



**Vibration Summary Report**  
**Fourth Quarter 2023**



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## Summary

- Results from the Envirohub vibration monitoring system for the fourth quarter of 2023 are reported for the Favona, Trio, Correnso, SUPA and Project Martha Underground Mines.
- Development and production blasting continued in the Martha Underground component of Project Martha. There were no blasts in Correnso. Mining in Favona and Trio has ceased.
- Compliance for Project Martha/SUPA blasting was achieved during the quarter. The maximum vibration recorded during the quarter was 3.89 mm/s.
- One vibration-related complaint was received during the reporting period, compared to none received from the previous quarter.
- The total number of blasts (888) was higher than the previous quarter (854). The number of blast events was also higher than the previous quarter (159, cf. 145 in the previous quarter).

## 1. Introduction

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

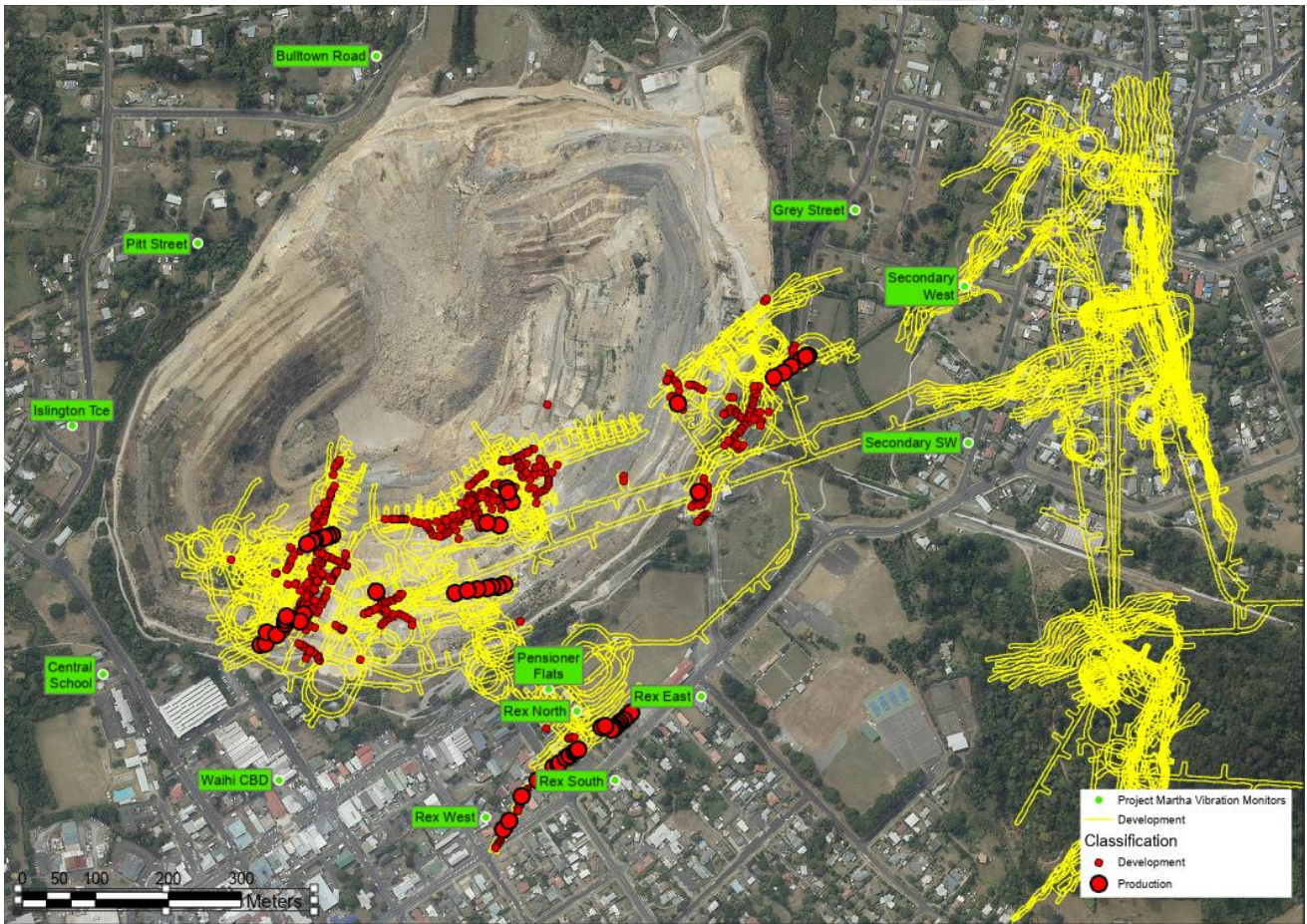
- a) Hauraki District Council (HDC) LUC No. 97/98-105 (Condition 3.11) for the extended Martha Mine Project.
- b) HDC Land Use Consent 85.050.326E (Condition 24) for the Favona Underground Mine.
- c) HDC Land Use Consent RC - 15774 (Condition 9) for the Trio Underground Mine Project.
- d) HDC Land Use 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), Condition 18 (f) for MDDP has been assumed by Project Martha below (g).
- 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

“Envirohub™”, 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.

The Project Martha vibration monitoring 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. SUPA utilises some monitors from the Correnso network and some from the Project Martha network, with the data incorporated into a database shared with Project Martha.

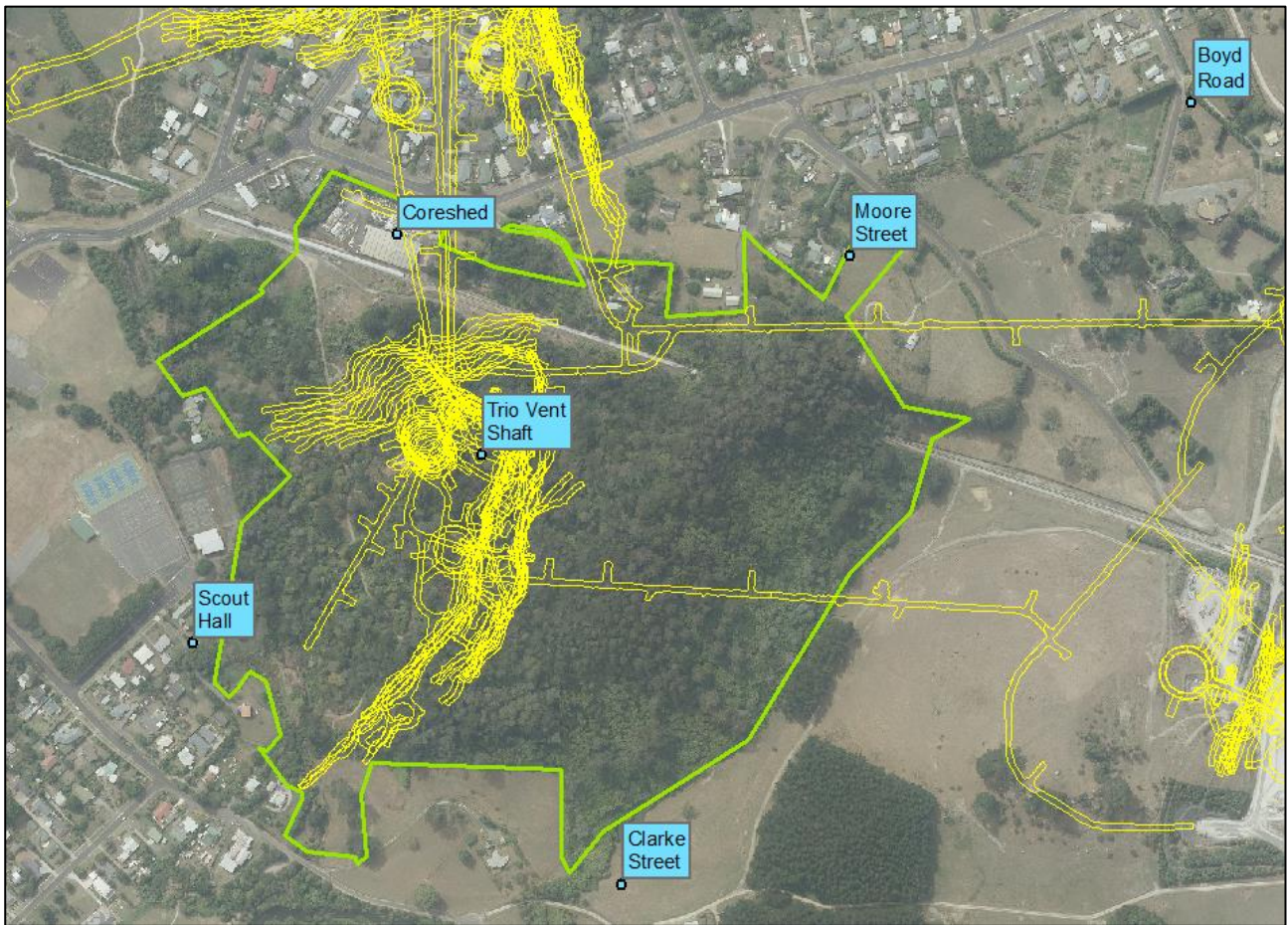


**Figure 1. Vibration Monitor & Blast Locations – Project Martha, SUPA**

*Note: Larger icons indicate production blasts*

The Trio Underground Operations have four compliance monitoring locations situated at Boyd Rd, Clarke St, the Coreshed (Barry Rd) and the Scout Hall (Baker St). In addition to these, one other monitoring location is located near the Trio vent shaft (Trio VS). The Moore Street monitor and infrastructure has been removed due to housing development on the site. As there is currently no mining being undertaken in the Trio Project area, vibration monitors are not installed at these locations, but the infrastructure remains so monitors can be reinstalled should work in the Trio area recommence. Monitoring locations are shown in Figure 2.

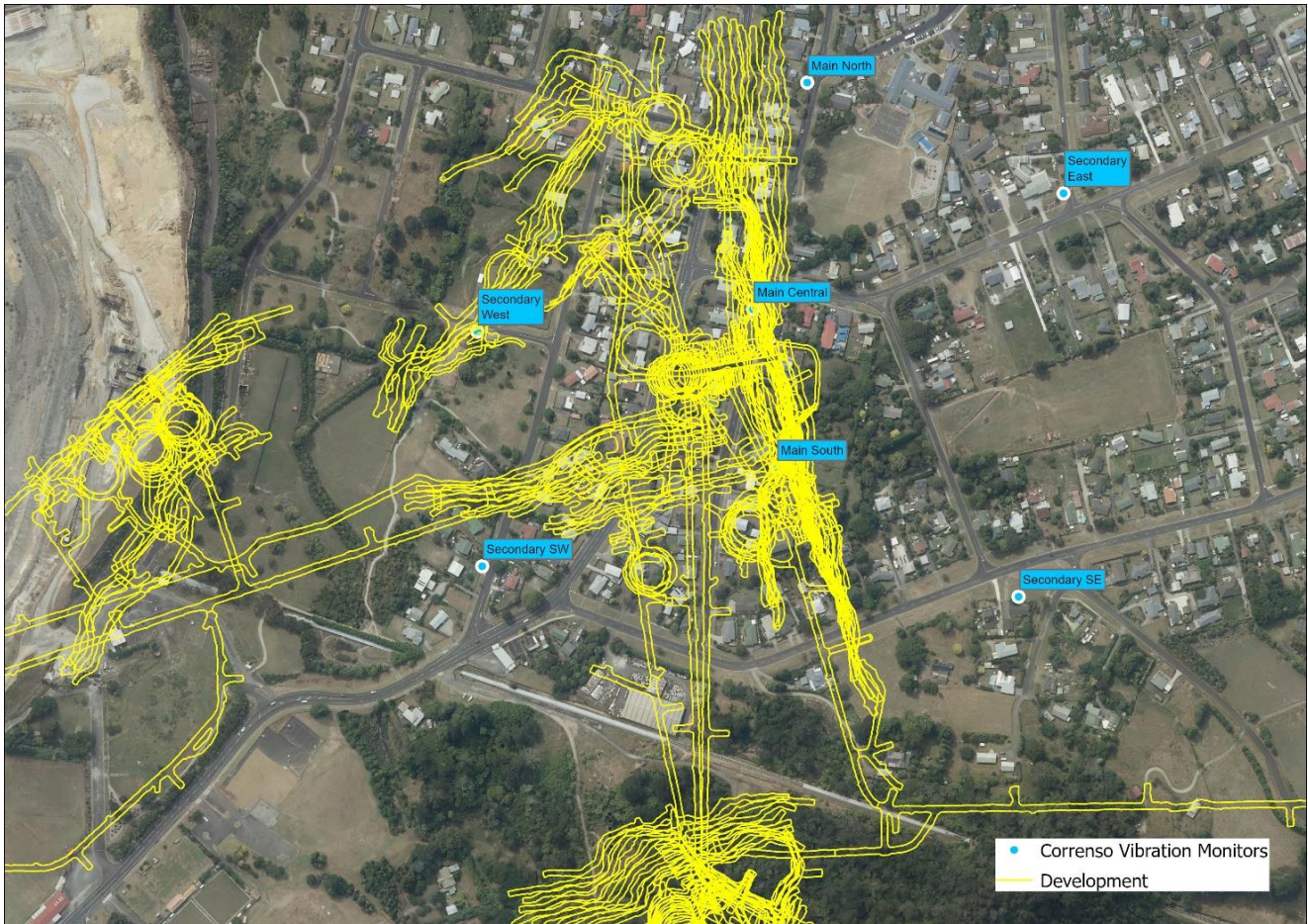




**Figure 2. Vibration Monitor Locations – Underground Operations (Trio)**

The Correnso Underground monitoring network comprises 7 permanent vibration monitors (previously 10). Approval from HDC was obtained to discontinue monitoring at 3 locations within the Correnso network in 2022. The remaining 7 monitors all have a trigger limit currently set at 0.75 mm/s. Current monitor locations are shown in Figure 3.





**Figure 3. Vibration Monitor Locations – Correnso**

### **3. Calibration**

Calibration of monitoring equipment, including the roving monitors, is completed on a six-monthly rotation to allow enough coverage of vibration monitoring while calibrations take place. A six-monthly calibration run was completed in Q4 2023. Calibration certificates can be viewed on Envirohub; 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**

Table 1 sets out the consented compliance limits for blast magnitude (peak particle velocity - vector sum) for Correnso and Project Martha, and the corresponding vibration results, reported as of the last day of the quarter (31 December 2023). Compliance with all limits was met throughout the quarter. There have been no blasts in Correnso during the previous six months, therefore no average or 95% calculations have been made.

**Table 1. Compliance Assessment Table for Correnso and Project Martha Q4 2023**

	<b>Consented Compliance Limit</b>	<b>Q3 Results - Correnso</b>	<b>Q3 Results - Project Marta</b>
<b>Development 95%*</b>	5 mm/s	No blasts	1.83 mm/s
<b>Development Average*</b>	2 mm/s	No blasts	0.91 mm/s
<b>Production 95%*</b>	5 mm/s	No blasts	2.80 mm/s
<b>Production Average*</b>	3 mm/s	No blasts	1.51 mm/s
<b>Maintenance/Safety</b>	1 mm/s	No blasts	No blasts

\* Six month rolling limit; data is presented as at the end of the quarter

#### **4.1 Project Martha**

159 blast events occurred in Martha Underground during the reporting period (cf. 145 in the previous quarter), with 94 events triggering compliance monitors.

Of the 888 individual blasts during the period:

- 819 were development blasts
- 69 were production blasts

The peak vibration levels for Martha Underground Operations (both production and development) during the quarter are shown in Figure 4 below.

Development:

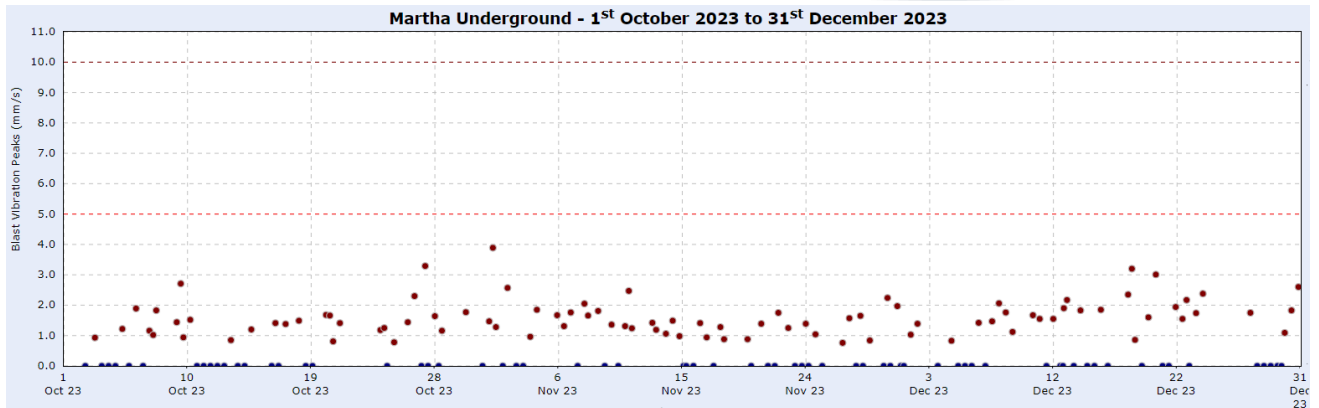
- The highest six-month average<sup>1</sup> for development blasting at a compliance monitor was assessed as 0.73 mm/s Pensioner Flats, below the consent limit average of 2mm/s.
- The development six month rolling 95 percentile<sup>1</sup> for all locations was assessed as 1.83 mm/s, below the 5mm/s limit.
- No Martha Underground development blast events recorded vibration levels above 5 mm/s during the period.

Production:

- The six-month average<sup>1</sup> for production blasting at a compliance monitor was assessed as 1.03 mm/s at Central School, below the consent limit average of 3 mm/s.
- The production six-month rolling 95 percentile<sup>1</sup> for all locations was assessed as 2.80 mm/s, below the 5mm/s limit.
- No Martha Underground production blast events recorded vibration levels above 5 mm/s during the quarter.

Four blasts were fired outside of the preferred time windows specified in the Vibration Management Plan during the quarter. No maintenance/safety blasts were required in Martha Underground during the period and there were no blasts on Sundays or public holidays.

<sup>1</sup> Data is presented as at the end of the quarter



**Figure 4. Maximum Peak Vibration Levels (Production and Development) – Martha Underground/SUPA Operations**

#### 4.2 Underground (Favona & Trio) Operations

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

No blasts were undertaken within the Correnso Project area during Quarter 4 of 2023.

### 5. Blasting

The 159 blast events during the period was a increase compared to the previous quarter (Table 2).

**Table 2. Quarterly blast events**

Operation	1 <sup>st</sup> Quarter 2023	2 <sup>nd</sup> Quarter 2023	3 <sup>rd</sup> Quarter 2023	4 <sup>th</sup> Quarter 2023
Martha Underground	160	132	145	159
Underground (Trio)	0	0	0	0
Correnso/SUPA	0	0	0	0
<b>Total</b>	<b>160</b>	<b>132</b>	<b>145</b>	<b>159</b>

*\*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 888 sub-blasts initiated within the 159 blast events during the reporting period (Figure 5).

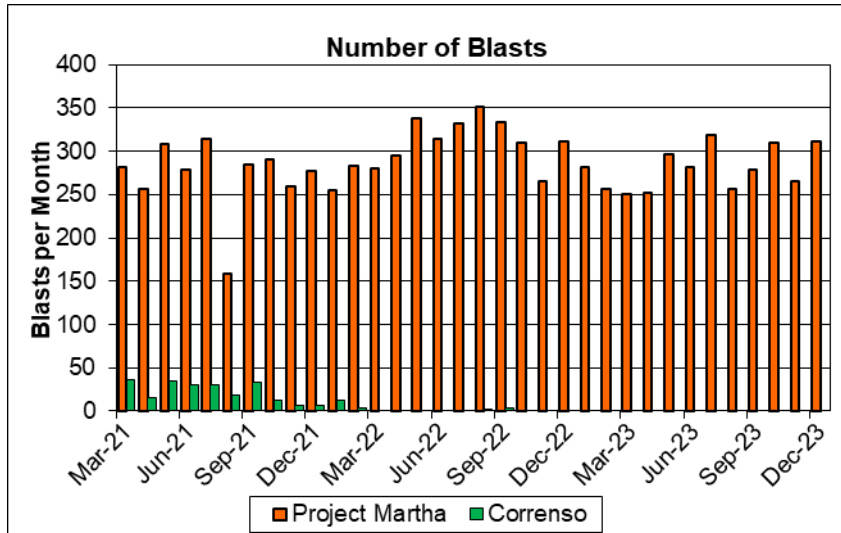


Figure 5. Number of Blasts (Project Martha and Correnso)

## 6. Complaints

Consistent with the previous quarter, one vibration-related complaint was received during the reporting period. (Figures 6 & 7).

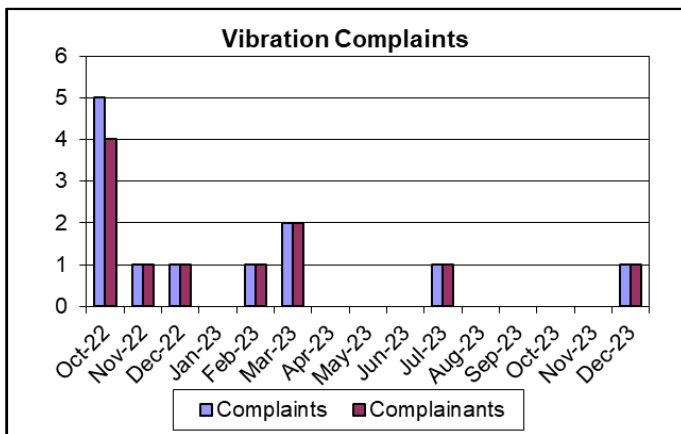


Figure 6. Number of Complaints & Complainants

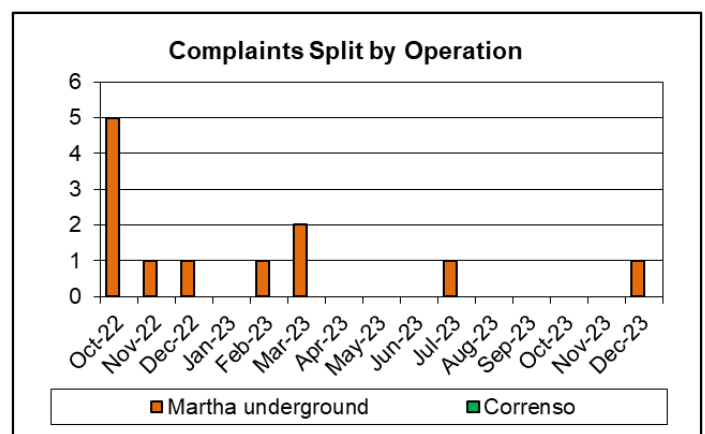


Figure 7. Complaints by Operation

## 7. Vibration and Complaint Management

### 7.1 Roving Monitoring

No roving monitoring was required or undertaken during the quarter.

### 7.2 Mitigation Actions

No mitigating actions were required in the quarter, largely due to no high-level blasts being recorded.