Monthly Noise Monitoring Assessment

Tomingley Gold Mine, July 2019

Prepared for: Tomingley Gold Operations Pty Limited
August 2019
MAC160270RP35

Muller Acoustic Consulting

Document Information

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Tomingley Gold Operations Pty Ltd (TGO) to complete a Noise Monitoring Assessment (NMA) for Tomingley Gold Mine ('the mine'), Tomingley, NSW.

The NMA involved quantifying the noise contribution of the mine by direct attended measurements to determine mining noise emissions so that effective management and controls can be implemented where required. The monitoring has been conducted in accordance with the TGO Noise Management Plan and in general accordance with Conditions L4.2 to L4.7 of the EPL at six representative receiver locations. It is noted that this assessment has been completed as part of an internal noise management initiative and does not form part of the annual noise monitoring program to address conditions of the Environmental Protection License (EPL).

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

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI) 2017;
- Environment Protection Licence EPL 20169 (EPL); and
- Australian Standard 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 Environmental Protection License Noise Limits

Historic assessments for the mine categorise receivers into Noise Assessment Groups (NAGs). The NAGs were derived based on ambient noise data that controlled receiver RBLs.

Table 1 reproduces the operational and sleep disturbance noise limits for assessed receivers referenced from the EPL that have been adopted for this NMA and are consistent with historic EPL monitoring locations.

Table 1 Noise Limits, dBA

Noise Assessment Group	Receivers	Day	Evening	Night	
		$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{A1(1min)}$
NAG A	R6, R4	36	36	36	45
	R5	37	37	37	45
NAG B	R2	36	36	36	45
NAG C	R3	49	40	40	45
	R29	48	40	40	45
NAG D	R23	43	39	39	46

Note: Refer to figure in Appendix 4 of Project Approval 09-0155 for noise locations. However, these criteria do not apply if the Proponent has an agreement with the relevant owner(s) of these residences / land to generate higher noise levels, and the Proponent has advised the Department of Planning and Infrastructure and EPA in writing of the terms of this agreement.

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3 Methodology

3.1 Locality

TGO is located to the south of the village of Tomingley, NSW. Receivers in the locality surrounding the mine are primarily rural/residential and for consistency the naming conventions for each receiver have been retained from historic noise assessments. The monitoring locations with respect to the mine are presented in the locality plan shown in **Figure 1.**

3.2 Assessment Methodology

The attended noise survey was conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise" and the EPL. Measurements were carried out using Svantek Type 1, 971 noise analyser between Tuesday 16 July 2019 and Friday 19 July 2019. The acoustic instrumentation used carries current NATA calibration 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 ±0.5dBA.

Both evening and night 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 $LA_{eq(15min)}$ mine noise contribution for comparison against the relevant EPL limit.

Prevailing meteorological conditions for the monitoring period were sourced from TGO's meteorological station and analysed in accordance with Appendix E4 of the NPI to determine the stability category present at the time of each measured sample. This was undertaken to determine applicability of results in accordance with Condition L4.3 of the EPL. 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.

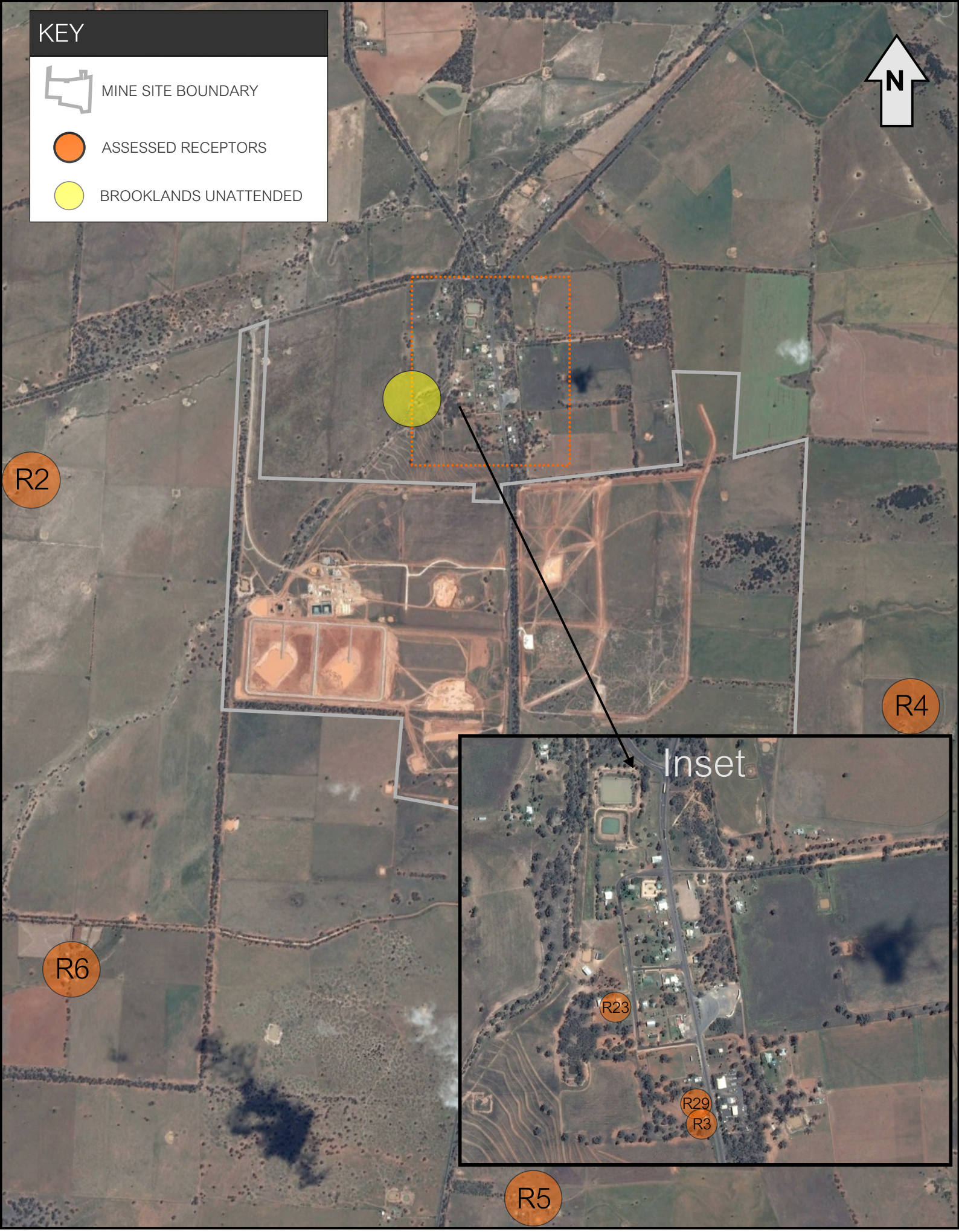

FIGURE 1 - LOCALITY PLAN AND ASSESSMENT LOCATIONS

TOMINGLEY GOLD MINE EPL NOISE MONITORING

REF: MAC160270

0 1000m

MAC
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4 Results

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

4.1 Assessment Results - Location R2

The results of the attended noise measurements at location R2 for the July 2019 survey are summarised in **Table 2** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 2 Operator-Attended Noise Survey Results – Location R2

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	19:01	84	41	39	36	WD: SSW WS: 4m/s Stab Class: D	Wind 38-44 Local Traffic 40-84 Dogs Barking 40-41
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
16/07/19	22:02	52	30	26	36	WD: SW WS: 2m/s Stab Class: D	Wind 25-31 Distant Traffic 26-30 Birds 31-39 TGO Hum 26-31
		TGO Site $L_{Aeq(15min)}$ Contribution					<26
17/07/19	19:04	84	57	23	36	WD: SW WS: <1.0m/s Stab Class: E	Local Traffic 30-80 Dogs 24-34 TGO Vehicles/Hum 24-29
		TGO Site $L_{Aeq(15min)}$ Contribution					<23
17/07/19	22:05	54	34	20	36	WD: N/A WS: Calm Stab Class: F	Local Traffic 22-50 Insects 28-38 TGO Hum 18-26
		TGO Site $L_{Aeq(15min)}$ Contribution					<20
18/07/19	19:10	88	60	15	36	WD: N/A WS: Calm Stab Class: E	Local Traffic 24-88 Dogs 24-30 TGO Hum 17-20
		TGO Site $L_{Aeq(15min)}$ Contribution					<20
18/07/19	22:07	51	25	18	36	WD: S WS: 0.5m/s Stab Class: E	Distant Traffic 21-25 Aircraft 22-26 TGO Hum 17-20
		TGO Site $L_{Aeq(15min)}$ Contribution					<20

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

4.2 Assessment Results - Location R3/R29

The results of the attended noise measurements at location R3/R29 for the July 2019 survey are summarised in **Table 3** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 3 Operator-Attended Noise Survey Results – Location R3/R29

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	19:51	83	66	40	40	WD: SSW WS: 2m/s Stab Class: D	Highway Traffic 38-83 Wind 38-41 TGO Plant 38-40
		TGO Site $L_{Aeq(15min)}$ Contribution					36
16/07/19	22:45	84	64	44	40	WD: SW WS: 2m/s Stab Class: D	Highway Traffic 42-84 Truck Idling 42-45 TGO Hum 42-44
		TGO Site $L_{Aeq(15min)}$ Contribution					<40
17/07/19	19:49	85	67	41	40	WD: SW WS: 0.5m/s Stab Class: E	Highway Traffic 41-85 Livestock 48-52 TGO Hum 36-38
		TGO Site $L_{Aeq(15min)}$ Contribution					<38
17/07/19	22:48	86	64	39	40	WD: N/A WS: Calm Stab Class: F	Highway Traffic 46-86 TGO Plant 38-44 TGO Equipment 42-46 TGO Reverse Alarm 37-39
		TGO Site $L_{Aeq(15min)}$ Contribution					38
18/07/19	19:56	86	69	47	40	WD: E WS: 0.5 m/s Stab Class: F	Highway Traffic 42-83 TGO Hum 39-46 TGO Equipment 42-48
		TGO Site $L_{Aeq(15min)}$ Contribution					<40
18/07/19	22:54	83	63	41	40	WD: N WS: 0.8m/s Stab Class: E	Highway Traffic 45-83 Idling Truck 40-41 TGO Hum 38-42 TGO Equipment 40-42
		TGO Site $L_{Aeq(15min)}$ Contribution					<40

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

4.3 Assessment Results - Location R4

The results of the attended noise measurements at location R4 for the July 2019 survey are summarised in **Table 4** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 4 Operator-Attended Noise Survey Results – Location R4

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	20:44	51	35	30	36	WD: SW WS: 2.5m/s Stab Class: D	Distant Traffic 30-42 Drill Rig to South (Not TGO) 30-37 Aircraft 35-43
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
16/07/19	23:33	55	38	37	36	WD: SW WS: 1.5m/s Stab Class: D	Distant Traffic 37-41 Drill Rig to South (Not TGO) 36-38 TGO Hum 36-37
		TGO Site $L_{Aeq(15min)}$ Contribution					32
17/07/19	20:40	54	35	29	36	WD: S WS: 0.5m/s Stab Class: D	Distant Traffic 30-40 Drill Rig to South (Not TGO) 30-34 Birds 30-54
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
17/0719	23:42	47	35	31	36	WD: N/A WS: Calm Stab Class: E	Distant Traffic 28-47 Drill Rig to South (Not TGO) 28-38 TGO Hum 31-35
		TGO Site $L_{Aeq(15min)}$ Contribution					<26
18/07/19	20:50	52	38	30	36	WD: SE WS: 0.5m/s Stab Class: E	Distant Traffic 25-51 Drill Rig to South (Not TGO) 30-33 Birds 29-32 TGO Hum 28-30
		TGO Site $L_{Aeq(15min)}$ Contribution					<25
18/07/19	23:51	43	31	22	36	WD: S WS: 0.5m/s Stab Class: E	Distant Traffic 24-43 Drill Rig to South (Not TGO) 24-31 Birds 32-36 TGO Hum 22-28
		TGO Site $L_{Aeq(15min)}$ Contribution					<20

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

4.4 Assessment Results - Location R5

The results of the attended noise measurements at location R5 for the July 2019 survey are summarised in **Table 5** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 5 Operator-Attended Noise Survey Results – Location R5

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	21:07	83	60	37	37	WD: SW WS: 1.5m/s Stab Class: D	Nearby Drill Rig (Not TGO) 38-46 Highway Traffic 37-81 Wind 36-39
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
16/07/19	23:56	83	62	48	37	WD: SW WS: 1.0m/s Stab Class: E	Nearby Drill Rig (Not TGO) 47-55 Highway Traffic 50-82 Insects 47 Wind 47
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
17/07/19	21:06	83	65	54	37	WD: NE WS: <0.5m/s Stab Class: D	Nearby Drill Rig (Not TGO) 50-60 Highway Traffic 50-82
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
18/07/19	00:06	80	58	34	37	WD: N/A WS: Calm Stab Class: D	Nearby Drill Rig (Not TGO) 35-50 Highway Traffic 46-77 Livestock 33-36
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
18/07/19	21:17	82	62	51	37	WD: ENE WS: 1.0m/s Stab Class: E	Nearby Drill Rig (Not TGO) 50-55 Highway Traffic 50-81
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
19/07/19	00:16	84	60	53	37	WD: E WS: 0.5m/s Stab Class: E	Nearby Drill Rig 50-55 Highway Traffic 55-82
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

4.5 Assessment Results - Location R6

The results of the attended noise measurements at location R6 for the July 2019 survey are summarised in **Table 6** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 6 Operator-Attended Noise Survey Results – Location R6

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	20:16	60	42	39	36	WD: SW WS: 4.0m/s Stab Class: D	Distant Traffic 38-41 Wind 38-49
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
16/07/19	23:07	50	37	36	36	WD: SW WS: 3.0m/s Stab Class: E	Distant Traffic 36-39 Wind 34-38 Livestock 34-35
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
17/07/19	20:13	52	31	23	36	WD: SW WS: 0.5m/s Stab Class: D	Distant Traffic 26-38 Livestock 24-28
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
17/07/19	23:13	52	29	23	36	WD: N/A WS: Calm Stab Class: F	Distant Traffic 22-33 Livestock 22-31
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
18/07/19	20:20	56	27	14	36	WD: E WS: 0.5 Stab Class: E	Distant Traffic 23-36 Livestock 20-26
		TGO Site $L_{Aeq(15min)}$ Contribution					TGO Inaudible
18/07/19	23:20	53	27	21	36	WD: NE WS: 0.5m/s Stab Class: D	Distant Traffic 24-35 Livestock 20-24 TGO Plant 18-21
		TGO Site $L_{Aeq(15min)}$ Contribution					<20

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

4.6 Assessment Results - Location R23

The results of the attended noise measurements at location R23 for the July 2019 survey are summarised in **Table 7** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 7 Operator-Attended Noise Survey Results – Location R23

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
16/07/19	19:29	57	44	40	39	WD: SSW WS: 2.0m/s Stab Class: D	Highway Traffic 39-55 Wind 39-41 Birds 42-44 TGO Hum 38-44
		TGO Site $L_{Aeq(15min)}$ Contribution					37
16/07/19	22:26	67	42	37	39	WD: SW WS: 1.0m/s Stab Class: D	Highway Traffic 36-54 Tuck Idling 35-39 Dogs 57 TGO Hum 35-38
		TGO Site $L_{Aeq(15min)}$ Contribution					<35
17/07/19	19:28	57	44	37	39	WD: SW WS: 1.0m/s Stab Class: D	Highway Traffic 40-56 TGO Hum 34-41 TGO Equipment 38-47 TGO Reverse Alarm 38-46
		TGO Site $L_{Aeq(15min)}$ Contribution					38
17/07/19	22:27	66	49	38	39	WD: SW WS: <0.5m/s Stab Class: D	Highway Traffic 44-65 Dogs 48-55 TGO Hum 35-40 TGO Equipment 36-45
		TGO Site $L_{Aeq(15min)}$ Contribution					38
18/07/19	19:35	73	49	41	39	WD: NW WS: <0.5m/s Stab Class: D	Highway Traffic 42 -65 Truck Idling 38-44 Dogs 44-63 TGO Hum 38-43 TGO Equipment 40-46
		TGO Site $L_{Aeq(15min)}$ Contribution					<39
18/07/19	22:32	59	44	37	39	WD: W WS: <0.5m/s Stab Class: D	Highway Traffic 40-55 Insects 41-45 TGO Hum 35-42 TGO Equipment 37-42
		TGO Site $L_{Aeq(15min)}$ Contribution					<37

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

5 Discussion

5.1 Discussion of Results - Location R2

Monitoring between Tuesday 16 July 2019 to Thursday 18 July 2019 identified that TGO was audible at location R2 on five occasions, with mining contributions remaining below 26dBA. Therefore, the relevant noise limit of 36dB $LA_{eq(15min)}$ was satisfied during this monitoring period. Extraneous sources such as road traffic, birds, insects, dogs barking and wind were audible during the survey periods.

5.2 Discussion of Results - Location R3/R29

Monitoring from Tuesday 16 July 2019 to Thursday 18 July 2019 identified that TGO was audible at location R3/R29 on six occasions, with mining contributions remaining below 40dBA. Therefore, the relevant noise limit of 40dB $LA_{eq(15min)}$ was satisfied during this monitoring period. Extraneous sources such as road traffic, idling trucks and wind were audible during the survey periods.

5.3 Discussion of Results - Location R4

Monitoring from Tuesday 16 July 2019 to Thursday 18 July 2019 identified that TGO was audible on four occasions at location R4 with mining contributions remaining below 32dBA, therefore the relevant noise limit of 36dB $LA_{eq(15min)}$ was satisfied. Road traffic, birds, aircraft and an operating drill rig (not TGO) south of the monitoring location were audible during the measurements at R4.

5.4 Discussion of Results - Location R5

TGO mine noise was inaudible during noise measurements at R5 for the July 2019 monitoring period. Therefore, relevant noise limits of 37dB $LA_{eq(15min)}$ were satisfied. Highway traffic and an operating nearby drill rig (not TGO) was the dominant sources at this receiver with other non-mining sources including livestock, dogs barking and wind.

5.5 Discussion of Results - Location R6

Monitoring from Tuesday 16 July 2019 to Thursday 18 July 2019 identified that TGO was audible on one occasion at location R6 with mining contributions remaining below 20dBA, therefore the relevant noise limit of 36dB $LA_{eq(15min)}$ was satisfied. Road traffic, livestock and wind-blown vegetation were audible during the measurements at R6.

5.6 Discussion of Results - Location R23

Monitoring between Tuesday 16 July 2019 to Thursday 18 July 2019 identified that TGO was audible at location R23 during all measurements, with mining contributions remaining below 39dBA. Therefore, the relevant noise limit of 39dB $LA_{eq(15min)}$ was satisfied during this monitoring period. Extraneous sources such as road traffic, dogs barking, idling trucks, insects, birds and wind were audible during the survey periods.

6 Comparison of Attended and Unattended Monitoring Results

To address Condition 6 of Schedule 3 of the Project Approval, a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results has been completed.

The validation compares monthly attended monitoring results against the closest assessed unattended monitoring location. Currently, TGO has an unattended real-time monitoring terminal installed at the Brooklands property (nearest to R23). Figure 1 identifies the location of the monitor with respect to the attended monitoring locations. It is noted that the Brooklands unattended monitor is situated 600m west of the attended noise monitoring location R23, therefore, background (L_{A90}) noise levels are significantly lower due to offset distance to highway traffic.

A comparison of mine noise contributions between attended and unattended noise monitoring demonstrates a general consistency between attended and unattended results. It was noted that highway traffic noise, dogs barking and wind in trees influenced measured noise levels for this assessment. Furthermore, for July 2019, results remained below the relevant criteria for both attended and unattended locations.

Table 8 provides a summary comparison of results between the attended and unattended noise surveys for R23.

Table 8 Comparison of Attended and Unattended Results – R23

Assessment Type	Time (hrs)	Descriptor (dBA re 20 µPa)			Criteria	Mine Noise Contribution	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}				
Tuesday 16 July 2019								
Attended	19:29	57	44	40	39	37	WD: SSW WS: 2.0m/s Stab Class: D	Highway Traffic 39-55 TGO Hum/Plant 38-44 Wind 39-41
Unattended	19:30	51	38	33	39	<33		Highway Traffic 33-50 TGO Hum 33-38
Attended	22:26	67	42	37	39	<35	WD: SW WS: 1.0m/s Stab Class: D	Highway Traffic 36-54 TGO Hum/Plant 35-38 Idling Truck 35-39
Unattended	22:30	46	34	31	39	<31		Highway Traffic 34-45 TGO Hum <34
Wednesday 17 July 2019								
Attended	19:28	57	44	37	39	38	WD: SW WS: 1.0m/s Stab Class: D	Highway Traffic 40-56 TGO Hum/Plant 34-47
Unattended	19:30	50	40	33	39	<33		Highway Traffic 35-50 TGO Hum/Plant 35-40
Attended	22:27	66	49	38	39	38	WD: SW WS: <0.5m/s Stab Class: D	Highway Traffic 44-65 TGO Hum/Plant 35-45 Dogs 48-55
Unattended	22:30	62	47	30	39	<30		Highway Traffic 35-60 TGO Hum <35
Thursday 18 July 2019								
Attended	19:35	73	49	41	39	<39	WD: NW WS: <0.5m/s Stab Class: D	Highway Traffic 42 -65 Truck Idling 38-44 TGO Hum/Plant 38-46 Dogs 44-63
Unattended	19:30	56	41	36	39	<36		Highway Traffic 35 -55 TGO Hum/Plant <40
Attended	22:32	59	44	37	39	<37	WD: W WS: <0.5m/s Stab Class: D	Highway Traffic 40-55 Insects 41-45 TGO Hum/Plant 35-42
Unattended	22:30	58	42	36	39	<36		Highway Traffic 35 -58 TGO Hum/Plant <40

Note 1: Meteorological data obtained from TGO's on-site weather station or by direct measurement by the operator.

7 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Monitoring Assessment on behalf of Tomingley Gold Operations (TGO). The assessment was completed to provide monthly monitoring data so that TGO can actively quantify and manage site noise emissions.

Attended monitoring conducted from Tuesday 16 July 2019 to Friday 19 July 2019, identified that TGO mine noise was audible at times at varying locations, although did not exceed relevant limits during applicable meteorological conditions during. the July 2019 assessment period.

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Appendix A - Glossary of Terms

Several technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Terms

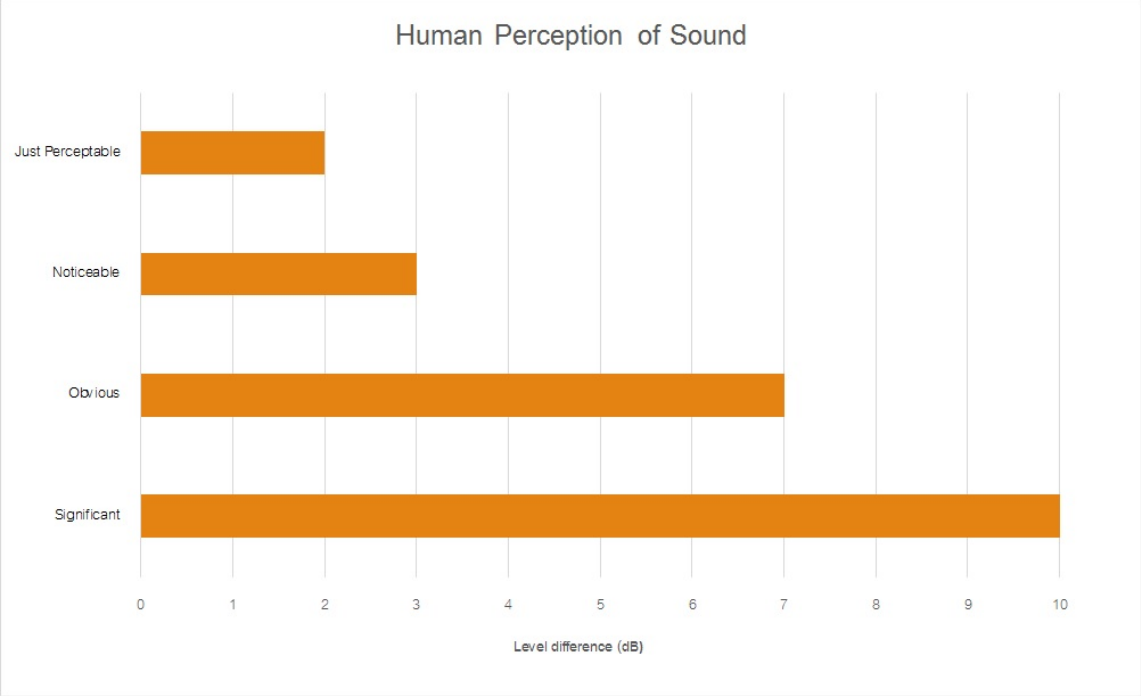
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The noise associated with a given environment. Typically a composite of sounds from many 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 noise.
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)	Decibels Linear or decibels Z-weighted.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A noise level which is exceeded 10 % of the time. It is approximately equivalent to the average of maximum noise levels.
LA90	Commonly referred to as the background noise, this is the level exceeded 90 % of the time.
LAeq	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
LAmax	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
Sound power level (SWL)	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment. Or a measure of the energy emitted from a source as sound and is given by : = 10.log10 (W/Wo) Where : W is the sound power in watts and Wo is the sound reference power at 10-12 watts.

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 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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