

Annual Noise Monitoring Assessment

Roberts Road Sand Quarry

Roberts Road

Maroota, NSW

November 2025

Prepared For: Hodgson Quarry and Plant

C/- VGT Environmental Compliance Solutions Pty Ltd

December 2025

MAC160257-05RP1

Document Information

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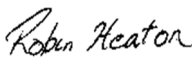
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APPENDIX A – GLOSSARY OF TERMS

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by VGT Environmental Compliance Solutions Pty Ltd (VGT), on behalf of Hodgson Quarry and Plant to complete a Noise Monitoring Assessment (NMA) for the Roberts Road Sand Quarry (the quarry), Maroota, NSW.

The NMA involved quantifying the noise contribution of the quarry by conducting operator attended measurements to determine compliance with the Environmental Protection Licence (EPL #6535) noise limits. The monitoring has been conducted in general accordance with Conditions P1.2 and L3 of the EPL and Conditions 16, 48, 49 and 50 of the Consolidated Consent (Mod 4, DA 267-11-99) at seven receiver locations.

The assessment has been conducted in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- NSW Environment Protection Authority (EPA), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- NSW Environment Protection Authority (EPA), Environment Protection Licence (EPL) #6535;
- NSW Department of Planning, Industry and Environment (DPIE), Consolidated Consent DA #267-11-99, Modification 4;
- Standards Australia AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters – Specifications; and
- Standards Australia AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

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2 Noise Criteria

2.1 Operational Noise Criteria

Table 1 incorporates the noise limits for assessed receivers referenced from Conditions P1.2 and L3.1 of the EPL and Condition 49 of the Consolidated Consent, that have been adopted for this NMA and are consistent with EPL monitoring locations.

Table 1 Noise Limits, dBA			
Receiver Identification	Day ²	Morning Shoulder ³	
	LAeq(15min)	LAeq(15min)	LA1(1min)
Point 1,3,4,5,6,7 (EPA 1,3,4,5,6,7) ¹ or All other receivers ²	43	40	50
Point 2 (EPA 2) ¹ or Receiver B ²	44	40	50

Note 1: Noise criteria adopted from EPL #6535.

Note 2: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 3: Noise criteria adopted from Consolidated Consent #DA 267-11-99, Modification 4.

The subsequent conditions stated in Section L3 and P1.2 of the projects EPL (EPL #6535) and are reproduced below:

Condition L3.3

- a) The noise limits set out in condition L3.1 apply under all meteorological conditions shown in the table below; and
- b) For those meteorology conditions not referred to in Condition L3.3(a), the noise limits that apply are the noise limits in Condition L3.1 plus 5dB.

Assessment Period	Meteorology Conditions
Day	Stability Categories A, B, C, D and E with wind speeds up to and including 3m/s at 10m above ground level.

L3.4 For the purpose of condition L3.3:

- a) The meteorological conditions are to be determined from meteorological data obtained from a meteorological weather station.
- b) Stability category shall be determined using the following method from fact Sheet D of the Noise Policy for Industry (NSW EPA, 2017):
 - i. Pasquill-Gifford stability classification scheme (section D1.3.1).

L3.5 To assess compliance:

a) with LAeq (15 minute) noise limits in condition L3.1, the noise measurement equipment must be located:

- i. approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or where applicable,*
- ii. within 30 meters of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 meters from the property boundary closest to the premises; or, where applicable,*
- iii. in an area within 50 meters of the boundary of a National Park or a Nature Reserve,*
- iv. at any other location identified in condition L3.1.*

b) with LAeq (15 minute) noise limits in condition L3.1, the noise measurement equipment must be located:

- i. at the reasonably most affected point at a location where there is no residence at the location; or,*
- ii. at the reasonably most affected point within an area at a location prescribed by condition L3.5(a).*

L3.6 A non-compliance of conditions L3.1 will still occur where noise generated from the premises is measured in excess of the noise limit at a point other than the reasonably most affected point at the locations referred to in condition L3.5(a) or L3.5(b).

Notes to L3.5 and L3.6: *The reasonably most affected point is a point at a location or within an area at a location experiencing or expected to experience the highest sound pressure level from the premises.*

L3.7 For the purpose of determining the noise generated at the premises, the modifying factor correction in Table C1 in Fact Sheet C of the Noise Policy for Industry (NSW EPA, 2017) may be applied, if appropriate, to the noise measurements by the noise monitoring equipment.

L3.8 Noise measurement must not be undertaken where rain or wind speed at microphone level will affect the acquisition of valid measurements.

P1.2 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

<i>EPA identification no.</i>	<i>Type of monitoring point</i>	<i>Location description</i>
1	Noise monitoring	100 Old Telegraph Road, Maroota
2	Noise monitoring	35 Roberts Road, Maroota
3	Noise monitoring	4471 Northern Road, Maroota
4	Noise monitoring	11 Roberts Road, Maroota
5	Noise monitoring	4460 Old Northern Road, Maroota
6	Noise monitoring	59 Roberts Road, Maroota
7	Noise monitoring	45 Roberts Road, Maroota

Due to technical difficulties, data from the on-site meteorological station was unavailable. Therefore, data from the nearest Bureau of Meteorological (BoM) Station has been supplemented.

2.2 Traffic Noise Criteria

The subsequent conditions stated in Section 50 of the projects Consolidated Consent (DA# 267-11-99, Modification 4) and are reproduced below:

50. The Applicant shall ensure that all traffic noise from the development does not exceed (LAeq (1hr)) 55dB(A) between 7am and 10pm and 50dB(A) between 10pm and 7am at any affected residence under adverse weather conditions. Where ambient Leq levels already exceed these criteria, the Applicant shall ensure that traffic noise from the development does not result in an exceedance of more than 2dB(A).

Note: Adverse weather conditions means in the presence of winds up to 3 meters per second and/or temperature inversions of up to 4 degrees Centigrade per 100 meters.

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3 Methodology

3.1 Locality

Roberts Road Sand Quarry is located at the Corner of Roberts Road and Old Northern Road, Maroota, NSW. Receivers in the locality surrounding the quarry are primarily rural/residential and for consistency the naming conventions for each receiver have been retained from Condition P1.2 of the EPL. The monitoring locations with respect to the quarry are presented in the locality plan shown in **Figure 1**.

3.2 Assessment Methodology

The attended noise survey was conducted by MAC staff in general accordance with the procedures described in Standards Australia AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise" and the EPL. Measurements were carried out using Svantek Type 1, 971 noise analysers between Wednesday 19 November 2025 and Thursday 20 November 2025. The acoustic instrumentation used carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022) and complies with AS/NZS IEC 61672.1-2019- Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed $\pm 0.5\text{dBA}$.

Due to time constraints within the morning shoulder period, two Svantek Type 1, 971 noise analysers were installed simultaneously at EPL1 and EPL6 on Thursday 20 November 2025. It is noted that there is approximately 40 meters between the two locations, therefore an intermediate observation point was chosen and is considered representative of both EPL monitoring locations. The noise analysers have audio playback capabilities to confirm noise sources during the observation period.

Day and morning shoulder measurements were of 15-minutes duration. Where possible, throughout each survey the operator quantified the contribution of each significant noise source. Extraneous noise sources were excluded from the analysis to calculate the $L_{Aeq}(15\text{min})$ quarry noise contribution for comparison against the relevant EPL limit.

Prevailing meteorological conditions for the monitoring period were sourced from the Bureau of Meteorology (BoM) site located at Mangrove Mountain AWS, NSW Site #61375. Results obtained during non-prevailing meteorological conditions (ie F Class Stability in conjunction with a 2m/s drainage or G Class Stability) are considered not applicable against the EPL criteria.

Where the quarry is inaudible, the contribution is estimated to be at least 10dBA below the ambient noise level.

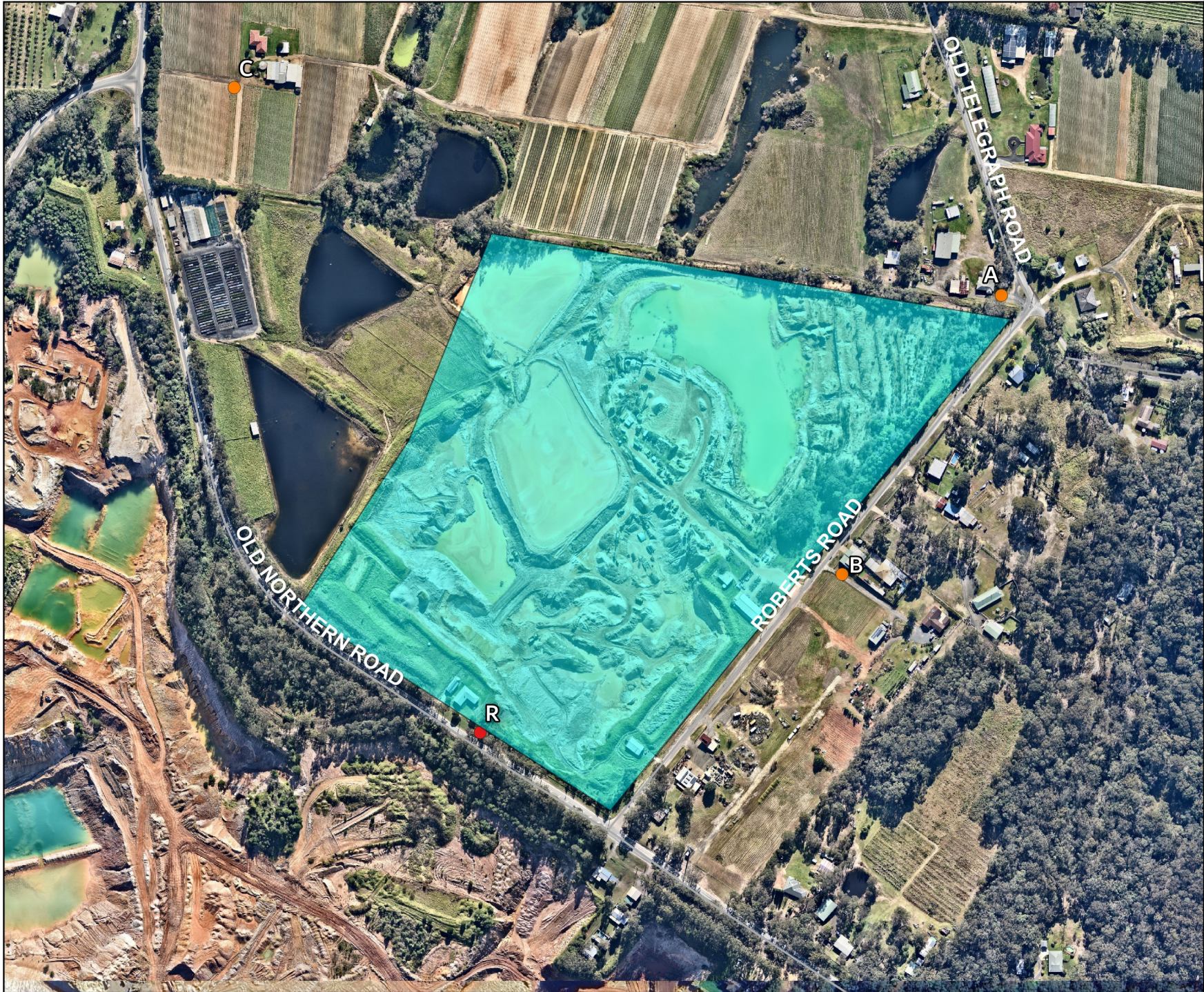


FIGURE 1
Site Locality
MAC160257

KEY

- Attended Monitoring Locations
- Road Noise Monitoring Location
- Site Boundary



4 Results

The monitoring and assessment results are presented in individual tables for each assessment location.

4.1 Meteorological Conditions

Weather data for the noise assessment was sourced from the BoM station, Mangrove Mountain, NSW, as well as operator measured conditions on site of EPL nominated receiver locations. The data was used to determine prevailing meteorological conditions at the time of the attended measurements, which are presented in **Table 2**.

Table 2 Prevailing Meteorological Conditions				
Date & Time	Mangrove Mountain AWS, NSW		Operator Measured Weather	
	Bureau of Meteorological Station		Monitoring Location	
	Site #61375		(1.8m AGL)	
	Wind Direction	Wind (m/s)	Wind Direction	Wind (m/s)
19/10/2025 06:00	N	0.0	E	0.1
19/10/2025 06:23	WSW	1.1	E	0.1
19/10/2025 06:41	WNW	0.5	E	0.1
19/10/2025 07:19	W	1.6	N	0.3
19/10/2025 07:37	W	1.9	N	0.3
19/10/2025 09:47	NNW	1.6	SE	0.3
19/10/2025 10:11	N	1.1	SE	0.5
19/10/2025 10:32	WNW	1.6	SE	0.3
19/10/2025 10:50	SE	2.4	SE	0.4
19/10/2025 11:09	SSW	0.5	SE	0.4
20/10/2025 06:00	SSW	0.5	NW	0.1
20/10/2025 06:01	SSW	0.5	NW	0.1
20/10/2025 06:22	SW	1.6	NW	0.1
20/10/2025 06:39	S	1.9	NW	0.1

4.2 Assessment Results – Location EPA 1

The results of the attended noise measurements at location EPA 1 for the [Comments] survey are summarised in **Table 3** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 3 Operator-Attended Noise Survey Results – EPA 1														
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA							
		L _A max	L _A eq	L _A 90										
19/11/2025	10:11 (Day)	68	43	36	43	WD: SE WS: 0.5m/s Rain: Nil	Birds 37-49							
							Traffic 35-68							
							Insects 33-50							
							Local residential noise 36-41							
							Windchimes 40-43							
							Aircraft 36-42							
							Quarry Processing <36 (just audible on lulls)							
							Quarry L _A eq(15min) Contribution						<36	
							20/11/2025	06:00 (Morning Shoulder)	74	48	38	40/50	WD: NW WS: 0.1m/s Rain: Nil	Birds 35-53
														Traffic 36-74
Quarry mobile plant 36-42 (3 minutes)														
Quarry truck exit 37-43 (15 seconds)														
Quarry L _A eq(15min) Contribution						37								
Quarry L _A 1(1min) Contribution						43								

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.3 Assessment Results – Location EPA 2

The results of the attended noise measurements at location EPA 2 for the [Comments] survey are summarised in **Table 4** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 4 Operator-Attended Noise Survey Results – EPA 2													
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA						
		L _A max	L _A eq	L _A 90									
19/11/2025	11:09 (Day)	80	58	46	44	WD: SE WS: 0.4m/s Rain: Nil	Birds 44-53						
							Traffic 43-80						
							Insects 43-48						
							Earthworks / other industrial						
							42-68						
							Windblown vegetation <42						
							Quarry processing 41-43 (audible on earthwork lulls)						
							Quarry trucks entry/ exit 42-48 (1 minute)						
							Quarry mobile plant 43-45 (audible on lulls)						
							Quarry L _A eq(15min) Contribution						42
20/11/2025	06:39 (Morning Shoulder)	81	51	33	40/50	WD: NW WS: 0.1m/s Rain: Nil	Birds 30-59						
							Traffic 30-81						
							Windblown vegetation <33						
							Local residential noise 30-41						
							Quarry mobile plant 36-40 (1 minute)						
							Quarry mechanical plant 33-35 (4 minutes)						
							Quarry L _A eq(15min) Contribution						36
							Quarry L _A 1(1min) Contribution						40

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.4 Assessment Results – Location EPA 3

The results of the attended noise measurements at location EPA 3 for the [Comments] survey are summarised in **Table 5** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 5 Operator-Attended Noise Survey Results – EPA 3							
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA
		L _{Amax}	L _{Aeq}	L _{A90}			
19/11/2025	07:19 (Day)	85	66	46	43	WD: N WS: 0.3m/s Rain: Nil	Traffic 38-85
							Birds 37-62
							Rooster 43-58
							Other industrial noise <43
							Quarry inaudible
Quarry L _{Aeq} (15min) Contribution							<35
19/11/2025	06:00 (Morning Shoulder)	96	71	48	40/50	WD: E WS: 0.1m/s Rain: Nil	Traffic 42-96
							Birds 44-56
							Rooster 45-63
							Other industrial noise 40-43
							Quarry inaudible
Quarry L _{Aeq} (15min) Contribution							<33
Quarry L _{A1} (1min) Contribution							<33

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.5 Assessment Results – Location EPA 4

The results of the attended noise measurements at location EPA 4 for the [Comments] survey are summarised in **Table 6** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 6 Operator-Attended Noise Survey Results – EPA 4							
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA
		L _{Amax}	L _{Aeq}	L _{A90}			
19/11/2025	09:47 (Day)	85	64	39	43	WD: SE WS: 0.3m/s Rain: Nil	Birds 35-52
							Traffic 36-85
							Insects 34-37
							Other industrial 36-47
							Quarry truck entry/ exit 35-44
							(3 minutes)
							Quarry mobile plant 36-38
							(2 minutes)
							Quarry L _{Aeq} (15min) Contribution
							40
19/11/2025	06:41 (Morning Shoulder)	81	58	37	40/50	WD: E WS: 0.1m/s Rain: Nil	Birds 32-51
							Traffic 32-81
							Offsite truck idle 50-56
							Other industrial <37
							Quarry truck exit 35-42
							(2 minutes)
							Quarry L _{Aeq} (15min) Contribution
							<35
							Quarry L _{A1} (1min) Contribution
							<42

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.6 Assessment Results – Location EPA 5

The results of the attended noise measurements at location EPA 5 for the [Comments] survey are summarised in **Table 7** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 7 Operator-Attended Noise Survey Results – EPA 5							
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA
		L _{Amax}	L _{Aeq}	L _{A90}			
19/11/2025	07:37 (Day)	87	62	37	43	WD: NE WS: 0.3m/s Rain: Nil	Rooster 37-55
							Birds 34-64
							Traffic 36-87
							Aircraft 43-55
							Quarry inaudible
Quarry L _{Aeq} (15min) Contribution							<32
19/11/2025	06:23 (Morning Shoulder)	90	68	43	40/50	WD: E WS: 0.1m/s Rain: Nil	Traffic 37-90
							Rooster 39-58
							Birds 58-53
							Sprinklers <35
							Quarry inaudible
Quarry L _{Aeq} (15min) Contribution							<33
Quarry L _{A1} (1min) Contribution							<40

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.7 Assessment Results – Location EPA 6

The results of the attended noise measurements at location EPA 6 for the [Comments] survey are summarised in **Table 8** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 8 Operator-Attended Noise Survey Results – EPA 6													
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA						
		L _A max	L _A eq	L _A 90									
19/11/2025	10:32 (Day)	77	49	37	43	WD: SE WS: 0.3m/s Rain: Nil	Birds 34-52						
							Traffic 35-77						
							Local residential noise 38-49						
							Windblown vegetation 35-39						
							Insects 34-44						
							Other industrial noise 37-45						
							Quarry processing <36-40 (throughout measurement)						
							Quarry mobile plant 37-42 (2 minutes)						
							Quarry L _A eq(15min) Contribution						39
							20/11/2025	06:01 (Morning Shoulder)	78	55	37	40/50	WD: NW WS: 0.1m/s Rain: Nil
Traffic 35-78													
Local residential noise 42-52													
Quarry trucks 37-42 (3 minutes)													
Quarry truck exit 34-36 (15 seconds)													
Quarry L _A eq(15min) Contribution						37							
Quarry L _A 1(1min) Contribution						44							

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.8 Assessment Results – Location EPA 7

The results of the attended noise measurements at location EPA 7 for the [Comments] survey are summarised in **Table 9** with the relevant EPL limits, the calculated quarry noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 9 Operator-Attended Noise Survey Results – EPA 7							
Date	Time (hrs) ¹	Descriptor (dBA re 20 µPa)			Limit	Meteorology ²	Description and SPL, dBA
		L _{Amax}	L _{Aeq}	L _{A90}			
19/11/2025	10:50 (Day)	82	54	40	43	WD: SE WS: 0.4m/s Rain: Nil	Traffic 39-82
							Insects 38-48
							Birds 39-59
							Aircraft 42-53
							Other industrial 38-51
							Quarry truck entry 40-45 (15 seconds)
							Quarry processing 38-41 (throughout)
							Quarry reverse alarm 39-42 (2 minutes)
							Quarry L _{Aeq} (15min) Contribution
							41
20/11/2025	06:22 (Morning Shoulder)	85	56	37	40/50	WD: N WS: 0.1m/s Rain: Nil	Birds 34-62
							Traffic 33-85
							Aircraft 39-44
							Quarry truck exit 36-43 (10 seconds)
							Quarry excavator <35 (20 seconds)
							Quarry truck 35-44 (1 minute)
							Quarry impact 46-48 (1 second)
							Quarry L _{Aeq} (15min) Contribution
							37
							Quarry L _{A1} (1min) Contribution
							48

Note 1: Day - the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays, EPL #6535.

Note 2: Meteorological data obtained from direct measurement by the operator and by BoM Mangrove Mountain AWS, NSW Site #61375.

4.9 Unattended Road Traffic Noise Results – Location R1

To assess road traffic noise levels associated with quarry related heavy vehicle, an unattended noise monitor was located on the boundary of 4405 Old Northern Road, Maroota, NSW.

The results of the road traffic noise measurements on Wednesday 19 November 2025 summarised in **Table 10**.

As per condition 50 of the quarries Consolidated Consent (#DA 267-11-99, Modification 4), results of the road traffic noise measurements identify that noise levels were influenced by extraneous noise sources such as birds and local road traffic not associated with the quarry. The noise contribution of the quarry related traffic at this location remained below relevant criteria.

Road traffic noise calculations were undertaken to quantify project related road traffic noise contributions at the measurement position using Traffic Noise Model (TNM) by the United States Department of Transport, Federal Highway Administrations Low Volume Calculator Tool at an offset distance of 15m from the road, which is representative of R1. Results of the road traffic noise calculations identify that quarry related heavy vehicles satisfy the relevant road noise criteria, hence would comply at all privately-owned receivers further than 15m from Old Northern Road.

Table 10 Road Noise Survey Results

Operational Period	Number of Quarry Trucks (passbys) ¹	Overall Calculated dB LAeq (dBA re 20 µPa)	Overall Measured dB LAeq (dBA re 20 µPa)	Compliance Limit dB LAeq (period)
Assessment Period – Day (7am to 8am), dB LAeq(1hr)				
7:00am to 8:00am	3	50	70	55
Assessment Period – Morning Shoulder (6am to 7am), dB LAeq(1hr)				
6:00am to 7:00am	2	48	70	50

Note 1: Vehicle flows provided by the quarry.

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5 Discussion

5.1 Discussion of Results – Location EPA 1

Monitoring conducted between Wednesday 19 November 2025 and Thursday 20 November 2025 identified that noise emissions were audible during both the morning shoulder and day periods at location EPA 1. The quarry sources during the morning shoulder were mobile plant and a truck exit with an estimated contribution measured at 37dBA for approximately three minutes. The quarry source during the day period was quarry processing, which was audible on ambient lulls, with an estimated contribution measured at <36dBA and therefore satisfied the relevant EPL noise limits.

Extraneous sources such as birds, local residential noise, windchimes, insects, aircraft and traffic were audible during the measurement period.

5.2 Discussion of Results – Location EPA 2

Monitoring conducted between Wednesday 19 November 2025 and Thursday 20 November 2025 identified that noise emissions were audible during both the morning shoulder and day periods at location EPA 2. The quarry sources audible during the day period were road truck entry/exit, processing and mobile plant for with an estimated contribution measured at 42dBA during residential construction/earthwork lulls. The quarry sources audible during the morning shoulder period were mechanical plant and mobile plant with an estimated contribution measured at 36dBA and 40dBA ($LA_{1(1min)}$) and therefore satisfied the relevant EPL noise limits.

Extraneous sources such as birds, other industrial noise, local residential noise, insects, windblown vegetation and traffic were audible during the measurement period.

5.3 Discussion of Results – Location EPA 3

Monitoring conducted between Wednesday 19 November 2025 identified that quarry noise emissions were inaudible during all assessment periods at location EPA 3, therefore the estimated quarry contribution satisfied the EPL noise limits.

Extraneous sources such as traffic, birds, sprinkler noise, rooster, insects and other industrial noise were audible during the measurement period.

5.4 Discussion of Results – Location EPA 4

Monitoring conducted between Wednesday 19 November 2025 identified that noise emissions were audible during the morning shoulder and day assessment periods at location EPA 4. The quarry sources audible during the day period were road truck entry/exit and mobile plant for with an estimated contribution measured at 40dBA. The quarry sources audible during the morning shoulder period were truck entry/ exit with an estimated contribution measured at <35dBA and 42dBA (LA_{1(1min)}), therefore the estimated quarry contribution satisfied the relevant EPL noise limits.

Extraneous sources such as birds, insects, traffic and other industrial noise were audible during the measurement period.

5.5 Discussion of Results – Location EPA 5

Monitoring conducted between Wednesday 19 November 2025 identified that noise emissions were inaudible during all assessment periods at location EPA 5, therefore the estimated quarry contribution satisfied the relevant EPL noise limits.

Extraneous sources such as rooster, birds, traffic, aircraft, sprinkler noise and birds were audible during the measurement period.

5.6 Discussion of Results – Location EPA 6

Monitoring conducted between Wednesday 19 November 2025 and Thursday 20 November 2025 identified that noise emissions were audible during the morning shoulder and day assessment periods on at location EPA 6. The quarry sources audible during the day period were processing and mobile plant with an estimated contribution measured at 39dBA. The quarry sources audible during the morning shoulder period was truck entry/ exit with an estimated contribution measured at 37dBA and 44dBA (LA_{1(1min)}), therefore the estimated quarry contribution satisfied the relevant EPL noise limits.

Extraneous sources such as birds, insects, windblown vegetation, other industrial noise, traffic and local residential noise were audible during the measurement period.

5.7 Discussion of Results – Location EPA 7

Monitoring conducted between Wednesday 19 November 2025 and Thursday 20 November 2025 identified that noise emissions were audible during the morning shoulder and day assessment periods on at location EPA 7. The quarry sources audible during the day period were processing, truck entry and reverse alarms with an estimated contribution measured at 41dBA. The quarry sources audible during the morning shoulder period were trucks, excavator, impact, truck entry/ exit with an estimated contribution measured at 36dBA and 48dBA ($LA_{1(1min)}$), therefore the estimated quarry contribution satisfied the relevant EPL noise limits.

Extraneous sources such as traffic, birds, insects, aircraft, and other industrial noise were audible during the measurement period.

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6 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment (NMA) for VGT Environmental Compliance Solutions Pty Ltd (VGT), on behalf of Hodgson Quarry and Plant. Monitoring was conducted in accordance with Conditions P1.2 and L3 of the Environmental Protection Licence (EPL #6535) and Conditions 16, 48, 49 and 50 of the Consolidated Consent (Mod 4, DA#267- 11- 99). The assessment was completed determine compliance with the EPL and Consent noise limits.

Attended monitoring conducted between Wednesday 19 November 2025 and Thursday 20 November 2025 identified that Roberts Road Sand Quarry noise emissions were audible on several occasions, although satisfying the relevant EPL noise limits. A review of monitoring data and operator attended observations determined that Roberts Road Sand Quarry contributions are below the EPL and Consent limits for all assessment periods.

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Appendix A – Glossary of Terms

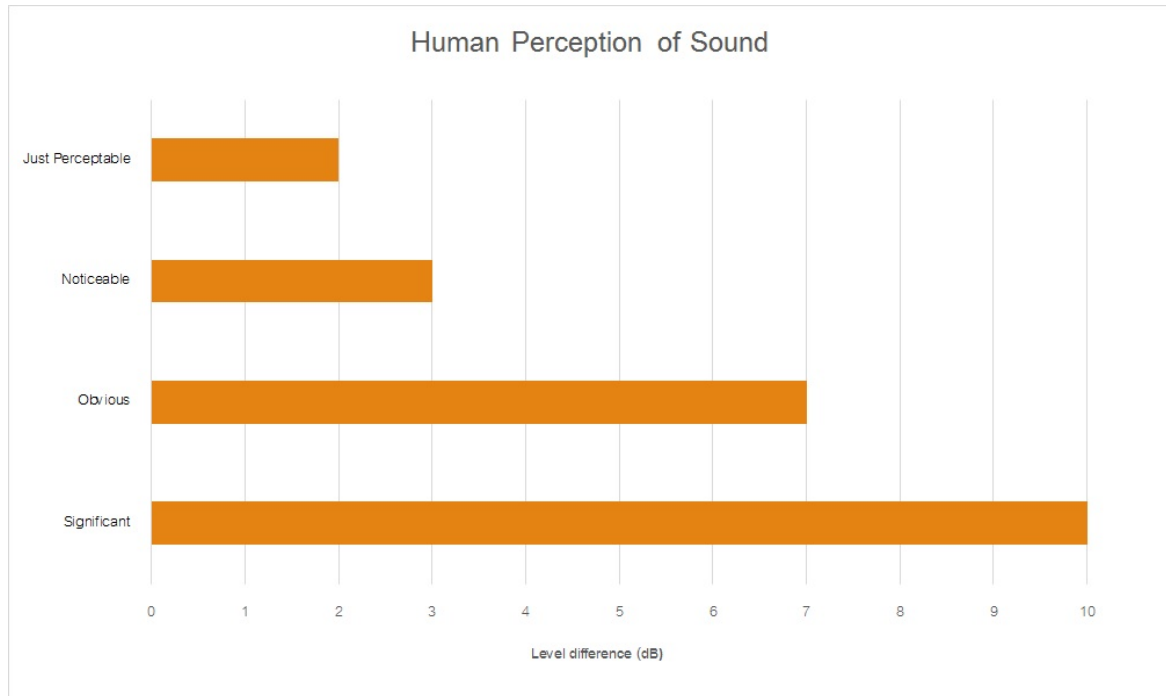
A number of technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Acoustical Terms	
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmx	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by $10 \cdot \log_{10} (W/W_0)$. Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA	
Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound





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