



9 August 2023

Ref: 212176R/30083

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: AUGUST 2023 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglenn Quarry (AQ) between Monday 31st July and Thursday 3rd August, 2023. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1 Noise Impact Assessment Criteria				
Land	Day Leq (15 min)	Evening Leq (15 min)	Night	
			Leq (15 min)	L1 (1 min)
1 Burraston	35	35	35	45
3 Rose	35	35	35	45
4 C M Thompson	44	35	35	45
5 M Taylor	45	35	35	45
6 S Thompson	45	35	35	45
9 Bates	37	35	35	45
10 Avery	38	35	35	45
11 Shipman	37	35	35	45
12 Hall	36	35	35	45
13 McGhie	35	35	35	45
14 Purtell	36	35	35	45
15 J Taylor	43	35	35	45
16 Bojba	40	35	35	45
All other privately owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.

Notes:

- For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).
- To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba



Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from the quarry operated weather station with real time observations made at the start of each 15 minute monitoring period (and confirmed with reference to the summary data provided by the proponent at the time of reporting. The weather throughout the survey was mild with clear skies. The wind speed was light from the west north west.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær “Evaluator” software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

Table 2 Ardglen Quarry Noise Monitoring Results – 3 rd August 2023 (Day)				
Location	Time	dB(A), _{Leq}	Wind speed/ direction°	Identified Noise Sources
4. Thompson	10:45 am	49	2.2 m/s 298°	Birds (47), traffic (41), AQ (40)
13. McGhie	10:10 am	37	2.0 m/s 260°	Traffic (36), birds (31), AQ inaudible
14. Purtell	10:28 am	46	2.3 m/s 284°	Birds (44), traffic (42), AQ occasionally audible
16. Bojba	11:10 am	45	1.8 m/s 309°	Traffic (43), birds (42), AQ inaudible

The results in Table 2 show that, under the meteorological and operating conditions at the time, the noise emissions from AQ were compliant with the relevant noise criteria at all monitoring locations.

At the time of the noise monitoring the following plant items were operational at the quarry;

- 1x Warrior screen,
- 1x 35t Excavator,
- 1x 972 front end loader, and
- 1x Hilux ute with trailer mounted water cart.

The noise from AQ was audible and measurable only at location 4. At this location the noise was attributable to the screening activity, including noise from the loader feeding material into the screen. The noise level varied cyclically depending on the stage of screening process.

At location 14 the noise from AQ was occasionally faintly audible but it was not loud or consistent enough to be measured. The noise was from the screening activity.

At the other two monitoring locations AQ was inaudible.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of three days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment an ARL EL-315 environmental noise logger and an ARL Ngara environmental noise logger, were located as shown in Figure 2 from 31st July to 3rd August, 2023.

Table 3 shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix A**.

TABLE 3 Measured Logger Noise Levels dB(A) – 31st July to 3rd August 2023						
Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	57	42	53	39	48	32
Logger 2	57	44	55	38	55	32



Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R14. This is adjacent to the attended noise monitoring location for this residence.

Logger 2 was in an open paddock north of the house.

The unattended noise loggers measure the total noise level in the environment but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

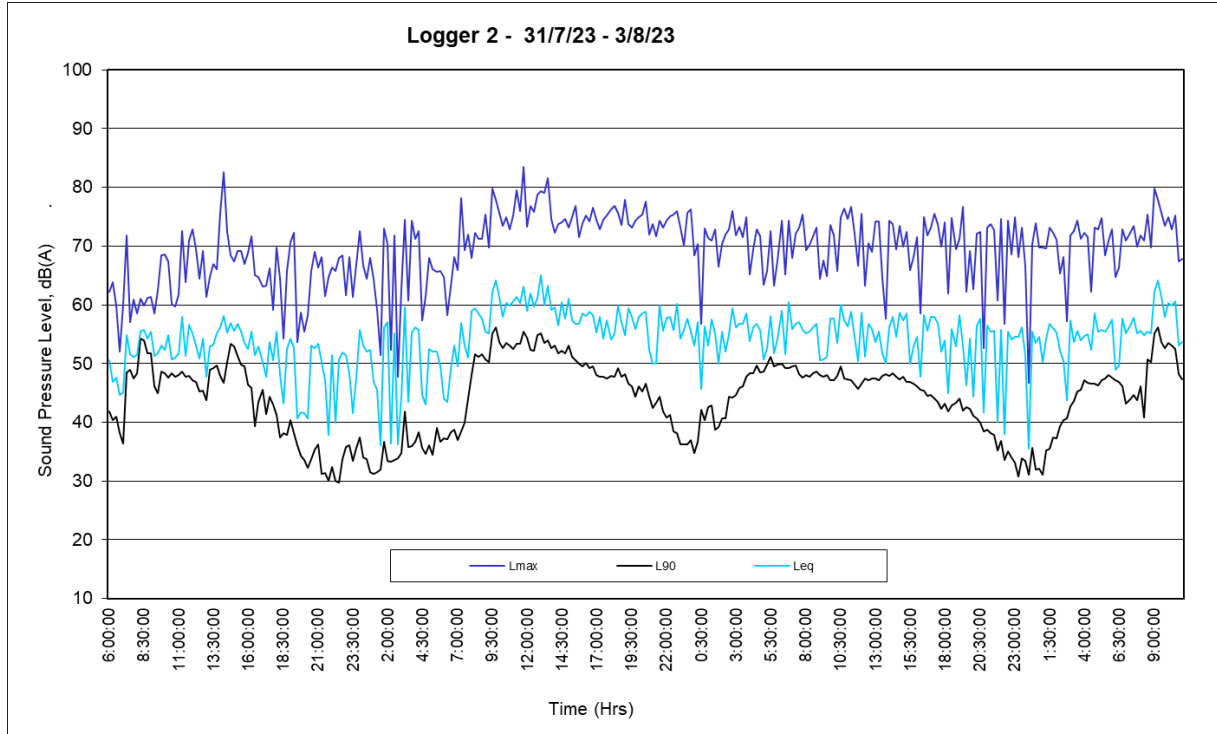
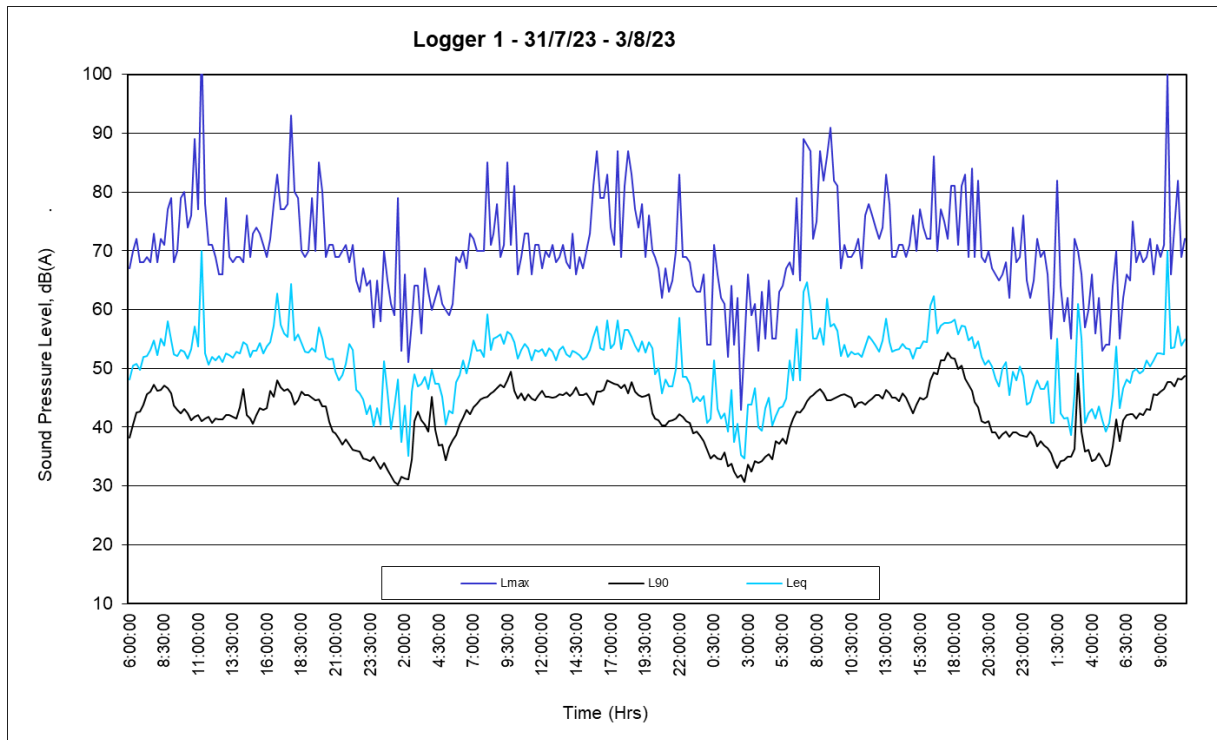
Author:



Ross Hodge M.A.A.S.

Acoustical Consultant

APPENDIX A NOISE LOGGER CHARTS





4 October 2023

Ref: 212176R/30136

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: SEPTEMBER 2023 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglen Quarry (AQ) between Friday 22nd and Wednesday 27th September, 2023. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1 Noise Impact Assessment Criteria				
Land	Day Leq (15 min)	Evening Leq (15 min)	Night	
			Leq (15 min)	L1 (1 min)
1 Burraston	35	35	35	45
3 Rose	35	35	35	45
4 C M Thompson	44	35	35	45
5 M Taylor	45	35	35	45
6 S Thompson	45	35	35	45
9 Bates	37	35	35	45
10 Avery	38	35	35	45
11 Shipman	37	35	35	45
12 Hall	36	35	35	45
13 McGhie	35	35	35	45
14 Purtell	36	35	35	45
15 J Taylor	43	35	35	45
16 Bojba	40	35	35	45
All other privately owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the $L1$ (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.

Notes:

- For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).
- To determine compliance with the $LAeq$ (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the $L1$ (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba



Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from the quarry operated weather station with real time observations made at the start of each 15 minute monitoring period (and confirmed with reference to the summary data provided by the proponent at the time of reporting). The weather throughout the survey was mild with clear skies. The wind speed was light from the west north west.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær “Evaluator” software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

Table 2 Ardglen Quarry Noise Monitoring Results – 27 th September 2023 (Day)				
Location	Time	dB(A), _{Leq}	Wind speed/ direction°	Identified Noise Sources
4. Thompson	10:30 am	43	1.7 m/s 298°	Traffic (41), AQ (37) , birds (35)
13. McGhie	9:55 am	33	0.8 m/s 286°	Traffic (31), birds (30), AQ inaudible
14. Purtell	10:12 am	46	1.0 m/s 294°	Birds (43), traffic (42), AQ occasionally audible
16. Bojba	10:50 am	50	6.6 m/s 318°	Traffic (50), birds (35), AQ occasionally audible

The results in Table 2 show that, under the meteorological and operating conditions at the time, the noise emissions from AQ were compliant with the relevant noise criteria at all monitoring locations.

At the time of the noise monitoring the following plant items were operational at the quarry;

- 1 x 35t Volvo excavator,
- 1 x Caterpillar 972 loader,
- 1 x Warrior screen screening rock,
- 2 x steel bin Truck and dogs carting oversize rock, being loaded by 972 loader,
- 1 x 2" water pump running intermittently, and
- 1 x Light vehicle with watercart trailer operating intermittently.

The noise from AQ was audible and measurable only at location 4. At this location the noise was attributable to the screening activity.

At location 14 the noise from AQ was occasionally faintly audible but it was not loud or consistent enough to be measured. The noise was from the screening activity.

At location 16 the noise from AQ was audible as occasional loud noise events possibly associated truck movements on site.

At location 13 AQ was not audible.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of three days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment an ARL EL-315 environmental noise logger and an ARL Ngara environmental noise logger, were located as shown in Figure 2 from 22nd to 27th September, 2023 (which includes a weekend). **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix A**. Note that the summary data presented in Table 3 is excludes the weekend period, whilst the graphical data is for the entire monitoring period.

TABLE 3 Measured Logger Noise Levels dB(A) – 22 nd to 27 th September 2023 ¹						
Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	58	37	54	34	53	25
Logger 2	53	31	51	33	50	28

¹ see text regarding dates of monitoring

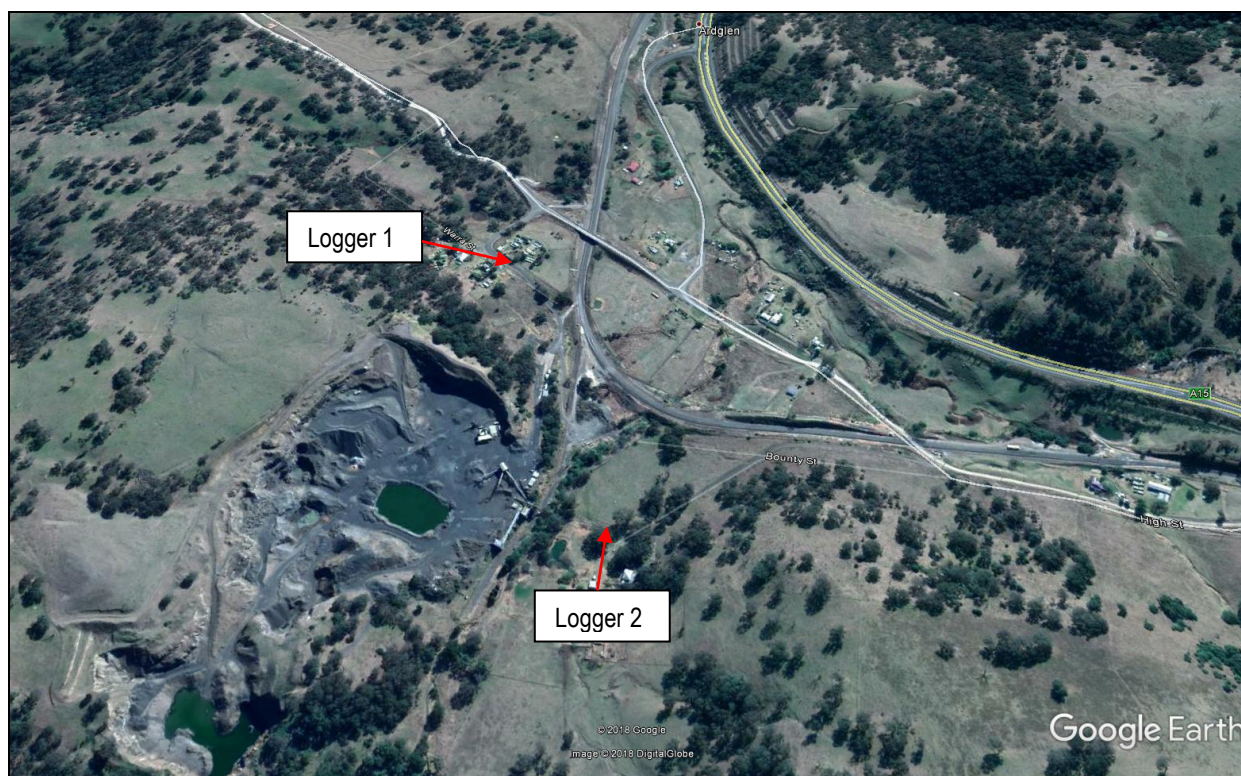


Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R14. This is adjacent to the attended noise monitoring location for this residence.

Logger 2 was in an open paddock north of the house.


The unattended noise loggers measure the total noise level in the environment, but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

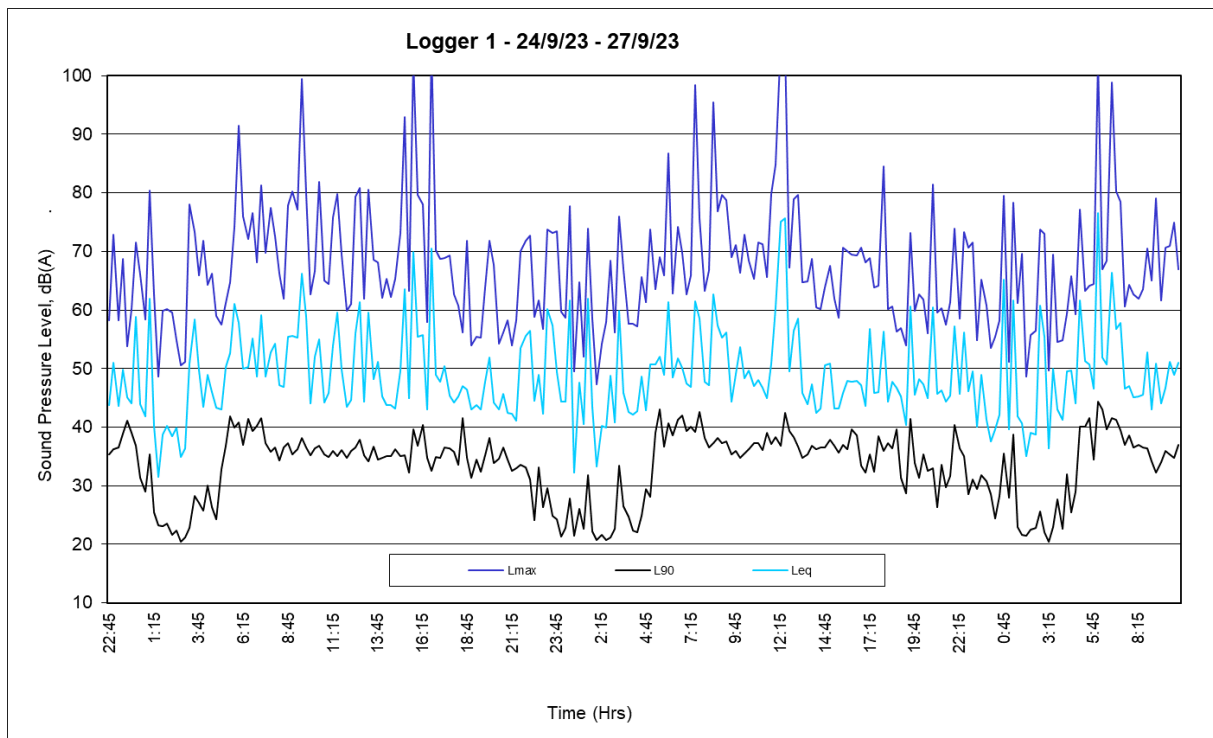
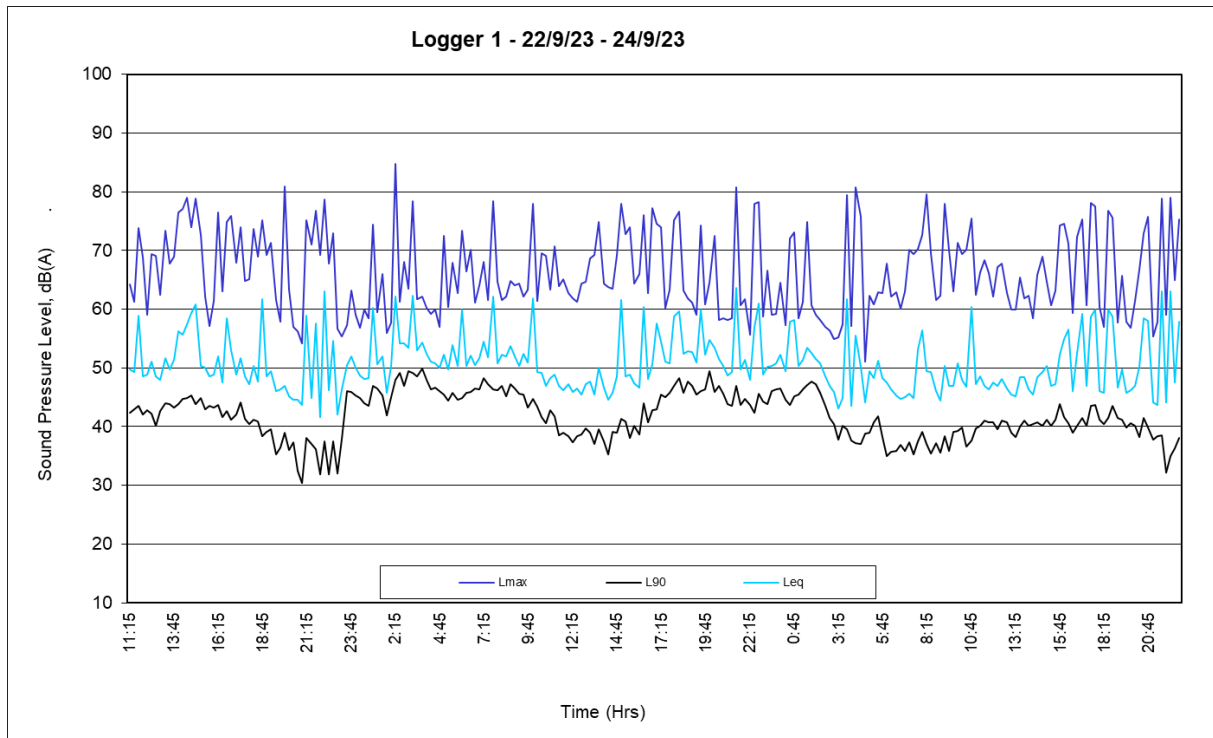
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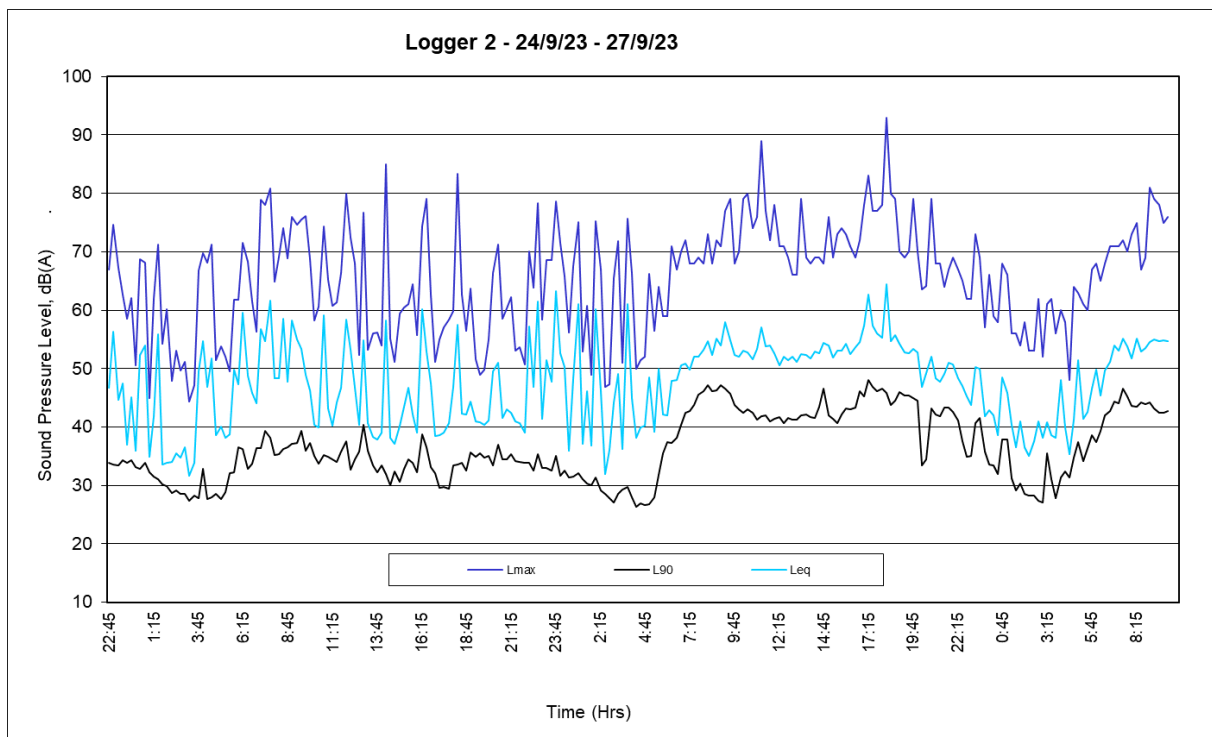
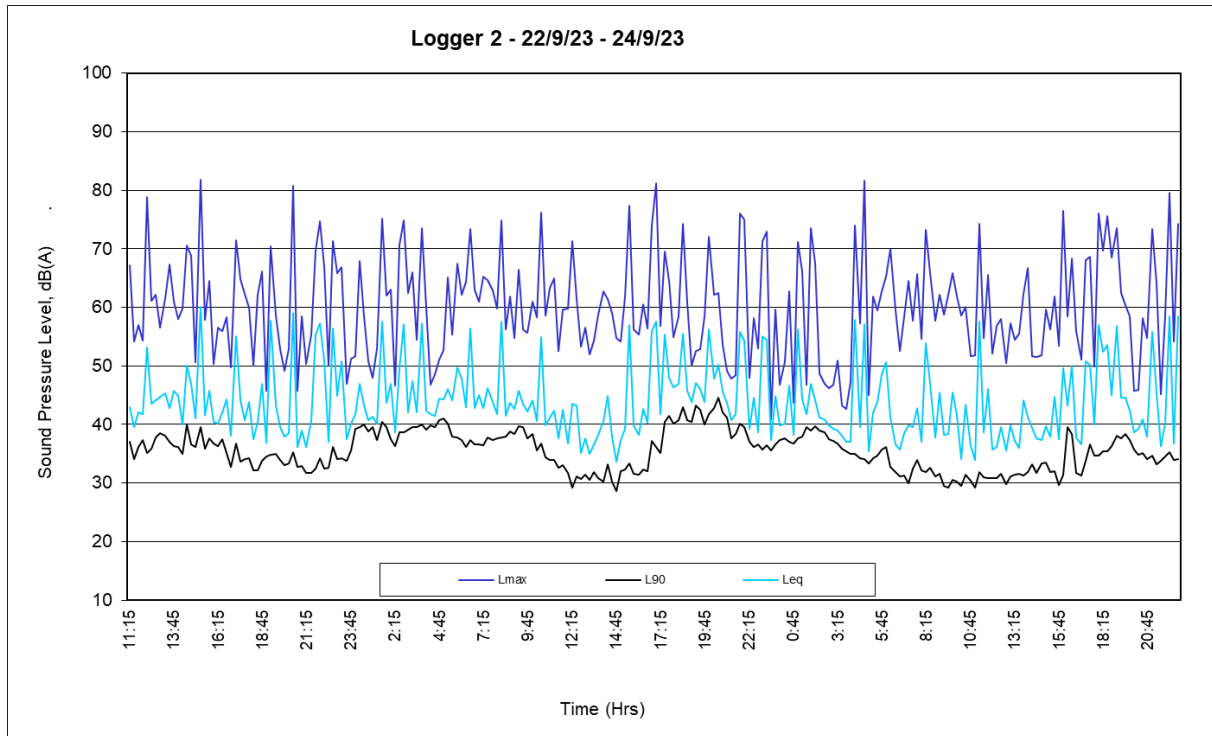


Ross Hodge M.A.A.S.

Acoustical Consultant

APPENDIX A NOISE LOGGER CHARTS







1 November 2023

Ref: 212176R/30152

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: OCTOBER 2023 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglan Quarry (AQ) between Tuesday 17th and Friday 20th October, 2023. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1 Noise Impact Assessment Criteria				
Land	Day Leq (15 min)	Evening Leq (15 min)	Night	
			Leq (15 min)	L1 (1 min)
1 Burraston	35	35	35	45
3 Rose	35	35	35	45
4 C M Thompson	44	35	35	45
5 M Taylor	45	35	35	45
6 S Thompson	45	35	35	45
9 Bates	37	35	35	45
10 Avery	38	35	35	45
11 Shipman	37	35	35	45
12 Hall	36	35	35	45
13 McGhie	35	35	35	45
14 Purtell	36	35	35	45
15 J Taylor	43	35	35	45
16 Bojba	40	35	35	45
All other privately owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the $L1$ (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.

Notes:

- For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).
- To determine compliance with the $LAeq$ (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the $L1$ (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba



Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from the wind rose for the period taken from the quarry operated weather station with real time observations made at the start of each 15 minute monitoring period (and confirmed with reference to the summary data provided by the proponent at the time of reporting). The weather throughout the survey was mild with clear skies. The wind speed was light from the west north west.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær “*Evaluator*” software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise

level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

Table 2 Ardglen Quarry Noise Monitoring Results – 20 th October 2023 (Day)				
Location	Time	dB(A), L _{eq}	Wind speed/ direction°	Identified Noise Sources
4. Thompson	11:40 am	38	2.1 m/s 321°	Birds (36), traffic (32), AQ occasionally audible
13. McGhie	11:00 am	32	2.2 m/s 286°	Birds (31), traffic (26), AQ inaudible
14. Purtell	11:20 am	41	1.8 m/s 300°	Traffic (39), birds (32), AQ occasionally audible
16. Bojba	10:41 am	47	1.4 m/s 285°	Traffic (46), birds (40), AQ inaudible

The results in Table 2 show that, under the meteorological and operating conditions at the time, the noise emissions from AQ were compliant with the relevant noise criteria at all monitoring locations.

At the time of the noise monitoring the following plant items were operational at the quarry;

- 1 x 30t Excavator,
- 1 x 30t dump truck,
- 1 x truck and dog carting material,
- 1 x 972 Front end loader,
- 1 x 2inch water pump running intermittently, and
- 1 x water trailer for dust suppression.

The noise from AQ was occasionally audible at locations 4 and 14. At these locations the noise was attributable to the general hum and occasional engine revs. The noise was not loud, or consistent, enough to be measured.

At locations 13 and 16 AQ was not audible.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of three days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment an ARL EL-315 environmental noise logger and an ARL Ngara environmental noise logger, were located as shown in Figure 2 from 17th to 20th October, 2023. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix A**.

TABLE 3 Measured Logger Noise Levels dB(A) – 17 th to 20 th October 2023						
Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	50	34	53	37	52	33
Logger 2	54	37	55	41	54	37

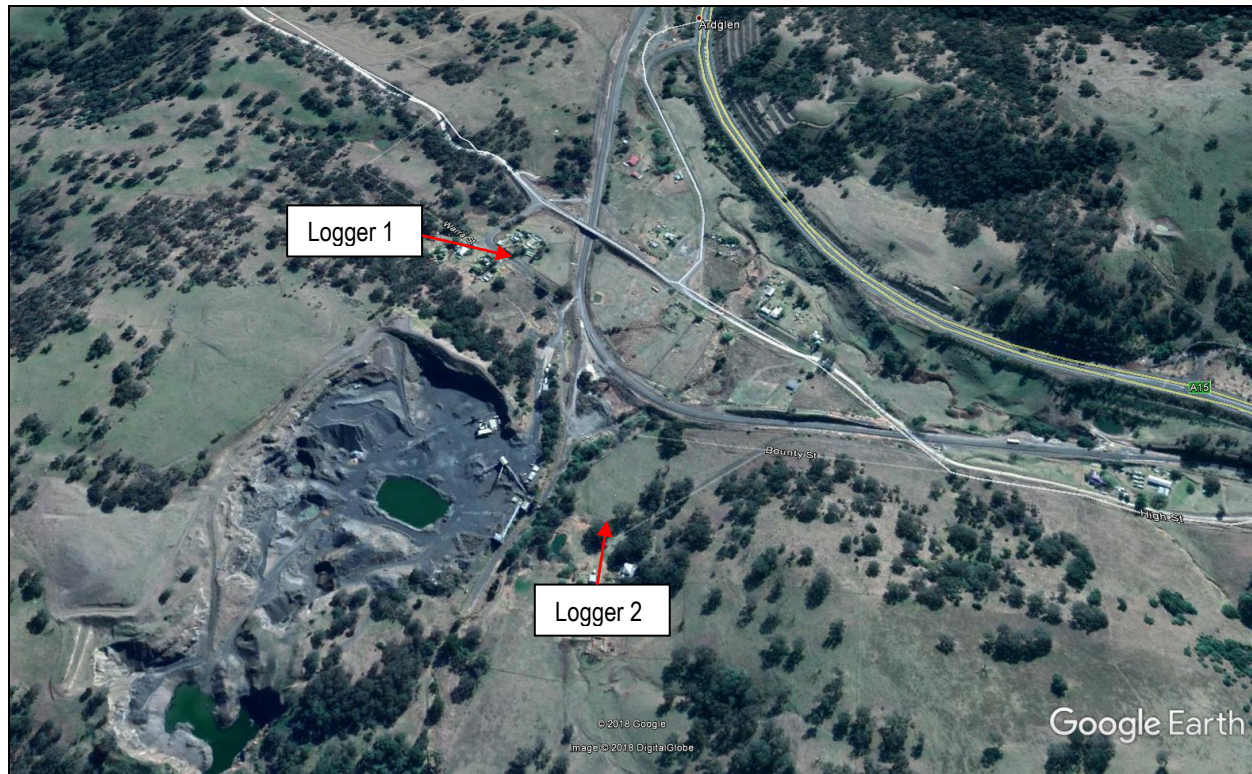


Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R14. This is adjacent to the attended noise monitoring location for this residence.

Logger 2 was in an open paddock north of the house.


The unattended noise loggers measure the total noise level in the environment, but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

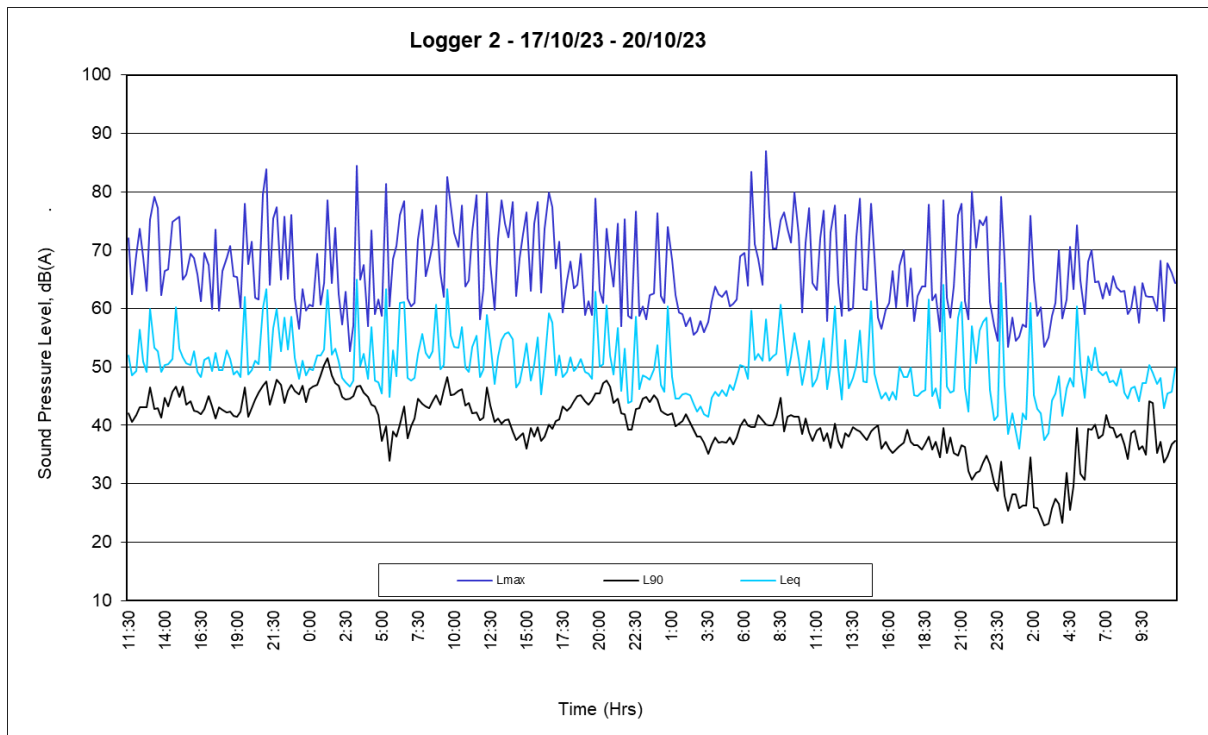
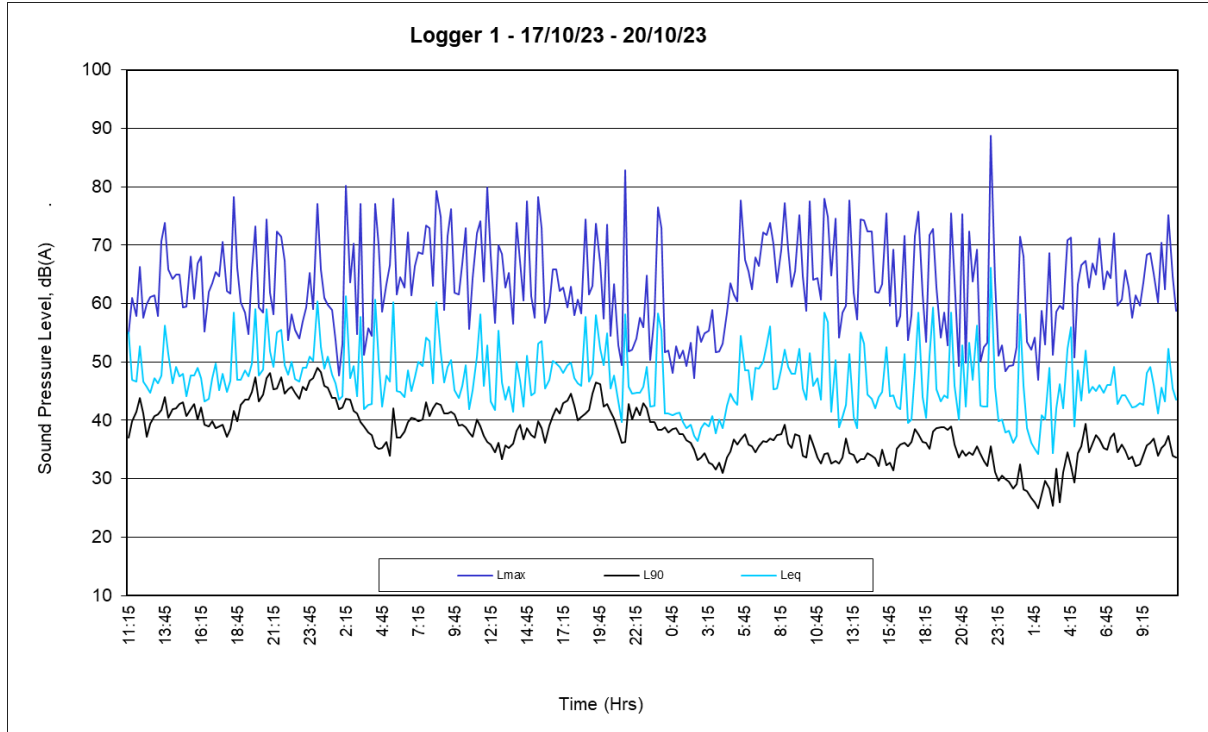
Author:



Ross Hodge M.A.A.S.

Acoustical Consultant

APPENDIX A NOISE LOGGER CHARTS





9 January 2024

Ref: 10584/10170

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: NOVEMBER 2023 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglenn Quarry (AQ) between Friday 24th and Monday 27th November, 2023. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1 Noise Impact Assessment Criteria				
Land	Day Leq (15 min)	Evening Leq (15 min)	Night	
			Leq (15 min)	L1 (1 min)
1 Burraston	35	35	35	45
3 Rose	35	35	35	45
4 C M Thompson	44	35	35	45
5 M Taylor	45	35	35	45
6 S Thompson	45	35	35	45
9 Bates	37	35	35	45
10 Avery	38	35	35	45
11 Shipman	37	35	35	45
12 Hall	36	35	35	45
13 McGhie	35	35	35	45
14 Purtell	36	35	35	45
15 J Taylor	43	35	35	45
16 Bojba	40	35	35	45
All other privately owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.

Notes:

- For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).
- To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba



Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from the quarry operated weather station with real time observations made at the start of each 15 minute monitoring period (and confirmed with reference to the summary data provided by the proponent at the time of reporting). The weather throughout the survey was mild with clear skies. The wind speed was light to moderate and generally from the north to west.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær “*Evaluator*” software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise

level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

Table 2 Ardglen Quarry Noise Monitoring Results – 27th November 2023 (Day)				
Location	Time	dB(A),_{Leq}	Wind speed/ direction°	Identified Noise Sources
4. Thompson	1:07pm	53	2.4 / 011	Train (52), traffic (44), birds (42), AQ occasionally audible
13. McGhie	2:03pm	37	2.8 / 108	Birds (34), dogs (32), traffic (28), AQ inaudible
14. Purtell	1:41pm	58	2.6 / 298	Traffic (58), birds (43), AQ inaudible
16. Bojba	12:46pm	57	0.9 / 268	Traffic (57), birds (35), AQ inaudible

The results in Table 2 show that, under the meteorological and operating conditions at the time, the noise emissions from AQ were compliant with the relevant noise criteria at all monitoring locations.

At the time of the noise monitoring the following plant items were operational at the quarry;

- 1x Cat 972 loader;
- 1x Komatsu 30t dump truck;
- 1x Volvo 35t Excavator;
- 3x rigid trucks and 30 truck and dog movements for the day;
- 1x hilux ute with a trailer mounted water cart operating;
- 1x 2" water pump running intermittently;
- 2x Generators.

The noise from AQ was occasionally audible at location 4. At this location the noise was attributable to the general hum and occasional engine revs. The noise was not loud, or consistent, enough to be measured.

At locations 13, 14 and 16 AQ was not audible.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of three days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment an ARL EL-315 environmental noise logger and an ARL Ngara environmental noise logger, were located as shown in Figure 2 from 24th to 27th November, 2023 (which includes a weekend). **Table 3** shows a summary of the relevant measured data from the

loggers which is also shown graphically in **Appendix A**. Note that the summary data presented in Table 3 is excludes the weekend period, whilst the graphical data is for the entire monitoring period.

TABLE 3						
Measured Logger Noise Levels dB(A) – 24th to 27th November 2023						
Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	48	36	50	37	50	38
Logger 2	56	41	45	36	43	37



Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R14. This is adjacent to the attended noise monitoring location for this residence.

Logger 2 was in an open paddock north of the house.

The unattended noise loggers measure the total noise level in the environment, but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

Author:

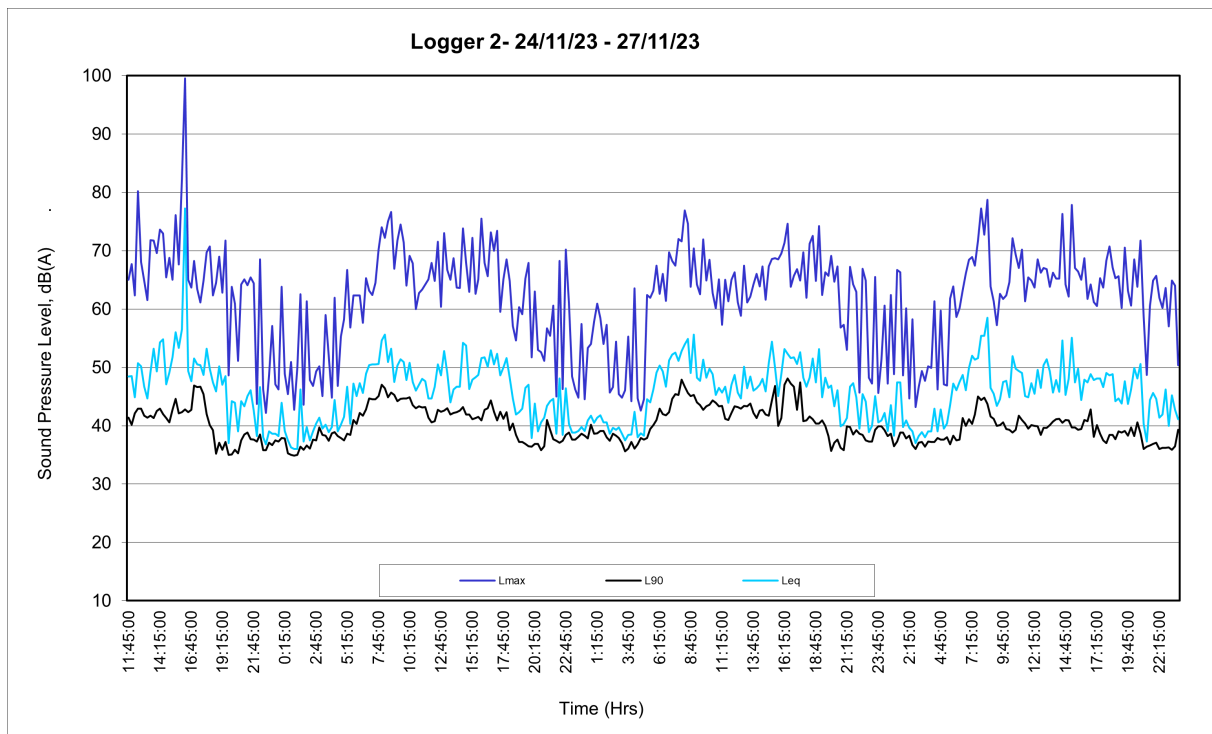
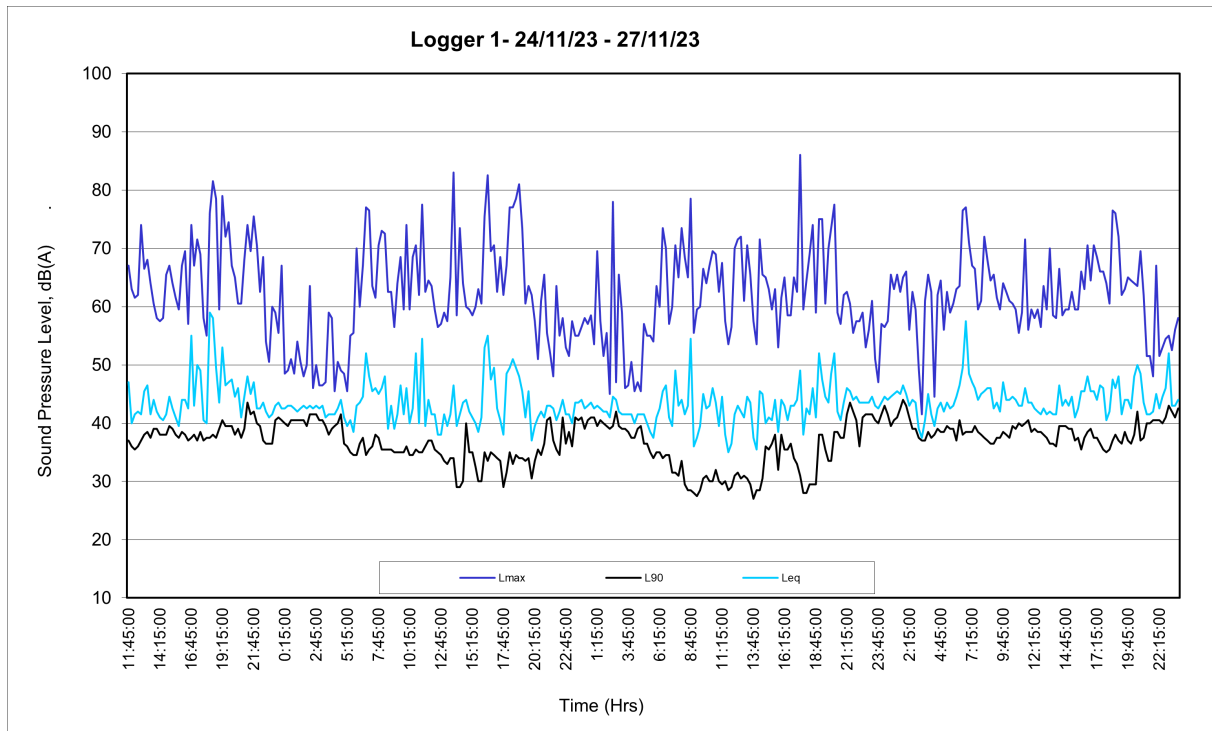


Neil Pennington MAIP, MAAS, MASA

B. Sc., B.Math. (Hons)

Principal / Director

APPENDIX A NOISE LOGGER CHARTS





5 February 2024

Ref: 10584/10205

Daracon Quarries Pty Ltd
PO Box 299
WALLSEND NSW 2287

RE: DECEMBER 2023 NOISE MONITORING RESULTS – ARDGLEN QUARRY

This letter report presents the results of attended and unattended noise monitoring conducted for the Ardglenn Quarry (AQ) between Monday 18th and Thursday 21st December, 2023. The monitoring was carried out to measure noise emissions from the operations of the quarry. Noise monitoring was carried out in accordance with the conditions of the AQ Noise Monitoring Plan (NMP) as detailed below.

NOISE CRITERIA

*The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in **Table 1** at any residence on privately-owned land, or more than 25% of any privately owned land.*

Table 1				
Noise Impact Assessment Criteria				
Land	Day Leq (15 min)	Evening Leq (15 min)	Night	
			Leq (15 min)	L1 (1 min)
1 Burraston	35	35	35	45
3 Rose	35	35	35	45
4 C M Thompson	44	35	35	45
5 M Taylor	45	35	35	45
6 S Thompson	45	35	35	45
9 Bates	37	35	35	45
10 Avery	38	35	35	45
11 Shipman	37	35	35	45
12 Hall	36	35	35	45
13 McGhie	35	35	35	45
14 Purtell	36	35	35	45
15 J Taylor	43	35	35	45
16 Bojba	40	35	35	45
All other privately owned land	35	35	35	45

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DECCW, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated agreement. The Proponent may also exceed the L1 (1 min) and Leq (15 min) noise impact criteria during out of hours rail loading activities provided they are conducted in accordance with Section 3, Condition 41 of the Project Approval (which is reproduced below).

41. The Proponent may only load a maximum of 2 trains outside the rail loading and distribution hours listed in Table 1 (of the Project Approval, being Monday to Sunday 7:00am to 10:00pm) in any 12 month period, unless agreed in writing by the Director General.

Notes:

- For information on the numbering and identification of properties used in this approval see Figure 2 on Page 14 of this Noise Monitoring Program).
- To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point on or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.
- To determine compliance with the L1 (1 minute) noise limits, noise from the project is to be measured 1m from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DECCW may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- The noise emission limits identified in the above table apply under meteorological conditions of:
 - wind speeds of up to 3 m/s at 10 metres above ground level; or
 - Temperature inversion conditions of up to 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and shown in the accompanying **Figure 1**:

Location 4: C M Thompson
Location 13: McGhie
Location 14: Purtell
Location 16: Bojba



Figure 1 – Attended Noise Monitoring Locations

ATTENDED NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2250 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from the quarry operated weather station with real time observations made at the start of each 15 minute monitoring period (and confirmed with reference to the summary data provided by the proponent at the time of reporting). The weather throughout the survey was mild with clear skies. The wind speed was moderate and generally from the southeast.

RESULTS OF ATTENDED MONITORING

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær “*Evaluator*” software. The software enables the contributions of the quarry and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for AQ during the day is based on an Leq noise level. The results, shown in **Table 2**, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise

level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

Table 2 Ardglen Quarry Noise Monitoring Results – 21st December 2023 (Day)				
Location	Time	dB(A),_{L_{eq}}	Wind speed/ direction°	Identified Noise Sources
4. Thompson	10:22am	51	4.1 / 146	Traffic (50), birds (45), AQ inaudible
13. McGhie	10:40am	49	4.8 / 128	Train (49), traffic (38), birds (27), AQ inaudible
14. Purtell	11:00am	56	4.8 / 144	Traffic (55), train (50), birds (37), AQ inaudible
16. Bojba	9:59am	56	3.3 / 113	Traffic (56), birds (34), AQ inaudible

The results in Table 2 show that, under the meteorological and operating conditions at the time, the noise emissions from AQ were compliant with the relevant noise criteria at all monitoring locations.

At the time of the noise monitoring the following plant items were operational at the quarry;

- 1 x 35t Excavator
- 1 x 972 Front end loader
- 1 x Generator
- 1 x Water truck
- 1 x 2" water pump running intermittently
- 1 x 12t Excavator

The noise from AQ was not audible at any of the monitoring locations.

The results of the noise monitoring programme have shown that AQ is operating within approved noise limits. No actions are recommended with respect to noise management at the Quarry.

UNATTENDED NOISE MEASUREMENTS

The NMP requires that unattended noise logging be undertaken over a period of three days, part of which coincides with the quarterly attended noise monitoring.

To measure the acoustic environment an ARL EL-315 environmental noise logger and an ARL Ngara environmental noise logger, were located as shown in Figure 2 from 18th to 21st December, 2023. **Table 3** shows a summary of the relevant measured data from the loggers which is also shown graphically in **Appendix A**.

TABLE 3 Measured Logger Noise Levels dB(A) – 18 th to 21 st December 2023						
Logger Location	Day (7am to 6pm)		Evening (6pm to 10 pm)		Night (10pm to 7am)	
	Leq	L90	Leq	L90	Leq	L90
Logger 1	56	44	53	39	49	32
Logger 2	55	34	51	34	50	30



Figure 2 – Unattended Noise Monitoring Locations

The logger locations were chosen to be representative of the acoustic environment of the closest residences to the quarry and for security reasons.

Logger 1 was located on the fence at location R14. This is adjacent to the attended noise monitoring location for this residence.

Logger 2 was in an open paddock north of the house.


The unattended noise loggers measure the total noise level in the environment, but the data cannot discriminate between various noise sources. As such, the data is presented here with no further analysis.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 0412 023 455.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington MAIP, MAAS, MASA

B. Sc., B.Math. (Hons)

Principal / Director

APPENDIX A
NOISE LOGGER CHARTS

