OceanaGold New Zealand Ltd
Fourth Quarter Summary Report 2020
Vibration Levels in Waihi

Contents

Summary

- Results from the Blasthub vibration monitoring system for the fourth quarter 2020 are reported for the Favona, Trio, Correnso and SUPA Underground Mines and Project Martha. Stope blasting was carried out in relation to Correnso/SUPA, with development blasting continuing in the Martha Underground component of Project Martha. Mining in Favona and Trio has ceased.
- Compliance for Correnso/SUPA development and production blasting, as defined by the consents, was achieved for the average limits and the 95-percentile for development blasting.
- Compliance for Project Martha blasting was achieved during the quarter; no production mining was carried out, and only 58 of the 165 development blast events during the period triggered compliance monitors (maximum vibration 2.33mm/s).
- 19 vibration-related complaints were received during the reporting period, up from the 10 received in the previous quarter. The number of complainants also increased; 15 during the quarter cf. 9 in the previous period. These increases were considered due to the higher number of production blasts during the period (38 vs 21 for the previous quarter).
- The total number of blasts (928) was comparable to the previous quarter (933) as was the number of blast events (193, cf. 199 in the previous quarter).

1. Introduction

This report documents vibration measurements and assessments to meet the requirements of:

a) Hauraki District Council (HDC) LUC No. 97/98-105 (Condition 3.11) for the extended Martha Mine Project.
b) HDC Land Use Consent 85.050.326E (Condition 24) for the Favona Underground Mine.
c) HDC Land Use Consent RC - 15774 (Condition 9) for the Trio Underground Mine Project.
d) HDC Land Use Consent RC – 202.2012 (Condition 22 (f)) for the Correnso Underground Mine.
e) HDC Land Use Consent RC – 202.2016 (Condition 14 (f)) for the Slevin Underground Mine (SUPA).
f) HDC Land Use Consent RC – 202.2017 (Condition 18 (f)) for the Martha Drill Drive Project (MDDP).
g) HDC Land Use Consent LUC 202.2018.857.1 (Condition 53) for Project Martha.

As agreed between OceanaGold and HDC these reports summarise vibration results and general performance of the monitoring system over calendar quarters rather than the dates set out in the consents.

2. Equipment Performance

“Blasthub”, the vibration monitoring system, has been used for reporting purposes, providing real-time monitoring, recording and review of results on a website. Access to the website is controlled, with permissions for review provided to HDC staff and OceanaGold users. The system is set with trigger levels between 0.40 and 0.75 mm/s for Martha and Underground operations.

In terms of vibration monitoring, the Project Martha network comprises 13 monitors (some shared with the Correnso network). These all have a trigger limit currently set at 0.75 mm/s. Any blasts fired during the period (highlighted in red) and the monitor locations are shown in Figure 1.

Figure 1. VMS Monitor & Blast Locations – Project Martha

The Trio Underground Operations have five compliance monitors situated at Boyd Rd, Moore St, Clarke St, the Coreshed (Barry Rd) and the Scout Hall (Baker St). In addition to these, one other monitor is located near the Trio vent shaft (Trio VS). This monitor acts as an 'indicator' for Blasthub, which allows correlation with the other monitors to report the compliance monitoring results directly onto Blasthub. No blasts were fired during the period; monitor locations are shown in Figure 2.

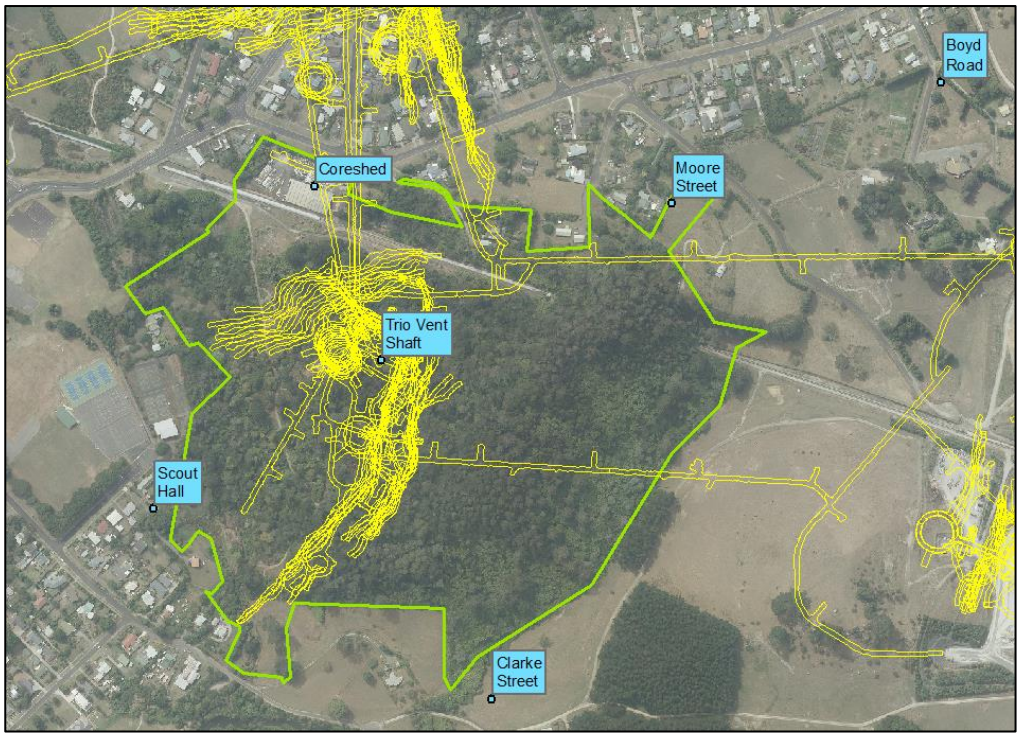

Figure 2. VMS Monitor Locations – Underground Operations (Trio)

The Correnso Underground monitoring network comprises 10 permanent vibration monitors. These all have a trigger limit currently set at 0.75 mm/s. The blasts fired during the period (highlighted in red) and monitor locations are shown in Figure 3. SUPA utilises the same compliance monitors as Correnso, with the data incorporated into a shared database.

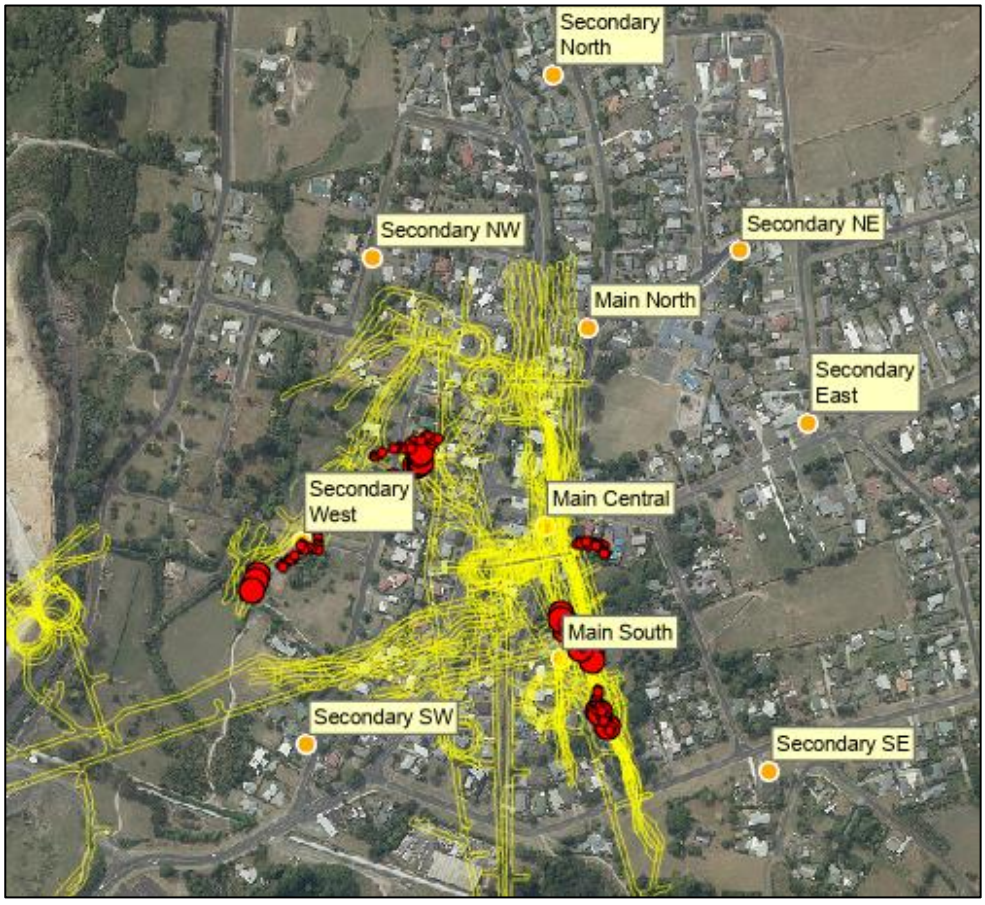

Figure 3. VMS Monitor & Blast Locations – Correnso, SUPA Operations

Note: Larger icons indicate Production Blasts (>7kg MIC)

3. Calibration

Calibration of monitoring equipment, including the roving monitors, was completed in June 2020 and October 2020. Calibration certificates can be viewed on Blasthub; refer to the monitoring results during those periods. The calibrations were undertaken by the Saros Group Pty Ltd in Queensland and conducted in accordance with AS/NZS ISO9000-2000 and AS ISO/IEC17025-2005 quality standards.

4. Compliance Assessment

4.1 Project Martha

165 blast events occurred in Martha Underground during the reporting period. Of the 771 individual blasts during the period:

- 760 were development blasts within normal blasting windows; 1 was outside the blast window and was initiated in the early evening (18:18) due to flooding concerns within the mine.
- 10 maintenance/safety blasts were fired (2 of which were fired outside normal blasting windows).

Project Martha Development:

- 165 Martha blast events were fired, 58 of these triggered compliance monitors (maximum vibration 2.33mm/s).

The peak vibration levels for Martha Underground Operations during the quarter are shown in Figure 4 below.

- The highest six-month average[1] for development blasting at a compliance monitor was assessed as 0.82mm/s at Pensioner Flats, below the consent limit average of 2mm/s.
- The development six month rolling 95 percentile[1] for all locations was assessed as 1.67mm/s, below the 5mm/s limit.
- No compliance monitors were triggered by the maintenance/safety blasts.

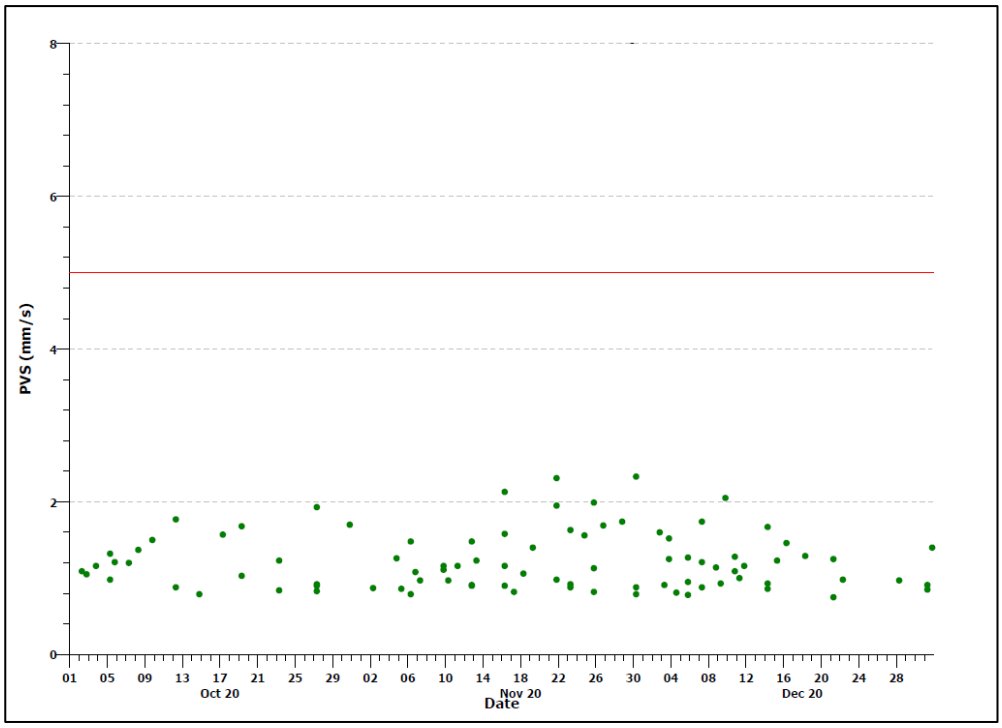

Figure 4. Maximum Peak Vibration Levels – Martha Underground Operations

[1] Data is presented as at the end of the quarter

4.2 Underground (Favona & Trio) Operations

Current mining plans for Trio were exhausted in the first quarter of 2020, and no blasting occurred during the reporting period. Likewise, no blasting was undertaken within Favona.

4.3 Correnso and SUPA

During the reporting period, 117 blast events (cf. 135 in the previous quarter) occurred in the Correnso and SUPA projects. The blast locations are presented in Figure 3 above, with the relative locations indicated for development and production blasting. The peak vibration levels for the period are shown in Figure 5 below.

Development:

- The highest six-month average[1] for development blasting at a compliance monitor was 0.73mm/s at Main Central, below the consent limit average of 2mm/s.
- The development six month rolling 95 percentile[1] for all locations was 1.45mm/s, below the 5mm/s limit.

Production:

- No blasts exceeded the 5mm/s level at a compliance monitor during the quarter.
- The highest six-month average[1] for production blasting at a compliance monitor was 1.67mm/s at Main Central, below the consent limit average of 3mm/s.
- The production six month rolling 95 percentile[1] for all locations was 4.07mm/s, below the 5mm/s limit.

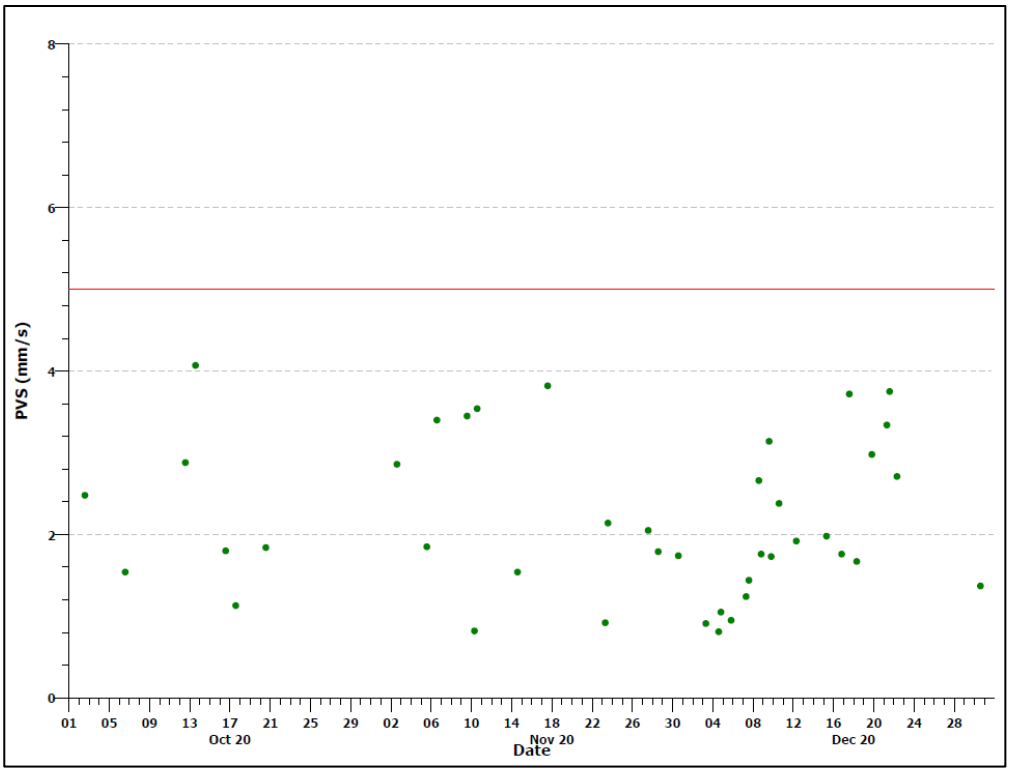

Figure 5. Maximum Peak Vibration Levels – Correnso/SUPA Operations

5. Blasting

The 193 blast events during the period was comparable to the 199 events in the previous quarter (Table 1), indicating the continuation of normal operations following the Covid-19 lockdown. The mine's focus continues to be towards establishing the operations for full production recommencing in second quarter 2021.

Table 1: Quarterly blast events

Operation	1st Quarter 2020	2nd Quarter 2020	3rd Quarter 2020	4th Quarter 2020
Martha Underground	156	112	172	165
Underground (Trio)	12 (3 Independent)	0	0	0
Correnso/SUPA	83 (12 Independent)	92 (4 Independent)	135 (27 Independent)	117 (28 Independent)
Total	**171**	**116**	**199**	**193**

* *Some blasts occurred simultaneously with blasting in other operational areas and did not contribute to the total number of blast events. Trio and Correnso events only contribute to the total when they are independent of Martha Underground.*

Multiple blasts may be fired during the one blast event. There were 928 blasts initiated within 193 blast events during the reporting period (Figure 6). This is a similar result to the number of blasts in the previous quarter (933), and shows consistency across the operation following the resumption of works after the Covid-19 lockdown and the intensification of Martha and Correnso development blasting.

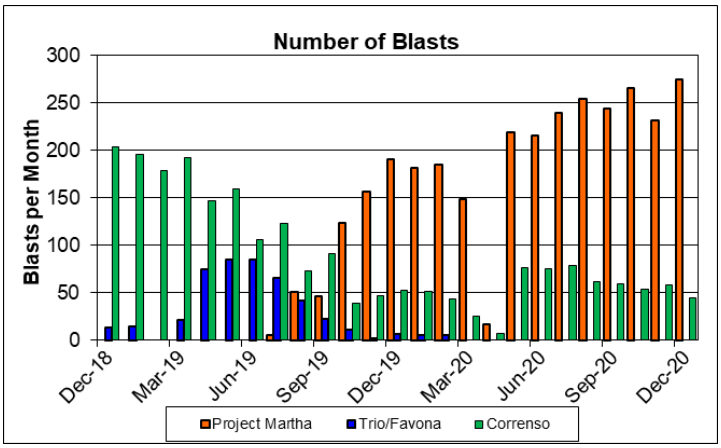

Figure 6. Number of Blasts (all operations)

6. Complaints

19 vibration-related complaints were received during the reporting period, up from the 10 received in the previous quarter (Figures 7 & 8). The number of complainants also increased; 15 during the quarter cf. 9 in the previous period. These increases were considered due to the higher number of production blasts during the period (38 vs 21 for the previous quarter).. Table 2 provides a summary of the complaints received during the quarter.

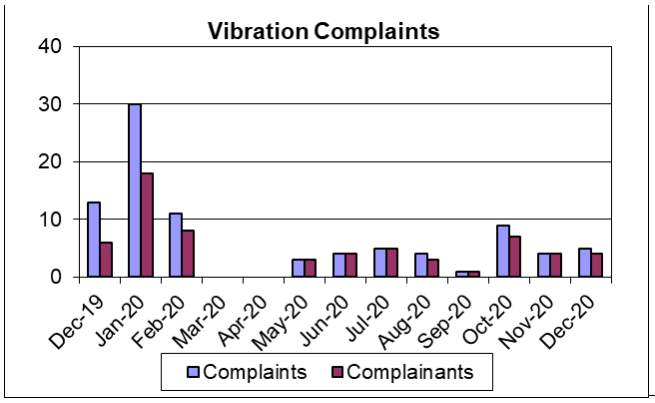

Figure 7. Number of Complaints & Complainants

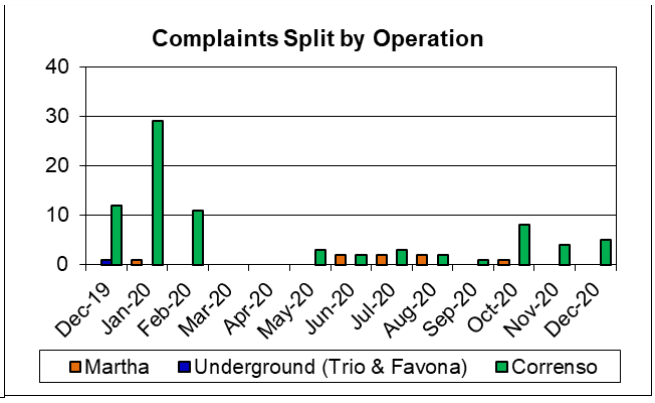

Figure 8. Complaints by Operation

Table 2: Summary of vibration complaints registered by OceanaGold

Date	Address	Nearest Monitor		Highest Blasthub Reading (mm/s)	Site
		Location	Reading (mm/s)		
2-Oct-20	Cuba St	Secondary East	1.1	2.5	Correnso
6-Oct-20	Cuba St	Secondary East	1.5	1.5	Correnso
12-Oct-20	Kenny St	Main Central	2.6	2.9	Correnso
2-Oct-20	Barry Rd	Secondary SE	0.9	2.5	Correnso
12-Oct-20	Gladstone Rd	Main South	1.1	2.9	Correnso
13-Oct-20	Dobson St	Secondary NW	2.0	4.1	Correnso
13-Oct-20	Gladstone Rd	Main Central	3.5	4.1	Correnso
13-Oct-20	Stafford St	Secondary SE	NT	4.1	Correnso
13-Oct-20	Kenny St	Main Central	3.5	4.1	Correnso
17-Oct-20	Clarke St	Pensioner Flats	1.5	1.5	Martha Underground
2-Nov-20	Stafford St	Main South	2.25	2.86	Correnso
2-Nov-20	Gladstone Rd	Main South	2.25	2.86	Correnso
3-Nov-20	Barry Rd	Main South	2.25	2.86	Correnso
17-Nov-20	Gladstone Rd	Secondary North	0.92	2.39	Correnso
9-Dec-20	Gladstone Rd	Secondary North	1.25	3.03	Correnso
17-Dec-20	Gladstone Rd	Secondary North	1.02	3.72	Correnso
17-Dec-20	Gladstone Rd	Main Central	3.72	3.72	Correnso
17-Dec-20	Gladstone Rd	Main North	2.26	3.72	Correnso
21-Dec-20	Stafford St	Secondary SE	1.26	3.75	Correnso

* *NT = Vibration monitor not triggered.*

7. Vibration and Complaint Management

No roving monitoring was required during the period. General complaint management continues to be managed through the External Affairs Department with technical advice provided by Environmental and Mining staff (supported by consultant input when required).