SGME | Engineering new environments

CAPABILITY STATEMENT

SUBJECT

Tailings and Mine Waste

MARKETS

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

ISO

9001:2015 I 14001:2015 I 45001:2018

Tailings and Mine Waste

Effective tailings management requires a balanced approach prioritising governance, risk management, critical controls, safety considerations, and specific mining requirements.

An effective management strategy covers the entire lifecycle of tailings, from design conception and construction to ongoing operational oversight and eventual closure in perpetuity. Integrating best available technology (BAT), best available practice (BAP), and rigorous assessments are essential to ensure structural integrity, regulatory compliance, and environmental stewardship. The performance objectives, risk management plan, and design intent provide a framework for safe, responsible tailings management, which requires regular inspections, detailed risk assessments, and proactive monitoring, which are imperative for promptly identifying and mitigating potential hazards.

Site investigations and appraisals gather essential data to inform decision-making, evaluate site suitability and identify potential risks early in the process. Routine and comprehensive inspections are vital to maintaining structural integrity and detecting potential hazards early. Detailed dam safety reviews and consequence category assessments enhance preparedness against potential risks, guiding robust mitigation strategies. Third-party reviews and due diligence assessments provide unbiased evaluations commensurate with the risk profiles and complexity of the tailings facility, ensuring compliance with industry best practices and bolstering project credibility.

Failure impact assessments from dam break scenario analysis and Failure Mode Effects Analysis (FMEA) are vital to tailings facility safety risk analysis. These assessments are instrumental in understanding potential failure modes and developing robust contingency plans. Breach analysis and inundation mapping further contribute to emergency preparedness and response planning by modelling potential impacts and guiding effective mitigation measures.

Monitoring and surveillance of tailings facility structures and associated appurtenances are critical during and post-operational phases for early detection, identification and mitigation of any anomalies as part of the supporting proactive maintenance and risk mitigation efforts. With design and site support capability during the operation and construction phases, SGME facilitates compliance with design specifications and regulatory requirements, ensuring that design objectives are met.

Key considerations

1. **Lifecycle Integration:** Ensuring tailings management plans cover the entire lifecycle of tailings, from design conception, operation, construction, closure and post-closure in perpetuity. This comprehensive approach guarantees consistent oversight and proactive adjustments throughout the tailings' lifespan.
2. **Risk Management and Safety:** This involves prioritising detailed risk assessments and safety considerations, incorporating BATs and BAPs, and ensuring that tailings facilities meet their design intent of containment and structural integrity. Regular inspections, dam safety reviews, and FMEA are essential to identifying potential hazards and implementing robust mitigation strategies.
3. **Stakeholder Collaboration:** Active engagements with stakeholders, regulatory bodies, and environmental experts to build trust and ensure compliance with requirements. This collaborative approach promotes good communication channels that address concerns, and ensures that diverse perspectives are integrated into the tailings management process.
4. **Environmental Stewardship:** Emphasising environmental stewardship by integrating BATs, BAPs, and sustainable practices. Regular monitoring and surveillance of tailings facilities support proactive maintenance, early detection of anomalies, and effective risk mitigation, ensuring long-term environmental protection.
5. **Regulatory Compliance and Governance:** Maintaining strict adherence to regulatory requirements and governance frameworks through transparent audits and third-party reviews. This promotes accountability, ensures compliance with industry best practices, and enhances the credibility and reliability of tailings management operations.

Approach

SGME is committed to sustainable development in tailings management, utilising advanced technologies to emphasise dynamic adaptation, accuracy, and economic efficiency. Our approach integrates robust risk mitigation with environmental stewardship, ensuring positive and sustainable outcomes while optimising economic value. Through continuous innovation and transparent practices, we adeptly navigate changing circumstances, technological advancements, and regulatory standards, minimising risks and maximising cost-effectiveness.
This approach underscores our dedication to proactive stakeholder engagement and a steadfast commitment to sustainable development throughout every phase of tailings management.

Outcomes

Engaging SGME for tailings engineering projects ensures comprehensive services and expertise aimed at developing tailored strategies and plans to manage site-specific challenges and legacy issues associated with mine closure. Our approach emphasises environmental stewardship through optimised designs to suit site conditions, operational efficiencies through dedicated site support services, and guaranteed safety from design concept to closure and beyond. We integrate strategic evolution planning to adapt to evolving circumstances, ensuring proactive management of environmental and regulatory requirements. Collaborative stakeholder engagement is central to our process, fostering transparency and trust while promoting sustainable future land use.

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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