

APPENDIX 10

January 2026

Wingham Urban Release Area 1



ADDENDUM LETTER – AMENDED NOISE IMPACT ASSESSMENT



Date: Friday, 23 January 2026

MidCoast Council
2 Biripi Way
Taree NSW 2430

Amenity Acoustics Pty Limited (Amenity Acoustics) is pleased to provide *Hampstead Property* with this services proposal to address the acoustic components of the Mid Coast Council (council) letter, *Planning Proposal Request for Further Information*, PP2024/0001, dated the 20th December 2024, so that council can complete the final assessment of application number PP-2024-2365.

Amenity Acoustics Pty Limited (Amenity Acoustics) has been engaged by MPT Farms Pty Limited to consider the implications of amending the proposed development area assessed under the Transport Corridor & Shooting Range Noise Impact Assessment (NIA) dated 30 May 2024 (Revision 4) in relation to Lot 92 DP 1285477, on Wingham Road, Wingham.

Amenity Acoustics understands that following finalisation of the NIA, the portion of the site proposed to be rezoned for residential development has been reduced to the area identified in the revised Precinct Plan in Figure 1 where the brown dashed line is the previous boundary. It is observed that an area to the north and to the east of the proposed development area has been removed from the area considered in the NIA, reducing the area from 28.56 ha to 23.15 ha.

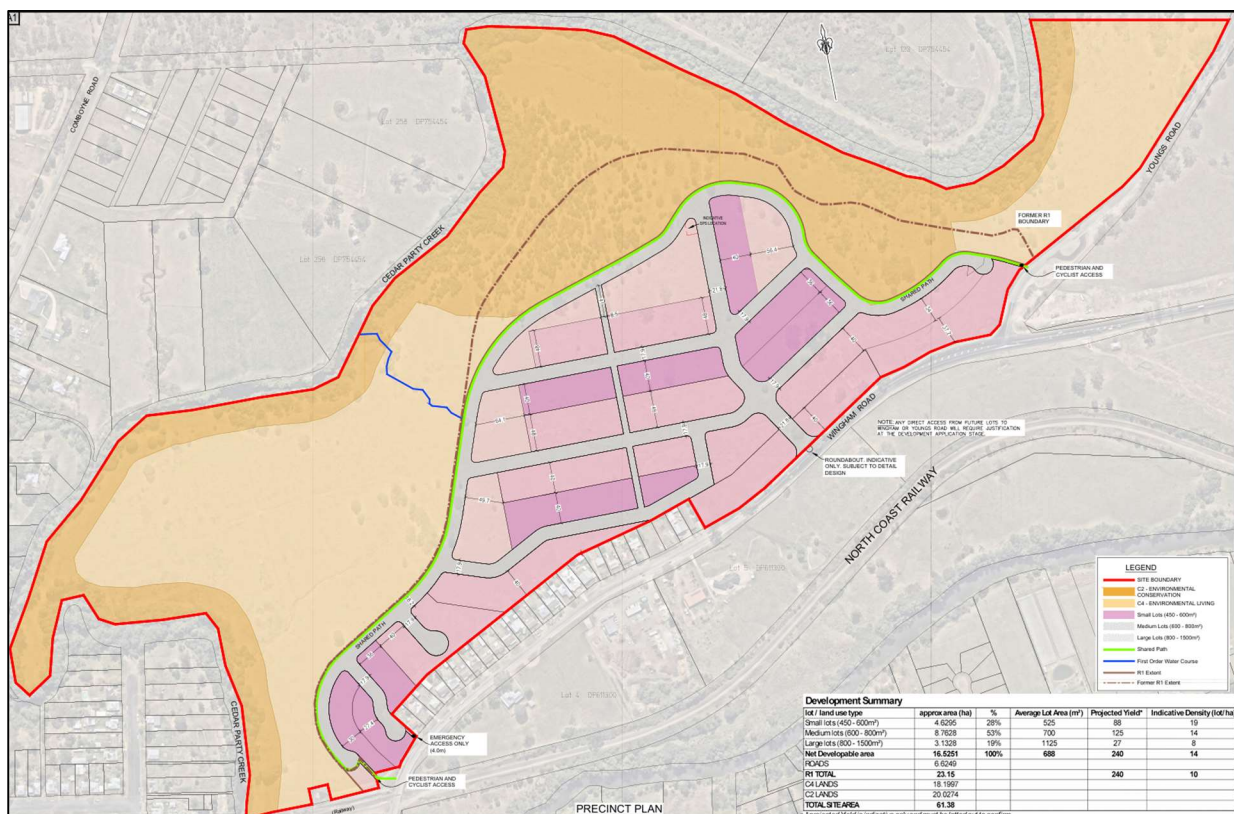


Figure 1: Wingham Road Precinct Plan (source: MPT Farms)



The NIA predicted environmental noise impact assessment across the proposed development site resulting from road traffic noise (Wingham Rd and Youngs Rd), North Coast Rail train noise, and shooting range noise from the Taree-Wingham Clay Target Club (Shooting Club). The NIA concluded that the site is suitable for the proposed development, as potential acoustic impacts may be managed by the adoption of reasonable and feasible noise mitigation construction measures.

The noise impacts of Wingham Road and Youngs Road, and the North Coast Rail train noise, are broadly unchanged under the revised Precinct Plan with only a negligible reduction in impact due to the reduced development area near Youngs Road. The assessment and figures in section 8 'Noise Modelling Results' remain appropriate although should be considered as a worst-case scenario.

To assess the potential impacts of the Shooting Club, attended and unattended noise monitoring was undertaken at "the most affected residential boundary", as required by the EPA's Target Shooting Ranges: Application Note for Assessing Noise Compliance (EPA 2015/0491) across two separate events. The NIA confirmed the shooting range is approximately 450 metres from the part of the site proposed to accommodate residential development. The distance from the Shooting Club increases with the revised Precinct Plan reducing the noise impact.

Based on review of the revised Precinct Plan, Amenity Acoustics confirms the NIA can be considered as a worst-case scenario for the noise impact on a future residential community with all impacts being equal or lesser than those considered during preparation of the NIA.

Other factors that should be considered in considering the noise impacts include:

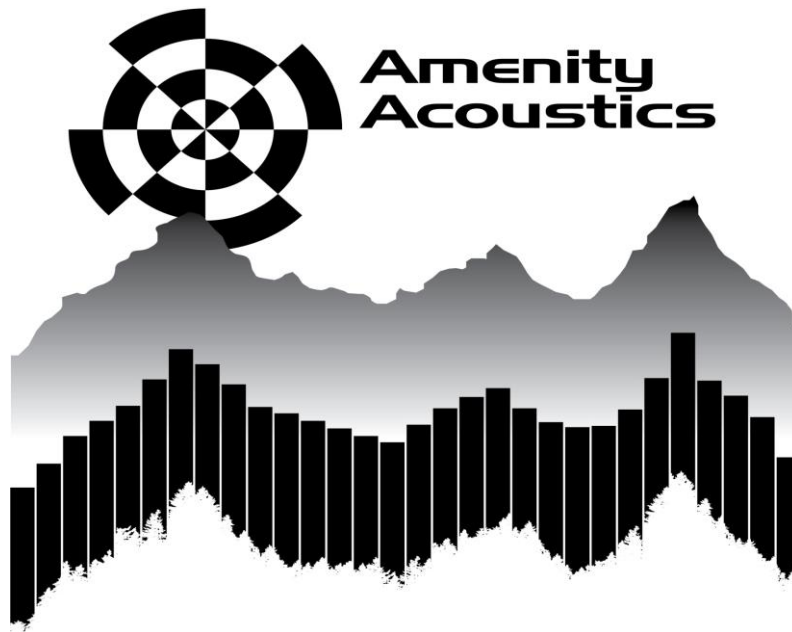
- The proposed reduction in speed limit to Wingham Road would reduce the noise impact on the subject site.
- Further assessment would be undertaken which may see noise impacts, and consequently required acoustic mitigation measures, to reduce with detailed assessment can be undertaken incorporating bulk earthworks levels and the potential for dwellings to provide an acoustic screen for dwellings that are further away from the source of the noise.

Amenity Acoustics confirms the impacts under the revised Precinct Plan will be less than those considered in the NIA and accordingly it is appropriate that the NIA can be relied upon for the rezoning process.

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AMENDED NOISE IMPACT ASSESSMENT



**Transport Corridor & Shooting Range Noise Impact Assessment of
Proposed Residential Development
Lot 92 DP 1285477, Wingham Road, Wingham, NSW**

J0548 R01v04

Revision 4

January 2025

CLIENT: MPT Farms Pty Limited C/- Hampstead Property

PROJECT SITE: Lot 92 DP 1285477, Wingham Road, Wingham, NSW

PROJECT TITLE: Transport Corridor & Shooting Range Noise Impact Assessment of Proposed Residential Development

REPORT ID. J0548 R01v04

REVISION No. Revision 4

Prepared for	Prepared by
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Document Release History

Revision No.	Document Author	Technical and Quality Review	Finalisation Approval	Issue Date
4	S. Kozakiewicz	S. Kozakiewicz	29/01/2025	29/01/2025
3	S. Kozakiewicz	S. Kozakiewicz	07/10/2024	07/10/2024
2	S. Kozakiewicz	S. Kozakiewicz	06/10/2024	06/10/2024
1	S. Kozakiewicz	S. Kozakiewicz	30/05/2024	30/05/2024

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- C Documented Measured Shot Noise

1 Introduction

Amenity Acoustics Pty Limited (Amenity Acoustics) was commissioned by *MPT Farms Pty Limited* (the client) C/- Hampstead Property to undertake the transport corridor (road and rail) and shooting range Noise Impact Assessment (NIA) of the proposed residential development, to accompany a Planning Proposal to the Mid Coast Council (Council). The site is Lot 92 DP 1285477, on Wingham Road, Wingham, New South Wales (NSW).

The aim of the NIA is to provide the results, assessment and recommendations resulting from the predicted environmental noise impact assessment across the proposed development site resulting from road traffic noise (Wingham Rd and Youngs Rd), North Coast Rail train noise, and shooting range (Taree-Wingham Clay Target Club) noise.

Table 1.1 provides a reference for which section(s) of the report that pertain to the relevant acoustic sections, within the '*Environmental Health*' section of the Midcoast Council's *Planning Proposal Pre-Lodgement Meeting*, dated 28 September 2023.

Table 1.1 – Reference for which section(s) of the report that pertain to the relevant acoustic sections, within the 'Environmental Health' section of the Midcoast Council's Planning Proposal Pre-Lodgement Meeting, dated 28 September 2023.

Midcoast Council's Planning Proposal Pre-Lodgement Meeting Section	Report Section
<i>'Acoustic measures need to be considered for Wingham Road and the nearby railway line. Following the completion of the Traffic Impact Assessment, an Acoustic Report should be prepared to demonstrate how acoustic impacts associated with traffic and rail could be addressed.'</i>	Section 7
<i>'The Acoustic Report should also consider any potential impacts on the residential development from the adjacent gun club.'</i>	Section 5.1.3
<i>'The Acoustic Report is to be prepared by a suitably qualified and experience acoustic consultant having regard to the NSW Environment Protection Authority's Noise Policy for Industry and NSW Road Noise Policy and the Development Near Rail Corridors and Busy Roads – Interim guideline.'</i>	Section 5.1
<i>'Local Planning Direction – 5.4 Shooting Ranges needs to be addressed as the site adjoins the Wingham Clay Target Club.'</i>	Section 4.1.3
<i>'Consideration should also be given to the Manning Model Aero Club that operates on the Wingham Racecourse Reserve.'</i>	Section 8.5

Table 1.2 provides a reference for which section(s) of the report that pertain to the relevant acoustic sections, within the Midcoast Council's letter *Planning Proposal Request for Further Information*, PP2024/0001, dated the 20th December 2024, so that council can complete the final assessment of application number PP-2024-2365.

Table 1.2 – Reference for which section(s) of the report that pertain to the relevant acoustic sections, within the Midcoast Council's Planning Proposal Request for Further Information, PP2024/0001, dated the 20th December 2024

Midcoast Council's Planning Proposal Pre-Lodgement Meeting Section	Report Section
<i>'1) The NIA, in particular Section 3.3.2, is absent of any information as to how many shots were measured or the shot categories that were measured (per Part 4 [10] of the POEO [Noise Control] Regulation 2017). Please amend the report to include the number of shots measured or the shot categories.'</i>	Section 3.3.2 and Appendix C
<i>'2) Generally, when assessing shot noise, the measured shots are documented similarly to Tables 1 and 2 provided in Section 6 of the EPA's Target Shooting Ranges: Application Note for Assessing Noise Compliance (EPA 2015/0491). This information assists in reviewing the documented shooting range contribution at a receiver location (Table 3.12 of the NIA). Please provide the information requested in point 1 of this section in the same format as Tables 1 and 2 of EPA's'</i>	Section 3.3.2 and Appendix C

Midcoast Council's Planning Proposal Pre-Lodgement Meeting Section	Report Section
Target Shooting Ranges: Application Note for Assessing Noise Compliance (EPA 2015/0491).	
3) With respect to the 'Noise Modelling Result' provided in Section 8 of the NIA, please provide more detail to give Council greater clarity on the future Construction Categories of future dwelling/s (Section 7 of the NIA). Acknowledging that it is difficult to know final dwelling heights or locations given the lot layout may change prior to a Development Application being lodged and the built form is unknown; one of the following two options should be provided: <u>Option One</u> i Lot numbers for each site should be shown. ii Proposed dwelling designs should be included – critically their heights should be defined or approximate heights based on proposed development standards. iii Pad heights should be provided. iv A table can then be provided indicating which Construction Category would apply to each Lot, including whether or not mechanical ventilation would be required. <u>Option Two</u> i Provide an accurate map that clearly delineates the distances from the shooting range that a change in construction measures would be anticipated. ii Provide detail on the expected number of dwellings that would require construction measures to address noise impacts. iii Provide examples of a range of dwelling designs and pad heights with indicative construction categories. iv A table can then be provided indicating which Construction Category would apply at a range of distances from the shooting range, including whether or not mechanical ventilation would be required and an estimate of the number of lots each construction category would apply to.	3 i) Section 8.1 & Figure 8.1 3 ii - iv) Section 8.11 & Figure 8.10

1.1 Reference Information

The supplied project information included documents as listed in **Table 1.3**.

Table 1.3 – Client Supplied Documents

Document Reference	Title	Created By	Dated
243804 WINGHAM - WEEKLY COUNT REPORT 7 DAYS.xlsx; 243804 WINGHAM -CLASS HOURLY COUNT.xlsx	Traffic classifier counts for Wingham Road	Intersect Traffic Pty Ltd	23/03/2024
24/002 (Rev D)	Traffic Impact Assessment Residential Planning Proposal	Intersect Traffic Pty Ltd	26/05/2024
24/002 (Rev C)	Traffic Impact Assessment Residential Planning Proposal	Intersect Traffic Pty Ltd	26/04/2024
Planning Proposal - Study Specifications - October 2023.pdf	Planning Proposal – Study Specifications	Midcoast Council	October 2023
230913 CCE Scoping Proposal.pdf	Cedar Creek Estate Scoping Proposal for Scoping Meeting 28 September 2023	Hampstead Property	13/09/2023
Planning Proposal Pre-Lodgement Meeting.pdf	Midcoast Council Planning Proposal Pre-Lodgement Meeting – 28 September 2023	Midcoast Council	28/09/2023
Ministerial Directions	Local Planning Directions	Dept of Planning	Issued to commence on 1 March 2020(replaces

Document Reference	Title	Created By	Dated
			previous Direction 7.3)
GIPAA-2024-0617101	Government Information (Public Access) Act 2009 (NSW) Notice of Decision: Released in part 2024-0617101 NOD as released	NSW Police Force	29/08/2024

The supplied project information included drawings as listed in **Table 1.4**.

Table 1.4 – Client Supplied Site Drawings

Project / Dwg. No.	Issue	Title	Drawn By	Drawn
351-23-00-SK1 Sheet 1 of 2	E	CONCEPT PRECINCT PLAN (Overall) Lot 92 Wingham Road, Wingham	Colliers	21/05/2024
351-23-00-SK1 Sheet 2 of 2	E	CONCEPT PRECINCT PLAN (Overall) Lot 92 Wingham Road, Wingham	Colliers	21/05/2024
351-23-00-SK1 Sheet 1 of 2	C	CONCEPT PRECINCT PLAN (Overall) Lot 92	Colliers	08/05/2024
351-23-00-SK1 Sheet 2 of 2	C	CONCEPT PRECINCT PLAN (Overall) Lot 92	Colliers	08/05/2024

1.2 Limitations

This technical report has been prepared for the Client. Technical reports prepared by Amenity Acoustics are undertaken in good faith as a deliverable of the client contract and are reliant on the details, conditions, and limitations of a specific services proposal, from client provided information, and from measurements and analysis stated herein.

There is inherent uncertainty present in environmental noise assessments as all possible variations in environmental conditions, the ambient noise environment or source combinations cannot be accessed and therefore professional judgement is exercised in the investigation and interpretation of reported findings.

The in-principle advice provided herein relates solely to possible acoustic requirements with the aim of achieving the specified noise level.

Amenity Acoustics accepts no responsibility for use by third parties of information or conclusions stated herein.

2 Project and Site Description

2.1 Site Description

The proposed residential development is situated at Lot 92 DP 1285477, on Wingham Road, Wingham, NSW. The proposed residential development is shown in **Figure 2.1**.

The 63.5-hectare property, zoned RU1 Primary Production, is largely cleared of vegetation and the topography slopes gently downward towards Cedar Party Creek to the north and east. The site is approximately 500 metres from the Wingham town centre at the closest point.

The southern site boundary adjoins the Wingham Road, and the western site boundary adjoins Youngs Road. Both roadways are single-lane, single carriage-way.

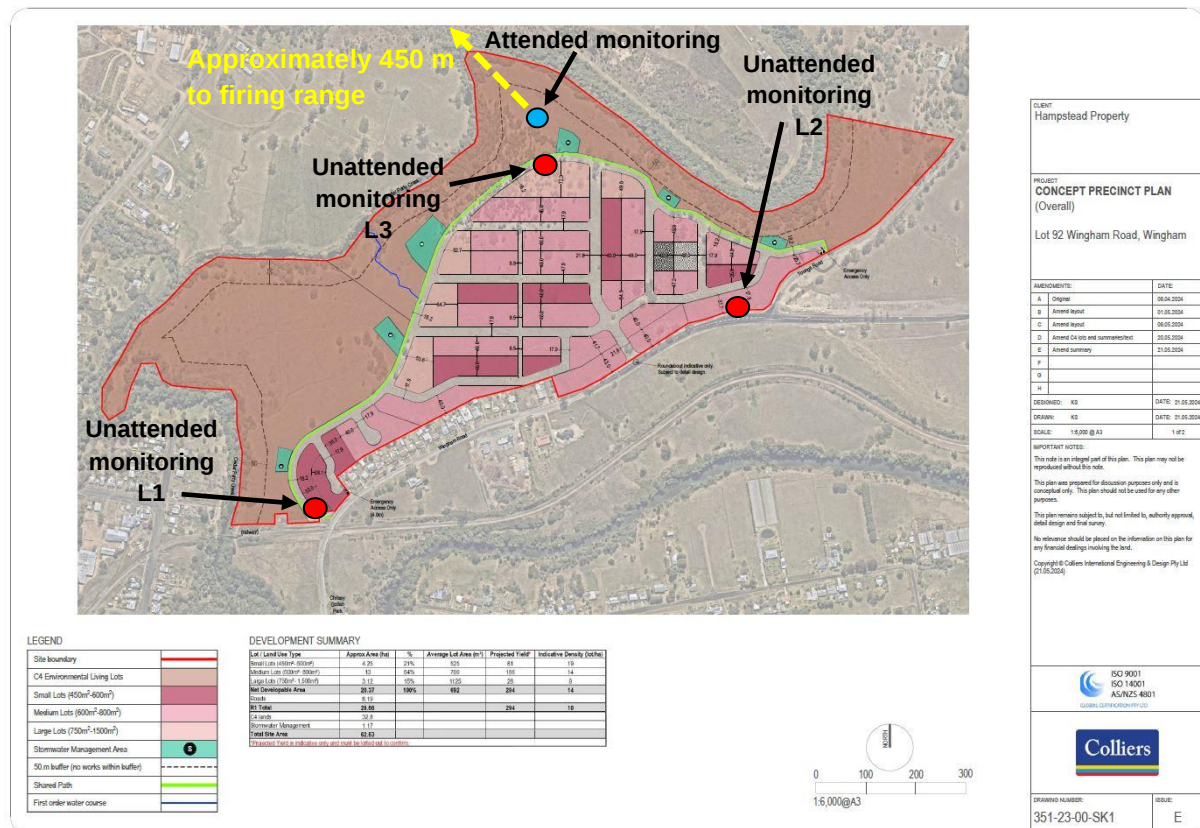
Wingham Road adjacent to the site is a sub-arterial road and is known as Regional Road 192 (RR 192), approximately 9 m wide with 3.5 m wide travel lanes and 1 m wide sealed

shoulders. Wingham Road has transitional speed limits, 50 km/hr near the rail crossing, changing to 60 km/hr next to the first Wingham Road premises and then to 90 km/h near the Young Road intersection.

Note: The Traffic Impact Assessment proposes the appropriateness of extending the 60 km/hr speed limit along Wingham Road, west of intersection with Youngs Road. Only the existing signposted traffic speed limits have been considered herein (as the model was calibrated against monitoring location L2 data, within the 90 km/hr zone), however, it is likely that the decrease in traffic speed from 90 to 60 km/hr would result in a reduced noise impact assessment across the eastern portion of the site.

2.2 Project Description

Figure 2.1 is the preliminary indicative lot layout – at the time of writing. There are approximately 300 individual allotments proposed to be developed in stages.



2.3 Traffic Impact Assessment

The Traffic Impact Assessment (Intersect Traffic, 24/002, Rev D) for the site has adopted a compound rate of 1.7% per annum background traffic growth for Wingham Road.

The relevant two-way mid-block traffic volume data extracted from the 2024 counts is shown below in **Figure 2.2**, along with predicted traffic volumes with just background traffic growth for 2029 (expected Stage 1 subdivision completion), 2034 (10-year horizon) and 2040 (development completion).

Table 1 – 2024, 2029, 2034 & 2040 peak hour mid-block traffic volumes									
Road	Section	2024		2029 @ 1.7% p.a.		2034 @ 1.7% p.a.		2040 @ 1.7% p.a.	
		AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)
Wingham Road	near railway crossing	967	1062	1052	1155	1245	1368	1631	1791

Figure 2.2 – Extract of Table 1 of the Traffic Impact Assessment [Intersect Traffic, 24/002, Rev D]

Figure 2.3 presents the future predicted peak hour traffic inclusive of traffic generated by the subject development distributed through the adjoining road network.

The addition of this traffic onto the future traffic volumes determined in **Section 5**, including the 1.7% annual background traffic growth will not result in the peak two-way mid-block capacity thresholds for all roads to be reached as demonstrated in **Table 2**, below.

Table 2 – Road Capacity Assessment –post development.

Road	Section	Capacity	2029 @ 1.7% p.a.		2034 @ 1.7% p.a.		2040 @ 1.7% p.a.		Development traffic	
		vtph	AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)	AM	PM
Wingham Road	east of subdivision access	2200	1093	1199	1326	1454	1793	1964	162	173
Wingham Road	near railway crossing	2200	1074	1178	1289	1414	1719	1883	88	92

Figure 2.3 – Extract of Table 2 of the Traffic Impact Assessment [Intersect Traffic, 24/002, Rev D]

3 Measurement of Existing Noise Levels

3.1 Unattended Sound Monitoring

An un-attended sound level monitoring survey was undertaken at three key site exposure locations representative of:

- the site transport corridors (road and rail) noise exposure, between 14:00 on the 1st March 2024 to 15:15 on the 9th March 2024; and,
- the ambient and background noise in northern portion of the site, representative of the northern most proposed residential boundary, between 16:00 on the 24th August 2024 to 09:30 on the 31st August 2024.

The monitoring locations are shown in **Figure 2.1**.

As per the requirements of the DNRCBR¹, the period of un-attended monitoring is considered reasonable and justifiable, adequately capturing the required representative sample of a minimum of 20 train pass-by events and a measurement period that includes a peak noise period.

Monitoring data was analysed and the existing site-specific noise levels were established per required descriptors for assessment purposes, to calibrate the existing transport corridor noise model. Equipment used in the unattended noise monitoring is detailed in **Table 3.1** and conforms to Australian Standard AS1259.2-1990 *Acoustics - Sound level meters - Integrating – Averaging*, Type 1 or 2.

Table 3.1 – Un-attended noise monitoring equipment details

Logging location	Instrument Type	Instrument Manufacturer / Model	Serial number	Calibration
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¹ Design principles are provided in the supporting guideline NSW Government Department of Planning (DoP) Development Near Rail Corridors and Busy Roads – Interim Guideline (DNRCBR), DoP 08_048, December 2008

L1 – Wingham Road, Wingham [Near railway crossing]	Environmental Noise Logger	ARL NGARA S-Pack	87812B	Within current calibration
L2 – Wingham Road, Wingham [Near intersection with Youngs Rd]	Environmental Noise Logger	RION NL-42EX	1173760	
L3 – Northern part of the site	Environmental Noise Logger	RION NL-42EX	117362	
-	Portable sound-level calibrator	Svantek SV-35A	64069	

Over the monitoring period, meteorological conditions from the locality were obtained from the Bureau of Meteorology (BOM) monitoring station, the Taree Airport Automatic Weather Station (AWS), ID 060141. Measurement data was excluded when it was raining or when the average wind speed during monitoring was greater than 5 m/s.

During the monitoring period, there was no track-work or industrial activity affecting rail movement frequency or typical pass by speed past the site for all the rail vehicle types (freight, and inter-region passenger). During the monitoring period, there was no road-work proximate to the site.

3.2 Attended Noise Monitoring Methodology

3.2.1 The Taree-Wingham Clay Target Club

The Taree-Wingham Clay Target Club (Shooting Club) operates from Lot 126 DP754454 which is part of the Cedar Party Creek Recreation Reserve at 70 Racecourse Road, Wingham. Lot 126 is owned by Crown Lands and the acoustic impacts of the Shooting Club were considered by Dunn & Hillam Architects when preparing a Feasibility & Masterplan Report for Wingham Racecourse finalised in February 2024.

As detailed in **Section 4.1.3.1**, a Shooting Range Approval has been obtained from NSW Police for the Shooting Club, however, no approval for the operation of the Shooting Club or similar could be issued by Council to assist the preparation of this assessment.

Attended monitoring of the Shooting Club was undertaken on 9 March 2024 during a 'Club Shoot' and unattended monitoring captured the acoustic levels of a Monthly Trap Competition on 25 August 2024.

Noise levels of the Shooting Club have been determined in accordance with the method prescribed in Schedule 2 of the *Protection of Environmental Operations (Noise Control) Regulation 2017 (NSW)*.

3.2.2 The Taree-Wingham Clay Target Club shooting range noise level contribution

Measurement and determination of the Taree-Wingham Clay Target Club shooting range noise level contribution (L_{Aeq}), as well as the ambient and background sound levels was undertaken by conducting four consecutive periods of 15-minute operator-attended noise monitoring at a site location indicative of the potentially most affected noise-sensitive residential receivers, the northern-most of the proposed Lot layout. The monitoring location is shown in **Figure 2.1** and was closer to the shooting club than the future Lot footprint, to clearly capture emitted shooting club noise. The attended sound monitoring survey was undertaken, between 13:15 to 14:33 on Saturday the 9th March 2024, capturing the scheduled Saturday afternoon 'Club Shoot'.

Operator-attended sound monitoring was undertaken with consideration to the requirements of relevant guidelines and Australian Standard AS1055. Noise measurements were not undertaken during rain or wind speeds greater than 5 m/s. Meteorological conditions during

monitoring, sourced from the BoM AWS ID 060141, were: average wind speeds of < 5 m/s; ESE-SW; temperature was 27-28 °C; humidity 58-65%, and no rain.

Equipment used in the operator-attended monitoring were within current calibration and are detailed in **Table 3.2**.

Table 3.2 – Operator-attended noise monitoring equipment details

Instrument Type	Instrument Manufacturer / Model	Serial number
Sound Level Meter	Larson Davis LD831 / AS1259 Type 1	0004379
Portable Acoustic Calibrator	Svantek, Type SV 35A	64069

3.3 Noise Monitoring Results

3.3.1 Unattended Sound Monitoring

3.3.1.1 Unattended monitoring time-domain charts

The unattended noise monitoring time-domain charts are presented in **Appendix 1**.

3.3.1.2 Monitoring Results – Background Noise Monitoring

Background noise monitoring results at unattended logging location L1 are presented in **Table 3.3**.

Table 3.3 – Background noise monitoring results, Location L1, Wingham Road, Wingham, 14:00, 01/03/2024 to 15:15, 09/03/2024 [L90, period dB(A)]

Date	Day	'Day' ¹ period ABL (Assessment Background Level) (7:00 – 18:00) L90, Day dB(A)	'Evening' period ABL (18:00 - 22:00) L90, Evening dB(A)	'Night' period ABL (22:00 - 7:00) L90, Night dB(A)
01/03/2024	Friday	51 ²	48	39
02/03/2024	Saturday	45	50	45
03/03/2024	Sunday	47	50	43
04/03/2024	Monday	51	48	39
05/03/2024	Tuesday	48	49	41
06/03/2024	Wednesday	48	50	44
07/03/2024	Thursday	50	50	40
08/03/2024	Friday	51	50	39
09/03/2024	Saturday	45 ²	– ²	– ²
RBL (Rating Background Level)		48	50	40

Note: 1. DAY period, 7:00 to 18:00 Monday to Saturday; or 8:00 to 18:00 on Sundays and public holidays.

2. '–' Insufficient data within the period / period not monitored.

Background noise monitoring results unattended logging location L2 are presented in **Table 3.4**.

Table 3.4 – Background noise monitoring results, Location L2, Wingham Rd site boundary near Youngs Rd, Wingham, 15:00, 01/03/2024 to 15:00, 09/03/2024 [L90, period dB(A)]

Date	Day	'Day' ¹ period ABL (Assessment Background Level) (7:00 – 18:00) L90, Day dB(A)	'Evening' period ABL (18:00 –22:00) L90, Evening dB(A)	'Night' period ABL (22:00 – 7:00) L90, Night dB(A)
01/03/2024	Friday	40 ²	39	40
02/03/2024	Saturday	41	42	42
03/03/2024	Sunday	37	40	40
04/03/2024	Monday	43	41	39
05/03/2024	Tuesday	40	42	37
06/03/2024	Wednesday	40	42	39
07/03/2024	Thursday	40	41	35
08/03/2024	Friday	39	41	37
09/03/2024	Saturday	40 ²	- ²	- ²
RBL (Rating Background Level)		40	41	39

Note: 1. DAY period, 7:00 to 18:00 Monday to Saturday; or 8:00 to 18:00 on Sundays and public holidays.
2. Insufficient data within the period / period not monitored.

Background noise monitoring results unattended logging location L3, the northern portion of the site, representative of the northern most proposed residential boundary are presented in Table 3.5.

Table 3.5 – Background noise monitoring results, Location L3, 16:00, 24/08/2024 to 09:30, 31/08/2024 [L90, period dB(A)]

Date	Day	'Day' ¹ period ABL (Assessment Background Level) (7:00 – 18:00) L90, Day dB(A)	'Evening' period ABL (18:00 –22:00) L90, Evening dB(A)	'Night' period ABL (22:00 – 7:00) L90, Night dB(A)
24/08/2024	Saturday	- ²	33	26
25/08/2024	Sunday	32	-	27
26/08/2024	Monday	31	31	24
27/08/2024	Tuesday	32	30	25
28/08/2024	Wednesday	34	34	25
29/08/2024	Thursday	31	31	22
30/08/2024	Friday	34	30	26
31/08/2024	Saturday	-	-	-
RBL (Rating Background Level)		32	31	25

Note: 1. DAY period, 7:00 to 18:00 Monday to Saturday; or 8:00 to 18:00 on Sundays and public holidays.
2. Insufficient data within the period / weather effected / period not monitored.

3.3.1.3 Monitoring Results – Ambient Noise Monitoring

Ambient noise monitoring results at unattended logging location L1 are presented in **Table 3.6** and **Table 3.7** as LAeq, period and LAeq, 1, 9 and 15 hour values.

Table 3.6 – LAeq, period ambient noise monitoring results, Location L1, Wingham Rd adjacent to railway crossing, Wingham, 14:00, 01/03/2024 to 15:15, 09/03/2024 [Leq, period dB(A)]

Date	Day	'Day' period (7:00 – 18:00) Leq, Day dB(A)	'Evening' period (18:00 – 22:00) Leq, Evening dB(A)	'Night' period (22:00 – 7:00) Leq, Night dB(A)
01/03/2024	Friday	60 ²	60	56
02/03/2024	Saturday	59	63	59
03/03/2024	Sunday	58	62	56
04/03/2024	Monday	60	59	57
05/03/2024	Tuesday	60	63	56
06/03/2024	Wednesday	61	62	56
07/03/2024	Thursday	61	63	57
08/03/2024	Friday	59	62	53
09/03/2024	Saturday	56 ²	– ²	– ²
Overall		60	62	57

Note: 1. Night period, 22:00 to 07:00 Monday to Saturday; or 8:00 on Sundays and public holidays.

2. Insufficient data within the period / period not monitored.

Un-attended transport corridor noise monitoring results are presented in **Table 3.7**.

Table 3.7 – Noise monitoring results, Location L1, Wingham Rd (adjacent to railway crossing), Wingham [dB(A)]

'Day' period (7:00 – 22:00)		'Night' period (22:00 – 7:00)	
Leq (15 hour) dB(A)	Leq (1 hour), dB(A)	Leq (9 hour), dB(A)	Leq, (1 hour), dB(A)
60	63	57	60

Ambient noise monitoring results at unattended logging location L2 are presented in **Table 3.8** as LAeq, period.

Table 3.8 – LAeq, period ambient noise monitoring results, Location L2, Wingham Rd site boundary near Youngs Rd, Wingham, 15:00, 01/03/2024 to 15:00, 09/03/2024 [Leq, period dB(A)]

Date	Day	'Day' period (7:00 – 18:00) Leq, Day dB(A)	'Evening' period (18:00 – 22:00) Leq, Evening dB(A)	'Night' period (22:00 – 7:00) Leq, Night dB(A)
01/03/2024	Friday	62 ²	60	54
02/03/2024	Saturday	61	61	56
03/03/2024	Sunday	61	61	57
04/03/2024	Monday	64	59	58
05/03/2024	Tuesday	63	62	58
06/03/2024	Wednesday	63	63	58
07/03/2024	Thursday	63	61	59
08/03/2024	Friday	63	60	54
09/03/2024	Saturday	61 ²	– ²	– ²
Overall		63	61	57

Note: 1. Night period, 22:00 to 07:00 Monday to Saturday; or 8:00 on Sundays and public holidays.

2. Insufficient data within the period / period not monitored.

Un-attended transport corridor noise monitoring results are presented in **Table 3.9**.

Table 3.9 – Noise monitoring results, Location L2, Wingham Rd (site boundary near Youngs Rd), Wingham [dB(A)]

‘Day’ period (7:00 – 22:00)		‘Night’ period (22:00 – 7:00)	
Leq (15 hour) dB(A)	Leq (1 hour), dB(A)	Leq (9 hour), dB(A)	Leq, (1 hour), dB(A)
62	65	57	63

Ambient noise monitoring results at location L3 are presented in **Table 3.10** as LAeq, period.

Table 3.10 – LAeq, period ambient noise monitoring results, Location L3, northern site portion, 16:00, 24/08/2024 to 09:30, 31/08/2024 [Leq, period dB(A)]

Date	Day	‘Day’ period (7:00 – 18:00) Leq, Day dB(A)	‘Evening’ period (18:00 – 22:00) Leq, Evening dB(A)	‘Night’ period (22:00 – 7:00) Leq, Night dB(A)
24/08/2024	Saturday	- ²	56	40
25/08/2024	Sunday	61 ³	-	45
26/08/2024	Monday	48	44	38
27/08/2024	Tuesday	50	59	41
28/08/2024	Wednesday	53	63	51
29/08/2024	Thursday	46	44	41
30/08/2024	Friday	56	60	40
31/08/2024	Saturday	-	-	-
Overall		52	58	45

Note: 1. Night period, 22:00 to 07:00 Monday to Saturday; or 8:00 on Sundays and public holidays.

2. Insufficient data within the period / weather effected / period not monitored.

3. Data excluded as it contained a shooting range competition within the period.

Ambient noise monitoring LAeq, 1, 9 and 15 hour results at unattended logging location L3 are presented in **Table 3.11**.

Table 3.11 – Noise monitoring results, Location L3, Location L3, northern site portion, 16:00, 24/08/2024 to 09:30, 31/08/2024

‘Day’ period (7:00 – 22:00)		‘Night’ period (22:00 – 7:00)	
Leq (15 hour) dB(A)	Leq (1 hour), dB(A)	Leq (9 hour), dB(A)	Leq, (1 hour), dB(A)
52	61 (with the contribution from the Taree-Wingham Clay Target Club Monthly Trap Competition on the 25/08/2024)	45	46
	59 (without the 25/08/2024 contribution)		

The Taree-Wingham Clay Target Club Monthly Trap Competition was held on Sunday the 25 August 2024. The events being contested were a 25t Handicap, 75t Champion of Champions shoot from 18 m (broken up into 3 rounds, 25t Double Barrel, 25t Single Barrel and 25t Pointscore) and the final event 20pr Deauville Doubles.

Results presented in **Table 3.11** show only a 2 dB increase in the day period LAeq, 1 hour results at the unattended logging location L3 when the contribution from the Taree-Wingham Clay Target Club competition on the 25/08/2024 is included. Noting that the metric to assess gun range firing contribution is relatively instantaneous and was considered best derived relative to the captured attended monitoring worst-case events.

3.3.2 Attended Sound Monitoring

Attended measurement results are presented **Table 3.12**. The intermittent, short-term firing noise acoustically dominates the existing otherwise semi-rural ambient noise environment. Other noise sources included road traffic noise from Wingham Road and the surrounding local road network, sporting game activity (cricket) and crowd noise (shouts, cheers and car horns) from the oval to the north, rural and domestic mechanical plant (tractors and motorbikes), intermittent aircraft noise (helicopters and planes), native fauna (insects, birds), and wind in the trees.

The clay target shooting range noise contribution was found to be **47 Leq, 1 hr dB(A)** and a worst-case 15-minute period contribution of **52 Leq, 15 min dB(A)**.

Appendix C of this report documents the assessed shot noise at the receiver location in the format as per Tables 1 and 2 in Section 6 of the NSW EPA's *Target Shooting Ranges: Application Note for Assessing Noise Compliance* (EPA 2015/0491). A total of 49 measurable gunshots noise levels were measured as detailed in Appendix C. This number of shots is considered acceptable, because Section 3.5 of EPA 2015/0491 states that '*Up to 50 audible and measurable gunshot noise levels ('shots') should be measured at each assessment location...*', and that the average peak shot measurement was acoustically dominant – at 11 dB higher – over the ambient peak level prior to the shot. The largest pressure difference being 30 dB higher.

Table 3.12 – Attended sound monitoring results, 12:15 - 14:33, 9th March 2024

Monitoring location	Start / finish time [HH:MM:SS]	Measured descriptor data					Shooting range contribution	
		[Li, 15 min dB(A)]				[LPeak Hold dB(Z)]	[Leq, 15 min dB(A)]	[LPeak Hold dB(Z)]
		Leq	Lmax	L1	L90			
Northern-most proposed Lot	13:15:33 - 13:30:33	53	83	65	38	59-99	52	89
	13:35:19 - 13:50:19	48	72	58	39	64-94	45	
	13:55:48 - 14:10:48	50	67	58	40	-	-	
	14:16:18 - 14:32:33	47	59	55	40	-	-	

4 Criteria

4.1 Internal Noise Levels

4.1.1 Transport and Infrastructure SEPP 2021

The internal acoustic performance requirements for new residential land use developments affected by noise from existing busy transport corridors (road and rail) in NSW, have been established based on World Health Organisation guidelines and are set out within the NSW Government *State Environmental Planning Policy (Transport and Infrastructure) 2021* (the Transport and Infrastructure SEPP). Design principles are provided in the supporting guideline NSW Government Department of Planning (DoP) *Development Near Rail Corridors and Busy Roads – Interim Guideline* (DNRCBR), DoP 08_048, December 2008.

The *Transport and Infrastructure SEPP* recognises that judicious land use planning, architectural design, building orientation and good internal layout can achieve acceptable acoustic amenity near busy transport corridors.

Applicable with **windows and doors closed**, the *Transport and Infrastructure SEPP* sets the acceptable internal noise levels of **35 dB(A) Leq** for bedrooms during the night-time period (at any time between 10:00 pm and 7:00 am) and **40 dB(A) Leq** for other habitable rooms (other

than a garage, kitchen, bathroom, or hallway) at any time. The night-time 'sleeping areas' criterion is 5 dB more stringent than the daytime and 'living areas' criteria.

The criteria for traffic corridor noise intrusion for specific room uses are derived from the maximum recommended internal design sound levels specified in the Australian/New Zealand Standard AS2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* for houses and apartments near major roads.

The acceptable internal L_{eq} transport corridor traffic noise level criterion per room type is summarised in **Table 4.1**.

Table 4.1 – Recommended design sound levels for different areas of occupancy in residential buildings

Activity type	Recommended 'maximum' design sound level, L_{eq} [dB(A) re: 20 μ Pa]	
	Day period (07:00 – 22:00)	Night period (22:00 – 07:00)
Sleeping areas (bedrooms)	40	35
Living areas (other habitable rooms)	40	40
Work areas (Garage, kitchen, bathroom, hallway)	45	45

If internal noise levels with windows or doors open exceed the criteria by more than 10 dB, the design of the ventilation for these rooms should be such that occupants can leave windows closed if they so desire and to also meet the ventilation requirements of the Building Code of Australia.

4.1.2 Applicability of the *Transport and Infrastructure SEPP*

Application of the *Transport and Infrastructure SEPP* requirements are *mandatory* only for residential developments near specific highly trafficked roads as listed in the guidelines, although the acoustic design advice offered in the *Transport and Infrastructure SEPP* may be useful when designing noise sensitive developments near other high traffic roads.

The *Transport and Infrastructure SEPP* imposes a mandatory requirement on Council consent authorities to take road corridor noise into account before determining development applications for noise sensitive developments on land in, or adjacent to, a road corridor when there is an annual average daily traffic (AADT) volume of greater than 40,000 vehicles. In other circumstances, the DNRCBR guidelines provide best practice advice where the proposed development is adjacent to a road with an AADT volume of 20,000 to 40,000 vehicles, or where the consent authority considers development is likely to be adversely affected by road noise or vibration.

For the proposed development, it is considered that application of the *Transport and Infrastructure SEPP* and DNRCBR requirements are *advisory* only, based on Wingham Road in proximity to the site being less than 20,000 AADT. The latest traffic classifier counts along Wingham Road, 60 m north of the railway crossing, were undertaken the week beginning the 12th March 2024. Combined eastern and western bound AADT data was approximately 9945 with a heavy vehicle percentage of 1%, day (07:00-22:00) and night (22:00-07:00) period AADT was approximately 9036 and 909, respectively. For even a conservative traffic growth of 3%, the application of the *Transport and Infrastructure SEPP* and DNRCBR requirements would likely remain *advisory* over the reasonable planning horizon of 10 years from project completion, as it would take approximately 24 years for the AADT to reach 20,000.

4.1.3 Shooting Range

4.1.3.1 Addressing the Planning Proposal Directions

The Midcoast Council's *Planning Proposal Pre-Lodgement Meeting* (28/09/2023) directions included, '*Local Planning Direction – 5.4 Shooting Ranges needs to be addressed as the site adjoins the Wingham Clay Target Club.*'

The proposed development is considered justified in the context of the objectives of Local Planning Direction 5.4 Shooting Ranges.

Although the site does not share a boundary with the shooting range (refer to **Figure 4.1**), the Local Planning Direction 5.4 Shooting Ranges is considered applicable and conclusions of the report account for the direction.

The objectives of the direction are addressed in the following table.

5.4 Shooting Ranges - Objectives	NIA Response
a) maintain appropriate levels of public safety and amenity when rezoning land adjacent to an existing shooting range,	The portion of the site proposed to accommodate residential development is approximately 450 metres from shooting range and the impacts have been assessed through attended and unattended monitoring.
b) reduce land use conflict arising between existing shooting ranges and rezoning of adjacent land,	There is a significant buffer between the shooting range and proposed residential area which includes dense vegetation and Cedar Party Creek which minimises any potential land use conflict.
c) identify issues that must be addressed when giving consideration to rezoning land adjacent to an existing shooting range.	Issues identified within this report are addressed by the proposed noise mitigation measures and are considered reasonable in the context of the proposed development.

Nonetheless, the day period assessment includes consideration of potential impacts on the residential development from the Taree-Wingham Clay Target Club shooting range, located at Lot 126 DP 754454, known as 70 Racecourse Road, Wingham and accessed via Comboyne Road, Wingham.

The shooting range is approximately 200 m from the site boundary and approximately 450 m from the part of the site proposed to accommodate residential development.

Therefore, this NIA is an Leq environmental noise impact assessment of representative noise from the shooting range use across the proposed development site. As such, the required category of construction relative to noise exposure, as summarised in **Table 7.2** have been applied.

The Shooting Range Approval issued by NSW Police Force (the Police Approval) for the Taree-Wingham Clay Target Club at 70 Racecourse Rd, Wingham was issued on 04/04/2023 and expires on 03/04/2028. The approval holder must not operate the shooting range in contravention of any conditions required by the Police Approval.

Approved operational hours for the facility are not addressed in the Police Approval although Condition 6 requires that "*Permissive shooting rights and local consent authority sought in relation to this approval must remain current.*"

As Council are the Appropriate Regulatory Authority (ARA) for private gun, rifle and/or pistol clubs, an informal information request was submitted to Council under the Government Information (Public Access) Act 2009 (NSW) seeking information regarding the permitted operation of the Shooting Club. On 16/09/2024 a Council Governance officer advised "*I have conducted a search of our electronic and historical records but was not able to find any development consents relating to the operation of the Taree-Wingham Clay Target Club or similar.*"

If the activity is subject to a development consent issued by council, the conditions in the consent apply.

As it is unclear whether the Shooting Club has a current approval and/or a commissioning compliance assessment for the operation of the Shooting Club from Council, and if it does, what the conditions of operation permit, Amenity Acoustics has assessed the following relevant NSW legislation and Government guidelines:

- *Noise Guide for Local Government* (EPA 2022P4215, January 2023)
- Protection of the Environment Operations (Noise Control) Regulation, CI 70 (POEO, 2017)
- Schedule 2: Determining Noise Levels from Shooting Ranges
- *Target Shooting Ranges: Application Note for Assessing Noise Compliance* (EPA 2015/0491) (the Application Note).

The Application Note clarifies EPA guidance on compliance assessment of shooting noise at target shooting ranges. Given no relevant consent or approval conditions for the operation of the Shooting Club could be obtained, the noise criteria for the shooting range should be informed with consideration to *Chapter 164, Noise Control Guideline, Target Shooting Ranges* of the NSW EPA's *Environmental Noise Control Manual* [EPA 94/31 ISBN 0 7310 1230 5, 10/5/85] (ENC Manual), which is included as Appendix A to the aforementioned Application Note and an extract is provided following.

The guideline specifies criteria for assessing the effect on nearby residences of pistol, rifle or gun club shooting range when the propellant is explosive. Criteria may be used for guidelines and less stringent figures could be used if site details and topography are very favourable. Measurement should be made at the worst affected location and consideration should be given to any neighbouring vacant land zoned as residential. Note that any premises used for competitive shooting where the propellant is explosive are scheduled premises under the Act.

Time of Day Restrictions

Daytime operation is considered as being from 10 a.m. to 5 p.m. Night operations normally extended from 5 p.m. to 10 p.m. To cater for special events such as state or national championships or charity shoots, the EPA may consider an extension of the times on both nights in one weekend provided such events occur no more than two or three times a year.

Restricted Number of Days

Peak Hold (Linear) readings are taken as the most affected residential boundary. The number of days and nights usage of the range should be limited to correspond with the measured level as shown in the table on page 164-2.

A concession has been made in the case of existing ranges and is included in the table. This may be subject to future review by the EPA.

Alterations to existing ranges should incorporate a movement towards the "Future Range" figures whenever possible.

	RESIDENTIAL LEVEL dB(Lin) Peak Hold										
	60	65	70	75	80	85	90	95	100	105	over 105
	MAXIMUM USAGE Days (Nights) per wk										
Existing Range Daytime Use	7	7	7	7	7	7	5	4	3	2	1
Existing Range Night-time Use	3	3	2	2	2	1	-	-	-	-	-
Future Range Daytime Use	7	5	5	4	3	2	1	-	-	-	-
Future Range Night-time Use	3	2	1	-	-	-	-	-	-	-	-

Figure 4.1 shows the location of existing residential dwellings in closer proximity to the Shooting Club than the closest area proposed for housing at the subject site. It is unclear if potential acoustic impacts of the operations of the Shooting Club have been assessed for these dwellings, however, if the Shooting Club is operating within the conditions of its planning approval (if any), then the potential noise exposure levels for dwellings closer than the proposed residential development may have been considered acceptable.

The Police Approval requires the Shooting Club consent to be current, suggesting that the potential impacts may need to be considered from April 2023 when granted.

Attended measurement results presented in **Table 3.12** show that the measured shooting range result was 89 $L_{Peak Hold}$ dB(Z) for the wind and atmospheric conditions at the time. A measurement of 89 $L_{Peak Hold}$ dB(Z) falls between the 5 dB range 85-90 dB(Lin), equating to a maximum daytime usage of the existing range to between seven (7) to five (5) days per week and between one (1) to no night time per week use, to be considered acceptable for nearby residential. To cater for special events such as state or national championships or charity shoots, the EPA may consider an extension of the times on both nights in one weekend provided such events occur no more than two or three times a year.

Alternatively, if the Shooting Club was to seek approval under the Application Note as a new range or as an alteration to the existing range, then based on the monitoring at “the most affected residential boundary”, as required by the Application Note, a maximum daytime usage of the existing range between two (2) to one (1) days per week and no night time per week use would be permitted which is thought to exceed the current usage of the Shooting Club.

Further, the Application Note includes provisions that would allow the Shooting Club to seek extensions for special events, and to seek less stringent figures (i.e. increased maximum usage) where site details and topography are very favourable.

This evidence based reasoning demonstrates that when considering the impact on the proposed residential development of the Planning Proposal, the operation of the Shooting Club could comfortably comply with the Application Note requirements, even under the “Future Range” provisions and without relying on extensions of concessions.

Accordingly, based on data presented and relevant guidelines, the proposed residential development and the Shooting Club are reasonably compatible land uses in the context of potential impacts. No assessment of compliance has been considered for the existing residential properties closer to the Shooting Club than the proposed development.

Without an approval for the operation of the Shooting Club, an assessment has been undertaken based on relevant guidelines and legislation. When analysed against data collected from acoustic monitoring at the closest proposed residential area to the Shooting Club, it is concluded that appropriate levels of public safety and amenity are achieved and that little land use conflict will arise from the rezoning of the proposed land. The proposal is justifiably consistent with the 5.4 Shooting Ranges of the Ministerial Directions.

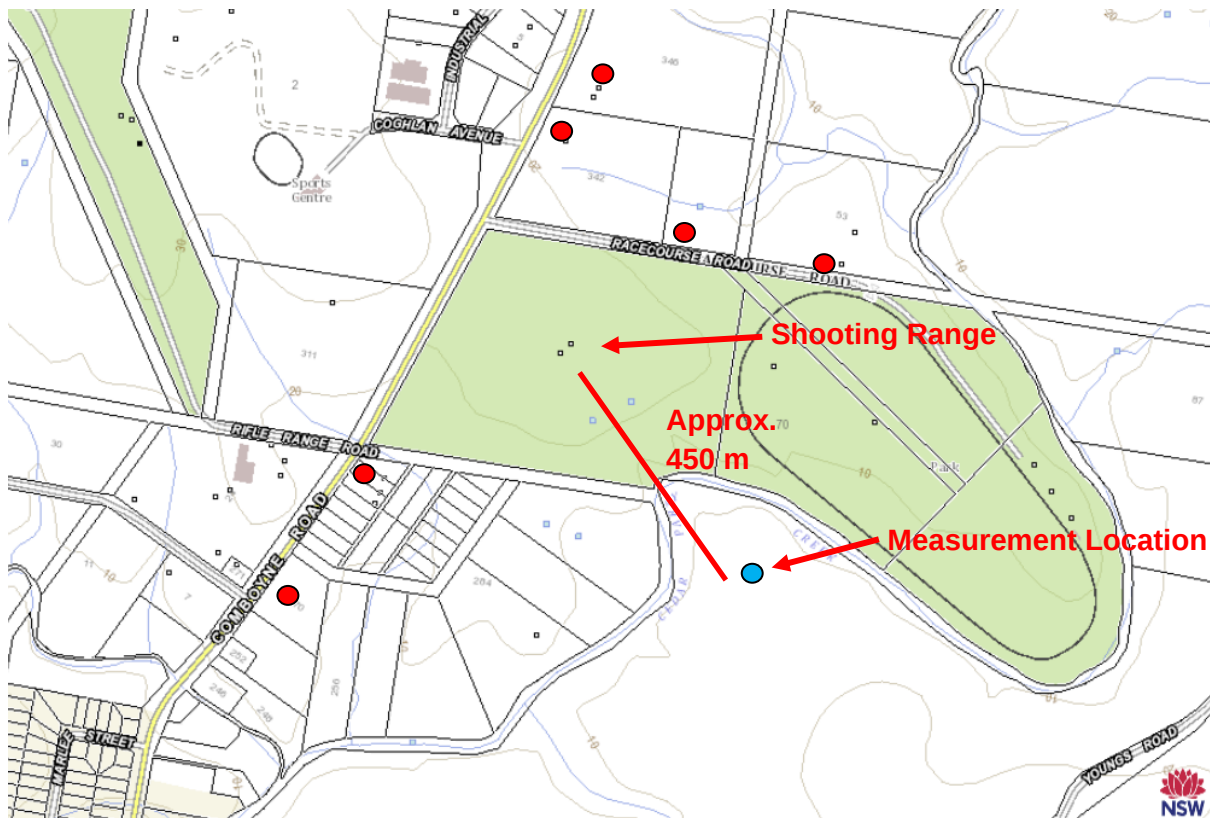


Figure 4.1 – Existing residential dwellings (shown as red dots) offset at similar or nearer distances from the shooting range at the time of the *Shooting Range Approval*. The measurement location is approximately 450 m from the centre of the firing area. [Department of Customer Service Spatial Information Exchange, 2024]

4.1.3.2 Case Study from the Application Note

Figure 4.2 presents a relevant case study from Section 2.14.4 Case Study, of the Noise Guide for Local Government of how a Council compliance officer would assess whether the shot noise emitted from an operationally compliant range would constitute ‘offensive noise.’

2.14.4. Case study

Council receives complaints about noise from a long-established outdoor shooting range located in the upper reaches of a valley. The complaints are made by residents of a suburb that has been developed in stages in the lower reaches of the valley over the preceding three years. Council is the ARA for this source of noise.

How can council respond?

- Because the range has been in existence for some time, it is operating under a development consent that does not include noise conditions. This is because the surrounding land was unoccupied when the range was established. Council is unable to vary the consent as there have been no changes to the operation of the shooting range. However, council planners should be mindful of the potential for land-use conflicts when considering rezoning or subdivision proposals for this development in the future.
- The range is owned, freehold, by the shooting club that manages it. This means that council does not have the option of controlling noise by varying the lease conditions.
- By visiting the suburb on a day on which shooting is taking place, the officer notes that the shot noise is loud in the bedrooms and living rooms of all the dwellings whose residents have complained. The number of complaints recorded suggests that a large number of people are affected. However, the noise does not occur often – the range is used at weekends, and in daylight only – and the length of time for which the range has been operating means that shot noise cannot be considered to be unusual for the locality. The officer concludes that it would be unreasonable to determine the shot noise emitted from this range to be offensive noise. (See Part 2, section 4.2.1 of this guide for advice on what constitutes ‘offensive noise’). On this basis the officer concludes that immediate action, for example a noise abatement direction, is not warranted in this instance.

Figure 4.2 – Extract of Section 2.14.4 Case Study, of the Noise Guide for Local Government.

The above scenario could be considered similar to the circumstances of Wingham as there is a pre-existing shooting range, however, it is unclear if the Shooting Club at Wingham has approval for operation and the land the Shooting Club operates on is owned by Crown Lands so is not owned in freehold by the Shooting Club.

Based on the case study, even if the noise was considered to be loud (which is not anticipated to be the case at the proposed development due to the distance and the buffer of the Shooting Club), given the noise does not occur often and only occurs during daytime on weekends, it would be unreasonable to determine the shot noise emitted from the Shooting Club to be 'offensive noise' and no noise abatement would be warranted.

5 Noise Modelling

5.1 Methodology and assumptions

5.1.1 Noise Modelling Methodology

Based on site specific circumstances (topography, ground types, existing infrastructure, and buildings) and the noise influence of the surrounding rail corridor, road network and gun range, a 3D computer environmental noise model was created of existing (to calibrate the model) and predicted future transport corridor noise (year 2029 and 2040) across the site using Datakustik Computer Aided Noise Abatement (CadnaA) Noise Prediction Software.

Representative façade noise levels contours across the site were predicted at 1.8 m above assumed ground floor dwelling heights. First-floor contours are modelled at 4.8 m above the assumed ground floor dwelling heights.

Using current year 2024 AADT along Wingham Road, predicted noise levels calibrated against the two site logging location were within +/- 2 dB.

The predict noise levels across the site were the cumulative impact from a worst-case scenario in the day-time of rail noise, road traffic noise and noise from clay target shooting. During the night-time, only the cumulative road and rail noise contribution was assessed, assuming no night-time shooting.

5.1.2 Year 2029 future rail traffic noise levels

Year 2029 future rail traffic noise levels – equating to the expected Stage 1 subdivision completion – were assumed to be equivalent to those rail noise contribution levels experienced currently, as explained below.

As stated in the DNRCBR, for a L_{eq} based on averaging several noise events (such as rail passbys) an increase of 2 dB is equivalent to increasing the number of passbys by 60 percent. As rail traffic volumes past the site are not expected to increase by a significant percentage, if at all, the likely relative increase in cumulative rail noise level growth per period is considered to be insignificant.

Also, as all current and future rail vehicles must comply with noise emission criteria which is unlikely to increase, it is expected that future emitted rail traffic noise will be equivalent to or potentially lower than those rail noise contribution levels experienced currently. The current noise levels were therefore considered representative of a worst-cast scenario of likely experienced rail noise levels.

5.1.3 Year 2029 and 2040 road traffic volumes

In line with the assessment criteria timeframe methodology of Section 2.5.3 of the *NSW Road Noise Policy* (RNP) [Department of Environment, Climate Change and Water, DECCW 2011/236, March 2011] and Section 2.1 of the Australian Standard AS3671-1989, *Acoustics*

– *Road Traffic Noise Intrusion – Building Siting and Construction*, assessment of road traffic noise exposure for developments is required to be evaluated at two points in time, namely:

- within one year of opening; and
- for a design year - typically ten years - after opening (the reasonable planning horizon).

Barring alternate routes or bypasses being constructed, the noise exposure levels occurring 10 years after opening resulting from higher traffic volumes are generally higher than those within one year of opening.

The relationship between road traffic noise descriptors is site specific and is dependent on factors such as road design, traffic density, composition, and offset distance from the roadway. The model was considered validated by deriving site-specific conversion factors relative to the measured results.

The future predicted peak hour vehicle trips per hour (VTPH) for 2029 (expected Stage 1 completion) – inclusive of traffic generated by the subject development distributed through the adjoining road network – and year 2040 (development completion) are shown in **Figure 2.2** of this report. VTPH volumes were predicted using a compounded rate of 1.7% annual growth, with 1% percentage heavy vehicles.

6 Rail Vibration

The Development Near Rail Corridors and Busy Roads – Interim Guideline considers potential health impacts including noise and vibration on people living and working near major transport corridors.

As the North Coast Rail is in proximity to the subject site, it is necessary to consider the potential impacts on a future residential community. The North Coast Rail accommodates infrequent, non-continuous intermittent train trips past the subject site.

3.5.1 *Rail Corridors* of the DNRCBR includes a Rail Vibration section which states:

The vibration assessment zone for typical development sites adjacent to rail corridors or above rail tunnels is shown in Figure 3.2. The assessment zone may need to be increased for specific areas where vibration issues are known to already exist. Refer to section 3.6.3 vibration criteria for additional information. Developments within this zone will need a vibration assessment.

Figure 3.2 of the DNRCBR requires a vibration assessment for the following distances of relevant land uses from the nearest operational track:

- 25 metres for Single Residential Buildings on “Hard” ground, such as sandstone
- 60 metres for Other Vibration Sensitive Buildings

Amenity Acoustics understands that the Planning Proposal does not propose any vibration sensitive buildings, such as auditoria, laboratories and board rooms, so complies with the DNRCBR in this regard.

Based on the distance of the North Rail Line from the site boundary, plus the width of easements within the subject site for access, overhead power and a sewer pipeline, no residential buildings are proposed within 25 metres of the operational track. Even in the absence of easements, no residential buildings are proposed within this area.

The DNRCBR refers to hard ground such as sandstone however the Geotechnical Investigation by DRB Consulting Engineers dated 8 May 2024 reveals that Borehole 1, which is in close proximity to the part of the site near the North Rail Line, contains 0-150 mm topsoil and silty gravelly clay 150-600 mm deep before encountering weathered sandstone.

Further, the Civil Package by DRB also shows 2-3 metres of fill in the closest area to the tracks that could accommodate a dwelling, which combined with the existing ground conditions confirm that the ground will not be hard, resulting in reduced vibration transfer.

Assessment of the potential for vibration impacts generated by train movements of the North Coast Rail on a future residential community at the subject site have been assessed in accordance with the DNRCBR. As residential buildings will be outside the 25 metres distance stated by the DNRCBR that may require a vibration assessment, plus the existing and proposed ground conditions are favourable to stifle vibration, no further vibration assessment is deemed necessary for the Planning Proposal.

7 Recommendations

7.1 Minimum building element acoustic performance based on modelled external façade noise levels

The external noise contribution exposure level incident on the house façades was assessed over the normal audible frequency range between 50 - 5000 Hz. The external noise exposure level used in the sound transmission calculations is the free-field level incident onto the building façade as no building footprints are known.

The minimum building element acoustic performances per standard construction for the proposed categories of noise control treatment for the sleeping areas and other habitable areas of the single / dual occupancy residential development that are directly exposed to noise are shown in **Table 7.1**.

Table 7.1 – Minimum building element acoustic performance per Standard Constructions for proposed categories of noise control treatment

Category of Noise Control Treatment	Weighted Sound Reduction Index [R_w] of Building Elements (minimum assumed)				
	Windows/Sliding Doors	Frontage Façade	Roof	Entry Door	Floor
Category 1	24	38	40	28	29
Category 2	27	45	43	30	29
Category 3	32	52	48	33	50

To relate the predicted noise exposure contours (refer **Section 8**) across the site to the recommended construction category, assessed relative to the most critical sleeping areas, refer to **Table 7.2**.

Table 7.2 – Noise exposure contours to recommended construction category – Sleeping Areas

Period of the Day	External Noise Level L_{eq} [dB(A) re: 20 μ Pa]	Category of Noise Control Treatment
Day (7:00 to 22:00)	$L_{eq} \leq 50$	Category 1
	$50 < L_{eq} \leq 65$	Category 2
	$65 < L_{eq} \leq 75$	Category 3
Night (22:00 to 7:00)	$L_{eq} \leq 45$	Category 1
	$45 < L_{eq} \leq 60$	Category 2
	$60 < L_{eq} \leq 70$	Category 3

The required element acoustic performance targets are presented in terms of Weighted Sound Reduction Index (R_w) values allowing alternatives to the standard constructions to be found.

The recommended standard (or *deemed-to-satisfy*) building element noise control treatment options per category of construction are provided in **Table 7.3** through **Table 7.5**.

Table 7.3 – Category No. 1 minimum building element proposed construction options

Building Element	Standard construction option
Windows/ Sliding Doors	Openable with minimum 4 mm monolithic glass and standard weather seals
Frontage Façade	Timber Frame or Cladding: 6 mm fibre cement sheeting or weatherboards or plank cladding externally, 90 mm deep timber stud or 92 mm metal stud, 13 mm standard plasterboard internally
	Brick Veneer: 110 mm brick, 90 mm timber stud or 92 mm metal stud, minimum 50 mm clearance between masonry and stud frame, 10 mm standard plasterboard internally
	Double Brick Cavity: Two leaves of 110 mm brickwork separated by 50 mm gap
Roof	Pitched concrete or terracotta tile or metal sheet roof with sarking, 10 mm plasterboard ceiling fixed to ceiling joists, R1.5 insulation batts in roof cavity.
Entry Door	35 mm solid core timber door fitted with full perimeter acoustic seals
Floor	1 layer of 19 mm structural floor boards, timber joist on piers
	Concrete slab floor on ground

Table 7.4 – Category No. 2 minimum building element proposed construction options

Building Element	Standard construction option
Windows/ Sliding Doors	Openable with minimum 6 mm monolithic glass and full perimeter acoustic seals
Frontage Façade	Timber Frame or Cladding: 6 mm fibre cement sheeting or weatherboards or plank cladding externally, 90 mm deep timber stud or 92 mm metal stud, 13 mm standard plasterboard internally with R2 insulation in wall cavity.
	Brick Veneer: 110 mm brick, 90 mm timber stud or 92 mm metal stud, minimum 50 mm clearance between masonry and stud frame, 10 mm standard plasterboard internally
	Double Brick Cavity: Two leaves of 110 mm brickwork separated by 50 mm gap
Roof	Pitched concrete or terracotta tile or metal sheet roof with sarking, 10 mm plasterboard ceiling fixed to ceiling joists, R2 insulation batts in roof cavity.
Entry Door	40 mm solid core timber door fitted with full perimeter acoustic seals
Floor	1 layer of 19 mm structural floor boards, timber joist on piers
	Concrete slab floor on ground

Table 7.5 – Category No. 3 minimum building element proposed construction options

Building Element	Standard construction option
Windows/ Sliding Doors	Openable with minimum 6.38 mm laminated glass and full perimeter acoustic seals
Frontage Façade	Brick Veneer: 110 mm brick, 90 mm timber stud or 92 mm metal stud, minimum 50 mm clearance between masonry and stud frame, 10 mm standard plasterboard internally
	Double Brick Cavity: Two leaves of 110 mm brickwork separated by 50 mm gap

Roof	Pitched concrete or terracotta tile or metal sheet roof with sarking, 1 layer of 13 mm sound-rated plasterboard ceiling fixed to ceiling joists, R2 insulation batts in roof cavity.
Entry Door	40 mm solid core timber door fitted with full perimeter acoustic seals
Floor	Concrete slab floor on ground

8 Noise Modelling Results

8.1 Concept Lot layout

Council have requested (PP2024/0001) that Lot numbers be provided. The Lot number can be found in the *Planning Proposal*, submitted drawing file reference 351-23P L01 [02] - *Concept Lot layout*, drawn 14/10/2024. An extract of 351-23P L01 [02] is presented in **Figure 8.1** for further reference.

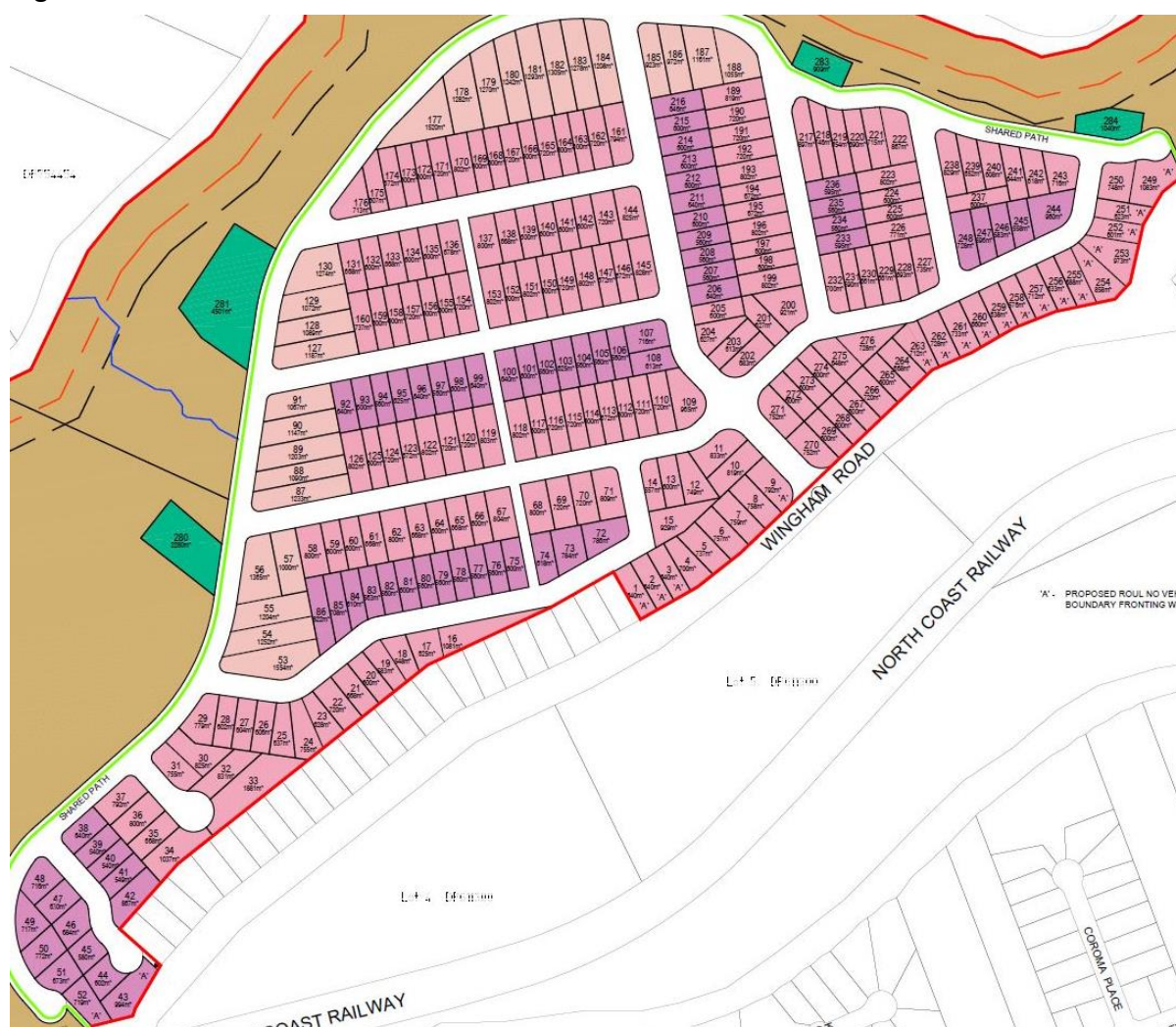


Figure 8.1 – Extract of the Concept Lot layout [Source, drawing file reference 351-23P L01 [02] - *Concept Lot layout*, drawn 14/10/2024]

8.2 Year 2029 Day period peak hour – Ground Floor

The results of the modelled scenario of year 2029 day period noise contours across the site at 1.5 m high, representative of a ground floor façade, with contributions from road, rail, and shooting range, are shown in **Figure 8.2**.

Partial acoustic shielding effects are provided by the dwellings and fences of the group of existing residential premises along the northern side of Wingham Road.

As shown in **Figure 8.2**, for the year 2029 day period, the majority of the site falls under the Category 2 construction requirements ($50 < L_{eq} \leq 65$), even with consideration of shooting noise. In the areas shown below the 50 L_{eq} dB(A) contours, Category 1 construction requirements apply.

There is a small portion of the site, adjacent to Wingham Road, at greater than 65 dB(A) where Category 3 construction would be required.

Where external façade levels exceed 60 dB(A) during the day period, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.



Figure 8.2 – Year 2029 Day period, ground floor noise contours

8.3 Year 2029 Day period peak hour – First Floor

The results of the modelled scenario of year 2029 day period noise contours across the site at 4.5 m high, representative of a first floor façade, with contributions from road, rail, and shooting range, are shown in **Figure 8.3**.

As shown in **Figure 8.3**, for the year 2029 day period, the majority of the site falls under the Category 2 construction requirements ($50 < L_{eq} \leq 65$).

First floors receivers in the western corner of the site, in the C4 environmental living lots area are shown to be shown below the 50 L_{eq} dB(A) contours, where Category 1 construction requirements apply.

There is a small portion of the site, adjacent to Wingham Road, exposed to both rail and road noise, at greater than 65 dB(A) where Category 3 construction would be required.

Where external façade levels exceed 60 dB(A) during the day period, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.



Figure 8.3 – Year 2029 Day period, first floor noise contours

8.4 Year 2029 Night period – Ground Floor

The output of the year 2029 night period modelled scenario, 1.5 m high noise contours, with only road and rail contribution are shown in **Figure 8.4**.

As shown in **Figure 8.4**, for the year 2029 night period, the majority of the site falls under the Category 2 construction requirements ($45 < Leq \leq 60$). In the areas shown below the 45 Leq dB(A) contours, Category 1 construction requirements apply.

There is a small portion of the site, adjacent to Wingham Road, at greater than 60 dB(A) where Category 3 construction would be required.

Where external façade levels exceed 55 dB(A) at night, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.



Figure 8.4 – Year 2029 Night period, ground floor noise contours

8.5 Year 2029 Night period – First floor

The output of the year 2029 night period modelled scenario, 4.5 m high, first floor noise contours, with only road and rail contribution are shown in **Figure 8.5**.

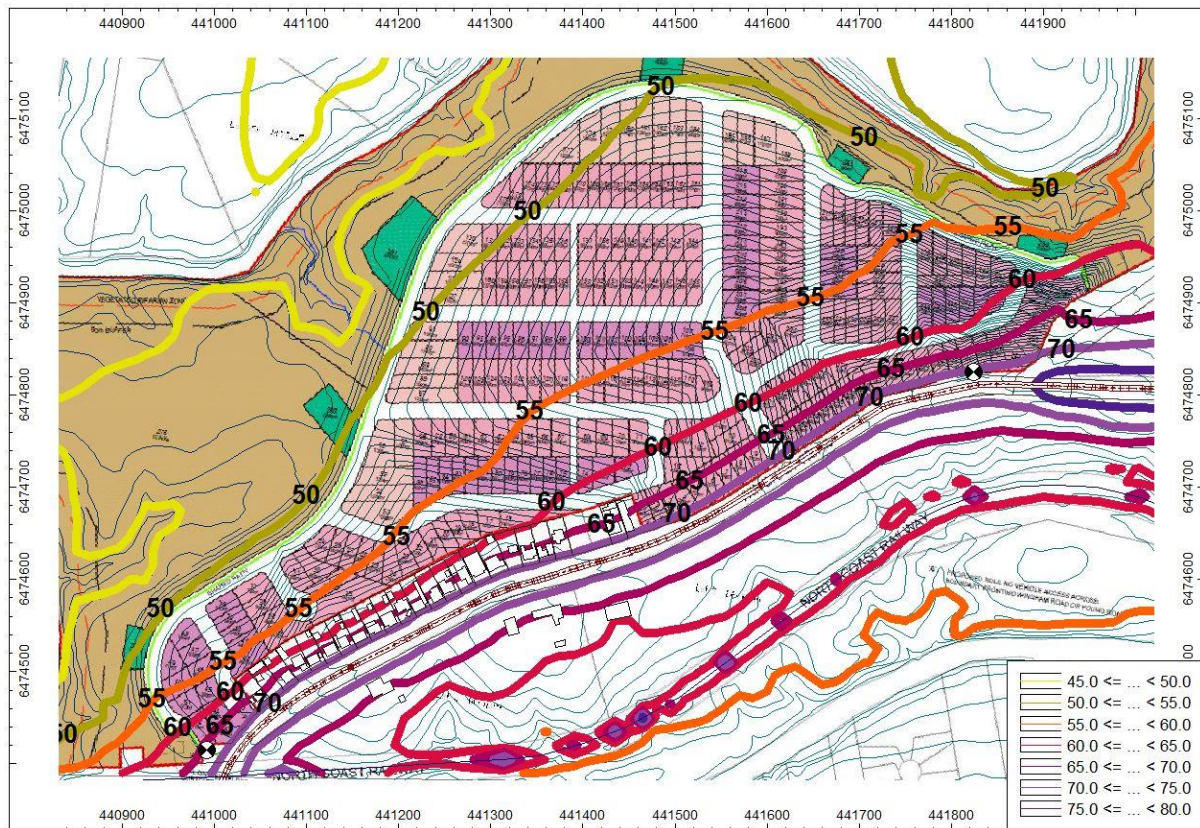


Figure 8.5 – Year 2029 Night period, first floor noise contours

As shown in **Figure 8.5**, for the year 2029 night period, the majority of the northern portion of the site falls under the Category 1 construction requirements. The remaining portion of the site nearest Wingham Road and the railway corridor, between 45-60 dB require Category 2 construction, apart from a small portion of the Lots that adjoin Wingham Road, where depending on the façade setback may require Category 3 construction on the potentially worst affected façades.

Where external façade levels exceed 55 dB(A) at night, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.

8.6 Year 2040 Day period – Ground Floor

The results of the modelled scenario of year 2040 Day period noise contours across the site at 1.5 m high, representative of a ground floor façade, with contributions from road, rail, and shooting range, are shown in **Figure 8.6**.



Figure 8.6 – Year 2040 Day period, ground floor noise contours

As shown in **Figure 8.6**, for the year 2040 day period, the majority of the site falls under the Category 2 construction requirements ($50 < L_{eq} \leq 65$), even with consideration of shooting noise.

Ground floor receivers in the western corner of the site, in the C4 environmental living lots area are shown to be shown below the 50 L_{eq} dB(A) contours, where Category 1 construction requirements apply.

For a small strip of the Lots that adjoin Wingham Road, depending on the final façade setback of constructed dwellings may require Category 3 construction on the potentially worst affected façades.

8.7 Year 2040 Day period – First Floor

The results of the modelled scenario of year 2040 Day period noise contours across the site at 4.5 m high, representative of a first floor façade, with contributions from road, rail, and shooting range, are shown in **Figure 8.7**.



Figure 8.7 – Year 2040 Day period, first floor noise contours

As shown in **Figure 8.7**, for the year 2040 day period, the majority of the site falls under the Category 2 construction requirements ($50 < Leq \leq 65$), including consideration of shooting noise.

First floor receivers in the western corner of the site, in the C4 environmental living lots area are shown to be shown below the 50 Leq dB(A) contours, where Category 1 construction requirements apply.

For a small strip of the Lots that adjoin Wingham Road, depending on the final façade setback of constructed dwellings may require Category 3 construction on the potentially worst affected first floor façades.

8.8 Year 2040 Night period – Ground Floor

The output of the year 2040 night period modelled scenario, 1.5 m high noise contours, with only road and rail contribution are shown in **Figure 8.8**.



Figure 8.8 – Year 2040 Night period, Ground floor noise contours

As shown in **Figure 8.8**, for the year 2040 night period, the southern portion of the site falls under the Category 2 construction requirements ($45 < L_{eq} \leq 60$). For the northern half of the site shown below the 45 L_{eq} dB(A) contours, Category 1 construction requirements apply.

There is a small portion of the site, adjacent to Wingham Road, at greater than 60 dB(A) where Category 3 construction would be required.

Where external façade levels exceed 55 dB(A) at night, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.

8.9 Year 2040 Night period – First Floor

The output of the year 2040 night period modelled scenario, 4.5 m high first floor noise contours, with only road and rail contribution are shown in **Figure 8.9**.



Figure 8.9 – Year 2040 Night period, First floor noise contours

As shown in **Figure 8.9**, for the year 2040 night period, the majority of the northern portion of the site falls under the Category 1 construction requirements. The remaining portion of the site nearest Wingham Road and the railway corridor, between 45-60 dB require Category 2 construction, apart from a small portion of the Lots that adjoin Wingham Road, where depending on the façade setback may require Category 3 construction on the potentially worst affected façades.

Where external façade levels exceed 55 dB(A) at night, and subject to further assessment as part of a Development Application, occupied spaces of proposed residences may require additional mechanical ventilation requirements to achieve the internal noise levels.

8.10 Additional ventilation requirements

Living spaces of the proposed residences may require – subject to further assessment as part of a Development Application – additional ventilation requirements to achieve the internal noise levels where external façade levels exceed 55 dB(A) at night and/or 60 dB(A) during the day period.

Consideration of ventilation requirements for noise-exposed rooms will be required to meet the provisions of the Building Code of Australia and other relevant standards. To minimise noise disturbance, air should be ducted into these rooms from a quiet area or through the use of quiet, acoustically treated ventilators.

8.11 Summary Table of Modelled Results

Acknowledging that it is difficult to know final dwelling heights or locations given the lot layout may change prior to a DA being lodged and the built form is unknown, Council have also requested (PP2024/0001) the provision of a table containing the per proposed lot pad

heights, Construction Category and whether or not additional mechanical ventilation may be required. **Figure 8.10** presents the above requested data. Pad heights were taken as representing the at ground proposed ground contour height in the geometric centre of each Lot.

Table 8.1 provides the collated summary of the approximate number of lots that will fit into each Category and the number that will require mechanical ventilation based on the Concept Lot Layout, derived from the worst-case noise exposure per lot, per modelled scenario. The application of these acoustic measures is based on the draft Concept Lot Layout which is likely to change and are considered worst-case scenario as dwellings are assessed independent of any other structures on the site which may limit acoustic impacts.

Table 8.1 – Summary of the worst-case per lot category of construction and potential for additional mechanical ventilation

Acoustic Category of Construction / Requirement	Number of Lots
Category No. 1	-
Category No. 2	226
Category No. 3	50
<i>Total</i>	276
Additional mechanical ventilation	137

Following rezoning of the property, the relevant construction category and requirement for mechanical ventilation could be captured in a Section 88B Instrument for the subject land at the DA-stage, to identify relevant details for each lot. As the bulk earthworks levels and lot layout will be known at that stage, it may be possible to consider the acoustic impacts for individual lots including proposed dwellings on lots closer to the noise source which could mitigate noise the impact and reduce the need for these acoustic measures.

		DAY 2029 GROUND (1.5 m)		DAY 2029 1st Floor		NIGHT 2029 GROUND		NIGHT 2029 1st Floor		DAY 2040 GROUND		DAY 2040 1st Floor		NIGHT 2040 GROUND		NIGHT 2040 1st Floor	
Lot No.	Pad height [at ground] (m)	Construction Category	May require additional mechanical ventilation?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?
1	23.6	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
2	23.6	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
3	24.2	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
4	24.5	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
5	24.6	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
6	25.0	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
7	25.3	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
8	25.7	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
9	26.1	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
10	25.6	2	Yes	2	Yes	3	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
11	25.5	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
12	24.8	2		2	Yes	2	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
13	24.5	2		2	Yes	2	Yes	3	Yes	2	Yes	2	Yes	2	Yes	3	Yes
14	24.2	2		2		2	Yes	2	Yes	2		2	Yes	2	Yes	3	Yes
15	24.3	2	Yes	2	Yes	3	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
16	23.7	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
17	23.9	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
18	24.1	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
19	24.2	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
20	24.3	2		2		2		2	Yes	2		2		2	Yes	2	Yes
21	24.5	2		2		2		2	Yes	2		2		2	Yes	2	Yes
22	24.3	2		2		2		2	Yes	2		2		2	Yes	2	Yes
23	24.3	2		2		2		2	Yes	2		2		2		2	Yes
24	24.2	2		2		2		2	Yes	2		2		2		2	Yes
25	24.0	2		2		2		2	Yes	2		2		2		2	Yes
26	23.6	2		2		2		2		2		2		2		2	Yes
27	23.3	2		2		2		2		2		2		2		2	
28	22.9	2		2		2		2		2		2		2		2	
29	22.6	2		2		2		2		2		2		2		2	
30	23.2	2		2		2		2		2		2		2		2	
31	23.1	2		2		2		2		2		2		2		2	
32	24.0	2		2		2		2		2		2		2		2	Yes
33	24.7	2		2		2		2	Yes	2		2		2		2	Yes
34	24.2	2		2		2		2	Yes	2		2		2		2	Yes
35	23.3	2		2		2		2		2		2		2		2	
36	22.7	2		2		2		2		2		2		2		2	
37	22.2	2		2		2		2		2		2		2		2	
38	22.2	2		2		2		2		2		2		2		2	
39	22.4	2		2		2		2		2		2		2		2	
40	22.7	2		2		2		2		2		2		2		2	
41	22.9	2		2		2		2		2		2		2		2	
42	23.3	2		2		2		2	Yes	2		2		2		2	Yes
43	22.6	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
44	22.7	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
45	22.8	2		2		2		2	Yes	2		2		2		2	Yes
46	22.7	2		2		2		2		2		2		2		2	Yes
47	22.5	2		2		2		2		2		2		2		2	
48	22.3	2		2		2		2		2		2		2		2	
49	22.2	2		2		2		2		2		2		2		2	
50	22.3	2		2		2		2		2		2		2		2	Yes
51	22.3	2		2		2		2	Yes	2		2		2		2	Yes
52	22.2	2	Yes	2	Yes	2	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
53	23.1	2		2		2		2		2		2		2		2	
54	22.8	2		2		2		2		2		2		2		2	
55	22.7	2		2		2		2		2		2		2		2	
56	22.3	2		2		2		2		2		2		2		2	
57	22.1	2		2		2		2		2		2		2		2	
58	22.2	2		2		2		2		2		2		2		2	
59	22.4	2		2		2		2		2		2		2		2	
60	22.5	2		2		2		2		2		2		2		2	
61	22.7	2		2		2		2		2		2		2		2	
62	22.9	2		2		2		2		2		2		2		2	

Figure 8.10 - Council requested (PP2024/0001) summary table containing the per proposed lot pad heights, Construction Category and whether or not additional mechanical ventilation may be required.

		DAY 2029 GROUND (1.5 m)		DAY 2029 1st Floor		NIGHT 2029 GROUND		NIGHT 2029 1st Floor		DAY 2040 GROUND		DAY 2040 1st Floor		NIGHT 2040 GROUND		NIGHT 2040 1st Floor	
Lot No.	Pad height [at ground] (m)	Construction Category	May require additional mechanical ventilation?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?
63	23.0	2		2		2		2		2		2		2		2	Yes
64	23.1	2		2		2		2	Yes	2		2		2		2	Yes
65	23.2	2		2		2		2	Yes	2		2		2	Yes	2	Yes
66	23.2	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
67	23.3	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
68	23.4	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
69	23.5	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
70	23.6	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
71	23.7	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
72	23.1	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
73	22.9	2		2		2	Yes	2	Yes	2		2	Yes	2	Yes	3	Yes
74	22.7	2		2		2	Yes	2	Yes	2		2	Yes	2	Yes	3	Yes
75	22.5	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
76	22.4	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
77	22.4	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
78	22.4	2		2		2		2	Yes	2		2		2	Yes	2	Yes
79	22.5	2		2		2		2	Yes	2		2		2	Yes	2	Yes
80	22.6	2		2		2		2	Yes	2		2		2		2	Yes
81	22.7	2		2		2		2	Yes	2		2		2		2	Yes
82	22.7	2		2		2		2		2		2		2		2	Yes
83	22.7	2		2		2		2		2		2		2		2	Yes
84	22.8	2		2		2		2		2		2		2		2	
85	23.0	2		2		2		2		2		2		2		2	
86	23.1	2		2		2		2		2		2		2		2	
87	22.6	2		2		2		2		2		2		2		2	
88	22.5	2		2		2		2		2		2		2		2	
89	22.5	2		2		2		2		2		2		2		2	
90	22.4	2		2		2		2		2		2		2		2	
91	22.4	2		2		2		2		2		2		2		2	
92	22.9	2		2		2		2		2		2		2		2	
93	23.1	2		2		2		2		2		2		2		2	
94	23.3	2		2		2		2		2		2		2		2	
95	23.5	2		2		2		2		2		2		2		2	
96	23.7	2		2		2		2		2		2		2		2	
97	23.9	2		2		2		2		2		2		2		2	
98	24.1	2		2		2		2		2		2		2		2	
99	24.3	2		2		2		2		2		2		2		2	
100	24.6	2		2		2		2		2		2		2		2	
101	24.8	2		2		2		2		2		2		2		2	
102	25.0	2		2		2		2		2		2		2		2	
103	25.2	2		2		2		2		2		2		2		2	
104	25.4	2		2		2		2		2		2		2		2	Yes
105	25.5	2		2		2		2		2		2		2		2	Yes
106	25.7	2		2		2		2		2		2		2		2	Yes
107	26.0	2		2		2		2		2		2		2		2	Yes
108	25.7	2		2		2		2	Yes	2		2		2	Yes	2	Yes
109	25.3	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
110	25.1	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
111	25.0	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
112	24.9	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
113	24.9	2		2		2		2	Yes	2		2		2	Yes	2	Yes
114	24.8	2		2		2		2	Yes	2		2		2	Yes	2	Yes
115	24.8	2		2		2		2	Yes	2		2		2	Yes	2	Yes
116	24.7	2		2		2		2	Yes	2		2		2	Yes	2	Yes
117	24.6	2		2		2		2	Yes	2		2		2	Yes	2	Yes
118	24.5	2		2		2		2		2		2		2		2	Yes
119	24.3	2		2		2		2		2		2		2		2	Yes
120	24.1	2		2		2		2		2		2		2		2	
121	24.0	2		2		2		2		2		2		2		2	
122	23.8	2		2		2		2		2		2		2		2	
123	23.6	2		2		2		2		2		2		2		2	
124	23.5	2		2		2		2		2		2		2		2	
125	23.3	2		2		2		2		2		2		2		2	

Figure 8.10 (continued...)

		DAY 2029 GROUND (1.5 m)		DAY 2029 1st Floor		NIGHT 2029 GROUND		NIGHT 2029 1st Floor		DAY 2040 GROUND		DAY 2040 1st Floor		NIGHT 2040 GROUND		NIGHT 2040 1st Floor	
Lot No.	Pad height [at ground] (m)	Construction Category	May require additional mechanical ventilation?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?	Cnstr Ctgry	Mech vent?
126	23.1	2		2		2		2		2		2		2		2	
127	22.5	2		2		2		2		2		2		2		2	
128	22.4	2		2		2		2		2		2		2		2	
129	22.4	2		2		2		2		2		2		2		2	
130	22.3	2		2		2		2		2		2		2		2	
131	22.6	2		2		2		2		2		2		2		2	
132	22.8	2		2		2		2		2		2		2		2	
133	23.1	2		2		2		2		2		2		2		2	
134	23.3	2		2		2		2		2		2		2		2	
135	23.5	2		2		2		2		2		2		2		2	
136	23.7	2		2		2		2		2		2		2		2	
137	24.0	2		2		2		2		2		2		2		2	
138	24.2	2		2		2		2		2		2		2		2	
139	24.4	2		2		2		2		2		2		2		2	
140	24.6	2		2		2		2		2		2		2		2	
141	24.8	2		2		2		2		2		2		2		2	
142	25.0	2		2		2		2		2		2		2		2	
143	25.2	2		2		2		2		2		2		2		2	
144	25.4	2		2		2		2		2		2		2		2	
145	25.8	2		2		2		2		2		2		2		2	
146	25.6	2		2		2		2		2		2		2		2	
147	25.4	2		2		2		2		2		2		2		2	
148	25.2	2		2		2		2		2		2		2		2	
149	25.0	2		2		2		2		2		2		2		2	
150	24.8	2		2		2		2		2		2		2		2	
151	24.7	2		2		2		2		2		2		2		2	
152	24.5	2		2		2		2		2		2		2		2	
153	24.3	2		2		2		2		2		2		2		2	
154	24.0	2		2		2		2		2		2		2		2	
155	23.8	2		2		2		2		2		2		2		2	
156	23.6	2		2		2		2		2		2		2		2	
157	23.5	2		2		2		2		2		2		2		2	
158	23.3	2		2		2		2		2		2		2		2	
159	23.1	2		2		2		2		2		2		2		2	
160	22.9	2		2		2		2		2		2		2		2	
161	24.4	2		2		2		2		2		2		2		2	
162	24.4	2		2		2		2		2		2		2		2	
163	24.4	2		2		2		2		2		2		2		2	
164	24.3	2		2		2		2		2		2		2		2	
165	24.2	2		2		2		2		2		2		2		2	
166	24.0	2		2		2		2		2		2		2		2	
167	23.9	2		2		2		2		2		2		2		2	
168	23.8	2		2		2		2		2		2		2		2	
169	23.6	2		2		2		2		2		2		2		2	
170	23.5	2		2		2		2		2		2		2		2	
171	23.3	2		2		2		2		2		2		2		2	
172	23.1	2		2		2		2		2		2		2		2	
173	22.9	2		2		2		2		2		2		2		2	
174	22.7	2		2		2		2		2		2		2		2	
175	22.5	2		2		2		2		2		2		2		2	
176	22.2	2		2		2		2		2		2		2		2	
177	22.8	2		2		2		2		2		2		2		2	
178	23.1	2		2		2		2		2		2		2		2	
179	23.1	2		2		2		2		2		2		2		2	
180	23.2	2		2		2		2		2		2		2		2	
181	23.3	2		2		2		2		2		2		2		2	
182	23.3	2		2		2		2		2		2		2		2	
183	23.4	2		2		2		2		2		2		2		2	
184	23.4	2		2		2		2		2		2		2		2	
185	23.4	2		2		2		2		2		2		2		2	
186	23.4	2		2		2		2		2		2		2		2	
187	23.3	2		2		2		2		2		2		2		2	
188	23.2	2		2		2		2		2		2		2		2	

Figure 8.10 (continued...)

		DAY 2029 GROUND (1.5 m)		DAY 2029 1st Floor		NIGHT 2029 GROUND		NIGHT 2029 1st Floor		DAY 2040 GROUND		DAY 2040 1st Floor		NIGHT 2040 GROUND		NIGHT 2040 1st Floor	
Lot No.	Pad height [at ground] (m)	Construction Category	May require additional mechanical ventilation?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?
189	23.8	2		2		2		2		2		2		2		2	
190	24.1	2		2		2		2		2		2		2		2	
191	24.4	2		2		2		2		2		2		2		2	
192	24.6	2		2		2		2		2		2		2		2	
193	25.0	2		2		2		2		2		2		2		2	
194	25.3	2		2		2		2		2		2		2		2	
195	25.5	2		2		2		2		2		2		2		2	
196	25.8	2		2		2		2		2		2		2		2	
197	26.3	2		2		2		2		2		2		2		2	
198	26.8	2		2		2		2		2		2		2		2	Yes
199	27.2	2		2		2		2	Yes	2		2		2		2	Yes
200	28.1	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
201	27.4	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
202	26.7	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
203	26.5	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
204	26.2	2		2		2		2	Yes	2		2		2	Yes	2	Yes
205	26.5	2		2		2		2	Yes	2		2		2		2	Yes
206	26.6	2		2		2		2		2		2		2		2	Yes
207	26.5	2		2		2		2		2		2		2		2	
208	26.3	2		2		2		2		2		2		2		2	
209	26.1	2		2		2		2		2		2		2		2	
210	25.8	2		2		2		2		2		2		2		2	
211	25.5	2		2		2		2		2		2		2		2	
212	25.2	2		2		2		2		2		2		2		2	
213	24.9	2		2		2		2		2		2		2		2	
214	24.7	2		2		2		2		2		2		2		2	
215	24.3	2		2		2		2		2		2		2		2	
216	24.0	2		2		2		2		2		2		2		2	
217	24.4	2		2		2		2		2		2		2		2	
218	24.5	2		2		2		2		2		2		2		2	
219	24.7	2		2		2		2		2		2		2		2	
220	24.9	2		2		2		2		2		2		2		2	
221	25.3	2		2		2		2		2		2		2		2	
222	25.4	2		2		2		2		2		2		2		2	Yes
223	26.5	2		2		2		2		2		2		2		2	Yes
224	26.9	2		2		2		2	Yes	2		2		2		2	Yes
225	27.3	2		2		2		2	Yes	2		2		2		2	Yes
226	27.7	2		2		2		2	Yes	2		2		2		2	Yes
227	29.2	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
228	28.7	2		2		2		2	Yes	2		2		2	Yes	2	Yes
229	28.5	2		2		2		2	Yes	2		2		2	Yes	2	Yes
230	28.4	2		2		2		2	Yes	2		2		2	Yes	2	Yes
231	28.2	2		2		2		2	Yes	2		2		2	Yes	2	Yes
232	28.1	2		2		2		2	Yes	2		2		2	Yes	2	Yes
233	27.2	2		2		2		2	Yes	2		2		2		2	Yes
234	26.7	2		2		2		2		2		2		2		2	Yes
235	26.2	2		2		2		2		2		2		2		2	Yes
236	25.7	2		2		2		2		2		2		2		2	
237	27.7	2		2		2		2	Yes	2		2		2	Yes	2	Yes
238	26.5	2		2		2		2	Yes	2		2		2		2	Yes
239	26.2	2		2		2		2	Yes	2		2		2		2	Yes
240	26.0	2		2		2		2	Yes	2		2		2		2	Yes
241	26.2	2		2		2		2	Yes	2		2		2	Yes	2	Yes
242	26.1	2		2		2		2	Yes	2		2		2	Yes	2	Yes
243	26.6	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
244	28.5	2		2		2	Yes	2	Yes	2		2	Yes	2	Yes	3	Yes
245	28.5	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
246	28.8	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
247	29.3	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
248	29.8	2		2		2	Yes	2	Yes	2		2		2	Yes	2	Yes
249	27.6	2	Yes	2	Yes	3	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
250	27.8	2		2	Yes	2	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes
251	29.9	2	Yes	2	Yes	3	Yes	3	Yes	2	Yes	2	Yes	3	Yes	3	Yes

Figure 8.10 (continued...)

		DAY 2029 GROUND (1.5 m)		DAY 2029 1st Floor		NIGHT 2029 GROUND		NIGHT 2029 1st Floor		DAY 2040 GROUND		DAY 2040 1st Floor		NIGHT 2040 GROUND		NIGHT 2040 1st Floor	
Lot No.	Pad height [at ground] (m)	Construction Category	May require additional mechanical ventilation?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?	Cnstr Ctgr	Mech vent?
252	30.8	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
253	32.0	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
254	32.8	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
255	32.6	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
256	32.5	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
257	32.3	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
258	32.0	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
259	32.4	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
260	32.0	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
261	31.6	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
262	31.2	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
263	30.8	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
264	30.8	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
265	30.1	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
266	29.5	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
267	28.9	2	Yes	3	Yes	3	Yes	3	Yes	2	Yes	3	Yes	3	Yes	3	Yes
268	28.4	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
269	27.9	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
270	27.3	2	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes	3	Yes
271	26.7	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
272	27.4	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
273	27.9	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
274	28.4	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
275	29.1	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes
276	30.0	2		2	Yes	2	Yes	3	Yes	2		2	Yes	2	Yes	3	Yes

Figure 8.10 (continued...)

8.12 Aero Club

The 'Environmental Health' section of the Midcoast Council's Planning Proposal Pre-Lodgement Meeting, dated 28 September 2023, states that *'Consideration should also be given to the Manning Model Aero Club that operates on the Wingham Racecourse Reserve.'*

At this stage of the assessment, a review of the Noise Impact Assessment on receivers that existed at that time proximate to the site, upon which Council would have based their approval of the model aero club, has not been reviewed. Such an assessment would be used to correlate the predicted model aero club impacts on the proposed footprint of the development, from which implications on build requirements may be then assessed.

It is considered that although potentially audible, received sound levels from the model aero club use may not be relatively loud compared to ambient noise in the area, as high-frequency noise – of which the small model aircraft produce – is the frequency range that is attenuated over distance greater than compared to mid- and low-frequency noise. Ambient noise in the area was insect noise, road traffic noise (tyre noise), wind noise a wind in the trees, all having a high-frequency component.

9 Conclusion

A transport corridor (road and rail) and shooting range noise intrusion impact assessment has been undertaken of the proposed residential development at Lot 92 DP 1285477, on Wingham Road, Wingham, NSW, to accompany a planning proposal to MidCoast Council to meet requirements specified by Council in the Minutes.

Table 1.1 provides a reference for which section(s) of the report that pertain to the relevant acoustic sections, within the *'Environmental Health'* section of the Midcoast Council's *Planning Proposal Pre-Lodgement Meeting*, dated 28 September 2023.

With the incorporation into the development of the required noise mitigation construction measures to building façades directly exposed to traffic and shooting range noise, aiming to

reduce internal noise to an acceptable level with windows/doors closed, Amenity Acoustics considers that the occupants of the development will not be subject to excessive internal transport corridor or shooting related noise.

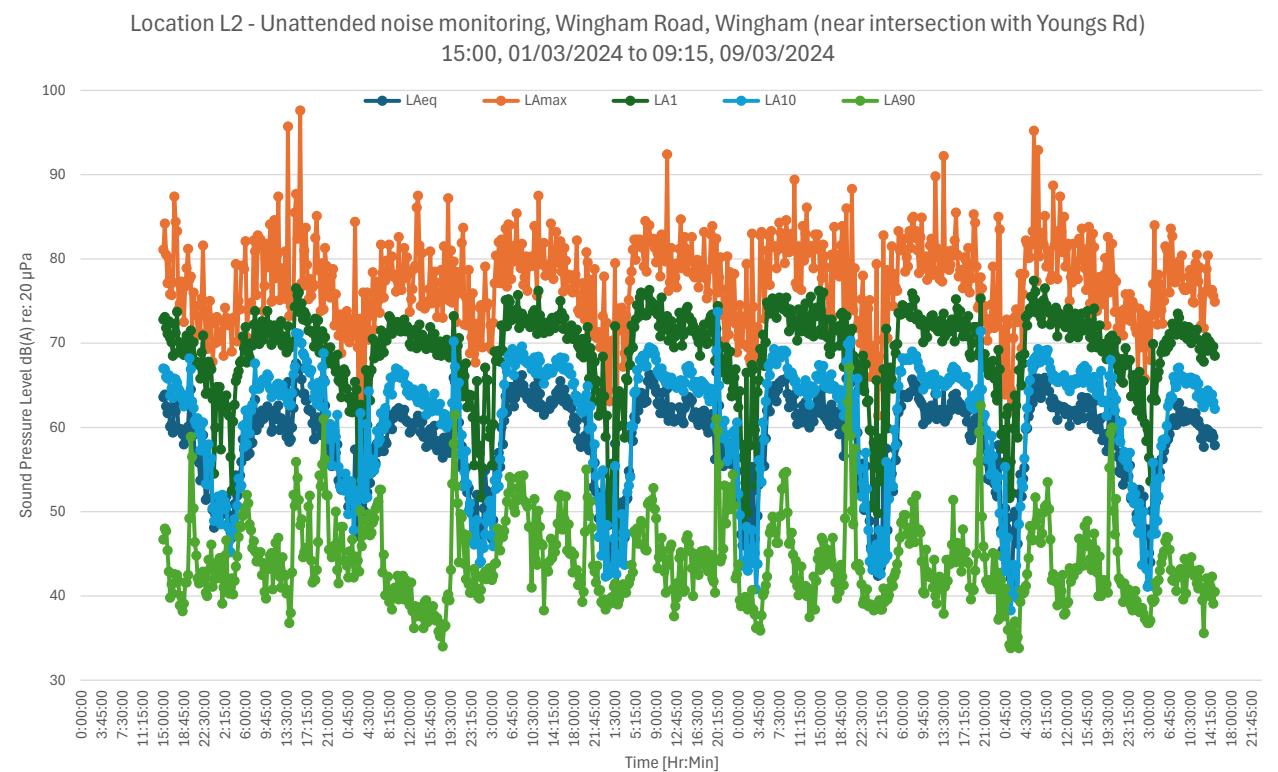
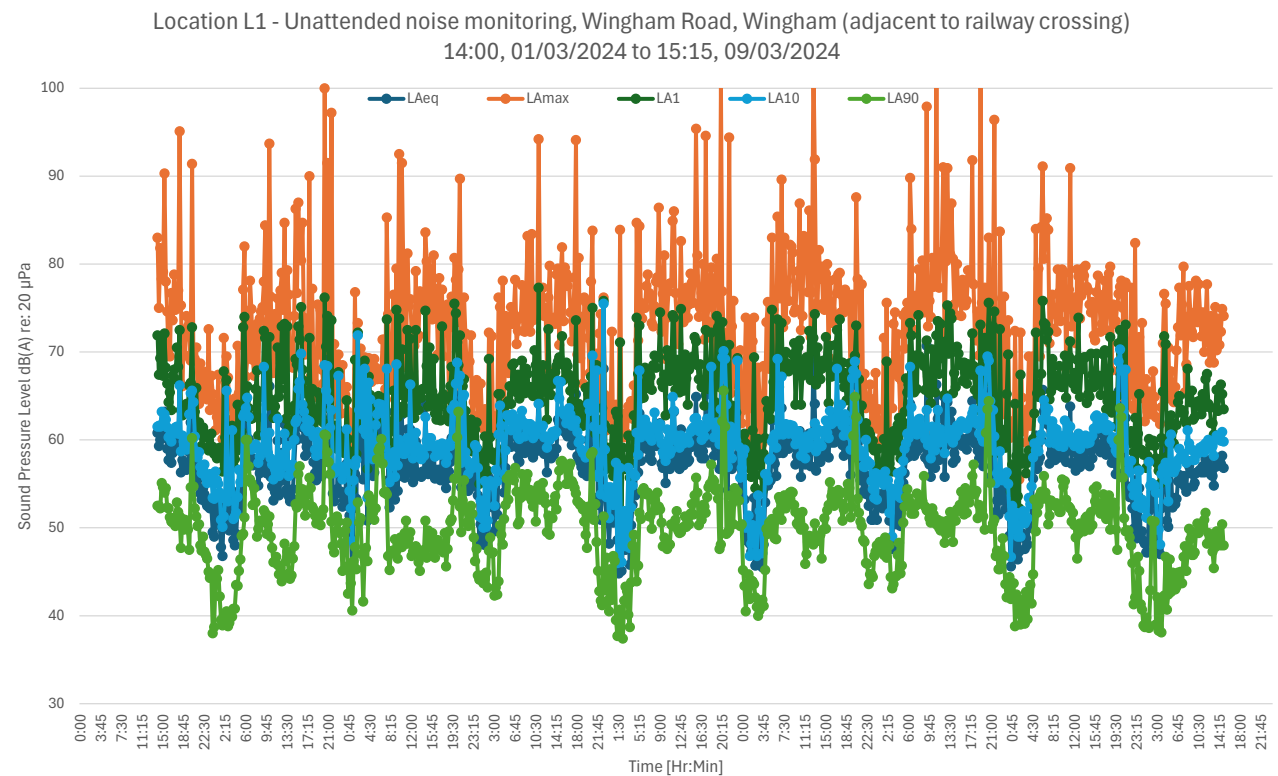
Attended and unattended noise monitoring was undertaken at “the most affected residential boundary”, as required by the Application Note, to assess the potential impacts of the Shooting Club across two separate events. It was determined that if development under the Planning Proposal was to proceed, the noise impacts of the Shooting Club would comply with the Application Note for the new development and permit more frequent maximum usage than what is understood to be the current operation, demonstrating the compatibility of the proposed residential area and the Shooting Club.

Additionally, results show that only a 2 dB increase in the typical ambient day period LAeq, 1 hour results at the unattended logging location L3 when the contribution from a Taree-Wingham Clay Target Club competition is included. Again, noting that the metric to assess gun range firing contribution is relatively instantaneous and was considered best derived relative to the $L_{Peak Hold}$ dB(Z) criteria.

Based on the findings of the assessment, and in consideration of the authority requirements including the Ministerial Directions, the site is considered suitable for the proposed development, as potential acoustic impacts may be managed by the adoption of reasonable and feasible noise mitigation construction measures.

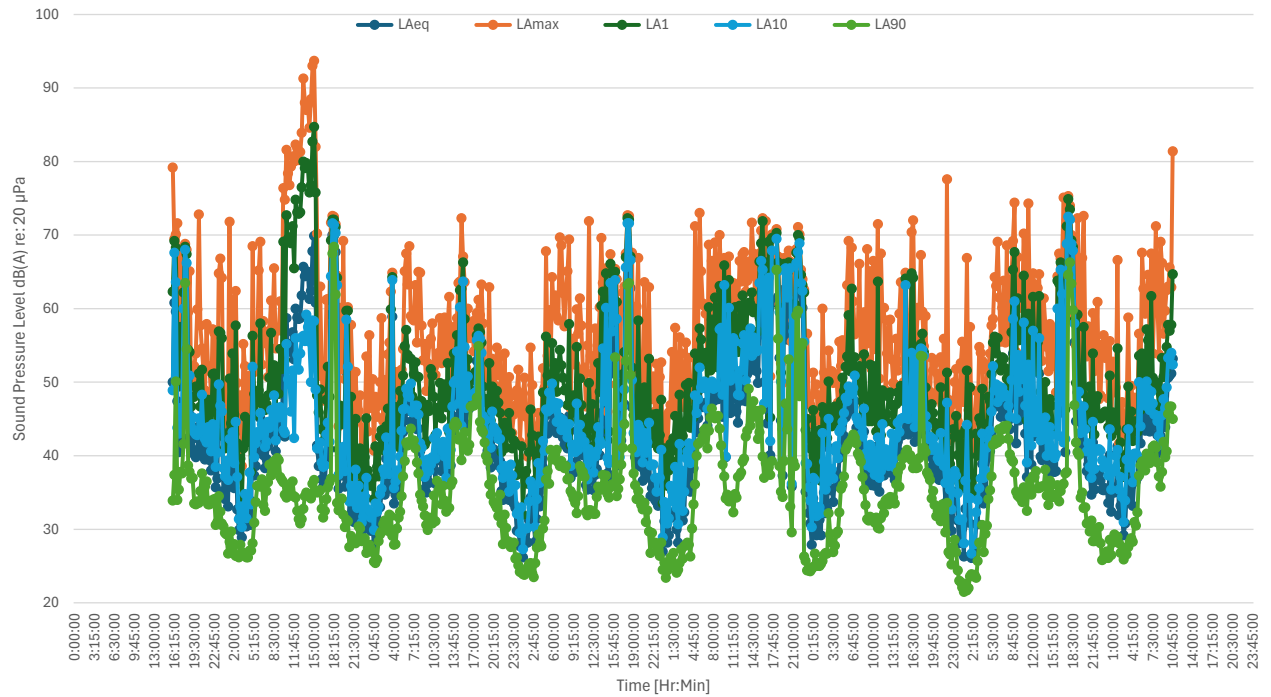
Appendices

Appendix A – Unattended Noise Monitoring Charts



Appendices

Location L3 - Unattended noise monitoring, Northern portion of the site, Wingham
16:00, 24/08/2024 to 09:30, 31/08/2024



Appendices

Appendix B - Acoustic Terminology

Ambient Noise	The general environmental noise at any specific location, being a composite of sounds from many near-field and far-field sources.
Background noise level	The underlying level of noise present in ambient noise when all unusual extraneous noise is removed. Sound levels contributing to background levels can include sound from nearby traffic, birds, insects, animals, machinery, and similar sources if these sounds are a normal feature of the location.
Building Envelope	The surface area comprising all the external walls and roof of the building under consideration. Elements such as windows, doors, and any exposed floors are considered part of the building envelope.
dB	Decibel, which is 20 times the logarithm (base 10) of the ratio of a given sound pressure to a reference pressure; used as a measure of sound.
dB(A)	'A-weighted' sound pressure level unit. A-weighting is an adjustment made to sound-level measurement, by means of an electronic filter, in line with international standards (IEC 61672-1) to approximate the response of the human ear at lower sound pressure levels.
dB(C)	'C-weighted' sound pressure level unit. C-weighting is an adjustment made to sound-level measurement, by means of an electronic filter, in line with international standards (IEC 61672-1) to approximate the response of the human ear at sound pressure levels above 85 dB.
Exposed façade	The elevation or wall of a building facing the main noise source.
Free field	A sound field where the effects of boundaries are negligible throughout the region of interest (Australian Standard 2659.1-1988).
LAeq	The A-frequency weighted equivalent sound pressure level – the steady sound level that, over a specified time period, would produce the same energy equivalence as the fluctuating sound level actually occurring.
LAF1, T	The A-frequency weighted 'fast' time weighted sound pressure level that is exceeded for 1% of the time (T) for which the given sound is measured.
LAF10, T	The A-frequency weighted 'fast' time weighted sound pressure level that is exceeded for 10% of the time (T) for which the given sound is measured.
LA90	The A-weighted sound pressure level that is exceeded for 90 per cent of the time of the sound measurement. The LA90 is considered to represent the background noise.
Maximum design sound level	The level of noise above which most people occupying the space start to become dissatisfied with the level of noise.
Octave band centre frequency	The International Standards Organisation (ISO) standardized frequency analysis bands for sound measurement, where the upper frequency limit is approximately twice the lower frequency, with each band identified by its geometric mean called the 'band centre frequency.'
Periods of the day – Road Traffic Noise	Day – The period from 7:00 to 22:00, of 15 hours duration. Night – The period from 22:00 to 7:00, or 9 hours duration.
Satisfactory design sound level	The level of noise that has been found to be acceptable by most people for the environment in question and also to be not intrusive.

Appendices

Appendix C – Documented Measured Shot Noise

Pre-shot LZpeaks	Shot LZpeak	Shot/pre-shot difference	Shot category
72	81	8.7	A
72	87	14.9	A
72	88	15.6	A
72	81	8.5	A
67	84	16.9	A
74	88	13.8	A
69	93	23.7	A
71	90	19.4	A
75	95	20.3	A
85	88	2.2	B
65	89	24.3	A
84	88	3.8	A
70	89	19.1	A
70	88	18.3	A
70	83	13.1	A
87	88	1.7	B
93	92	-0.6	Not Valid
73	92	18.1	A
71	90	18.7	A
71	89	17.8	A
89	90	0.2	B
95	99	4.9	A
78	82	3.7	A
85	84	-0.7	Not Valid
74	81	7.3	A
74	83	9.2	A
76	85	9.2	A
77	82	4.3	A
78	80	1.6	B
75	79	3.7	A
81	91	9.7	A
81	87	6.0	A
77	74	-3.2	Not Valid
79	83	4.6	A
71	91	19.4	A
83	90	7.0	A
89	97	7.9	A
89	94	5.8	A
85	95	10.5	A
85	97	11.7	A
85	93	8.7	A
76	105	29.3	A
76	106	29.8	A
74	88	13.2	A
76	93	17.1	A
76	80	3.8	A
77	96	18.7	A
81	90	9.5	A
72	78	5.3	A
Total number of category A and B shots			46
Final noise level (arithmetic average of category A and B shots)			89

