Monthly Noise Monitoring Assessment

Tomingley Gold Mine
February 2024

Prepared for: Tomingley Gold Operations Pty Limited
February 2024
MAC160270-2024RP02

Muller Acoustic Consulting

Document Information

Monthly Noise Monitoring Assessment

Tomingley Gold Mine

February 2024

Prepared for: Tomingley Gold Operations Pty Limited

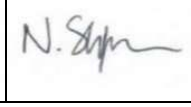
Prepared by: Muller Acoustic Consulting Pty Ltd

PO Box 678, Kotara NSW 2289

ABN: 36 602 225 132

P: +61 2 4920 1833

www.mulleracoustic.com

DOCUMENT ID	DATE	PREPARED	SIGNED	REVIEWED	SIGNED
MAC160270-2024RP02	15 February 2024	Nicholas Shipman		Oliver Muller	

Field Officer: Daniel Brown

CONTENTS

This page has been intentionally left blank

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;
- 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 # 20169 (EPL);
- 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**.

This page has been intentionally left blank

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	R4, R5, R6	35	35	35	45
NAG B	R2	36	35	35	45
NAG C	R3/R29	45	35	35	45
NAG D	R23	43	38	36	45

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.

This page has been intentionally left blank

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 Standards Australia AS 1055:2018, "Acoustics - Description and Measurement of Environmental Noise" and the EPL. Measurements were carried out using a Svantek Type 1, 971 noise analyser between Monday 5 February 2024 and Wednesday 7 February 2024. 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 ±0.5dBA.

Both evening and night measurements were of 15-minutes in 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 on-site meteorological station and analysed in accordance with Appendix D1 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

MAC160270

Tomingley Gold Operations

KEY

- Receivers
- Brooklands
- TGO Boundary

0 300 600 900 1200 1500 m

N

MAC
Muller Acoustic Consulting

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 TGOs on-site meteorological station, 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	TGO on-site Meteorological Station (10m AGL)		Operator Measured Weather Monitoring Location (1.8m AGL)	
	Wind Direction	Wind (m/s)	Wind Direction	Wind (m/s)
05/02/2024 18:02	S	5.9	NE	4.1
05/02/2024 18:24	S	5.8	NE	3.8
05/02/2024 18:47	S	4.9	NW	4.7
05/02/2024 19:09	S	7.9	W	3.5
05/02/2024 19:27	S	6.0	W	3.4
05/02/2024 19:48	S	7.1	W	4.7
06/02/2024 19:39	SSW	5.8	S	1.8
06/02/2024 20:01	SSW	4.5	S	1.5
06/02/2024 20:24	SSW	4.3	S	1.5
06/02/2024 20:47	SW	2.8	S	1.0
06/02/2024 21:04	SW	2.9	S	0.4
06/02/2024 21:28	SW	2.2	S	0.5
06/02/2024 22:00	SSW	3.1	S	0.7
06/02/2024 22:23	S	1.8	S	0.8
06/02/2024 22:41	SSW	3.1	S	0.4
06/02/2024 23:03	SSW	1.7	S	0.3
06/02/2024 23:28	S	3.0	S	0.3
06/02/2024 23:50	SSE	2.6	S	0.3
07/02/2024 19:36	ENE	4.2	E	2.1
07/02/2024 19:57	E	7.2	E	1.1
07/02/2024 20:20	ENE	5.6	E	2.6
07/02/2024 20:43	NE	4.8	E	1.4
07/02/2024 21:01	ENE	3.6	E	0.8
07/02/2024 21:26	ENE	4.9	NE	1.5
07/02/2024 22:01	E	5.2	NE	1.5
07/02/2024 22:23	ENE	3.1	E	0.8
07/02/2024 22:40	E	3.6	NE	0.5
07/02/2024 23:02	ENE	5.1	NE	0.6
07/02/2024 23:26	E	5.5	E	2.6
07/02/2024 23:48	ENE	5.2	E	0.4

4.2 Assessment Results - Location R2

The results of the attended noise measurements at location R2 for the February 2024 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 R2

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}	Limit		
05/02/2024	19:48 (Evening)	64	51	48	35	WD: SW WS: 4.7m/s Stab Class: D	Wind in vegetation 46-64 Birds 46-52 Dogs barking 45-48 TGO inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<35
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	21:28 (Evening)	49	37	34	35	WD: S WS: 0.5m/s Stab Class: D	Insects 35-42 Traffic 35-38 Dogs barking 36-49 TGO processing 33-35
TGO Site $LA_{eq(15min)}$ Contribution							34
06/02/2024	22:00 (Night)	68	41	31	35	WD: S WS: 0.7m/s Stab Class: D	Insects 32-35 Operator 40 Traffic 31-68 TGO processing 30-33
TGO Site $LA_{eq(15min)}$ Contribution							32
07/02/2024	21:26 (Evening)	64	43	34	35	WD: NE WS: 1.5m/s Stab Class: D	Insects 31-40 Traffic 36-64 Operator 42 TGO processing 33-35
TGO Site $LA_{eq(15min)}$ Contribution							34
07/02/2024	22:01 (Night)	45	35	32	35	WD: NE WS: 1.5m/s Stab Class: D	Insects 32-36 Traffic 34-45 Dogs barking 38 TGO processing 31-35
TGO Site $LA_{eq(15min)}$ Contribution							33

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

4.3 Assessment Results - Location R3/R29

The results of the attended noise measurements at location R3/R29 for the February 2024 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 R3/R29

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
05/02/2024	19:09 (Evening)	86	66	46	35	WD: W WS: 3.5m/s Stab Class: D	Traffic 43-86 Insects 40-42 Birds 44-48 Wind in vegetation 45-57 Dogs barking 47-49 TGO Inaudible
		TGO Site $L_{Aeq(15min)}$ Contribution					<35
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	20:47 (Evening)	83	66	53	35	WD: S WS: 1.0m/s Stab Class: D	Traffic 50-83 Insects 52-56 TGO Inaudible
		TGO Site $L_{Aeq(15min)}$ Contribution					<35
06/02/2024	22:41 (Night)	84	65	42	35	WD: S WS: 0.4m/s Stab Class: D	Traffic 43-84 Insects 40-42 TGO processing 33-35
		TGO Site $L_{Aeq(15min)}$ Contribution					34
07/02/2024	20:43 (Evening)	81	64	48	35	WD: E WS: 1.4m/s Stab Class: D	Insects 43-47 Traffic 46-81 TGO Inaudible
		TGO Site $L_{Aeq(15min)}$ Contribution					<35
07/02/2024	22:40 (Night)	85	67	42	35	WD: NE WS: 0.5m/s Stab Class: D	Insects 38-41 Traffic 40-85 Dogs barking <38 TGO Inaudible
		TGO Site $L_{Aeq(15min)}$ Contribution					<32

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

4.4 Assessment Results - Location R4

The results of the attended noise measurements at location R4 for the February 2024 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 R4

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
05/02/2024	18:24 (Evening)	56	47	44	35	WD: NE WS: 3.8m/s Stab Class: D	Wind in vegetation 43-56 Birds 47-49 Traffic 45-48 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<34
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	20:01 (Evening)	61	40	36	35	WD: S WS: 1.5m/s Stab Class: D	Insects 34-44 Birds 42-61 Traffic 35-40 Wind in vegetation 33-44 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<26
06/02/2024	23:28 (Night)	66	36	32	35	WD: S WS: 0.3m/s Stab Class: D	Traffic 33-40 Insects 30-35 Operator 45-66 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<22
07/02/2024	19:57 (Evening)	55	39	30	35	WD: E WS: 1.1m/s Stab Class: D	Insects 28-33 Birds 36-55 Traffic 27-32 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<20
07/02/2024	23:26 (Night)	62	48	42	35	WD: E WS: 3.5m/s Stab Class: D	Wind in vegetation 40-62 Insects 37-41 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<32

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

4.5 Assessment Results - Location R5

The results of the attended noise measurements at location R5 for the February 2024 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 R5

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
05/02/2024	18:02 (Evening)	81	63	48	35	WD: NE WS: 4.1m/s Stab Class: D	Traffic 45-81 Birds 52-61 Aircraft 51-53 Wind in vegetation 42-58 TGO Inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<35
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	19:39 (Evening)	81	62	40	35	WD: S WS: 1.8m/s Stab Class: D	Traffic 41-81 Wind in vegetation 38-40 Birds 46-53 TGO Inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<30
06/02/2024	23:50 (Night)	81	62	33	35	WD: S WS: 0.3m/s Stab Class: D	Insects 32-36 Traffic 35-81 TGO Inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<23
07/02/2024	19:36 (Evening)	80	62	43	35	WD: E WS: 2.1m/s Stab Class: D	Wind in vegetation 42-45 Traffic 44-80 Birds 45-55 TGO Inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<33
07/02/2024	23:48 (Night)	79	56	39	35	WD: E WS: 0.4m/s Stab Class: D	Insects 37-41 Traffic 40-79 Offsite drilling 38-42 TGO Inaudible
TGO Site $LA_{eq(15min)}$ Contribution							<29

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

4.6 Assessment Results - Location R6

The results of the attended noise measurements at location R6 for the February 2024 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 R6

Date	Time (hrs)	Descriptor (dBA re 20 µPa)			EPL Limit	Meteorology[1]	Description and SPL, dBA
		L_{Amax}	L_{Aeq}	L_{A90}			
05/02/2024	18:47 (Evening)	71	56	52	35	WD: NW WS: 4.5m/s Stab Class: D	Wind in vegetation 49-56 Birds 51-71 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<35
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	20:24 (Evening)	55	43	37	35	WD: S WS: 1.5m/s Stab Class: D	Insects 33-55 Birds 41-49 Wind in vegetation 39-44 Traffic 35-38 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<27
06/02/2024	23:03 (Night)	44	33	29	35	WD: S WS: 0.3m/s Stab Class: D	Insects 27-37 Livestock <30 Traffic 33-44 TGO Inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<20
07/02/2024	20:20 (Evening)	61	47	42	35	WD: E WS: 2.6m/s Stab Class: D	Birds 40-61 Wind in trees 40-51 Traffic 43-46 TGO inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<32
07/02/2024	23:02 (Night)	50	38	34	35	WD: NE WS: 0.6m/s Stab Class: D	Insects 34-38 Operator 50 Wind in trees 37-43 Traffic 32-38 TGO processing 31-36
TGO Site $L_{Aeq(15min)}$ Contribution							33

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

4.7 Assessment Results - Location R23

The results of the attended noise measurements at location R23 for the February 2024 survey are summarised in **Table 8** with the relevant EPL limits, the calculated mining noise contribution and prevailing meteorological conditions at the time of each measurement.

Table 8 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}			
05/02/2024	19:27 (Evening)	84	52	43	38	WD: W WS: 3.4m/s Stab Class: D	Traffic 40-63 Wind in vegetation 41-45 Birds 42-84 TGO inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<33
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018							
06/02/2024	21:04 (Evening)	59	48	46	38	WD: S WS: 0.4m/s Stab Class: D	Traffic 47-59 Livestock <43 Insects 46-51 TGO processing 36-38
TGO Site $L_{Aeq(15min)}$ Contribution							37
06/02/2024	22:23 (Night)	58	46	42	36	WD: S WS: 0.4m/s Stab Class: D	Traffic 37-58 Insects 36-40 TGO processing 34-35
TGO Site $L_{Aeq(15min)}$ Contribution							35
07/02/2024	21:01 (Evening)	60	47	42	38	WD: E WS: 0.8m/s Stab Class: D	Traffic 40-60 Insects 38-41 Local residential 38-41 Birds 39-41 TGO inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<32
07/02/2024	22:23 (Night)	62	44	37	36	WD: E WS: 0.8m/s Stab Class: D	Traffic 38-62 Insects 34-38 Service station 37-39 TGO inaudible
TGO Site $L_{Aeq(15min)}$ Contribution							<27

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 Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities were audible on four occasions during the assessment period at location R2. The estimated mining contributions were measured between 33dBA and 35dBA, therefore TGO emissions remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as insects, traffic, wind in vegetation, operator noise, dogs barking, and birds were audible during the measurement period.

5.2 Discussion of Results - Location R3/R29

Monitoring between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities were audible on one occasion during the assessment period at location R3/R29. The estimated mining contributions were measured between <32dBA and <35dBA, therefore TGO emissions remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as traffic, wind in vegetation, dogs barking, birds and insects were audible during the measurement period.

5.3 Discussion of Results - Location R4

Monitoring between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities remained inaudible during the assessment period at location R4. The estimated mining contributions were measured between <20dBA and <34dBA, therefore TGO emissions remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as insects, birds, traffic, livestock, wind in vegetation and operator noise were audible during the measurement period.

5.4 Discussion of Results - Location R5

Monitoring between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities remained inaudible during the assessment period at location R5. The estimated mining contributions were measured between <23dBA and <35dBA, therefore TGO emissions remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as traffic, aircraft, offsite construction, birds, insects and wind in vegetation were audible during the measurement period.

5.5 Discussion of Results - Location R6

Monitoring between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities were audible on one occasion during the assessment period at location R6. The estimated mining contributions were measured between <20dBA and <35dBA, therefore the relevant noise limit of 35dB $LA_{eq(15min)}$ was satisfied. Extraneous sources such as insects, birds, traffic, wind in vegetation, livestock and operator noise were audible during the measurement period.

5.6 Discussion of Results - Location R23

Monitoring between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO activities were audible on two occasions during the assessment period at location R23. The estimated mining contributions were measured between <27dBA and 37dBA, therefore the noise limit of 38dB $LA_{eq(15min)}$ for evening and 36dB $LA_{eq(15min)}$ for night was satisfied. Extraneous sources such as traffic, insects, dogs barking, livestock, local residential noise, service station and wind in vegetation were audible during the measurement period.

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.

Historically, 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 wind, insects, and highway traffic noise influenced measured noise levels for this assessment. Furthermore, for February 2024, results remained below the relevant criteria for attended locations.

Table 9 provides a summary comparison of results between the attended and unattended noise surveys for R23.

Table 9 Comparison of Attended and Unattended Results

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}				
Monday 5 February 2024								
Attended	19:27	84	52	43	38	<33	WD: W WS: 3.4m/s Stab Class: D	Traffic 40-63 Wind in vegetation 41-45 Birds 42-84 TGO inaudible
Unattended	19:30	61	47	40	38	<30		No audio trigger
Due to constant rainfall during the measurement period, monitoring was unable to be completed as per Table A1, Fact Sheet A in the Noise Policy (NPI), 2017 and AS1055:2018								
Tuesday 6 February 2024								
Attended	21:04	59	48	46	38	37	WD: S WS: 0.4m/s Stab Class: D	Traffic 47-59 Insects 46-51 TGO processing 36-38
Unattended	21:00	76	72	48	38	<38		No audio trigger
Attended	22:23	58	46	42	36	35	WD: S WS: 0.4m/s Stab Class: D	Traffic 37-58 Insects 36-40 TGO processing 34-35
Unattended	22:30	52	41	35	36	32		Insects TGO processing
Wednesday 7 February 2024								
Attended	21:01	60	47	42	38	<32	WD: E WS: 0.8m/s Stab Class: D	Traffic 40-60 Insects 38-41 Birds 39-41 TGO inaudible
Unattended	21:00	54	45	42	38	<32		No audio trigger
Attended	22:23	62	44	37	36	<27	WD: E WS: 0.8m/s Stab Class: D	Traffic 38-62 Insects 34-38 TGO inaudible
Unattended	22:15	58	44	36	36	<26		Insects Traffic TGO inaudible

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 (NMA) on behalf of Tomingley Gold Operations Pty Ltd (TGO). The assessment was completed to provide monthly monitoring data so that TGO can actively quantify and manage site noise emissions.

Attended monitoring conducted between Monday 5 February 2024 and Wednesday 7 February 2024 identified that TGO mine noise were audible on several occasions during the measurement period. A review of monitoring data and operator attended observations determined that TGO contributions remained below relevant limits.

This page has been intentionally left blank

Appendix A – Glossary of Terms

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

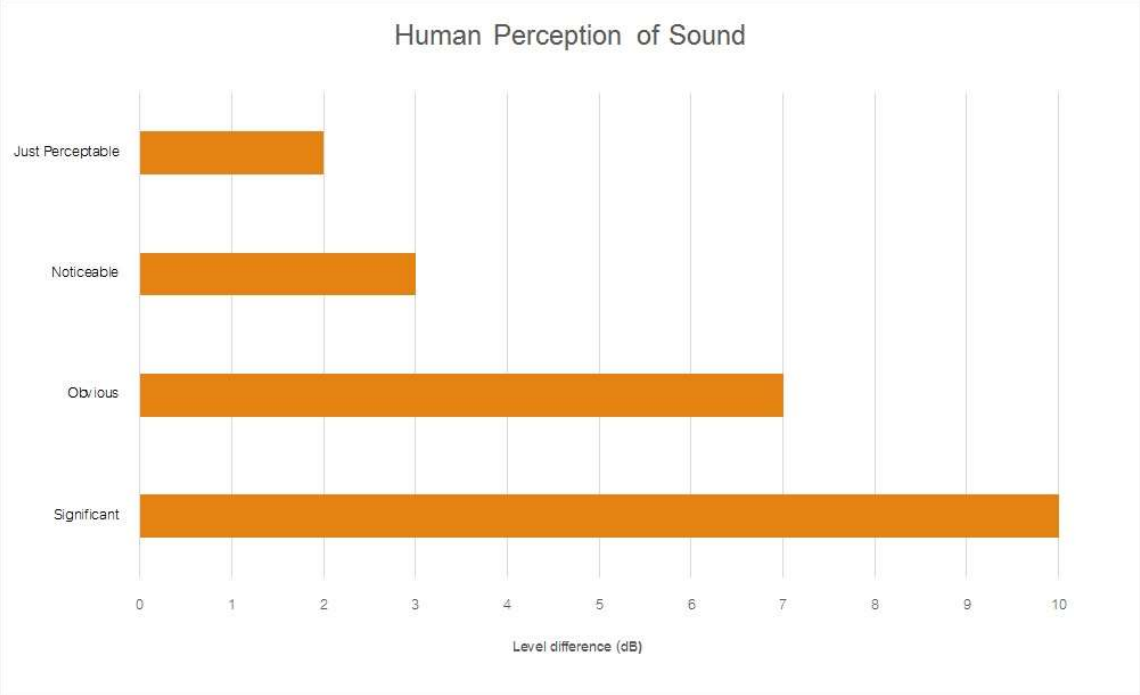
Table A1 Glossary of Acoustical Terms

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.
LAmax	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.log10 (W/Wo). 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



Muller Acoustic Consulting Pty Ltd
PO Box 678, Kotara NSW 2289
ABN: 36 602 225 132
Ph: +61 2 4920 1833
www.mulleracoustic.com

MAC
Muller Acoustic Consulting