

CAPABILITY STATEMENT

SUBJECT

# Geotechnical Risk Management

MARKETS

Feasibility and Mine Planning | Mine Operations | Mine and Quarry Closure  
Rehabilitation, Monitoring and Research

ISO

9001:2015 | 14001:2015 | 45001:2018





## Geotechnical Risk Management

Effective geotechnical risk management is crucial for ensuring mining operations are conducted safely and efficiently.

It involves proactive assessment and mitigation of geological hazards, essential for minimising disruptions, optimising resource allocation, and safeguarding personnel and equipment throughout the project lifecycle. The implementation of a proactive approach not only enhances operational resilience but also fosters a resilient environment that supports sustained project success and safety.

Identifying and managing specific geotechnical risks inherent in mining activities is critical for maintaining operational continuity and safety. Developing robust systems for risk assessment, monitoring, and management enables early detection and mitigation of geological risks, minimising operational disruptions and maximising resource efficiency.

Investigating rockfall events, ground control incidents, and other geological risks provides valuable insights to enhance safety measures and operational efficiency. Advising site teams on effective risk mitigation strategies fosters a proactive safety culture, ensuring a secure working environment and reducing incident risks.

Developing and maintaining meticulous risk registers and ground control management plans is essential to adhere to industry best practices. This systematic approach ensures that ground control, mining methods, and stress management are optimised, mitigating risks effectively and enhancing operational resilience.

Specialising in designing and installing robust engineering systems tailored to mining environments enhances operational safety, efficiency, and sustainability. These solutions are crucial for maintaining stability and minimising environmental impacts throughout the project lifecycle.

Continuous monitoring of ground response, including rock mass behaviour, deformation patterns, stress levels, and seismic activity, provides early detection of potential risks. Monitoring also ensures the performance of ground support and reinforcement systems is optimised, allowing for timely development and implementation of mitigation strategies.

### Key considerations

- 1. Proactive Risk Mitigation:** Proactive risk mitigation is essential for maintaining safety and operational efficiency in mining. By anticipating and addressing potential geotechnical hazards before they escalate, mining operations can reduce disruptions and enhance overall stability. This involves implementing advanced monitoring systems and developing comprehensive risk management plans that adapt to evolving conditions. Proactive measures ensure that potential issues are managed effectively, safeguarding personnel, equipment, and resources throughout the project lifecycle.
- 2. Predictive Risk Modelling:** Predictive risk modelling uses advanced analytical techniques to forecast potential geotechnical issues before they occur. These models provide valuable insights into future risks by analysing historical data, environmental conditions, and operational parameters. This foresight allows for developing targeted mitigation strategies, enabling mining operations to proactively address potential hazards and maintain operational stability.



- 3. Adaptive Monitoring Techniques:** Adaptive monitoring techniques are essential for managing geotechnical risks in changing mining environments. These methods adjust to evolving conditions and quickly identify potential issues by leveraging real-time data and flexible systems. This proactive approach ensures early detection and timely response, enhancing safety and efficiency throughout the project lifecycle.
- 4. Innovative Risk Management Practices:** Innovative risk management practices are crucial for adapting to the dynamic challenges of mining environments. These practices involve integrating the latest technologies, methodologies, and data-driven approaches to enhance risk assessment and mitigation strategies. By embracing new solutions and continuously improving risk management processes, mining operations can better manage geotechnical uncertainties and ensure long-term project success.
- 5. Long-Term Geotechnical Sustainability:** Embracing a long-term sustainability approach in geotechnical risk management is key to ensuring enduring project success. This involves designing risk management strategies, anticipating future conditions and regulatory changes, and maintaining stability and safety throughout the mine's lifecycle. By prioritising sustainable practices and proactive risk mitigation, projects can achieve optimal resource efficiency and minimise environmental impact, ensuring resilience and stability for current operations and future developments.

## Approach

SGME's approach to geotechnical risk management is founded on expertise, innovation, and proactive engagement. We prioritise a deep understanding of project-specific challenges, utilising advanced technologies and rigorous data analysis to develop effective strategies. Collaboration with clients is integral to tailoring solutions that enhance safety, minimise risk, and optimise operational efficiency throughout all phases of mining operations. By integrating these capabilities with ongoing monitoring and adaptive management practices, SGME ensures resilient and sustainable outcomes, proactively addressing geological risks and supporting operational continuity.

## Outcomes

Engaging SGME for geotechnical risk management ensures tailored strategies that effectively address the unique challenges of mining projects. Our commitment to safety, risk management, and environmental stewardship underscores the importance of efficient and sustainable operations. Strategic planning and proactive stakeholder engagement foster collaboration and drive positive project outcomes, ensuring compliance with regulatory standards and promoting long-term success. SGME's approach ensures that mining operations operate safely, efficiently, and sustainably, delivering value through proactive risk mitigation and operational excellence.



## Working with SGME

Engaging SGME as a collaborative partner delivers numerous benefits:

- **Improved return on investment (ROI):** Our expertise maximises ROI to satisfy investor expectations.
- **Reduced mine closure risks and disruptions:** Our strategies minimise complex closure risks to ensure a smooth future land use transition.
- **Addressing environmental, social, and governance (ESG) risks:** We focus on ESG criteria to mitigate environmental impacts and meet regulatory standards.
- **Enhanced strategic insight:** Collaboration boosts your performance through strategic planning.
- **Industry collaboration:** We foster partnerships with mining experts, staying abreast of technology and regulatory advancements.
- **Future risk vigilance:** Our proactive approach anticipates future risks to aid informed decision-making.
- **Innovative solutions for safe execution:** Our expertise delivers innovative solutions to ensure safe execution.

Our proactive approach ensures adaptability, sustainability and responsible development to safeguard the mining industry creating enduring value.

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