

GEOTECHNICAL • ENVIRONMENTAL



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APPENDIX A

SITE PLAN

RCA ref 17497-401/1

13 March 2025

Le Mottee Group Unit 4/199 Adelaide Street Raymond Terrace NSW 2324

Attention: Nicole Gerrard



Geotechnical Engineering Engineering Geology Environmental Engineering Hydrogeology Construction Materials Testing Environmental Monitoring Sound & Vibration Occupational Hygiene

OPERATIONAL NOISE IMPACT ASSESSMENT MOTORBIKE TRACK AT 93 THOMPSON LANE, STROUD, NSW

### 1 INTRODUCTION

RCA Australia (RCA) have been engaged by Le Mottee Group on behalf of Abbie Vernon -Smith (the client) to prepare an Operational Noise Impact Assessment to support a Development Application for a private motorbike track on Lot 1063 DP 629536, 93 Thompson Lane, Stroud, NSW.

The purpose of this assessment is to quantify potential noise impacts to the nearest residential receivers and to identify operational noise mitigation measures to minimise any impacts to the community.

The proposed motorbike track shall operate as follows:

- Saturdays 9 am 5 pm.
- Sundays 9 am 5pm.
- 1 2 days during the week, most likely Wednesdays and Fridays 9 am 5 pm.
- School holidays and public holidays.
- Up to 15 20 people riding on the track at a time.
- Different bike sizes from children to adults.



Figure 1Proposal site (shaded blue) and nearest residential receivers shown pink



# 2 NOISE MONITORING EQUIPMENT

RCA have taken a range of noise measurements in preparing this report. Noise monitoring equipment details are provided in **Table 1**. The measurement locations are shown in **Figure 2**.

Make and model	Serial number	Location	Last NATA calibrated
Svantek 971, class 1 sound level meter	55581	Attended L1	June 2024
Svantek 979, class 1 sound level meter	92044	Attended L2	Feb 2025
Svantek 971, class 1 sound level meter	61419	Attended L3	April 2023
Svantek 977D, class 1 sound level meter	99738	Unattended logger L4	March 2024
Svantek 33B	86489	Calibrator	March 2024

**Table 1**Noise monitoring equipment details

# 3 EXISTING ENVIRONMENT

The Draft Mid Coast Council LEP (2025) identifies the subject land as RU2 "Rural Landscape" and lists "Recreation facilities (outdoors)" as a permitted with consent development. The surrounding residential receivers would be considered as "rural residential". The ambient acoustic environment is often controlled by natural noise sources in rural areas, though agricultural equipment use is also common and may be audible.

RCA have identified the nearest residential receivers to the motorbike track and show these in **Figure 1** and **Table 2**.

 Table 2
 Identified closest residential receivers

Receiver ID	Approximate distance and direction from track	
R1	750 m North-West of track	
R2	770 m West of track	
R3	385 m South of track	
R4	440 m South of track	

The rating background noise level (RBL) is a method of quantifying the underlying noise level in an area. The procedure for calculating the RBL is set out in the Noise Policy for Industry (NPI) (EPA, 2017) and involves statistical analysis of noise levels continuously measured in 15-minute increments over seven days. The RBL is often used as an objective measure of discussing whether a noise is intrusive or not.

RCA deployed an unattended noise logger on the proponent's property (location L4) to continuously measure noise levels over two weeks in accordance with procedures contained within the NPI. The NPI requires that the background noise level is first calculated for each individual 'day' (between 7 am – 6 pm). This is called the Assessment Background Level (ABL). The Rating Background Level (RBL) is then calculated as the median of all



ABL's. This is shown below. We only present daytime metrics since the site is not requesting to operate during the evening or night period.

Date	Day ABL	Day LAeq
25-Jan-25	32	64
26-Jan-25	32	62
27-Jan-25	36	58
28-Jan-25	34	57
29-Jan-25	26	57
30-Jan-25	29	61
31-Jan-25	30	58
1-Feb-25	32	58
2-Feb-25	33	57
3-Feb-25	31	49
4-Feb-25	30	47
5-Feb-25	30	44
6-Feb-25	31	63
7-Feb-25	32	49
Overall RBL	32	-
Overall Day LAeq	-	59

 Table 3
 Measured background noise levels

# 4 ASSESSMENT CRITERIA

There is no guideline for setting noise criteria for private recreational motorbike tracks. However, RCA have worked with a commercial motorsport facility which received a prevention notice noise limit issued by Port Stephens Council, as 10 dBA above RBL. In the absence of more relevant guidance, RCA use this precedent for the basis of this assessment. The noise assessment criterion is then shown in **Table 4**. It is worth noting that the noise criterion is expressed as a 15-minute averaged noise level (LAeq,15 minute), and an individual rider is not likely to ride for the full fifteen minutes due to fatigue.

Table 4	Project noise	target
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Day time RBL	Project noise target (RBL + 10 dB)	
32 dBA	LAeq,15-minute 42 dBA	



### 5 NOISE IMPACT ASSESSMENT

RCA attended site on the 7<sup>th</sup> of February 2025. Five motorbikes and riders were available to assist us to take representative noise measurements of the motorbike track when operating. The first exercise was for RCA to take sound measurements approximately 1 m from each individual motorbike exhaust while the operator throttled the exhaust. From this measurement we can calculate a sound power which would later be used in a computer noise model. The calculated sound powers are shown in **Table 5**.

Bike ID	Engine size	Calculated sound power, dBA
#1	450cc	114
#2	250cc	109
#3	450cc	113
#4	250cc (2 stroke)	109
#5	250cc	106

Table 5Calculated motorbike sound powers

RCA then stationed four sound level meters (L1, L2, L3 and L4) across the motorbike track and at the unattended noise monitoring location. The five riders then rode the track for approximately fifteen minutes while the sound level meters recorded the noise from the track.

From the office, RCA prepared a 3D computer noise model of the motorbike track and the surrounding areas. Noise model inputs are summarised in **Table 6**.

Table 6Noise model inputs

Model parameter	Setting
Software and algorithm used	CadnaA implementing ISO 9613. This predicts environmental noise under "downwind" conditions for all receivers.
Noise source	An area source, 1 m high, covering the track. The sound power was the logarithmic addition of the spectral sound powers listed in <b>Table 5</b> .
Ground elevation	3D ground elevation data sourced from government agency.
Receiver heights	1.5 m above ground level.

The predictive noise model was then validated by comparing the LAeq at the four monitoring positions to the actual levels measured. A noise model is considered to have reasonable accuracy when the difference between measured and predicted values is less than 2 dB.

Table 7	Noise model validation summary
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Validation scenario	Location	Measured LAeq	Predicted LAeq
Five bikes continuously	L1	72.8	72.5
riding for approximately fifteen	L2	80.2	78.7
minutes.	L3	73.9	72.6
	L4	52.3	51.9



When rounded to the nearest dB it is seen that the predicted levels were all within 1 dB of the measured levels at all monitoring locations. The model is then considered to be validated.

RCA then use this validated noise model to predict noise levels at the identified residential receivers. Even though the facility may at times have up to 20 bikes riding, we believe this model provides a reasonable assessment scenario for the following reasons:

- The five riders on the day of testing were all experienced riders. They explained that riding continuously for 15 minutes for the purpose of our measurements was physically demanding, and riders would typically ride for shorter periods with breaks interspersed. For background, operating a noise source for half the duration would result in a 3 dB reduction.
- This private recreational bike track is for friends and family including small children. As the track becomes congested with more riders (including children), the riders would naturally slow down to maintain safety and would therefore be quieter. Furthermore, the smaller children's bikes would not be as noisy as the bikes RCA measured. For example, the current total sound power of the five riders measured was 118 dBA. Adding another 250cc motorbike with a sound power of 106 dBA does not increase the group's total sound power. Adding a children's bike (which would be quieter than a 250cc bike) would have less impact on the group's total sound power.
- There will be many instances where there are less than five riders using this private motorbike track.

For these reasons, RCA believes we have measured and now modelled a reasonable typical worst-case scenario. The predicted noise levels for the identified residential receivers are compared against the adopted noise target and shown in **Table 8** and visually represented as noise contours in **Figure 2** below.

Receiver ID	Noise target, LAeq,15-minute dBA	Predicted LAeq, 15- minute dBA	Exceedance, dB		
R1	42	39	Nil		
R2	42	39	Nil		
R3	42	43	1		
R4	42	41	Nil		

# Table 8 Predicted noise levels received





### Figure 2LAeq, 15 minute noise contours from bike track

Le Mottee Group Motorbike Track Operational Noise Impact Assessment 93 Thompsons Lane, Stroud, NSW RCA ref 17497-401/1, March 2025



When rounded to the nearest dB, it is seen that there is a 1 dB exceedance predicted at a single receiver (R3). Noise levels are predicted to comply with the adopted noise targets at all other receiver locations.

Noise guidelines in NSW (including the Noise Policy for Industry and the NSW Road Noise Policy) typically regard an exceedance less than 2 dB to be "negligible" based on the fact that people on average will not be able to perceive a difference between two noise levels when they are less than 2 dB apart. RCA also note that often there will be less than five riders on the track and often they will not ride for a full 15 minutes before taking a break. Either of these factors are likely to negate the predicted 1 dB exceedance.

# 6 MITIGATION MEASURES

RCA offer the following noise mitigation measures to minimise any disturbance to the community:

- The proposed operating hours outlined in **Section 1** of this report are adhered to.
- It is the responsibility of each bike owner to ensure their bike's muffler is well maintained.
- Two noise audits are to be conducted within the first 12 months of operating. Audits would be planned for when there will be at least five motorbikes using the track. The audit would involve taking a noise measurement 1 m from the exhaust of any bikes on site and records would be kept by the client. Any motorbikes that are found to be 3 dB higher than the average for its weight class would require the muffler to be inspected to verify it is in proper working condition.
- A compliance assessment is to be undertaken on the day of the noise audits. This might either involve repeating the same four monitoring locations and adjusting the validated computer noise model to account for noise levels measured on the day. Another approach would involve noise measurements to be taken at a location representative of the identified receivers. This would likely require property access permission from the owner.
- If the compliance assessment determines that noise levels are significantly above those predicted in this report for larger groups of riders, the site would implement management practices to limit the number of riders to meet the noise targets in this assessment.

# 7 CONCLUSION

RCA have prepared this Noise Impact Assessment for Le Mottee Group on behalf of Abbie Vernon-Smith. RCA have adopted assessment noise criteria based on similar proposals and have assessed what we believe to be a reasonable typical worst case 15-minute scenario. The assessment found that there may be a 1 dB exceedance at one receiver (R3). A 1 dB exceedance would typically be regarded as negligible since most people will not be able to perceive a difference in noise levels when the difference is less than 2 dB. Regardless of this, RCA offer feasible and reasonable mitigation measures to minimise disturbance to the community.



# Yours faithfully

# **RCA AUSTRALIA**

# A.Rees

Alex Rees Principal Acoustic Consultant

### REFERENCES

- [1] Noise Policy for Industry (EPA, 2017)
- [2] NSW Road Noise Policy (DECCW, 2011)

### GLOSSARY

dB	Decibel, which is 10 times the logarithm (base 10) of the ration of a given sound pressure to a reference pressure.
L <sub>Aeq</sub>	A weighted, equivalent continuous noise level averaged over time on an equivalent energy basis. The A weighting filter is applied to the measurement data to represent the typical frequency response of the human ear.
L <sub>A90</sub>	Also referred to as the "background noise level". This is the A- weighted level that the noise remains above for 90% of the measurement duration.

# Appendix A

Site Plan

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