



OceanaGold New Zealand Ltd

Third Quarter 2018 - Summary Report

Noise Levels in Waihi



# Contents

- 1. Summary .....4
- 2. Introduction.....4
- 3. Methodology.....4
- 4. Results .....5
  - 4.1. General .....5
  - 4.2. Wind.....5
  - 4.3. Compliance .....6
  - 4.4. Complaints .....6
  - 4.5. Operations Assessment.....7
    - 4.5.1. Martha Pit.....7
    - 4.5.2. Mill.....7
    - 4.5.3. Underground (Favona/Trio) & Correnso .....7
    - 4.5.4. Exploration/Drilling.....7
- 5. Mitigation .....7
  - 5.1. Mine & exploration .....7
- Appendices .....8
  - A. Martha Noise Consent Conditions .....9
  - B. Favona Noise Consent Conditions .....11
  - C. Trio Underground Mine Noise Consent Conditions .....13
  - D. Correnso Underground Mine Noise Consent Conditions.....15
  - E. Martha Mine Noise Mitigation Plan .....17

## 1. Summary

Compliance against the consented noise limit(s) and New Zealand Standards was not able to be assessed during the third quarter of 2018. Two mean corrected noise levels (MCNL) assessments were made during the period but did not have all the contributory readings in suitable meteorological conditions as required by the measurement Standards.

16 single compliance readings were made during the quarter. 4 single corrected measurement levels (SCML) were taken in suitable met conditions; these were all within compliance levels. 12 SCML readings were taken during unsuitable met conditions; 2 mine-dominated SCML readings returned marginal levels and mitigation action was effectively undertaken.

Adverse wind conditions (>3 m/s), as recorded at the meteorological station on Barry Rd, occurred on 44% of the monitoring occasions.

During the reporting period, two yellow compliance assessments were made under the procedures set out in the Martha Mine Noise Mitigation Plan. These were in relation to the establishment of an exploration rig and prompted the placement of a second tier of shipping containers around the rig to comply with required noise levels.

One noise complaint was received by OceanaGold during the period; three fewer than the previous quarter. The complaint was in relation to a barking dog at a company rental and was not mining-related.

Four night-time measurements for the Mill were recorded in the reporting period. The measurements were compliant, with the mill inaudible and levels dominated by traffic and birds at 28 to 35 dBA. No measurement was mine-dominant.

Three measurements of the Union Hill Vent Shaft were made during the quarter. All measurements were compliant; levels ranged from 44 to 49 dBA and were dominated by birds, traffic and wind.

## 2. Introduction

This report provides a summary of noise measurements and assessments undertaken by OceanaGold (NZ) Ltd Waihi Operations (OceanaGold) for the third quarter of 2018. The report is prepared to comply with the requirements of four consents:

- Under the Hauraki District Council (HDC) Land Use Consent (LUC) for the Martha Mine (No. 97/98 – 105, condition 3.9 (c)) OceanaGold is required to submit quarterly summary reports to Council on representative noise levels.
- Under the Noise Conditions of the LUC for the Favona Underground Mine (No. 85.050.326.E, condition 9) a summary report is required at the end of each 3-month period from commencement to completion of work.
- Under the Noise Conditions of the LUC for the Trio Underground Mine (RC-15774, condition 6d) a summary report is required at the end of each 3-month period from commencement to completion of work.
- Under the Noise Conditions of the LUC for the Correnso Underground Mine (RC-202.2012, condition 11d) a summary report is required at the end of each 3-month period from commencement to completion of work.

For exploration drilling operations, the conditions set out in section 8.3.1 of the Hauraki District Plan apply. Any monitoring of these activities is also included in this report.

## 3. Methodology

Sound measurements and assessments by OceanaGold comply with the consent conditions and the New Zealand Standards *NZS 6801:2008 Acoustics - Measurement of Environmental Sound and 6802:2008 Acoustics - Environmental Noise*.

Compliance noise is measured for a minimum of 15 minutes as required under the consent conditions. Compliance readings cannot always be made on every site visit or check due to excessive wind conditions (i.e. greater than 5 m/s).

Monitoring checks are made in response to complaints whenever necessary; initially to verify the noise level and subsequently (if necessary) to determine the effectiveness of any mitigating actions and/or the effect of changing wind conditions (changing wind strength or direction influences noise transmission between the mine and the receiver).

OceanaGold uses noise monitoring procedures to ensure conformance to the above standards and consent conditions, and has also implemented a noise mitigation plan for the Martha Mine. The Martha Mine Noise Mitigation Plan requires daily review of wind conditions that could potentially result in noise levels generating complaints. Monitoring has shown that wind speeds (measured at the OceanaGold meteorological station) over 3 m/s are likely to increase mine noise downwind of the activity to levels that generate complaints. When such wind conditions occur, OceanaGold implements mitigating actions to reduce noise levels where practicable. During periods when high frequency sounds such as birds, cicadas and crickets become the controlling noise, a filter can be applied to noise measurements at four and eight kilo-hertz to enable analysis of the lower frequency noise levels (i.e. those associated with mine operations).

Wind has a significant influence on sound propagation. Sound measurement and assessment must take the effect of wind into account. Sound measurements are taken in conditions ranging from nil wind up to 5 m/s at the receiver (*NZS 6801:2008 Acoustics - Measurement of Environmental Sound*). Wind greater than 5 m/s is generally unacceptable for monitoring due to wind noise effects on the microphone.

Downwind, wind speeds of 3 - 5 m/s are considered marginal due to propagation of sound by wind from source to receiver. Conditions akin to those for which the compliance limits are set generally occur when wind speeds are less than 3 m/s (*Hegley, 2003: Evidence of Nevil Hegley – Favona Underground Project 2003 Final – 11/11/03*).

Wind speeds are recorded at the OceanaGold met stations at Barry Rd and at the Development Site. These wind readings are assumed to represent the general wind conditions across Waihi and at the noise source (e.g. the mine).

Other meteorological factors influencing the overall sound environment include solar radiation, cloud cover, sunrise and sunset times, wind direction and the direction from source to receiver. These factors were also measured to derive a meteorological stability rating at the time of monitoring. Meteorological stability categories of 4 (neutral) or 5 (slightly positive) are considered suitable meteorological influences on sound propagation and are used to determine noise compliance (*NZS 6801:2008 Acoustics - Measurement of Environmental Sound* (HDC LUC 97/98-105, Condition 3.8 (e))).

## 4. Results

### 4.1. General

Monitoring activity for the period is shown in Table 1.

**Table 1:** Noise monitoring activity

	Number of days checked	Number of days measured	Number of checks (compliance & other)	Number of complaint days	Number of complaint checks
July	1	1	3	0	0
August	5	5	11	0	0
September	4	4	7	0	0
<b>QR Total</b>	<b>10</b>	<b>10</b>	<b>21</b>	<b>0</b>	<b>0</b>

### 4.2. Wind

Adverse wind conditions occurred at the Barry Rd met station for 44% of the monitoring occasions (see Table 2). While it is the general prevailing wind condition as measured at the met station that primarily affects noise propagation, measurements may be made under adverse conditions if the wind at the receiver or at street level is generally more favourable for monitoring. Even then, representative noise measurements of mining activities are not always possible due to wind noise. Periods of high wind strengths during monitoring were less frequent than the previous quarter (28% adverse).

**Table 2:** Percentage of monitoring time average wind speeds greater or equal to 3 m/s.

	Receiver	Met Station
July	0%	100%
August	0%	17%
September	0%	43%
<b>QR Average</b>	<b>0%</b>	<b>44%</b>

28% (5/18) of the compliance measurements made in the reporting period were not in suitable met conditions (as measured at the met station). Other conditions (wind direction, solar radiation, and cloud cover) also influence suitable met assessments. Monitoring in suitable met conditions occurred on fewer occasions during this reporting period (4) than the previous quarter (8).

#### 4.3. Compliance

No mine-dominated SCMLs exceeded compliance levels in suitable met conditions during the reporting period (see Table 3).

**Table 3:** Summary of Single Corrected Measured Levels (SCML).

	Total SCML calculations	Mine-dominated SCML over (limit + 5 dBA)	SCML in suitable met	Mine-dominated SCML over in suitable met
July	3	0	0	0
August	6	0	1	0
September	7	0	3	0
<b>QR Total</b>	<b>16</b>	<b>0</b>	<b>4</b>	<b>0</b>

No MCNL measurements were recorded in suitable met conditions this quarter (see Table 4). Of the MCNL readings undertaken during the period, none were over the limit due to mine-related activity.

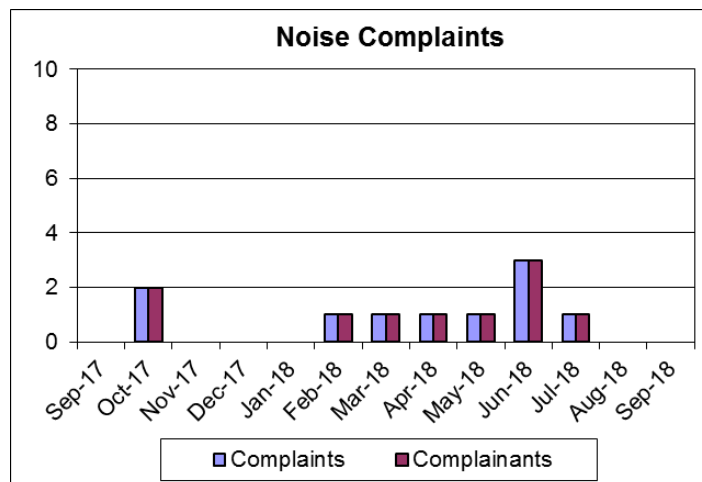
**Table 4:** Summary of Mean Corrected Noise Levels (MCNL).

	Total MCNL calculations	Marginal MCNL	MCNL 5 dBA over limit	MCNL in suitable met	MCNL over limit in suitable met
July	1	0	0	0	0
August	0	0	0	0	0
September	1	0	0	0	0
<b>QR Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

#### 4.4. Complaints

One noise complaint was received by OceanaGold during the period; three fewer than the previous quarter. The complaint was in relation to a dog barking continuously at one of the company's rental properties.

There were no complaints in relation to mining-related noise.



**Figure 1:** Noise complaint history

## **4.5. Operations Assessment**

### **4.5.1. Martha Pit**

No significant works were conducted in the pit during the quarter. The pit is essentially in 'lock-down' with only essential maintenance (drainage, weed control, and security) and low-impact geotechnical monitoring being undertaken.

### **4.5.2. Mill**

Four night-time measurements for the Mill were recorded in the reporting period. The measurements were compliant, with the mill inaudible and levels dominated by traffic and birds at 28 to 35 dBA. No measurement was mine-dominant.

Two short readings were taken to assess the potential impact of unloading mill media (steel balls) in a purpose-built bunker near the Water Treatment Plant. The readings determined a 20 - 25 second period of 53 – 56dBA during the tipping operation. This is well within the permitted maximum noise level, and the short duration will have negligible impact on a 15-minute compliance assessment.

### **4.5.3. Underground (Favona/Trio) & Correnso**

Three compliance measurements were made of surface-related activities (e.g. stockpiling and ventilation) supporting underground operations during the quarter. All measurements were compliant; levels ranged from 44 to 49 dBA and were dominated by birds, traffic and wind.

### **4.5.4. Exploration/Drilling**

Near-mine exploration and geotechnical drilling during the quarter continued in various locations: underground, farmland north of the processing plant, and around the outside of the pit. 8 assessments during the period indicated the drilling was generally compliant with noise conditions, with levels ranging from 48 to 57 dBA. The readings above 50 dBA were all in relation to a 55 dBA limit area, with one marginal reading of 57 dBA (in strong wind conditions) prompting mitigation action (see Section 5 below).

Drilling near to residences has been kept to daytime-only drilling, recognising the activity was unlikely to comply with night-time noise restrictions. Some night-time drilling was achievable in the Favona sites more distant from residences, but this required additional noise mitigation measures and a preparedness to return to daytime-only if compliance was unable to be achieved.

The use of proprietary noise blankets installed on security fences around the pit rigs was common practice during the period, with favourable results from monitoring and feedback from residents. In more sensitive areas, the use of double-stacked shipping containers still proved more effective.

## **5. Mitigation**

### **5.1. Mine & exploration**

Commitment to the management and mitigation of mine noise was sustained during the third quarter of 2018. Two yellow assessments were made during the quarter.

Test monitoring of the exploration rig starting at the old Tenex site on Mueller St returned a marginal result, indicating that the single tier of shipping containers was inadequate mitigation. As this result was in relatively high wind conditions, more readings were undertaken some days later in more favourable conditions. One of these follow-up readings confirmed the need for additional noise mitigation. Once a second tier of containers was installed, noise readings at the site were fully compliant.

## **Appendices**



## A. Martha Noise Consent Conditions

Relevant noise conditions detailed in the Land Use Consent follow.

### 3.8 NOISE

- (a) Construction (refer to the definition in Condition 3.3)

With the exception of Waihi Central School where the construction noise limit shall be 55 dB  $L_{Aeq}$  at any point at or within the boundary of the school during school hours, all construction activities provided for by this consent shall not exceed the following limits:

Monday - Friday	Saturdays	dB $L_{Aeq}$	dB $L_{AFmax}$
0630 – 0730		60	70
0730 – 1800	0730 – 1800	75	90
1800 – 2000		70	85

At all other times, including Sundays and Public Holidays, the noise level ( $L_{10}$ ) shall not exceed 40 dB  $L_{Aeq}$ .

All noise shall be measured within or close to the boundary of any residentially zoned site or the notional boundary of any occupied rural dwelling site not owned by the consent holder or related Company or not subject to an agreement with the consent holder or related Company.

In the event that a property is sold and ceases to be subject to an agreement between the consent holder (or related Company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related Company) and the landowner, the location for the measurement of noise shall revert to being on or close to the boundary of that residentially zoned site or the notional boundary of the occupied rural site.

Construction noise shall be managed, measured and assessed in accordance with New Zealand Standard NZS6803:1999 Acoustics – Construction Noise.

- (b) Operations

- i) Activities Within Area B

The noise level ( $L_{Aeq}$ ) at any point outside the 55 dB and 50 dB control boundaries shown in Plan 2 (copy attached in Appendix E) arising from mining and related activities when measured within or close to the boundary of any residentially zoned site or the notional boundary of any occupied dwelling in the Rural Zone not owned by the Company or not subject to an agreement with the Company or related Company shall not exceed the limits specified below:

		55 dB Control Boundary	50 dB Control Boundary
Monday – Friday	0700-2100	55 dB	50 dB
Saturday	0700-1200	55 dB	50 dB
All other times		40 dB	40 dB

In the event that a property is sold and ceases to be subject to an agreement between the consent holder (or related Company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related Company) and the landowner, the location for the measurement of noise shall revert to being within or close to the boundary of that residentially zoned site or the notional boundary of the occupied rural site.

- ii) Activities Within Areas C & D

The noise level ( $L_{Aeq}$ ) measured within or close to the boundary of any Residential or Low Density Residential zoned site, or the notional boundary of any occupied rural dwelling site within the Rural zone not owned by the Company or not subject to an agreement with the Company or related Company shall not exceed the following limits:

Monday – Friday	0700-2100	55 dB
Saturday	0700-1200	55 dB
All other times		40 dB

In the event that a property is sold and ceases to be subject to an agreement between the consent holder (or related Company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related Company) and the landowner, the location for the measurement of noise shall revert to being within or close to the boundary of that residentially zoned site or the notional boundary of the occupied rural site.

iii) Activities Within Areas E, F, H, I, & K

The provisions of Rule 8.3.1.3 of the Operative Hauraki District Plan 2014 shall apply.

In considering the action to be taken as a result of any breach of the noise limits, Council shall have regard to the following factors:

- 1) The total time duration for which the noise exceeded the limit
- 2) The time of the day at which the breach occurred
- 3) Whether the breach occurred as a result of factors beyond the control of the consent holder or contractor
- 4) The amount by which the noise limit was exceeded
- 5) The likelihood that the breach will recur
- 6) The actions taken to prevent recurrence of the breach
- 7) Action taken to mitigate the noise and whether the best practicable option for the circumstances was adopted

For the purposes of 4) above, a breach of the noise limit by 5dB or less shall be considered marginal. The Council will seek an explanation of the reasons for a marginal breach, and will seek that action be taken to avoid a recurrence if practical. The Council will not take enforcement action in respect of a marginal breach to achieve compliance where this would impose unreasonable restrictions on mine operations, such breach being one that will not impose anything more than minor adverse effects upon the residential areas in the vicinity of the mine. The Council may pursue enforcement action if the breach persists unduly in the circumstances or if the best practicable option is not being adopted.

- (e) Noise shall be measured in accordance with the provisions of New Zealand Standard NZS6801:2008 Acoustics – Measurement of Environmental Sound and assessed in accordance with the provisions of NZS 6802:2008 Acoustics – Environmental Noise.

**3.9 Monitoring and Reporting on Noise Levels**

- (a) The consent holder shall at weekly intervals during construction activities (as defined in Condition 3.3) and at intervals not exceeding six (6) months during operational activities, assess and record representative noise levels generated by mining operations.
- (b) Representative noise levels during construction and operation activities shall be measured and assessed in accordance with the methods specified in Condition 3.8.
- (c) The consent holder shall, unless otherwise directed to do so by the Council following consultation with the consent holder, provide a summary report to the Council at the end of each February, May, August and November on the representative noise levels.
- (d) The consent holder shall prepare a Noise Management Plan. This Management Plan shall be submitted to and approved by Hauraki District Council. The objective of this plan is to detail the methods to be used to comply with condition 3.8.

## B. Favona Noise Consent Conditions

5. All noise associated with the construction and use of the Favona Underground Mine Project (including associated activities of stockpiling and construction works) shall be measured within or at the boundary of any residentially zoned site or the notional boundary of any occupied rural dwelling site not owned by the consent holder or related Company, or not subject to an agreement with the consent holder or related Company as shown on Figure 2-3 of the Assessment of Environmental Effects (attached to this consent as Attachment A). In the event that a property is sold, and is not subject to an agreement between the consent holder (or related Company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related Company) and the occupier, the measurement of noise shall revert to being measured at any point within or at the boundary of the residentially zoned site or the notional boundary of the occupied rural site.

All noise associated with the construction and use of the Favona Underground Mine Project shall be measured cumulatively with other noise emanating from the Exploration Decline (should this be operated simultaneously), all operations within the process plant, operations within the waste and tailings area, and the conveyor and associated activities over the periods specified below, and shall not exceed the following limits:

Monday – Friday	0700-2100	55 dBA L <sub>10</sub>
Saturday	0700-1200	55 dBA L <sub>10</sub>
All other times		40 dBA L <sub>10</sub>
All nights	2100-0700 (the following day)	70 dBA L <sub>max</sub>

The measurement periods to determine the daytime L<sub>10</sub> shall be representative of any single working day (ie 0700 – 2100 Monday to Friday and 0700 – 1200 Saturday) and shall consist of at least three measurement periods of at least 15 minutes duration each, in any non-consecutive 60-minute periods spread over the working day.

The mean corrected noise level shall be calculated on an energy basis from the measurements and no single corrected measured level shall exceed the permitted mean level by more than 5 dBA.

*(Note: The term ‘related Company’ includes Waihi Mines Limited, Welcome Gold Mines Limited, Auag Resources Limited, Martha Mining Limited, Waihi Gold Mining Company Limited, and Waihi Gold Company Nominees Limited).*

6. Subject to the express provisions of Condition 5, the noise levels shall be measured and assessed in accordance with the requirements of the New Zealand Standards NZS 6801:1999 Measurement of Environmental Sound and NZS 6802:1991 Assessment of Environmental Sound.
7. Before and operations take place on or in association with the polishing pond stockpile between the hours of 2100 hrs and 0700 hrs the following day the consent holder shall demonstrate in practice, to the satisfaction of the Manager – Planning and Environmental Services, that it is able to comply with Condition 5. The process proposed to demonstrate compliance shall be included in the Noise Management Plan (Condition 10) and will require Council to obtain a report from the liaison office appointed under Condition 40 as to complaints received and the steps taken in response.
8. The consent holder shall establish maximum sound power levels for individual items of Favona Mine equipment and record these in the noise management plan. All equipment and machinery shall be regularly maintained to ensure compliance with the noise levels in Condition 5.
9. Monitoring and Reporting
- Unless it can be demonstrated that adverse weather conditions prevented noise monitoring on each day of the seven day period, the consent holder shall monitor noise levels at weekly interval during any construction of buildings, haul and access roads, any noise bunds and the vent shaft riser and during stockpile site preparation works. In addition and unless it can be determined that adverse weather conditions prevented noise monitoring on each day of the seven day period, the consent holder shall monitor noise levels at weekly intervals for the first six months of production operations and, if the monitoring demonstrates compliance with the noise limits, thereafter at intervals not exceeding 3 months. In the event that noise limits are exceeded then monitoring shall continue at

weekly intervals while steps are undertaken to remedy the situation. Such measures shall be implemented immediately.

Records of all noise monitoring shall be maintained and provided to Council on request.

Representative noise levels shall be measured and assessed in accordance with the methods specified in Condition 6, and as set out in the Noise Management Plan (Condition 10).

The consent holder shall, unless otherwise directed to do so by Council following consultation with the consent holder, provide a summary report to the Council at the end of each 3 month period from commencement of work to completion of the project (ie once all rehabilitation has been completed) on the following:

- i) Results of the noise monitoring;
- ii) Any complaints received during the previous 3 month period, action taken by the consent holder and the resolution (if any); and
- iii) Any other matters of concern raised with the consent holder.

10. Noise Management Plan

The consent holder shall, 1 month prior to the exercising of this consent, prepare a noise management plan to the satisfaction of the Manager Environment and Planning. The objective of this plan is to detail the methods to be used to comply with Conditions 5, 6, 7, 8, & 9.

## C. Trio Underground Mine Noise Consent Conditions

### Noise

5. All noise associated with the Trio Underground Mine Project shall be measured on or close to the boundary of any residentially zoned site or the notional boundary of any occupied rural dwelling site not owned by the consent holder or related company or not subject to an agreement with the consent holder or related company. In the event that a property is sold and ceases to be subject to an agreement between the consent holder (or related company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related company) and the landowner, the measurement of noise shall revert to being on or close to the boundary of the residentially zoned site or the notional boundary of the occupied rural site.

All noise associated with the Trio Underground Mine Project shall be over the periods specified below, and shall not exceed the Noise Level limits specified below:

Time Period	Noise Limits
Monday – Friday 0700-2100	55 L <sub>10</sub>
Saturday 0700-1200	55 L <sub>10</sub>
All other times	40 L <sub>10</sub>
On all nights 2100-0700 (the following day)	70 L <sub>max</sub>

The noise shall be measured cumulatively with other noise emanating from the Martha Mine and Favona Underground Mine (should there be simultaneous sources of noise generation), all operations within the process plant, operations within the waste and tailings area, and the conveyor and associated activities

The day time measurement periods to determine the L<sub>10</sub> noise level shall be representative of any single working day and shall consist of at least three measurement periods of at least 15 minutes duration each, in any non-consecutive 60-minute periods spread over the working day.

The mean corrected noise level shall be calculated on an energy basis from the measurements and no single corrected measured level shall exceed the permitted mean level by more than 5dBA.

Subject to the express provisions in the table in this condition, the noise levels shall be measured and assessed in accordance with the requirements of the New Zealand Standards NZS6801:1999 Measurement of Environmental Sound and NZS6802:1991 Assessment of Environmental Sound

### Noise Monitoring and Reporting

6. a) Noise monitoring to confirm compliance with the noise levels in Condition 5 shall be undertaken as follows:
- Unless it can be demonstrated that adverse weather conditions prevented noise monitoring on each day of the seven day period, the consent holder shall monitor noise levels for the site at weekly intervals for 6 weeks from the commencement of Trio Underground mining operations, and if the monitoring demonstrates compliance with the noise limits, thereafter at intervals not exceeding three months.

In the event that noise limits are exceeded then monitoring shall continue at weekly intervals while steps are undertaken to comply with Condition 5. Such measures to comply with Condition 5 shall be implemented immediately.

Note: Such ongoing monitoring may be undertaken in conjunction with the Favona Land Use Consent (85.050326E) and the Martha Mining Licence (ML 322388).

- b) Records of all noise monitoring shall be maintained and provided to Council on request.

- c) Representative noise levels shall be measured and assessed in accordance with the methods specified in Condition 5, and as set out in the Noise Management Plan (Condition 7).
  
- d) The consent holder shall, unless otherwise directed to do so by Council following consultation with the consent holder, provide a summary report to the Council at the end of each 3 month period from commencement of work Trio Underground mining operations to completion on the following:
  - (i) Results of the noise monitoring that is of direct relevance to the Trio Underground Mine Project;
  
  - (ii) All complaints received during the previous 3 month period, action taken by the consent holder and the resolution (if any); and
  
  - (iii) Any other matters of concern raised with the consent holder.

**Noise Management Plan**

- 7. The consent holder shall, 1 month prior to the exercise of this consent, prepare a noise management plan for the Trio Underground Mine Project for the written approval of the Manager Environment and Planning, Hauraki District Council. The objective of this plan is to detail the methods to be used to comply with Conditions 5 and 6 of this consent.

## D. Correnso Underground Mine Noise Consent Conditions

### Noise

7 All noise associated with the use of existing facilities and infrastructure by the Correnso Underground Mine provided for under ML32 2388 and the Extended Project and Favona and Trio land use consents referenced in Condition 2 above and identified in Schedule A of this consent shall not exceed the applicable Noise Level limits contained in the existing licences and consents identified in Schedule A of this consent.

8 The mean corrected noise level (L10) arising from the construction, operation and decommissioning of the Correnso Underground Mine vent shaft shall not exceed the limits shown in Figure 2 – Noise Monitoring Sites attached to this consent and specified below:

		55 dBA Control Boundary	50 dBA Control Boundary
Monday – Friday	0700-2100	55 dBA	50 dBA
Saturday	0700-1200	55 dBA	50 dBA
All other times		40 dBA	40 dBA

9 The mean corrected noise level (L10) arising from the construction, operation and decommissioning of the Correnso Underground Mine cemented aggregate fill plant at any point measured on the boundary of any Residential, Rural Residential, Reserve (Passive), Industrial (Light) zoned site or the notional boundary of any occupied rural dwelling site within the Rural Zone shall not exceed the limits specified below:

Monday - Friday	0700-2100	55 dBA
Saturday	0700-1200	55 dBA
All other times		40 dBA

10 Except as provided for in Condition 8, all noise associated with the Correnso Underground Mine shall be measured within or close to the boundary of any residentially zoned site or the notional boundary of any occupied rural dwelling site not owned by the consent holder or related company, or not subject to an agreement with the consent holder or related company. In the event that a property is sold and ceases to be subject to an agreement between the consent holder (or related company) and the purchaser, or in the event that there is no longer an agreement between the consent holder (or related company) and the landowner, the measurement of noise shall revert to being on or close to the boundary of that residentially zoned site or the notional boundary of the occupied rural site.

The noise shall be measured cumulatively with other noise emanating from the Martha Mine and the Favona and Trio Underground Mines (should there be simultaneous operations), all operations within the process plant area, operations within the waste and tailings area, and the conveyor and associated activities.

The daytime measurement periods to determine the L10 shall be representative of any single working day and shall consist of at least three measurement periods of at least 15 minutes duration each, in any non-consecutive 60-minute periods spread over the working day.

The mean corrected noise level shall be calculated on an energy basis from the measurements and no single corrected measured level shall exceed the permitted mean level by more than 5dBA. Subject to the express provisions in this condition, the noise levels shall be measured and assessed in accordance with the requirements of the New Zealand Standards NZS6801:1999, Measurement of Environmental Sound and NZS6802:1991, Assessment of Environmental Sound.

11 Noise Monitoring and Reporting

a) The consent holder shall undertake the monitoring required by these conditions at its cost. Noise monitoring to confirm compliance with the noise levels in Conditions 7, 8 and 9 shall be undertaken as follows:

- i) Unless it can be demonstrated that adverse weather conditions prevented noise monitoring on each day of the seven day period, the consent holder shall monitor noise levels for the site at weekly intervals for 6 weeks from:
    - Commencement of construction of the ventilation shaft in the Surface Facilities Area; and
    - Commencement of the Correnso Underground Mine.
  - ii) Monitoring of noise from the operation of the ventilation fan shall be undertaken on two separate nights. This monitoring shall be undertaken within 2 months of the ventilation fan being installed and operating.
 

If the monitoring required in i) and ii) above demonstrates compliance with the noise limits, noise monitoring shall be undertaken thereafter at intervals not exceeding three months for the duration of the activity identified above.

In the event that noise limits are exceeded then monitoring shall continue at weekly intervals while steps are undertaken to comply with Conditions 7, 8 and 9. Such measures to comply with Conditions 7, 8 and 9 shall be implemented immediately.
  - iii) Such ongoing monitoring shall be undertaken in conjunction with the Martha Mining Licence (ML 32 2388), the Extended Project Land Use Consent (97/98-105), the Favona Land Use Consent (85.050.326E) and the Trio Land Use Consent (RC-15774).
- b) Records of all noise monitoring shall be maintained and provided to Council on request.
  - c) Representative noise levels shall be measured and assessed in accordance with the methods specified in Condition 10, and as set out in the Noise Management Plan (Condition 12).
  - d) The consent holder shall, unless otherwise directed to do so by Council following consultation with the consent holder, provide a summary report to the Council at the end of each 3 month period from commencement of work to completion on the following:
    - i) Results of the noise monitoring that is of direct relevance to the Correnso Underground Mine; and
    - ii) All complaints received during the previous 3 month period, action taken by the consent holder and the resolution (if any); and
    - iii) Any other matters of concern raised with the consent holder.

## 12 Noise Management Plan

The consent holder shall prepare a Noise Management Plan for the written approval of the Council. The objective of the Plan is to detail the methods to be used to comply with Conditions 7, 8, 9, 10 and 11 of this consent. This Plan shall be submitted to the Council at least 1 month prior to the exercise of this consent and the consent shall not be exercised until the Noise Management Plan has been approved by the Council. The Noise Management Plan may be reviewed and amended from time to time, subject to the approval of Council but not in a manner inconsistent with these conditions.

Advice note:

The Noise Management Plan may be prepared in conjunction with Noise Management Plans prepared in accordance with the consent requirements applying to other mines in the Waihi Area.



## **E. Martha Mine Noise Mitigation Plan**

### **Introduction**

The purpose of this plan is to ensure that elevated noise levels under certain operating and weather conditions are reduced by timely and effective action. The plan has been developed based on the company's desire to comply with the consents relating to noise as well as minimise effects on the community.

The plan is based on defined status levels that will lead to the implementation of various noise mitigation measures at the Martha Pit.

### **Status Levels**

Three status levels are recognised:

#### **1) Green Status**

- a) Normal operational mode where:
- measurements have been made they are within the consent limits
  - no justifiable noise complaints have been received or
  - no noise measurements have been taken

#### **2) Yellow Status**

- a) A noise measurement is above the consent level
- b) A complaint has been made by a member of the public, the wind speed exceeds 5m/s and a follow up reading cannot be made and the noise appears excessive.

#### **3) Red Status**

- a) A follow up noise measurement made after noise mitigation measures have been put in place by a yellow status results in a measurement above the consent level.
- b) Where the wind speed still exceeds 5m/s, no noise measurement is possible and the yellow status mitigation measures have not reduced the perceived noise to an acceptable level.

At the time the noise measurement is made or where the measurement is unable to be made under 2b & 3b, note will be made of the dominant noise sources to permit targeting of these activities by the mining operations.

Meteorological conditions may be taken into account when deciding whether to go to a yellow, red or back to green status, e.g. rain, cold or other conditions that would normally mean most residents would be in-doors.

### **Noise Mitigation Measures.**

Where particular noise sources dominate these will be targeted by Mining Operations to ensure that the greatest reduction in noise is achieved with the least disruption to mining operations.

- 1) Yellow Status - indicative measures that could be undertaken are

- a) Slowing of equipment on the SFA area
- b) Stopping of rehandle with trucks from the SFA stockpiles
- c) Change of material into the crusher – e.g. from ignimbrite to PAF, jaw to Stamler
- d) Closure of the jaw crusher
- e) Stopping of all Crushing but allowing stockpiling of mined material

The dominant noise sources and meteorological effects must be considered when deciding upon the appropriate actions to take. For example, when the measured background noise ( $L_{95}$ ) is greater than the consent limit and wind is a contributing factor beyond the control of the operation – the decision may be to proceed with part or all mining activities.

2) Red Status - the following action is mandatory.

- a) Closure of all SFA and mining noise producing activities that are not contained wholly within the pit itself.
- b) Drilling, rock breaking and tramming or haulage of oversize or other material within the confines of the pit will be permitted.

### **Reverting to Green Status**

Yellow or Red Status may be set back to Green under the following conditions:

- a) A follow-up noise measurement confirms a marginal level or is below the consent limits or a background reading, and accompanied by a
- b) Change in meteorological conditions e.g. change in wind direction or speed, heavy rainfall etc

## Noise Mitigation Action Process

