



EKAPA

890 Flood/Mud Rush

17 Feb 2026

Learnings from the Recovery

3 September 26

Minerals Council Mud Rush Day Of Learning



Content of Presentation

1. In memory
2. 890ml and event summary
3. Recovery summary
4. Key issues & learnings from the recovery
5. Suggested improvements
6. DMPR & inquiry
7. Gratitude and acknowledgment

1. In memory



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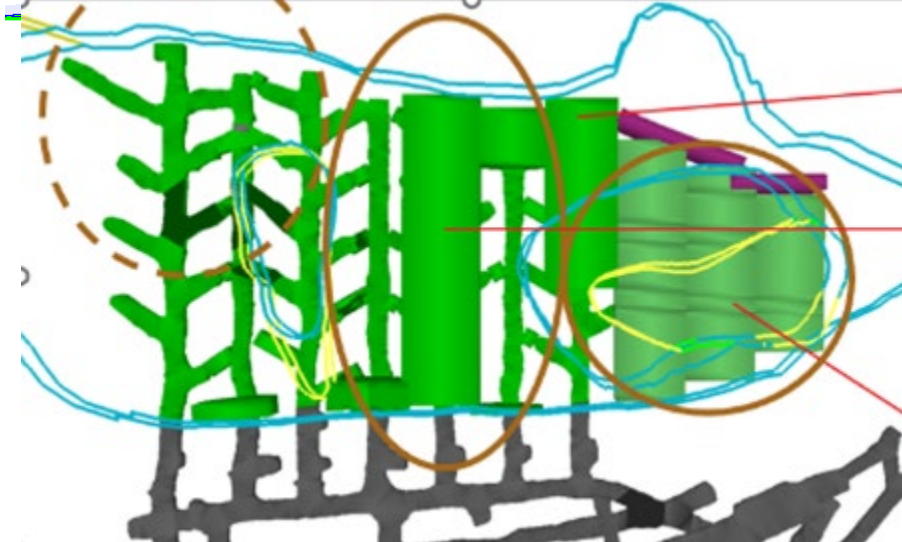
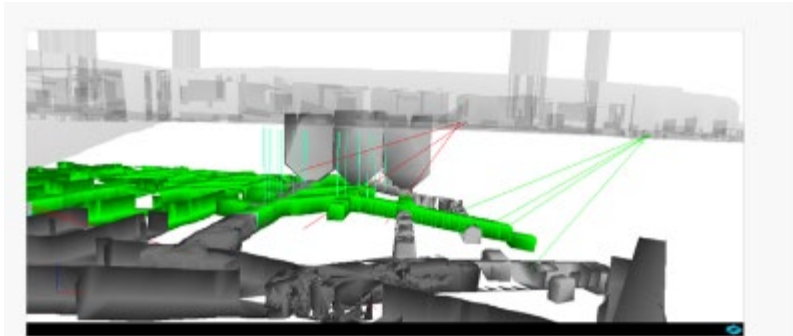
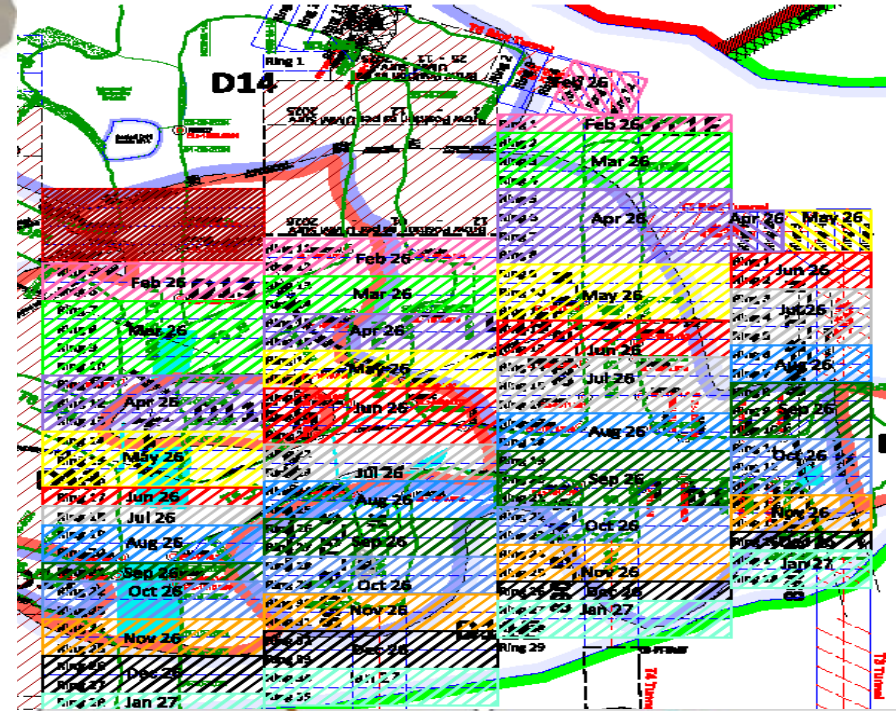
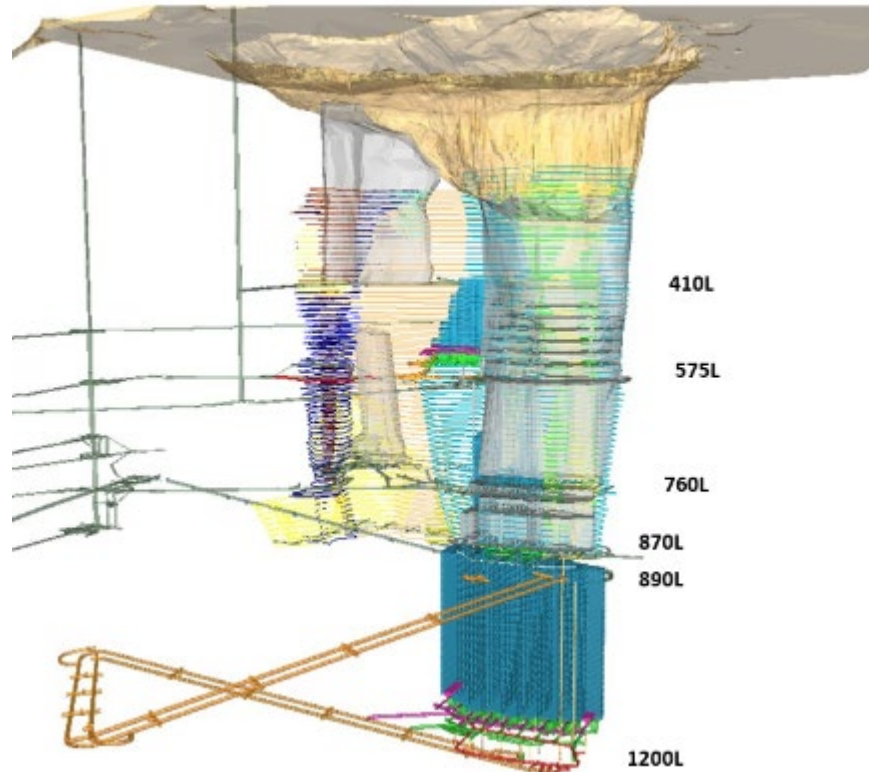
2. Water and Mud Rush Add Projects-2019

1. **Surface Boreholes** - Drilling/Deepening and equipping 95 new boreholes on surface – ring around the pits
2. **SAP** - Throwing SAP and Bentolite in Du Toitspan Pit
3. **Lower DTP Pan Level** – Lower level, diverting water away, graveyard bypass and then Cassandra trench bypass
4. **Drain 580** - Dewatering Drilling on 580 and draining – HPE
5. **Camera & Alarms** - Camera and technology onto key Pumps & infrastructure
6. **Water management** – respond to breakdowns & dedicated resources – data & recording all pumping and accurate records
7. **Pit bottom Analysis** - Drone flights of pits, monthly and post high rain fall events
8. **DuT pit dams** - 5 dams and pumps inside DuT pit, built to catch surface run off
9. **Water tunnel** – rehab and inspections, dedicated crews
10. **Old levels** - Old level inspections, more effective and controlled
11. **Pump philosophy** - Change pump philosophy measure on trial and revert
12. **Dewater 890** – drain holes to 870 old sample tunnel and drain 870 sample level
13. Water sample and analysis
14. **Discussion EX UG managers**
15. Investigating old caves and events
16. Keep dewatering 870 drift 1 and 2



2. 890m design and background

1. Du Toitspan Pipe
2. Mining Start 1869
 1. First c180m dug by hand
 2. Then Chambering and 4 levels of caves
3. 890m level
4. Ring retreats T6 to T3
 1. Started production in Oct 2025
 2. Around 50 000 of plan 256 000 tons mined
5. Underneath 4 previous caves
 1. 410
 2. 575
 3. 760
 4. 870



2. 890m status just prior accident

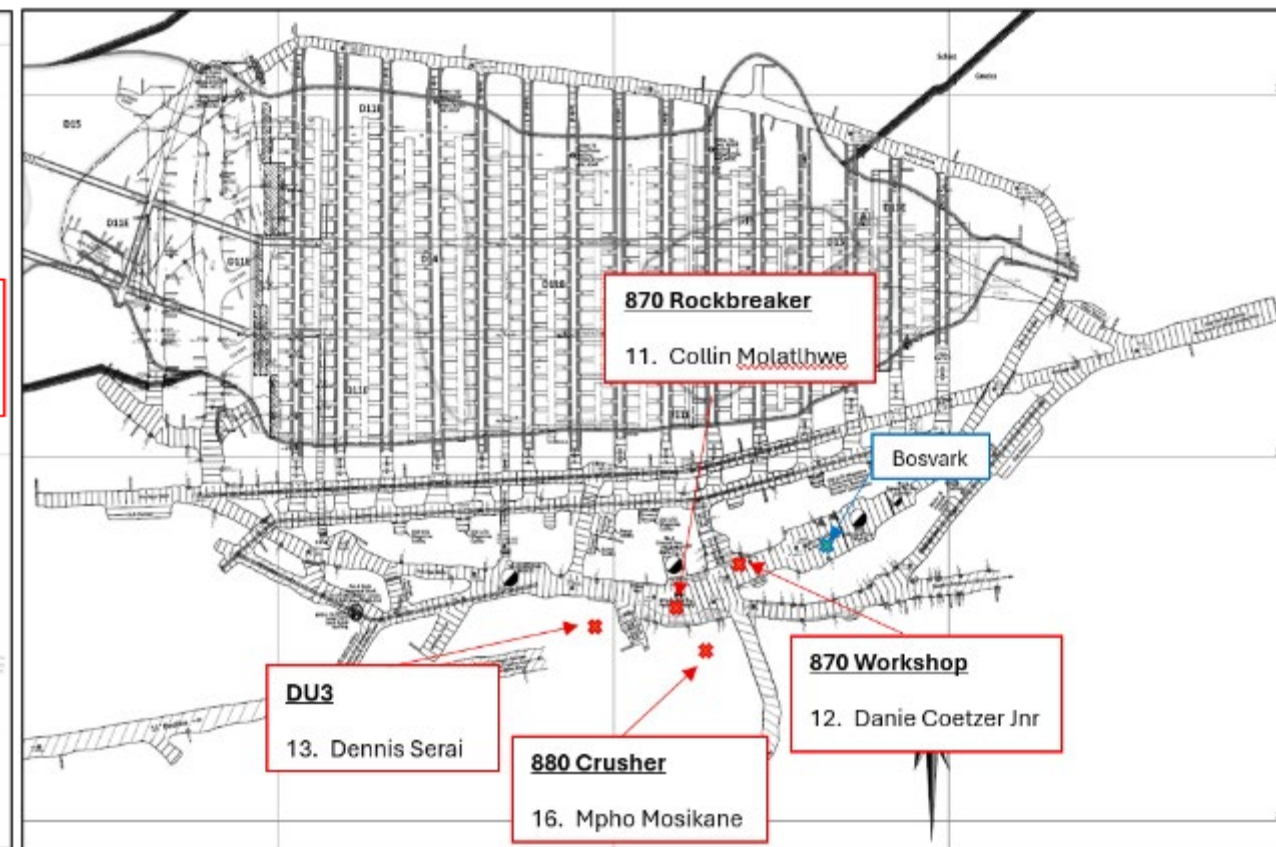
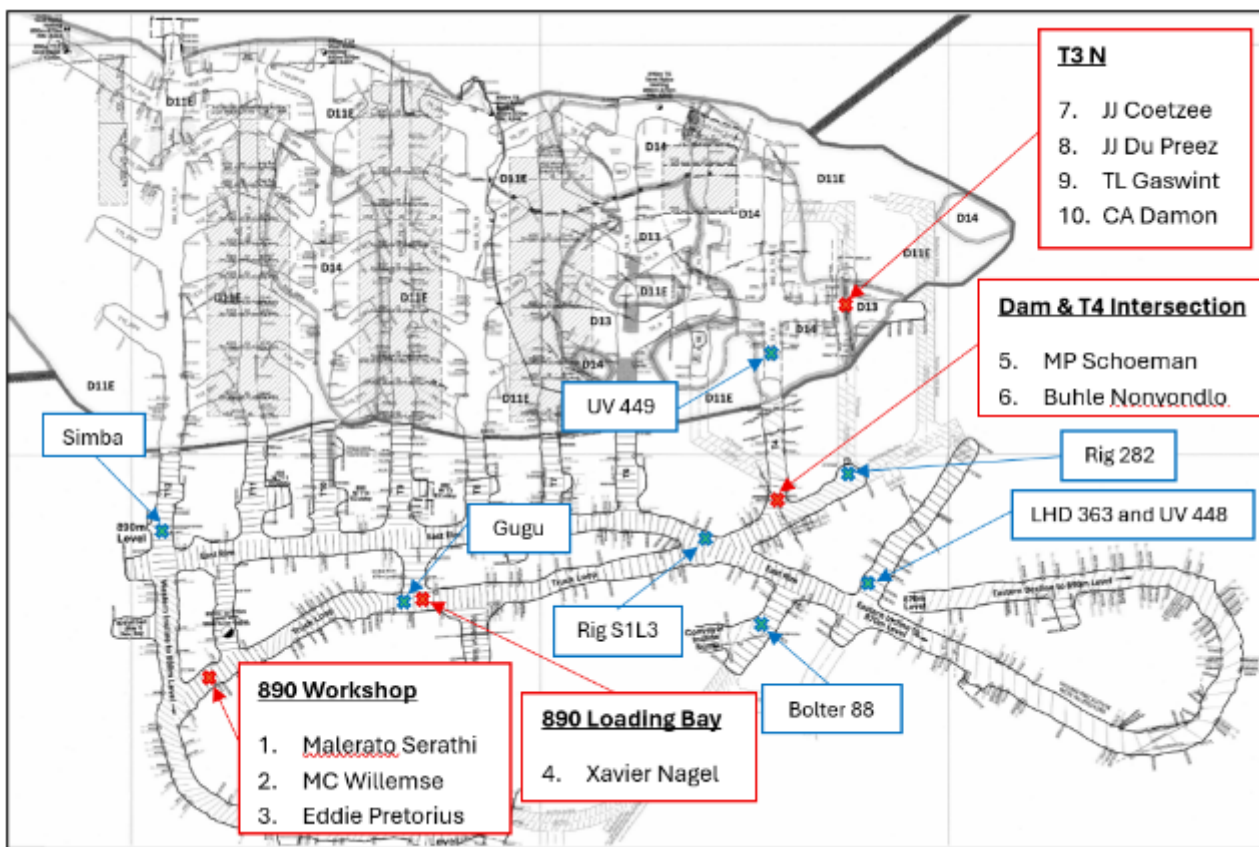
Shift 1

Location of 14 UMM employees
at the time of the event

17 February 2026

890mL

870mL



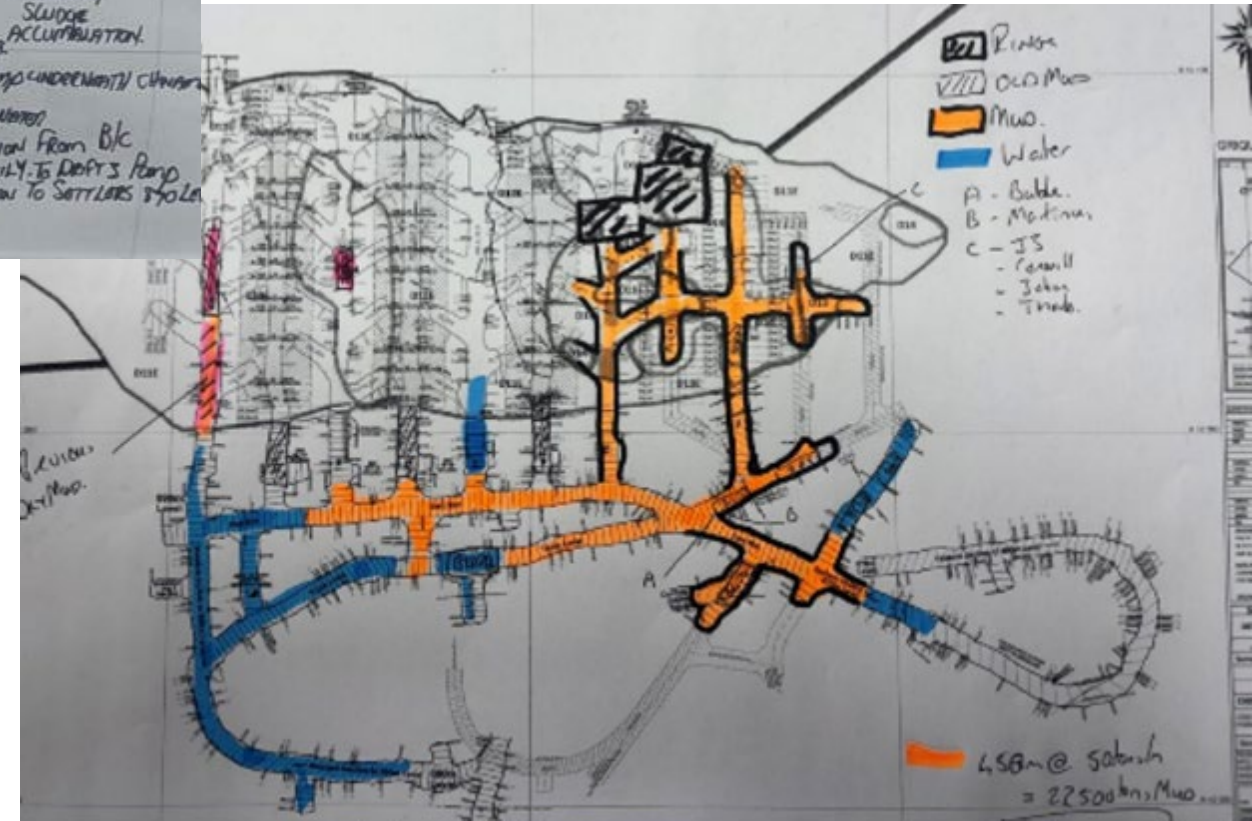
1. Loading T6 and T5 rings as Pillar retreat, development blast T3N
2. ST14 on charge
3. All dry and kimberlite in drawpoints
4. No warnings

2. Event Summary

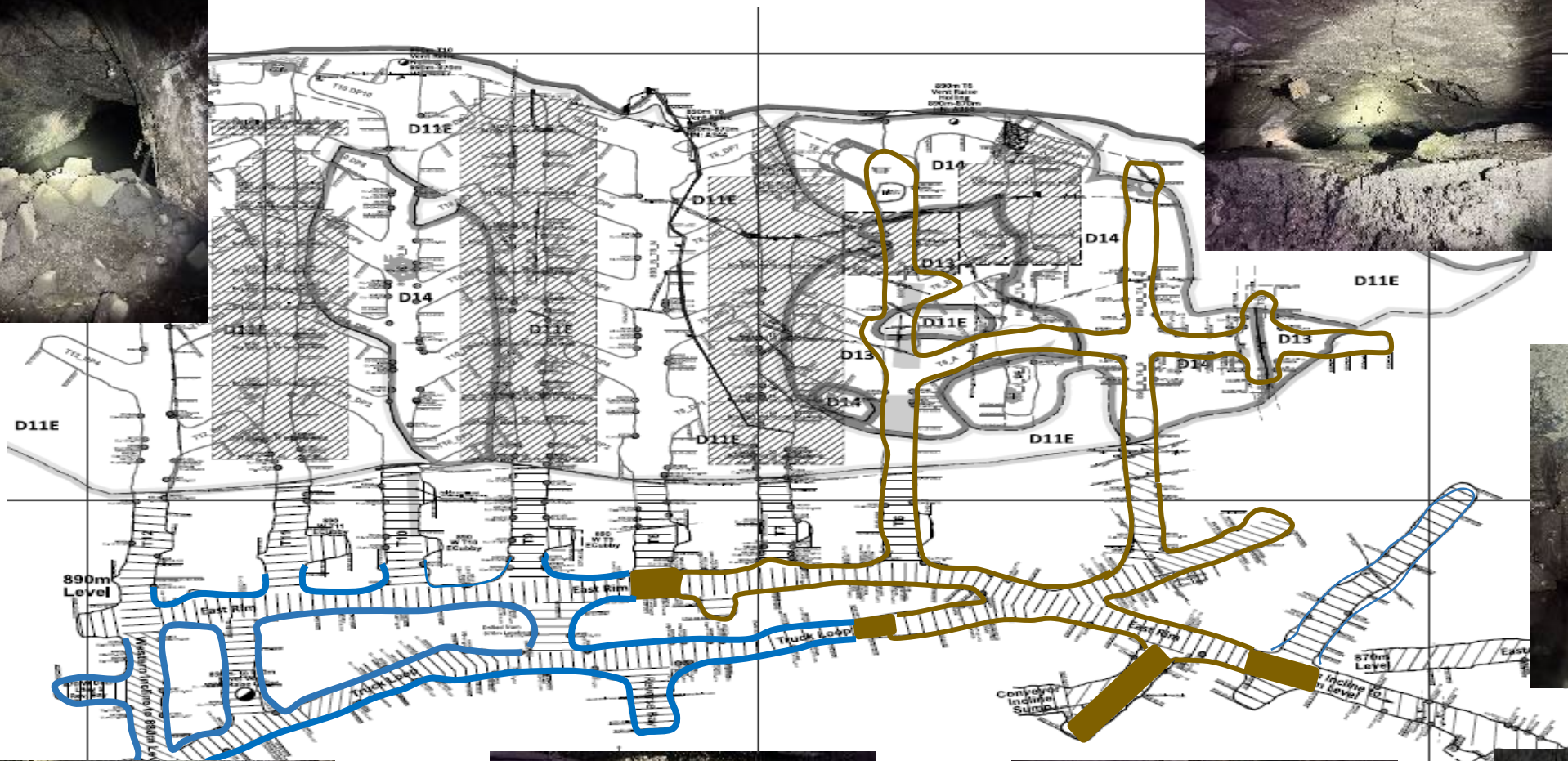
1. 17 Feb 2026 - 00h52 am
2. Airblast followed by flooding, rock and mud
3. Very large Ventersdorp Lava rocks (70% waste rock)
4. Power, comms, RAW, Pump station, CA, water line all knocked out
5. UV moved 80m and torn in 2
6. 3 drill rigs destroyed
7. Second rush of water after loading 180 tons
8. 450m of tunnels filled 9000 m³ Rock/mud
 1. 305m reopened to recover
9. 48 417m³ additional water until recovery 23 March
 1. Water still coming 150m³ per day as at 25 June



2. 870/890 – Point of Accident

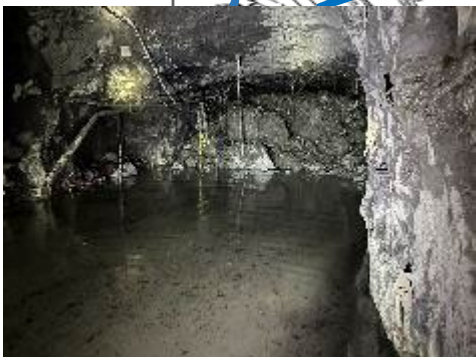


2. 890 – Point of Accident



Legend

- Assumption of Mud
- Mud up to Hanging Wall
- Water & Mud



2. Event – 00h52 at 890 Tipping ramp



2. Event – Post event at Eastern rimT12



2. Event – 07h00 in 890



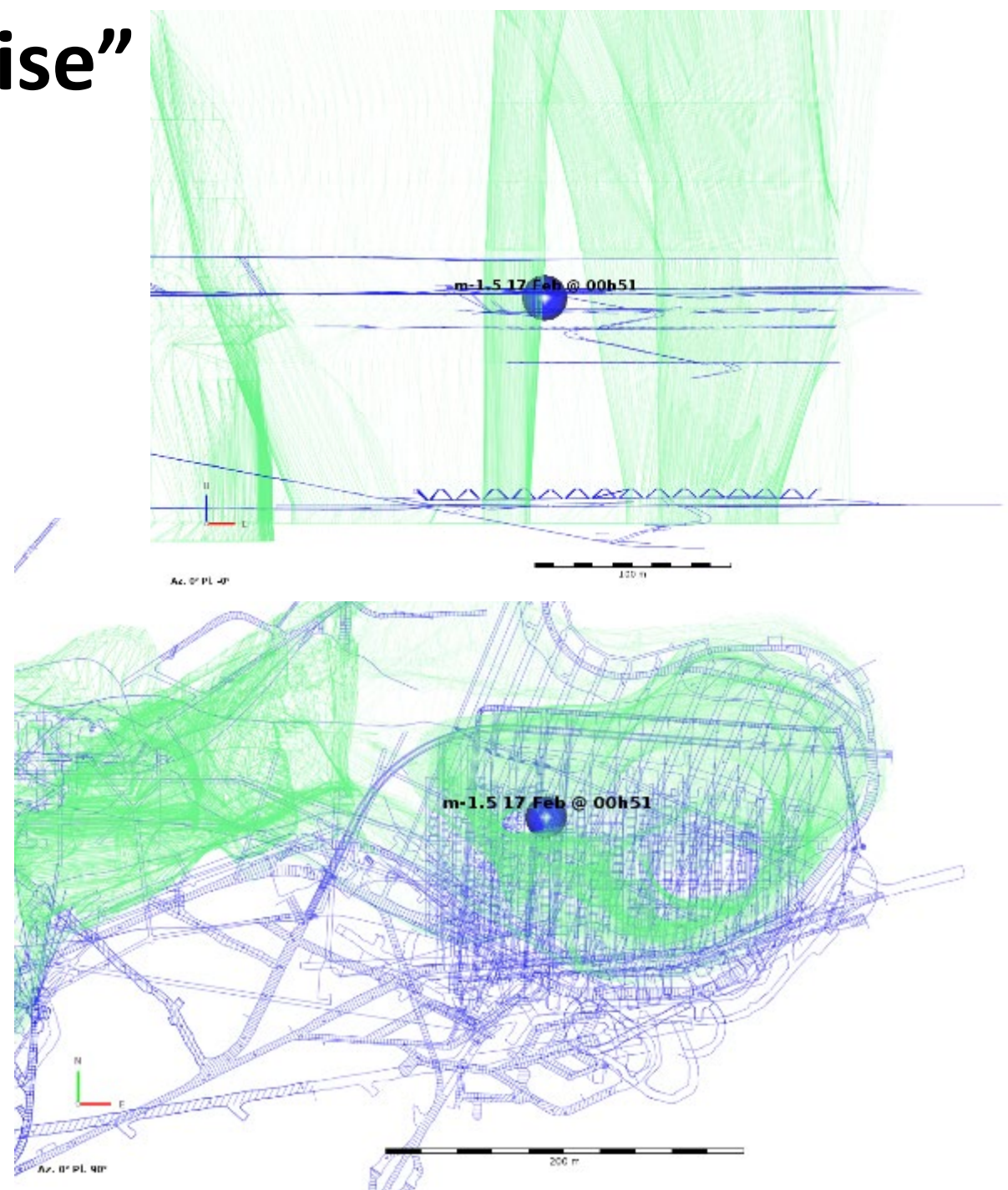
2. Post Event – Water mud and level monitor



2. “Seismic noise”

Event

- Seismic system installed for NWC picked up noise at this location at time of event? (is this the event, or as a result of it?)
- No other noise picked up by seismic system

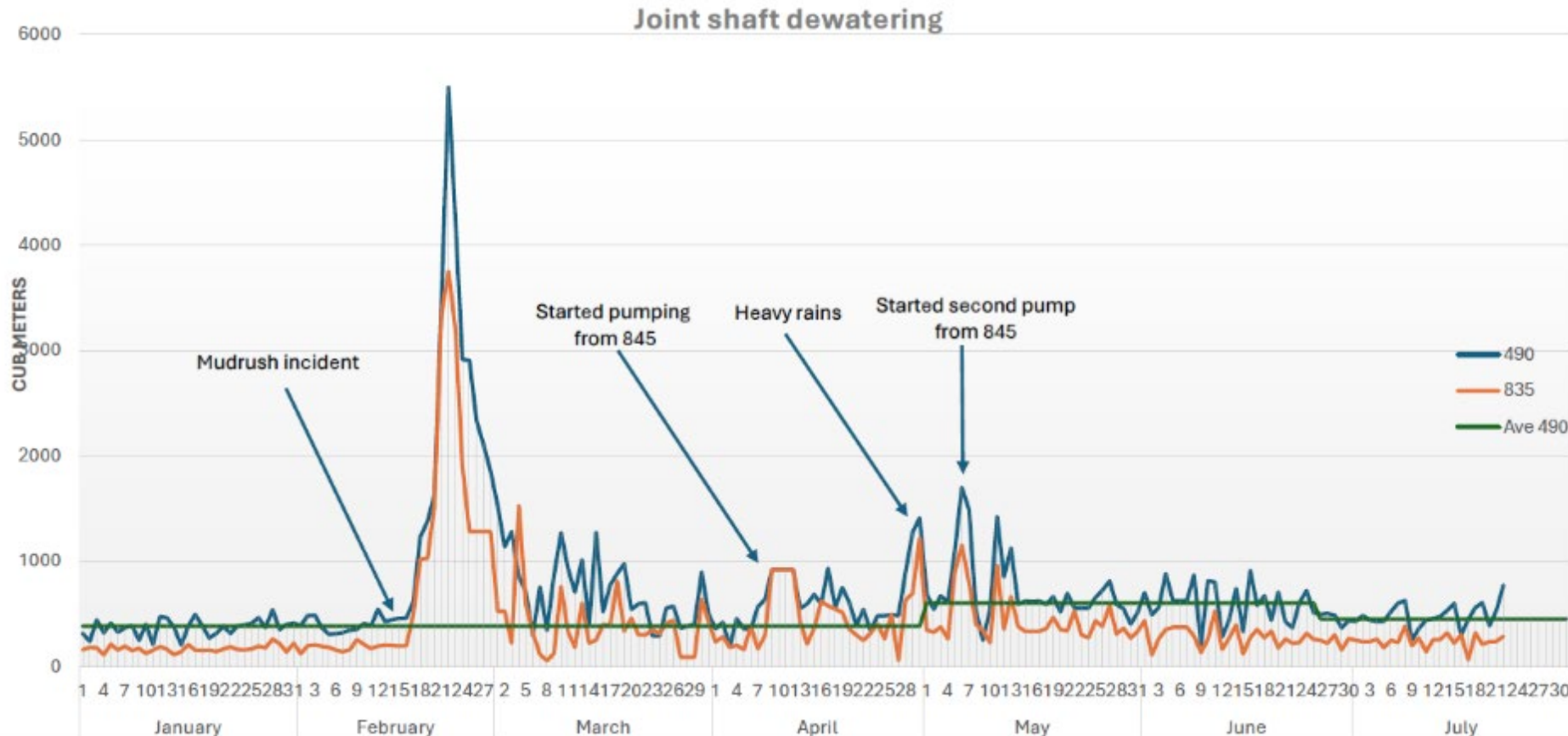


2. Event Summary – why analysis

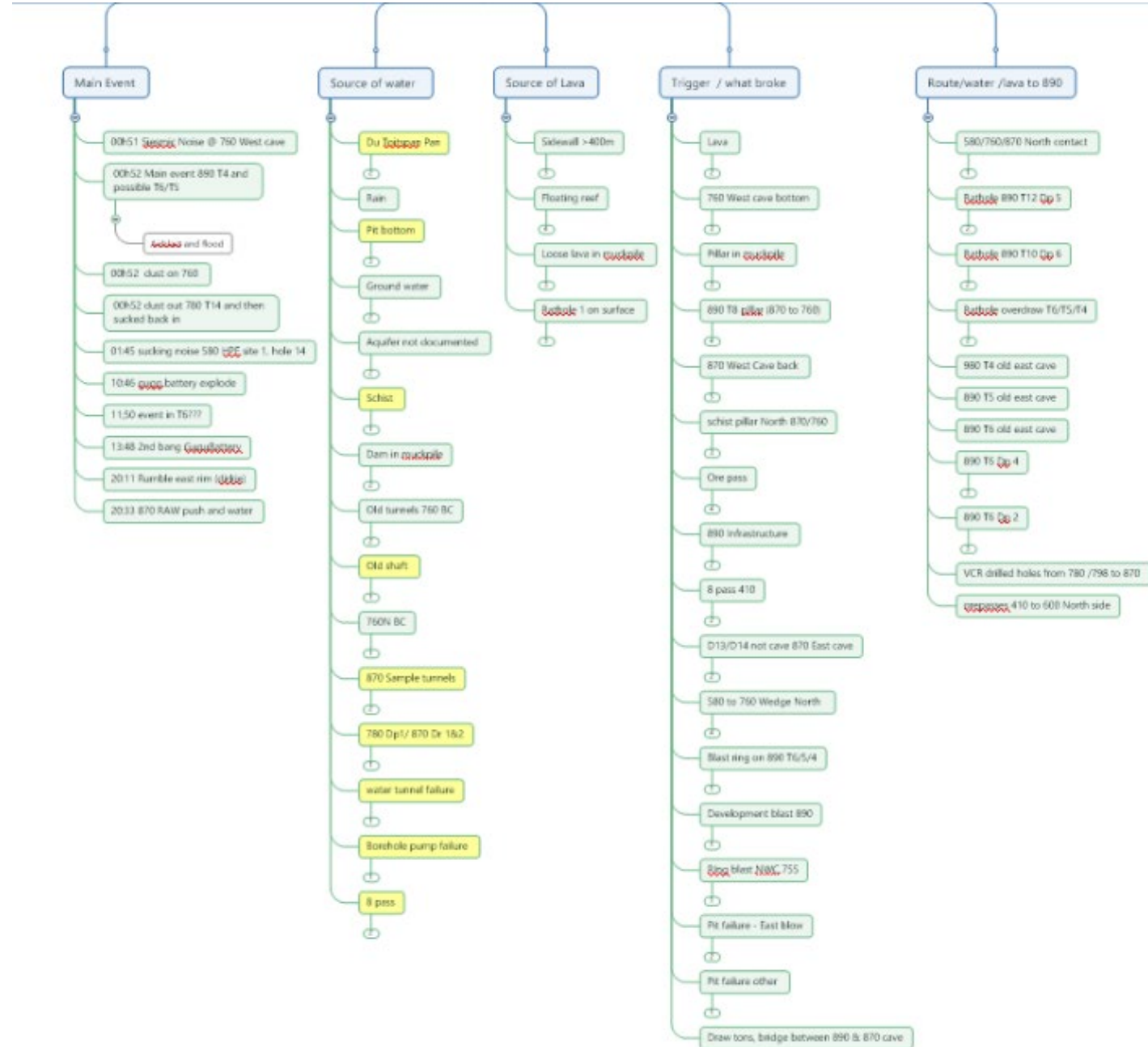
Unanswered questions as we stand

1. Source of the additional water?
2. Source lava into the cave ?
3. What broke & where?
4. Route to 890 tunnels

Scenario	1	2	3
	Blasted footprint void up	50% blasted footprint cave	Only IDZ cave up
Description			
m2 footprint	500	250	178
m3 come out	70 000	70 000	70 000
Height rock water	140	280	393
Bottom void	10	10	10
mid void	20	40	56
top of void	100	100	100
Break point low	880	880	880
Break point high	790	790	790
Top of event Max	650	510	397
Top of event Min	740	600	487
AOI Max	290	60	343
AOI Min	515	165	118



2. Event Summary – why analysis



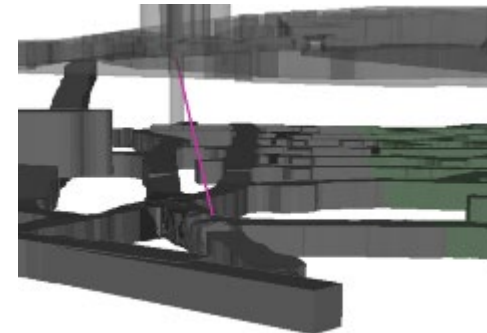
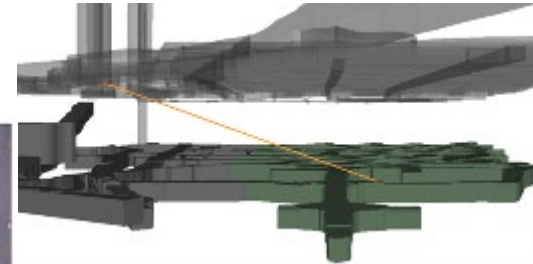
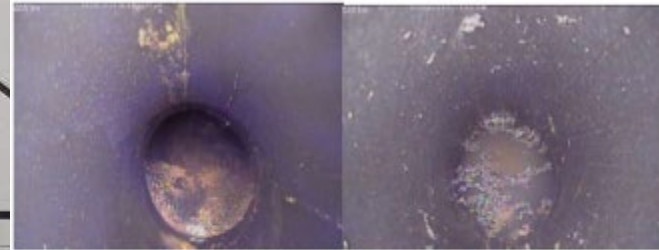
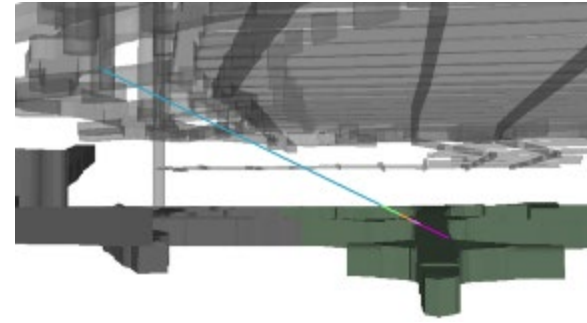
3. Recovery Summary

1. Reporting/in-loco
 1. Mud rush alarm - 1 mins
 2. Report CCR - 4 mins
 3. Rollcall and gather (confirm 5 missing) - 4 mins
 4. Mgmt and Proto on site - 46 mins
 5. Shaft cleared - 2hrs 22
2. ECR and MRS
 1. 78 teams rotations by 15 different teams
 2. 485 proto team members
 3. 14155 hours of proto work
3. Drilling
 1. 5 Holes
 2. 233m drilling
 3. Complete by sat 21 Feb
 4. Confirm no air pockets or sign of life
4. Pumping/power
 1. 31 add pumps installed/ replaced
 2. 2 add drain column lines 870 to 760
 3. 48 417 m³ additional water pumped till recovery
 4. Power re routed, re connected for 890/870 levels
5. Loading
 1. 1883 loads – 17 578 tons
 2. 5 machines (non left standing)
 3. 305m tunnel re-opened



3. Recovery - Drilling

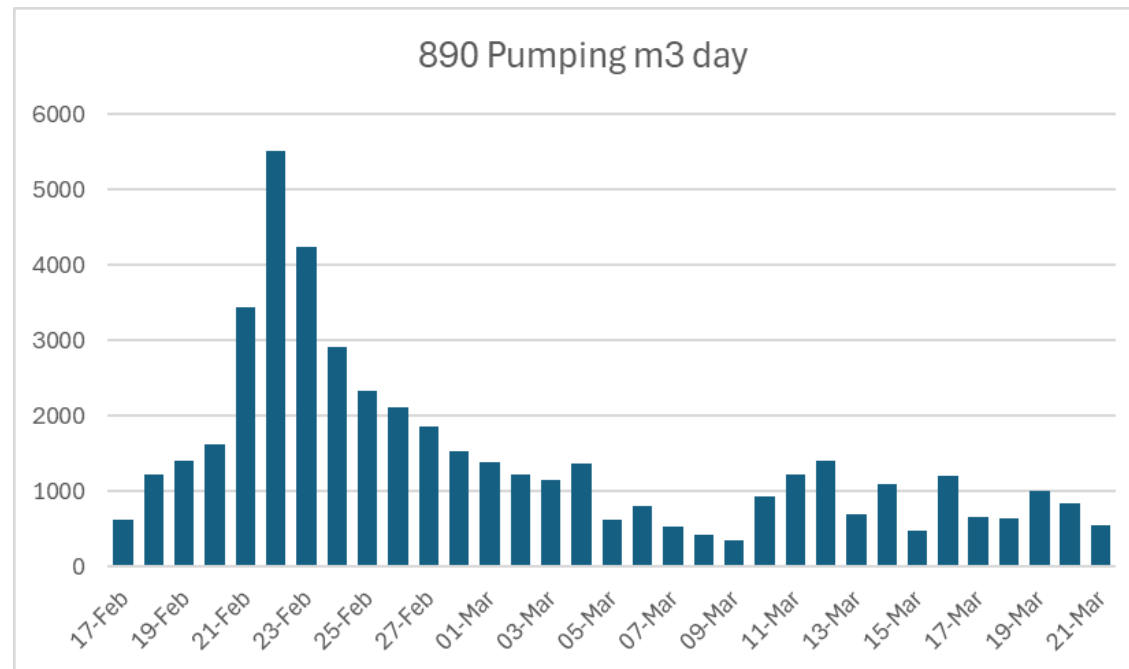
			day 1	day 2	day 3	day 4	day 5	day 6
			17-Feb-26	18-Feb-26	19-Feb-26	20-Feb-26	21-Feb-26	22-Feb-26
			Tues	Weds	Thurs	Fri	Sat	Sun
DRILLING	HOLE 1	46,5						
	HOLE 5 a	22						
	HOLE 5 b	22						
	PINK HOLE	50,7						
	HOLE 5 c	26						
	GREEN HOLE	66,5						
		233,7						



3. Recovery - Pumping

1. Normally 300m³ day
2. Add pumps east and west
3. Add pumps 870 to 835 and out
4. 48 417m³ as at 04h00 on 23 March

			17-Feb-26	18-Feb-26	19-Feb-26	20-Feb-26	21-Feb-26
			Tues	Weds	Thurs	Fri	Sat
PUMPING	W1 - 8kw (second pipelines0						
	W2 - 8kw						
	W3 kw - 8 Kw						
	W20kw from wesselton						
	E1 10 Kw						
	E2 - 10kw						
	E3 - 10kw						
	870 90kw 1						
	870 90kw 2						
	870 90kw 3						
	870 workshop 8KW						
	870 drift 3 - KW8						
	10Kw						
	GRANNY 30 Kw						
	install 835kw from wessels						



3. Post Event – Water Pumping

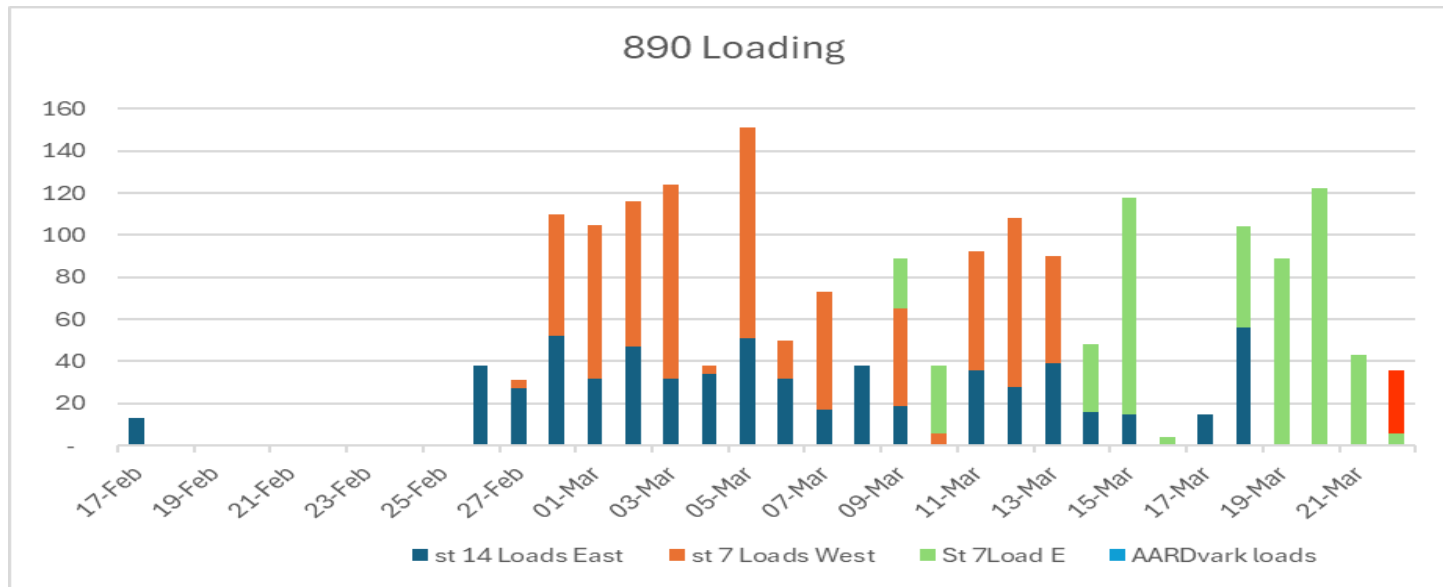


3. Post Event – Water Pumping

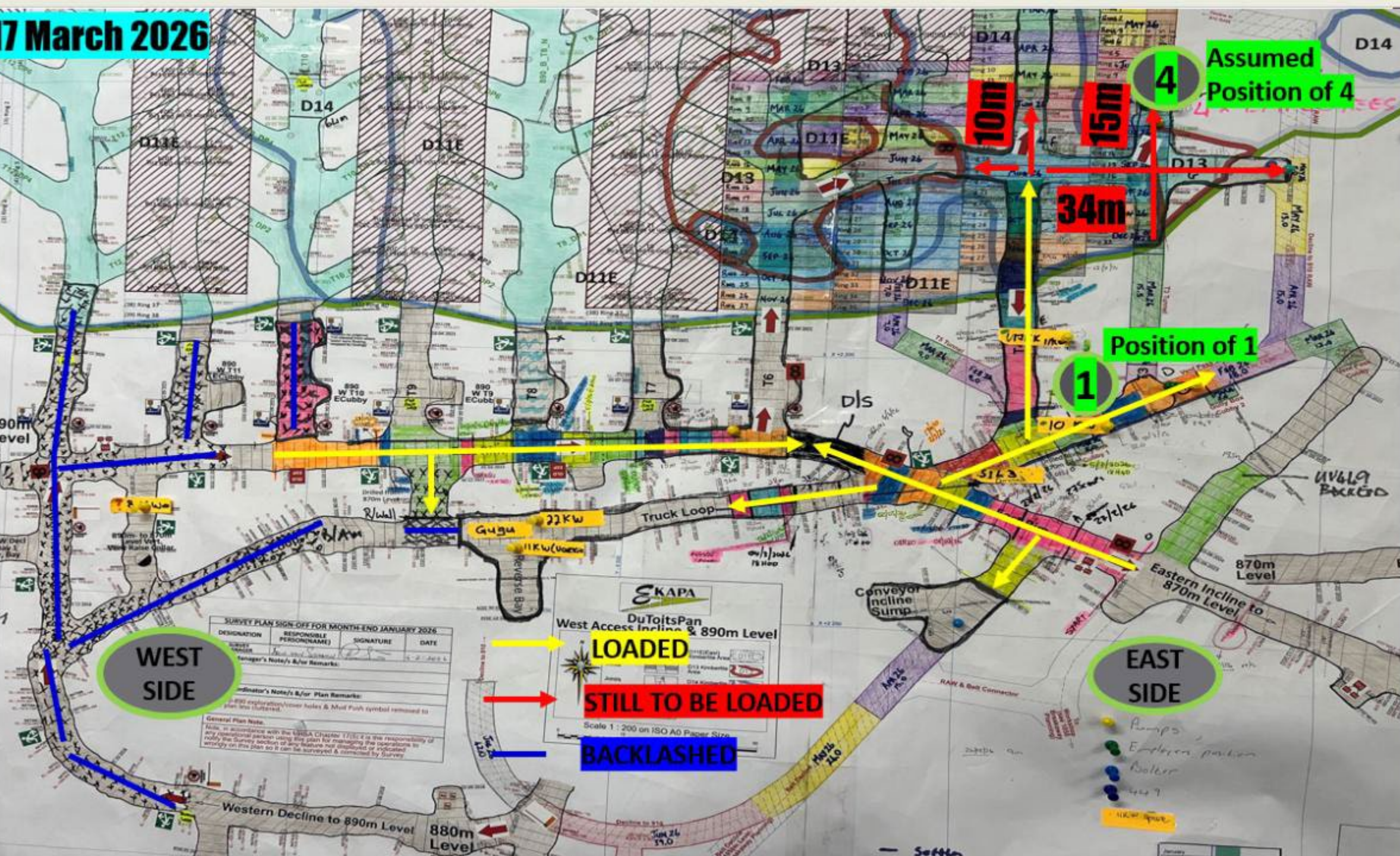


3. Loading

1. Loaded 17 578 tons
2. Re-Opened 305m development tunnels
3. Tunnels all intact which we could access
4. Started loading with ST14 on East
5. Started loading with ST7 on West
6. Backlash space an issued until whole west
7. Used ST7 East, ST14 not fit around corner, after “drowning” 2 ST7 , Completed with Aard on face.
8. Water – fluctuate and not stop, every time stopped water increased
9. Big rocks – encountered, mostly Lava, some so big required blasting



7 March 2026



3. Loading



1. Large rocks in muckpile
2. "Temp" dam at Gugu
3. Back half of 282 drill rig
4. Change tyres on Bosvark



3. Loading



3. Recovery Summary

1. Miner 1 – 9 March 12h48 21 Days
 1. Around 30m from last known position moved by water/mud
2. Miner 2 – 22 March 01h35 34 days
 1. At last known location with Miner 3
3. Miner 3 – 22 March 01h35 34 days
 1. At last known location with Miner 2
4. Miner 4 – 23 March 02h00 35 days
 1. At last known location with Miner 5
5. Miner 5 – 23 March 02h08 35 days
 1. At last known location with Miner 4



4. Some Key Issues in Recovery

1. All power and comms tripped
2. Fire on Gugu
 1. BEV Batteries in water, 24 hours of fumes
3. Unknown ahead of us will there be another event, Once we start to load and loosen up
4. Explosives in charged end, how far did team get
 1. Connected??
5. Mid month measuring, where was the actual face
6. 2ndry blasting big rocks
 1. Source explosives, miner to blast
7. Removal of TMM especially drill rigs in the muckpile / the face
 1. cutting, or blasting
 2. pulling out
8. Mud in water, settlers, pipe lines, pumps
9. Temp Dam burst 890
10. TMM breakdown (flooding/heat)
 1. Spares/ Diesel
 2. Workshop tools
11. TMM keys
 1. Missing/ lost
 2. Taken home
12. TMM available
 1. One LDV broken by 4 times
 2. Only one for all logistics
13. Flat tyres (ST14 with chains)
 1. Replace off site
 2. Chains to be removed and reinstalled
14. Ramp wet and muddy
 1. No TMM travel
 2. Drag tyres
15. Hoisting mud/ backlash space
 1. Choke ground handle system
 2. All space used up
 3. Proto members check each load prior tip
16. TMM components tipped into crusher
17. Secondary Flooding 870
18. 490 Main shaft dam overflow
19. Service water – cut off,
 1. not wash machines,
 2. proto members
20. Compressed Air also cut in event
21. Backlashing make 870 muddy, down ramp, no TMM go up
22. Our Proto team
 1. Capt offered job,
 2. Had to dissolve team
 3. Still not paid!
23. Liquidation !!!!



4. Learnings from Recovery

1. **People tracking - power and comms go, LKL becomes guess work, tech wiped out**
 1. Post event could have moved anywhere, TMM moved 80m by event!
 2. Training what to do, versus instinct (2nd escape or development end)
2. **Recording all said in ECR and decision register**
 1. Hand written real issue to interpret later
"Proto relieve themselves Ester taking samples"
 2. Document and sign daily
 3. Operational decisions, risk assessments, and actions must be traceable.
 4. Create a central incident documentation Storage/ system
 5. CCR phone recordings very useful
3. **Record and understand changes made UG**
 1. Pumps, power connections, water levels, loading face advance
 2. Photos and video
 3. Power/pumping reticulation – record of changes
 4. Operation, maintenance, spares, keys
 5. Capture lessons learnt and issues
4. **Emergency Control Room**
 1. All decisions and update
 2. Sets of plans – 18 different teams
 3. Update as progress ! No survey ! Plot on board
5. **Manning ECR – training, skills, knowledge whole mine, fatigue**
 1. 387 hours worked in 35 days
 2. Rotation and relief, impact in rest of operations
 3. Engineering & logistics part of ECR



4. Learnings from Recovery

6. TMM

1. Operation & operators – licences
2. Spares availability and tools
3. Maintenance & skills
4. Key control

7. Family and Media

1. A dedicated resources pre briefed for media
2. Separate resources for family – daily detailed comms at least
3. Bring into ECR (risky but worked in this case, UMM a family and good understand mining)

8. Recovery objectives should balance urgency with safety

1. Pressure during rescue/recovery operations can create additional risks.(DMPR)
2. Maintain a safety-first approach throughout recovery activities.
3. Proto captain on the face, has to be able to make call, needs support

9. Stakeholder & Underground Visit Management:

1. Numerous stakeholders visited the operation during the rescue and recovery period & requested access to the underground incident area.
2. During rescue and recovery operations, underground access should be based on operational necessity, not stakeholder interest:
3. Minimize exposure of non-essential personnel to underground risks.
4. Prevent potential disruption to recovery activities

10. Install Independent Emergency Communications

1. Current systems failed for 15 hours with power loss – no communication between ECR and UG during this time.
2. Implement: Battery-backed communication systems.



5. Suggested Improvements

1. **Emergency Fund - Recovery (This one cost north of R20mil)**
 1. All mines contribute to a fund
 2. MC /MRS – Managed
2. **MRS control room training – Compulsory**
 1. Managers/ MO / Engineers and GES
 2. Do training at mine site, part of audit evaluation
 3. Do simulations, what if scenarios?
3. **Technical Team/Advice/Assessment – Impartial Experts to assist**
 1. To date not one question asked?
 2. No real meaningful data gathered
 3. Fear “inquiry” vs learn industry – to prevent repeat
4. **Counselling to all**
 1. Proto team members – especially those who directly “recover”
 2. Team on shift of incident – especially key witnesses & line management
 3. Management & volunteers
5. **Personal/ profession cover vs liability for Legal Appointees**
 1. Lonely and scary place
 2. Fewer and fewer professional prepared to take appointment



6. DMPR – Data & Sect 65 Inquiry

1. Present whole recovery – for what purpose
 1. Minister of MPR – 3 times
 2. CIOM – Most Days per week
 3. PI and SIOM – Daily
2. Portfolio committee
 1. Session ½ day 10 March – full of accusations
3. Continual pressure to speed up
4. No Instructions issued to date
5. No real meaningful data collection
6. 11.5 submitted – no response/ feedback
7. Sect 64 report – understand complete but has not been shared
8. Sect 65 Inquiry
 1. Call on 22 June to request a date to start

7. Gratitude & Acknowledgement

1. Emergency control room team

1. My team committed through uncertainty (Moshe, Chris, Kobus)
2. Black Rock for sending relief team for a weekend

2. MRS & Proto teams

1. Dedication and support unbelievable to witness in action
2. MRS management
3. Each Proto team and member (78 teams)
4. Each mine cover own team costs

3. Minerals Council and Mining industry

1. Financial contribution
2. Offer support & advice
3. Pumps – sorry have not been able to return most

4. Local community

1. All meals and drinks for rescue teams
2. Regular prayer sessions and check in's

5. UMM

1. Individuals volunteer way beyond expectations

6. Ekapa teams

1. Volunteer in uncertainty of liquidation





Thank you

