# Monthly Noise Monitoring Assessment

## Tomingley Gold Mine, October 2022

Prepared for: Tomingley Gold Operations Pty Limited
October 2022
MAC160270-2022RP10

Muller Acoustic Consulting

# *Document Information*

## Monthly Noise Monitoring Assessment

## Tomingley Gold Mine, October 2022

**Prepared for: Tomingley Gold Operations Pty Limited**

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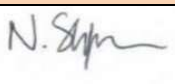
| MAC160270-2022RP10 | 20 October 2022 | Nicholas Shipman |  | Oliver Muller |  |

CONTENTS

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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 | 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.

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# 3 Methodology

## 3.1 Locality

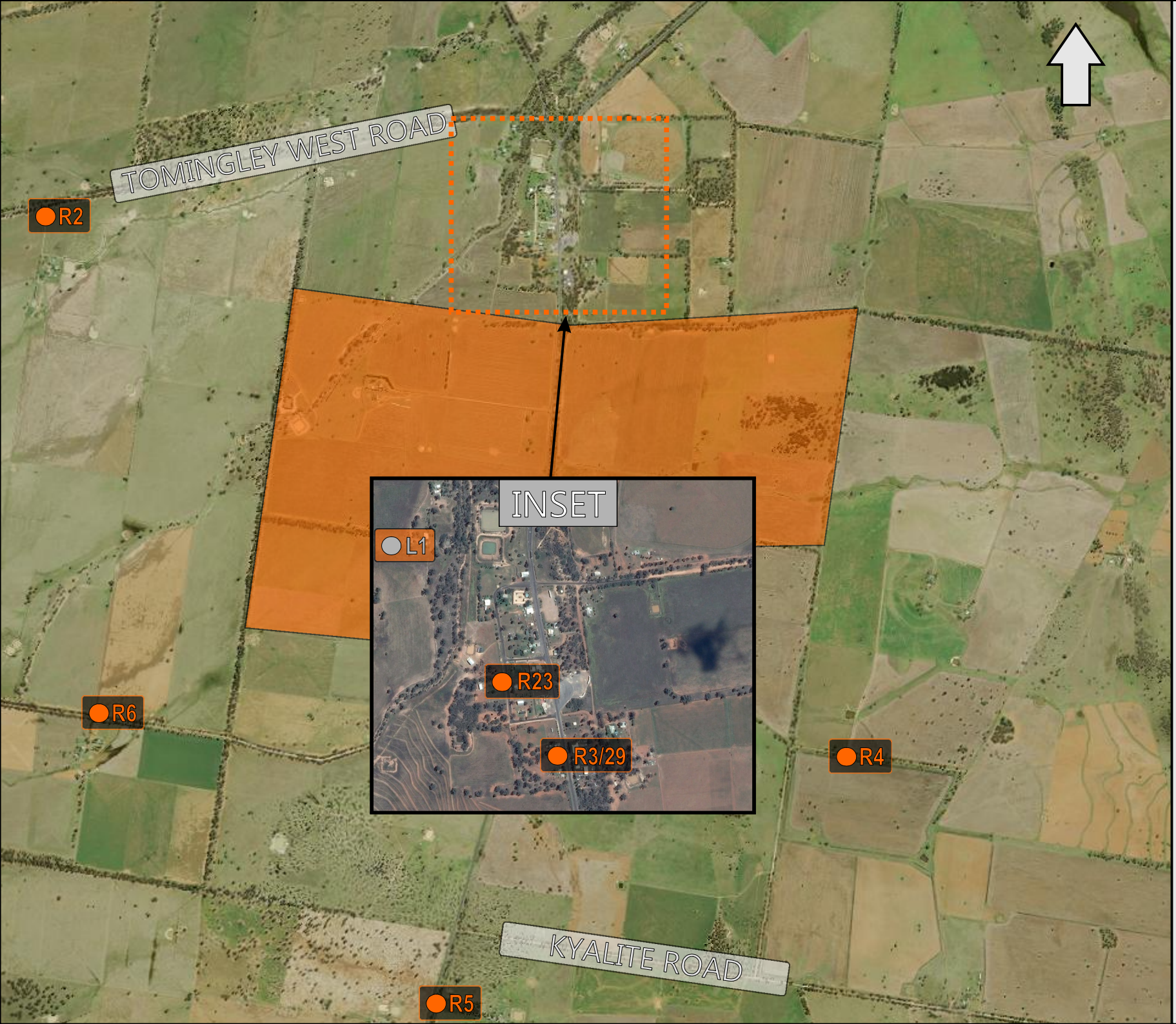
TGO is located to the south of the village of Tomingley, NSW. Receivers in the locality surrounding the mine are primarily rural/residential and for consistency the naming conventions for each receiver have been retained from historic noise assessments. The monitoring locations with respect to the mine 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 a Svantek Type 1, 971 noise analyser between Tuesday 4 October 2022 and Thursday 6 October 2022. 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 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 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

REF: MAC160270-2022

0 1000m

KEY

- L1 — UNATTENDED LOGGER LOCATION
- R2 — RECEIVER LOCATION
- SITE LOCATION

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*Imagery Source : 6MAPS

# 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 October 2022 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 | Meteorology[1] | Description and SPL, dBA |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | Limit | | |
| 04/10/2022 | 21:45 (Evening) | 73 | 47 | 31 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: D | Insects 30-36<br>Dog bark 36-44<br>Traffic 29-73<br>TGO processing 31-33 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | 32 |
| 04/10/2022 | 22:00 (Night) | 56 | 32 | 30 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Insects 27-29<br>Traffic 40-56<br>TGO processing 28-31 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | 29 |
| 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 for Industry (NPI), 2017 and AS1055:2018. | | | | | | | |
| 05/10/2022 | 22:03 (Night) | 68 | 56 | 50 | 35 | WD: E<br>WS: 2.6m/s<br>Stab Class: D | Wind in trees 53-68<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 21:19 (Evening) | 56 | 35 | 33 | 35 | WD: E<br>WS: 0.6m/s<br>Stab Class: E | Traffic 32-56<br>Insects 32-35<br>TGO processing 28-33 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | 30 |
| 06/10/2022 | 22:00 (Night) | 53 | 36 | 33 | 35 | WD: E<br>WS: 0.5m/s<br>Stab Class: D | Traffic 30-53<br>Insects 30-32<br>TGO processing 27-34 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | 31 |

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 October 2022 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 |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | | | |
| 04/10/2022 | 21:05 (Evening) | 86 | 67 | 40 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Insects 37-40<br>Traffic 38-86<br>Birds 37-39<br>TGO inaudible |
| | | TGO Site $L_{Aeq(15min)}$ Contribution | | | | | <30 |
| 04/10/2022 | 22:40 (Night) | 87 | 66 | 39 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Traffic 38-87<br>Insects 38-40<br>TGO inaudible |
| | | TGO Site $L_{Aeq(15min)}$ Contribution | | | | | <29 |
| 05/10/2022 | 20:21 (Evening) | 86 | 67 | 52 | 35 | WD: E<br>WS: 2.4m/s<br>Stab Class: D | Wind in trees 45-52<br>Traffic 44-86<br>TGO inaudible |
| | | TGO Site $L_{Aeq(15min)}$ Contribution | | | | | <35 |
| 05/10/2022 | 22:43 (Night) | 86 | 64 | 47 | 35 | WD: E<br>WS: 2.7m/s<br>Stab Class: D | Wind in trees 44-56<br>Traffic 44-86<br>TGO inaudible |
| | | TGO Site $L_{Aeq(15min)}$ Contribution | | | | | <35 |
| 06/10/2022 | 20:40 (Evening) | 86 | 67 | 40 | 35 | WD: E<br>WS: 1.2m/s<br>Stab Class: D | Insects <36<br>Traffic 35-86<br>Wind in trees 36-40<br>Livestock 35-46<br>TGO inaudible |
| | | TGO Site $L_{Aeq(15min)}$ Contribution | | | | | <30 |
| 06/10/2022 | 22:39 (Night) | 91 | 70 | 43 | 35 | WD: E<br>WS: 1.6m/s<br>Stab Class: D | Livestock 40-48<br>Insects <39<br>Traffic 39-91<br>Wind in trees 39-45<br>TGO inaudible |
| | | 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.

## 4.3 Assessment Results - Location R4

The results of the attended noise measurements at location R4 for the October 2022 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 |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | | | |
| 04/10/2022 | 20:16 (Evening) | 54 | 35 | 27 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: F | Insects 24-34<br>Operator 49-54<br>Local residential noise 26-39<br>Traffic 24-32<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <20 |
| 04/10/2022 | 23:29 (Night) | 60 | 44 | 40 | 35 | WD: E<br>WS: 1.8m/s<br>Stab Class: E | Traffic <37<br>Wind in trees 37-60<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <30 |
| 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 for Industry (NPI), 2017 and AS1055:2018. | | | | | | | |
| 05/10/2022 | 23:29 (Night) | 72 | 56 | 49 | 35 | WD: E<br>WS: 2.8m/s<br>Stab Class: D | Wind in trees 42-72<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 19:50 (Evening) | 55 | 42 | 38 | 35 | WD: E<br>WS: 1.8m/s<br>Stab Class: D | Wind in trees 34-49<br>Insects <34<br>Operator 51-55<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <28 |
| 06/10/2022 | 23:32 (Night) | 58 | 40 | 37 | 35 | WD: E<br>WS: 2.2m/s<br>Stab Class: D | Wind in trees 36-58<br>Traffic 36-44<br>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.

## 4.4 Assessment Results - Location R5

The results of the attended noise measurements at location R5 for the October 2022 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 |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | | | |
| 04/10/2022 | 19:54 (Evening) | 80 | 64 | 42 | 35 | WD: SE<br>WS: 0.1m/s<br>Stab Class: E | Insects 39-41<br>Traffic 39-80<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <32 |
| 04/10/2022 | 23:51 (Night) | 80 | 57 | 44 | 35 | WD: E<br>WS: 2.6m/s<br>Stab Class: E | Traffic 43-80<br>Insects<43<br>Wind in trees 43-61<br>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 for Industry (NPI), 2017 and AS1055:2018. | | | | | | | |
| 05/10/2022 | 23:55 (Night) | 82 | 63 | 53 | 35 | WD: E<br>WS: 2.8m/s<br>Stab Class: D | Wind in trees 50-64<br>Traffic 50-82<br>Insects <50<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 19:27 (Evening) | 83 | 64 | 45 | 35 | WD: E<br>WS: 1.9m/s<br>Stab Class: D | Insects 41-43<br>Wind in trees 44-48<br>Traffic 46-83<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 23:57 (Night) | 79 | 57 | 48 | 35 | WD: E<br>WS: 2m/s<br>Stab Class: D | Wind in trees 45-52<br>Insects <45<br>Traffic 47-79<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |

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 October 2022 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 |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | | | |
| 04/10/2022 | 20:40 (Evening) | 65 | 44 | 35 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Insects 33-37<br>Traffic 36-48<br>Livestock 37-65<br>TGO processing 33-35 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | 34 |
| 04/10/2022 | 23:04 (Night) | 63 | 42 | 39 | 35 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Traffic 36-54<br>Insects 36-38<br>Operator 61-63<br>Livestock 36-58<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <29 |
| 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 for Industry (NPI), 2017 and AS1055:2018. | | | | | | | |
| 05/10/2022 | 23:05 (Night) | 72 | 62 | 55 | 35 | WD: E<br>WS: 2.8m/s<br>Stab Class: D | Wind in trees 51-72<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 20:16 (Evening) | 55 | 46 | 43 | 35 | WD: E<br>WS: 2.1m/s<br>Stab Class: D | Wind in trees 45-55<br>Insects <41<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <33 |
| 06/10/2022 | 23:04 (Night) | 55 | 46 | 42 | 35 | WD: E<br>WS: 1.6m/s<br>Stab Class: D | Insects <39<br>Wind in trees 39-55<br>Traffic 39-46<br>TGO processing <35 |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |

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 October 2022 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 |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{Aeq}$ | $L_{A90}$ | | | |
| 04/10/2022 | 21:23 (Evening) | 60 | 46 | 40 | 36 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Traffic 36-60<br>Dog bark 38-44<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <30 |
| 04/10/2022 | 22:23 (Night) | 63 | 47 | 42 | 38 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Dog bark 41-49<br>Birds 40-49<br>Traffic 38-63<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <32 |
| 05/10/2022 | 20:42 (Evening) | 70 | 55 | 51 | 36 | WD: E<br>WS: 2.4m/s<br>Stab Class: D | Wind in trees 50-60<br>Traffic 50-62<br>Operator 62-70<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 05/10/2022 | 22:24 (Night) | 73 | 54 | 49 | 38 | WD: E<br>WS: 2.6m/s<br>Stab Class: D | Wind in trees 48-73<br>Traffic 50-64<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <35 |
| 06/10/2022 | 20:57 (Evening) | 55 | 44 | 37 | 36 | WD: E<br>WS: 1.6m/s<br>Stab Class: D | Traffic 35-55<br>Wind in trees 38-44<br>Dog bark 40-52<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <27 |
| 06/10/2022 | 22:21 (Night) | 54 | 45 | 38 | 38 | WD: E<br>WS: 1.2m/s<br>Stab Class: D | Traffic 36-54<br>Wind in trees 35-41<br>TGO inaudible |
| TGO Site $L_{Aeq(15min)}$ Contribution | | | | | | | <28 |

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 4 October 2022 and Thursday 6 October 2022 identified that TGO activities were audible on four occasions at location R2. The estimated mining contributions were measured between 29dBA and <35dBA, therefore TGO emissions remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as insects, dog bark, traffic and wind in trees were audible during the measurement period.

It is noted that measurements were unable to be obtained during the evening period on Wednesday 5 October 2022 due to constant rainfall.

## 5.2 Discussion of Results - Location R3/R29

Monitoring between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO activities remained inaudible during the measurement period at location R3/29. The estimated mining contribution was measured below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as insects, birds, livestock, wind in trees and traffic were audible during the measurement period.

## 5.3 Discussion of Results - Location R4

Monitoring between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO remained inaudible during all measurements at location R4. The estimated mining contribution remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as traffic, insects, wind in trees and birds were audible during the measurement period.

It is noted that measurements were unable to be obtained during the evening period on Wednesday 5 October 2022 due to constant rainfall.

## 5.4 Discussion of Results - Location R5

Monitoring between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO remained inaudible during all measurements at location R5. The estimated mining contribution remained below the relevant noise limit of 35dB $LA_{eq(15min)}$. Extraneous sources such as insects, traffic and wind in trees were audible during the measurement period.

It is noted that measurements were unable to be obtained during the evening period on Wednesday 5 October 2022 due to constant rainfall.

## 5.5 Discussion of Results - Location R6

Monitoring between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO activities were audible during two measurements at location R6. The estimated mining contributions were measured between 34dBA and <35dBA, therefore the relevant noise limit of 35dB $LA_{eq(15min)}$ was satisfied. Extraneous sources such as insects, traffic, livestock, operator noise and wind in trees were audible during the measurement period.

It is noted that measurements were unable to be obtained during the evening period on Wednesday 5 October 2022 due to constant rainfall.

## 5.6 Discussion of Results - Location R23

Monitoring between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO activities remained inaudible at location R23. The estimated mining contribution was measured below the relevant noise limit of 38dB $LA_{eq(15min)}$ for evening and 36dB $LA_{eq(15min)}$ for night. Extraneous sources such as insects, traffic, dog bark, birds, wind in trees and operator noise 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, birds, and highway traffic noise influenced measured noise levels for this assessment. Furthermore, for October 2022, 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 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 4 October 2022** | | | | | | | | |
| Attended | 21:23 | 60 | 46 | 40 | 38 | <30 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Traffic 36-60<br>Dog bark 38-44<br>TGO inaudible |
| Unattended | 21:23 | 58 | 46 | 37 | 38 | <27 | | No audio trigger |
| Attended | 22:23 | 63 | 47 | 42 | 36 | <32 | WD: E<br>WS: 0.1m/s<br>Stab Class: E | Dog bark 41-49<br>Birds 40-49<br>Traffic 38-63<br>TGO inaudible |
| Unattended | 22:23 | 58 | 46 | 41 | 36 | <31 | | Insects<br>Traffic<br>TGO inaudible |
| **Wednesday 5 October 2022** | | | | | | | | |
| Attended | 20:42 | 70 | 55 | 51 | 38 | <35 | WD: E<br>WS: 2.4m/s<br>Stab Class: D | Wind in trees 50-60<br>Traffic 50-62<br>Operator 62-70<br>TGO inaudible |
| Unattended | 20:45 | 63 | 50 | 46 | 38 | <36 | | Wind<br>TGO inaudible |
| Attended | 22:24 | 73 | 54 | 49 | 36 | <35 | WD: E<br>WS: 2.6m/s<br>Stab Class: D | Wind in trees 48-73<br>Traffic 50-64<br>TGO inaudible |
| Unattended | 22:30 | 62 | 49 | 45 | 36 | <35 | | No audio trigger |
| **Thursday 6 October 2022** | | | | | | | | |
| Attended | 20:57 | 55 | 44 | 37 | 38 | <27 | WD: E<br>WS: 1.6m/s<br>Stab Class: D | Traffic 35-55<br>Wind in trees 38-44<br>Dog bark 40-52<br>TGO inaudible |
| Unattended | 21:00 | 57 | 45 | 36 | 38 | <26 | | No audio trigger |
| Attended | 22:21 | 54 | 45 | 38 | 36 | <28 | WD: E<br>WS: 1.2m/s<br>Stab Class: D | Traffic 36-54<br>Wind in trees 35-41<br>TGO inaudible |
| Unattended | 22:15 | 63 | 46 | 36 | 36 | <26 | | Insects<br>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 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 between Tuesday 4 October 2022 and Thursday 6 October 2022 identified that TGO mine noise was 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 during applicable meteorological conditions.

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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**

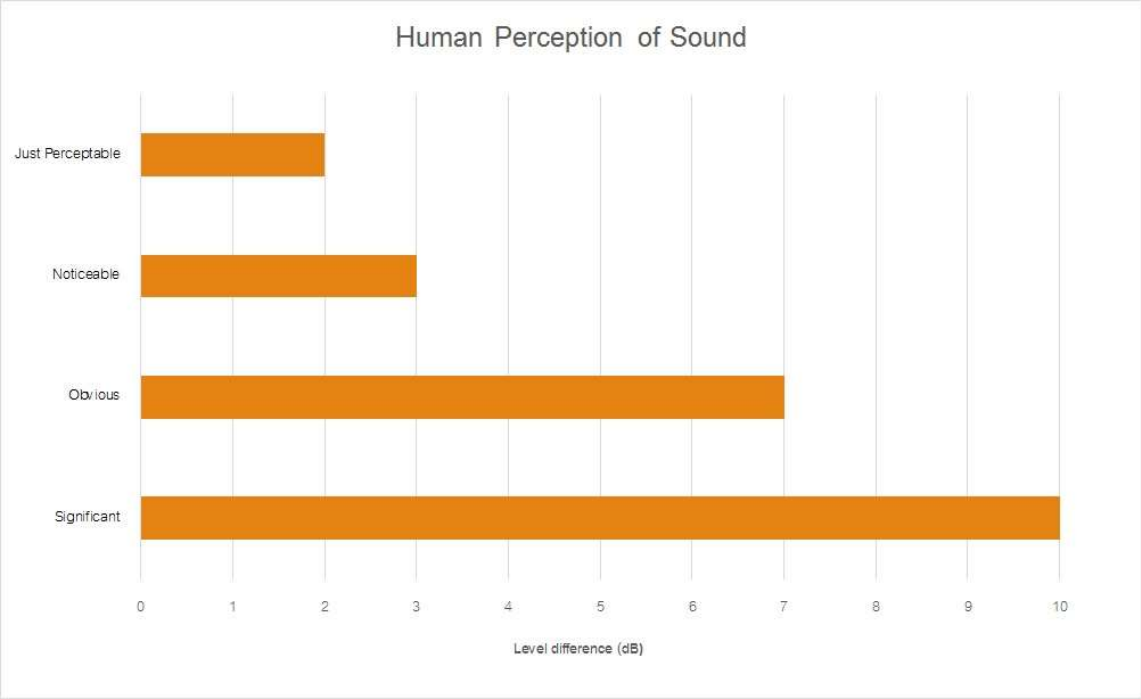
| Term | Description |
|---|---|
| 1/3 Octave | Single octave bands divided into three parts |
| Octave | A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit. |
| ABL | Assessment Background Level (ABL) is defined in the NPI as a 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 :<br>= 10.log10 (W/Wo)<br>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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