



Highwall Rockfall Incident: Excavator Operator Injury

28 July 2024 | North Pit, Section A

This safety alert details a serious rockfall incident that occurred following blasting operations. The event highlights critical safety considerations for operations near highwalls, particularly after blasting and during periods of heavy rainfall.

What Happened

1



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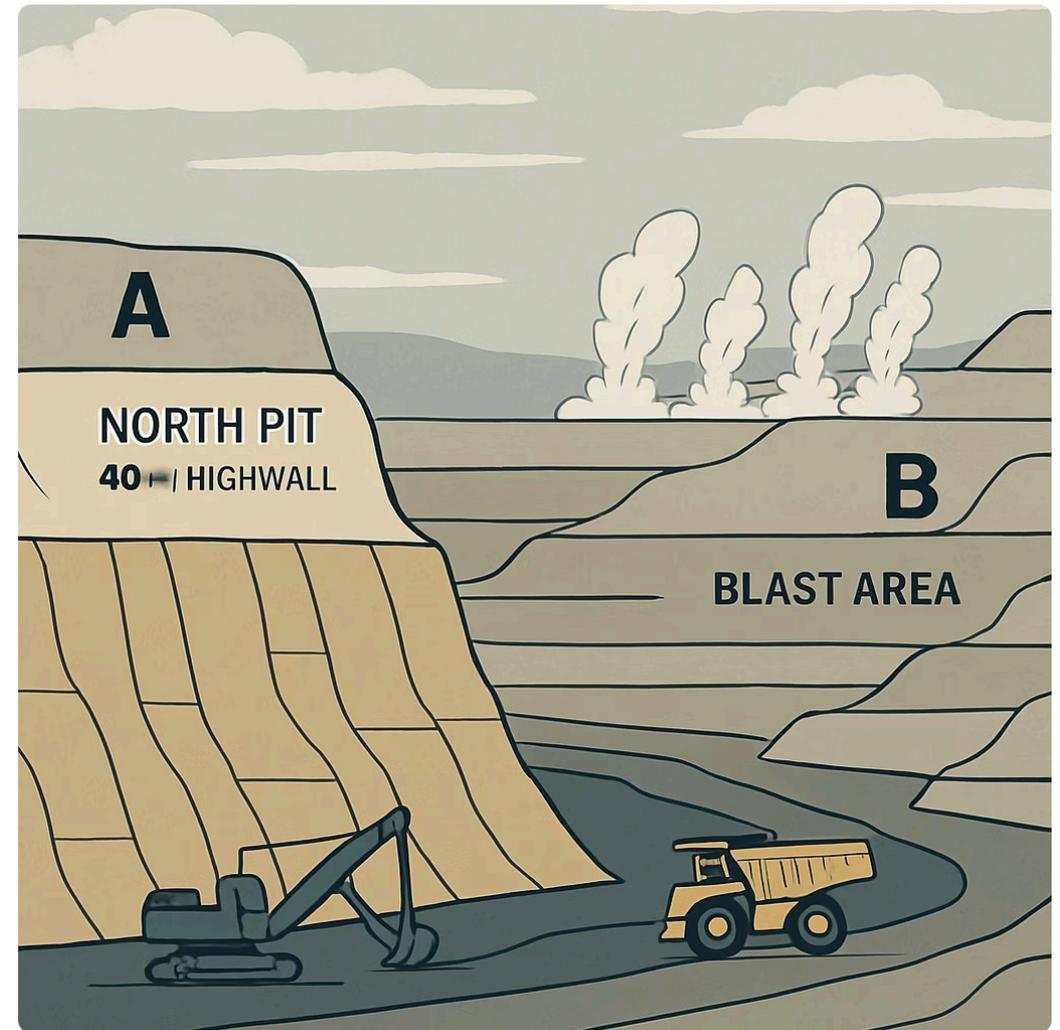
Incident Summary

- A rockfall occurred from a 40-metre highwall in an open cut coal mine
- The falling material struck an excavator working in the area
- The operator sustained a sprained ankle and bruises whilst exiting the machine
- The incident occurred shortly after blasting operations in an adjacent section

When and Where

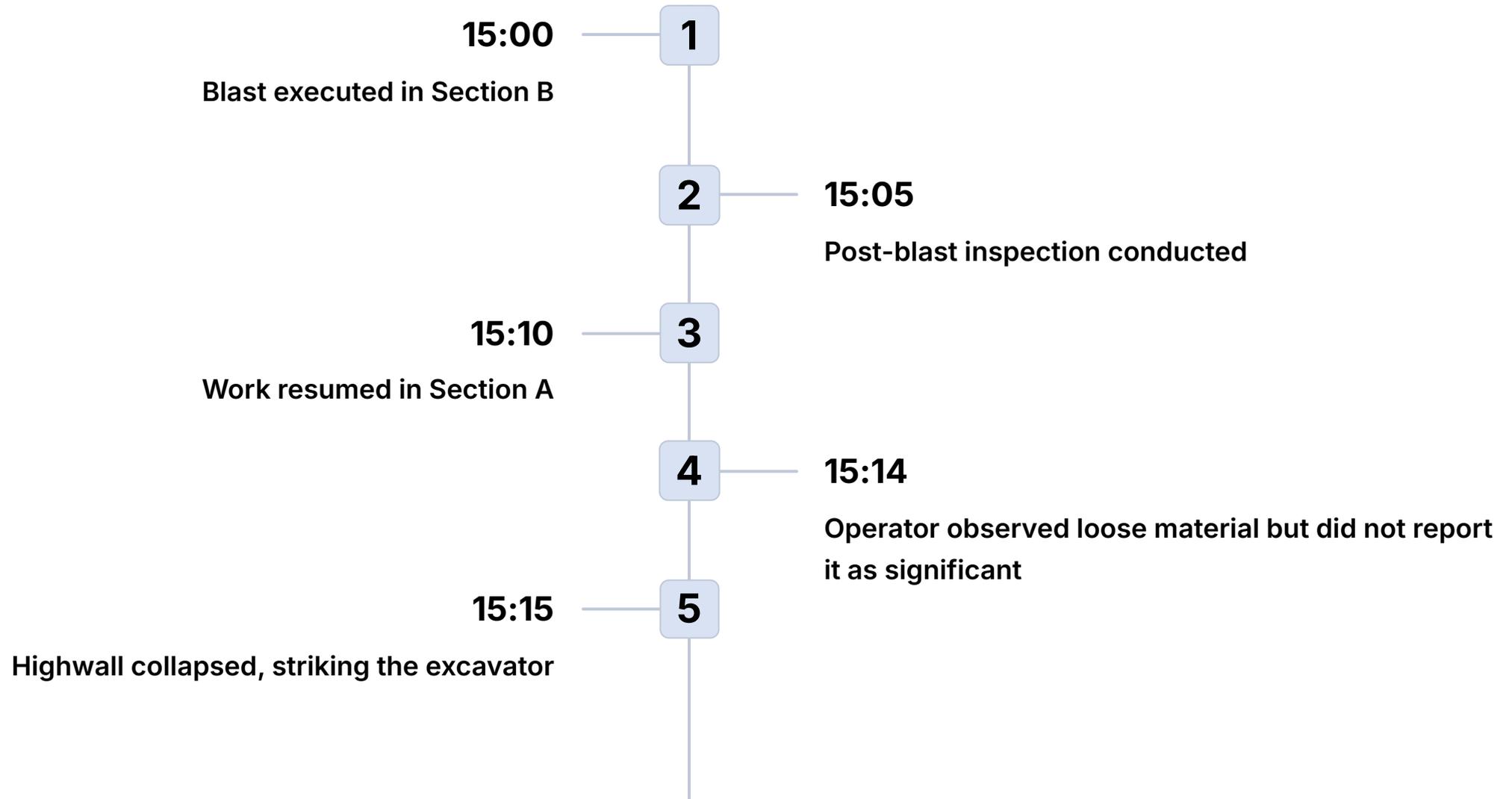
Location Details

- North Pit, Section A of an open cut coal mine
- 40-metre highwall collapsed
- Adjacent to Section B where blasting had occurred
- Approximately 30 metres between blast area and incident location



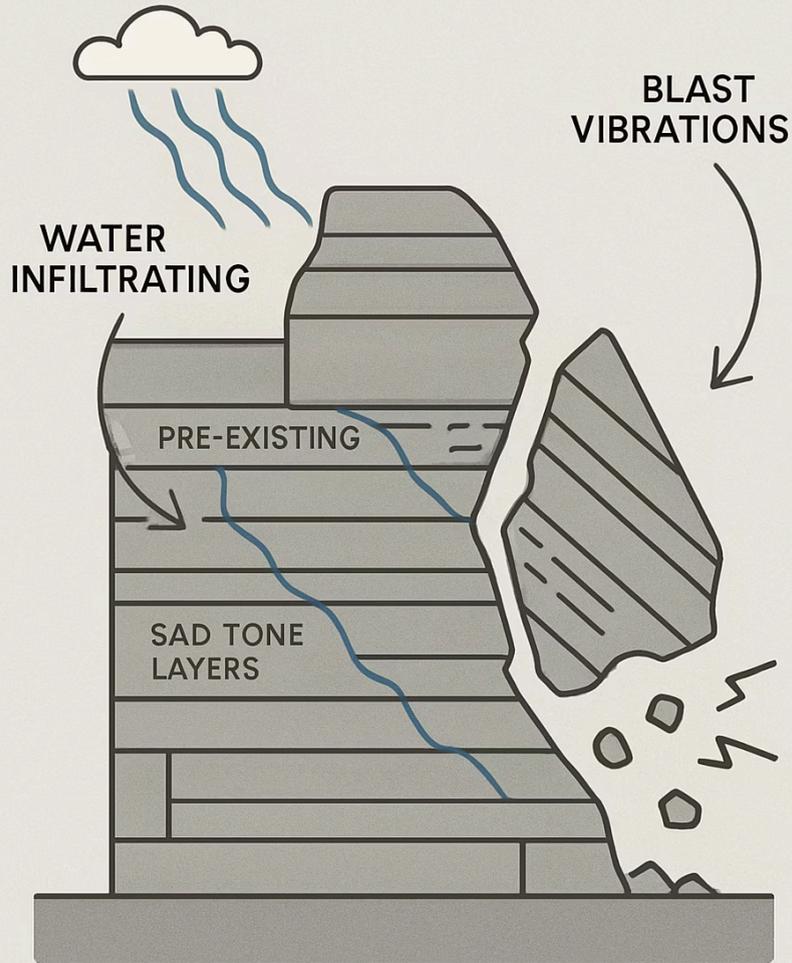
⚠ The proximity of blasting operations to active work areas created a significant hazard that was not adequately assessed or communicated.

Critical Timeline



Only 15 minutes elapsed between the blast and the rockfall, with just 5 minutes between work resumption and the incident.

HIGHWALL CROSS-SECTION



Water infiltrating along pre-existing discontinuities

How It Happened: Technical Factors

Pre-existing Geological Weakness

The rockfall resulted from a planar failure along discontinuities in sandstone layers within the highwall structure.

Water Infiltration

Approximately 150mm of rainfall in the week prior had created lubricated planes of weakness within the rock mass.

Blast-Induced Vibrations

Vibrations from the adjacent section triggered the failure of the already compromised highwall structure.

Why It Happened: Systemic Factors



Inadequate Inspection

Post-blast inspection protocols failed to identify subtle signs of highwall instability



Risk Assessment Gaps

Process did not adequately consider the cumulative effects of recent heavy rainfall and blast vibrations



Communication Failure

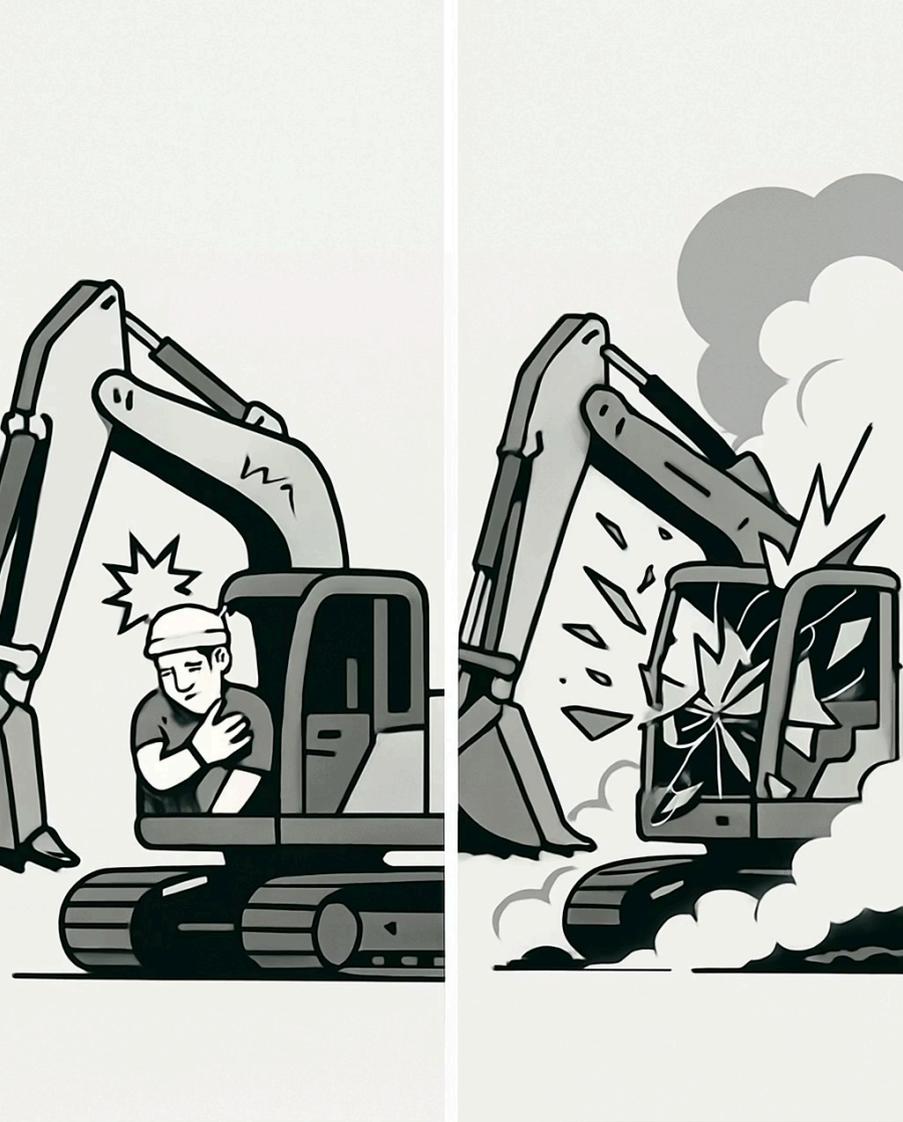
Specific post-blast inspection findings were not effectively communicated to the excavation crew



Personal Assessment

Operator's personal risk assessment failed to identify the rockfall hazard despite observing loose material





A modern vector illustration in shades of aegis by Olympe

Catastrophic cabin damage

Consequences: Actual vs Potential

Actual Consequences

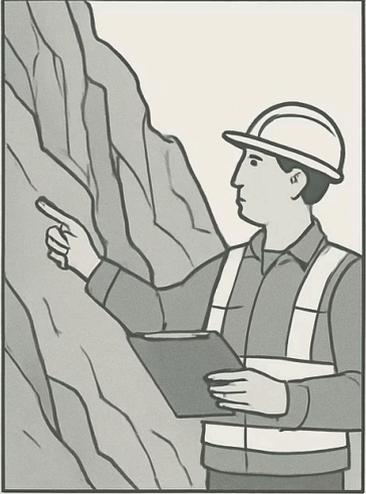
- Operator sustained a sprained ankle and bruises
- Excavator was significantly damaged
- Operations in the affected area were halted
- Emergency response initiated within two minutes

Potential Consequences

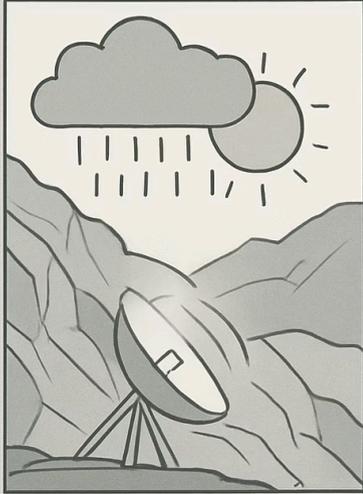
- Fatal injuries if rockfall had directly impacted the operator cabin
- Catastrophic equipment loss
- Extended production disruption
- Regulatory investigation and potential penalties

Emergency response was prompt and effective, with the area supervisor arriving at the scene within two minutes and immediately securing the area.

Prevention Measures



Enhanced Inspection Protocols



Slope Stability Radar Monitoring



Weather-Triggered Assessments



Improved Communication Procedures

1

Enhanced Inspection Protocols

Implement comprehensive post-blast inspection protocols, including detailed visual assessment of highwall conditions with specific attention to geological features

2

Continuous Monitoring Systems

Install slope stability radar for continuous highwall monitoring to detect subtle movements that may indicate instability before visible signs appear

3

Weather-Triggered Protocols

Establish specific inspection protocols for periods following significant rainfall (>50mm in 24 hours or >100mm in a week)

4

Structured Communication

Implement mandatory handover processes requiring detailed communication of all inspection findings to equipment operators with signed acknowledgment