



Vibration Summary Report
First Quarter 2023



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Summary

- Results from the Envirohub vibration monitoring system for the first 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 7.58 mm/s.
- Three vibration-related complaints were received during the reporting period, down from the seven received in the previous quarter. The number of complainants also decreased; three during the quarter cf. five in the previous period.
- The total number of blasts (789) was lower than the previous quarter (888). The number of blast events was similar to the previous quarter (167, cf. 161 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 12 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.

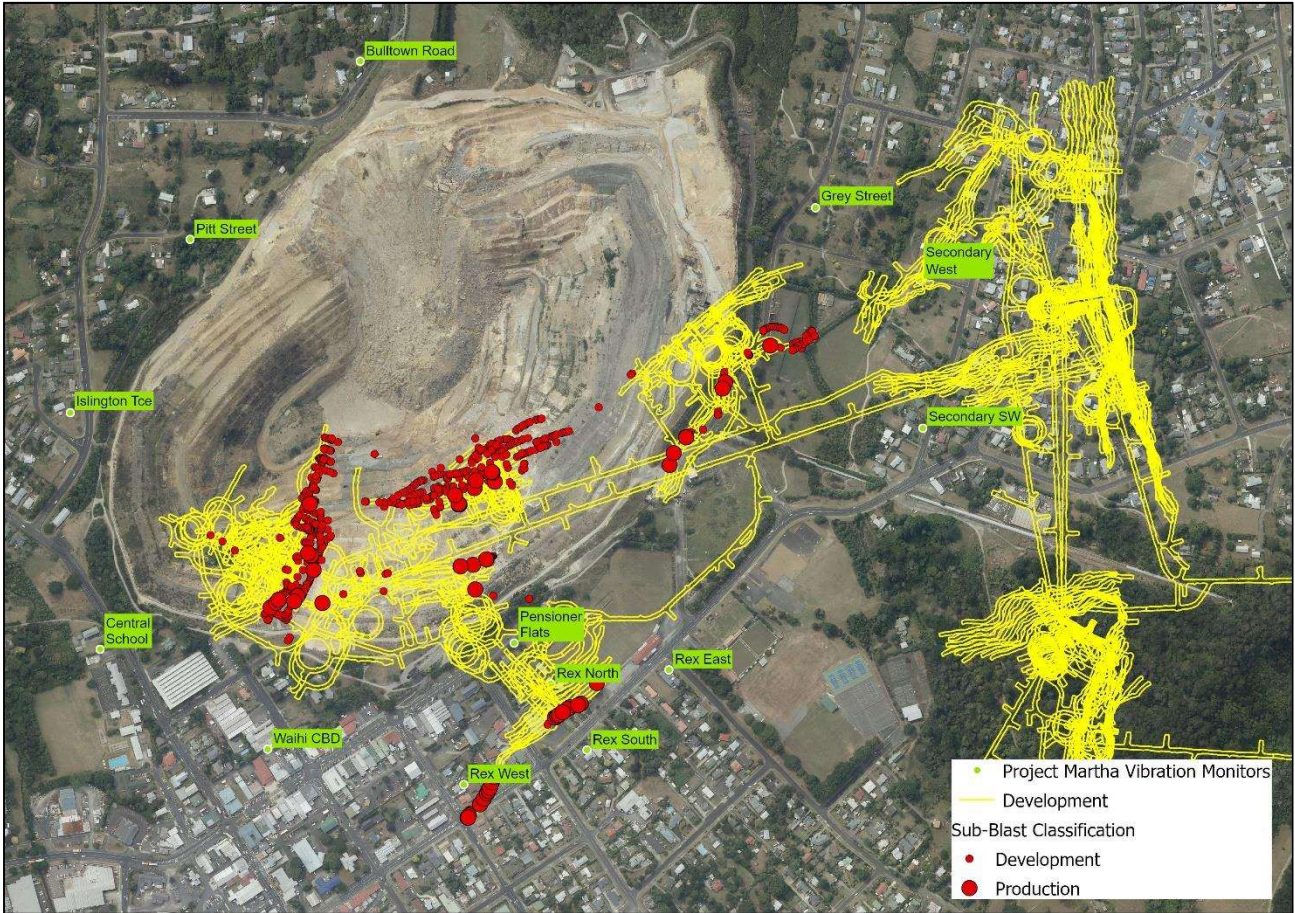


Figure 1. Vibration Monitor & Blast Locations – Project Martha, SUPA

Note: Larger icons indicate production blasts

The Trio Underground Operations have five compliance monitoring locations situated at Boyd Rd, Moore St, 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). 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.

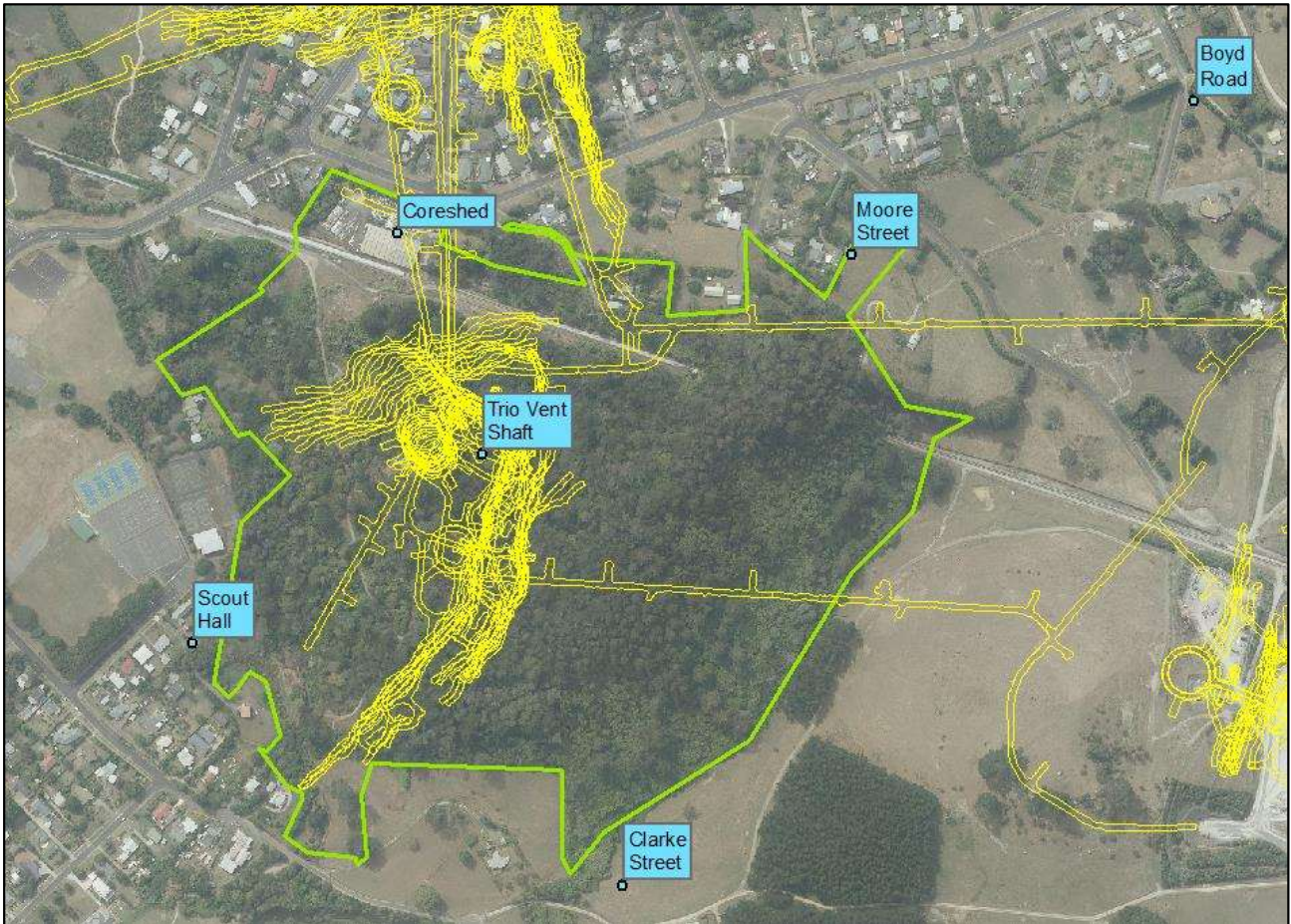


Figure 2. Vibration Monitor Locations – Underground Operations (Trio)

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 earlier in 2022. The remaining 7 monitors all have a trigger limit currently set at 0.75 mm/s. Monitor locations are shown in Figure 3.

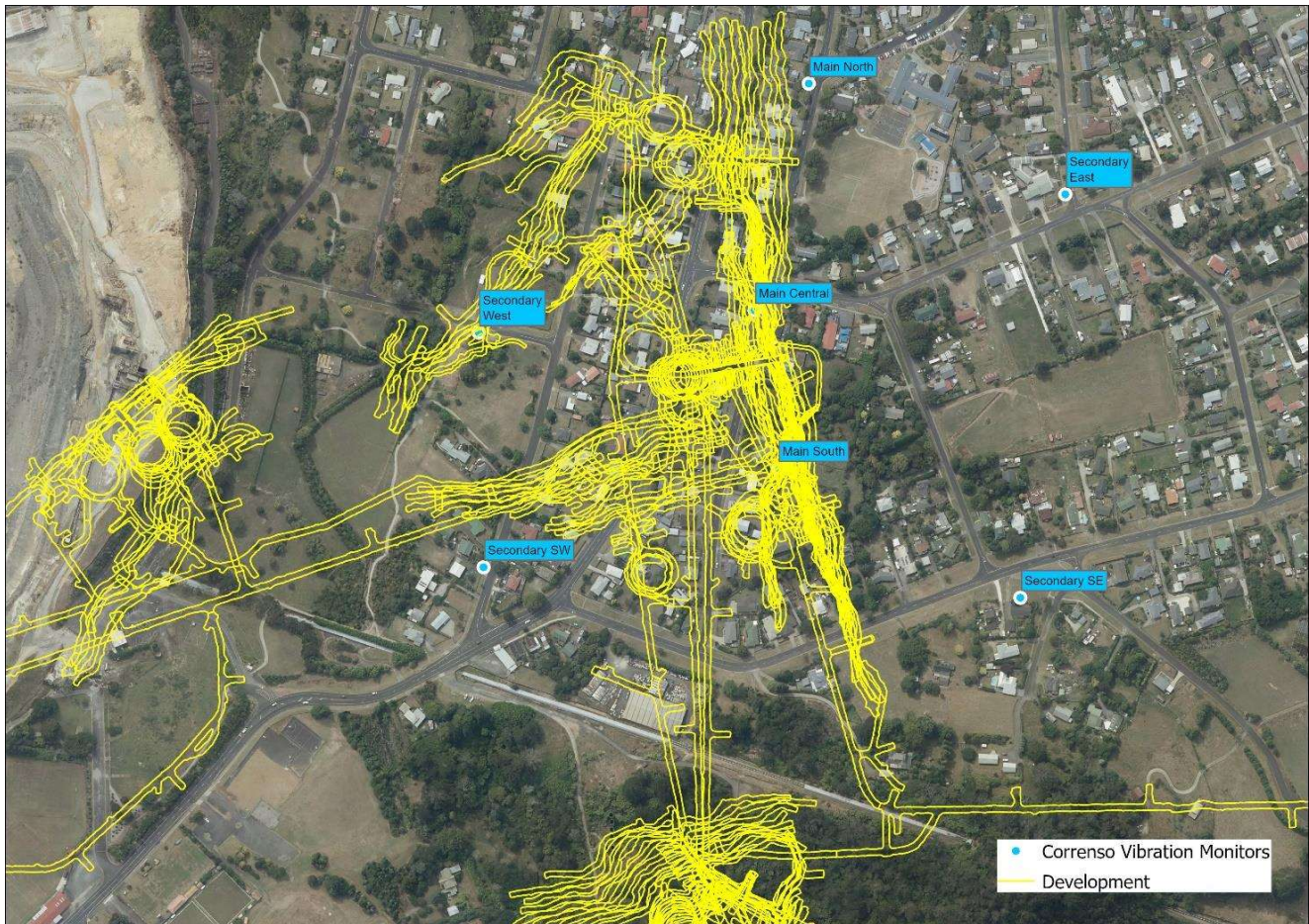


Figure 3. Vibration Monitor Locations – Correnso

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 undertaken in Q3 of 2022. 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 March 2023). Compliance with all limits was met throughout the quarter. There were an insufficient number of blasts in the previous six months to calculate average and 95% numbers for Correnso as no blasts occurred in quarter 1.

Table 1. Compliance Assessment Table for Correnso and Project Martha Q1 2023

	Consented Compliance Limit	Q1 Results - Correnso	Q1 Results - Project Marta
Development 95%*	5 mm/s	No blasts	2.04 mm/s
Development Average*	2 mm/s	No blasts	0.61 mm/s
Production 95%*	5 mm/s	No blasts	4.05 mm/s
Production Average*	3 mm/s	No blasts	1.45 mm/s
Maintenance/Safety	1 mm/s	No blasts	No blasts

Note: Data is presented as at the end of the quarter

* six month rolling limit

4.1 Project Martha

167 blast events occurred in Martha Underground during the reporting period (cf. 160 in the previous quarter), with 40 triggering compliance monitors.

Of the 789 individual blasts during the period:

- 730 were development blasts
- 58 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 average¹ for development blasting at a compliance monitor was assessed as 0.61 mm/s Rex West, below the consent limit average of 2mm/s.
- The development six month rolling 95 percentile¹ for all locations was assessed as 2.04 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 average² for production blasting at a compliance monitor was assessed as 1.45 mm/s at Rex West, below the consent limit average of 3 mm/s.
- The production six-month rolling 95 percentile¹ for all locations was assessed as 4.05 mm/s, below the 5mm/s limit.
- Two Martha Underground production blast events recorded vibration levels above 5 mm/s during the quarter.
- The highest level of vibration recorded during the quarter for production blasting was 7.58 mm/s at the Rex West monitor on 14 February 2023.

No maintenance/safety blasts were required in Martha Underground during the period and there were no blasts on Sundays or public holidays.

¹ Data is presented as at the end of the quarter

² Data is presented as at the end of the quarter

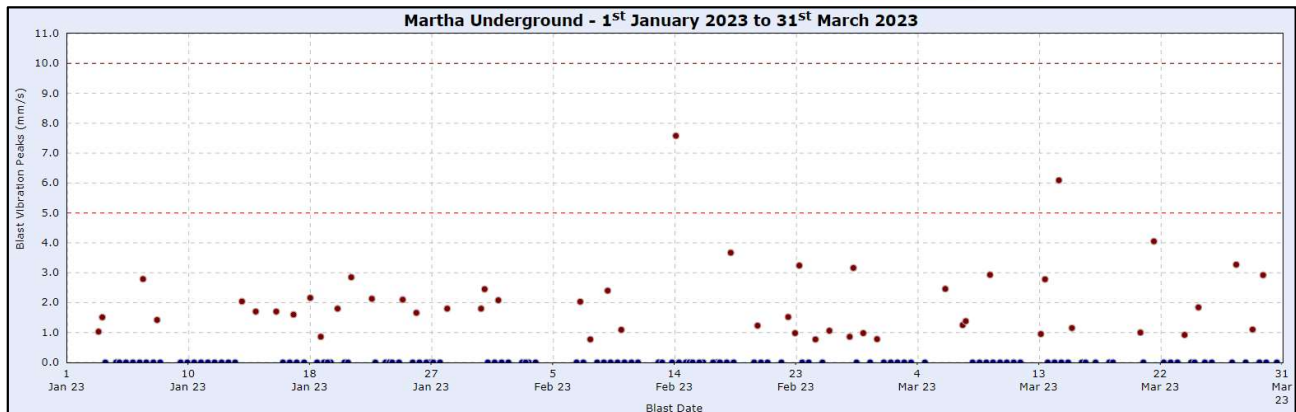


Figure 4. Maximum Peak Vibration Levels (Production and Development) – Martha Underground/SUPA Operations

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 1 of 2023.

5. Blasting

The 167 blast events during the period was a similar number to the previous quarter (Table 2).

Table 2. Quarterly blast events

Operation	2 nd Quarter 2022	3 rd Quarter 2022	4 th Quarter 2022	1 st Quarter 2023
Martha Underground	109	161	160	167
Underground (Trio)	0	0	0	0
Correnso/SUPA	15 (1 independent)	0	4 (1 independent)	0
Total	110*	161	161*	167

**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 789 sub-blasts initiated within 167 blast events during the reporting period (Figure 5).

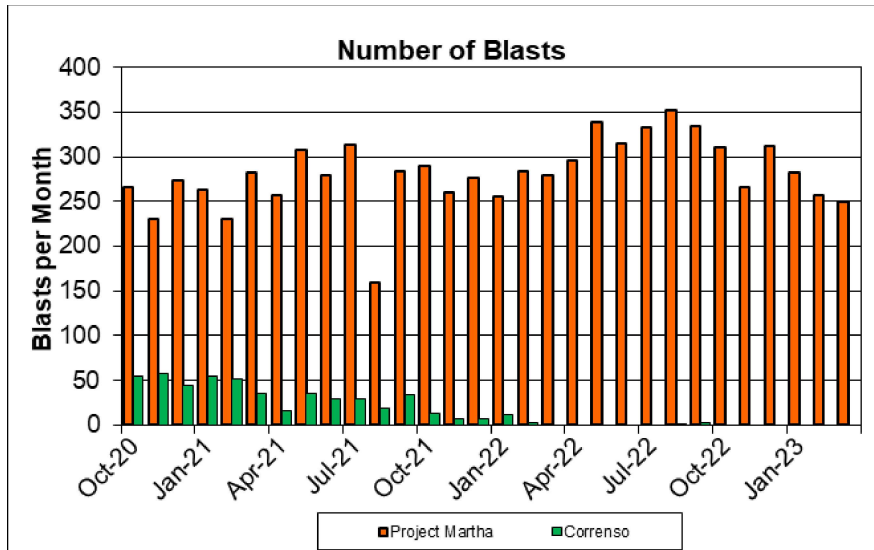


Figure 5. Number of Blasts (Project Martha and Correnso)

6. Complaints

Three vibration-related complaints were received during the reporting period, down from 7 received in the previous quarter (Figures 6 & 7). The number of complainants also decreased slightly; three during the quarter cf. five in the previous period. Table 3 provides a summary of the complaints received during the quarter.

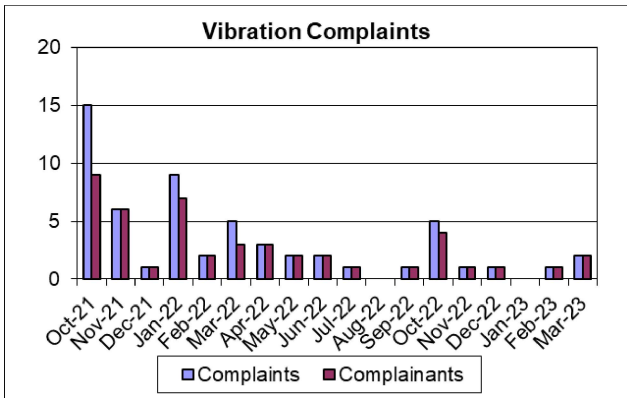


Figure 6. Number of Complaints & Complainants

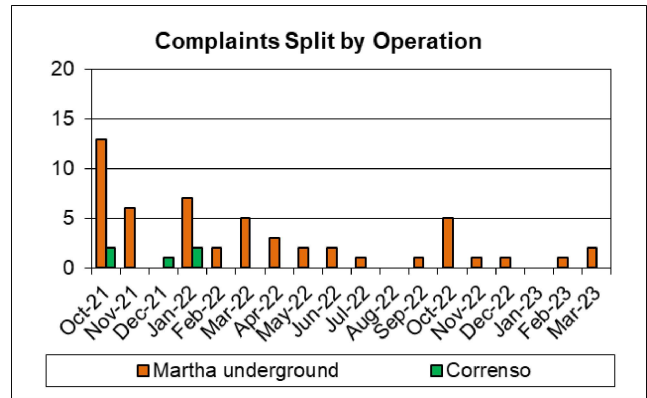


Figure 7. Complaints by Operation

Table 3. Summary of vibration complaints registered by OceanaGold

Date	Location	Nearest Monitor	Vibration nearest caller (mm/s)	Maximum vibration (mm/s)	Monitor with Max Vibration
1-Feb-23	Phillips Ln	Rex East	2.1	2.1	Rex East
14-Mar-23	Kenny St	Rex West	2.5	2.5	Rex West
21-Mar-23	Johnston St	Rex West	4.1	4.1	Rex West

7. Vibration and Complaint Management

7.1 Roving Monitoring

No roving monitoring was undertaken during the quarter.

7.2 Mitigation Actions

Mitigating actions were required in relation to the two high-level blast recorded at the Rex West monitor during the quarter. The mitigating actions were as follows:

- Blast hole deck stemming lengths were reviewed to ensure that blast holes in ground that could lead to sympathetic detonation are appropriately controlled.
- Charge weights for blasts in ground that could lead to sympathetic denotation were reduced.