

An aerial photograph showing a large, curved tailings storage facility (TSF) with a large body of water. The TSF is a long, narrow strip of reddish-brown earth, with a dirt road running alongside it. The water is a deep blue color. In the background, there is a large industrial facility with several smokestacks and buildings, situated near a body of water with many small boats. The sky is clear and blue.

**Position statement  
on preventing  
catastrophic failure of  
tailings storage facilities**

December 2016

ICMM members recognise that they have a significant role to play in creating a safer and more sustainable mining and metals industry. Through their commitments they work together, alongside governments and local communities to improve quality of life beyond the provision of the minerals and metals that sustain modern living.

All member companies are represented on ICMM's council by their CEO.

#### **Our members**

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African Rainbow Minerals

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Barrick

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Goldcorp

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Newcrest Mining

Newmont

Orano

Polyus

Rio Tinto

South32

Sumitomo Metal Mining

Teck

Vale

# Preventing catastrophic failure of tailings storage facilities

## 1

### Overview

This position statement sets out ICMM members' approach to the governance of tailings storage facilities (TSFs) for the mining and metals industry to minimise the risk of catastrophic failure of tailings facilities.

Tailings are the solid material plus varying degrees of runoff and process water (waste) remaining after the recoverable metals and minerals have been extracted from mined ore. The physical and chemical characteristics of the tailings vary with the nature of the ore, its geological setting and the climate where the tailings are placed. Tailings are most commonly stored in surface facilities, which can represent a significant area of disturbance at mining operations.

The foundation for this position statement is a tailings storage facility (TSF) governance framework which enhances focus on those key elements of management and governance necessary to maintain integrity of TSFs and minimise the risk of catastrophic failures. The six key elements of this TSF governance framework are:

1. Accountability, Responsibility and Competency
2. Planning and Resourcing
3. Risk Management
4. Change Management
5. Emergency Preparedness and Response
6. Review and Assurance

## 2

### Background on ICMM principles and position statements

All ICMM member companies implement the ICMM *Sustainable Development Framework* as a condition of membership.<sup>1</sup> This includes commitments to implement 10 principles throughout their businesses, to report in line with the Global Reporting Initiative's (GRI)

*Sustainability Reporting Framework* and to obtain independent external assurance that the ICMM commitments are being met (this framework is described in detail at [www.icmm.com/member-commitments](http://www.icmm.com/member-commitments)).

ICMM principles of particular relevance to preventing catastrophic failure of TSFs are:

- Principle 1: Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development
- Principle 2: Integrate sustainable development in corporate strategy and decision-making processes
- Principle 4: Implement effective risk-management strategies and systems based on sound science and which account for stakeholder perceptions of risks
- Principle 5: Pursue continual improvement in health and safety performance with the ultimate goal of zero harm
- Principle 6: Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change
- Principle 7: Contribute to the conservation of biodiversity and integrated approaches to land-use planning
- Principle 10: Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance.

In accordance with the principles, ICMM has also developed a number of position statements that further elaborate member commitments to particular issues. Company members comply with these statements by incorporating them into their operational practices.

1. Members are expected to implement the commitments in this position statement by November 2018. The position statement will not apply retroactively

## Continued

# Preventing catastrophic failure of tailings storage facilities

### 3

#### Recognition statements

ICMM members recognise that:

1. Tailings production is inherent to mining and minerals processing and will remain so for the foreseeable future. These materials require engineered solutions for their long-term safe storage and sustainable management.
2. TSFs undergo ongoing changes over their life cycle which must be considered and managed to ensure continued TSF safety and structural integrity.
3. Catastrophic TSF failures are unacceptable and owners and operators of such facilities should ensure systems, standards and resources are in place to prevent failures.
4. Potential for TSF failures must be considered and addressed through a facility's life cycle, which includes design, construction, operation and closure.
5. Technical guidance exists to support preventing catastrophic failures of TSFs through appropriate design, construction, operation and closure. Owners and operators utilise this along with the judgement of competent designers and experts. Some extreme natural events are impossible to predict.
6. Each TSF is unique. Site conditions, mineral characteristics and other aspects of each mine site dictate appropriate tailings technology and storage solutions. Although no single design or operating practice can be adopted universally, the industry continually seeks to improve and develop techniques and new technologies and implement them as appropriate.

### 4

#### Commitments

In addition to existing commitments under the ICMM *Sustainable development framework* ICMM member companies commit to implement practices consistent with the *Tailings governance framework* (the 'Framework') so that the risk of catastrophic failure of tailings storage facilities is minimised.

#### Tailings governance framework

The purpose of the Tailings Governance Framework is to enable enhanced focus on those key elements of management and governance necessary to prevent catastrophic failures of tailings storage facilities (TSFs).

#### 4.1

#### Accountability, responsibility and competency

Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks.

- Accountability for the overall governance of tailings facilities resides with the owners and operators.
- Organisational structures and roles are established to support management of TSF risks and governance accountability.
- Communication processes are maintained to ensure that personnel understand their responsibilities. Training is conducted to maintain currency of knowledge and skills.
- Role competency and experience requirements are defined for critical roles within the established organizational structures.

#### 4.2

#### Planning and resourcing

The financial and human resources needed to support continued TSF management and governance are maintained throughout a facility's life cycle.

**'The purpose of the *Tailings governance framework* is to enable enhanced focus on those key elements of management and governance necessary to prevent catastrophic failures of tailings storage facilities.'**

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- TSF operating and capital costs, and human resource needs, are included in relevant business planning processes.
- Resources necessary to implement and maintain activities within this governance framework are provided.

### 4.3

#### Risk management

Risk management associated with TSFs includes risk identification, an appropriate control regime and the verification of control performance.

- Risk controls and their associated verification activities are identified based on failure modes and their associated consequences, and evaluated on a TSF-specific basis considering all phases of the TSF life cycle.
- Suitably qualified and experienced experts are involved in TSF risk identification and analysis, as well as in the development and review of effectiveness of the associated controls.
- Performance criteria are established for risk controls and their associated monitoring, internal reporting and verification activities.

### 4.4

#### Change management

Risks associated with potential changes are assessed, controlled and communicated to avoid inadvertently compromising TSF integrity.

- Processes are applied that involve the identification, assessment, control and communication of risks to TSF integrity arising from both internally-driven and externally-driven change, to avoid introducing uncertain, unacceptable, and/or unmanaged risks.
- Documents and records that support TSF planning, design, construction, operation, surveillance, management and governance are maintained and kept suitably current and accessible.

### 4.5

#### Emergency preparedness & response

Processes are in place to recognize and respond to impending failure of TSFs and mitigate the potential impacts arising from a potentially catastrophic failure.

- Action thresholds and their corresponding response to early warning signs of potential catastrophic failure are established.
- Emergency preparedness and response plans are established commensurate with potential failure consequences. Such plans specify roles, responsibilities and communication procedures.
- Emergency preparedness and response plans are periodically tested.

### 4.6

#### Review & assurance

Internal and external review and assurance processes are in place so that controls for TSF risks can be comprehensively assessed and continually improved.

- Internal performance monitoring and inspections and internal and external reviews and assurance are conducted commensurate with consequences of TSF failure to evaluate and to continually improve the effectiveness of risk controls.
- Outcomes and actions arising from TSF review and assurance processes are recorded, reviewed, closed-out and communicated.
- Performance of risk management programs for TSFs is reported to executive management on a regular basis.

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**ICMM** is an international organisation dedicated to enabling a safe, fair and sustainable mining and metals industry. Bringing together 25 mining and metals companies and over 30 regional and commodities associations we strengthen environmental and social performance.

We serve as a catalyst for change; enhancing mining's contribution to society.

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