



Noise Impact Assessment

Proposed Residential Subdivision

At 357 Ripley Road, Ripley

On behalf of HB Doncaster Pty Ltd

19BRA0109 R01_5



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Acoustics



Data



Traffic



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Revision Record

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Executive Summary

TTM conducted a noise impact assessment of a proposed residential subdivision located at 357 Ripley Road, Ripley. The assessment was based upon the State Development Assessment Provisions (SDAP) and Queensland Development Code (QDC) MP4.4.

Noise measurements were undertaken to establish the existing road traffic noise levels of Cunningham Highway and Ripley Road. Road traffic noise levels were assessed at the development considering a 10-year planning horizon and are predicted to comply with relevant SDAP outdoor passive recreation and external façade criteria (ground floor) with the inclusion of acoustic barriers along Cunningham Highway.

QDC MP4.4 Noise Categories were recommended for noise affected lots so that future dwellings are constructed to achieve the internal noise criteria of AS2107. The building treatment requirement ranges between QDC Noise Category 0 - 1 for ground floor and 0 – 3 for first floor levels.

A preliminary assessment of proposed future commercial use areas was included. Separation of commercial / community areas and residential areas is currently facilitated by the internal road network. Any required noise mitigation of expected future uses is anticipated to be able to be achieved by a noise assessment at the development application stage of these uses.

Compliance with road traffic noise requirements is predicted to be achieved based on the implementation of the recommendations outlined in Section 7 of this report.



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1 Introduction

1.1 Background

TTM was engaged by HB Doncaster Pty Ltd to undertake a noise impact assessment of the proposed residential subdivision at 357 Ripley Road, Ripley. This report will form part of the development application for consideration by State authorities.

1.2 References

This report is based on the following:

- City of Ipswich, *Information Request*, dated 15 January 2020
- City of Ipswich, *Information Request*, dated 27 April 2020
- City of Ipswich, *Information Request*, dated 28 April 2020
- State Development Assessment Provisions (SDAP) Version 2.6 – State Code 1
- Queensland Development Code (QDC) *MP4.4 – Buildings in a Transport Noise Corridor* (August 2015)
- Development plan shown in Appendix A.
- Site inspection, noise measurements, analysis and calculations conducted by TTM.

1.3 Scope

The assessment includes the following:

- Description of the site
- Measurement of existing road traffic noise levels
- Statement of assessment criteria relating to road traffic noise intrusion
- Assessment of road traffic noise onto the development
- Analysis of predicted noise levels
- Details of noise control recommendations to be incorporated to achieve predicted compliance.

2 Site Description

2.1 Site Location

The site is described by the following:

- Lot 2 on RP196150, Lot 1 on RP196152, Lot 2 on RP196154 & Lots 342 - 344 on S3173
- 255-331 Montereia Road and 311-395 Ripley Road, Ripley

The site locality is shown in Figure 1.

Figure 1: Site Locality



2.2 Description of Surrounding Area

The site is bound by Cunningham Highway to the north, Ripley Road to the east and Montereia Road to the south. The current acoustic environment at the site and surrounding area is primarily comprised of road traffic noise from the Cunningham Highway and a lower impact from Ripley Road.

3 Proposed Development

3.1 Development Description

The proposal is to subdivide the site into a mix of uses such as residential lots, park, open space, community facilities and neighbourhood centre. Access is proposed from Ripley Road and Monterey Road.

The development layout is shown in Figure 2. Other development plans are shown in Appendix A.

Figure 2: Proposed Development Plan



3.2 Future Commercial Uses

Details of proposed future commercial and/or community uses are preliminary only and currently consist of the potential for uses such as a supermarket, service station and fast food outlet(s). Separation of commercial / community areas and residential areas is currently facilitated by the internal road network. Any required noise mitigation of future uses is expected to be able to be achieved by a noise assessment at the development application stage of these uses. A noise assessment at that time can include determining best site layouts for each use within these zones and other noise mitigation measures that may be required. No further assessment should be required at this time.

4 Measurements

4.1 Equipment

The following equipment was used to measure existing noise levels:

- ARL EL316 environmental noise monitor (SN# 16-707-016)
- ARL EL316 environmental noise monitor (SN# 16-306-005)
- Norsonic Nor131 Sound Level Meter (SN# 1313158)
- RION Sound Calibrator type NC73 (SN# TTMNC73-01)

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 Unattended Noise Monitoring

Unattended noise monitoring was conducted to establish the existing road traffic noise levels between Wednesday 7th August and Friday 16th August 2019. The noise monitors were placed as shown in Figure 3. The monitors were approximately 15m from the nearest lane of the respective road. The microphones were approximately 1.4m above ground level.

Figure 3: Unattended Noise Monitoring Locations



The noise monitor was set to measure statistical noise levels in 'A'-weighting, 'Fast' response, over 1 hour intervals (Cunningham Highway) and 15 minute intervals (Ripley Road). Road traffic noise levels were measured in accordance with Australian Standard AS2702¹.

Weather during the monitoring period was generally fine with temperatures between 2-29°C (source: Bureau of Meteorology).

4.3 Results of Measurements

4.3.1 Road Traffic Noise Levels

Table 1 presents the measured road traffic noise levels at the unattended monitoring locations.

Table 1: Measured Road Traffic Noise Levels

Location	Road Traffic Noise Descriptor	Time Period	Measured Level, dB(A)
Cunningham Highway	LA10,18 hr	6am to midnight	71.4
	Noisiest day-time LAeq,1 hour	6am to 7am	71.0
	Noisiest night-time LAeq,1 hour	5am to 6am	69.0
	L90, 8 hour	10pm to 6am	43.2
	L90, 18 hour	6am to midnight	56.1
Ripley Road	LA10,18 hr	6am to midnight	63.5
	Noisiest day-time LAeq,1 hour	6am to 7am	63.6
	Noisiest night-time LAeq,1 hour	5am to 6am	59.2
	L90, 8 hour	10pm to 6am	42.4
	L90, 18 hour	6am to midnight	50.1

A breakdown of daily relevant L90 road traffic noise levels for the Cunningham Highway are provided in Table 2.

Table 2: Daily L90 Road Traffic Noise Levels for the Cunningham Highway

Date	LA90,8h dB(A)	LA90,18h dB(A)
8/07/2019	41.8	51.9
8/08/2019	41.5	56.1
8/09/2019	40.5	58.3
8/12/2019	42.0	54.4
13/08/2019	44.7	54.8

¹ Australian Standard AS2702:1984 *Acoustics – Methods for the measurement of road traffic noise*



14/08/2019	46.3	55.3
15/08/2019	45.8	55.9
Average	43.2	56.1

5 Noise Criteria

5.1 Road Traffic Noise

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

The site is also impacted from road traffic noise from Ripley Road (Council Road). The Ipswich City Council Planning Scheme (2006) does not reference specific road traffic noise criteria. Noise assessment in general is referenced against the Environmental Protection (Noise) Policy 2008 (EPP). The current EPP version is 2019. The EPP lists road traffic noise as an excluded noise source in relation to the Acoustic Quality Objectives.

Relevant road traffic noise criteria for dwelling internal sound levels is considered to be AS2107² internal design sound levels. A relevant and practical framework for presenting these results is the *Queensland Development Code MP4.4 Buildings in a Transport Noise Corridor* (QDC) and the noise category rating system to describe the noise impact levels. The QDC also provides dwelling façade treatment requirements which are based on achieving the internal sound levels of AS2107. The QDC prescribed treatments are typically found to be conservative when compared to using the AS3671³ methodology for determining façade treatment requirements to achieve the internal sound levels of AS2107.

The QDC noise category system is also beneficial at the development approval stage when future dwelling designs are not known in addition to being a clear and practical way of communicating noise impact levels to all various parties involved in the design and construction of dwellings. The Internal criteria for future dwelling design can be targeted to the mid-level of the AS2107 acceptable sound level range.

5.1.1 State Development Assessment Provisions

The State Development Assessment Provisions *State Code 1: Development in a state-controlled road environment* outlines the external and internal noise criteria for residential uses. The noise assessment requirements are summarised in Table 3 below.

Table 3: SDAP Noise Criteria – Road Traffic Noise

Performance Outcomes	Acceptable Outcomes
<p>PO23 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multimodal corridor in habitable rooms</p>	<p>AO23.1 A noise barrier or earth mound is provided which is designed, sited and constructed:</p> <ul style="list-style-type: none"> to meet the following external noise criteria at all facades of the building envelope: <ul style="list-style-type: none"> ≤60 dB(A) L₁₀ (18 hour) façade corrected (measured L₉₀ (8 hour) free field between 10pm and 6am ≤40 dB(A)) ≤63 dB(A) L₁₀ (18 hour) façade corrected (measured L₉₀ (8 hour) free field between 10pm and 6am >40 dB(A))

² AS2107:2016. Acoustics - Recommended design sound levels and reverberation times for building interiors

³ AS3671:1989 Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction

Performance Outcomes	Acceptable Outcomes
	<ul style="list-style-type: none"> 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. <p>OR all of the following acceptable outcomes apply:</p> <p>AO23.2 Buildings which include a habitable room are setback the maximum distance possible from a state controlled road.</p> <p>AND</p> <p>AO23.3 Buildings are designed and oriented so that habitable rooms are located furthest from a state controlled road.</p> <p>AND</p> <p>AO23.4 Buildings (other than a relevant residential building or relocated building) are designed and constructed using materials which ensure that habitable rooms meet the following internal noise criteria:</p> <ol style="list-style-type: none"> ≤35 dB(A) $L_{eq(1\text{ hour})}$ (maximum hour over 24 hours). <p>Habitable rooms of relevant residential buildings located within a transport noise corridor must comply with the Queensland Development Code MP4.4 Buildings in a transport noise corridor.</p>
<p>PO24 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multimodal corridor in outdoor spaces for passive recreation.</p>	<p>AO24.1 A noise barrier or earth mound is provided which is designed, sited and constructed:</p> <ol style="list-style-type: none"> To meet the following external noise criteria in outdoor spaces for passive recreation: <ol style="list-style-type: none"> ≤57 dB(A) $L_{10(18\text{ hour})}$ free field (measured $L_{90(18\text{ hour})}$ free field between 6am and 12 midnight ≤45 dB(A)) ≤60 dB(A) $L_{10(18\text{ hour})}$ free field (measured $L_{90(18\text{ hour})}$ free field between 6am and 12 midnight >45 dB(A)) 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. <p>OR</p> <p>AO24.2 Each dwelling has access to an outdoor space for passive recreation which is shielded from a state controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure</p> <p>AND</p> <p>AO24.3 Each dwelling with a balcony directly exposed to noise from a state-controlled road or type 1 multi-modal corridor has a continuous solid gap-free balustrade (other than gaps required for drainage purposes to comply with the Building Code of Australia).</p>

5.1.2 Queensland Development Code

The Queensland Development Code Part MP 4.4 - 'Buildings in a Transport Noise Corridor' (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 AS2107⁴. The triggers for each noise category are summarised in Table 4. Details regarding the noise categories and acceptable forms of construction can be found in Schedule 1 and 2 of the QDC.

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

Noise Category	Level of Transport Noise* $L_{A10, 18\text{Hour}}$ 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.

⁴ Australian Standard AS2107:2016 *Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors*

6 Road Traffic Noise Assessment

An assessment of road traffic noise onto the proposed development was conducted to determine the acoustic treatment requirements for predicted compliance with relevant criteria.

6.1 Assessment Criteria

Based on the measured noise levels detailed in Section 4.3.1 and the criteria outlined in Section 5.1.1, the following external road traffic noise criteria were utilised:

Cunningham Highway (SDAP external criteria)

- External façade: An external noise level of 63 dB(A) $L_{A10,18hr}$ façade corrected
- Outdoor passive recreation: An external noise level of 60 dB(A) $L_{A10,18hr}$ free-field

6.2 Traffic Volumes

Existing traffic volumes and growth rates for Cunningham Highway were obtained from the Department of Transport and Main Roads (DTMR). Ripley Road data was obtained from Bitzios traffic engineers.

Cunningham Highway and Ripley Road on ramp traffic volumes were obtained from TTM traffic engineers. The traffic volumes used in the noise model are presented in Table 5.

Table 5: Traffic Volumes used in the Noise Model

Road	Traffic Volumes (AADT)			Heavy Vehicles (%)	Avg. Growth Rate (%)
	2016	2019	2035		
Cunningham Highway (State-controlled)	n/a	20,582	35,689	16.4%	3.5%
Ripley Road (Council Road)	5,422	6,642	19,609	4.0%	7.0%^
Cunningham Highway - Ripley Road on-ramp	n/a	2,000	5,904	4.0%	7.0%^

^An initial growth rate of 10% with an average rate of 7% over the whole design horizon (2035) period as advised by TTM traffic engineers

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

6.3 Noise Model

6.3.1 Noise Modelling Parameters

Road traffic noise predictions were conducted using 'SoundPLAN v8.1', a CoRTN based modelling program. The basis of the 'SoundPLAN' model is as follows:

Table 6: Noise Modelling Parameters

Description	Value
Noise modelling standard	CoRTN
Grid spacing (noise maps)	2m
Road surface type	Stone Mastic Asphalt (-1dB(A))
CoRTN correction for QLD roads (Except Pacific Motorway at Logan Motorway to Nerang)	-0.7dB(A) (free-field) -1.7dB(A) (1m in front of building façade)
Ground contours	Natural ground contours of the surrounds and design contours of the site provided by Peak Urban Engineers (plan ref: 19-0070 SK200 Rev 1)
Cunningham Highway speed limit	100km/h
Ripley Road speed limit	60km/h
Noise source height above grade	0.5m
Residential floor heights	2.8m
Receiver heights	1.8m above ground level
Façade correction	+2.5dB(A)

6.3.2 Noise Model Verification

To verify the road traffic noise model, the $L_{A10, 18 \text{ Hour}}$ noise level was modelled and compared to the measured level presented in Section 4.3.1. The SoundPLAN prediction is shown in Appendix C.

Table 7: Comparison between measured and modelled road traffic noise level

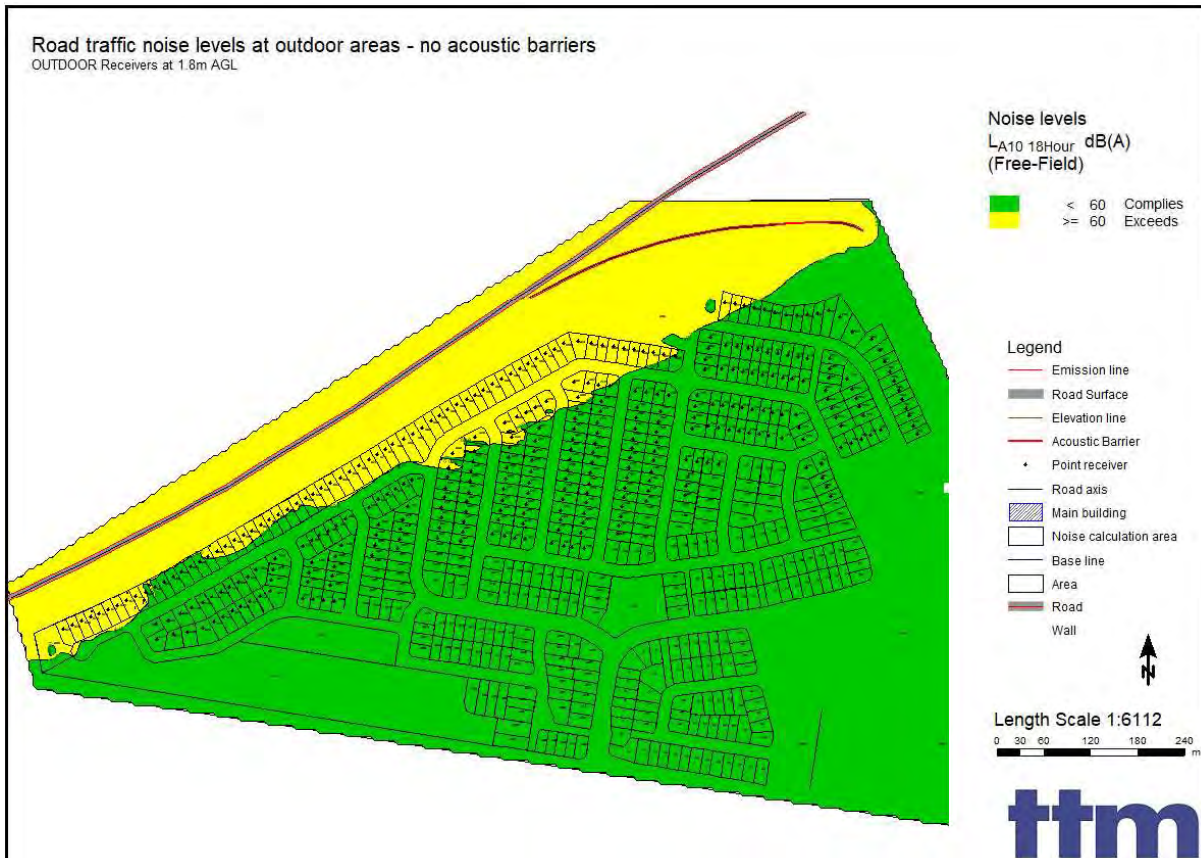
Logger Location	Measured $L_{A10, 18 \text{ Hour}}$	Predicted $L_{A10, 18 \text{ Hour}}$
Cunningham Highway	71.4	71.4
Ripley Road	63.5	63.5

Modelling is adjusted to ensure predicted levels are not less than measured levels

6.4 Predicted Road Traffic Noise Levels

Modelling was conducted to determine the road traffic noise levels at the development in the 10-year planning horizon after completion to 2035. Figure 4 presents the predicted road traffic noise levels compared to the SDAP outdoor passive recreation criteria for Cunningham Highway, to determine whether an acoustic barrier is necessary for the development.

Figure 4: Predicted Road Traffic Noise Levels Compared to SDAP Outdoor Criteria (Cunningham Highway) - No Acoustic Barriers



Noise modelling indicates that road traffic noise levels are predicted to exceed the outdoor passive recreation criteria for sections of the development without acoustic treatment. An acoustic barrier along the north western boundary is required.

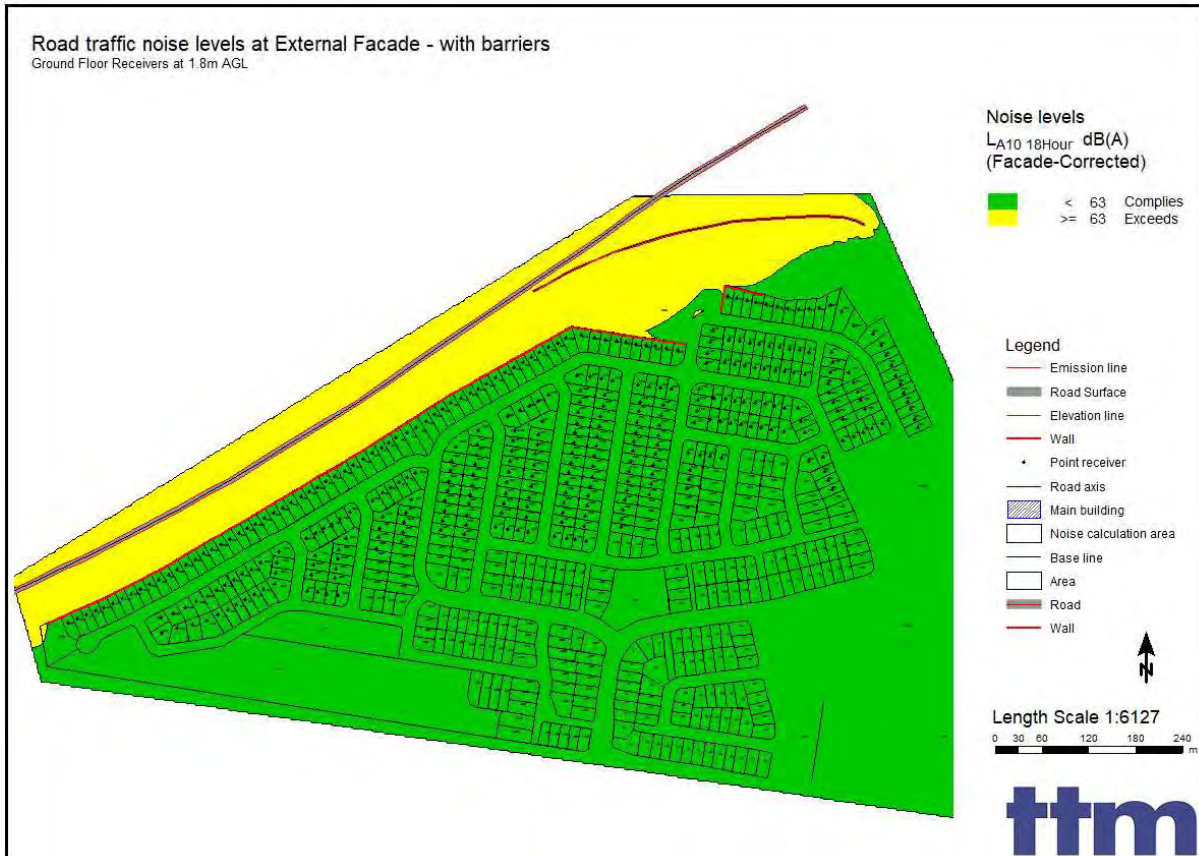
Noise modelling results, inclusive of recommended acoustic barriers, for SDAP outdoor passive recreation and external façade criteria for Cunningham Highway are shown in Figure 5 and Figure 6 respectively.

Details of the recommended acoustic barriers are provided in Section 7.

Figure 5: Predicted Road Traffic Noise Levels Compared to SDAP Outdoor Criteria (Cunningham Highway) – With Proposed Acoustic Barriers



Figure 6: Predicted Road Traffic Noise Levels Compared to SDAP External Façade Criteria (Cunningham Highway) – With Proposed Acoustic Barriers



With the inclusion of acoustic barriers, Cunningham Highway noise levels are predicted to comply with SDAP outdoor passive recreation and external façade criteria at ground floor level at all areas of all lots. Some lots exceed the SDAP external façade criteria at the first floor level particularly along the Cunningham Highway frontage. Single point receiver results and SDAP criteria comparison for each lot and floor level are included in Appendix C.

Based on inclusion of the recommended acoustic barriers, road traffic noise contours at ground and first floor levels are presented in the following Figures as free-field and façade corrected results. Façade corrected noise levels are presented as QDC Noise Categories for the purposes of presenting noise impact levels and determining acoustic building treatment requirements.

Figure 7: Predicted Road Traffic Noise Levels with Acoustic Barriers – Ground Floor (Free Field)

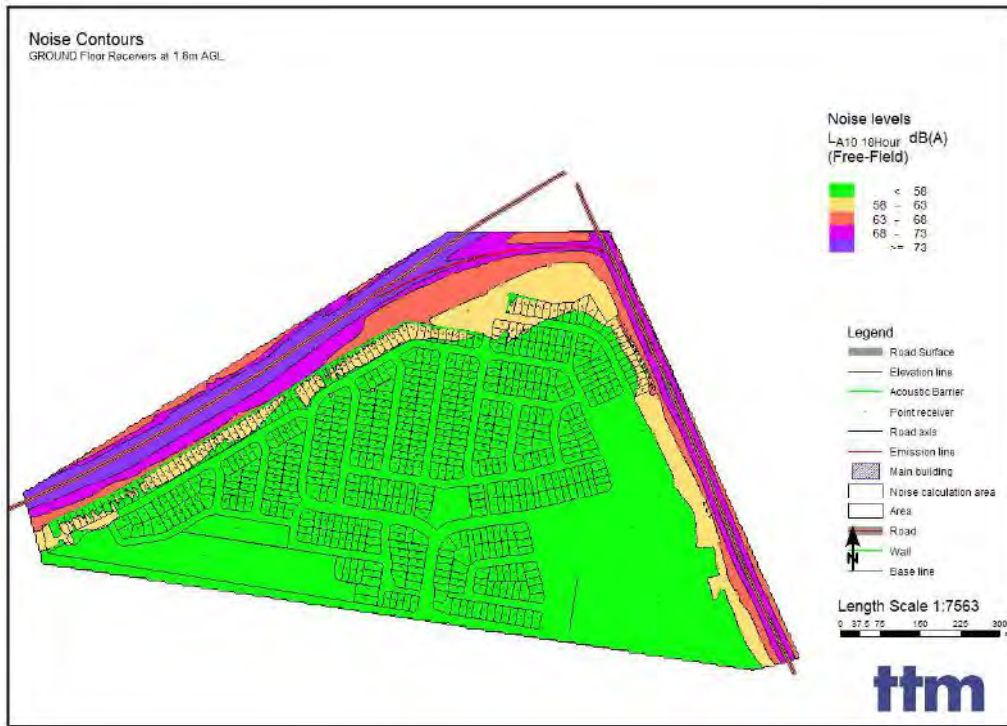


Figure 8: Predicted Road Traffic Noise Levels with Acoustic Barriers – First Floor (Free Field)

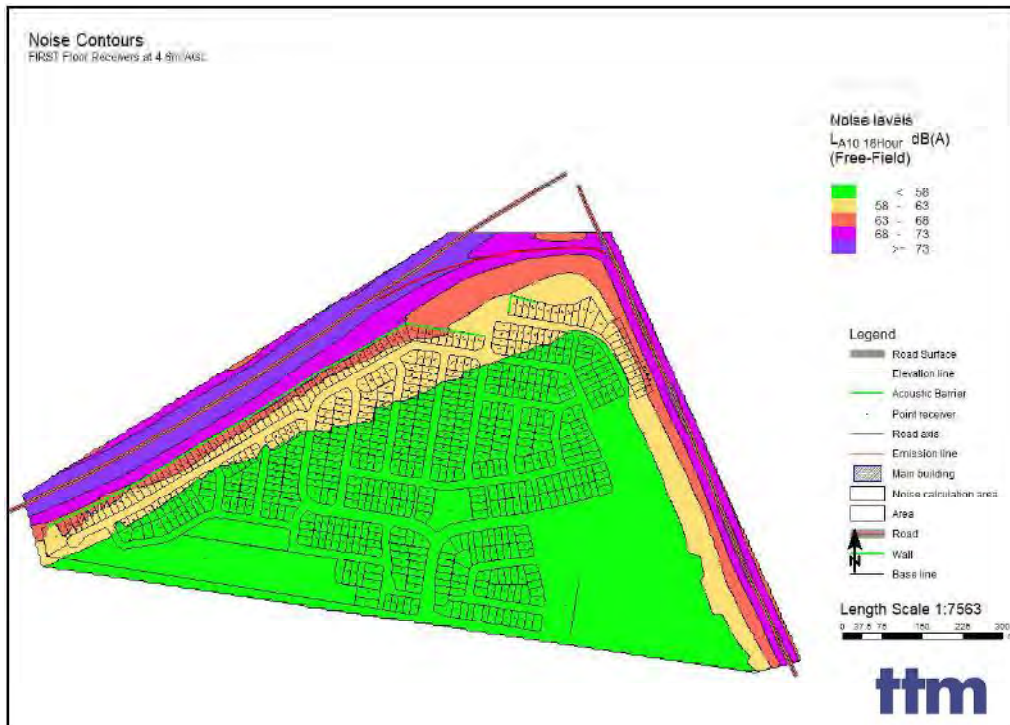
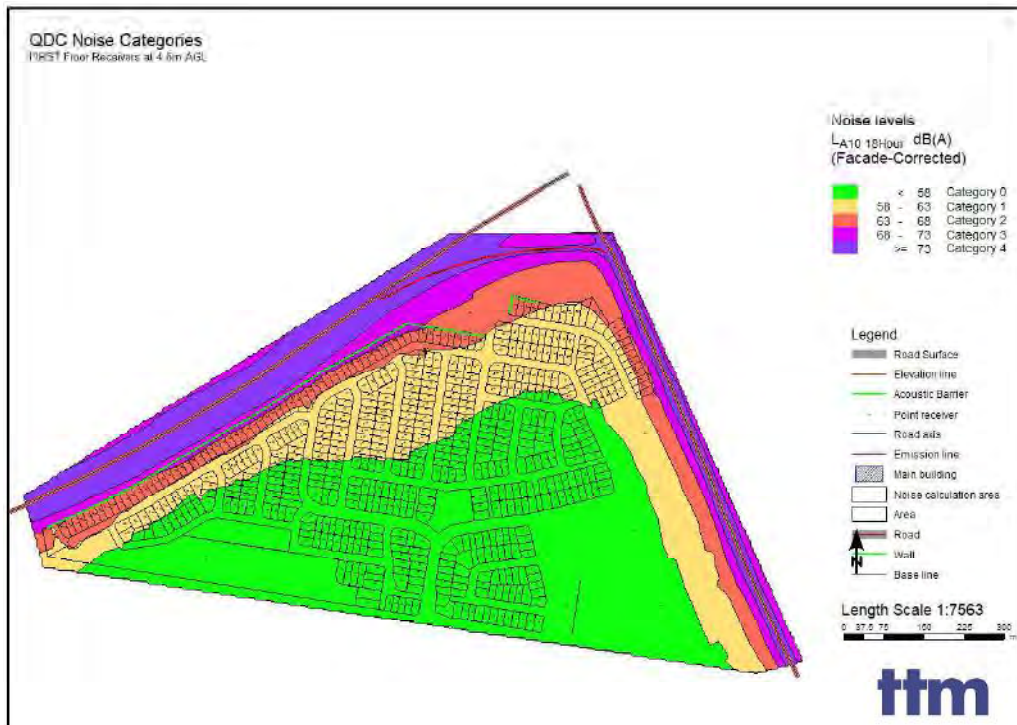


Figure 9: Predicted Road Traffic Noise Levels with Acoustic Barriers – Ground Floor (Façade Corrected)



Figure 10: Predicted Road Traffic Noise Levels with Acoustic Barriers – First Floor (Façade Corrected)





Based on the single point receiver results for each lot (Appendix C) and inclusive of the recommended acoustic barriers, the acoustic treatment requirements for future dwellings are QDC MP4.4 Noise Category 0-1 for Ground Floor and 0-3 for First Floor.

Details of dwelling construction requirements in accordance with the QDC, to provide compliance with AS2107 internal sound level criteria, are outlined in Section 7 for all lots.

7 Recommendations

Compliance is predicted to be achieved provided the recommendations detailed below are incorporated into the development.

7.1 Acoustic Barrier

An acoustic barrier is required to reduce road traffic noise levels at the private outdoor areas of noise affected lots. The location and extent of the acoustic barriers are shown in the following figures. Barrier recommendations are as follows:

- a. Be the minimum height relative to the finished lot pad level as specified in Figure 11 to Figure 13. AHD heights are provided in Appendix C.
- b. Constructed in accordance with the requirements of 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, and *Transport and Main Roads Specifications MRTS15 Noise Fences*.
- c. No gaps or holes should be evident in the barrier construction including at the base.
- d. The barrier should be constructed of a material with a surface mass not less than 15kg/m².
- e. Suitable materials may include earth mound, steel panels, fibre cement sheeting, plywood, glass, masonry, or a combination of materials.
- f. Note only: The future development approval conditions for the project may require the noise barrier design to be submitted to the Department of Transport and Main Roads for review and endorsement, prior to the commencement of construction. Timber may not be an accepted material by Department of Transport and Main Roads.

Figure 11: Recommended Acoustic Barriers – North-East Section

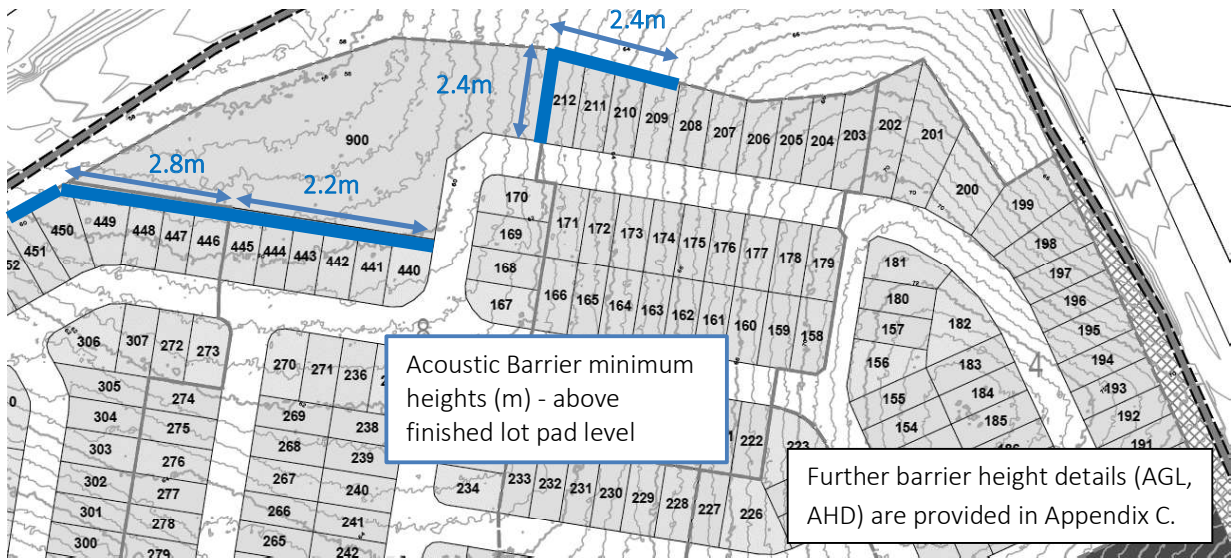


Figure 12: Recommended Acoustic Barriers – Central Section

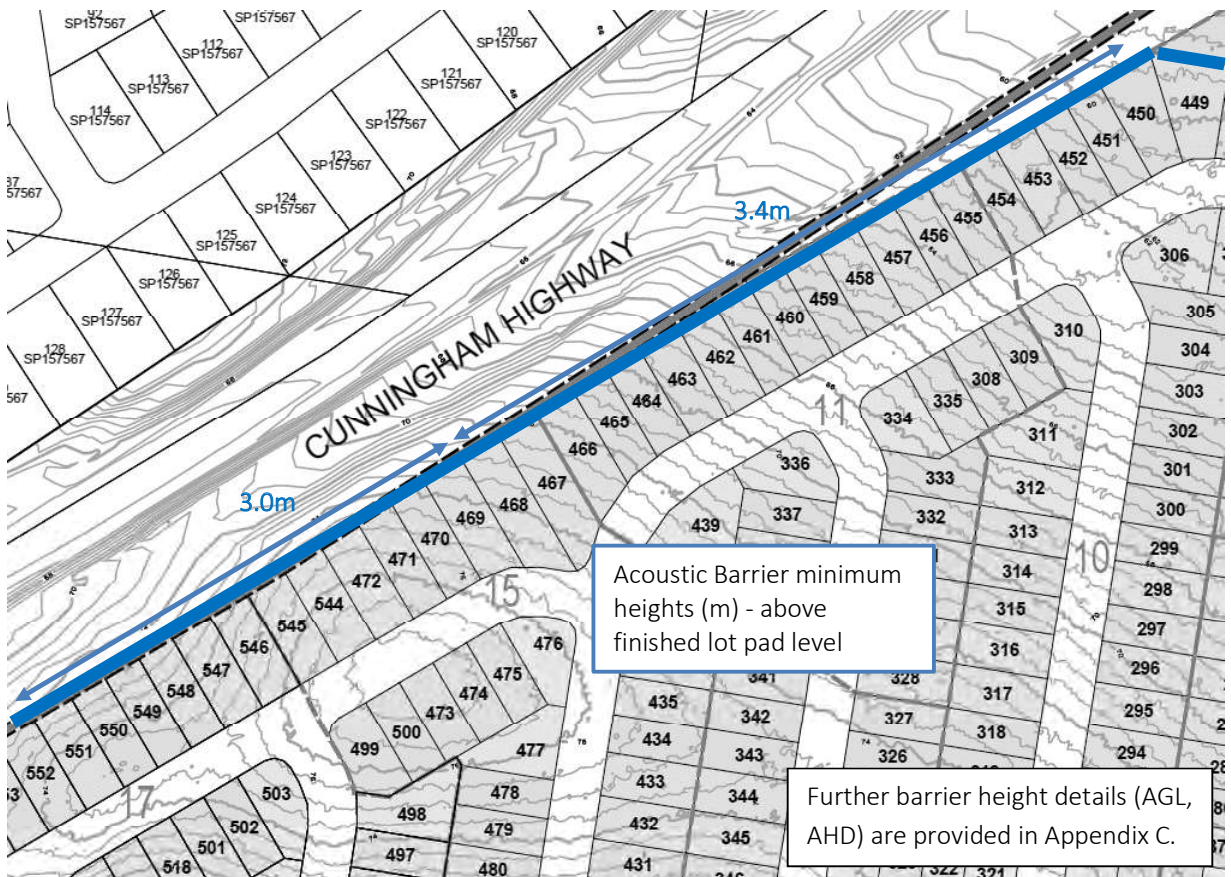
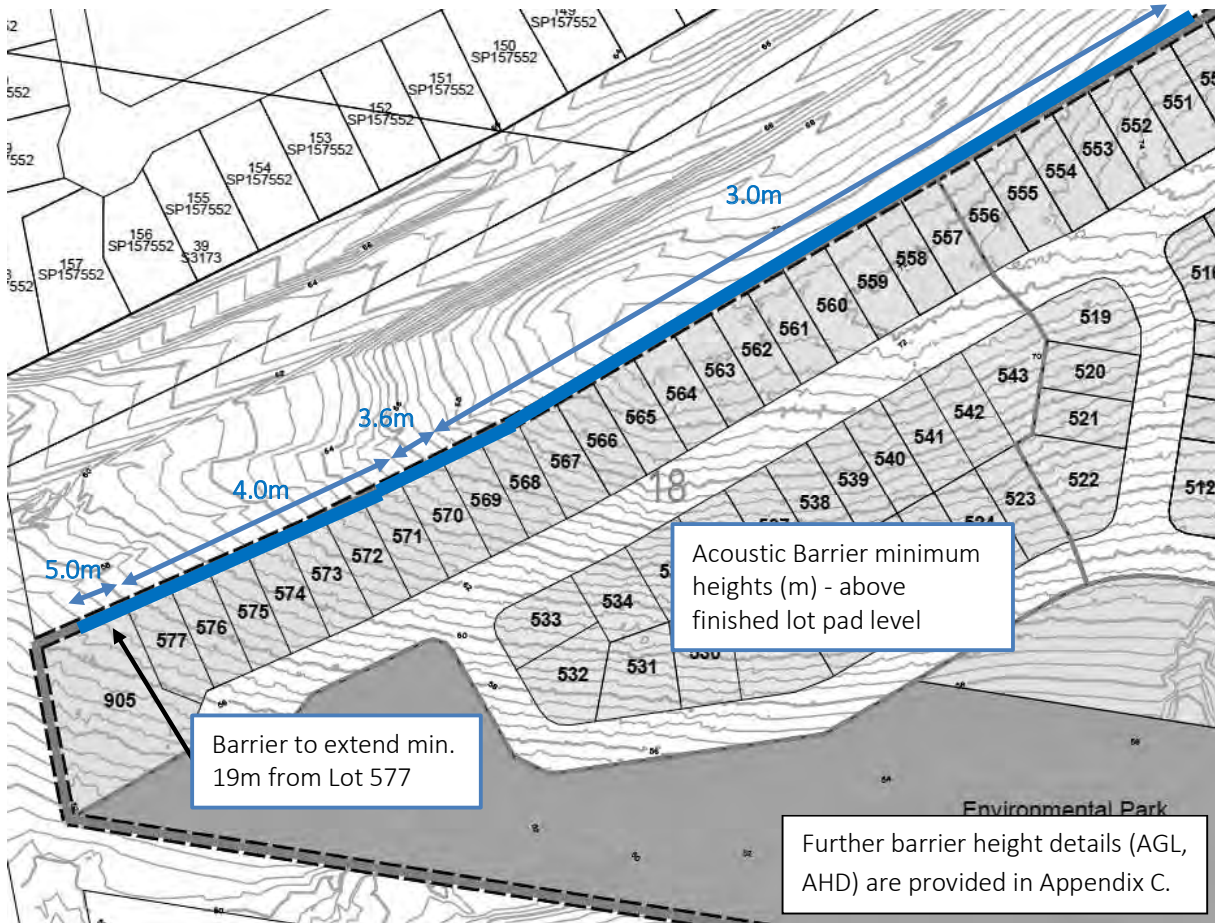


Figure 13: Recommended Acoustic Barriers – South Section



7.2 Dwelling Treatments

This section summarises the noise affected lots and associated acoustic treatment required for road traffic noise to achieve compliance with the Queensland Development Code (QDC) MP4.4 and AS2107 internal sound levels. For the purposes of the development application, the QDC provides a conservative design approach to the treatment of habitable rooms within dwellings.

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).

QDC Noise Categories applicable for all lots are listed in Appendix C.

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. QDC Schedule 1 is summarised in Table 8.

Table 8: 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 > 1.8m ² *	Glazing ≤ 1.8m ² *	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 D 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, we recommend an individual acoustic assessment be conducted (in accordance with AS3671 and AS2107) for each noise affected dwelling, once building plans are available, to optimise acoustic treatments for quality and cost savings. We would recommend this for QDC noise category 2 or higher.

8 Conclusion

A noise impact assessment was undertaken of the proposed residential subdivision located at 357 Ripley Road, Ripley. Compliance with the State Development Assessment Provisions criteria and Queensland Development Code (QDC) MP4.4 outlined in Section 5 is predicted to be achieved based on the implementation of the recommendations outlined in Section 7 of this report.



Appendix A Development Plans

NOT TO BE USED FOR ENGINEERING DESIGN
OR CONSTRUCTION

NOTES

This plan was prepared as a preliminary design for the proposed development. All dimensions and locations are approximate and subject to change without notice. The information on this plan is for information only and should not be used for any other purpose. The client is responsible for the accuracy and completeness of the information provided. The client is also responsible for the accuracy and completeness of the information provided. The client is also responsible for the accuracy and completeness of the information provided.

LEGEND

- Site Boundary
- Site Boundary (See Appendix)
- Major Control (250m setback)
- Stage Boundary
- Plot or Development Area
- Proposed Community Facility (See 1150m)
- Non-White Building Extension Zone
- Prohibited Construction

MASTER PLAN



RESIDENTIAL ALLOTMENTS	Lot No.	%
12.1 - 12.100	301	23.3%
12.2 - 12.200	174	20.2%
12.3 - 12.300	45	10.5%
Total All. All Lots	527	
Site Area	50,908 m ²	
Development Density	1.00%	0.4%
Nett Developmental Potential (Lot 100)	2077 m ²	3.0%
Local Council Plan (Lot 100)	5,100 m ²	8.1%
Community Facility (Lot 100)	4000 m ²	6.0%
Other Residential (Lot 100)	1,200 m ²	1.8%
Other Residential (Lot 100)	1,800 m ²	2.7%
Other Residential (Lot 100)	1,800 m ²	2.7%
Other Residential (Lot 100)	1,800 m ²	2.7%

RP DESCRIPTION: Lot 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



HB DONCASTER PTY LTD
255-331 MONTEREA ROAD & 311-395 RIPLEY ROAD, RIPLEY • 11/05/2020 • 07980 P 08 Rev K-PRO-01

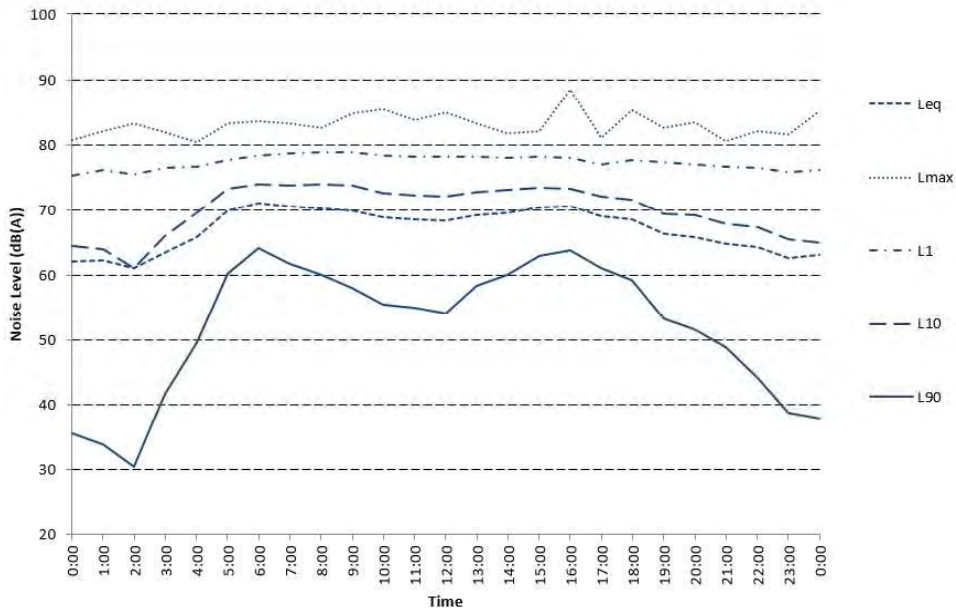




Appendix B Unattended Noise Monitoring Graphs

Cunningham Highway

Thursday, 08/08/2019



Friday, 09/08/2019



Monday, 12/08/2019



Tuesday, 13/08/2019



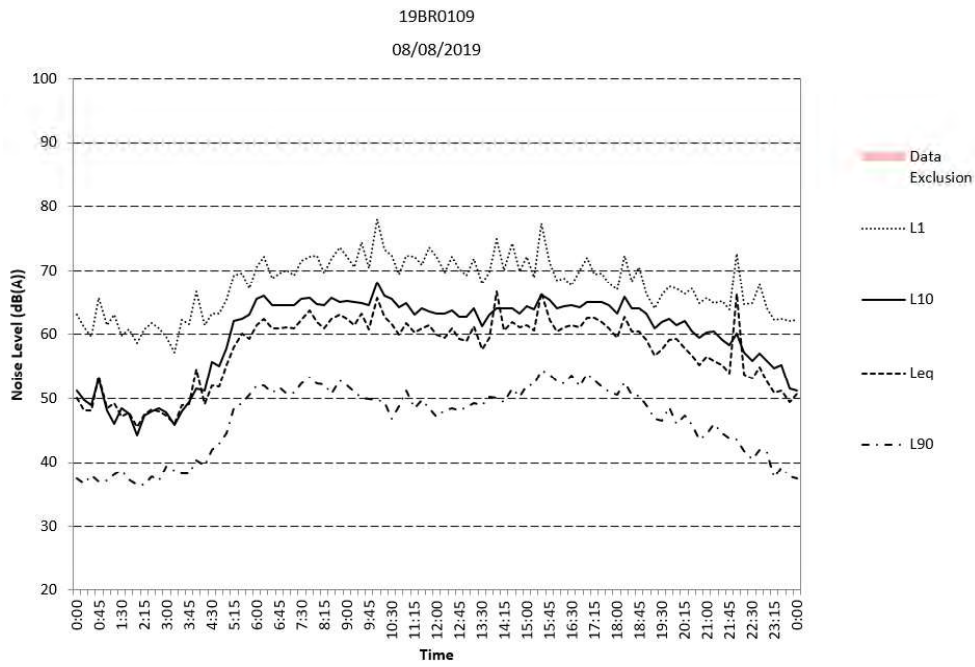
Wednesday, 14/08/2019



Thursday, 15/08/2019



Ripley Road



19BR0109
10/08/2019



19BR0109
11/08/2019



19BR0109
12/08/2019



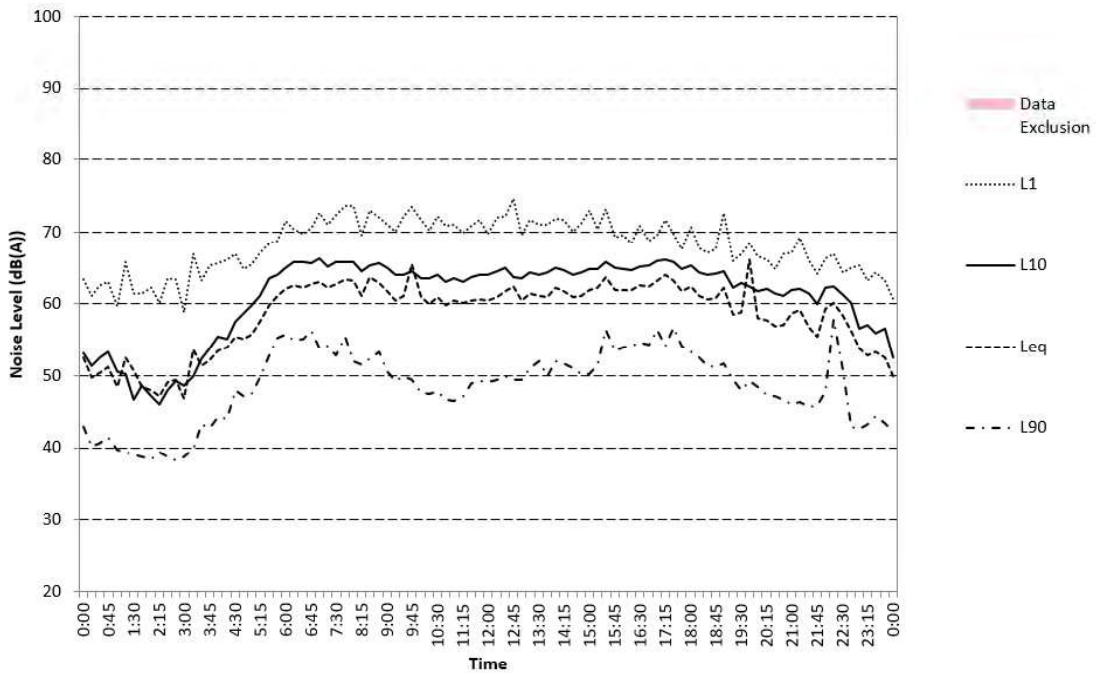
19BR0109
13/08/2019



19BR0109
14/08/2019



19BR0109
13/08/2019



19BR0109
14/08/2019



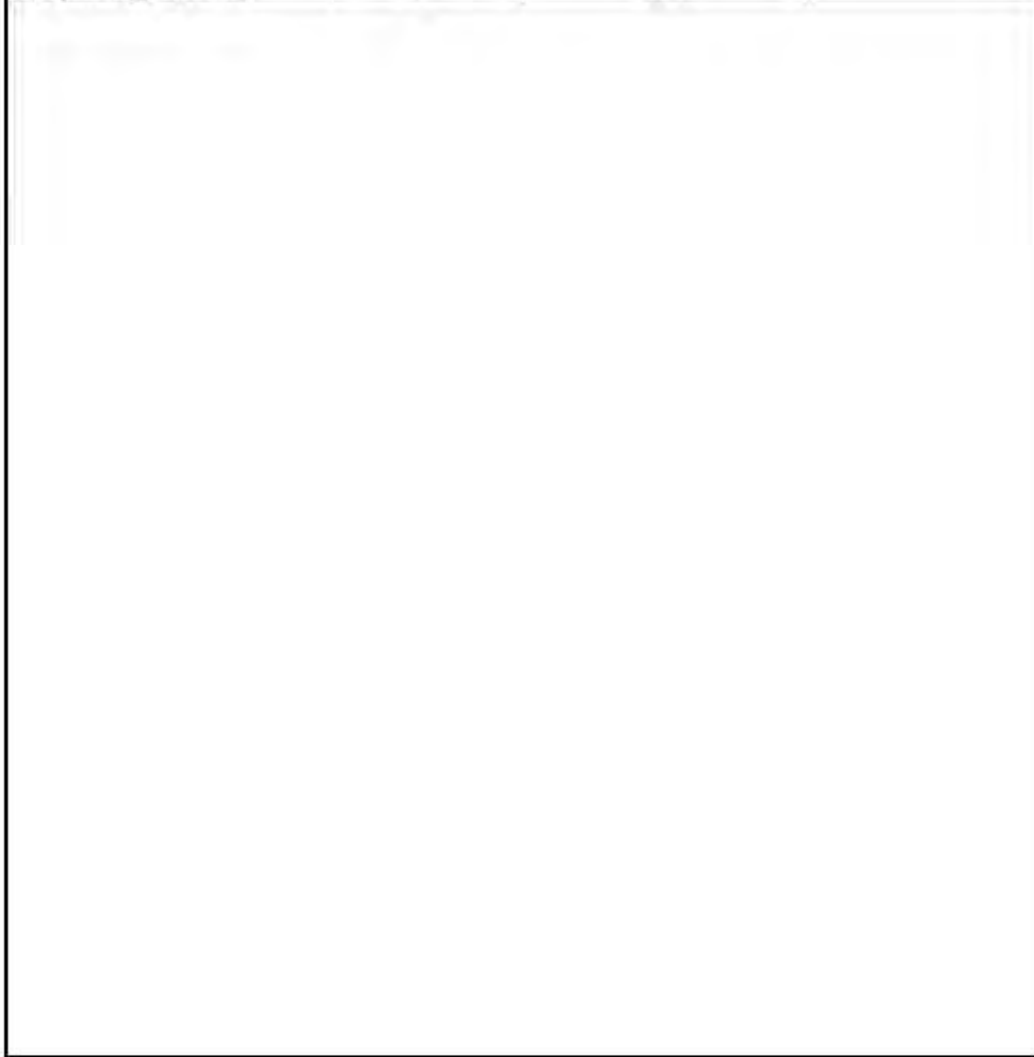
19BR0109
15/08/2019



Appendix C SoundPLAN Noise Modelling Outputs

357 Ripley Road, Ripley
RTN Assessment
Verification 2019

Receiver	FI	L10(18h) Free Field dB(A)	
Cunningham Hwy logger (71.4dB)	GF	71.4	
Ripley Rd Logger (63.5dB)	GF	63.5	



TTM Consulting Pty Ltd

SoundPLAN 8.1

19BRA0109 357 Ripley Road, Ripley
Assessed Receiver RTN Levels - Prediction 2035
SoundPlan v 8.1

Exceed criteria

			NO BARRIER		WITH ACOUSTIC BARRIER				
Receiver	Floor	Lot	L10(18h)		L10(18h)		Private Outdoor	External Façade	QDC
		Pad	Free field	Facade Corrected	Free field	Facade Corrected	Criteria	Criteria	Noise Category
		Level	dB(A)	dB(A)	dB(A)	dB(A)	60	63	
		m (AHD)					Free field	Façade corrected	
Lot 106	GF	66.71	54.1	56.6	53.6	56.1	ok	ok	0
Lot 106	F 1	66.71	55.3	57.8	54.6	57.1		ok	0
Lot 107	GF	66.21	54.3	56.8	53.8	56.3	ok	ok	0
Lot 107	F 1	66.21	55.5	58	54.8	57.3		ok	0
Lot 108	GF	65.71	54.5	57	54	56.5	ok	ok	0
Lot 108	F 1	65.71	55.8	58.3	55	57.5		ok	0
Lot 109	GF	64.52	54.8	57.3	54.2	56.7	ok	ok	0
Lot 109	F 1	64.52	56.1	58.6	55.3	57.8		ok	0
Lot 110	GF	64.52	54.5	57	54	56.5	ok	ok	0
Lot 110	F 1	64.52	55.8	58.3	55.1	57.6		ok	0
Lot 111	GF	64.72	54.4	56.9	53.8	56.3	ok	ok	0
Lot 111	F 1	64.72	55.7	58.2	55	57.5		ok	0
Lot 112	GF	64.72	54.2	56.7	53.6	56.1	ok	ok	0
Lot 112	F 1	64.72	55.4	57.9	54.7	57.2		ok	0
Lot 141	GF	69.37	54.4	56.9	54	56.5	ok	ok	0
Lot 141	F 1	69.37	55.2	57.7	54.8	57.3		ok	0
Lot 142	GF	69.89	54.5	57	54.2	56.7	ok	ok	0
Lot 142	F 1	69.89	55.4	57.9	55.1	57.6		ok	0
Lot 143	GF	68.9	54	56.5	53.6	56.1	ok	ok	0
Lot 143	F 1	68.9	55	57.5	54.6	57.1		ok	0
Lot 144	GF	68.09	53.7	56.2	53.3	55.8	ok	ok	0
Lot 144	F 1	68.09	54.7	57.2	54.5	57		ok	0
Lot 145	GF	66.89	53.1	55.6	52.9	55.4	ok	ok	0
Lot 145	F 1	66.89	54.4	56.9	54.1	56.6		ok	0
Lot 149	GF	68.97	55.1	57.6	54.8	57.3	ok	ok	0
Lot 149	F 1	68.97	56.2	58.7	56	58.5		ok	1
Lot 150	GF	69.07	54.9	57.4	54.5	57	ok	ok	0
Lot 150	F 1	69.07	55.8	58.3	55.6	58.1		ok	1
Lot 151	GF	69.16	54.6	57.1	54.3	56.8	ok	ok	0
Lot 151	F 1	69.16	55.6	58.1	55.3	57.8		ok	0
Lot 152	GF	70.64	55.4	57.9	55.1	57.6	ok	ok	0



Lot 152	F 1	70.64	56.6	59.1	56.4	58.9		ok	1
Lot 153	GF	70.62	55.5	58	55.2	57.7	ok	ok	0
Lot 153	F 1	70.62	56.8	59.3	56.6	59.1		ok	1
Lot 154	GF	70.32	55.5	58	55.2	57.7	ok	ok	0
Lot 154	F 1	70.32	56.9	59.4	56.7	59.2		ok	1
Lot 155	GF	69.83	55.5	58	55.3	57.8	ok	ok	0
Lot 155	F 1	69.83	57	59.5	56.8	59.3		ok	1
Lot 156	GF	69.48	55.7	58.2	55.4	57.9	ok	ok	0
Lot 156	F 1	69.48	57.2	59.7	57	59.5		ok	1
Lot 157	GF	68.7	55.8	58.3	55.5	58	ok	ok	1
Lot 157	F 1	68.7	57.3	59.8	57.2	59.7		ok	1
Lot 158	GF	68.01	55.8	58.3	55.5	58	ok	ok	1
Lot 158	F 1	68.01	57.1	59.6	56.8	59.3		ok	1
Lot 159	GF	68.32	56.3	58.8	56.1	58.6	ok	ok	1
Lot 159	F 1	68.32	57.5	60	57.3	59.8		ok	1
Lot 160	GF	67.71	56.5	59	56.2	58.7	ok	ok	1
Lot 160	F 1	67.71	57.6	60.1	57.4	59.9		ok	1
Lot 161	GF	67.01	56.7	59.2	56.3	58.8	ok	ok	1
Lot 161	F 1	67.01	57.7	60.2	57.5	60		ok	1
Lot 162	GF	66.31	56.9	59.4	56.6	59.1	ok	ok	1
Lot 162	F 1	66.31	58	60.5	57.6	60.1		ok	1
Lot 163	GF	65.7	57.2	59.7	56.8	59.3	ok	ok	1
Lot 163	F 1	65.7	58.2	60.7	57.9	60.4		ok	1
Lot 164	GF	65	57.4	59.9	57	59.5	ok	ok	1
Lot 164	F 1	65	58.4	60.9	58.1	60.6		ok	1
Lot 165	GF	64.5	57.8	60.3	57.3	59.8	ok	ok	1
Lot 165	F 1	64.5	58.8	61.3	58.4	60.9		ok	1
Lot 166	GF	63.51	58	60.5	57.5	60	ok	ok	1
Lot 166	F 1	63.51	59	61.5	58.7	61.2		ok	1
Lot 167	GF	61.81	57.9	60.4	57.2	59.7	ok	ok	1
Lot 167	F 1	61.81	59.1	61.6	58.7	61.2		ok	1
Lot 168	GF	61.5	58.3	60.8	57.8	60.3	ok	ok	1
Lot 168	F 1	61.5	59.5	62	59.2	61.7		ok	1
Lot 169	GF	61.11	58.6	61.1	58.3	60.8	ok	ok	1
Lot 169	F 1	61.11	59.9	62.4	59.6	62.1		ok	1
Lot 170	GF	61.11	59.2	61.7	58.9	61.4	ok	ok	1
Lot 170	F 1	61.11	60.5	63	60.2	62.7		ok	1
Lot 171	GF	63.03	58.8	61.3	58.4	60.9	ok	ok	1
Lot 171	F 1	63.03	59.9	62.4	59.6	62.1		ok	1
Lot 172	GF	64.02	58.5	61	58.1	60.6	ok	ok	1
Lot 172	F 1	64.02	59.6	62.1	59.3	61.8		ok	1



Lot 173	GF	65.03	58.3	60.8	57.9	60.4	ok	ok	1
Lot 173	F 1	65.03	59.3	61.8	59	61.5		ok	1
Lot 174	GF	65.73	58	60.5	57.6	60.1	ok	ok	1
Lot 174	F 1	65.73	59	61.5	58.8	61.3		ok	1
Lot 175	GF	66.34	57.6	60.1	57.4	59.9	ok	ok	1
Lot 175	F 1	66.34	58.7	61.2	58.5	61		ok	1
Lot 176	GF	67.02	57.4	59.9	57.1	59.6	ok	ok	1
Lot 176	F 1	67.02	58.5	61	58.3	60.8		ok	1
Lot 177	GF	67.43	57.1	59.6	56.8	59.3	ok	ok	1
Lot 177	F 1	67.43	58.2	60.7	58.1	60.6		ok	1
Lot 178	GF	67.62	56.7	59.2	56.5	59	ok	ok	1
Lot 178	F 1	67.62	58	60.5	57.8	60.3		ok	1
Lot 179	GF	67.3	56.2	58.7	56	58.5	ok	ok	1
Lot 179	F 1	67.3	57.6	60.1	57.4	59.9		ok	1
Lot 180	GF	68.08	55.8	58.3	55.6	58.1	ok	ok	1
Lot 180	F 1	68.08	57.4	59.9	57.3	59.8		ok	1
Lot 181	GF	67.87	56.1	58.6	56	58.5	ok	ok	1
Lot 181	F 1	67.87	57.8	60.3	57.6	60.1		ok	1
Lot 182	GF	68.24	55.6	58.1	55.3	57.8	ok	ok	0
Lot 182	F 1	68.24	57.3	59.8	57.1	59.6		ok	1
Lot 183	GF	68.34	55.4	57.9	55.2	57.7	ok	ok	0
Lot 183	F 1	68.34	57	59.5	56.9	59.4		ok	1
Lot 184	GF	68.35	55.3	57.8	55	57.5	ok	ok	0
Lot 184	F 1	68.35	56.8	59.3	56.6	59.1		ok	1
Lot 185	GF	68.46	55.1	57.6	54.8	57.3	ok	ok	0
Lot 185	F 1	68.46	56.6	59.1	56.5	59		ok	1
Lot 186	GF	68.56	55	57.5	54.8	57.3	ok	ok	0
Lot 186	F 1	68.56	56.5	59	56.4	58.9		ok	1
Lot 187	GF	68.76	55.8	58.3	55.6	58.1	ok	ok	1
Lot 187	F 1	68.76	57.2	59.7	57.1	59.6		ok	1
Lot 188	GF	68.87	55.4	57.9	55.1	57.6	ok	ok	0
Lot 188	F 1	68.87	56.6	59.1	56.5	59		ok	1
Lot 189	GF	68.35	59.5	62	59.5	62	ok	ok	1
Lot 189	F 1	68.35	61.9	64.4	61.8	64.3		Exceed	2
Lot 190	GF	68.35	58.5	61	58.5	61	ok	ok	1
Lot 190	F 1	68.35	61.4	63.9	61.4	63.9		Exceed	2
Lot 191	GF	68.35	57.8	60.3	57.7	60.2	ok	ok	1
Lot 191	F 1	68.35	61.1	63.6	61	63.5		Exceed	2
Lot 192	GF	68.35	57.6	60.1	57.4	59.9	ok	ok	1
Lot 192	F 1	68.35	61	63.5	61	63.5		Exceed	2
Lot 193	GF	68.27	57.6	60.1	57.4	59.9	ok	ok	1

Lot 193	F 1	68.27	61	63.5	61	63.5		Exceed	2
Lot 194	GF	68.16	58	60.5	57.9	60.4	ok	ok	1
Lot 194	F 1	68.16	61.2	63.7	61.2	63.7		Exceed	2
Lot 195	GF	68.06	58.4	60.9	58.3	60.8	ok	ok	1
Lot 195	F 1	68.06	61.3	63.8	61.3	63.8		Exceed	2
Lot 196	GF	67.95	58.6	61.1	58.6	61.1	ok	ok	1
Lot 196	F 1	67.95	61.4	63.9	61.4	63.9		Exceed	2
Lot 197	GF	67.86	58.7	61.2	58.6	61.1	ok	ok	1
Lot 197	F 1	67.86	61.7	64.2	61.6	64.1		Exceed	2
Lot 198	GF	67.89	58.8	61.3	58.7	61.2	ok	ok	1
Lot 198	F 1	67.89	61.9	64.4	61.8	64.3		Exceed	2
Lot 199	GF	67.81	58.1	60.6	58	60.5	ok	ok	1
Lot 199	F 1	67.81	61.6	64.1	61.5	64		Exceed	2
Lot 200	GF	67.74	58.1	60.6	58	60.5	ok	ok	1
Lot 200	F 1	67.74	60	62.5	59.9	62.4		ok	1
Lot 201	GF	67.71	58.6	61.1	58.5	61	ok	ok	1
Lot 201	F 1	67.71	60.2	62.7	60.1	62.6		ok	1
Lot 202	GF	67.79	58.7	61.2	58.6	61.1	ok	ok	1
Lot 202	F 1	67.79	60.2	62.7	60.1	62.6		ok	1
Lot 203	GF	67.63	58.4	60.9	58.3	60.8	ok	ok	1
Lot 203	F 1	67.63	59.8	62.3	59.7	62.2		ok	1
Lot 204	GF	67.49	58.4	60.9	58.3	60.8	ok	ok	1
Lot 204	F 1	67.49	59.7	62.2	59.6	62.1		ok	1
Lot 205	GF	67.37	58.6	61.1	58.4	60.9	ok	ok	1
Lot 205	F 1	67.37	59.8	62.3	59.7	62.2		ok	1
Lot 206	GF	67.05	58.9	61.4	58.8	61.3	ok	ok	1
Lot 206	F 1	67.05	60	62.5	60	62.5		ok	1
Lot 207	GF	66.56	59.3	61.8	59.1	61.6	ok	ok	1
Lot 207	F 1	66.56	60.4	62.9	60.3	62.8		ok	1
Lot 208	GF	65.67	59.5	62	59	61.5	ok	ok	1
Lot 208	F 1	65.67	60.6	63.1	60.6	63.1		ok	2
Lot 209	GF	65.18	60	62.5	59.1	61.6	ok	ok	1
Lot 209	F 1	65.18	61.1	63.6	61	63.5		Exceed	2
Lot 210	GF	64.18	60.3	62.8	59.3	61.8	ok	ok	1
Lot 210	F 1	64.18	61.4	63.9	61.3	63.8		Exceed	2
Lot 211	GF	63.19	60.5	63	59.4	61.9	ok	ok	1
Lot 211	F 1	63.19	61.7	64.2	61.6	64.1		Exceed	2
Lot 212	GF	62.39	60.9	63.4	57.9	60.4	ok	ok	1
Lot 212	F 1	62.39	62.1	64.6	62	64.5		Exceed	2
Lot 213	GF	63.07	56.7	59.2	55.9	58.4	ok	ok	1
Lot 213	F 1	63.07	57.9	60.4	57.3	59.8		ok	1



Lot 214	GF	62.76	57.2	59.7	56.3	58.8	ok	ok	1
Lot 214	F 1	62.76	58.3	60.8	57.8	60.3		ok	1
Lot 215	GF	63.53	56.6	59.1	55.9	58.4	ok	ok	1
Lot 215	F 1	63.53	57.7	60.2	57.1	59.6		ok	1
Lot 216	GF	64.33	56.5	59	55.8	58.3	ok	ok	1
Lot 216	F 1	64.33	57.5	60	57	59.5		ok	1
Lot 217	GF	64.73	56.2	58.7	55.6	58.1	ok	ok	1
Lot 217	F 1	64.73	57.2	59.7	56.7	59.2		ok	1
Lot 218	GF	65.52	56.2	58.7	55.6	58.1	ok	ok	1
Lot 218	F 1	65.52	57.1	59.6	56.6	59.1		ok	1
Lot 219	GF	66.02	55.9	58.4	55.4	57.9	ok	ok	0
Lot 219	F 1	66.02	56.8	59.3	56.4	58.9		ok	1
Lot 220	GF	66.71	55.7	58.2	55.2	57.7	ok	ok	0
Lot 220	F 1	66.71	56.7	59.2	56.3	58.8		ok	1
Lot 221	GF	67.33	55.5	58	55.1	57.6	ok	ok	0
Lot 221	F 1	67.33	56.5	59	56.2	58.7		ok	1
Lot 222	GF	68.03	55.4	57.9	55	57.5	ok	ok	0
Lot 222	F 1	68.03	56.5	59	56.1	58.6		ok	1
Lot 223	GF	69.26	55.5	58	55.1	57.6	ok	ok	0
Lot 223	F 1	69.26	56.6	59.1	56.3	58.8		ok	1
Lot 224	GF	70.32	55.4	57.9	55.1	57.6	ok	ok	0
Lot 224	F 1	70.32	56.5	59	56.2	58.7		ok	1
Lot 225	GF	70.53	55.1	57.6	54.8	57.3	ok	ok	0
Lot 225	F 1	70.53	56.2	58.7	55.9	58.4		ok	1
Lot 226	GF	68	54.7	57.2	54.3	56.8	ok	ok	0
Lot 226	F 1	68	55.8	58.3	55.3	57.8		ok	0
Lot 227	GF	67.01	54.9	57.4	54.3	56.8	ok	ok	0
Lot 227	F 1	67.01	55.8	58.3	55.4	57.9		ok	0
Lot 228	GF	66.21	54.9	57.4	54.3	56.8	ok	ok	0
Lot 228	F 1	66.21	55.8	58.3	55.4	57.9		ok	0
Lot 229	GF	65.5	54.9	57.4	54.4	56.9	ok	ok	0
Lot 229	F 1	65.5	55.9	58.4	55.5	58		ok	1
Lot 230	GF	64.91	55	57.5	54.4	56.9	ok	ok	0
Lot 230	F 1	64.91	56.1	58.6	55.6	58.1		ok	1
Lot 231	GF	64.7	55.4	57.9	54.7	57.2	ok	ok	0
Lot 231	F 1	64.7	56.4	58.9	55.9	58.4		ok	1
Lot 232	GF	64.5	55.6	58.1	55	57.5	ok	ok	0
Lot 232	F 1	64.5	56.7	59.2	56.1	58.6		ok	1
Lot 233	GF	64.31	55.9	58.4	55.2	57.7	ok	ok	0
Lot 233	F 1	64.31	57	59.5	56.4	58.9		ok	1
Lot 234	GF	63.66	55.9	58.4	55.1	57.6	ok	ok	0



Lot 234	F 1	63.66	57.1	59.6	56.4	58.9		ok	1
Lot 235	GF	63.37	56.3	58.8	55.5	58	ok	ok	1
Lot 235	F 1	63.37	57.5	60	56.8	59.3		ok	1
Lot 236	GF	62.22	58	60.5	56.3	58.8	ok	ok	1
Lot 236	F 1	62.22	59.3	61.8	58.4	60.9		ok	1
Lot 237	GF	62.22	57.6	60.1	56.2	58.7	ok	ok	1
Lot 237	F 1	62.22	58.9	61.4	58.2	60.7		ok	1
Lot 238	GF	63.33	57.4	59.9	56.2	58.7	ok	ok	1
Lot 238	F 1	63.33	58.6	61.1	57.8	60.3		ok	1
Lot 239	GF	63.73	56.9	59.4	55.9	58.4	ok	ok	1
Lot 239	F 1	63.73	58.2	60.7	57.3	59.8		ok	1
Lot 240	GF	64.24	56.6	59.1	55.6	58.1	ok	ok	1
Lot 240	F 1	64.24	57.9	60.4	57	59.5		ok	1
Lot 241	GF	64.63	56.2	58.7	55.4	57.9	ok	ok	0
Lot 241	F 1	64.63	57.5	60	56.6	59.1		ok	1
Lot 242	GF	65.13	55.9	58.4	55.1	57.6	ok	ok	0
Lot 242	F 1	65.13	57.2	59.7	56.3	58.8		ok	1
Lot 243	GF	65.53	55.6	58.1	54.9	57.4	ok	ok	0
Lot 243	F 1	65.53	56.8	59.3	56	58.5		ok	1
Lot 244	GF	65.93	55.2	57.7	54.6	57.1	ok	ok	0
Lot 244	F 1	65.93	56.5	59	55.6	58.1		ok	1
Lot 245	GF	66.53	55	57.5	54.4	56.9	ok	ok	0
Lot 245	F 1	66.53	56.2	58.7	55.4	57.9		ok	0
Lot 246	GF	67.13	54.7	57.2	54.2	56.7	ok	ok	0
Lot 246	F 1	67.13	55.9	58.4	55.2	57.7		ok	0
Lot 247	GF	67.83	54.5	57	54	56.5	ok	ok	0
Lot 247	F 1	67.83	55.7	58.2	55	57.5		ok	0
Lot 256	GF	71.81	54.6	57.1	54	56.5	ok	ok	0
Lot 256	F 1	71.81	55.6	58.1	54.8	57.3		ok	0
Lot 257	GF	71.1	54.7	57.2	54.1	56.6	ok	ok	0
Lot 257	F 1	71.1	55.7	58.2	54.9	57.4		ok	0
Lot 258	GF	70.4	54.9	57.4	54.3	56.8	ok	ok	0
Lot 258	F 1	70.4	56	58.5	55.1	57.6		ok	0
Lot 259	GF	69.7	55.2	57.7	54.5	57	ok	ok	0
Lot 259	F 1	69.7	56.2	58.7	55.3	57.8		ok	0
Lot 260	GF	69.7	55.6	58.1	54.9	57.4	ok	ok	0
Lot 260	F 1	69.7	56.6	59.1	55.8	58.3		ok	1
Lot 261	GF	68.9	55.8	58.3	55	57.5	ok	ok	0
Lot 261	F 1	68.9	56.8	59.3	55.9	58.4		ok	1
Lot 262	GF	68.3	56.1	58.6	55.2	57.7	ok	ok	0
Lot 262	F 1	68.3	57.1	59.6	56.2	58.7		ok	1



Lot 263	GF	67.51	56.4	58.9	55.4	57.9	ok	ok	0
Lot 263	F 1	67.51	57.4	59.9	56.5	59		ok	1
Lot 264	GF	66.8	56.6	59.1	55.6	58.1	ok	ok	1
Lot 264	F 1	66.8	57.7	60.2	56.8	59.3		ok	1
Lot 265	GF	66.11	56.9	59.4	55.8	58.3	ok	ok	1
Lot 265	F 1	66.11	58	60.5	57.1	59.6		ok	1
Lot 266	GF	65.41	57.2	59.7	56	58.5	ok	ok	1
Lot 266	F 1	65.41	58.3	60.8	57.3	59.8		ok	1
Lot 267	GF	64.6	57.4	59.9	56.1	58.6	ok	ok	1
Lot 267	F 1	64.6	58.6	61.1	57.6	60.1		ok	1
Lot 268	GF	63.9	57.7	60.2	56.2	58.7	ok	ok	1
Lot 268	F 1	63.9	58.9	61.4	57.9	60.4		ok	1
Lot 269	GF	63.51	58.2	60.7	56.5	59	ok	ok	1
Lot 269	F 1	63.51	59.4	61.9	58.4	60.9		ok	1
Lot 270	GF	62.44	58.8	61.3	56.7	59.2	ok	ok	1
Lot 270	F 1	62.44	60.1	62.6	59	61.5		ok	1
Lot 271	GF	62.32	58.4	60.9	56.5	59	ok	ok	1
Lot 271	F 1	62.32	59.7	62.2	58.7	61.2		ok	1
Lot 272	GF	62.62	60.2	62.7	57	59.5	ok	ok	1
Lot 272	F 1	62.62	61.6	64.1	59.7	62.2		ok	1
Lot 273	GF	62.62	59.8	62.3	57	59.5	ok	ok	1
Lot 273	F 1	62.62	61.2	63.7	59.6	62.1		ok	1
Lot 274	GF	63.34	59.2	61.7	56.7	59.2	ok	ok	1
Lot 274	F 1	63.34	60.6	63.1	58.9	61.4		ok	1
Lot 275	GF	64.33	59	61.5	56.8	59.3	ok	ok	1
Lot 275	F 1	64.33	60.2	62.7	58.7	61.2		ok	1
Lot 276	GF	65.04	58.6	61.1	56.6	59.1	ok	ok	1
Lot 276	F 1	65.04	59.8	62.3	58.3	60.8		ok	1
Lot 277	GF	65.83	58.2	60.7	56.5	59	ok	ok	1
Lot 277	F 1	65.83	59.4	61.9	58.1	60.6		ok	1
Lot 278	GF	66.43	57.8	60.3	56.2	58.7	ok	ok	1
Lot 278	F 1	66.43	59	61.5	57.7	60.2		ok	1
Lot 279	GF	67.13	57.5	60	56	58.5	ok	ok	1
Lot 279	F 1	67.13	58.6	61.1	57.4	59.9		ok	1
Lot 280	GF	67.73	57.1	59.6	55.8	58.3	ok	ok	1
Lot 280	F 1	67.73	58.2	60.7	57	59.5		ok	1
Lot 281	GF	68.53	56.8	59.3	55.6	58.1	ok	ok	1
Lot 281	F 1	68.53	57.9	60.4	56.7	59.2		ok	1
Lot 282	GF	69.22	56.4	58.9	55.4	57.9	ok	ok	0
Lot 282	F 1	69.22	57.5	60	56.4	58.9		ok	1
Lot 283	GF	69.93	56.1	58.6	55.1	57.6	ok	ok	0



Lot 283	F 1	69.93	57.2	59.7	56.1	58.6		ok	1
Lot 284	GF	70.53	55.8	58.3	54.9	57.4	ok	ok	0
Lot 284	F 1	70.53	56.9	59.4	55.9	58.4		ok	1
Lot 285	GF	71.12	55.4	57.9	54.7	57.2	ok	ok	0
Lot 285	F 1	71.12	56.5	59	55.6	58.1		ok	1
Lot 286	GF	71.93	55.3	57.8	54.5	57	ok	ok	0
Lot 286	F 1	71.93	56.3	58.8	55.4	57.9		ok	0
Lot 287	GF	72.53	55	57.5	54.3	56.8	ok	ok	0
Lot 287	F 1	72.53	56	58.5	55.1	57.6		ok	0
Lot 288	GF	74.02	54.7	57.2	54.1	56.6	ok	ok	0
Lot 288	F 1	74.02	55.7	58.2	54.9	57.4		ok	0
Lot 289	GF	74.38	54.9	57.4	54.3	56.8	ok	ok	0
Lot 289	F 1	74.38	55.9	58.4	55.1	57.6		ok	0
Lot 290	GF	74.38	54.9	57.4	54.3	56.8	ok	ok	0
Lot 290	F 1	74.38	56	58.5	55.1	57.6		ok	0
Lot 291	GF	73.88	54.9	57.4	54.2	56.7	ok	ok	0
Lot 291	F 1	73.88	56	58.5	55.1	57.6		ok	0
Lot 292	GF	73.7	55.5	58	54.7	57.2	ok	ok	0
Lot 292	F 1	73.7	56.5	59	55.6	58.1		ok	1
Lot 293	GF	73.61	56	58.5	55.1	57.6	ok	ok	0
Lot 293	F 1	73.61	56.9	59.4	55.9	58.4		ok	1
Lot 294	GF	73.1	56.4	58.9	55.4	57.9	ok	ok	0
Lot 294	F 1	73.1	57.3	59.8	56.3	58.8		ok	1
Lot 295	GF	72.31	56.7	59.2	55.6	58.1	ok	ok	1
Lot 295	F 1	72.31	57.6	60.1	56.6	59.1		ok	1
Lot 296	GF	71.5	57	59.5	55.9	58.4	ok	ok	1
Lot 296	F 1	71.5	58	60.5	56.9	59.4		ok	1
Lot 297	GF	70.7	57.4	59.9	56.1	58.6	ok	ok	1
Lot 297	F 1	70.7	58.3	60.8	57.2	59.7		ok	1
Lot 298	GF	69.81	57.6	60.1	56.3	58.8	ok	ok	1
Lot 298	F 1	69.81	58.6	61.1	57.4	59.9		ok	1
Lot 299	GF	68.7	57.9	60.4	56.4	58.9	ok	ok	1
Lot 299	F 1	68.7	59	61.5	57.6	60.1		ok	1
Lot 300	GF	67.9	58.3	60.8	56.5	59	ok	ok	1
Lot 300	F 1	67.9	59.3	61.8	57.9	60.4		ok	1
Lot 301	GF	67	58.6	61.1	56.6	59.1	ok	ok	1
Lot 301	F 1	67	59.7	62.2	58.2	60.7		ok	1
Lot 302	GF	66.1	58.9	61.4	56.7	59.2	ok	ok	1
Lot 302	F 1	66.1	60.1	62.6	58.4	60.9		ok	1
Lot 303	GF	65.25	59.3	61.8	56.8	59.3	ok	ok	1
Lot 303	F 1	65.25	60.6	63.1	58.8	61.3		ok	1



Lot 304	GF	64.31	59.6	62.1	56.8	59.3	ok	ok	1
Lot 304	F 1	64.31	61	63.5	59	61.5		ok	1
Lot 305	GF	63.72	60.3	62.8	57	59.5	ok	ok	1
Lot 305	F 1	63.72	61.6	64.1	59.5	62		ok	1
Lot 306	GF	62.83	61.2	63.7	57.2	59.7	ok	ok	1
Lot 306	F 1	62.83	62.7	65.2	60.1	62.6		ok	1
Lot 307	GF	62.72	60.7	63.2	57.1	59.6	ok	ok	1
Lot 307	F 1	62.72	62.1	64.6	59.9	62.4		ok	1
Lot 308	GF	66.22	60.8	63.3	57.2	59.7	ok	ok	1
Lot 308	F 1	66.22	62.3	64.8	59.6	62.1		ok	1
Lot 309	GF	65.52	60.9	63.4	57.2	59.7	ok	ok	1
Lot 309	F 1	65.52	62.3	64.8	59.7	62.2		ok	1
Lot 310	GF	64.32	60.7	63.2	56.9	59.4	ok	ok	1
Lot 310	F 1	64.32	62.2	64.7	59.4	61.9		ok	1
Lot 311	GF	66.35	59.4	61.9	56.6	59.1	ok	ok	1
Lot 311	F 1	66.35	60.8	63.3	58.5	61		ok	1
Lot 312	GF	67.83	59	61.5	56.7	59.2	ok	ok	1
Lot 312	F 1	67.83	60.3	62.8	58.4	60.9		ok	1
Lot 313	GF	68.82	58.7	61.2	56.7	59.2	ok	ok	1
Lot 313	F 1	68.82	59.8	62.3	58.1	60.6		ok	1
Lot 314	GF	69.62	58.3	60.8	56.5	59	ok	ok	1
Lot 314	F 1	69.62	59.5	62	57.8	60.3		ok	1
Lot 315	GF	70.62	57.9	60.4	56.4	58.9	ok	ok	1
Lot 315	F 1	70.62	59.1	61.6	57.6	60.1		ok	1
Lot 316	GF	71.52	57.5	60	56.1	58.6	ok	ok	1
Lot 316	F 1	71.52	58.6	61.1	57.2	59.7		ok	1
Lot 317	GF	72.52	57.2	59.7	55.9	58.4	ok	ok	1
Lot 317	F 1	72.52	58.3	60.8	56.9	59.4		ok	1
Lot 318	GF	73.43	56.9	59.4	55.8	58.3	ok	ok	1
Lot 318	F 1	73.43	57.9	60.4	56.7	59.2		ok	1
Lot 319	GF	73.92	56.5	59.0	55.5	58.0	ok	ok	1
Lot 319	F 1	73.92	57.5	60	56.4	58.9		ok	1
Lot 320	GF	74.13	56	58.5	55.1	57.6	ok	ok	0
Lot 320	F 1	74.13	57.1	59.6	56	58.5		ok	1
Lot 321	GF	73.49	55	57.5	54.2	56.7	ok	ok	0
Lot 321	F 1	73.49	56.1	58.6	55.2	57.7		ok	0
Lot 322	GF	73.19	55	57.5	53.7	56.2	ok	ok	0
Lot 322	F 1	73.19	56	58.5	55.1	57.6		ok	0
Lot 323	GF	72.99	54.3	56.8	53.2	55.7	ok	ok	0
Lot 323	F 1	72.99	56.1	58.6	55.2	57.7		ok	0
Lot 324	GF	72.78	54.3	56.8	52.9	55.4	ok	ok	0



Lot 324	F 1	72.78	56.2	58.7	55.1	57.6		ok	0
Lot 325	GF	74.7	56.4	58.9	55.4	57.9	ok	ok	0
Lot 325	F 1	74.7	57.6	60.1	56.3	58.8		ok	1
Lot 326	GF	74.9	57.1	59.6	55.9	58.4	ok	ok	1
Lot 326	F 1	74.9	58.1	60.6	56.8	59.3		ok	1
Lot 327	GF	74.6	57.6	60.1	56.3	58.8	ok	ok	1
Lot 327	F 1	74.6	58.6	61.1	57.2	59.7		ok	1
Lot 328	GF	74.1	58.1	60.6	56.7	59.2	ok	ok	1
Lot 328	F 1	74.1	59.1	61.6	57.6	60.1		ok	1
Lot 329	GF	73.1	58.4	60.9	56.8	59.3	ok	ok	1
Lot 329	F 1	73.1	59.4	61.9	57.9	60.4		ok	1
Lot 330	GF	72.09	58.8	61.3	57.1	59.6	ok	ok	1
Lot 330	F 1	72.09	59.9	62.4	58.2	60.7		ok	1
Lot 331	GF	71.1	59.2	61.7	57.2	59.7	ok	ok	1
Lot 331	F 1	71.1	60.4	62.9	58.5	61		ok	1
Lot 332	GF	70.49	59.8	62.3	57.5	60	ok	ok	1
Lot 332	F 1	70.49	60.9	63.4	59	61.5		ok	1
Lot 333	GF	69.52	60.2	62.7	57.6	60.1	ok	ok	1
Lot 333	F 1	69.52	61.4	63.9	59.3	61.8		ok	1
Lot 334	GF	67.72	60.6	63.1	57.2	59.7	ok	ok	1
Lot 334	F 1	67.72	62.2	64.7	59.3	61.8		ok	1
Lot 335	GF	67.02	60.8	63.3	57.4	59.9	ok	ok	1
Lot 335	F 1	67.02	62.3	64.8	59.6	62.1		ok	1
Lot 336	GF	69.92	60.3	62.8	56.9	59.4	ok	ok	1
Lot 336	F 1	69.92	61.9	64.4	59	61.5		ok	1
Lot 337	GF	71.52	59.9	62.4	57.2	59.7	ok	ok	1
Lot 337	F 1	71.52	61.3	63.8	58.8	61.3		ok	1
Lot 338	GF	72.41	59.5	62	57	59.5	ok	ok	1
Lot 338	F 1	72.41	60.9	63.4	58.6	61.1		ok	1
Lot 339	GF	73.31	59.1	61.6	57	59.5	ok	ok	1
Lot 339	F 1	73.31	60.4	62.9	58.3	60.8		ok	1
Lot 340	GF	74.22	58.8	61.3	56.9	59.4	ok	ok	1
Lot 340	F 1	74.22	60	62.5	58.1	60.6		ok	1
Lot 341	GF	74.81	58.3	60.8	56.6	59.1	ok	ok	1
Lot 341	F 1	74.81	59.5	62	57.7	60.2		ok	1
Lot 342	GF	75.11	57.8	60.3	56.3	58.8	ok	ok	1
Lot 342	F 1	75.11	59	61.5	57.4	59.9		ok	1
Lot 343	GF	75.1	57.2	59.7	55.8	58.3	ok	ok	1
Lot 343	F 1	75.1	58.4	60.9	56.9	59.4		ok	1
Lot 344	GF	74.41	56.4	58.9	54.9	57.4	ok	ok	0
Lot 344	F 1	74.41	57.6	60.1	56.2	58.7		ok	1



Lot 345	GF	73.71	55.1	57.6	53.8	56.3	ok	ok	0
Lot 345	F 1	73.71	56.8	59.3	55.6	58.1		ok	1
Lot 346	GF	72.92	54.3	56.8	53	55.5	ok	ok	0
Lot 346	F 1	72.92	56.1	58.6	55	57.5		ok	0
Lot 431	GF	72.92	54.4	56.9	53.2	55.7	ok	ok	0
Lot 431	F 1	72.92	56.5	59	55	57.5		ok	0
Lot 432	GF	73.72	55.3	57.8	53.9	56.4	ok	ok	0
Lot 432	F 1	73.72	57.2	59.7	55.9	58.4		ok	1
Lot 433	GF	74.42	56.5	59	55	57.5	ok	ok	0
Lot 433	F 1	74.42	58	60.5	56.5	59		ok	1
Lot 434	GF	74.92	57.4	59.9	55.8	58.3	ok	ok	1
Lot 434	F 1	74.92	58.9	61.4	57.2	59.7		ok	1
Lot 435	GF	75.12	58.1	60.6	56.4	58.9	ok	ok	1
Lot 435	F 1	75.12	59.5	62	57.7	60.2		ok	1
Lot 436	GF	75.11	58.7	61.2	56.8	59.3	ok	ok	1
Lot 436	F 1	75.11	60.1	62.6	58.2	60.7		ok	1
Lot 437	GF	74.93	59.4	61.9	57.2	59.7	ok	ok	1
Lot 437	F 1	74.93	60.8	63.3	58.7	61.2		ok	1
Lot 438	GF	74.61	60	62.5	57.6	60.1	ok	ok	1
Lot 438	F 1	74.61	61.4	63.9	59.1	61.6		ok	1
Lot 439	GF	72.86	60.2	62.7	57.3	59.8	ok	ok	1
Lot 439	F 1	72.86	61.8	64.3	59.2	61.7		ok	1
Lot 440	GF	61.71	59.8	62.3	57.6	60.1	ok	ok	1
Lot 440	F 1	61.71	60.9	63.4	60.6	63.1		ok	2
Lot 441	GF	61.97	60.5	63	58.1	60.6	ok	ok	1
Lot 441	F 1	61.97	61.5	64	61.2	63.7		Exceed	2
Lot 442	GF	62.07	61	63.5	58.4	60.9	ok	ok	1
Lot 442	F 1	62.07	62.1	64.6	61.8	64.3		Exceed	2
Lot 443	GF	62.17	61.6	64.1	58.8	61.3	ok	ok	1
Lot 443	F 1	62.17	62.6	65.1	62.2	64.7		Exceed	2
Lot 444	GF	62.17	62	64.5	58.8	61.3	ok	ok	1
Lot 444	F 1	62.17	63	65.5	62.7	65.2		Exceed	2
Lot 445	GF	62.27	62.6	65.1	58.9	61.4	ok	ok	1
Lot 445	F 1	62.27	63.6	66.1	63.2	65.7		Exceed	2
Lot 446	GF	62.27	63.1	65.6	58.3	60.8	ok	ok	1
Lot 446	F 1	62.27	64.1	66.6	63.7	66.2		Exceed	2
Lot 447	GF	62.36	63.6	66.1	58.6	61.1	ok	ok	1
Lot 447	F 1	62.36	64.7	67.2	64.3	66.8		Exceed	2
Lot 448	GF	62.46	64.4	66.9	59	61.5	ok	ok	1
Lot 448	F 1	62.46	65.4	67.9	65	67.5		Exceed	2
Lot 449	GF	62.57	65.4	67.9	59.4	61.9	ok	ok	1



Lot 449	F 1	62.57	66.4	68.9	65.9	68.4		Exceed	3
Lot 450	GF	62.69	65.9	68.4	58.7	61.2	ok	ok	1
Lot 450	F 1	62.69	67	69.5	66.5	69		Exceed	3
Lot 451	GF	62.99	65.9	68.4	58.7	61.2	ok	ok	1
Lot 451	F 1	62.99	66.9	69.4	66.3	68.8		Exceed	3
Lot 452	GF	63.5	66	68.5	58.7	61.2	ok	ok	1
Lot 452	F 1	63.5	67.1	69.6	66.6	69.1		Exceed	3
Lot 453	GF	63.99	66	68.5	58.5	61	ok	ok	1
Lot 453	F 1	63.99	67.1	69.6	66.1	68.6		Exceed	3
Lot 454	GF	64.69	66	68.5	58.7	61.2	ok	ok	1
Lot 454	F 1	64.69	67.1	69.6	65.9	68.4		Exceed	3
Lot 455	GF	65.49	66.2	68.7	58.9	61.4	ok	ok	1
Lot 455	F 1	65.49	67.2	69.7	66.2	68.7		Exceed	3
Lot 456	GF	65.99	66.1	68.6	58.6	61.1	ok	ok	1
Lot 456	F 1	65.99	67.2	69.7	65.9	68.4		Exceed	3
Lot 457	GF	66.69	66.2	68.7	58.4	60.9	ok	ok	1
Lot 457	F 1	66.69	67.3	69.8	65.6	68.1		Exceed	3
Lot 458	GF	67.49	66.2	68.7	58.4	60.9	ok	ok	1
Lot 458	F 1	67.49	67.4	69.9	65.4	67.9		Exceed	2
Lot 459	GF	68.29	66.2	68.7	58.4	60.9	ok	ok	1
Lot 459	F 1	68.29	67.4	69.9	65.2	67.7		Exceed	2
Lot 460	GF	68.88	66.1	68.6	58.1	60.6	ok	ok	1
Lot 460	F 1	68.88	67.4	69.9	64.7	67.2		Exceed	2
Lot 461	GF	69.69	66.2	68.7	58.2	60.7	ok	ok	1
Lot 461	F 1	69.69	67.5	70	64.9	67.4		Exceed	2
Lot 462	GF	70.49	66.3	68.8	58	60.5	ok	ok	1
Lot 462	F 1	70.49	67.6	70.1	64.9	67.4		Exceed	2
Lot 463	GF	71.2	66	68.5	57.5	60	ok	ok	1
Lot 463	F 1	71.2	67.7	70.2	64.1	66.6		Exceed	2
Lot 464	GF	72.58	66.1	68.6	58.5	61	ok	ok	1
Lot 464	F 1	72.58	67.9	70.4	64.9	67.4		Exceed	2
Lot 465	GF	73.49	66.1	68.6	58.6	61.1	ok	ok	1
Lot 465	F 1	73.49	68.1	70.6	65.1	67.6		Exceed	2
Lot 466	GF	74.51	65.8	68.3	58.8	61.3	ok	ok	1
Lot 466	F 1	74.51	67.9	70.4	64.4	66.9		Exceed	2
Lot 467	GF	75.48	66.3	68.8	59.2	61.7	ok	ok	1
Lot 467	F 1	75.48	67.9	70.4	64.7	67.2		Exceed	2
Lot 468	GF	74.92	65.3	67.8	57.8	60.3	ok	ok	1
Lot 468	F 1	74.92	67.7	70.2	63.4	65.9		Exceed	2
Lot 469	GF	74.91	65.8	68.3	57.9	60.4	ok	ok	1
Lot 469	F 1	74.91	67.9	70.4	64.8	67.3		Exceed	2



Lot 470	GF	74.89	65.5	68	58.1	60.6	ok	ok	1
Lot 470	F 1	74.89	67.7	70.2	65.1	67.6		Exceed	2
Lot 471	GF	74.79	65.2	67.7	58.2	60.7	ok	ok	1
Lot 471	F 1	74.79	67.5	70	65.2	67.7		Exceed	2
Lot 472	GF	74.49	64.9	67.4	58.2	60.7	ok	ok	1
Lot 472	F 1	74.49	67.4	69.9	65.2	67.7		Exceed	2
Lot 473	GF	74.2	58.4	60.9	56.4	58.9	ok	ok	1
Lot 473	F 1	74.2	60.7	63.2	58.6	61.1		ok	1
Lot 474	GF	74.4	58.6	61.1	56.5	59	ok	ok	1
Lot 474	F 1	74.4	60.9	63.4	58.6	61.1		ok	1
Lot 475	GF	74.49	58.8	61.3	56.7	59.2	ok	ok	1
Lot 475	F 1	74.49	61.1	63.6	58.6	61.1		ok	1
Lot 476	GF	74.46	59.2	61.7	56.8	59.3	ok	ok	1
Lot 476	F 1	74.46	61.1	63.6	58.6	61.1		ok	1
Lot 477	GF	74.39	57.4	59.9	55.6	58.1	ok	ok	1
Lot 477	F 1	74.39	59.4	61.9	57.5	60		ok	1
Lot 478	GF	73.92	56.5	59	54.9	57.4	ok	ok	0
Lot 478	F 1	73.92	58.6	61.1	56.9	59.4		ok	1
Lot 479	GF	73.13	55.8	58.3	54.3	56.8	ok	ok	0
Lot 479	F 1	73.13	57.5	60	55.9	58.4		ok	1
Lot 480	GF	72.13	54.9	57.4	53.6	56.1	ok	ok	0
Lot 480	F 1	72.13	56.4	58.9	54.9	57.4		ok	0
Lot 481	GF	71.12	54.3	56.8	53.1	55.6	ok	ok	0
Lot 481	F 1	71.12	55.6	58.1	54.3	56.8		ok	0
Lot 495	GF	70.19	54.6	57.1	53.4	55.9	ok	ok	0
Lot 495	F 1	70.19	55.7	58.2	54.5	57		ok	0
Lot 496	GF	71	55.2	57.7	53.9	56.4	ok	ok	0
Lot 496	F 1	71	56.4	58.9	55.1	57.6		ok	0
Lot 497	GF	71.7	55.7	58.2	54.3	56.8	ok	ok	0
Lot 497	F 1	71.7	57.2	59.7	55.7	58.2		ok	1
Lot 498	GF	72.13	56.2	58.7	54.7	57.2	ok	ok	0
Lot 498	F 1	72.13	57.9	60.4	56.4	58.9		ok	1
Lot 499	GF	73.61	58.2	60.7	56.4	58.9	ok	ok	1
Lot 499	F 1	73.61	60.4	62.9	58.6	61.1		ok	1
Lot 500	GF	73.89	58.3	60.8	56.4	58.9	ok	ok	1
Lot 500	F 1	73.89	60.5	63	58.6	61.1		ok	1
Lot 501	GF	70.51	57.5	60	56.2	58.7	ok	ok	1
Lot 501	F 1	70.51	59.4	61.9	58.4	60.9		ok	1
Lot 502	GF	71.2	57.8	60.3	56.3	58.8	ok	ok	1
Lot 502	F 1	71.2	59.8	62.3	58.7	61.2		ok	1
Lot 503	GF	71.99	58.1	60.6	56.4	58.9	ok	ok	1



Lot 503	F 1	71.99	60.2	62.7	58.9	61.4		ok	1
Lot 504	GF	70.28	56.1	58.6	54.8	57.3	ok	ok	0
Lot 504	F 1	70.28	57.4	59.9	56.3	58.8		ok	1
Lot 505	GF	69.15	55.4	57.9	54.3	56.8	ok	ok	0
Lot 505	F 1	69.15	56.6	59.1	55.7	58.2		ok	1
Lot 506	GF	67.93	54.7	57.2	53.6	56.1	ok	ok	0
Lot 506	F 1	67.93	55.8	58.3	54.8	57.3		ok	0
Lot 507	GF	66.54	54	56.5	52.9	55.4	ok	ok	0
Lot 507	F 1	66.54	55	57.5	54	56.5		ok	0
Lot 508	GF	65.14	53.4	55.9	52.3	54.8	ok	ok	0
Lot 508	F 1	65.14	54.3	56.8	53.3	55.8		ok	0
Lot 509	GF	62.91	52.2	54.7	51.2	53.7	ok	ok	0
Lot 509	F 1	62.91	53.1	55.6	52.1	54.6		ok	0
Lot 510	GF	62.9	52.5	55	51.5	54	ok	ok	0
Lot 510	F 1	62.9	53.4	55.9	52.4	54.9		ok	0
Lot 511	GF	63	52.8	55.3	51.8	54.3	ok	ok	0
Lot 511	F 1	63	53.6	56.1	52.7	55.2		ok	0
Lot 512	GF	62.99	53	55.5	52.1	54.6	ok	ok	0
Lot 512	F 1	62.99	54	56.5	53.1	55.6		ok	0
Lot 513	GF	65.29	54.1	56.6	53.1	55.6	ok	ok	0
Lot 513	F 1	65.29	55.1	57.6	54.2	56.7		ok	0
Lot 514	GF	66.5	54.7	57.2	53.8	56.3	ok	ok	0
Lot 514	F 1	66.5	55.9	58.4	55	57.5		ok	0
Lot 515	GF	67.44	55.4	57.9	54.4	56.9	ok	ok	0
Lot 515	F 1	67.44	56.6	59.1	55.7	58.2		ok	1
Lot 516	GF	68.18	56.8	59.3	55.7	58.2	ok	ok	1
Lot 516	F 1	68.18	58.5	61	57.5	60		ok	1
Lot 517	GF	68.9	57	59.5	55.8	58.3	ok	ok	1
Lot 517	F 1	68.9	58.7	61.2	57.7	60.2		ok	1
Lot 518	GF	69.7	57.3	59.8	56.1	58.6	ok	ok	1
Lot 518	F 1	69.7	59.2	61.7	58.1	60.6		ok	1
Lot 519	GF	67.11	56.8	59.3	55.9	58.4	ok	ok	1
Lot 519	F 1	67.11	58.5	61	57.8	60.3		ok	1
Lot 520	GF	66.39	56	58.5	55.1	57.6	ok	ok	0
Lot 520	F 1	66.39	57.5	60	56.7	59.2		ok	1
Lot 521	GF	65.19	55.1	57.6	54.2	56.7	ok	ok	0
Lot 521	F 1	65.19	56.4	58.9	55.6	58.1		ok	1
Lot 522	GF	65.6	54.9	57.4	54.1	56.6	ok	ok	0
Lot 522	F 1	65.6	56.2	58.7	55.4	57.9		ok	0
Lot 523	GF	63.57	54	56.5	53.3	55.8	ok	ok	0
Lot 523	F 1	63.57	55.4	57.9	54.6	57.1		ok	0



Lot 524	GF	63.45	54	56.5	53.4	55.9	ok	ok	0
Lot 524	F 1	63.45	55.4	57.9	54.6	57.1		ok	0
Lot 525	GF	63.32	54	56.5	53.4	55.9	ok	ok	0
Lot 525	F 1	63.32	55.4	57.9	54.7	57.2		ok	0
Lot 526	GF	63.07	53.9	56.4	53.2	55.7	ok	ok	0
Lot 526	F 1	63.07	55.4	57.9	54.7	57.2		ok	0
Lot 527	GF	62.79	53.8	56.3	53.2	55.7	ok	ok	0
Lot 527	F 1	62.79	55.4	57.9	54.7	57.2		ok	0
Lot 528	GF	62.18	53.6	56.1	53	55.5	ok	ok	0
Lot 528	F 1	62.18	55.4	57.9	54.7	57.2		ok	0
Lot 529	GF	62	53.9	56.4	53.2	55.7	ok	ok	0
Lot 529	F 1	62	55.9	58.4	55.2	57.7		ok	0
Lot 530	GF	61.45	54.3	56.8	53.6	56.1	ok	ok	0
Lot 530	F 1	61.45	56.4	58.9	55.7	58.2		ok	1
Lot 531	GF	60.54	54.7	57.2	53.7	56.2	ok	ok	0
Lot 531	F 1	60.54	56.9	59.4	56	58.5		ok	1
Lot 532	GF	59.16	55.1	57.6	53.8	56.3	ok	ok	0
Lot 532	F 1	59.16	57.3	59.8	56.4	58.9		ok	1
Lot 533	GF	63.42	57.9	60.4	57	59.5	ok	ok	1
Lot 533	F 1	63.42	59.7	62.2	58.9	61.4		ok	1
Lot 534	GF	65.45	58.2	60.7	57.3	59.8	ok	ok	1
Lot 534	F 1	65.45	59.8	62.3	59.1	61.6		ok	1
Lot 535	GF	66.37	57.8	60.3	57.1	59.6	ok	ok	1
Lot 535	F 1	66.37	59.5	62	58.9	61.4		ok	1
Lot 536	GF	66.89	57.5	60	56.8	59.3	ok	ok	1
Lot 536	F 1	66.89	59.3	61.8	58.6	61.1		ok	1
Lot 537	GF	67.03	57.1	59.6	56.4	58.9	ok	ok	1
Lot 537	F 1	67.03	59	61.5	58.3	60.8		ok	1
Lot 538	GF	67.18	57	59.5	56.3	58.8	ok	ok	1
Lot 538	F 1	67.18	58.9	61.4	58.2	60.7		ok	1
Lot 539	GF	67.16	56.9	59.4	56.2	58.7	ok	ok	1
Lot 539	F 1	67.16	58.7	61.2	58	60.5		ok	1
Lot 540	GF	67.11	56.7	59.2	56.1	58.6	ok	ok	1
Lot 540	F 1	67.11	58.6	61.1	57.9	60.4		ok	1
Lot 541	GF	67.05	56.7	59.2	56.1	58.6	ok	ok	1
Lot 541	F 1	67.05	58.6	61.1	57.9	60.4		ok	1
Lot 542	GF	66.84	56.6	59.1	55.9	58.4	ok	ok	1
Lot 542	F 1	66.84	58.4	60.9	57.7	60.2		ok	1
Lot 543	GF	66.74	56.6	59.1	55.8	58.3	ok	ok	1
Lot 543	F 1	66.74	58.3	60.8	57.7	60.2		ok	1
Lot 544	GF	74.2	64.2	66.7	58.4	60.9	ok	ok	1



Lot 544	F 1	74.2	67.1	69.6	65.3	67.8		Exceed	2
Lot 545	GF	73.69	63.6	66.1	58.5	61	ok	ok	1
Lot 545	F 1	73.69	66.8	69.3	65	67.5		Exceed	2
Lot 546	GF	73.18	63.4	65.9	58.6	61.1	ok	ok	1
Lot 546	F 1	73.18	66.6	69.1	64.9	67.4		Exceed	2
Lot 547	GF	72.58	63.4	65.9	59	61.5	ok	ok	1
Lot 547	F 1	72.58	66.4	68.9	65.3	67.8		Exceed	2
Lot 548	GF	71.79	63.1	65.6	59	61.5	ok	ok	1
Lot 548	F 1	71.79	66	68.5	65.2	67.7		Exceed	2
Lot 549	GF	70.89	62.1	64.6	59	61.5	ok	ok	1
Lot 549	F 1	70.89	65.5	68	64.9	67.4		Exceed	2
Lot 550	GF	70.09	61.1	63.6	58.9	61.4	ok	ok	1
Lot 550	F 1	70.09	65.3	67.8	64.8	67.3		Exceed	2
Lot 551	GF	69.18	60.2	62.7	58.3	60.8	ok	ok	1
Lot 551	F 1	69.18	65	67.5	64.8	67.3		Exceed	2
Lot 552	GF	68.68	60	62.5	58.5	61	ok	ok	1
Lot 552	F 1	68.68	64.9	67.4	64.8	67.3		Exceed	2
Lot 553	GF	68.27	59.9	62.4	58.5	61	ok	ok	1
Lot 553	F 1	68.27	64.8	67.3	64.8	67.3		Exceed	2
Lot 554	GF	68.18	60.4	62.9	58.9	61.4	ok	ok	1
Lot 554	F 1	68.18	65.1	67.6	65.1	67.6		Exceed	2
Lot 555	GF	68.18	60.8	63.3	59.3	61.8	ok	ok	1
Lot 555	F 1	68.18	65.4	67.9	65.3	67.8		Exceed	2
Lot 556	GF	68.17	61	63.5	59.5	62	ok	ok	1
Lot 556	F 1	68.17	65.3	67.8	65.3	67.8		Exceed	2
Lot 557	GF	68.27	61.3	63.8	59.6	62.1	ok	ok	1
Lot 557	F 1	68.27	65.4	67.9	65.4	67.9		Exceed	2
Lot 558	GF	68.37	61.6	64.1	59.6	62.1	ok	ok	1
Lot 558	F 1	68.37	65.3	67.8	65.3	67.8		Exceed	2
Lot 559	GF	68.38	61.1	63.6	59.5	62	ok	ok	1
Lot 559	F 1	68.38	64.9	67.4	64.9	67.4		Exceed	2
Lot 560	GF	68.38	60.4	62.9	59.3	61.8	ok	ok	1
Lot 560	F 1	68.38	64.6	67.1	64.6	67.1		Exceed	2
Lot 561	GF	68.44	59.9	62.4	59.2	61.7	ok	ok	1
Lot 561	F 1	68.44	64.3	66.8	64.3	66.8		Exceed	2
Lot 562	GF	68.48	59.3	61.8	59	61.5	ok	ok	1
Lot 562	F 1	68.48	64	66.5	63.9	66.4		Exceed	2
Lot 563	GF	68.38	58.8	61.3	58.5	61	ok	ok	1
Lot 563	F 1	68.38	63.4	65.9	63.4	65.9		Exceed	2
Lot 564	GF	68.11	58.4	60.9	58.1	60.6	ok	ok	1
Lot 564	F 1	68.11	63	65.5	63	65.5		Exceed	2



Lot 565	GF	67.61	58.3	60.8	57.9	60.4	ok	ok	1
Lot 565	F 1	67.61	62.4	64.9	62.4	64.9		Exceed	2
Lot 566	GF	67.05	58.9	61.4	58	60.5	ok	ok	1
Lot 566	F 1	67.05	62.3	64.8	62.3	64.8		Exceed	2
Lot 567	GF	66.24	59.5	62	58.1	60.6	ok	ok	1
Lot 567	F 1	66.24	62.6	65.1	62.5	65		Exceed	2
Lot 568	GF	65.27	59.9	62.4	57.9	60.4	ok	ok	1
Lot 568	F 1	65.27	62.9	65.4	62.8	65.3		Exceed	2
Lot 569	GF	64.49	60.7	63.2	57.8	60.3	ok	ok	1
Lot 569	F 1	64.49	63.5	66	63.1	65.6		Exceed	2
Lot 570	GF	63.27	60.9	63.4	57.2	59.7	ok	ok	1
Lot 570	F 1	63.27	63.8	66.3	62.9	65.4		Exceed	2
Lot 571	GF	62.04	61.1	63.6	57.2	59.7	ok	ok	1
Lot 571	F 1	62.04	64.2	66.7	63.3	65.8		Exceed	2
Lot 572	GF	60.82	61.2	63.7	57.4	59.9	ok	ok	1
Lot 572	F 1	60.82	64.3	66.8	63.6	66.1		Exceed	2
Lot 573	GF	59.4	60.9	63.4	57.4	59.9	ok	ok	1
Lot 573	F 1	59.4	64.2	66.7	63.5	66		Exceed	2
Lot 574	GF	58.38	60.9	63.4	57.6	60.1	ok	ok	1
Lot 574	F 1	58.38	64.2	66.7	63.9	66.4		Exceed	2
Lot 575	GF	57.75	61.5	64	58	60.5	ok	ok	1
Lot 575	F 1	57.75	64.5	67	64.5	67		Exceed	2
Lot 576	GF	56.8	61.5	64	57.6	60.1	ok	ok	1
Lot 576	F 1	56.8	64.5	67	64.3	66.8		Exceed	2
Lot 577	GF	56.77	62.3	64.8	58.4	60.9	ok	ok	1
Lot 577	F 1	56.77	65.1	67.6	65.1	67.6		Exceed	2

All lots not listed above are QDC Noise Category 0 (not noise affected)

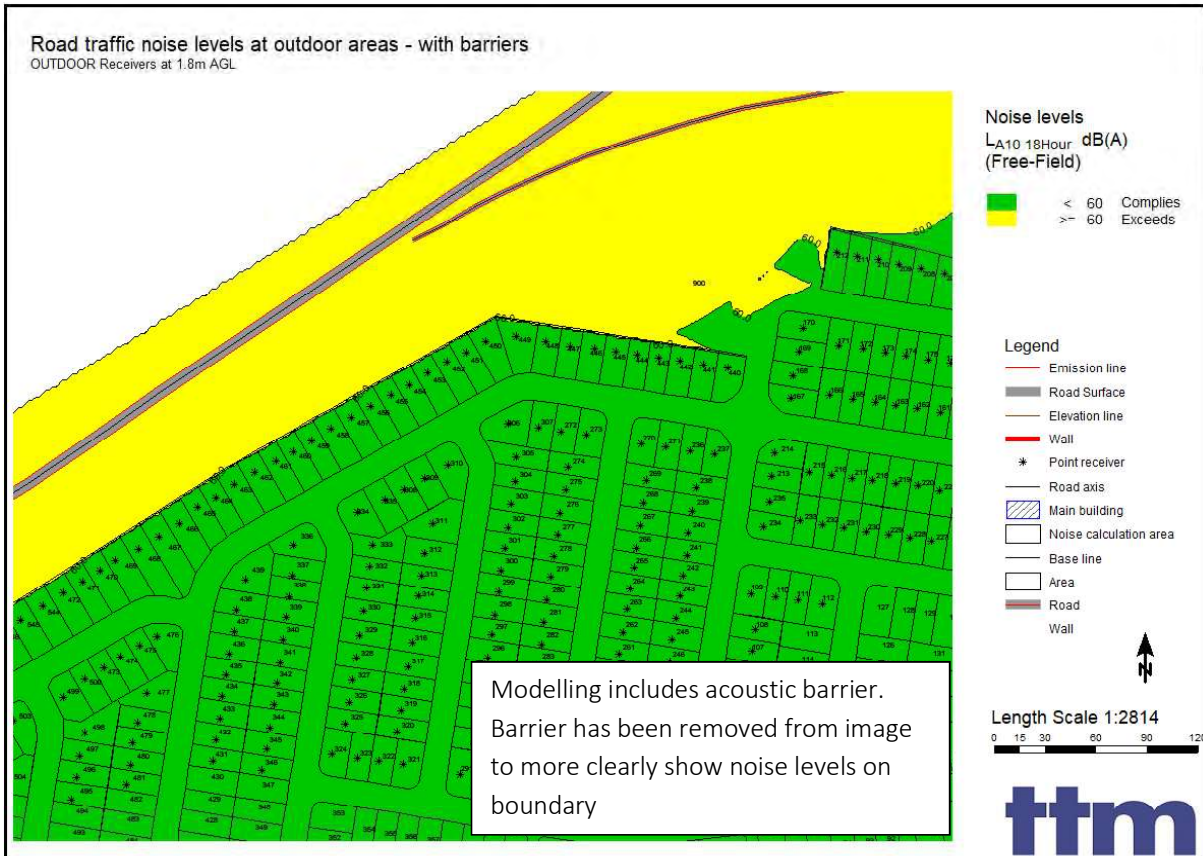


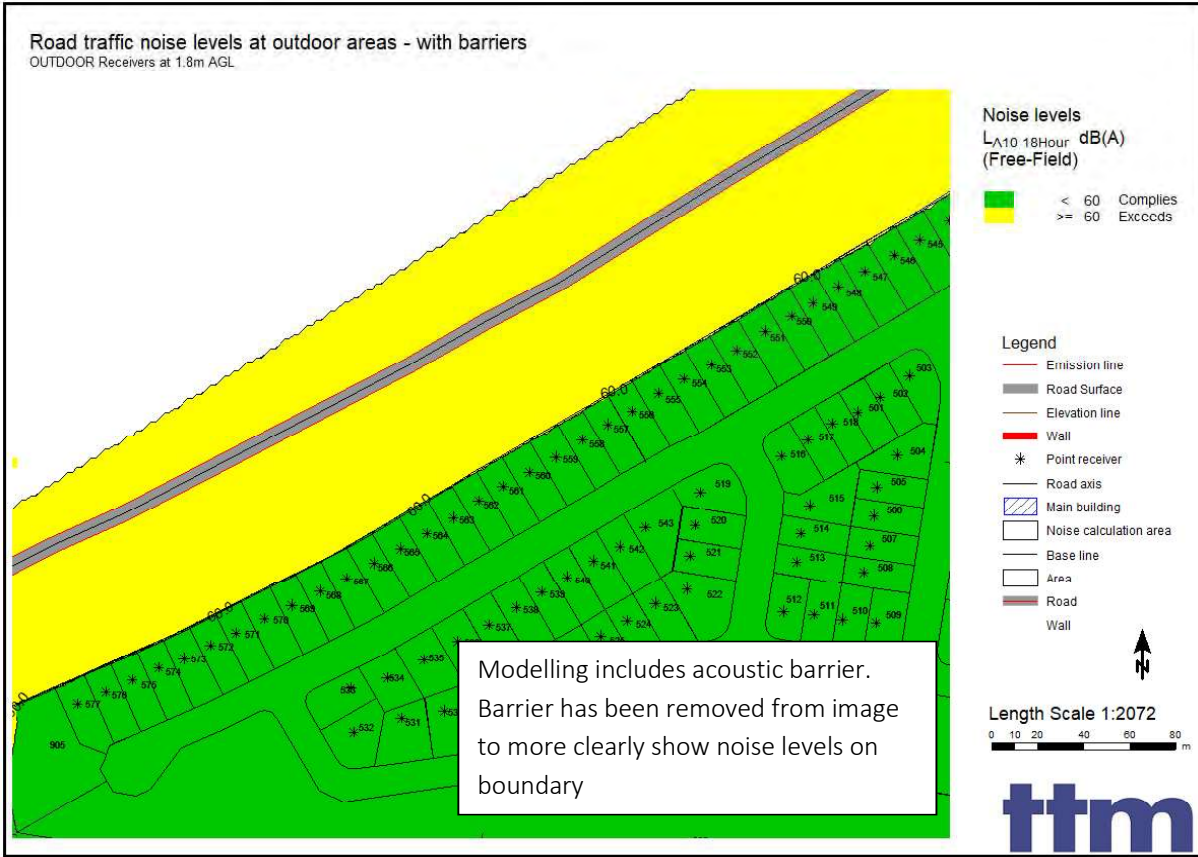
Acoustic Barrier Heights – AGL and AHD

Lot	Lot Pad Level	Acoustic Barrier Min. Height Above Lot pad level	
		AHD (m)	AGL (m)
Lot 209	65.18	2.4	67.58
Lot 210	64.18	2.4	66.58
Lot 211	63.19	2.4	65.59
Lot 212	62.39	2.4	64.79
Lot 440	61.71	2.2	63.91
Lot 441	61.97	2.2	64.17
Lot 442	62.07	2.2	64.27
Lot 443	62.17	2.2	64.37
Lot 444	62.17	2.2	64.37
Lot 445	62.27	2.2	64.47
Lot 446	62.27	2.8	65.07
Lot 447	62.36	2.8	65.16
Lot 448	62.46	2.8	65.26
Lot 449	62.57	2.8	65.37
Lot 450	62.69	3.4	66.09
Lot 451	62.99	3.4	66.39
Lot 452	63.49	3.4	66.89
Lot 453	63.99	3.4	67.39
Lot 454	64.68	3.4	68.08
Lot 455	65.48	3.4	68.88
Lot 456	65.98	3.4	69.38
Lot 457	66.68	3.4	70.08
Lot 458	67.48	3.4	70.88
Lot 459	68.28	3.4	71.68
Lot 460	68.87	3.4	72.27
Lot 461	69.68	3.4	73.08
Lot 462	70.48	3.4	73.88
Lot 463	71.19	3.4	74.59
Lot 464	72.57	3.4	75.97
Lot 465	73.49	3.4	76.89
Lot 466	74.5	3.4	77.9
Lot 467	75.47	3.4	78.87
Lot 468	74.92	3.4	78.32
Lot 469	74.91	3.0	77.91
Lot 470	74.89	3.0	77.89



Lot 471	74.79	3.0	77.79
Lot 472	74.49	3.0	77.49
Lot 543	66.73	3.0	69.73
Lot 544	74.2	3.0	77.2
Lot 545	73.69	3.0	76.69
Lot 546	73.18	3.0	76.18
Lot 547	72.58	3.0	75.58
Lot 548	71.78	3.0	74.78
Lot 549	70.88	3.0	73.88
Lot 550	70.08	3.0	73.08
Lot 551	69.18	3.0	72.18
Lot 552	68.68	3.0	71.68
Lot 553	68.27	3.0	71.27
Lot 554	68.18	3.0	71.18
Lot 555	68.18	3.0	71.18
Lot 556	68.17	3.0	71.17
Lot 557	68.27	3.0	71.27
Lot 558	68.37	3.0	71.37
Lot 559	68.38	3.0	71.38
Lot 560	68.38	3.0	71.38
Lot 561	68.44	3.0	71.44
Lot 562	68.48	3.0	71.48
Lot 563	68.38	3.0	71.38
Lot 564	68.1	3.0	71.1
Lot 565	67.6	3.0	70.6
Lot 566	67.05	3.0	70.05
Lot 567	66.23	3.0	69.23
Lot 568	65.27	3.0	68.27
Lot 569	64.49	3.0	67.49
Lot 570	63.27	3.6	66.87
Lot 571	62.03	4.0	66.03
Lot 572	60.82	4.0	64.82
Lot 573	59.4	4.0	63.4
Lot 574	58.38	4.0	62.38
Lot 575	57.75	4.0	61.75
Lot 576	56.8	4.0	60.8
Lot 577	56.77	4.0	60.77
Lot 905	54.7	5.0	59.7







Appendix D Schedule 1 & 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 1.8m ²) 35 (where total area of glazing for a habitable room is less than or equal to 1.8m ²)
		External walls	47
		Roof	41
		Floors	45
		Entry doors	33

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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 1.8m ²) 32 (where total area of glazing for a habitable room is less than or equal to 1.8m ²)
		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 1.8m ²) 24 (where total area of glazing for a habitable room is less than or equal to 1.8m ²)
		External walls	35
		Roof	35
		Entry Doors	26
Category 0	No additional acoustic treatment required – standard building assessment provisions apply.		

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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 <i>acoustically rated seals</i> .
	38	Minimum 14.38mm thick laminated glass, with full perimeter <i>acoustically rated seals</i> ; 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 <i>acoustically rated seals</i> .
		35
	32	Minimum 6.30mm thick laminated glass with full perimeter <i>acoustically rated seals</i> .
	27	Minimum 4mm thick glass with full perimeter <i>acoustically rated seals</i> .
	24	Minimum 4mm thick glass with standard weather seals.

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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/m ³ or 50mm thick polyester insulation with a density of 20kg/m ³ in the cavity. OR Two leaves of clay brick masonry at least 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/m ³ 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.

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Component of building's external envelope	Minimum R_w	Acceptable forms of construction
	41	<p>Two leaves of clay brick masonry at least 110mm thick with cavity not less than 50mm between leaves</p> <p>OR</p> <p>Single leaf of clay brick masonry at least 110mm thick with:</p> <ul style="list-style-type: none"> (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 <p>OR</p> <p>Single leaf of brick masonry at least 110mm thick with at least 13mm thick render on each face</p> <p>OR</p> <p>Concrete brickwork at least 110mm thick</p> <p>OR</p> <p>In-situ concrete at least 100mm thick</p> <p>OR</p> <p>Precast concrete at least 100mm thick and without joints</p>

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Component of building's external envelope	Minimum R_w	Acceptable forms of construction
	35	<p>Single leaf of clay brick masonry at least 110mm thick with:</p> <ul style="list-style-type: none"> (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 <p>OR</p> <p>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.</p>
Roof	45	<p>Concrete or terracotta tile or sheet metal roof with sarking, <i>acoustically rated plasterboard</i> 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.</p> <p>OR</p> <p>Concrete or terracotta tile or sheet metal roof with sarking, 2 layers of <i>acoustically rated plasterboard</i> 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.</p>
	41	<p>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.</p> <p>OR</p> <p>Concrete suspended slab at least 100mm thick.</p>
	38	<p>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.</p>

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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/m ³ 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/m ³ 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 <i>acoustically rated seals</i> .
	33	Fixed so as to overlap the frame or rebate of the frame by not less than 10mm, fitted with full perimeter <i>acoustically rated seals</i> 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.

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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/m ² ; or (iv) Solid core timber door not less than 35mm thick fitted with full perimeter <i>acoustically rated seals</i> .

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