



Monthly Report on Filled/Unfilled Stopes and Seismic Monitoring

May 2025

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1 INTRODUCTION

Hauraki District Council Land Use Consent 202.2018 (Project Martha) requires monthly reporting of void and stope volumes, seismic and rock movement monitoring and reporting relating to safeguards around proximities to historic workings (Condition 75). Additionally, Condition 75 requires reporting of the volume of fill used to fill historic unfilled voids.

Hauraki District Council Land Use Consents 202.2012 (Correnso) and 202.2016 (SUPA) have similar requirements for reporting stope volumes and filled stopes, and for seismic and rock movement monitoring. No stoping has occurred in Correnso/SUPA since January 2023 (refer to earlier monthly reports for previous Correnso/SUPA data). Some small-scale narrow vein mining has started in Correnso using the cut and fill method.

This report is for the period May 2025 and must be submitted to HDC no later than 10 working days after the end of the calendar month covered.

Refer to Appendix A for full transcripts of the relevant consent conditions.

2 FILLED/UNFILLED STOPES (MARTHA UNDERGROUND)

The main mining methods used in Martha Underground are a combination of Modified Avoca Narrow Vein Stopping and Transverse Remnant Stope Mining, along with limited floor benching and overhand cut and fill mining. Table 1 uses survey data for the scanned void volume (m³) as the defining measure of volumes for voids and backfill. Where a void is partially filled, an estimate is given of the percentage filled at the end of the month. The volumes are reported for each stope so the state of the voids can be tracked monthly. As a void is created (by stope blasting, mining historic backfill or encountering historic voids), bogged and scanned, the status would appear as 'Open' with the relevant void volume, and once a void is backfilled, the status changes to 'Filled' and will be removed from the table after two months.

At the end of May 39,278 m³ of stopes were open in Martha Underground. This is calculated using the totals from Table 1 (Scanned Void – Total Fill Volume EOM).



Table 1: Filled/Unfilled Stopes

Date Scanned	Stope	Stope Type	Mining method	Fill Type	Status	Scanned Void (m³)	*Monthly Fill Vol (m³)	*Total Fill Vol EOM (m³)	Notes
TBD	EDW-012-FDR-5-01-4,6,10	Historic Fill		CRF	Bogging	TBC	0	0	1
TBD	EDW-015-FDR-3-20	Historic Fill		CRF	Open	20858	0	0	2
Nov-24	RYE-019-ODR-4-P4	Virgin		RF	Open	TBC	0	0	3
Nov-24	EMW-012-FDR-2-15-P1	Historic Fill		CRF	Open	TBC	0	0	4
Feb-25	EDW-016-FDR-4-03-P1	Historic Fill	TRS	CRF	Filled (May)	18600	18600	18600	
Feb-25	EMW-010-FDR-3-24-P1	Historic Fill	TRS	CRF	Bogging	TBC	0	0	5
Feb-25	EDW-017-ODR-1-03-1-07-4-P1	Virgin	MAS	RF	Filled (May)	4313	4313	4313	
Feb-25	EMP-010-FDR-1-06-P1	Historic Fill	TRS	CRF	Open	TBC	0	0	6
Mar-25	EMW-009-FDR-3-32-P1	Historic Fill	TRS	CRF	Filled (May)	6613	5952	6613	
Mar-25	EMW-013-FDR-2-21-P1	Virgin	TRS	CRF	Filling (10%)	6800	680	680	
Mar-25	EDW-012-ODR-7-P1	Virgin	MAS	RF	Filled (May)	744	744	744	
Mar-25	EMW-013-ODR-2-25-2-P1	Historic Fill	TRS	CRF	Open	TBC	0	0	
Apr-25	EDW-012-ODR-7-P2	Virgin	MAS	RF	Filled (April)	1205	0	1205	
Apr-25	EDW-012-ODR-7-P3	Virgin	MAS	RF	Open	TBC	0	0	7
Apr-25	EDW-017-ODR-1-03-1-07-4-P2	Virgin	MAS	RF	Filled	677	0	677	
Apr-25	EMP-019-FDR-3-02 P1	Historic Stope	TRS	RF	Open	TBC	0	0	8
Apr-25	EMW-012-FDR-2-15 P1	Historic Fill	TRS	RF	Open	TBC	0	0	9
Apr-25	EMW-015-FDR-2-03-P1	Historic Stope	TRS	CRF	Filled (May)	2253	2253	2253	
May-25	EMW-014-FDR-5-16-P1	Historic Fill	TRS	CRF	Filling	4000	0	0	
May-25	EDW-008-FDR-4-04-1-P1	Historic Fill	TRS	CRF	Bogging	TBC	0	0	
May-25	RYE-020-ODR-3-P9	Virgin	MAS	CRF	Open	8300	0	0	
TOTALS						74,363	32,542	35,085	

* Monthly and End of Month fill volumes are calculated using the estimated percentage filled and the scanned void volume. The percentage filled is estimated by visual inspection. Therefore, fill volumes are approximate only.

Table 1 Notes:

1. Void not open due to historic crown failed and bogging on hold until crown stabilisation complete and void created.
2. Void not open due to historic workings keep filling void, bogging on hold until crown stabilisation complete and void created.
3. Only half of panel mined and will be filled once panel complete. Second half of panel planned once flat backing completed on RYE-016.
4. Unable to get scan. Stope still choked off.
5. Unable to scan as currently still bogging stope.
6. Stope bogging currently on hold.
7. Stope fired and didn't pull through. Currently re-designing recovery holes. Will get final CMS and fill it after firing the recovery holes.
8. Recovery holes designed for underbreak.
9. Stope choked, assessment required.

3 SEISMIC & GEOTECHNICAL MONITORING

3.1 Underground Seismic Monitoring System

The purpose of the seismic system is to monitor seismic rock mass response to mining activity in and around active mining areas. The current seismic system is able to record events at least as small as ML -3.0 in the identified critical areas. The agreed critical magnitude is ML -0.5.

Anomalous seismic behaviour of the closure pillar that must be reported to the HDC is defined as:

- Event magnitudes exceeding ML -0.5.
- An increase in released seismic energy that does not subside after two weeks.

Underground seismic sensor locations, coordinates and sensor details are highlighted in Table 2, Figure 1 and Figure 2.

Table 2: Seismic sensor locations and details

Name	East	North	RL	Type	Location
S2	396513.4	643183.4	798.9	Uni-axial	823 COR SP1
S6	396397.3	643275.1	831.2	Uni-axial	844 SP
S7	396484.8	643260.4	940.7	Uni-axial	942 COR ACC
S9	396422.8	643249.3	883.9	Tri-axial	882 COR DEC
S10	396494.3	643130.9	932.7	Uni-axial	972 RAD
S21	395321.9	642792.6	951.3	Uni-axial	EDW 007 SAC
S22	396039.3	643121.9	917.7	Tri-axial	920 EMP DEC ACC
S23	395618.9	642743.9	887.5	Tri-axial	ROW 11 DEC/INC
S24	395903.4	642787.0	917.3	Uni-axial	REX ACC SP3
S25	395721.0	642944.2	782.5	Tri-axial	800 SP5
S26	395528.3	642859.5	792.8	Tri-axial	EDW 800 - RB DOWN

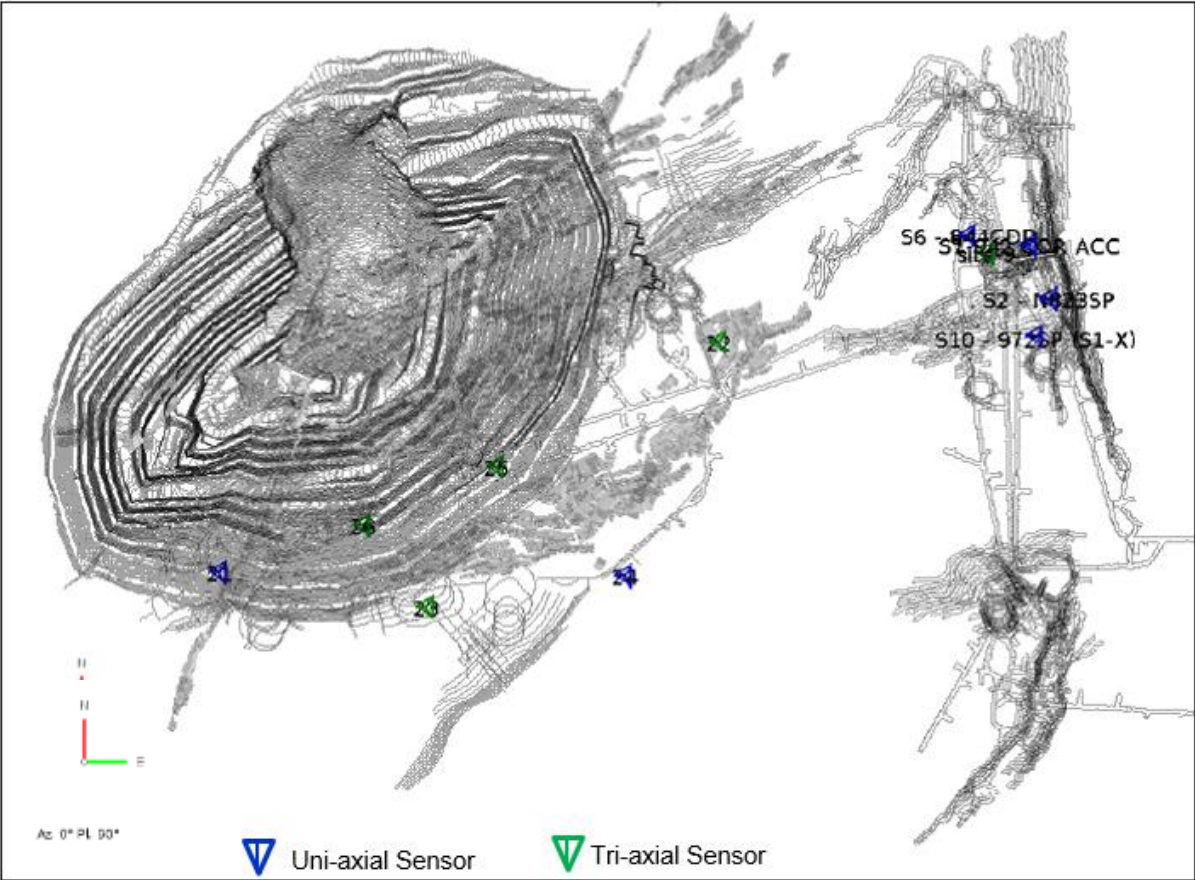


Figure 1: Plan view micro-seismic sensor locations.

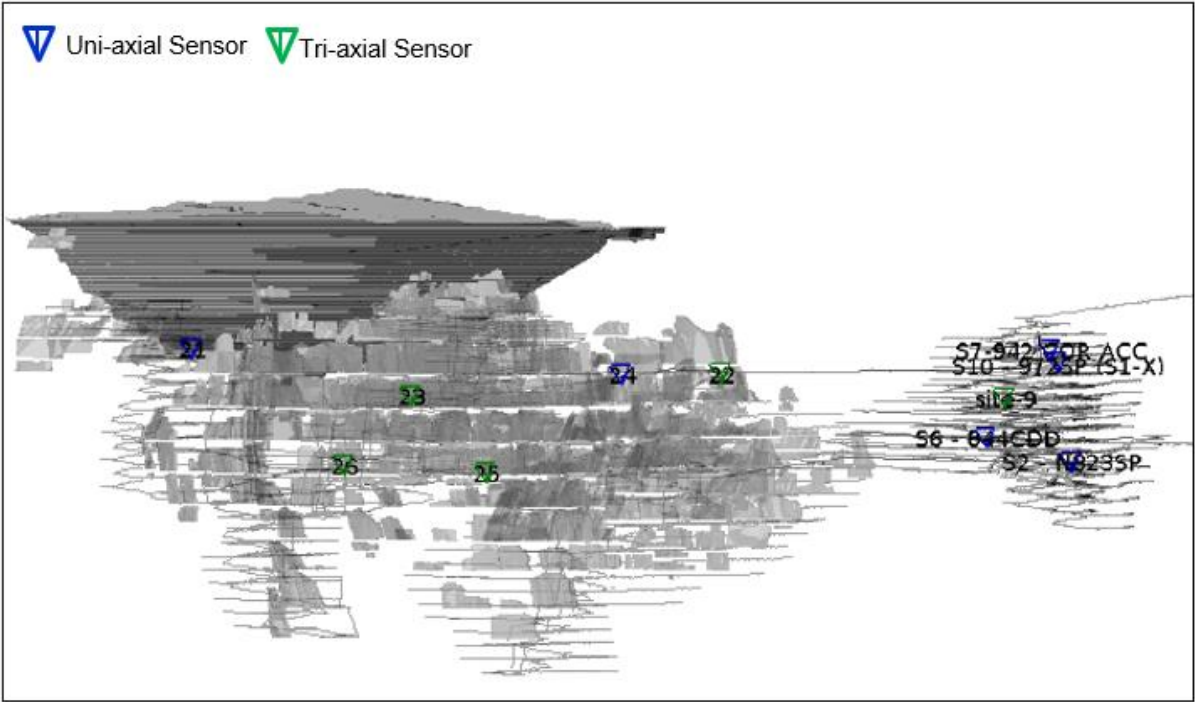


Figure 2: Section view north showing distribution and location of sensors.

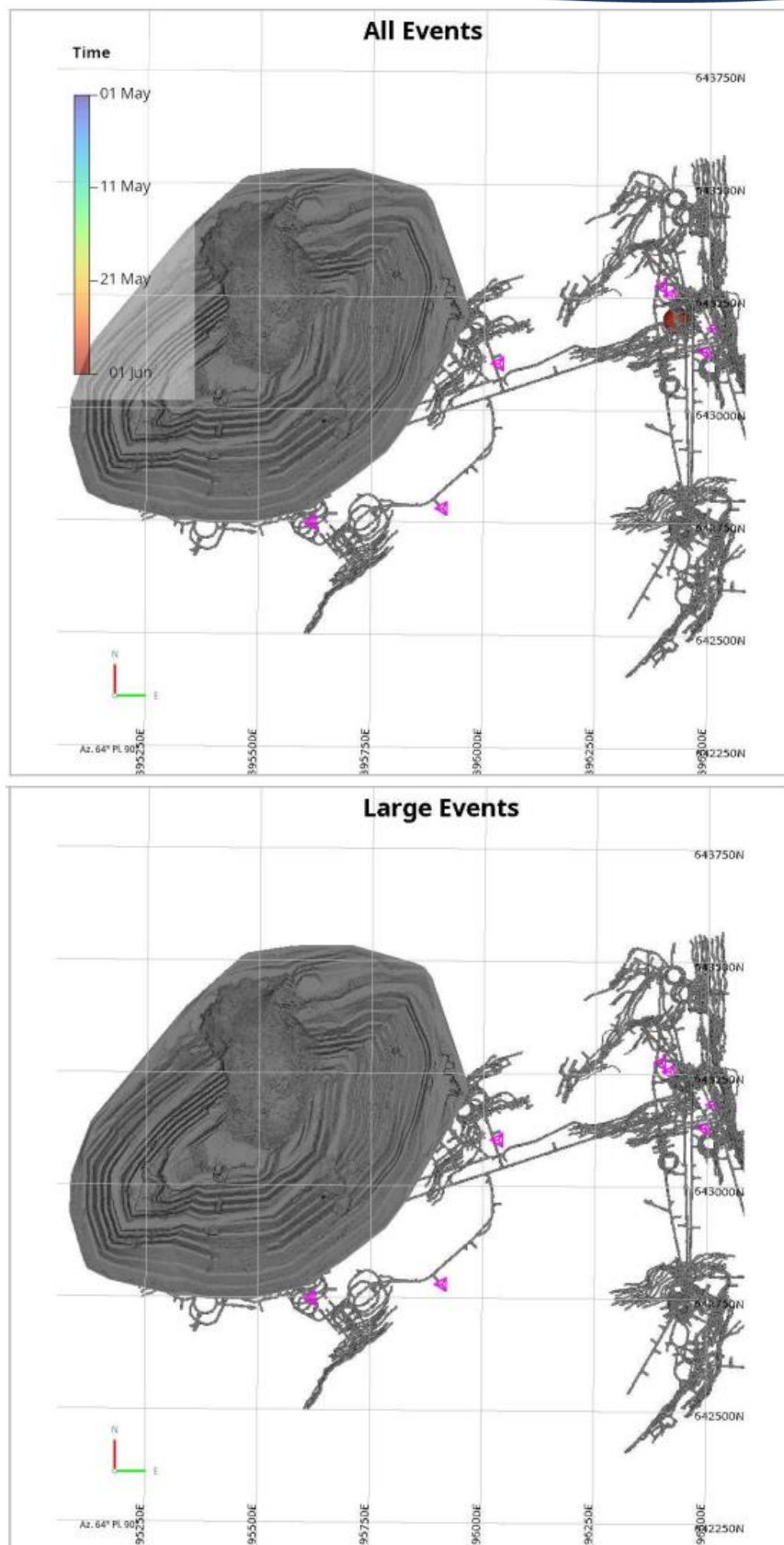


Figure 3: Plan View, Top: Normal (Location and Source) & $m_L \geq -3.0$ & number of accepted triggers ≥ 3 , Bottom: Listing of events $m > -0.5$ during May 2025.

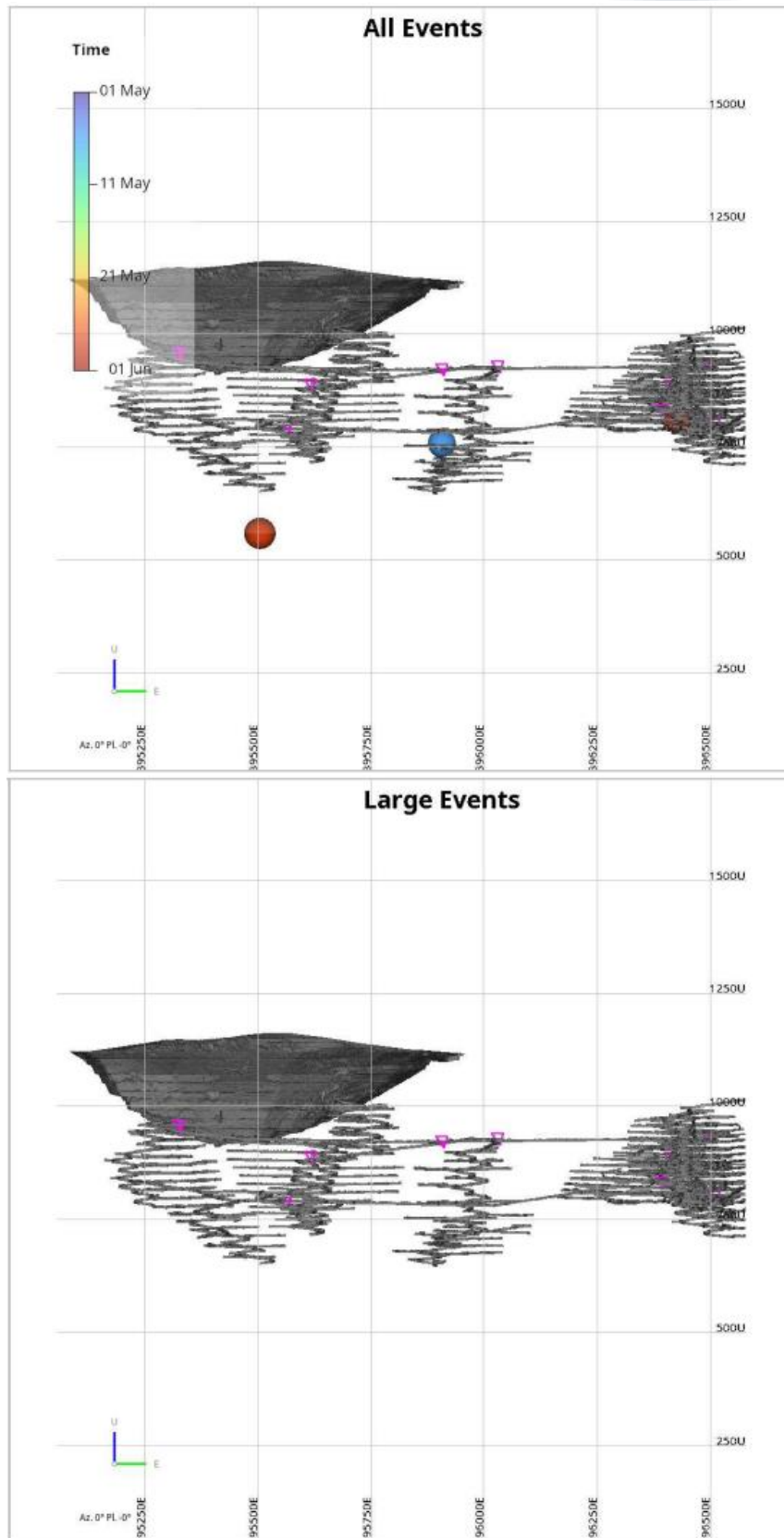


Figure 4: Looking North, Top: Normal (Location and Source) & $mL \geq -3.0$ & number of accepted triggers ≥ 3 , Bottom: Listing of events $m > -0.5$ during May 2025.

3.2 Results

There were three events recorded this month with a maximum magnitude of mL-1.8.

The health of the seismic system suffered this month with timing issues. This reduces location accuracy and performance of the system.

Number of expert processed events: total (18), normal (5), rejected (3), blasts (10), other (0).

3.2.1 Seismologist Comments

The location of blasts shows a high degree of scatter. This likely reflects a high degree of uncertainty in hypocentre location due to an inaccurate velocity model. It is recommended that an adaptive apparent velocity (AAV) model be calibrated for Waihi to improve the event locations and classification of blasts.

3.2.2 Interpretation and/or mitigation required

Recommend to arranging an online catch-up meeting to discuss the seismic system's performance, recorded seismicity, monitoring objectives, and the results presented in the report.

3 Month Event History vs Cumulative Potency is summarised below in Figure 5.

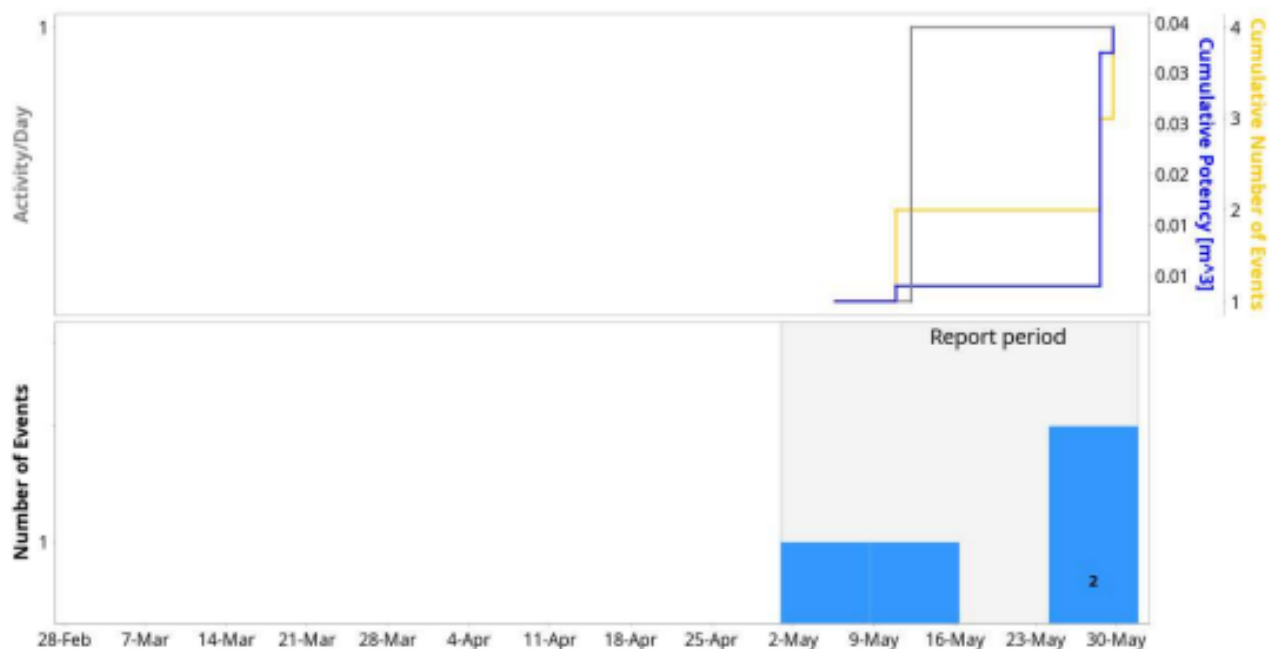


Figure 5: 3 Month Event History vs Cumulative Potency.

3.3 Extensometer Monitoring

Three extensometers installed from the surface above the REX mining area monitor crown stability and deformation. Extensometer collar locations are shown in Figures 6, 7 & 8 below.



Figure 6: Extensometer Collar Location Plan.

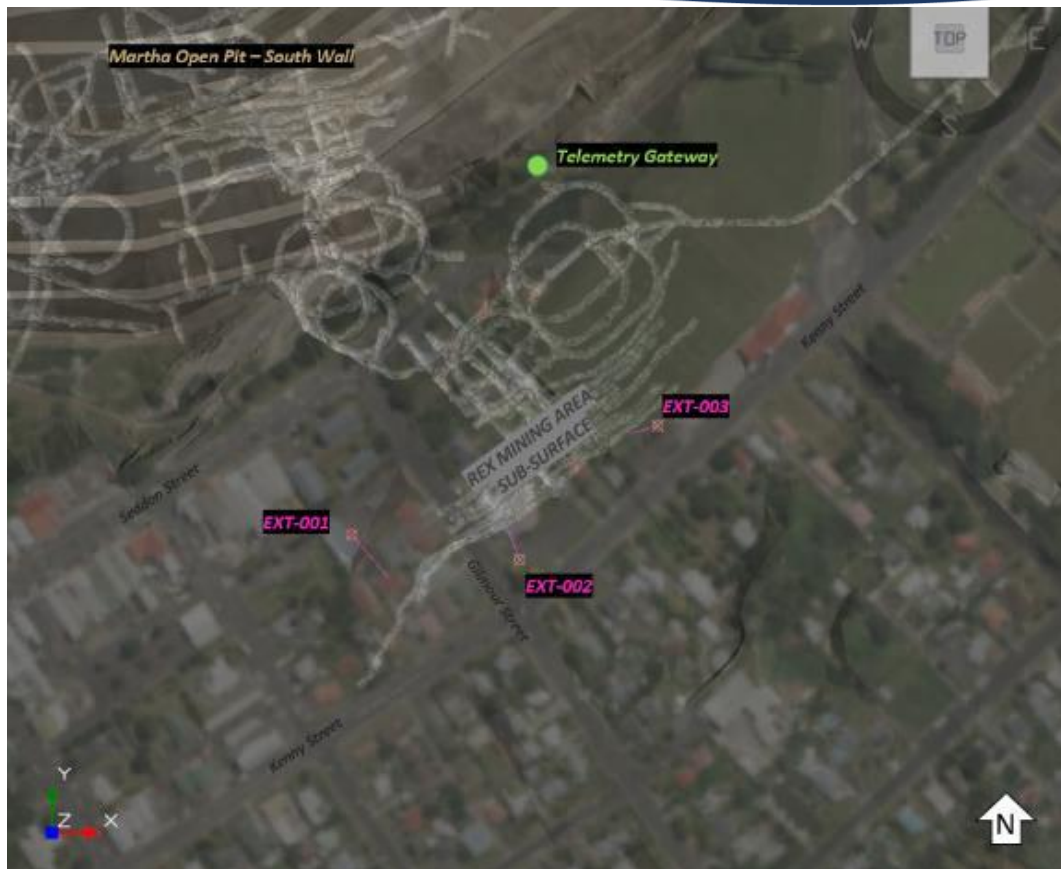


Figure 7: Extensometer Location Plan – spatial relationship to REX underground mining area.

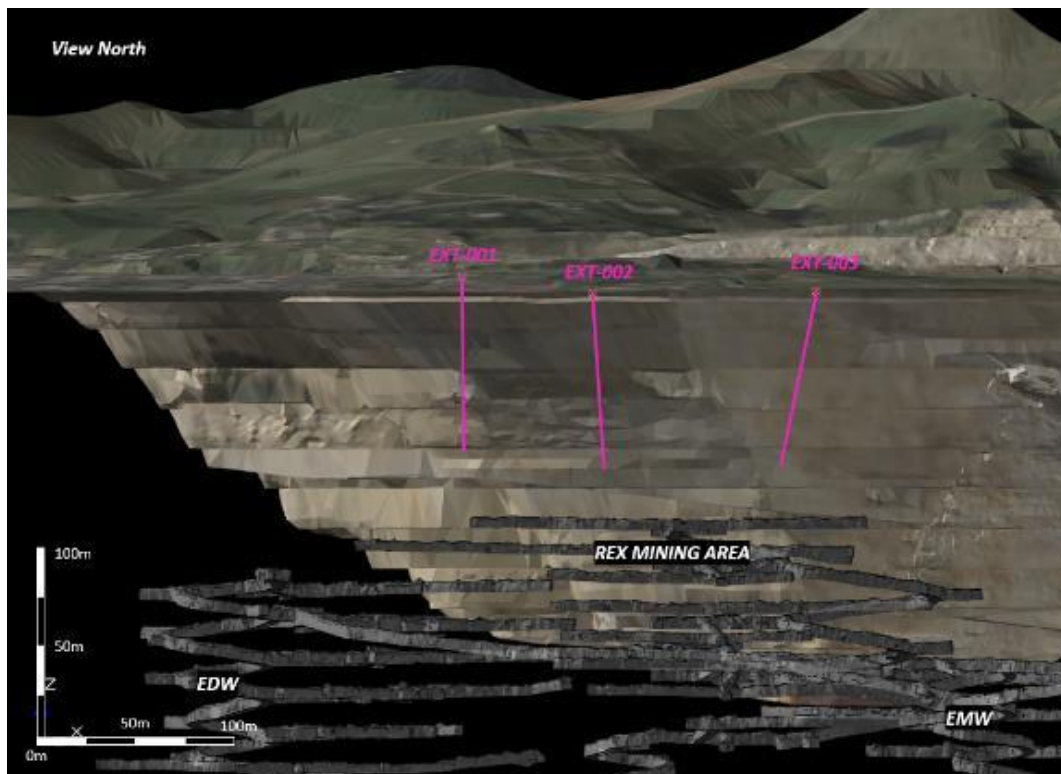


Figure 8: Cross-Section View North – highlighting REX extensometers.

3.3.1 Extensometer Results & Data

Extensometer data for May 2025 has been summarised in Figure 9 below. Results show no significant movement for the month of May and long-term trends are stable. Very slight deviation noted in EXT-003-REX 60 due to REX development. This deviation levelled out after development finished. Most likely ground settlement.



Figure 9: Displacement vs Time for REX Extensometers – May 2025.

3.4 Slough Meter Monitoring

Slough meters have been installed to monitor historic voids/pillars in the Rex Access which traverses over previously mined historic Royal stopes. Slough meters are configured to monitor the full horizontal extent of the modern development over the north-dipping historic stopes.

All slough anchors indicate no change to historic void cavity or pillar currently being monitored in the REX Access.

3.5 Short Term Operational Monitoring

Various visual indicator type monitoring devices are installed as and when required to monitor short term mining scenarios. These indicator devices include but are not limited to 'Clock-its', 'Rock-its', 'Bucket' indicator instruments.

Short term devices are primarily installed where modern development traverses historical drives and voids to allow monitoring of pillars and void crowns for short term operational safety in relation to potential void propagation prior to production being completed.

There has been no change in these visual indicator devices.

3.6 Stand-Off Distances

As per the Underground Void Management Plan (VMP), a stand-off distance from proposed stoping to the Martha open pit is to be maintained at a minimum of 40m.

During the month of May, the required stand-off distance was maintained, this includes the 20m stand-off to the milking cow zone.

4 PROBE DRILLING

4.1 SUPA Consent RC-202.2016 c.20a

Probe drilling for Correnso/SUPA is now complete.

4.2 Probe Drilling for the Month (Project Martha)

Reporting of probe drilling meters is not required by Project Martha Consent RC-202.2018 but is reported here for continuity. Total probe drilling for May 2025: 6,518 m.

5 DEFINITIONS

Term	Definition
Stope Code e.g. EDW-016-FDR-7-20	'Vein' - 'Mining level' - 'Stope type' - 'Stope length progression'
Vein EDW RYE EMW REX	Edward Royal East Empire West Rex
Mining Level	Sequential stoping levels (increasing with depth)
Stope Type ODR FDR CFR	Ore Drive Fill Drive Cut Fill Ramp
Mining Method MAS TR TRS	Modified Avoca Stoping Transverse Stoping Transverse Remnant Stoping
Fill Type CRF RF	Cemented Rock Fill Rock Fill
Other Acronyms TBD TBC N/A CALS	To Be Determined To Be Confirmed Not Applicable Cavity Auto-Scanning Laser System (CALS) Void Scanner

APPENDIX A CONSENT CONDITIONS

HDC LAND USE CONSENT No. RC-202.2012 (Correnso)

- 26 Reporting on Filled/Unfilled Stopes and Seismic Monitoring
- a) The consent holder shall report to the Council on a monthly basis on the total stope volume and volume of fill stopes for that month for each mining method employed namely: cut and fill area, transverse stope area: and all Avoca areas combined. The report shall be in a form acceptable to the Council and the data shall be for the situation at the 20th day of the reporting month. The report shall be delivered on or before the end of the calendar month covered.
 - b) The consent holder shall report to the Council on a monthly basis detailing any anomalous results from the seismic monitoring and rock movement monitoring required by Condition 23. The report shall be delivered on or before the end of the calendar month covered.

HDC LAND USE CONSENT No. RC-202.2016 (SUPA)

- 20 Reporting on Filled/Unfilled Stopes and Seismic Monitoring
- a) The consent holder shall report to the Council on a monthly basis on the total stope volume and volume of filled stopes for that month for each mining method employed. This shall include volume of voids created, the volume of fill in voids that have been created and the volume of fill in surveyed unfilled historic voids. each stope mined during the month where adjacent to an unfilled historic stope void. The report shall be delivered on or before no later than 10 working days after the end of the calendar month covered.
 - b) The consent holder shall report to the Council on a monthly basis detailing any anomalous results from the seismic monitoring and rock movement monitoring required by Condition 23. The report shall be delivered on or before the end of the calendar month covered.

HDC LAND USE CONSENT No. RC-202.2018 (Project Martha)

- 75 The consent holder shall report to the Council on a monthly basis on the total stope volume and volume of filled stopes for that month for each mining method employed. This shall include the volume of voids created, the volume of fill in voids that have been created and the volume of fill in surveyed unfilled historic voids (including the volume of fill up to 30 m below the toe of the Phase 4 Cutback). The report shall be in a form acceptable to the Council and the data shall be for the situation as at the 20th day of the reporting month. The report shall be delivered no later than 10 working days after the end of the calendar month covered.

The consent holder shall report to the Council on a monthly basis detailing any anomalous results from the seismic monitoring and rock movement monitoring required by Condition 71. The report shall also report against the stand-off distances specified within the Void Management Plan required by Condition 72 (where applicable). The report shall be delivered no later than 10 working days after the end of the calendar month covered.

Note: Mining statistics are already recorded on a calendar month basis. For practicality and consistency, it was agreed that the reporting above would be for monitoring during the calendar months and the situation at the end of the month.