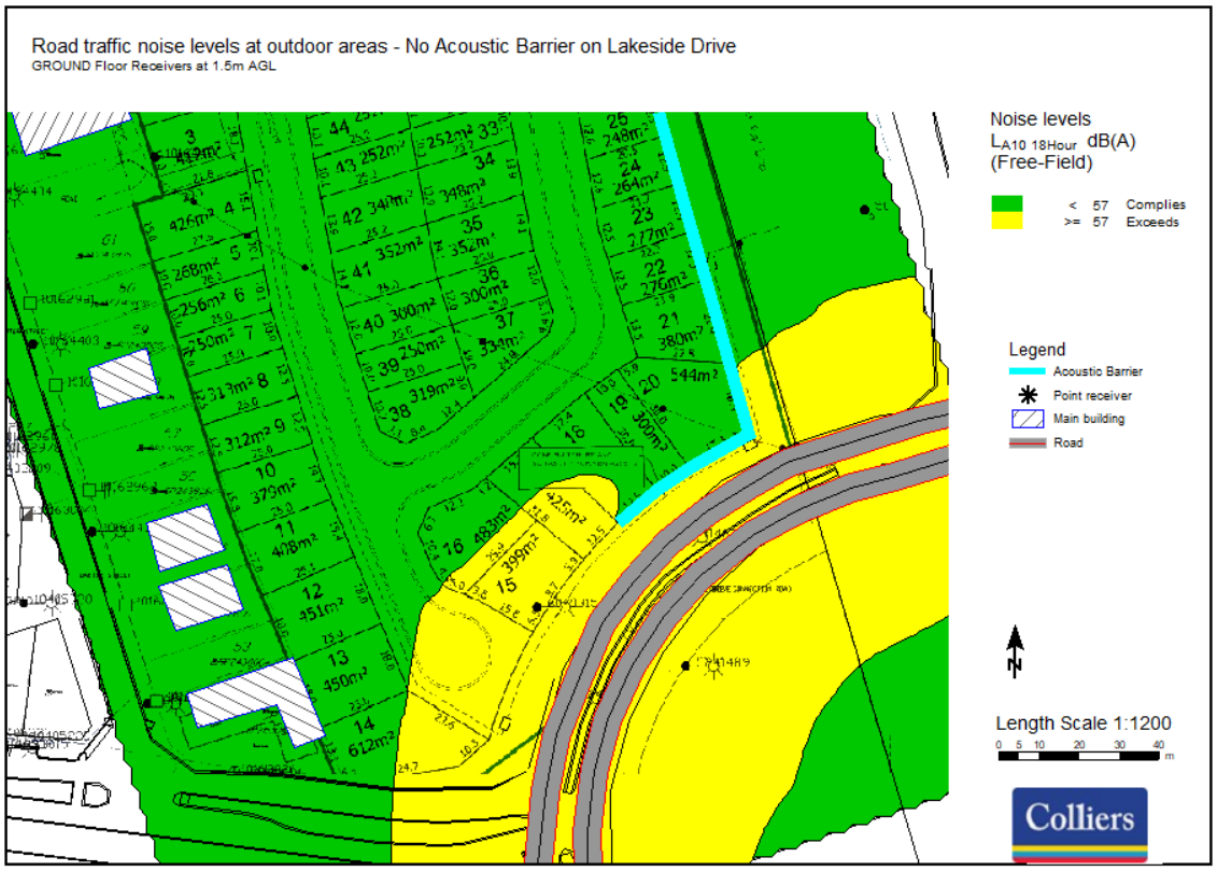
Description	Value
Ground levels	Natural surface and design contours provided by EDQ
Acoustic barriers (recommended)	Eastern and southern boundaries
Lakeside Drive speed limit	60km/h posted 50km/h near the site, due to the close proximity of traffic signals
Noise source height above grade	0.5m
Floor heights	2.8m
Receiver heights	1.8m above ground level
Free-field calibration factor	-0.7 dB(A) adjustment as per Table 4.3.2.1 of TMR Code of Practice
Receiver calibration factor	-1.7 dB(A) adjustment as per Table 4.3.2.1 of TMR Code of Practice
Façade correction	+2.5dB(A)

7.4 Predicted Road Traffic Noise Levels

Modelling was conducted to determine the road traffic noise levels at the development in the 10-year planning horizon to 2039.

Figure 4 below presents the predicted road traffic noise levels compared to the free-field assessment criteria of 57 dB(A) to determine whether acoustic barriers are necessary for lots in proximity to Lakeside Drive.

Figure 7: Predicted Road Traffic Noise Levels Compared to the Free-Field Noise Criteria – No Additional Barriers



Without an acoustic barrier, road traffic noise levels are predicted to exceed the free-field noise criteria at lots along the southern boundary. Acoustic barriers will be recommended along the lot boundaries to achieve compliance with the outdoor criteria. The predicted noise levels inclusive of the recommended acoustic barriers are shown in Figure 8 below.

Figure 8: Predicted Road Traffic Noise Levels Compared to the Free-Field Noise Criteria – With Acoustic Barriers

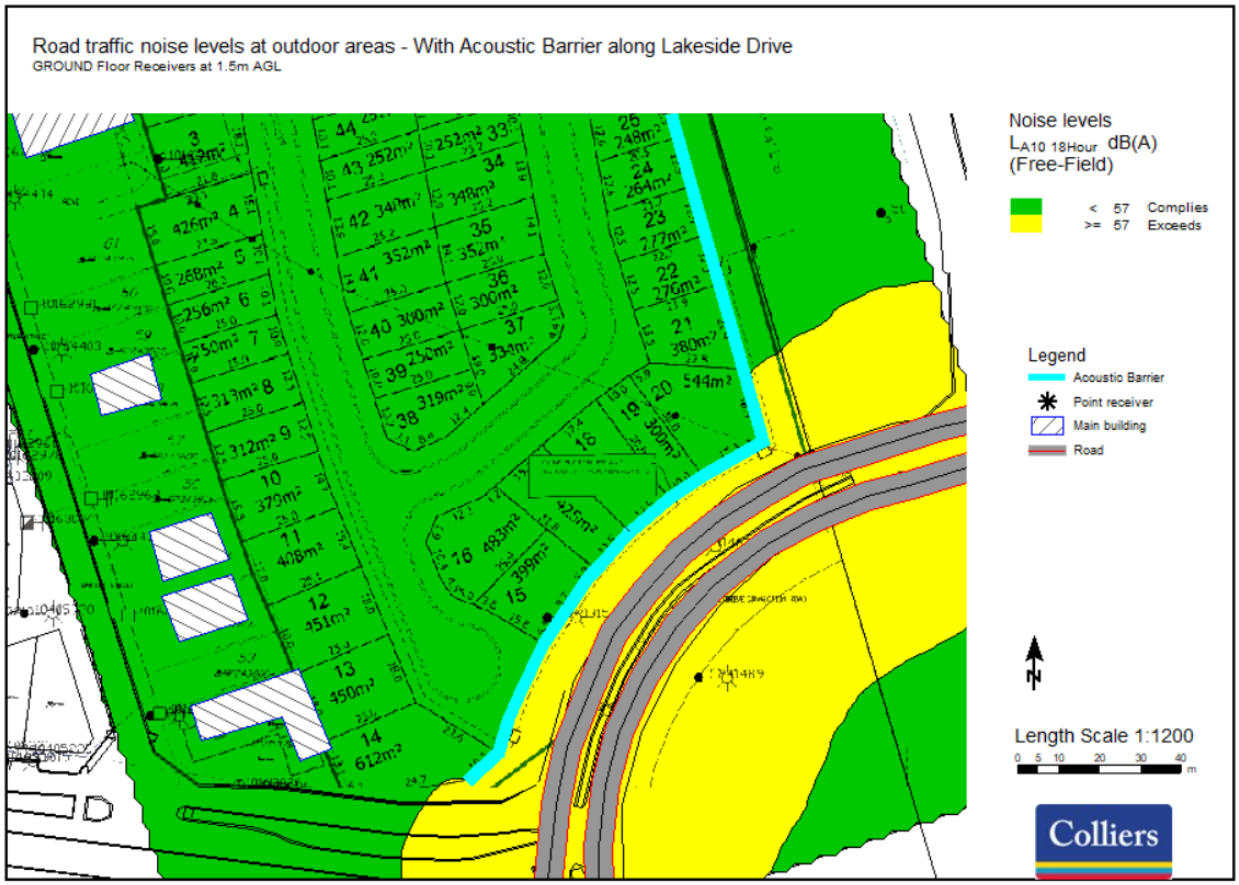


Figure 8 above shows that with inclusion of acoustic barriers along Lakeside Drive, road traffic noise levels are predicted to comply with the free-field noise criteria at all lots. Details of the recommended acoustic barriers are provided in Section 8.1.

Compliance with the internal noise criteria will be met by application of building treatments in accordance with the Queensland Development Code MP4.4. The predicted QDC MP4.4 road traffic noise contours at ground and first floor level facades are presented in Figure 9 and Figure 10 below. The QDC MP4.4 road traffic noise contours are inclusive of the receiver calibration factor described in Section 7.3.1. Noise levels are compared to the criteria of QDC MP4.4 for the purposes of determining the acoustic building treatment requirements for noise affected lots.

Figure 9: Predicted QDC MP4.4 Road Traffic Noise Levels – Ground Floor

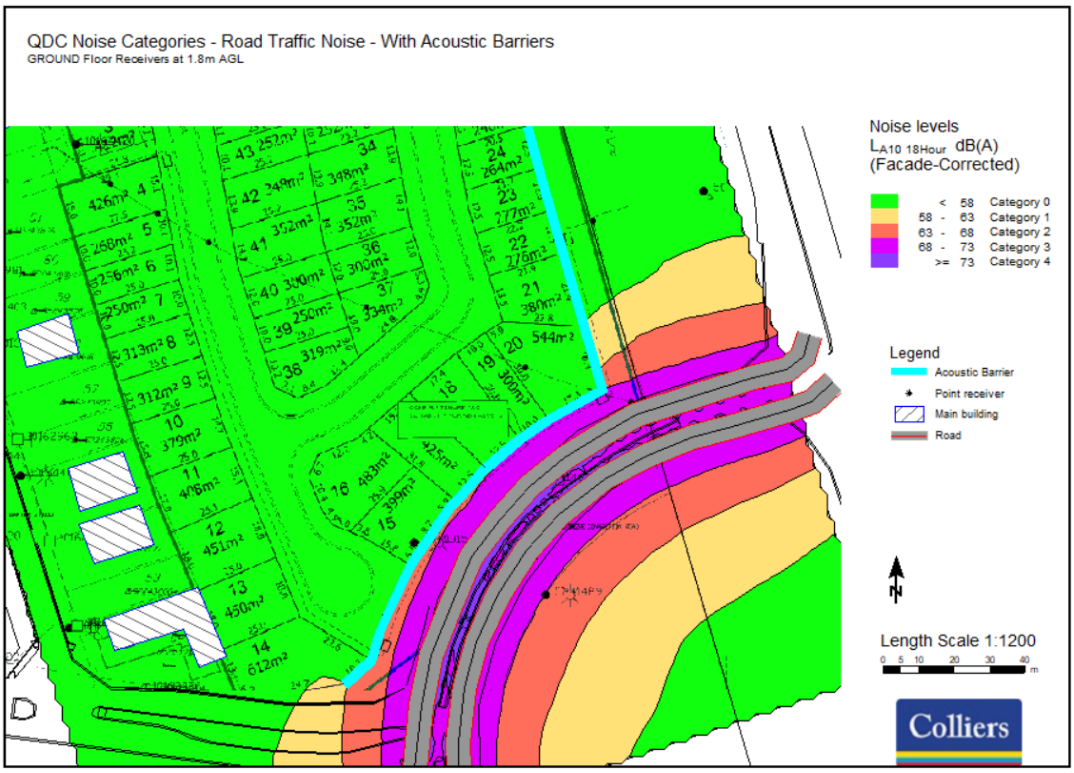
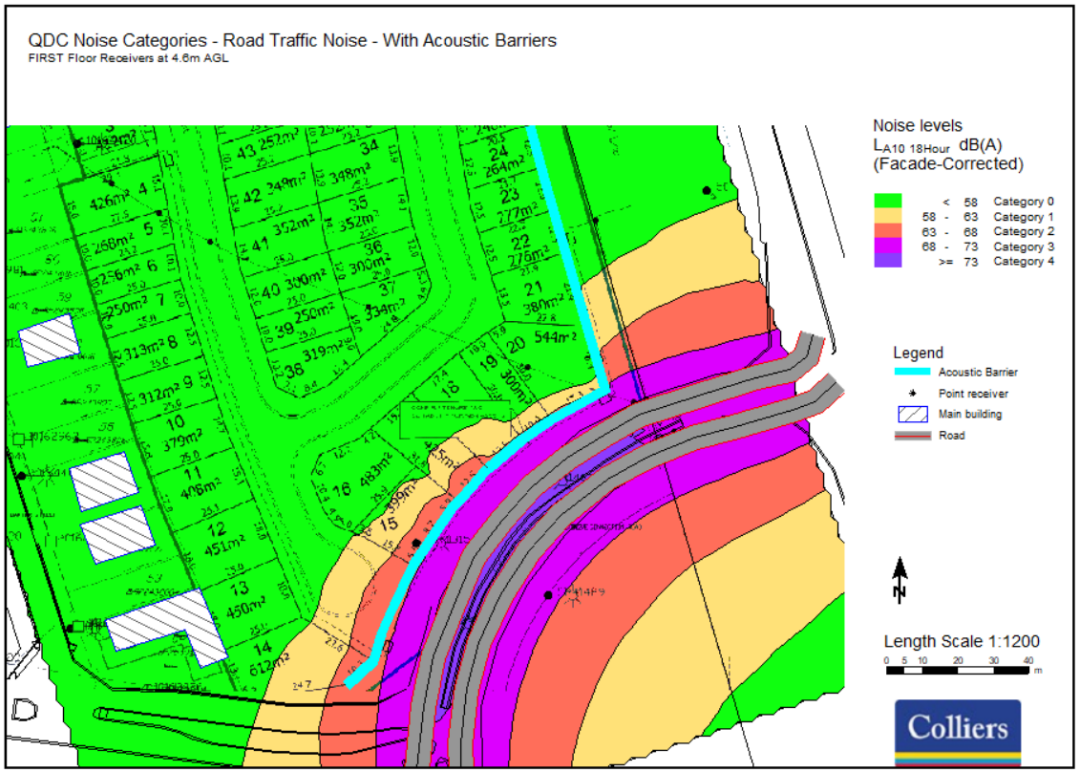


Figure 10: Predicted QDC MP4.4 Road Traffic Noise Levels – First Floor



Road traffic noise levels were predicted at Stage 7C and 7D of the development inclusive of acoustic barriers. The acoustic treatment requirements for ground floor and first floor of dwellings range from QDC MP4.4 Noise Category 0 to 2. Acoustic treatment in accordance with QDC MP4.4 will satisfy compliance with DTMR requirements for internal noise criteria.

Details of dwelling construction requirements in accordance with the QDC are outlined in Section 8. The QDC MP4.4 requirements are specified based on the highest noise category within each proposed lot.

Note: the impact from rail noise is predicted to be higher at all lots of the development and therefore future acoustic treatment requirements are based on the results of the rail noise assessment.

8 Colliers Recommendations

The following recommendations should be implemented for predicted compliance with the noise criteria detailed in Section 5.

8.1 Acoustic Barriers

8.1.1 Rail Noise

Acoustic barriers are recommended to reduce the QDC MP4.4 rail noise construction requirements for the ground floor level of dwellings. The location and extent of the acoustic barrier is shown in Figure 11.

The rail noise barrier recommendations are as follows:

a) The acoustic barrier along the eastern boundary (shown in red) must be minimum 3.0m high relative to the finished ground level of the lots (i.e. on top of the future retaining wall).

b) The 3.0m high barrier must return a minimum of approximately 50m along the southern boundary. A separate acoustic barrier at a lower height is recommended to continue along the southern boundary for the purposes of road traffic noise reduction. The step between 3.0m and 1.8m high barrier is to occur at the boundary between lot 17 and lot 18.

c) The barrier should be constructed of a material with a surface density of at least 15kg/m^2 and be constructed in accordance with

   I. Civil Engineering Standard Specification QR-CTS-Part 41 – Part 41, Design and Construction of Noise Fences/Barriers, and

   II. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019;

d) No gaps or holes should be evident in the barrier construction.

8.1.2 Road Traffic Noise

Acoustic barriers are also recommended along the southern boundary to achieve compliance with the PO38 private open space requirements of State Code 1. The location and extent of the acoustic barrier is shown in Figure 11.

The road traffic acoustic barrier recommendations are as follows:

a) The acoustic barrier along the southern boundary (shown in orange colour) must be minimum 1.8m high relative to the finished ground level of the lots (i.e. on top of the future retaining wall).

b) The barrier must be constructed accordance with the requirements of:

   I. Chapter 7 Integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads 2013,

II. Transport and Main Roads Specifications MRTS15 Noise Fences,

III. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.

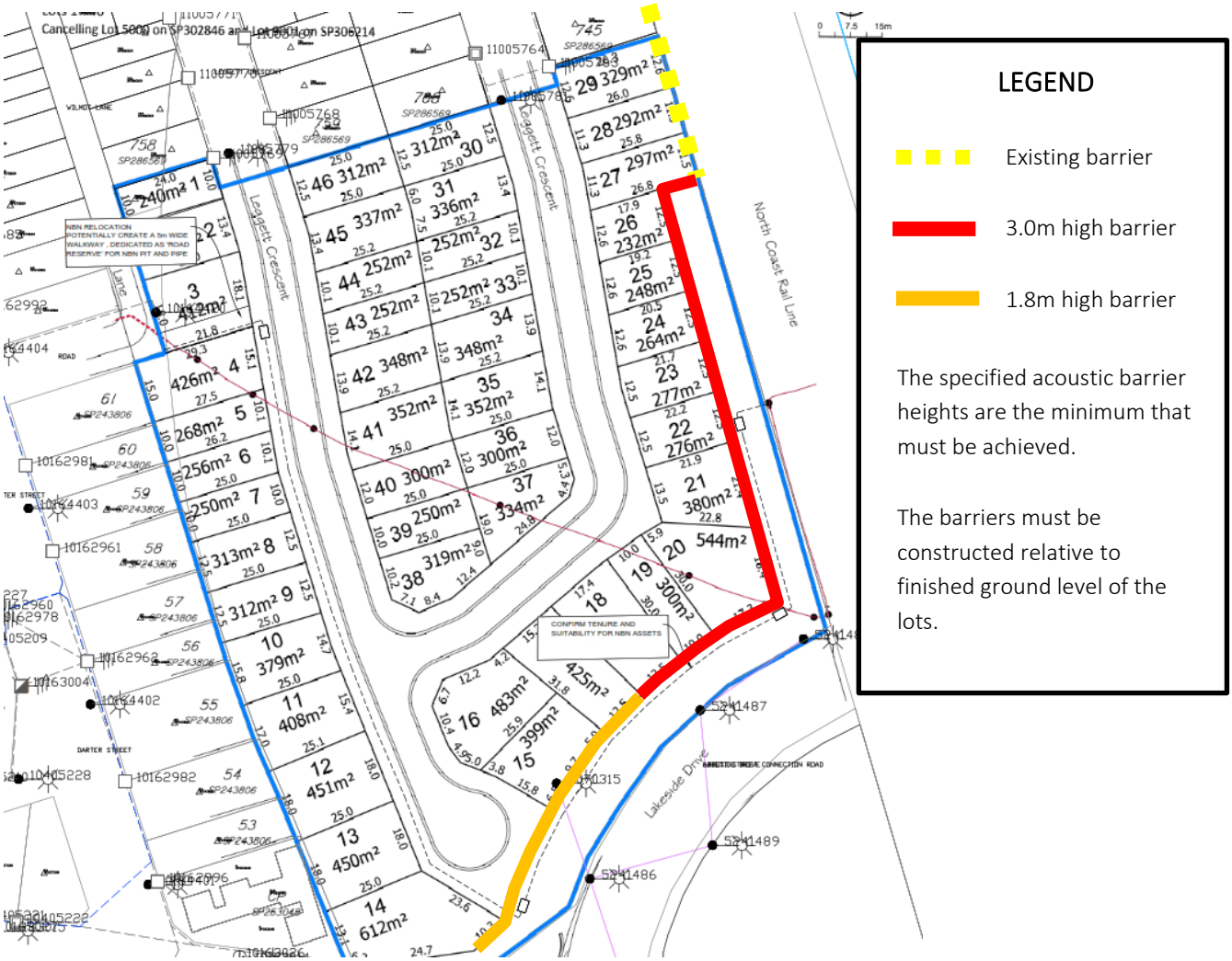
c) The noise barrier design may need to be submitted to the Department of Transport and Main Roads for review and endorsement, prior to the commencement of construction (check development approval conditions).

d) Be constructed of a material with a surface mass not less than 15kg/m^2 and be free of gaps or holes including at the base.

e) Suitable materials include earth mound, plywood, steel, masonry, and composite panels such as Modular Walls. A combination of materials can be used if desired provided they achieve compliance with MRTS15.

f) Note: Lapped timber palings may not be deemed as an accepted material by Department of Transport and Main Roads.

Figure 11: Recommended Acoustic Barriers for Stage 7C and 7D



8.1.3 Dwelling Treatments

The QDC MP4.4 requires that habitable rooms in residential buildings located in a transport noise corridor are adequately protected from transport noise to safeguard occupant's health and amenity.

In order to achieve the performance requirements of the QDC MP4.4, the external building envelope of habitable rooms must comply with the minimum R_W for each building component specified in Schedule 1 to achieve a minimum transport noise reduction level for the relevant noise category by either one of the following:

a) Using materials specified in Schedule 2 of the QDC MP4.4;

OR

b) Using materials with manufacturer's specifications that, in combination, achieve the minimum R_W value for the relevant building component and applicable noise category.

For application of Point (b), possible alternative constructions can be determined by the glazier (for glazing) and construction manuals such as 'The Red Book' by CSR (for walls and roof/ceiling).

Noise Categories applicable to Stage 7C and 7D of the development are listed in Table 10. The QDC MP4.4 requirements are specified based on the highest noise category within each proposed lot.

If the lot layout changes from that showed in Appendix A, it is recommended that the acoustic requirements for each lot are reviewed by a suitably qualified acoustic consultant.

Table 10: QDC MP4.4 Noise Categories Applicable to Stage 7C and 7D

Lot	QDC MP4.4 Noise Category (Ground floor)	QDC MP4.4 Noise Category (First floor)
1	2	2
2	2	2
3	1	2
4	1	2
5	1	2
6	1	2
7	1	2
8	1	2
9	1	2
10	1	2
11	1	2
12	2	2
13	2	2
14	2	2
15	1	2

Lot	QDC MP4.4 Noise Category (Ground floor)	QDC MP4.4 Noise Category (First floor)
16	1	2
17	1	3
18	1	3
19	1	3
20	1	3
21	1	3
22	1	3
23	1	3
24	1	3
25	1	3
26	2	3
27	2	4
28	2	4
29	2	4
30	2	3
31	2	3
32	2	3
33	2	3
34	1	3
35	1	3
36	1	3
37	1	3
38	1	2
39	1	2
40	1	2
41	1	2
42	1	2
43	1	2
44	1	2
45	1	2
46	2	2

Details regarding QDC noise categories and associated sound reduction rating (R_w) requirements for habitable rooms can be found within Schedule 1 of the QDC MP4.4.

Table 11: QDC Noise Category Levels and Associated Sound Reduction Rating (R_w) Requirements for Habitable Rooms (QDC MP4.4 - Schedule 1)

QDC Noise Category	Required Acoustic Rating (R_w) for Habitable Rooms			
	Glazing > 1.8m²*	Glazing ≤ 1.8m²*	External Walls	Roof and Ceiling
Category 4	R_W 43	R_W 43	R_W 52	R_W 45
Category 3	R_W 38	R_W 35	R_W 47	R_W 41
Category 2	R_W 35	R_W 32	R_W 41	R_W 38
Category 1	R_W 27	R_W 24	R_W 35	R_W 35
Category 0	None	None	None	None

*Total glazing area for room

QDC MP 4.4 Schedule 1 and 2 which includes acceptable forms of construction for each noise category is provided in Appendix C of this report.

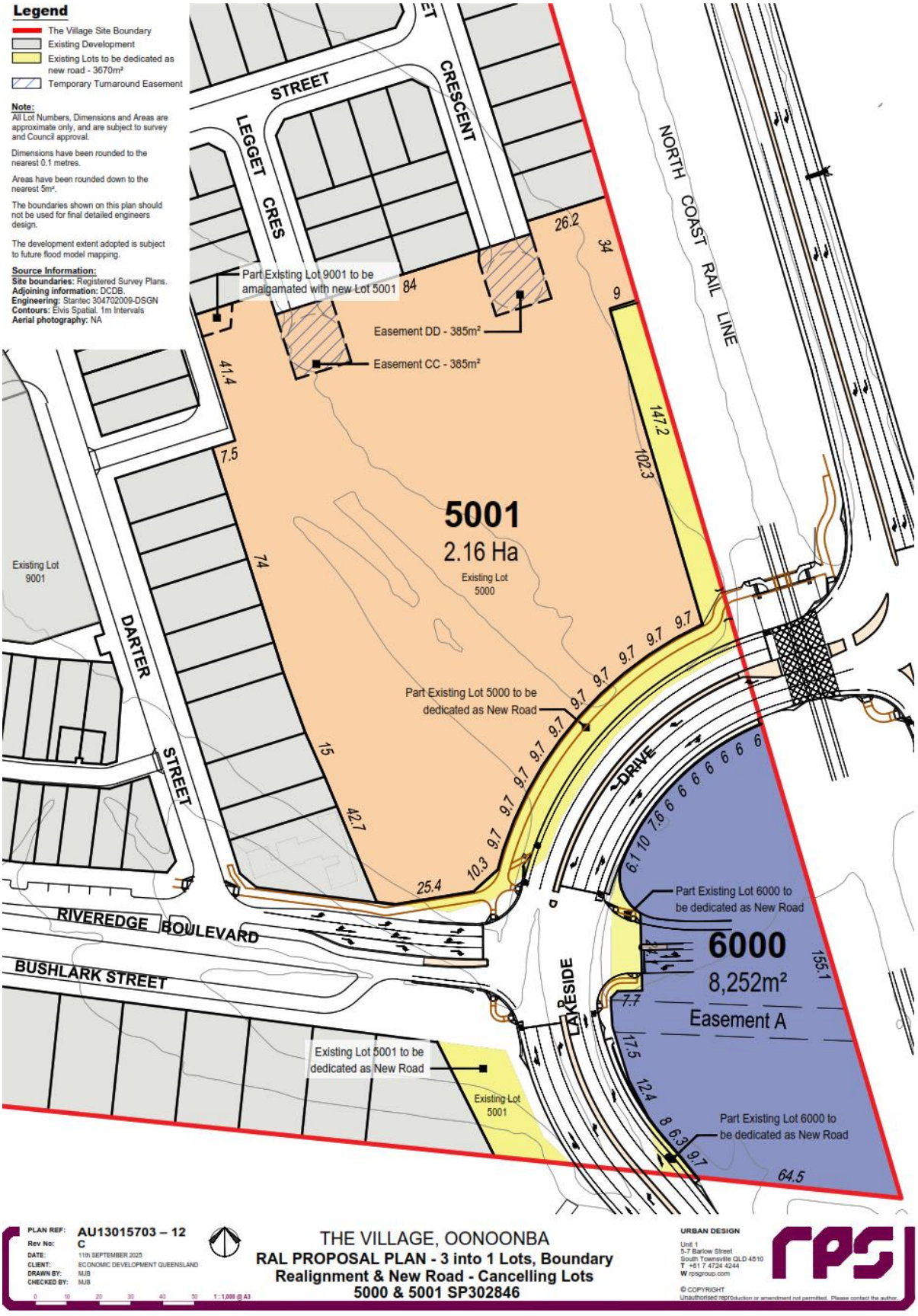
Dwellings on noise affected lots may be constructed in accordance with the QDC noise category construction requirements for the nominated lot. However, as the QDC requirements are conservative and apply to all facades equally, it is recommended that an individual acoustic assessment be conducted for each noise affected dwelling, once building plans are available, to optimise acoustic treatments for quality and cost savings. A site-specific report is generally recommended for QDC Noise Category 2 or higher.

9 Conclusion

An environmental noise assessment was undertaken of the proposed Stage 7C and 7D of The Village development located at Abbott Street, Oonoonba.

Compliance with the criteria outlined in Section 5 is predicted to be achieved based on the implementation of the recommendations outlined in Section 8 of this report.

Appendix A Development Plans


Legend
The Village Site Boundary
Existing Development
Existing Lots to be dedicated as new road - 3670m²
Temporary Turnaround Easement
Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.
Dimensions have been rounded to the nearest 0.1 metres.
Areas have been rounded down to the nearest 5m².
The boundaries shown on this plan should not be used for final detailed engineers design.
The development extent adopted is subject to future flood model mapping.
Source Information:
Site boundaries: Registered Survey Plans.
Adjoining information: DCDB.
Engineering: Stantec 304702009-DSGN
Contours: Elvis Spatial. 1m Intervals
Aerial photography: NA
LEGGET CRES
CRESCENT
STREET
NORTH COAST RAIL LINE
Part Existing Lot 9001 to be amalgamated with new Lot 5001
Easement DD - 385m²
Easement CC - 385m²
5001
2.16 Ha
Existing Lot 5000
Existing Lot 9001
DARTER
STREET
Part Existing Lot 5000 to be dedicated as New Road
DRIVE
Part Existing Lot 6000 to be dedicated as New Road
6000
8,252m²
Easement A
RIVEREDGE BOULEVARD
BUSHLARK STREET
LAKESIDE
Existing Lot 5001 to be dedicated as New Road
Existing Lot 5001
Part Existing Lot 6000 to be dedicated as New Road
PLAN REF: AU13015703 – 12
Rev No: C
DATE: 11th SEPTEMBER 2025
CLIENT: ECONOMIC DEVELOPMENT QUEENSLAND
DRAWN BY: MJB
CHECKED BY: MJB
1:1,000 @ A3
THE VILLAGE, OONOONBA
RAL PROPOSAL PLAN - 3 into 1 Lots, Boundary Realignment & New Road - Cancelling Lots 5000 & 5001 SP302846
URBAN DESIGN
Unit 1
5-7 Barlow Street
South Townsville QLD 4510
T +61 7 4724 4244
W rpsgroup.com
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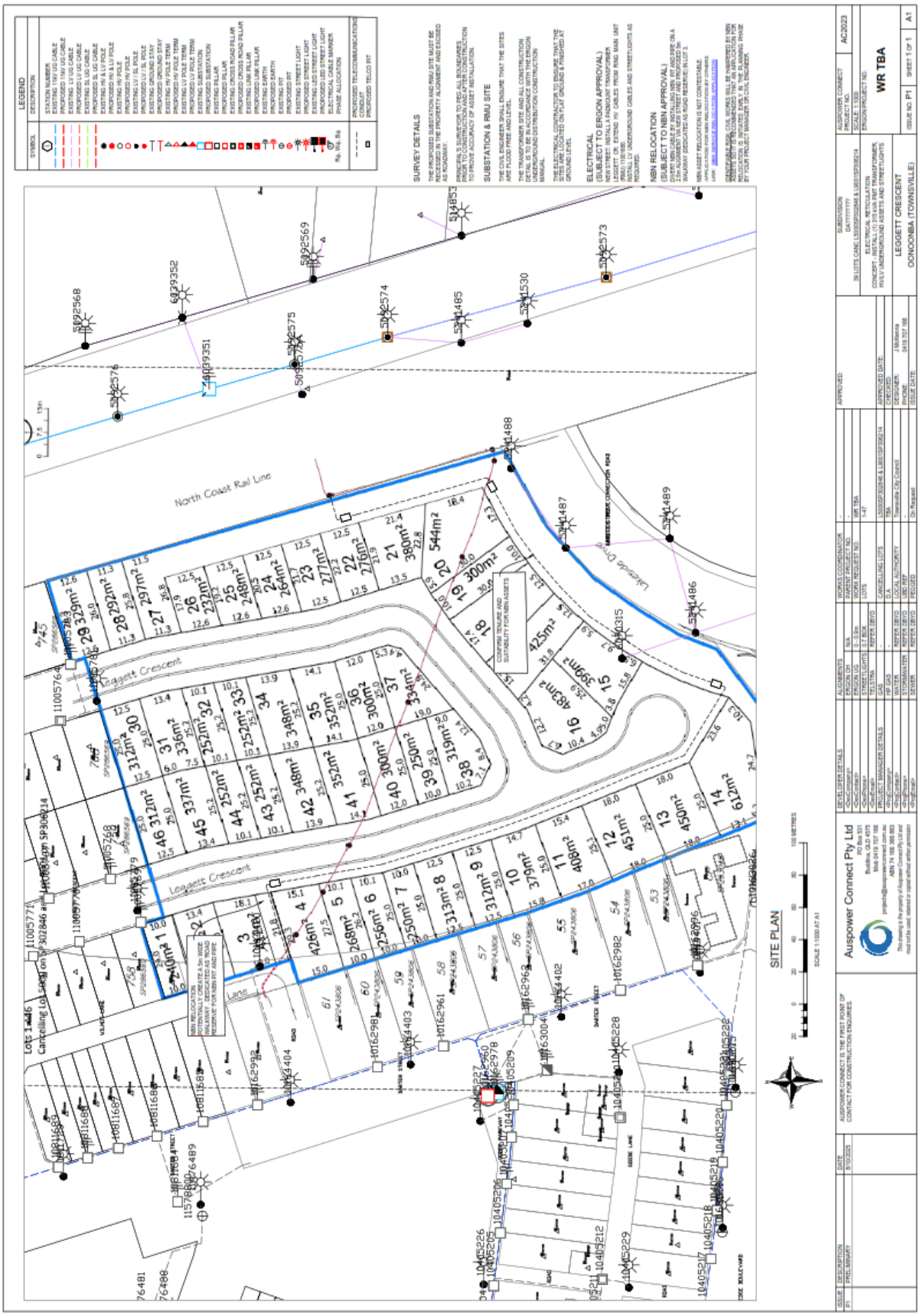
LEGEND
SURVEY DETAILS
SUBSTATION & RMU SITE
ELECTRICAL
(SUBJECT TO ERGON APPROVAL)
NBN RELOCATION
(SUBJECT TO NBN APPROVAL)
North Coast Rail Line
Leggett Crescent
Lane
SITE PLAN
LEGGETT CRESCENT
OONOONBA (TOWNSVILLE)
WR TBA
Auspower Connect Pty Ltd

Appendix B SoundPLAN Noise Modelling Outputs

Oonoonba UDA
M17 - RAIL Noise - 24GCA0050 Stage 7C&D - Verifications - Receivers

Receiver	Floor	Lmax, rail Free Field dB(A)	
SLM Bridge (Approx)	GF	86.7	
SLM Site	GF	88.6	
SLM South	GF	88.6	

Appendix C Schedule 1 and 2 of QDC MP4.4

Schedule 1

Noise category	Minimum *transport noise reduction* (*dB (A)*) required for *habitable rooms*	Component of building's *external envelope*	Minimum R_w required for each component
Category 4	40	Glazing	43
		External walls	52
		Roof	45
		Floors	51
		Entry doors	35
Category 3	35	Glazing	38 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			35 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	47
		Roof	41
		Floors	45
		Entry doors	33

Noise category	Minimum *transport noise reduction* (*dB (A)*) required for *habitable rooms*	Component of building's *external envelope*	Minimum R_w required for each component
Category 2	30	Glazing	35 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			32 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	41
		Roof	38
		Floors	45
		Entry doors	33
Category 1	25	Glazing	27 (where total area of glazing for a *habitable room* is greater than 1.8m²)
			24 (where total area of glazing for a *habitable room* is less than or equal to 1.8m²)
		External walls	35
		Roof	35
		Entry Doors	28
Category 0	No additional acoustic treatment required – standard building assessment provisions apply.		

Schedule 2

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
Glazing	43	Double glazing consisting of two panes of minimum 5mm thick glass with at least 100mm air gap and full perimeter *acoustically rated seals*.
	38	Minimum 14.38mm thick laminated glass, with full perimeter *acoustically rated seals*; OR Double glazing consisting of one pane of minimum 5mm thick glass and one pane of minimum 6mm thick glass with at least 44mm air gap, and full perimeter *acoustically rated seals*
	35	Minimum 10.38mm thick laminated glass, with full perimeter *acoustically rated seals*.
	32	Minimum 6.38mm thick laminated glass with full perimeter *acoustically rated seals*.
	27	Minimum 4mm thick glass with full perimeter *acoustically rated seals*
	24	Minimum 4mm thick glass with standard weather seals

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
External walls	52	Two leaves of clay brick masonry, at least 270mm in total, with subfloor vents fitted with noise attenuators.
	47	Two leaves of clay brick masonry at least 110mm thick with: (i) cavity not less than 50mm between leaves; and (ii) 50mm thick mineral insulation or 50mm thick glass wool insulation with a density of 11kg/m³ or 50mm thick polyester insulation with a density of 20kg/m³ in the cavity. OR Two leaves of clay brick masonry at last 110mm thick with: (i) cavity not less than 50mm between leaves; and (ii) at least 13mm thick cement render on each face OR Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) Mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 13mm thick fixed to outside face of studs. OR Single leaf of minimum 150mm thick masonry of hollow, dense concrete blocks, with mortar joints laid to prevent moisture bridging.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	41	Two leaves of clay brick masonry at least 110mm thick with cavity not less than 50mm between leaves OR Single leaf of clay brick masonry at last 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³ positioned between studs; and (iii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Single leaf of brick masonry at least 110mm thick with at least 13mm thick render on each face OR Concrete brickwork at least 110mm thick OR In-situ concrete at least 100mm thick OR Precast concrete at least 100mm thick and without joints.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	35	Single leaf of clay brick masonry at least 110mm thick with: (i) a row of at least 70mm x 35mm timber studs or 64mm steel studs at 600mm centres, spaced at least 20mm from the masonry wall; and (ii) One layer of plasterboard at least 10mm thick fixed to outside face of studs OR Minimum 6mm thick fibre cement sheeting or weatherboards or plank cladding externally, minimum 90mm deep timber stud or 92mm metal stud, standard plasterboard at least 13mm thick internally.
Roof	45	Concrete or terracotta tile or sheet metal roof with sarking, *acoustically rated plasterboard* ceiling at least 13mm thick fixed to ceiling joists, cellulose fibre insulation at least 100mm thick with a density of at least 45kg/m³ in the cavity. OR Concrete or terracotta tile or sheet metal roof with sarking, 2 layers of *acoustically rated plasterboard* at least 16mm thick fixed to ceiling joists, glass wool insulation at least 50mm thick with a density of at least 11kg/m³ or polyester insulation at least 50mm thick with a density of at least 20kg/m³ in the cavity.
	41	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling joists, glass wool insulation at least 50mm thick with a density of at least 11kg/m³ or polyester insulation at least 50mm thick with a density of at least 20kg/m³ in the cavity. OR Concrete suspended slab at least 100mm thick.
	38	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity, mineral insulation or glass wool insulation at least 50mm thick with a density of at least 11 kg/m³.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	35	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity.
Floors	51	Concrete slab at least 150mm thick.
	45	Concrete slab at least 100mm thick OR Tongued and grooved boards at least 19mm thick with: (i) timber joists not less than 175mm x 50mm; and (ii) mineral insulation or glass wool insulation at least 75mm thick with a density of at least 11kg/m³ positioned between joists and laid on plasterboard at least 10mm thick fixed to underside of joists; and (iii) mineral insulation or glass wool insulation at least 25mm thick with a density of at least 11kg/m³ laid over entire floor, including tops of joists before flooring is laid; and (iv) secured to battens at least 75mm x 50mm; and (v) the assembled flooring laid over the joists, but not fixed to them, with battens lying between the joists.
Entry Doors	35	Solid core timber not less than 45mm thick, fixed so as to overlap the frame or rebate of the frame by not less than 10mm, with full perimeter *acoustically rated seals*.
	33	Fixed so as to overlap the frame or rebate of the frame by not less than 10mm, fitted with full perimeter *acoustically rated seals* and constructed of - (i) solid core, wood, particleboard or blockboard not less than 45mm thick; and/or (ii) acoustically laminated glass not less than 10.38mm thick.

Component of building's *external envelope*	Minimum R_w	Acceptable forms of construction
	28	Fixed so as to overlap the frame or rebate of the frame, constructed of - (i) Wood, particleboard or blockboard not less than 33mm thick; or (ii) Compressed fibre reinforced sheeting not less than 9mm thick; or (iii) Other suitable material with a mass per unit area not less than 24.4kg/m²; or (iv) Solid core timber door not less than 35mm thick fitted with full perimeter *acoustically rated seals*.