

BUILDING ORGANISATIONAL CAPACITY

CHAPTER XIV

SUMMARY OF EXISTING PERFORMANCE STANDARDS FOR TAILINGS MANAGEMENT

Charles Dumaresq*, Vice-President – Science and Environmental Management, Mining Association of Canada

1. INTRODUCTION

When the development of the Global Industry Standard on Tailings Management (the Standard) was initiated, standards and guidance were already in place that describe various aspects of best practices related to tailings management. The scope of the Standard is broad, with requirements falling into three general categories:

- tailings management governance
- community engagement and public disclosure
- technical design considerations.

There are three existing standards that address the first two of these categories (tailings management governance, and community engagement and public disclosure). These are the:

1. International Council on Mining and Metals (ICMM) Performance Expectations
2. Mining Association of Canada (MAC) *Towards Sustainable Mining*® (TSM®)
3. Initiative for Responsible Mining Assurance (IRMA).

This chapter provides an overview of each of these standards, including:

- background information on the organisations and standards
- scope of application
- how the standards address performance related to:
 - tailings management governance
 - community engagement and public disclosure
 - water management, which is also relevant to tailings management

- performance measurement and verification
- external Inputs to the development and implementation of the standard
- implementation of the standard
- disclosure of performance against the standard.

There are no existing standards for technical design considerations, although guidance is provided by several organisations such as the International Commission on Large Dams (ICOLD) and national/ regional organisations such as the Australian National Committee on Large Dams (ANCOLD) and the Canadian Dam Association (CDA). The guidance from these organisations is focused on tailings dams and containment structures and not on tailings management and tailings facilities more broadly.

It is important to emphasise that while these organisations do not prescribe performance expectations, many regulatory authorities incorporate this guidance into various legal requirements (e.g. site-specific permits for tailings dams).

This chapter does not provide summaries of existing technical guidance. Readers should refer to the websites of the above-listed organisations for information.

2. ICMM PERFORMANCE EXPECTATIONS

2.1 BACKGROUND ON THE ICMM AND THE PERFORMANCE EXPECTATIONS

The ICMM is an international organisation dedicated to a safe, fair and sustainable mining and metals industry. ICMM consists of 27 mining and metals companies and 38 regional and commodities associations.

In February 2020, ICMM introduced its updated **Mining Principles**. All company members are expected to implement these Principles as a condition of membership. Performance Expectations were introduced for each Principle, defining the good practice environmental, social and governance requirements, with the goal of maximising benefits to host communities and minimising negative impacts to effectively manage societal challenges.

The Mining Principles are an update to ICMM's 10 Principles for Sustainable Development, first established in 2003. The Performance Expectations build upon these Principles and upon the work that ICMM has done since they were introduced to develop position statements and guidance to improve company member performance.

There are 10 Mining Principles:

1. **Ethical Business.** Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development.
2. **Decision-Making:** Integrate sustainable development in corporate strategy and decision-making processes.
3. **Human Rights.** Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.
4. **Risk Management.** Implement effective risk-management strategies and systems based on sound science, and which account for stakeholder perceptions of risk.
5. **Health and Safety.** Pursue continual improvement in the health and safety performance with the ultimate goal of zero harm.
6. **Environmental Performance.** Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change.
7. **Conservation of Biodiversity.** Contribute to the conservation of biodiversity and integrated approaches to land-use planning.
8. **Responsible Production.** Facilitate and support the knowledge-base and systems for responsible design, use, re-use, recycling and disposal of products containing metals and minerals.
9. **Social Performance.** Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities.

10. **Stakeholder Engagement.** Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner, effectively report and independently verify progress and performance.

ICMM documents, including position statements and guidance, are available free of charge on the ICMM website.

2.2 ASPECTS OF THE ICMM PERFORMANCE EXPECTATIONS RELEVANT TO THE SCOPE OF THE STANDARD

ICMM Performance Expectations relevant to the scope of the Standard are described primarily in the ICMM Position Statement on Tailings Management. Requirements of the Standard related to community engagement are not directly addressed in this Position Statement but are explicitly addressed in other aspects of the ICMM Performance Expectations (see below). In addition, ICMM Performance Expectations related to water stewardship, summarised in below, are also relevant to tailings management.

The ICMM Performance Expectations do not address technical design aspects related to tailings management. Instead, company members are expected to refer to technical guidance from the ICOLD, ANCOLD CDA, or to guidance from similar organisations relevant to the mine location.

Tailings Management Governance

The **ICMM Position Statement on Tailings Management** sets out expectations for company members. The Position Statement, which was released in 2016, commits company members to implement practices consistent with a Tailings Governance Framework (the Framework) so that the risk of catastrophic failure of tailings storage facilities is minimised.

ICMM company members were expected to implement the commitments in this Position Statement by November 2018.

The Position Statement pre-dates the updated Mining Principles and the introduction of the ICMM Performance Expectations. It addresses Principles 1, 2, 4, 5, 6, 7 and 10. The Performance Expectations further commit company members to design, construct, operate, monitor and decommission tailings facilities using comprehensive, risk-based management and governance practices in line with internationally recognised good practice. Company members are expected to commit to implementing practices consistent with the Framework, in addition to meeting the Performance Expectations.

* Member of the GTR Multi-stakeholder Advisory Group

The Framework focuses on six elements of tailings management and governance, summarised as follows:

- 1. Accountability, responsibility and competency.** Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of tailings facility risks.
- 2. Planning and resourcing.** The financial and human resources needed to support continued tailings management and governance are maintained throughout a facility's life cycle.
- 3. Risk management.** Risk management associated with tailings facilities includes risk identification, an appropriate control regime and the verification of control performance.
- 4. Change management.** Risks associated with potential changes are assessed, controlled and communicated to avoid inadvertently compromising tailings facility integrity.
- 5. Emergency preparedness and response.** Processes are in place to recognise and respond to impending failure of tailings facilities and mitigate the potential impacts arising from a potentially catastrophic failure.
- 6. Review & assurance.** Internal and external review and assurance processes are in place so that controls for tailings facility risks can be comprehensively assessed and continually improved.

Community Engagement and Public Disclosure

Several ICMM Performance Expectations address aspects of community engagement, particularly:

1. Ethical Business
2. Decision-Making
3. Human Rights
4. Risk Management
6. Environmental Performance
9. Social Performance
10. Stakeholder Engagement

In addition, there are two position statements that company members are expected to implement.

Position Statement: Indigenous Peoples
This position statement was put in place in 2013, replacing ICMM's 2008 Mining and Indigenous Peoples Position Statement. The Position Statement

sets out ICMM members' approach to engaging with Indigenous Peoples and to Free, Prior and Informed Consent (FPIC).

The commitments may be summarised as requiring members to:

- Engage indigenous peoples to ensure that their rights and interest are respected and that they obtain sustainable benefits through the development of mining projects.
- Understand and respect their rights and interests regarding a project and its potential impacts.
- Agree and document appropriate engagement and consultation processes with potentially impacted indigenous peoples and relevant government authorities.
- Work to obtain the consent of indigenous communities for new projects (and changes to existing projects) that are located on lands traditionally owned by or under customary use of indigenous peoples and are likely to have significant adverse impacts on indigenous peoples.
- Collaborate with the responsible authorities to achieve outcomes consistent with the position statement where government is responsible for managing indigenous peoples' interests.
- Address the likelihood that differences of opinion will arise and agree on avenues of recourse.

Position Statement: Partnerships for Development

This position statement was put in place in 2010. It commits ICMM company members to actively support or help develop partnerships with other stakeholder groups with the aim of enhancing the social and economic contribution of mining through development partnerships. In practical terms this means:

1. Either individually or collectively through ICMM publicly express their willingness to work in partnership with development agencies, host governments, civil society organisations, and local communities to enhance mining and metals' contribution to social and economic development.
2. For major investments in regions where socio-economic outcomes are highly uncertain or where there are significant opportunities to enhance such outcomes: (i) develop an understanding of the social and economic contribution of the project, including an analysis of the barriers that might weaken this contribution; and (ii) actively support or help develop partnerships or collaborations with other stakeholder groups with

the aim of ensuring the project's potential socio-economic contribution is realised.

3. Review the relative success of their development partnerships and collaborations at suitable intervals and adapt these over time to ensure they continue to contribute to the overall goal of enhancing the social and economic contribution of mining.
4. Provide an overview of their work on such partnerships, as appropriate, in their annual external reporting and communications.

ICMM Guidance Documents

ICMM has also developed a number of guidance documents related to community engagement.

- **Community Development Toolkit** (2012) – an update to the original toolkit released in 2005
- **Stakeholder Research Toolkit** (2015)
- **Understanding Company-Community Relations Toolkit** (2015)
- **Integrating Human Rights Due Diligence into Corporate Risk Management Processes** (2012)
- **Good Practice Guide to Indigenous Peoples and Mining** (2015)
- **Land acquisition and resettlement: Lessons learned**
- **Handling and Resolving Local-Level Concerns and Grievances: Human Rights in the Mining and Metals Sector** (2009, updated in 2019)

In addition, ICMM, in partnership with International Finance Corporation, the International Committee of the Red Cross, and the global oil and gas industry association for environmental and social issues, has produced **Voluntary Principles on Security and Human Rights: Implementation Guidance Tools**.

Water Management

Several of the ICMM's Performance Expectations address aspects of water management, particularly:

1. Human Rights
2. Risk Management
3. Environmental Performance
4. Conservation of Biodiversity
5. Stakeholder Engagement

ICMM company members are also expected to implement the **Water Stewardship Position**

Statement, which was put in place in 2017. Water stewardship is the use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial. The Position Statement describes three member commitments. These are aligned with the expectation that effective stewardship requires collaboration and concerted action from all parties, including government, civil society, business and local communities through inclusive stakeholder engagement.

This position statement commits company members to:

- Apply strong and transparent corporate water governance
- Manage water at operations effectively
- Collaborate to achieve responsible and sustainable water use

ICMM has also developed **A Practical Guide to Catchment Based Water Management**.

2.3 PERFORMANCE MEASUREMENT AND VERIFICATION

Measurement of performance against the Performance Expectations is conducted on a site or asset-specific basis.¹ This includes assessing performance against the Performance Expectations and applicable ICMM Position Statements. In the case of tailings facilities, this would include implementation of the Framework.

Performance measurement and verification includes:

- Self-assessment of all assets to confirm the existence and integrity of systems and/or practices relating to implementation of applicable Performance Expectations and Position Statements.
- Prioritisation of assets for third-party validation following criteria chosen by the company and including transparent disclosure of the selection process.
- Third-party validation of the reasonableness and authenticity of assertions made in self-assessments.²

1. Assets are operations involved in the production or refining of minerals and metals for sale or further processing. An asset may comprise several sites in different locations (e.g. a port, a pipeline desalination facility), under the same management control which 'support the production and sale' of minerals.

2. Third-party validations must be conducted by qualified validation service providers (VSPs). VSPs are professional service providers and must meet ICMM requirements for independence, experience, expertise and lack of conflicts of interest. ICMM will keep a register of VSPs that members use.

These performance measurement activities are designed to evaluate the implementation of the Performance Expectations individually, and relevant Position Statements. There is no overall outcome or score for a given asset. The possible outcomes for each Performance Expectation are: ‘meets’, ‘partially meets’, and ‘does not meet’. In some situations, the outcome may be ‘not applicable’.

2.4 EXTERNAL INPUT TO DEVELOPMENT AND IMPLEMENTATION OF THE ICMM PERFORMANCE EXPECTATIONS

To obtain external input to the updated Mining Principles and development of the Performance Expectations, ICMM launched a global public consultation in 2018. The objective of the consultation process was to obtain views from individuals and organisations to help improve the environmental and social performance of the mining and metals industry.

An online survey in English, French, Portuguese, Spanish and Japanese was used to obtain input on the 10 Principles and 38 proposed Performance Expectations. The consultation was conducted over a period of about seven weeks. In total, 263 respondents from 30 countries completed the survey, with the number of people commenting on each proposed Performance Expectation ranging from 205 to 263.

A report summarising the consultation is available on the [ICMM website](#).

2.5 IMPLEMENTATION OF THE ICMM PERFORMANCE EXPECTATIONS

ICMM's Mining Principles apply to roughly 650 assets in over 50 countries. Details of the tailings storage facilities that ICMM members own or operate are available at <https://www.icmm.com/member-tsfs>.

2.6 DISCLOSURE OF PERFORMANCE AGAINST THE ICMM PERFORMANCE EXPECTATIONS

Members are required to publicly disclose their performance measurement activities on an annual basis. The disclosure can be made on a member's website or in a sustainability or corporate report. The asset-by-asset disclosures that apply to self-assessments and third-party validations from 2022 onwards will provide information to interested parties of the status of implementation of the Performance Expectations.

3. MINING ASSOCIATION OF CANADA – TOWARDS SUSTAINABLE MINING® (TSM®)

3.1 BACKGROUND ON MAC AND TSM

The Mining Association of Canada (MAC) is an industry association that represents the interests of the mining sector in Canada. MAC has 42 members, including Canadian and foreign-based companies, involved in the mining of metals, oil sands, metallurgical coal and diamonds.

In 2004, MAC launched *Towards Sustainable Mining (TSM)* to improve environmental and social performance. *TSM* provides eight performance measurement protocols (standards) to measure *TSM* performance at the facility level. These protocols are in three focus areas:

Environmental Stewardship

- tailings management
- biodiversity conservation management
- water stewardship.

Communities and People

- Indigenous and community relationships
- safety and health management
- crisis management and communications planning (measured at the facility and corporate level)
- preventing child and forced labour.

Energy Efficiency

- energy use and greenhouse gas emissions management.

All *TSM* protocols and associated documents can be accessed free of charge on the MAC website, and are available in English, French, and Spanish:

<https://mining.ca/towards-sustainable-mining/>

<https://mining.ca/fr/vers-le-developpement-minier-durable/>

<https://mining.ca/towards-sustainable-mining/hacia-una-mineria-sostenible/>

3.2 SCOPE OF APPLICATION

TSM protocols are designed primarily to be applied to mines and related facilities (e.g., smelters and refineries) in the operating phase of the life cycle. *TSM* has been applied voluntarily to closed facilities and many elements can also be applied to facilities at pre-operational phases of the life cycle. Guidance documents developed under the tailings management component of *TSM* are designed to be applicable throughout the life cycle of tailings facilities.

TSM protocols are designed to be applicable to any mine, located anywhere in the world.

3.3 ASPECTS OF TSM RELEVANT TO THE SCOPE OF THE STANDARD

Requirements of the Standard related to tailings management governance are addressed in the *TSM Tailings Management Protocol*. Within the tailings management component of *TSM* there are some requirements specific to community engagement, particularly in the context of emergency preparedness. Community engagement is addressed more broadly in the *Indigenous and Community Relationships Protocol*, summarised below. The *Water Stewardship Protocol*, summarised below, is also relevant to tailings management and the scope of the Standard.

TSM does not address technical design aspects related to tailings management. Company members are expected to refer to technical guidance from the ICOLD, ANCOLD, CDA, or guidance from similar organisations relevant to the mine location.

Tailings Management Governance

The *Tailings Management Protocol* describes five performance indicators:

1. Having a corporate tailings management policy or commitment

Intent: confirm that companies have established and effectively communicated a policy or commitments that express intention, commitments and principles in relation to tailings management.

2. Developing and implementing site-specific tailings management systems, and emergency preparedness

Intent: confirm that companies have:

- developed and implemented a tailings management system
- developed and tested emergency response plans and emergency preparedness plans.

3. Assigning accountability and responsibility for tailings management

Intent: confirm that accountability for tailings management is assigned to an Accountable Executive Officer, and that an appropriate management structure and resources are in place to provide assurance to the company that tailings are managed responsibly.

4. Conducting annual tailings management reviews

Intent: confirm that there is an annual review of tailings management that is reported to the Accountable Executive Officer to ensure corporate governance over tailings management and to ensure that the company is satisfied that the tailings management organisational structures and systems are effective and continue to meet the needs of the organisation.

5. Developing and implementing site-specific Operational, Maintenance and Surveillance (OMS) manuals

Intent: confirm that the company has developed and implemented a tailings facility-specific OMS manual to facilitate implementation of the tailings management system.

The *Tailings Management Protocol* refers to two guidance documents:

1. A Guide to the Management of Tailings Facilities ('the Tailings Guide')

2. Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities ('the OMS Guide').

Elements described in the performance indicators must be implemented in conformance with these Guides. A comprehensive Table of Conformance has been developed to aid in measuring performance against the indicators in the Protocol.

The Tailings Guide, first released in 1998, is modelled on the ISO 14001 *Environment Management Systems* but is tailored to tailings management. It provides guidance on:

- development and implementation of site-specific tailings management systems
- emergency preparedness
- assurance, including independent review

The OMS Guide, introduced in 2003, provides guidance on the development, implementation, and review and updating of site-specific OMS manuals that describe all operation, maintenance, and surveillance activities related to the management of a tailings facility.

In 2015, MAC launched independent and internal reviews of the tailings management component of TSM. As an outcome of these reviews, the Protocol and Guides were revised in two-step process:

2017:

- third edition of the Tailings Guide
- revised *Tailings Management Protocol*
- introduced the Table of Conformance

2019:

- second edition of the OMS Guide
- version 3.1 of the Tailings Guide
- revised *Tailings Management Protocol*
- revised Table of Conformance

Community Engagement and Public Disclosure

The *TSM Indigenous and Community Relationships Protocol* was developed to measure performance related to community engagement. This protocol was introduced in 2019 and replaces the *Aboriginal and Community Outreach Protocol*, introduced with the launch of TSM in 2004.

The *Indigenous and Community Relationships Protocol* has five performance indicators:

1. Community of Interest (COI) identification

Intent: confirm that processes are in place to identify COI, including Indigenous communities and organisations, affected or perceived to be affected by the company's operations and activities or who have a genuine interest in the performance and activities of a company and/or operation.

2. Effective COI engagement and dialogue

Intent: confirm that processes have been established to support development and maintenance of meaningful relationships with COI, including Indigenous communities and organisations, to gain mutual understanding of viewpoints, to build effective relationships, and to create shared value and mutual benefits.

3. Effective Indigenous engagement and dialogue

Intent: confirm that mining facilities are actively building meaningful relationships and implementing engagement and decision-making processes with Indigenous communities. This includes aiming to achieve FPIC for impacts on rights of directly affected Indigenous peoples before proceeding with development and maintaining it throughout the life of the project. This indicator also confirms that efforts are made to ensure that Indigenous peoples have equitable access to opportunities with the company. Furthermore, this indicator seeks to ensure that management and designated employees are educated on the history of Indigenous peoples and receive skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

4. Community impact and benefit management

Intent: confirm that processes have been established to ensure that adverse community impacts, including human rights impacts, are identified, avoided and mitigated and that processes are in place to encourage and optimise social benefits generated from the facility. Additionally, this indicator seeks to confirm that facilities identify and engage with COI on potential adverse environmental impacts that may directly affect communities, including those associated with tailings management (as applicable), and potential adverse impacts related to community safety and health.

5. COI response mechanism

Intent: confirm that there are processes in place to receive, track and respond to incidents, concerns and feedback from COI, including Indigenous communities and organisations, leading towards stronger relationships and building trust.

Water Management

The *TSM Water Stewardship Protocol* was introduced in 2019 and is based on the ICMM Water Stewardship Position Statement. The *Water Stewardship Protocol* has four performance indicators:

1. Water governance

Intent: confirm that commitment and accountabilities are in place and communicated to relevant COI to support water stewardship.

2. Operational water management

Intent: confirm that water-related plans and management systems are implemented at the facility level. This indicator includes both water quality and water quantity.

3. Watershed-scale planning

Intent: confirm that the facility supports engagement with other water users and COI in the watershed and participates in watershed-scale planning and governance fora, where they exist. This indicator focuses on watershed planning beyond the operational footprint of the facility.

4. Water performance and reporting

Intent: confirm that water related objectives or targets have been established to measure performance and that reporting is in place to inform decision-making and to communicate performance publicly.

3.4 PERFORMANCE MEASUREMENT AND VERIFICATION

Each TSM protocol provides several performance indicators with performance measurement criteria for each indicator. Performance is measured on a scale from Level C to Level AAA.³

- Level C: No systems in place; activities tend to be reactive; procedures may exist, but they are not integrated into policies and management systems.
- Level B: Procedures exist but are not fully consistent or documented; systems/processes planned and being developed.
- Level A: Systems/processes are developed and implemented.
- Level AA: Integration into management decisions and business functions.
- Level AAA: Excellence and leadership.

TSM uses four layers of performance measurement and verification:

1. *Self-assessment:* Every year, each facility conducts a detailed and thorough self-assessment against each protocol. It is important to note however, that under the *Tailings Management Protocol*, an internal audit is required for a Level A and an

external audit is required for a Level AA. There is no self-assessment for this protocol.

2. *External verification:* Every three years, a Verification Service Provider (VSP) reviews a company's self-assessments to determine if there is adequate evidence to support the performance ratings the facility has reported, and to adjust ratings as appropriate. VSPs are experienced auditors who are independent of the company being verified.
3. *CEO letter of assurance:* In the year of external verification, the company's CEO or most senior executive in Canada submits a letter to MAC that confirms an external verification has been conducted. CEO Letters of Assurance are available on the MAC website.
4. *Post-verification review:* Each year, MAC's Community of Interest Advisory Panel selects a sample of companies to appear before the Panel to present and discuss their TSM results. Through these discussions, the Panel tests to see whether and how facility systems are leading to performance improvement.

3.5 EXTERNAL INPUT TO DEVELOPMENT AND IMPLEMENTATION OF TSM

When TSM was being developed, MAC established a Community of Interest Advisory Panel (COI Panel) to provide advice and oversight on the development and implementation of the programme. The COI Panel played an important role in the original design of TSM and continues to inform its implementation and evolution. The Panel serves as a platform for communities of interest and MAC members to discuss and collaborate on issues of mutual concern.

The Panel is an independent, multi-stakeholder group comprised of about 12 to 15 individuals from Indigenous groups, communities where the industry is active, environmental and social non-government organisations, and labour and financial organisations. A small number of members of the MAC Board of Directors also sit on the Panel to provide a mining industry perspective to discussions. The Panel:

- provides support and advice for the TSM programme.
- conducts a yearly review of a sample of companies' verified TSM results to analyse company systems and practices.
- provides critical perspectives by raising emerging issues of concern beyond those currently covered under TSM.

³ There are two exceptions to this: crisis management and communications planning and preventing child and forced labour. For these two protocols, performance is measured on a yes/no basis.

3.6 IMPLEMENTATION OF TSM

Participation in *TSM* is mandatory for all MAC members for their operating mines in Canada. Some MAC members also voluntarily apply and report on *TSM* at their operations in other countries. In addition, within Canada, *TSM* has been adopted by the Association minière du Québec (AQM), the provincial industry association in the province of Québec.

In 2018, MAC and AQM members applied the tailings management component of *TSM* at approximately 55 tailings facilities⁴ in Canada (including five closed facilities), and six operating facilities in Finland, Surinam, Burkina Faso, Mexico, Peru, and the United States.

In addition to the international application of *TSM* by MAC members, *TSM* has been adopted by industry associations in Finland (2015), Argentina (2016), Botswana (2017), the Philippines (2017), Spain (2018), Brazil (2019), and Norway (2020). Adoption is being seriously considered in several other countries.

At this time, MAC does not have an estimate of the number of tailings facilities to which *TSM* is being applied through *TSM* programmes of industry associations in other countries. In addition, because of the phase-in period following adoption, facilities in those countries are at different stages of implementation of *TSM*.

3.7 DISCLOSURE OF PERFORMANCE AGAINST TSM

For MAC members, all *TSM* results must be reported and publicly disclosed on an annual basis. An annual *TSM Progress Report* is available on the [MAC website](#). For other industry associations adopting *TSM*, public disclosure is a condition of adoption.

4. INITIATIVE FOR RESPONSIBLE MINING ASSURANCE (IRMA)

4.1 BACKGROUND ON IRMA

IRMA was founded in 2006 by a coalition of nongovernment organisations, businesses purchasing minerals and metals for resale in other products, affected communities, mining companies, and labour unions. IRMA's mission is to establish a multi-stakeholder and independently verified responsible mining assurance system that improves social and environmental performance and creates value for leading mine sites. Through IRMA:

industrial-scale mines can document their leadership and receive value for proven responsible performance

purchasers of metals and minerals can source from mines that meet or are working toward meeting a full array of leading practices in social and environmental responsibility

communities, workers, and civil society organisations can convey social licence with assurance that the mine operates to leading levels of socially and environmentally responsible performance.

The IRMA **Standard for Responsible Mining** (the IRMA Standard) specifies performance requirements for environmentally and socially responsible practice and is designed to support the achievement of four overarching principles:

Principle 1—Business Integrity

Intent: Operating companies conduct their business in a transparent manner that complies with applicable host country and international laws, regulations and best practice, respects human rights, and builds trust and credibility with workers, communities and stakeholders.

Principle 2—Planning and Managing for Positive Legacies

Intent: Operating companies engage with stakeholders from the early planning stages and throughout the mine lifecycle to ensure that mining projects are planned and managed to deliver positive economic, social and environmental legacies for companies, workers and communities.

Principle 3—Social Responsibility

Intent: Operating companies engage with workers, stakeholders and rights holders to maintain or enhance the health, safety, cultural values, quality of life and livelihoods of workers and communities.

Principle 4—Environmental Responsibility

Intent: Operating companies engage with stakeholders to ensure that mining is planned and carried out in a manner that maintains or enhances environmental values and avoids or minimises impacts to the environment and communities.

4.2 SCOPE OF APPLICATION

The IRMA Standard is intended to be applicable to:

- all types of industrial – or large-scale – mining (including surface, sub-surface and solution mining), and all mined materials (e.g., minerals, metals) with the exception of energy fuels
- mining and associated activities, such as construction of infrastructure or preliminary ore processing, that occur on the mine site, and includes requirements that pertain to different phases of the mine life cycle.

4.3 ASPECTS OF THE IRMA STANDARD RELEVANT TO THE SCOPE OF THE STANDARD

Requirements of the Standard related to tailings management governance are addressed in a chapter in the IRMA Standard entitled 'Waste and Materials Management'. This chapter includes a small number of requirements specific to community engagement, particularly in the context of emergency preparedness. Community engagement is addressed more broadly in chapters under Principle 2—Planning and Managing for Positive Legacies, and Principle 3—Social Responsibility, summarised below. The chapter on Water Management, summarised below, is also relevant to tailings management and the scope of the Standard.

Like ICMM and *TSM*, the IRMA Standard does not address technical design aspects related to tailings management. It does, however, include requirements related to conducting alternatives assessment and application of best available technologies (BAT) and best available/applicable practices (BAP). These requirements are based on the MAC Tailings Guide

but are not reflected in the *Tailings Management Protocol*, as *TSM* participation is not required during the planning and design phases of the life cycle.

Tailings Management Governance

The scope of the requirements in the IRMA Standard for waste and materials management includes tailings as well as spent heap leach materials, waste rock, overburden, low grade ore and other wastes and materials. The requirements are relevant for all mines. However, IRMA states that 'at the present time [June 2018 when version 1 of the Standard was released] mine sites using riverine, submarine and lake disposal of mine waste materials will not be certified by IRMA.'

The objective of the relevant chapter in the IRMA Standard is to ensure that wastes and materials are managed in a manner that minimises their short- and long-term physical and chemical risks and protects the health and safety of communities and future land and water uses. This chapter aims to align with requirements in the 2017 versions of MAC's *Tailings Management Protocol* and Tailings Guide. The IRMA Standard, however, also applies the MAC protocol and guidance to mine waste facilities other than tailings facilities.

The relevant requirements of the IRMA Standard are listed below. Note that IRMA does not provide summary descriptions for each of the following categories of requirements. Rather than develop such summaries, the requirements of the IRMA Standard have been summarised below, omitting sub-bullets which contain additional details.

Policy and governance:

The operating company shall:

- develop a policy for managing waste materials and mine waste facilities in a manner that eliminates, if practicable, and otherwise minimises risks to human health, safety, the environment and communities
- demonstrate its commitment to the effective implementation of the policy.

Safe management of materials other than mine wastes

- Not relevant to tailings management governance since this applies to materials, substances and wastes other than mine wastes (e.g. used oils and solvents from vehicle maintenance).

4. Note that a small number of mine sites have multiple tailings facilities. In such case, *TSM* scores for the individual tailings facilities are aggregated to give a single score. Thus, the total number of tailings facilities included is actually higher.

Mine waste source characterisation and impact prediction:

The operating company shall:

- identify all existing and/or proposed mine waste facilities that have the potential to be associated with waste discharges or incidents, including catastrophic failures, that could lead to impacts on human health, safety, the environment or communities
- perform a characterisation for each mine waste facility that has chemical risks
- identify physical risks related to all mine waste facilities where the potential exists for catastrophic failure resulting in impacts on human health, safety, the environment or communities.

Waste facility assessment:

The operating company shall:

- implement a risk-based approach to mine waste assessment and management
- carry out an alternatives assessment to inform mine
- waste facility siting and selection of waste management practices.

Mitigation of risks and management of mine waste management facilities:

The operating company shall:

- design mine waste facilities and mitigate risks in a manner consistent with best available technologies (BAT) and best available/applicable practices (BAP)
- develop and implement risk management strategies
- develop a critical controls framework (e.g. as per MAC's Tailings Guide)
- develop an OMS manual (or equivalent)
- evaluate the performance of mine waste facilities on a regular basis
- update the OMS manual and implement new or revised risk and critical control strategies if information reveals that mine waste facilities are not being effectively operated or maintained
- implement an annual management review to facilitate continual improvement.

Independent Review of Mine Waste Management Facilities

- Siting and design or re-design of mine waste facilities, and the selection and modification of risk management strategies shall be informed by independent reviews.
- Reviews shall be carried out by independent review bodies, which may be composed of a single reviewer or several individuals who are objective, third-party, competent professionals.
- Independent review bodies shall report to the operation's general manager and an Accountable Executive Officer of the operating company or its corporate owner.
- The operating company shall develop and implement an action plan in response to commentary, advice or recommendations from an independent review, document a rationale for any advice or recommendations that will not be implemented, and track progress of the plan's implementation. All of this information shall be made available to IRMA auditors.

Stakeholder Engagement in Mine Waste Management

- Stakeholders shall be consulted when assessing alternatives for mine waste facility siting and management and prior to the finalisation of the design.
- Emergency preparedness and response plans shall be discussed and prepared in consultation with potentially affected communities and workers and/or workers' representatives, and in collaboration with first responders and relevant government agencies.
- Emergency and evacuation drills (desktop and live) related to catastrophic failure of mine waste facilities shall be held on a regular basis.
- If requested by stakeholders, the operating company shall report to stakeholders on mine waste facility management actions, monitoring and surveillance results, independent reviews and the effectiveness of management strategies.

Community Engagement and Public Disclosure

Requirements related to community engagement and public disclosure are described in several different chapters under Principles 1, 2 and 3 of the IRMA Standard. The relevant chapters within each of these principles are:

Principle 1. Business Integrity

Chapter 1.2—Community and Stakeholder Engagement
Intent: Support mining company decision-making and enable communities and stakeholders to participate in mining-related decisions that affect their health, well-being, safety, livelihoods, futures and the environment.

Chapter 1.3—Human Rights Due Diligence
Intent: Respect human rights, and identify, prevent, mitigate and remedy infringements of human rights.

Chapter 1.4—Complaints and Grievance Mechanism and Access to Remedy
Intent: Provide accessible and effective means for affected communities and individuals to raise and resolve mine-related complaints and grievances at the mine operational level, while not limiting their ability to seek remedy through other mechanisms.

Principle 2. Planning and Managing for Positive Legacies

Chapter 2.1—Environmental and Social Impact Assessment and Management
Intent: Proactively anticipate and assess environmental and social impacts, manage them and monitor and adapt environmental and social management systems in a manner that protects affected communities, workers and the environment.

Chapter 2.2—Free, Prior and Informed Consent
Intent: Demonstrate respect for the rights, dignity, aspirations, culture, and livelihoods of Indigenous peoples, participate in ongoing dialogue and engagement and collaborate to minimise impacts and create benefits for indigenous peoples.

Chapter 2.3—Obtaining Community Support and Delivering Benefits
Intent: Obtain and maintain credible broad support from affected communities and produce tangible and equitable benefits.

Chapter 2.4—Resettlement
Intent: Avoid involuntary resettlement, and when that is not possible, equitably compensate affected persons and improve the livelihoods and living standards of displaced persons.

Chapter 2.5—Emergency Preparedness and Response
Intent: Plan for and be prepared to respond effectively to emergency situations that may affect offsite resources or communities.

Chapter 2.6—Planning and Financing Reclamation and Closure
Intent: Protect long-term environmental and social values and ensure that the costs of site reclamation and closure are not borne by affected communities or the wider public.

Principle 3. Social Responsibility

Chapter 3.3—Community Health and Safety
Intent: protect and improve the health and safety of individuals, families, and communities affected by mining projects.

Chapter 3.4—Mining and Conflict-Affected or High-Risk Areas
Intent: prevent contribution to conflict or the perpetration of serious human rights abuses in conflict-affected or high-risk areas.

Chapter 3.7—Cultural Heritage
Intent: protect and respect the cultural heritage of communities and indigenous peoples.

Water Management

The objective of this chapter of the IRMA Standard is to ensure that water resources are managed in a manner that strives to protect current and future uses of water. The scope includes both water quality and quantity. Requirements in this chapter address the following topic areas:

- water management context and collaboration at the local and regional level
- site characterisation and prediction of potential impacts
- prevention and mitigation of impacts to water
- monitoring and adaptive management
- data sharing, communications and reporting on water management performance.

4.4 PERFORMANCE MEASUREMENT AND VERIFICATION

IRMA will provide certification on a site-specific basis for mine sites that have met all relevant requirements of the IRMA Standard. Operating companies must apply to seek IRMA certification, and certification is carried out by independent certification bodies.

There are intermediate steps that an operating company can take in the certification process.

IRMA provides a self-assessment tool for operating companies potentially interesting in seeking certification. Operating companies can also seek verification of individual chapters of the IRMA Standard (called IRMA Transparency), and there are IRMA 50, IRMA 75 and IRMA 100 Certified levels. These are illustrated in Figure 1 below.

Source: <https://responsiblemining.net/what-we-do/certification/>

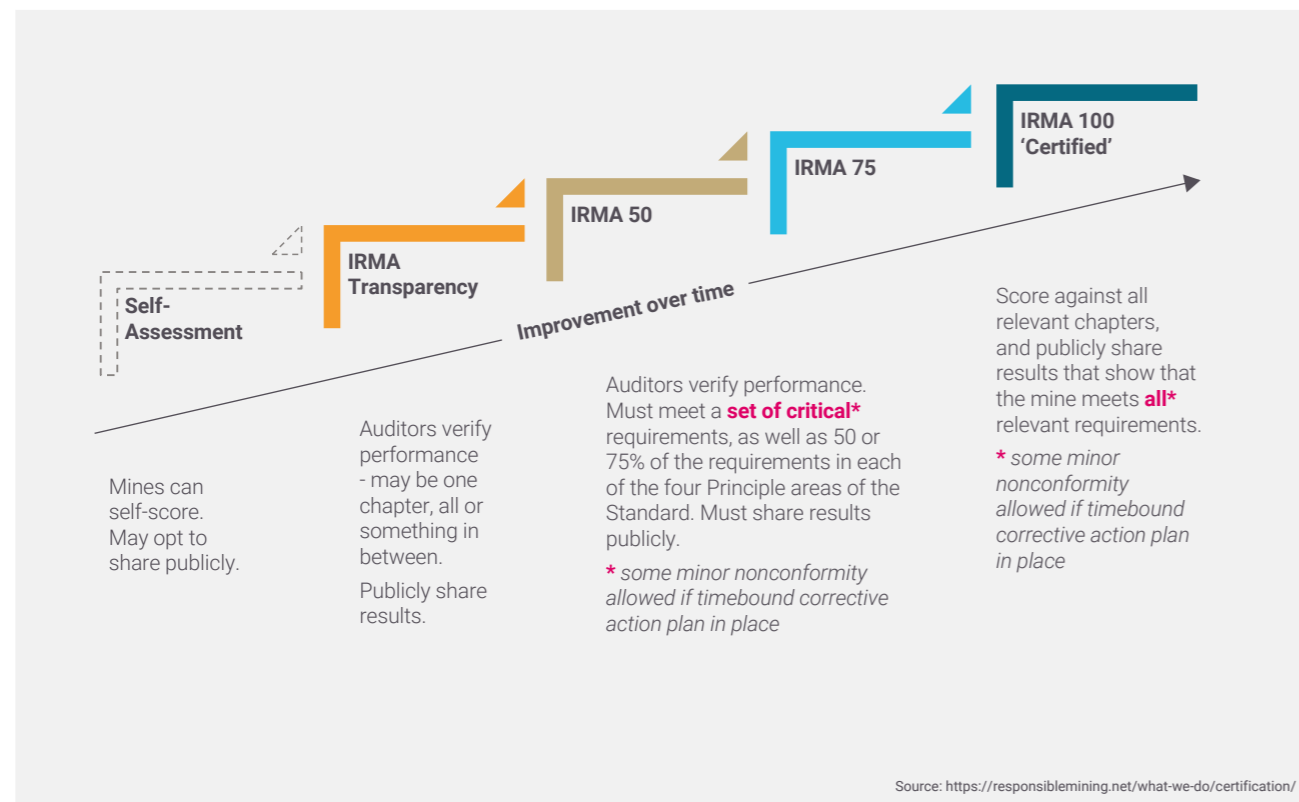


Figure 1. IRMA Achievement Levels

IRMA has prepared **IRMA Certification Body Requirements** which set out the activities that all certification bodies shall undertake when assessing mining projects that wish to become certified to the IRMA Standard, obtain a verified level of achievement, or undergo surveillance or recertification. The document is intended to:

- enable all certification bodies to operate in a consistent and controlled manner
- enable oversight of certification bodies by IRMA in a consistent and controlled manner

- provide the transparency that is required of an international certification scheme for it to have credibility with stakeholders
- provide documentation for continuity and consistency of the delivery or IRMA certification.

To support performance measurement, IRMA has developed a **guidance document**. For each requirement of the IRMA Standard this document describes the means of verification and provides examples of evidence and explanatory notes.

4.5 EXTERNAL INPUT TO THE DEVELOPMENT AND IMPLEMENTATION OF THE IRMA STANDARD

The IRMA Standard was created by the multi-stakeholder IRMA Steering Committee (now Board of Directors) and Secretariat through an intensive multi-year consultation process. Representatives of IRMA's five core sectors, as well as representatives from government agencies, financial institutions, academic organisations, related certification programmes, and others, participated in the process to define the content of the Standard.

IRMA conducted two rounds of public consultation (in 2014 and 2016) and two field tests (one in Zimbabwe and one in the United States) in order to collect input on the requirements of the Standard. IRMA also convened multi-stakeholder working groups and consulted independent experts to further articulate requirements that reflect responsible mining.

During the two public consultation periods, more than 120 individuals and organisations provided over 2,100 comments and recommendations that informed the content presented in the IRMA Standard.

4.6 IMPLEMENTATION OF THE IRMA STANDARD

At present, according to the **IRMA website**, there are two mines that are under assessment by a certification body: one in Mexico and one in Zimbabwe. In addition, a self-assessment has been completed at **one mine** in South Africa.

4.7 DISCLOSURE OF PERFORMANCE AGAINST THE IRMA STANDARD

Results of assessments by certification bodies will be available on the IRMA website as they become available. Operating companies that conduct self-assessments may opt to make the results of those assessments public.

5. COMPARISON OF THE STANDARD AND OTHER EXISTING STANDARDS

5.1 TAILINGS MANAGEMENT GOVERNANCE

As defined by ICMM, tailings management governance refers to the organisational structures and processes that a company puts in place to ensure the effective management, oversight and accountability for tailings. Tailings management governance consists of several elements:

- assigning accountability and responsibility for tailings management
- implementation of a management systems approach (i.e. tailings management system) to integrate all the Operator's systems, practices and processes related to tailings management (e.g. risk management, managing change) into one comprehensive framework
- assessing and managing risk
- developing and implementing OMS activities to operationalise the tailings management system, risk management plans and related components on a day-to-day basis
- emergency preparedness
- assurance, including Independent Review.

Table 1, below, summarises how each of these elements is addressed in the Standard, the ICMM Performance Expectations, MAC's TSM programme and the IRMA Standard.

Table 1. Comparison of governance provisions across standards

The Standard	ICMM Performance Expectation	MAC TSM	IRMA Standard
Accountability and responsibility			
<ul style="list-style-type: none"> Requires assignment of executive level accountability, site and/or corporate level responsibility and having an Engineer of Record. 	<ul style="list-style-type: none"> Addressed, in general terms, but specific aspects not addressed, such as executive level accountability, site-level responsibility and engineer of record. No additional guidance at present on how to implement, although guidance is under development. 	<ul style="list-style-type: none"> Requires assignment of executive level accountability, site and/or corporate level responsibility and having an engineer of record. Tailings Guide provides description of roles and responsibilities of each, which become requirements by way to table of conformance. 	<ul style="list-style-type: none"> Not explicitly addressed. Two requirements refer to an accountable executive office. No requirements pertaining to site and/or corporate level responsibility. No requirements pertaining to an engineer of record or similar.
Tailings management system			
<ul style="list-style-type: none"> Requires development, implementation and review of a tailings management system. System is less comprehensive than under MAC TSM, with some requirements disconnected from the requirement related to a tailings management system. 	<ul style="list-style-type: none"> Not addressed. ICMM guidance currently under development will address tailings management systems, based on the MAC Tailings Guide. 	<ul style="list-style-type: none"> Requires development, implementation and review of a tailings management system. Tailings Guide provides a detailed description of a tailings management system, most of which becomes required by way to table of conformance. 	<ul style="list-style-type: none"> Not addressed.
Assessing and managing risk			
<ul style="list-style-type: none"> Includes requirements to assess risk and development and implement risk management plans Focus is on physical risks of failure Addresses critical controls management 	<ul style="list-style-type: none"> Addressed, but at a high level No additional guidance at present on how to implement, although guidance is under development 	<ul style="list-style-type: none"> Includes requirements to assess risk and development and implement risk management plans, as part of requirements for a tailings management system. Focus is on both physical and chemical risk. Tailings Guide provides details, some of which becomes required by way to table of conformance. Addresses critical controls management Further guidance in an appendix 	<ul style="list-style-type: none"> Includes requirements to assess risk and development and implement risk management plans Focus is on both physical and chemical risks Addresses critical controls management, with reference to MAC Tailings Guide Most detailed of the standards with respect to chemical risks

The Standard	ICMM Performance Expectation	MAC TSM	IRMA Standard
Operations, maintenance and surveillance activities			
<ul style="list-style-type: none"> Requires development and implementation of an OMS manual Less comprehensive than under MAC TSM, with some requirements disconnected from the requirements related to an OMS manual 	<ul style="list-style-type: none"> Not addressed. ICMM guidance under development will address OMS manuals, based on the MAC OMS Guide. 	<ul style="list-style-type: none"> Requires development, implementation and review of an OMS manual. OMS Guide provides details, many of which are required by way to table of conformance. 	<ul style="list-style-type: none"> Requires development, implementation and review of an OMS manual
Emergency preparedness			
<ul style="list-style-type: none"> Includes requirements to develop emergency response plans, and to work with potentially impacted communities in the development and testing of plans. Requires development of inundation studies. 	<ul style="list-style-type: none"> High level requirements to develop and test plans. No additional guidance at present on how to develop and test plans, although guidance is under development. 	<ul style="list-style-type: none"> Includes requirements to develop emergency response plans, and to work with potentially impacted communities in the development and testing of plans. Requires development of inundation studies for some tailings facilities. Tailings Guide provides details which becomes required by way to table of conformance 	<ul style="list-style-type: none"> Includes requirements to develop emergency response plans, and to work with potentially impacted communities in the development and testing of plans. No requirement to develop inundation studies.
Assurance including independent review			
<ul style="list-style-type: none"> Requires development and implementation of independent review mechanisms. Level of effort scaled based on consequence classification. Also addresses other assurance mechanisms. 	<ul style="list-style-type: none"> Addresses at a high level Independent review not explicitly addressed 	<ul style="list-style-type: none"> Requires development and implementation of independent review mechanisms. Level of effort scaled based on risk profile but less prescriptive than the Standard. Measurement of performance against the Tailings Management Protocol requires internal audit for level A and external audit for level AA. Audits are a form of assurance. 	<ul style="list-style-type: none"> Requires development and implementation of independent review mechanisms. Level of effort scaled based on risk, but less prescriptive than the Standard. IRMA certification would require assessment by a certification body which is a form of assurance.

5.2 COMMUNITY ENGAGEMENT AND PUBLIC DISCLOSURE

The Standard can also be compared with the existing standards with respect to community engagement and public disclosure. However, this comparison is necessarily less detailed than the comparison above for tailings management governance, due to:

- the more diverse ways in which community engagement and public disclosure are addressed in the various standards
- the fact that the Standard is entirely focused on tailings management and requirements related

to community engagement and public disclosure are presented in that context, whereas most requirements in the other standards are in the context of site-wide activities related to community engagement.

Based on the structure of the Standard, the table below compares across three areas:

1. engagement with affected communities
2. community engagement in emergency preparedness
3. public disclosure.

Table 2. Comparison of community engagement and public disclosure provisions across standards

Global Industry Standard on Tailings Management	ICMM Performance Expectation	MAC TSM	IRMA Standard
Engagement with affected communities			
<ul style="list-style-type: none"> • Specific requirements for community engagement, respect for human rights, FPIC, social impact assessment. 	<ul style="list-style-type: none"> • Mining Principle 3 – Human Rights, provides eight Performance Expectations. • Mining Principle 9 – Social Performance, provides four Performance Expectations. • Mining Principle 10 – Stakeholder Engagement, provides four Performance Expectations. • FPIC and relationships with Indigenous communities are addressed in Mining Principle 3 and in the <i>Position Statement: Indigenous Peoples</i>. • Social impact assessment not explicitly addressed. 	<ul style="list-style-type: none"> • <i>Indigenous and Community Relationship Protocol</i> has specific requirements for community engagement and FPIC. • Social impact assessment not explicitly addressed. 	<ul style="list-style-type: none"> • Detailed requirements in • Chapter 1.2—Community and Stakeholder Engagement • Chapter 1.3—Human Rights Due Diligence • Chapter 1.4—Complaints and Grievance Mechanism and Access to Remedy • Chapter 2.1—Environmental and Social Impact Assessment and Management • Chapter 2.2—Free, Prior and Informed Consent • Chapter 2.3—Obtaining Community Support and Delivering Benefits • Chapter 2.4—Resettlement • Chapter 2.6—Planning and Financing Reclamation and Closure.

Global Industry Standard on Tailings Management	ICMM Performance Expectation	MAC TSM	IRMA Standard
Community engagement in emergency preparedness			
<ul style="list-style-type: none"> • Specific requirements to engage with local communities, first responders and others in the development and testing of emergency plans related to tailings management. 	<ul style="list-style-type: none"> • Not specifically addressed in the Position Statement on Tailings Management. 	<ul style="list-style-type: none"> • Specific requirements to engage with local communities, first responders and others in the development and testing of emergency plans related to tailings management. 	<ul style="list-style-type: none"> • Specific requirements to engage with local communities, first responders and others in the development and testing of emergency plans related to tailings management.
Public disclosure			
<ul style="list-style-type: none"> • Detailed requirements for disclosure of information specific to tailings management. 	<ul style="list-style-type: none"> • Mining Principle 10 – Stakeholder Engagement, includes a Performance Expectation that addresses disclosure. • Since this Performance Expectation is not intended to be specific to tailings management, it does not prescribe specific disclosure or reporting requirements related to tailings. 	<ul style="list-style-type: none"> • <i>Indigenous and Community Relationship Protocol</i> has requirements for public reporting. • Since this Protocol is not intended to be specific to tailings management, these requirements do not prescribe specific disclosure or reporting requirements related to tailings. 	<ul style="list-style-type: none"> • The following chapter in the IRMA Standard all have requirements related to disclosure: • Chapter 2.1—Environmental and Social Impact Assessment and Management • Chapter 2.2—Free, Prior and Informed Consent • Chapter 2.4—Resettlement • Chapter 2.6—Planning and Financing Reclamation and Closure. • Since none of these chapters are intended to be specific to tailings management, these requirements do not prescribe specific disclosure requirements related to tailings.

5.3 STATUS OF IMPLEMENTATION OF THE STANDARD

The status of implementation of a standard gives an indication of its maturity. While a more mature standard is not necessarily more effective in achieving its objectives, lessons learned and incorporated over the long period of implementation can help to improve a standard and improve effectiveness of implementation (e.g. performance indicators and criteria refined based on experience to ensure measurability of performance).

MAC TSM

This is the oldest and most mature of the standards. The MAC Tailings Guide was first introduced in 1998 and the OMS Guide was introduced based on implementation experience with the Tailings Guide. The *Tailings Management Protocol* was introduced in 2004 and there has been public reporting of performance against the Protocol since 2006, so there is now about 15 years of experience with implementation of the Protocol.

The Protocol, Tailings Guide and OMS Guide were extensively revised and modernised between 2015 and 2019 and a Table of Conformance was introduced to help measure performance against indicators in the Protocol.

TSM is being implemented in more than 60 facilities around the world as part of the MAC TSM programme and has been adopted by industry associations around the world. The global adoption and implementation of TSM continues to grow.

ICMM Performance Expectations

While the ICMM Performance Expectations were only introduced in February 2020, they are based on the development and implementation of the ICMM Principles of Sustainable Development that date to 2003, and several different Position Statements relevant to the scope of the Standard. Position statements and guidance related to community engagement are the most mature of these.

The Position Statement on Tailings Management is newer and there is less experience with its implementation, particularly at the site-specific

level. ICMM does not yet have guidance related to tailings management but a comprehensive guidance document is under development.

As a condition of membership, since 2018 ICMM company members have been required to implement the Position Statement on Tailings Management.

The mechanisms to implement and measure performance against the Performance Expectations are new and as yet un-tested.

IRMA Standard

Version 1 of the IRMA Standard was released in 2018 and version 2 has not yet been released. IRMA development has considered lessons from similar initiatives, including close alignment with MAC TSM on tailings management, rather than starting from scratch. In addition, two tests of an early draft of the IRMA Standard were conducted. There has been careful consideration of implementation mechanisms in advance of roll-out of the Standard.

However, the IRMA Standard is both very broad in scope and very detailed. No assessment has been completed and, to date, no facility has received IRMA certification. Thus, it is certainly less mature than MAC's TSM. It is more difficult to compare the IRMA Standard with the ICMM Performance Expectations, since Performance Expectations are, in effect, a new mechanism that brings together a range of pre-existing Position Statements.

Global Industry Standard on Tailings Management

This is a completely new standard. It has been developed in a relatively short period of time (less than one year), resulting in less opportunity to consider and learn from existing standards. This was offset in some respects by the experience of the members of the Expert Panel. However, as an un-tested standard, questions remain, for example, about the measurability of performance against some of the requirements.

More significantly, the implementation mechanism for the Standard is yet to be determined and will be critical to its effectiveness.

KEY MESSAGES

1. When development of the Standard was initiated, several other standards related to tailings management were already in place. Like the Standard, these standards address tailings management, governance, and community engagement and public disclosure.
2. International Council on Mining and Metals (ICMM) Performance Expectations were introduced in 2020 and are being implemented by ICMM's 27 members. Commitments relevant to the Standard are described in:
 - Position Statement: Tailings Management (2016)
 - Position Statement: Indigenous Peoples (2013)
 - Position Statement: Partnerships in Development (2010)
 - Position Statement: Water Stewardship (2017)
3. The Mining Association of Canada (MAC) *Towards Sustainable Mining*[®] (TSM[®]), was introduced in 2004 and is being implemented at over 60 facilities. TSM has also been adopted by industry associations in several other countries. Requirements relevant to the Standard are described in:
 - *Tailings Management Protocol* (2004, revised 2017 & 2019).
 - *Indigenous and Community Relationships Protocol* (2004, revised 2019).
 - *Water Stewardship Protocol* (2019).
4. The Initiative for Responsible Mining Assurance (IRMA) *Standard for Responsible Mining* was launched in 2018 and is currently being implemented at two mines. Requirements relevant to the Standard are described in:
 - Environmental Responsibility Requirements
 - Chapter 4.1: Waste and Materials Management
 - Chapter 4.2: Water Management
 - Business Integrity Requirements (3 relevant chapters).
 - Planning for Positive Legacies Requirements (6 relevant chapters).
 - Social Responsibility Requirements (3 relevant chapters).
5. There are no existing standards for technical design which is a topic addressed in the Standard. However, guidance from organisations such as the International Commission on Large Dams (ICOLD) is frequently incorporated into legal requirements (e.g. site-specific permits for tailings dams).