



FRASER ALEXANDER

Risk Mitigation Differentiators in Tailings Management

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WHO WE ARE

We operate TSF on behalf of clients, under EoR direction, and within a governance and risk framework aligned to tailings industry best practice.



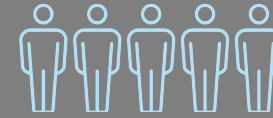
ENVIRONMENTAL
SOCIAL
GOVERNANCE

1912

Over 100 years servicing the mining industry



100% black-owned, majority women-owned



± 2713 employees, based globally



±90 client sites, servicing blue-chip clients based across 9 countries on 2 continents



Comprehensive and entrenched corporate governance framework, highest ethical standards



Striving towards the highest levels of contractor health, safety and environmental standards

BBBEE
LEVEL 1



Leading ESG in the mining services sector, evidenced in our [sustainability report](#)



Business built on VALUES



Our shareholders comprise of leading South African investment companies who are themselves deeply committed to ESG

WHO WE ARE

We operate TSF on behalf of clients, under EoR direction, and within a governance and risk framework aligned to tailings industry best practice.



Champion of gender equality and the dignity and rights of all people who we employ and who we may impact

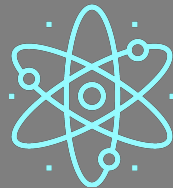
RESEARCH & DEVELOPMENT



Safer, more efficient, lower emissions and lower impact solutions



Drier/safer, lower impact deposition solutions



Most advanced technologies of their type, globally ensuring higher levels of safety and efficiency and reducing impact

LEADING EVP, AND SKILLS DEVELOPMENT OPPORTUNITIES IN THE MINING CONTRACTING SECTOR.

DEEPLY EMBEDDED SOCIAL BENEFIT PROGRAMMES ENHANCE OUR AND OUR CUSTOMERS LICENCE TO OPERATE:



Partnerships with local people to deliver services to our customers



Skills Development focused on sustainable jobs



Supplier Development and Enterprise Development to ensure sustainable businesses



CSI focused on education and healthcare



DIVERSITY AND INCLUSION

TAILINGS DAM RISK & LIABILITY LANDSCAPE

Why tailings risk is profound

As of 18 Feb 2026: **206 major TSF failures** listed at WISE Uranium Project¹



Failure causes **consistently linked to:**

- Excessive RoR & high phreatic surface
- Operational deviations, including water mismanagement
- Inadequate monitoring
- Delayed escalation
- Underlying foundations conditions



**Key
takeaway**

Sources:

- ¹ <https://www.wise-uranium.org/mdaf.html>
- ² Lessons from Tailings Dam Failures—Where to Go from Here? (David John Williams, MDPI, 2021)



TAILINGS DAM RISK & LIABILITY LANDSCAPE

The evolving requirements for responsible tailings governance



What “Stepping Up” looks like across the industry

- Broader **GISTM adoption** & global best-practice alignment
- Stronger **oversight & accountability** for high-consequence TSFs
- Elevated **ESG, regulatory & social-licence expectations**



Compliance Check



Escalation Path

What this means for operators supporting EORs & Owners

- Provide **accurate data**, daily surveillance & clear records
- Demonstrate **conformance** to design intent & operational controls
- Ensure **early warning, early escalation & solid documentation**



Key
takeaway

TAILINGS DAM RISK & LIABILITY LANDSCAPE

Fraser Alexander manages tailings risk in collaboration with Mines and the EoR: Three parties. Three roles. One shared responsibility: safe, well-governed TSFs.



Responsibility	Client (the Mine Owner)	Engineer of Record (EOR)	Fraser Alexander (the Operator)
	- Overall accountable - Appoints the ITRB	- Technical responsibility - Sets compliance requirements	Supports the operational responsibility on behalf of the Owner
Role / Duties	Client (the Mine Owner)	Engineer of Record (EOR)	Fraser Alexander (the Operator)
	- Can outsource design and operating functions (EoR, Operator). - Ensure all legal obligation are fulfilled	Responsible for the technical design, and oversight on Operational mgmt.	- Supports carrying out the legal obligations and the management (operation) - Physically operates the TSF, monitors and reports on the TSF.

The Independent Tailings Review Board (ITRB)

- Responsible for an independent review of the Tailings facility, including work undertaken by the EoR.
- Holds no accountability, which is retained by the Owner and EoR

Tailings management is underpinned by regulation

- National laws (Enforceable legal obligation)
- International standards (Voluntary compliance)
- International best practice guidelines (moral and social obligations)

FRASER'S RISK MITIGATION PHILOSOPHY



- Strong Technical Governance
- Proactive Hazard Identification
- Rapid Escalation Culture

Key value adds from Fraser Alexander

1. Proven operational discipline & specialist TSF capability
2. Dedicated Technical Risk Management team for every region
3. Strong digital, data & monitoring ecosystem (TORAS with IoT integration, aerial survey)

Industry leading drone
surveying and IoT devices
services



TORAS
MONITOR. MANAGE. MITIGATE.

Our integrated tailings risk
management digital solution

World's leading tailings
deposition contractor



**NXT GEN
SOLUTIONS**

Adopting an innovative
combination of solutions
approach to enhance tailings
management

Active R&D of new/drier
tailings solutions.

World leader in automated
hydro-remining equipment
offering the only fully
remotely operated remining
units (ROMU's)

Only company globally that
designs and operates
self-propelled cyclone
depositions units (SPCU's)



Key
takeaway

FRASER'S RISK MITIGATION PHILOSOPHY

Integrated surveillance, governance, and operational discipline form the backbone of our safe TSF management.



Mitigation Actions

- Is residual exposure acceptable?
- If No, mitigation to reduce likelihood and impact, or contain damage.
- Formalised decision to mitigate, based on cost benefit

Residual Exposure

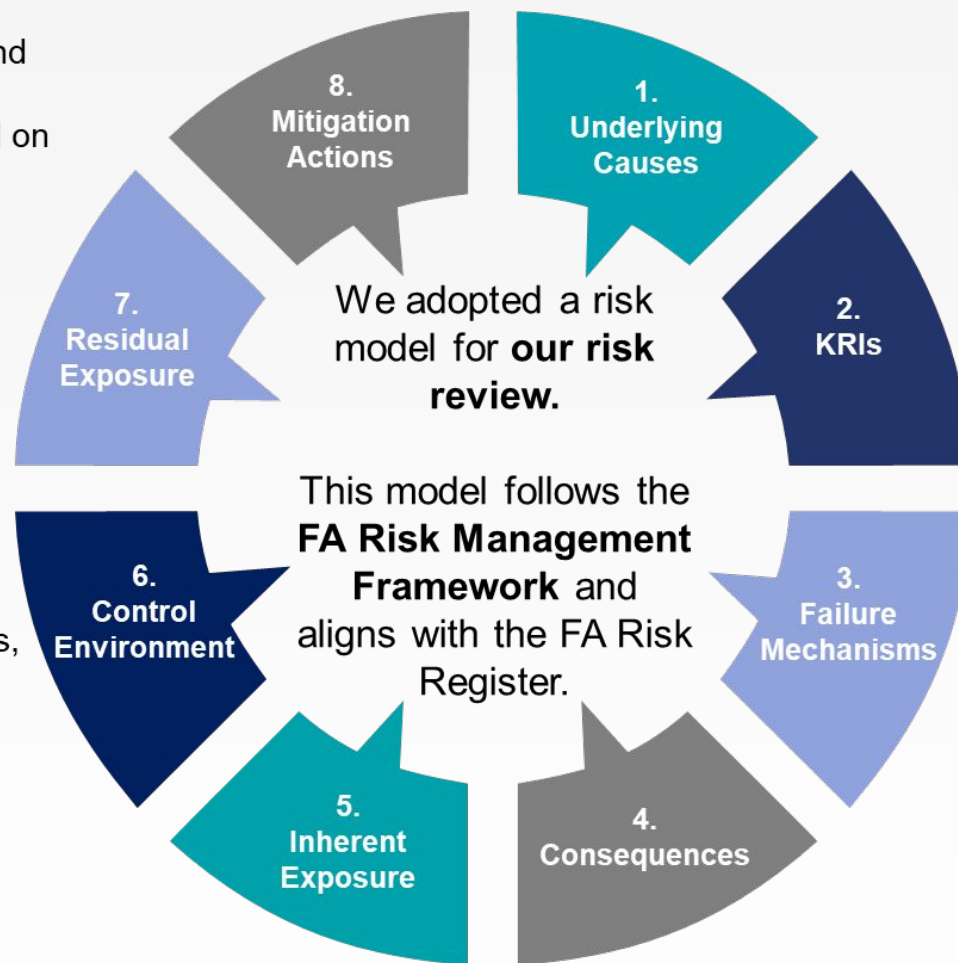
- Three lines of defence
- Combined assurance
- Self-assessment

Controls Environment

- Controls defined in a business management system, laws, regulations, contracts, policies, procedures, SOPs, standards, guidelines and templates

Inherent Exposure

- Measured in terms of the risk matrix defined in the FA risk framework



Underlying Causes

- Root causes & Secondary causes
- Dependencies & Commonalities
- Macro and micro drivers
- External and internal dynamics

Key Result Indicators

- Triggers
- Leading & Lagging Risk Indicators
- Key Performance Indicators

Failure Mechanisms

Each risk is formulated as a unique failure mechanism

Consequences

- Financial (revenue, orderbook, profit, tax, sales, cash, working capital, etc)
- SHE & community risk
- Reputation risk
- Long term sustainability

ADDED VALUE FROM FRASER: HOW WE ENSURE COMPLIANCE

Ensuring compliance through discipline, data & technical governance



Mine owners need operators who:

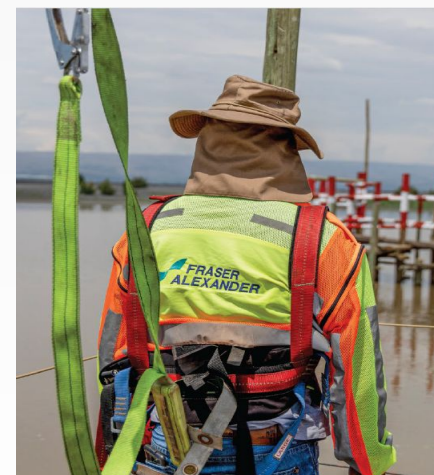
- Reduce operational risk through disciplined execution
- Provide transparent, reliable performance data
- Support legal, regulatory & GISTM-aligned requirements

EoRs need operators who:

- Understand and follow design intent
- Maintain deposition discipline (freeboard, pond control, RoR)
- Escalate deviations early and clearly
- Provide complete, auditable monitoring records

Fraser provides:

- Structured TSF data for EoR & Owner reviews
- Monthly monitoring dashboards & trend analysis
- Independent technical assurance
- Support for ITRBs, audits & annual reviews
- Clear, consistent documentation of conformance



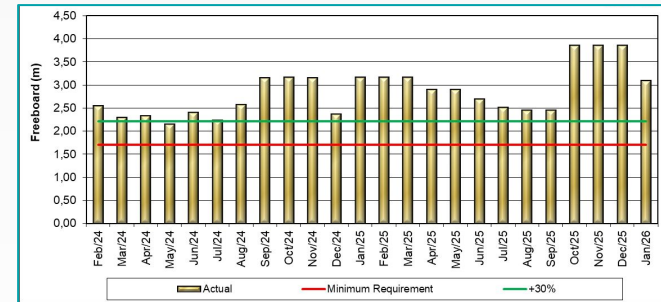
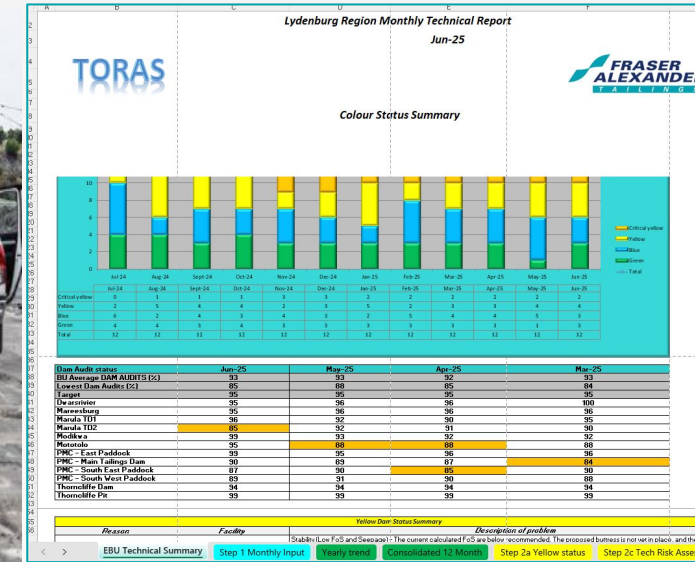
Key
takeaway

ADDED VALUE FROM FRASER: A DEDICATED TECHNICAL RISK MANAGEMENT TEAM



Led through a Technical Services that transforms operations into a fully risk-managed, technically governed service — not just deposition.

- Dedicated expert civil engineers
- Independent technical review
- Failure Mode Analysis built into monthly dashboards
- Trigger Action deviation classification system
- Consolidation of all monitoring data via TORAS
- Interpretation of monitoring data



Key
takeaway

FRASER'S RISK MITIGATION PHILOSOPHY

How Fraser uses TSF data to strengthen risk visibility & governance



What we provide our clients (mine owners)

1st line risk management

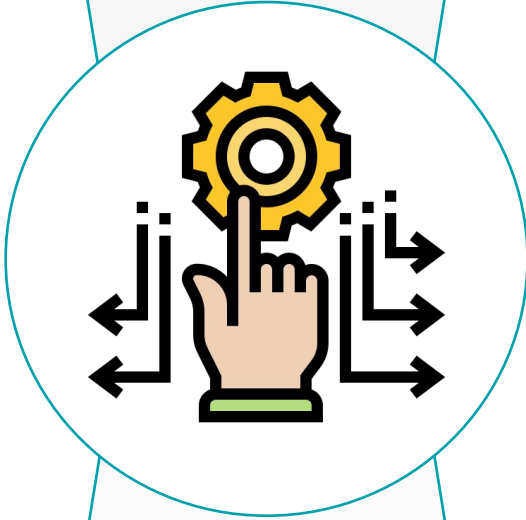
- Daily monitoring data evaluated against EoR **technical parameters**
- Monthly **compliance reports and Class C (Yellow TSF) remediations plans**
- Clear classification of TSFs (A/B/C) for performance visibility

Classification	Compliance Status
Class A	Full Compliance
Class B	Partial Compliance
Class C	Major non-conformance

What we do internally

2nd line risk management *(for internal risk management purposes only)*

- Independent internal view of **risk exposure** across contracts
- **Verification** of operational & monitoring performance
- **Monthly EXCO-level visibility** to strengthen governance



RISK MATRIX

		ESTIMATED LIKELIHOOD				
		1-20%	21-40%	41-60%	61-80%	81% - 100%
POTENTIAL IMPACT	Negligible	1	2	3	4	5
	Minor	2	4	6	8	10
	Moderate	3	6	9	12	15
	Major	4	8	12	16	20
	Critical	5	10	15	20	25

KEY:
Medium 5 to 8
Low 1 to 4
Very High 15 to 20
High 9 to 14

- Develop mitigation actions.
- Inform internal risk management decision.

ADDED VALUE FROM FRASER: DIGITAL / MONITORING DIFFERENTIATORS



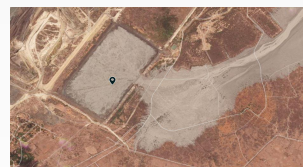
Merriespruit,
South Africa, 1994



Ajka,
Hungary, 2010



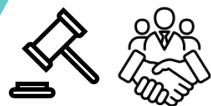
Brumadinho
Brazil, 2019



Williamson
Diamond Mine,
Tanzania, 2022



Chambishi,
Zambia, 2024



Why the shift to live monitoring systems

- International Standards (like GISTM) & Regulatory Expectations
- Investor & Governmental Pressure
- Preventing Failures & Fatalities
- Protecting Lives & Livelihoods

The benefits that comes with the shift

- Continuous oversight – implying improved Risk Management •
- Data-Driven Decision-Making •
- Stakeholder-Specific Benefits •



Challenges & Change Management Considerations

- Workforce Adaptation & Culture shift
- Potential inefficient interpretation from data overload
- Balancing Human & Machine inputs



Key
takeaway

ADDED VALUE FROM FRASER: DIGITAL, DATA & MONITORING DIFFERENTIATORS

We give clients and EoRs the clearest possible view of real facility behaviour.

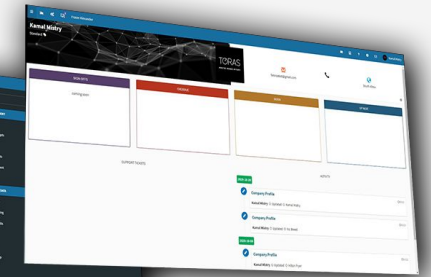
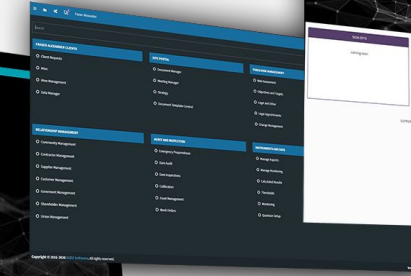


TORAS – Fraser's digital risk management backbone

- Integrates daily monitoring data (piezos, freeboard, rainfall, deposition hours)
- Client & EoR access to dashboards
- Audit-ready traceability & automated reporting
- Early warning alerts

Benefits to Mines owners and EoRs

- Stronger client engagement & transparency
- Reliable daily/monthly monitoring
- Proactive TSF risk management
- Web/mobile data access
- Supports audits, inspections, action management
- IoT and 3rd-party System integration



OFFLINE DATA
CAPTURING



CENTRALISED DATA
REPOSITORY



DAILY + MONTHLY
MONITORING



IN-CAPTURE DATA
VALIDATIONS



WORKFLOWS AND
ACTION PLANS



RISK MANAGEMENT
BUSINESS INTELLIGENCE



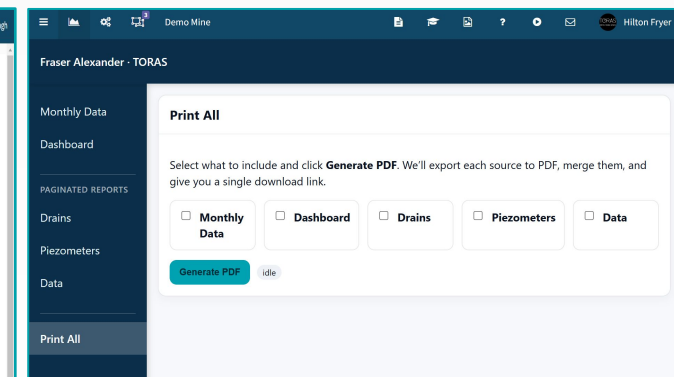
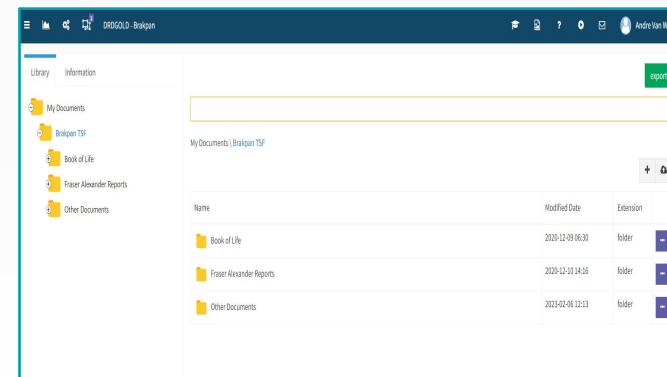
AUTOMATED
NOTIFICATIONS



CLIENT DATA
PORTAL



IOT READY



ADDED VALUE FROM FRASER: OPERATIONAL RISK MANAGEMENT



Fraser is unique because we:

- Operate 100+ TSFs across commodities
- Have global experience in all deposition methods (cyclone, spigot, daywall, upstream/downstream)
- Use proprietary remote-operated deposition tech (ROMU™, SPCU™, etc.)
- Provide specialist Survey capability
- Offer re-mining & Dewatered (Dry) stack solutions
- Rehabilitation (restoring the environment to be self-sustainable again).



**Key
takeaway**



GISTM: MEETING RISING GLOBAL EXPECTATIONS THROUGH ALIGNED, EVIDENCE-BASED TAILINGS GOVERNANCE



Recap on industry rising expectations:

- Mines, investors, and stakeholders now expect GISTM-aligned governance and transparency
- Increasing focus on evidence of monitoring, competency, and responsible risk stewardship
- TSFs expected to meet international best practice, not minimum compliance

How Fraser supports Mine Owners & EORs

- Provides **evidence-based monitoring and conformance** (TORAS → auditable records → accessible to EoR & Owner)
- Strengthens **governance & risk classification** (TSF risk classes A/B/C → structured escalation pathways)
- Reduces **operational risk exposure** (remote tech, engineered controls, trained TSF operators)
- Supports **key GISTM requirements**:
 - Knowledge base (Topic II)
 - Operational control & monitoring (Topic III)
 - Governance & accountability (Topic IV)
 - Emergency readiness (Topic V)



Key
takeaway

A circular inset image showing a mining facility with large conveyor belts, machinery, and a clear sky. The image is partially obscured by a dark grey circle containing text.

Transforming mine
waste into societal,
environmental and
economic value.

A large, dark blue geometric shape with a teal outline, resembling a stylized arrow or a corner of a document, positioned on the right side of the slide.

THANK YOU

FRASER ALEXANDER

OUR PURPOSE



Transforming mine waste into societal, environmental and economic value.

Fraser Alexander is a Global leader in mine waste management contracting.

Fraser's strategy is to invest in people, technology, assets and relationships that will enable us to be leaders in facilitating the transition to a mining circular economy.

*Our **STRATEGY** aims to achieve this.
Our **PURPOSE** statement articulates it.*

QUESTIONS?