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ICMM
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on Mining & Metals

**MINING WITH
PRINCIPLES**

CONFORMANCE PROTOCOLS

Global Industry Standard on Tailings Management

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About ERM:

ERM is a leading global provider of environmental, health, safety, risk, social consulting services and sustainability related services. ERM works with the world's leading organizations, delivering innovative solutions and helping them to understand and manage their sustainability challenges. ERM has more than 5,500 people in over 40 countries and territories working out of more than 160 offices. ERM Website: <https://www.erm.com>

About KCB:

KCB is an award-winning engineering, geoscience and environmental consulting firm with a strong culture of quality, health and safety, community engagement and ethics. For over 70 years, KCB has developed sustainable solutions for clients in energy, hydropower, infrastructure, mining and transportation sectors. KCB has engineers and scientists working in over 25 countries with its head office in Vancouver and other offices across Canada, and in the United States, England, Australia, Peru and Brazil. KCB Website: <https://www.klohn.com>

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FOREWORD

Standards are important for establishing clear expectations of safe and responsible performance. The catastrophic tailings dam collapse at Vale's Córrego de Feijão mine in Brumadinho on 25 January 2019 was a human and environmental tragedy that demanded decisive and appropriate action to enhance the safety of tailings facilities across the globe. That motivated the United Nations Environment Programme (UNEP), International Council on Mining and Metals (ICMM) and Principles for Responsible Investment (PRI) to convene the Global Tailings Review to develop an international standard for the safer management of tailings storage facilities.

Launched on 5 August 2020, the Global Industry Standard on Tailings Management (the Standard) has the ultimate goal of zero harm to people and the environment and sets a global benchmark for achieving strong social, environmental and technical outcomes for tailings management.

But for any standard to be effective, conformance must periodically be assessed. As ICMM members committed that all facilities with 'Extreme' or 'Very high' potential consequences will be in conformance with the Standard by August 2023, and all other facilities by August 2025, the ability to reliably assess conformance has some urgency. To enable companies who have committed to implementing the Standard to confidently assess conformance, ICMM has developed Conformance Protocols for the Standard. For ICMM members, this effectively supports the integration of the Standard into ICMM's existing assurance and validation processes for its member commitments.

The Standard is structured around six Topic Areas encompassing 15 Principles and includes 77 individual Requirements. The Conformance Protocols map to the 77 Requirements of the Standard using clear and concise

criteria to enable conformance with the Standard to be assessed. The criteria in the Conformance Protocols are derived from and faithfully reflect the language of the Standard, to support implementation and enable conformance against all applicable Requirements to be assessed. The intention is that they can be used by Operators of tailings facilities to conduct self-assessments of progress with implementing the Standard. In addition, they can be used to enable third-party auditors to independently confirm whether a tailings facility is in conformance with Requirements of the Standard at the asset level.

Given the ambitious timelines for implementing the Standard, the publication of the Conformance Protocols is an important milestone. It underscores ICMM's commitment to the safe and responsible management of tailings facilities. And we hope that is widely adopted as a basis for assessing conformance by all those who share our commitment.

Aidan Davy

Chief Operating Officer and Director, Environment Programme, ICMM

INTRODUCTION

i. Overview

The *Conformance Protocols for the Global Industry Standard on Tailings Management* ('the Conformance Protocols') have been developed to support the integration of the *Global Industry Standard on Tailings Management* ('the Standard') into ICMM's existing assurance and validation processes for its member commitments. The Conformance Protocols support self-assessments and independent third party assessments of progress with implementing the Standard. While the primary audience is ICMM members and the independent consultants they engage with to assess conformance, it can also be applied by non-members.

The Standard strives to 'achieve the ultimate goal of zero harm to people and the environment with zero tolerance for human fatality'. It requires Operators to take responsibility and prioritise the safety of tailings facilities through all phases of a facility's lifecycle, including closure and post-closure, until a facility meets the criteria of *safe closure*. It also requires the disclosure of relevant information to support public accountability. The Standard is structured around six Topic Areas encompassing 15 Principles and includes 77 individual Requirements. The Standard applies to tailings facilities¹, except those deemed to be in a state of *safe closure*.

On 5 August 2020, ICMM members committed to implement the Standard such that all facilities with 'Extreme' or 'Very high' potential consequences will be in conformance with the Standard within three years, and all other facilities within five years. The Conformance Protocols have been developed to support that commitment.

The Conformance Protocols map to the 77 Requirements of the Standard using clear and concise criteria to enable conformance with the Standard to be assessed.

The objectives of this document are:

- To provide Operators and independent third-parties with clear criteria, derived from the language of the Standard, illustrated by examples (which are indicative rather than mandatory), which supports implementation and enables conformance against all applicable Requirements of the Standard to be assessed.
- To help Operators conduct self-assessments of progress with implementing the Standard at the asset level, which in some cases may include more than one tailings facility.

- To enable third-party auditors to independently confirm whether a tailings facility is in conformance with Requirements of the Standard.

For the purposes of this document, 'Conformance' means that an Operator can demonstrate that systems and processes are in place to implement all applicable Requirements of the Standard (not in conflict with the law).

ii. Assessing conformance

The Conformance Protocols support self-assessments and independent third-party validation of progress with implementing the Standard. ICMM's *Validation Guidance* defines these terms as follows:

- **Self-assessment** – First-party confirmation (i.e. self-assessment) of the existence and integrity of systems and/or practices relating to implementation, to the extent that they are applicable in a given context.
- **Third-party validation** – Independent confirmation of the reasonableness and authenticity of assertions made in self-assessments. This review may take place as part of a separate system audit, e.g. an ISO 14001 environmental management system audit.

Third-party validation work is to be undertaken by an auditor with the experience, skills and knowledge required to competently confirm the reasonableness and authenticity of assertions made in self-assessments or to undertake a standalone audit. It is anticipated that for many Operators, headline data for their self-assessments will be completed in a similar manner to the ICMM Performance Expectations.

In undertaking third-party validation, the auditor must review evidence to support the findings that an Operator either meets, partially meets, or does not meet the Requirements of the Standard (see Table 1 for a description of conformance levels). Evidence to support findings may include, but is not limited to, documents and records, direct observations, interviews with appropriate personnel and results of inspections by regulatory agencies. The auditor should confirm during the review that evidence provided can reasonably be expected to address the Requirements and related criteria. However, the Conformance Protocol is based on the premise that an auditor's scope of work does not include a detailed analysis of the evidence provided, especially given that much of it is already subject to oversight by (and the

¹ The Conformance Protocols apply to tailings facilities as a whole, not just tailings embankments. They do not apply to riverine and deep sea systems and other types of facilities such as fresh and process water dams, stockpiles, etc (which don't conform to the definition of a *Tailings Facility* within the Standard). This distinction is important because while the design, construction and operation of embankments is a very important factor in influencing the safety of tailings facilities, it is not the only factor. For example, aspects related to water management (eg seepage, surface water) can be very important in ensuring safe tailings management.

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professional judgement of) an Independent Tailings Review Board (ITRB), senior independent technical reviewer, and/or regulatory agency. The functions of independent review (e.g. the ITRB) are summarised in the Standard (Annex 3, Table 4) and described more fully in ICMM's *Tailings Management: Good practice guide*, while more detail on the competencies of auditors are provided in Section vi.

As noted in the preamble of the Standard, 'Conformance with the Standard does not displace the requirements of any specific national, state or local governmental statutes, laws, regulations, ordinances, or other government directives. Operators are expected to conform with the Requirements of the Standard not in conflict with other provisions of law'.

The Conformance Protocols assume a similar approach to demonstrating conformance with the Standard to that

laid out in the ICMM *Assurance and Validation Procedure*. In practice, there is a presumption that the third-party validation work by an independent auditor will rely to a significant degree on the self-assessment work already undertaken by the Operator. While third-party validation may be undertaken without a prior self-assessment, it is likely to be a more time-consuming and onerous undertaking.

The possible outcomes for the self-assessment and third-party validation of an individual Requirement are 'Meets', 'Partially Meets', and 'Does not Meet'. In some situations, a requirement may be 'Not Applicable' – for example, many mining operations do not take place in indigenous or tribal peoples land or territories, in which case Requirement 1.2 would not be applicable. A description of the conformance levels is provided in **Table 1**.

Table 1: Description of conformance levels

Conformance level	Description of outcome
Meets	Systems and/or practices related to the Requirement have been implemented and there is sufficient evidence to demonstrate that the Requirement is being met.
Partially meets	Systems and/or practices related to meeting the Requirement have been only partially implemented. Gaps or weaknesses persist that may contribute to an inability to meet the Requirement, or insufficient verifiable evidence has been provided to demonstrate that the activity is aligned to the Requirement.
Does not meet	Does not Meet – Systems and/or practices required to support implementation of the Requirement are not in place, or are not being implemented, or cannot be evidenced.
Not applicable	The specific Requirement is not applicable to the context of the asset.

This range of conformance levels are intended to aid members during their self-assessments to understand where they are on their journey to full implementation of the Standard. ICMM members are committed to implementing the Standard by 5 August 2023 for operated tailings facilities with 'Extreme' or 'Very High' potential consequences and by 2025 for all other tailings facilities. As such, all applicable criteria should satisfy the *Meets* level of conformance by this time.

Given the timelines for implementing the Standard, the expectation is that members should demonstrate conformance by these dates based on self-assessments at a minimum. However, members should contract with auditors to undertake third-party validation as soon as reasonably practicable to confirm the assertions made in self-assessments. Thereafter, the intervals between independent audits of tailings facilities should be a maximum of three

years for 'Extreme' or 'Very High' consequence facilities and five years for all others. Once a tailings facility is deemed to be in a state of *safe closure* it no longer needs to be subject to self-assessments or third-party audits,

Where an Operator is required to undertake engineering work or other measures to conform to some Requirements (e.g. for Requirements 4.7 or 5.7, which might include remedial engineering measures for existing facilities), the expectation is that these shall be carried out as soon as reasonably practicable. It is not necessary for such measures to be complete by the implementation deadlines for an Operator to be in conformance, but both the measures and associated timelines should be clearly documented by an Accountable Executive. The working assumption is that the yet-to-be completed works, once complete, will address the underlying gap in conformance.



The Standard and supporting Conformance Protocols are directed to the Operator. Conformance is intended to be assessed for individual tailings facilities. In practice, some Requirements are facility specific while others apply across the asset or at the corporate level. Where an asset includes more than one tailings facility, the evidence for many of the Requirements of the Standard will be common across the facilities.

Regarding any public statements of *conformance* with the Protocols which Operators may wish to make, such statements should clearly differentiate between declarations of conformance based on self-assessments versus independent audits of the Requirements of the Standard.

In conducting self-assessments that form the basis for third-party audits, Operators should assess conformance against all Requirements of the Standard. The scope of an engagement with a third-party audit service provider may cover all the Requirements of the Standard, or a representative sample of the Requirements (by mutual agreement between the Operator and service provider). Where a representative sample of the Requirements are to be chosen, this should be at the discretion of third-party audit service provider to ensure the independence and integrity of the work undertaken. The representative sample should include Requirements from each of the 6 topics of the Standard and the methodology used to determine the representative sample size and selection should be stated in the audit report.

iii. Relationship between the Conformance Protocols, the Standard and other ICMM tailings-related documents

The relationship between the Standard and ICMM's tailings-related documents is shown in **Figure 1** and explained below.

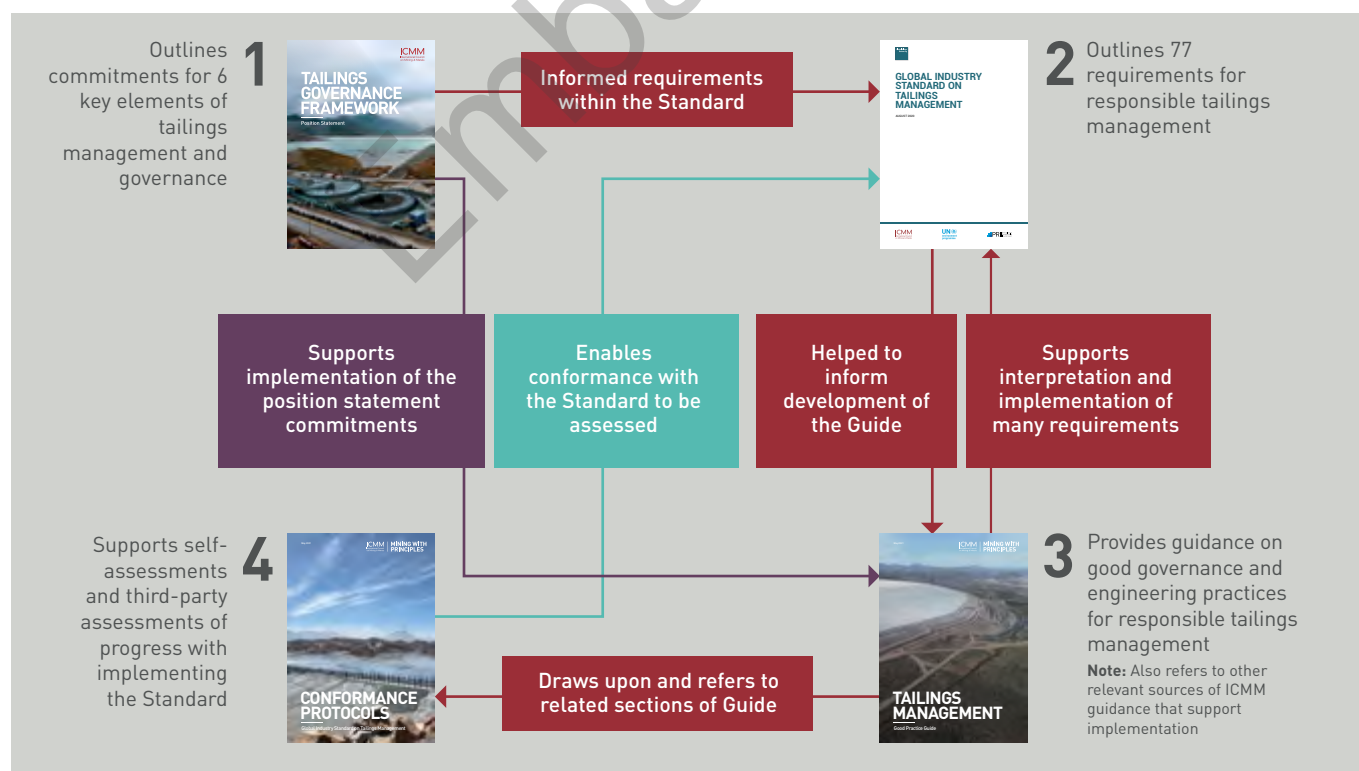


Figure 1: Relationship between key documents

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The two documents that include the commitments of membership are illustrated on the top of Figure 1. The six commitments in the *Tailings Governance Framework: Position Statement* on tailings management and governance (see top left of Figure 1) pre-date the requirements of the Standard which adequately addresses them. The Standard (top right of Figure 1) outlines 77 Requirements for responsible tailings management, under 15 Principles that cover six Topic areas. The Standard has helped to inform the development of ICMM's Tailings Management Good Practice Guide ('the Guide', bottom right of Figure 1).

In turn, the Guide supports the interpretation and implementation of many requirements within the Standard. In particular, the Guide provides support with certain terminology as used in the Standard (for consistency) and is referenced within certain examples. The Guide is not intended to either replace Requirements or create additional requirements beyond the Standard. The Guide also supports the implementation of the commitments within the *Tailings Governance Framework: Position Statement*. In addition, the Guide also refers to other sources of ICMM guidance that help to support implementation of some of the environmental and social requirements of the Standard (primarily under Principles 1–3 of the Standard).

Lastly, the ICMM Conformance Protocols (bottom left of Figure 1) support self-assessments and independent third party assessments of progress with implementing the Standard. Where appropriate, the Protocols refer to related sections of the Guide.

iv. Scope of application to members assets

ICMM's *Assurance and Validation Procedure* specifies that assets subject to self-assessment or third-party validation include:

'Operations involved in the production or refining of minerals and metals over which the member exercises control with regard to financial and operating policies and practices. This excludes activities in a company's portfolio that are not producing saleable products, such as exploration sites, non-managed operations and projects.'

Given that the Standard also applies to closed facilities (not deemed to be in a state of safe closure), for the Conformance Protocols, assets subject to self-assessment or third-party validation include:

'Operations involved in the production or refining of minerals and metals over which the member exercises control with regard to financial and operating policies and practices.

This excludes activities in a company's portfolio that are not producing saleable products, such as exploration sites, non-managed operations and projects. One exception is closed sites where closure activities are still actively taking place. Once closure activities have been executed at a site (other than monitoring and maintenance), validation activities are limited to assessing conformance with the Standard. Validation of conformance with the Standard should continue until a closed tailings facility is deemed to be in a state of 'safe closure' by an Independent Tailings Review Board or a senior independent technical reviewer and signed off by the Accountable Executive.'

v. Approach to interpreting the Standard Requirements

The Conformance Protocols were developed to strictly adhere to the Standard Requirements. The Standard has some challenges across the 77 Requirements in terms of internal consistency and the level of detail operators are expected to provide. To support conformance with the Standard, some of the conformance criteria or related examples in the protocols are accompanied by notes of clarification. In all such instances, a guiding principle was that any such notes of clarification must not result in a less safe tailings facility than intended by the Standard. The ICMM Tailings Management Good Practice Guide supports the interpretation and implementation of many requirements within the Standard across the wide range of jurisdictions and tailings facilities globally.

Additional interpretive elements are primarily located within the examples of conformance for *Meets* and within the interpretive notes and equivalency sections (see *Section viii* below). Where possible, the introduction of new terms beyond those already contained within the Standard has been avoided. The Standard contains multiple technical terms and common terms, which have a specific meaning in the context of the Standard. These terms appear in *italics* throughout the Conformance Protocols and are listed within Annex A. In addition, several terms deemed to aid interpretation of Requirements but were not contained within the Standard, were sourced from the Tailings Management Good Practice Guide and are also included in Annex A.

Each Requirement has been treated as standalone. However, there are strong inter-connections, dependencies and points of overlap between most of the Requirements that are important to consider as part of the self-assessment and third-party validation process. Each Operator will need to work through these to develop their implementation plan for the Standard.

vi. Criteria for selection of audit providers and requisite skills

Third-party validations must be undertaken by competent professionals with appropriate skills, experience and independence. In this way, the third-party validation will go beyond a 'box-ticking' exercise, bringing value to the process and aid in the continual improvement of tailings management. The appointment of an audit provider should meet the following criteria outlined in ICMMs Assurance and Validation Procedure as shown in **Table 2** below. Where criteria refer to financial interests and fees, this applies at the asset level.



Table 2: Criteria for selection of audit provider

Criteria	Audit Provider
Objectivity	The audit provider must be able to perform the engagement in a way that is demonstrably objective and should not allow bias, conflict of interest or undue influence of others to override professional or business judgments.
	The audit provider should have no active financial or material indirect financial interest in the validation client.
	The audit provider should have no undue dependence on total fees from the client (no more than 30% of total income from client is recommended).
	No member of the audit team should be performing services for the auditee client (i.e. mine site) at the time of the audit that directly relate to the subject matter of the audit engagement or deal in or be a promoter of shares and securities in the auditee client.
	No member of the audit team should be acting as an advocate on behalf of an auditee client in litigation or in resolving disputes with third parties at the time of the audit.
	An audit provider should be impartial and reach conclusions based on objective criteria, rather than on the basis of bias or prejudice.
	Other threats to objectivity such as familiarity and intimidation should also be considered.
Organisational competencies	The organisations through which individuals provide audit services must be able to demonstrate adequate competencies, including adequate audit oversight, and infrastructure, including quality control.
Individual competencies	Individuals involved in any specific audit process must be demonstrably competent in terms of skills, knowledge of the Standard subject matter, industry experience and areas of expertise to cover the Standard topics.
	A multidisciplinary team should provide the expertise necessary to adequately audit a company's conformance to the Standard (Table 3).

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A multidisciplinary team is most often needed to provide the experience, skills and knowledge to adequately assess conformance with the Standard. **Table 3** outlines the anticipated skillsets required by the multidisciplinary audit team to competently conduct the audit. It is important to recognise that individuals on the team may have the

associated skills and knowledge to cover more than one of the skillsets illustrated in Table 3, so a team of two-three professionals may be adequate. Similarly, the same skillsets/disciplines would be expected to conduct the self-assessment process at the asset level.

Table 3: Auditor skillset associated with each Topic and Principle of the Standard

Topic	GISTM Principle	Associated skillset						
		Geography including climate	Life-Cycle including Closure	Risk / emergency management	Tailings Facility Engineer (Geotech/ Hydrotech/ Civil/ Mining)	Environmental management	Socio-economic / community aspects	Water
Communities (I)	1		x				x	
Integrated Knowledge Base (II)	2	x	x	x	x	x	x	x
	3	x			x	x	x	
Design, Construction, Operation and Monitoring (III)	4			x	x			
	5	x	x	x	x	x	x	x
	6	x			x	x		x
	7				x	x		
Management and Governance (IV)	8			x	x	x		
	9				x			
	10		x	x	x	x		
	11					x	x	
	12						x	
Emergency Response (V)	13			x				
	14			x		x	x	
Disclosure (VI)	15		x	x	x	x	x	

vii. Layout of the Conformance Protocol

Each Conformance Protocol contains four sections as described in **Table 4**.

Table 4: Summary of the Conformance Protocol layout

Section	Details included	Purpose for inclusion
1	Principle and Requirement	Provides the wording of the Standard Requirement and associated principle.
2	The conformance assessment criteria for Meets Examples of evidence for 'Meets' criteria	Defines the conformance criteria for Meets (which vary across all Requirements) Criteria for Partially Meets are common across all Requirements and described below rather than duplicated in each Requirement. Criteria have not been defined for Does not meet as this will be self-evident from the assessment. The examples included are illustrative, non-exhaustive and should be read as indicative rather than mandatory. They are intended to help <i>Operators</i> and auditors understand the type of evidence that could be used to demonstrate conformance.
3	Interpretive and Clarification Notes	For certain protocols more context is provided for users of the protocols. These included acronyms not covered in the Standard, terms defined for the purpose of the protocols, or certain technical considerations. This section also references relevant sections of the Tailings Management Good Practice Guide. These notes are to support implementation and assessment of the protocol content.
4	Equivalent Standards for demonstrating conformance	The current best determinations of ICMM or IFC equivalent environmental and social requirements (including all ICMM's position statements) are included to help operators evaluate and adopt, and for auditors to assess. It is fully expected that there will be other mechanisms available in various parts of the world that may, once implemented, demonstrate partial or full equivalency against a particular GISTM requirement.

Criteria for *Partially Meets* are common across all Requirements and are classified as:

Some progress has been made on the *Meets* criteria, but for at least one of them:

- Systems and/or practices related to meeting the criterion have been only partially implemented.
- Gaps or weaknesses persist that may contribute to an inability to meet the intended outcome of the criterion.
- Insufficient verifiable evidence can be provided to demonstrate that the criterion has been met.

A plan is in place to address deficiencies in other criteria.

viii. Equivalent standards for demonstrating performance and references to existing guidance

The Standard states the following about equivalency:

'Many activities referenced in this Standard may be found as part of a comprehensive mine-wide environmental and social management system. Where credible systems for assuring these requirements are already in place (such as third-party audit or verification processes), these should be recognised as equivalent to avoid duplication, to the extent reasonably practicable'.

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This approach aims to avoid redundancy for operators, reduce audit burden for all parties and enable recognition of existing risk management controls in place. In demonstrating equivalency against the environmental and social provisions within the Standard, the main focus has been on ICMM's Mining Principles and related performance expectations and position statements, IFC's *Performance Standards on Social and Environmental Sustainability*, and a number of ISO standards. Where appropriate, these equivalent standards and related sources of guidance are referred to within the Conformance Protocols under Section 4 'Equivalent Standards for demonstrating conformance' as either partially or fully equivalent. Where partial equivalency is demonstrated an explanation as to why this is the case is provided.

The Conformance Protocols do not consider equivalency with the Mining Association of Canada's (MAC) *Towards Sustainable Mining*® (TSM®) programme, which includes detailed requirements relating to tailings management and other aspects addressed by the Standard. MAC has conducted a detailed assessment of equivalency of

the Standard's Requirements against the *TSM Tailings Management Protocol* and other *TSM* performance protocols relevant to the Standard. This assessment is available on the MAC website at: <https://mining.ca/our-focus/tailings-management/>

ix. Disclosure of outcomes

Under the ICMM *Assurance and Validation Procedure*, member companies would be required to disclose whether a facility is in conformance with the Standard. This should clearly indicate whether the determination of conformance is based on a self-assessment or a third-party audit, and the date on which the self-assessment or audit was completed. Self-assessments should be signed-off by an *Accountable Executive*, whereas third-party audits should be signed-off by the lead auditor. In addition, when a facility does not conform to one or more of the requirements, this should be disclosed alongside a summary of time-bound measures to bring the facility into conformance. Alternatively, a declaration of why conformance to a specific requirement may not be applicable² should be provided.

² For example, this would be applicable in some jurisdictions the State legally assumes responsibility for certain actions that are part of a Requirement in the Standard.

THE CONFORMANCE PROTOCOLS



PRINCIPLE 1

Respect the rights of *project-affected people* and *meaningfully engage* them at all phases of the *tailings facility lifecycle*, including closure.

Requirement 1.1	
1	<p>Demonstrate respect for human rights in accordance with the United Nations Guiding Principles on Business and Human Rights (UNGP), conduct human rights due diligence to inform management decisions throughout the <i>tailings facility lifecycle</i> and address the human rights risks of <i>tailings facility credible failure scenarios</i>.</p> <p>For existing facilities, the <i>Operator</i> can initially opt to prioritize salient human rights issues in accordance with the UNGP.</p>

Assessment		
	Conformance	Criteria
2	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> <i>Operator</i> has a policy commitment to respect human rights in accordance with the UNGPs. <i>Operator</i> has conducted a site-specific human rights due diligence process to inform management decisions throughout the <i>tailings lifecycle</i>. <i>Operator</i> has addressed the human rights risks of <i>tailings facility credible failure scenarios</i> where such scenarios exist for a given facility.
		<p>Examples</p> <ol style="list-style-type: none"> Documented Human Rights policy in line with UNGPs. <ul style="list-style-type: none"> Policy may be site specific, or company-wide and implemented at the site. Documented human rights due diligence process in line with the UNGPs, as well as evidence that findings are updated regularly and have informed management decision making over time. <ul style="list-style-type: none"> For existing facilities, <i>Operator</i> can initially prioritize salient human rights issues for management consideration, rather than undertaking a full due diligence process. Documentation can include a stand-alone due diligence report or a human rights risk and <i>impact assessment</i>, or be incorporated into a Social Impact and Risk Assessment. Can also include annual reports. Evidence can include minutes of meetings and records of mitigation measures planned and implemented. Mitigation strategies or plans connected to specific human rights risks for facilities with <i>credible failure scenarios</i>, as identified in the due diligence process. Related actions should be time-bound, have assigned responsibility and KPIs for monitoring. <ul style="list-style-type: none"> Implementation may be demonstrated through monitoring and evaluation reports, as well as ongoing revisions to mitigation strategies or plans, based on review.

Interpretive and Clarification Notes:	
3	/

Equivalent Standards for demonstrating conformance	
4	ICMM Performance Expectations (Principle 3.1 regarding human rights) is fully equivalent to conformance with this protocol for criteria a and b if the site-specific human rights due diligence process has informed management decisions throughout the <i>tailings facility lifecycle</i> . Specific additional steps need to be taken where criterion c applies.

PRINCIPLE 1

Respect the rights of *project-affected people* and *meaningfully engage* them at all phases of the *tailings facility lifecycle*, including closure.

Requirement 1.2	
1	Where a new <i>tailings facility</i> may impact the rights of indigenous or tribal peoples, including their land and resource rights and their right to self-determination, work to obtain and maintain <i>Free, Prior and Informed Consent</i> (FPIC) by demonstrating conformance to international guidance and recognised <i>best practice</i> frameworks.

Assessment		
Conformance	Criteria	Examples
Meets	<p>For new facilities, the following are demonstrated:</p> <p>a. <i>Operator</i> has identified indigenous or tribal peoples^{1,2,3} that may be affected by a new <i>tailings facility</i>, and understands how the rights of these groups may be impacted⁴, including their land and resource rights and their right to self-determination.</p> <p>If indigenous or tribal peoples are identified in accordance with (a), the following are demonstrated:</p> <p>b. <i>Operator</i> works to obtain and maintain <i>FPIC</i> from identified indigenous or tribal peoples, in conformance with international guidance and recognised <i>best practice</i> frameworks.</p>	<p>a. Identification of indigenous or tribal peoples may include:</p> <ul style="list-style-type: none"> – a register of <i>project-affected people</i>, including clear explanation for presence/absence of indigenous peoples; – due diligence assessments showing how indigenous and tribal peoples have been considered; – baseline profiles of indigenous or tribal groups including summaries of their community, cultural, and land/resource use characteristics; – impact/risk assessments pertaining to the rights of indigenous and tribal peoples; and – plans designed to support the <i>meaningful engagement</i> and participation of indigenous and tribal peoples; a mutually acceptable process for <i>meaningful engagement</i> and good faith negotiation; and culturally appropriate mitigation measures and benefits (e.g., an Indigenous Peoples Plan). <p>b. (i) A mutually acceptable engagement process may be supported by:</p> <ul style="list-style-type: none"> – agreement on a mutually acceptable process for <i>meaningful engagement</i> and good faith negotiation with affected indigenous and tribal peoples; and – as outcome(s) of the above process (and in the event that <i>FPIC</i> is attained), realization of agreement(s) or other documentation of <i>FPIC</i> prior to approval or construction of the <i>tailings facility</i>, and that are maintained over the <i>tailings facility lifecycle</i>. – establish policies and practices supporting <i>FPIC</i> and <i>meaningful engagement</i> with indigenous and tribal peoples; – records showing how indigenous and tribal peoples are engaged in the development of engagement plans, negotiation processes, and determination of the conditions for <i>FPIC</i>; – written agreements outlining expectations, methods, and timing of engagement and/or negotiation processes; – evidence of information shared at an appropriate level of detail and accessibility; and, – engagement records showing how the timing of engagement in relation to key decision points in the <i>tailings facility lifecycle</i>. <p>(ii) Documentation of <i>FPIC</i> may include formal, negotiated agreements, such as impact-benefit agreements, benefit-sharing agreements, participation agreements, and/or community development agreements, and other documentation, such as letters of endorsement, memoranda of understanding, and interim agreements.</p> <ul style="list-style-type: none"> – In early stages of negotiation, the conditions for consent may be represented as a set of conditions under which the affected indigenous or tribal people agrees to move forward with the <i>Operator</i>. This may be formalised in a framework agreement or other agreement appropriate to the stage of the <i>tailings facility lifecycle</i>.
2		

Interpretive and Clarification Notes:

3

1. 'Indigenous' or 'tribal peoples' may be referred to by various terms depending on the national context. These terms may include (but are not limited to): 'aboriginals' or 'aboriginal peoples'; 'first nations'; 'indigenous nations'; 'hill tribes'; 'tribal groups' or 'tribal nations'; 'scheduled tribes'; 'traditional owners'; 'natives', 'native tribes', or 'native bands'; 'Sub-Saharan African historically underserved traditional local communities'; 'indigenous ethnic minorities'; and 'minority nationalities'.
2. 'Indigenous' or 'tribal peoples' may or may not be recognized (formally or informally) by national legislation, laws or policies. A lack of national recognition is not sufficient to confirm the absence of indigenous or tribal peoples.
3. The determination of indigenous or tribal peoples status should consider if the group in question represents a distinct social and cultural group possessing the following characteristics in varying degrees: (a) self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas; (c) customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture; and (d) a distinct language or dialect, often different from the official language or languages of the country or region in which they reside. This determination may also apply to communities or groups that have lost collective attachment to distinct habitats or ancestral territories within the concerned group members' lifetime, because of forced severance, conflict, government resettlement programs, dispossession of their lands, natural disasters, or incorporation of such territories into an urban area. [This definition is derived from IFC Performance Standard 7, World Bank Environmental and Social Standard 7, and ICMM Good Practice Guide: Indigenous Peoples and Mining (2015).]
4. Potential impacts on indigenous or tribal peoples and their rights could include loss of access and/or adverse impacts to lands and natural resources subject to traditional ownership or under customary use or occupation; impacts that result in relocation of indigenous peoples from these lands and natural resources; and/or, impacts on tangible or intangible aspects of the cultural heritage of indigenous or tribal peoples.

Equivalent Standards for demonstrating conformance

4

- a. IFC Performance Standards. *Performance Standard 7: Indigenous Peoples* and *Guidance Note 7: Indigenous Peoples* provides guidance to the private sector in the context of managing risks and impacts. Paragraphs 4-6 assist in the definition and identification of indigenous or tribal peoples. Conformance with IFC Performance Standard 7 is fully equivalent to conformance with this protocol.
- b. World Bank Environmental and Social Framework. *ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities*. Paragraphs 8 and 9 assist in the definition and identification of indigenous or tribal peoples. Paragraph 25 outlines criteria to establish FPIC. Conformance with ESS7 is fully equivalent to conformance with this protocol.
- c. ICMM's *Position Statement on Indigenous Peoples and Mining* defines ICMM members' approach to engaging with Indigenous Peoples and to FPIC. This internationally recognised best practice framework clearly articulates members' commitments related to understanding, engaging, negotiating and working to obtain the consent of indigenous or tribal peoples, and related performance expectations. The Position Statement is supported by ICMM Good Practice Guide: Indigenous Peoples and Mining (2015), which provides background on the history of FPIC in the mining industry and its role in project development. Specifically, Chapter 2 addresses indigenous engagement and participation including FPIC and Chapter 3 addresses agreements between mining companies and indigenous and tribal peoples. Alignment with ICMM's Position Statement and Tailings Management Good Practice Guide is fully equivalent with this protocol.

PRINCIPLE 1

Respect the rights of *project-affected people* and *meaningfully engage* them at all phases of the *tailings facility lifecycle*, including closure.

1	Requirement 1.3		
	Demonstrate that <i>project-affected people</i> are <i>meaningfully engaged</i> throughout the <i>tailings facility lifecycle</i> in building the <i>knowledge base</i> and in decisions that may have a bearing on public safety and the integrity of the <i>tailings facility</i> . The <i>Operator</i> shall share information to support this process.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> <i>Operator</i> has identified <i>project-affected people</i>. <i>Operator</i> has undertaken <i>meaningful engagement</i> with <i>project-affected people</i> throughout the <i>tailings facility lifecycle</i> to: <ul style="list-style-type: none"> Share relevant and accessible information about the <i>tailing facility</i>; Build the <i>knowledge base</i> for the <i>tailings facility</i>, including the social, environmental and local economic context; and, Seek feedback on decisions that may have a bearing on public safety and the integrity of the <i>tailings facility</i>. 	<ol style="list-style-type: none"> Identification of <i>project-affected people</i> may include a register or <i>stakeholder</i> map that provides identification (either by name or group), geographic location, interest in the <i>tailing facility</i>, influence and/or vulnerability, as well as appropriate means of engagement. Evidence of <i>meaningful engagement</i> may include engagement plans, communication <i>materials</i>, and meeting minutes. <ul style="list-style-type: none"> Relevant information may include the design, construction and operation of the <i>tailing facility</i>, baseline studies, impact and risk assessment, mitigation measures, emergency response and preparedness plans, and closure plans. Development of the <i>knowledge base</i> can be evidenced by documenting engagement, including individuals and groups engaged, topics discussed, information provided, questions and concerns raised, and feedback received. Feedback on decisions may be demonstrated within engagement records, such as documentation of questions, concerns or suggestions, as well as actions taken by the <i>Operator</i> in response to feedback.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> IFC Performance Standard 1.25-1.31 regarding effective community engagement, is partially equivalent to conformance with this protocol because there is no reference to a 'knowledge base' or 'public safety of tailings'. ICMM Performance Expectation 9.3 is partially equivalent to conformance with this protocol, as it requires 'stakeholder engagement based upon an analysis of the local context and provide local stakeholders with access to effective mechanisms for seeking resolution of grievances related to the company and its activities;' however there is no reference to building a 'knowledge base' or seeking input on public safety of tailings. 		

PRINCIPLE 1

Respect the rights of *project-affected people* and *meaningfully engage* them at all phases of the *tailings facility lifecycle*, including closure.

1	Requirement 1.4		
	Establish an effective operational-level, non-judicial grievance mechanism that addresses complaints and grievances of <i>project-affected people</i> relating to the <i>tailings facility</i> , and provides remedy in accordance with the UNGP.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. An effective operational-level non-judicial grievance mechanism accessible to <i>project-affected people</i> has been developed and implemented. b. The grievance mechanism addresses complaints and <i>grievances</i> of <i>project-affected people</i> relating to the <i>tailings facility</i>. c. The grievance mechanism provides remedy in accordance with the UNGPs 29- 31. 	<ul style="list-style-type: none"> a. A grievance mechanism for the <i>tailings facility</i> most likely forms part of a site-wide or company-wide mechanism. In this case, components of any grievance mechanism should be integrated and articulated. b. To meet the 'effectiveness' test the grievance mechanism should for example demonstrate: <ul style="list-style-type: none"> – That complaints and <i>grievances</i> are systematically logged; and – There is evidence of complaints and <i>grievances</i> being addressed (i.e. treated in a timely manner by the <i>Operator</i> – see part c below). c. Further to example b above, the remedy provided by the grievance mechanism should demonstrate the effectiveness criteria within the UNGP 31 in respect of the <i>tailings facility</i>.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	<ul style="list-style-type: none"> a. Sections 29- 31 of the UN Guiding Principles on Business and Human Rights is particularly relevant for demonstrating conformance for non-judicial grievance mechanisms and is fully equivalent to conformance with this protocol provided that complaints relating to the <i>tailings facility</i> are within scope. b. IFC Performance Standards. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, Requirements, Paragraph 35 provides a description of grievance mechanisms for affected communities and is partially equivalent to conformance with this protocol as it does not refer to the UN Guiding Principles on Business and Human Rights. c. ICMM Performance Expectations 3.1 and 9.3 and associated guidance (https://www.icmm.com/website/publications/pdfs/social-performance/2019/guidance_grievance-mechanism-2019.pdf) is fully equivalent to conformance with this protocol. 		

PRINCIPLE 2

Develop and maintain an interdisciplinary *knowledge base* to support safe *tailings* management throughout the *tailings facility lifecycle*, including closure.

1	Requirement 2.1		
	Develop and document knowledge about the social, environmental and local economic context of the <i>tailings facility</i> , using approaches aligned with international <i>best practices</i> . Update this knowledge at least every five years, and whenever there is a <i>material</i> change either to the <i>tailings facility</i> or to the social, environmental and local economic context. This knowledge should capture uncertainties due to climate change.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. <i>Operator</i> has documented the site-specific social, environmental and economic context in relation to its <i>tailings facility</i>. b. Evaluate uncertainties associated with climate change that may impact upon the safety of the <i>tailings facility</i> (see also GISTM requirement 3.1). c. <i>Operator</i> updates the above information at least at five-year intervals, and whenever there is a <i>material</i> change to the <i>tailings facility</i> or related environmental, social or economic context. 	<ul style="list-style-type: none"> a. Social, environmental and economic documentation could include baseline or ongoing¹ (updated) assessments, as well as targeted studies to address specific queries or topics. Documentation may include Environmental and Social <i>Impact Assessments</i> aligned to IFC2 or similar standards. Targeted studies may include the identification of sensitive environmental and/or social receptors (including cultural resources or ethnographic elements) in relation to a particular <i>tailings facility</i>, and/or local economic data. Such documentation, assessments, studies, etc. should be completed to a level of detail³ that enables <i>Operator</i> decisions to be made in relation to <i>tailings facility</i> safety. b. Climate change evaluations may include variable hydrologic conditions⁴ and their potential impacts on the <i>credible failure</i> modes/ scenarios. c. /
3	Interpretive and Clarification Notes:		
	<ul style="list-style-type: none"> 1. The link/evolution between baseline and ongoing studies is an area of focus in enhancing company environmental and social management systems. If a baseline is not available, the data that contributes to the current situation knowledge base, including seepage monitoring for example, becomes more important. 2. 'IFC' means the International Finance Corporation and its performance standards relevant to the development of new tailings projects in general, and the mining sector in particular. Similar international standards can also be referenced particularly when outside the scope of a new/proposed tailings project; for example, the ICMM Performance Expectation 4.1 (see also Equivalent Standards below). 3. It is possible that for certain legacy tailings facilities not all required context information will be available. In these cases, the conformance assessment should be completed on a risk-basis, where the information gap would be seen as more significant if the facility is considered to pose a relatively higher risk to human or environmental receptors. 4. Operators should also be aware of, and raise/review with local regulators where identified, hydrological changes due to sub-regional land use or water management outside of the <i>tailings facility</i> <i>Operator</i> control, i.e. where there is a change to the hydrological conditions in the vicinity of the facility from land use or other water management activities. 		
4	Equivalent Standards for demonstrating conformance		
	<ul style="list-style-type: none"> a. IFC Performance Standards (specifically PS1 Assessment and Management of Environmental and Social Risks and Impacts) and the Environmental, Health and Safety Guidelines for Mining, in relation to developing knowledge regarding the social, environmental and local economic context of the <i>tailings facility</i> are fully equivalent to conformance with this protocol for criteria a and b. Specific additional steps need to be taken for criterion c. b. ICMM Performance Expectation 4.1 in respect of assessing environmental and social risks associated with new <i>tailings</i>-related projects and significant changes to existing operations is fully equivalent to conformance with this protocol for criteria a and b. Specific additional steps need to be taken for criterion c. 		

PRINCIPLE 2

Develop and maintain an interdisciplinary *knowledge base* to support safe *tailings* management throughout the *tailings facility lifecycle*, including closure.

1	Requirement 2.2		
	Prepare, document and update a detailed site characterisation of the <i>tailings facility</i> site(s) that includes data on climate, geomorphology, geology, geochemistry, hydrology and hydrogeology (surface and groundwater flow and quality), geotechnical, and seismicity. The physical and chemical properties of the <i>tailings</i> shall be characterised and updated regularly to account for variability in ore properties and processing.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> A detailed site characterisation¹ of the <i>tailings facility</i> site(s) exists and it is updated as warranted throughout the <i>lifecycle</i> to reflect <i>material</i> changes in conditions and new knowledge. Site characterisation is supported by data including site-specific climate, geomorphology, geology, geochemistry, hydrology, and hydrogeology (surface and groundwater flow and quality), geotechnical, and seismicity. <i>Tailings</i> characterisation exists, considering the physical and geochemical properties, and it is updated throughout the <i>lifecycle</i> to account for variability in ore properties, processing, and <i>tailings</i> deposition. 	<ol style="list-style-type: none"> Site characterization reports are updated throughout the <i>lifecycle</i>, as required. The site characterisation is commensurate with the complexity of the site conditions and design. Site characterisation reports may cover specific subjects (e.g., foundations, abutments, geohazards, hydrogeological conditions, meteorological assessments, etc.)². <i>Tailings</i> geochemical characterisation could include static, kinetic testing, field barrels and/or columns. Physical characterization of <i>tailings</i> could use in situ testing methods and laboratory testing³.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> ICMM Tailing Management Good Practice Guide: Section 3.3.2 (Site Characterization). EGBC (2016) Guideline on 'Dam Foundation Characterization' https://www.egbc.ca/getmedia/13381165-a596-48c2-bc31-2c7f89966d0d/2016_Site-Characterization-for-Dam-Foundations_WEB_V1-2.aspx. ICOLD Bulletin 181 (2021) 'Tailings Dam Design – Technology Update' https://www.icold-cigb.org/GB/publications/bulletins.asp. 		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 2

Develop and maintain an interdisciplinary *knowledge base* to support safe *tailings* management throughout the *tailings facility lifecycle*, including closure.

1	Requirement 2.3 Develop and document a <i>breach analysis</i> for the <i>tailings facility</i> using a methodology that considers credible failure modes, site conditions, and the properties of the slurry. The results of the analysis shall estimate the physical area impacted by a potential failure. When flowable materials (water and liquefiable solids) are present at <i>tailings facilities</i> with Consequence Classification of 'High', 'Very High' or 'Extreme', the results should include estimates of the physical area impacted by a potential failure, flow arrival times, depth and velocities, and depth of <i>material</i> deposition. Update whenever there is a <i>material</i> change either to the <i>tailings facility</i> or the physical area impacted.						
2	<table> <tr> <th data-bbox="172 651 352 701">Assessment</th><th data-bbox="352 651 1482 701"></th></tr> <tr> <th data-bbox="172 701 352 750">Conformance</th><th data-bbox="352 701 1482 750">Criteria</th></tr> <tr> <td data-bbox="172 750 352 1532">Meets</td><td data-bbox="352 750 1482 1532"> <p>The following are demonstrated:</p> <ol style="list-style-type: none"> Where a <i>tailings facility</i> has a <i>credible failure mode / scenario</i>¹, there is a documented <i>breach analysis</i> for the <i>tailings facility</i> using a methodology that considers <i>credible failure</i> modes, site conditions and properties of the <i>tailings</i>. The physical area potentially affected by a failure is estimated and defined. For facilities with <i>credible failure scenarios</i> involving flowable <i>materials</i> (water and liquefiable solids) and with consequence classification of 'High', 'Very High' or 'Extreme' or greater, the flow arrival times, flow depths, flow velocities, and depth of deposited <i>material</i> are estimated. For facilities meeting all the conditions of a, b and c, a <i>breach analysis</i> is completed / updated if there is a <i>material change</i>¹ to the <i>tailings facility</i> or to the <i>knowledge base</i> that results in a <i>credible failure scenario</i> that could lead to a flow failure. <p>Examples</p> <ol style="list-style-type: none"> <i>Credible failure scenarios</i> that involve flowable <i>tailings</i> typically consider geotechnical and hydrotechnical mechanisms. Not all <i>tailings facilities</i> have <i>credible failure</i> modes and of those, not all have <i>credible failure scenarios</i> that could lead to the need for a breach assessment. Site conditions typically consider topography, embankment fill properties, potential water volumes, and <i>tailings</i> properties. / The flowability of solids typically consider the in situ <i>tailings</i> properties and the volume of water available for transport. Numerical models are typically used to estimate flow arrival times, flow velocities and depth of deposited <i>material</i>. The understanding of <i>breach analysis</i> for <i>tailings facilities</i> continues to evolve and assumptions and sensitivity analysis are typically documented and considered. Examples of <i>material</i> changes could be elimination of the ability to store water within the <i>tailings facility</i> on closure or adjustments to <i>credible failure</i>. </td></tr> </table>	Assessment		Conformance	Criteria	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Where a <i>tailings facility</i> has a <i>credible failure mode / scenario</i>¹, there is a documented <i>breach analysis</i> for the <i>tailings facility</i> using a methodology that considers <i>credible failure</i> modes, site conditions and properties of the <i>tailings</i>. The physical area potentially affected by a failure is estimated and defined. For facilities with <i>credible failure scenarios</i> involving flowable <i>materials</i> (water and liquefiable solids) and with consequence classification of 'High', 'Very High' or 'Extreme' or greater, the flow arrival times, flow depths, flow velocities, and depth of deposited <i>material</i> are estimated. For facilities meeting all the conditions of a, b and c, a <i>breach analysis</i> is completed / updated if there is a <i>material change</i>¹ to the <i>tailings facility</i> or to the <i>knowledge base</i> that results in a <i>credible failure scenario</i> that could lead to a flow failure. <p>Examples</p> <ol style="list-style-type: none"> <i>Credible failure scenarios</i> that involve flowable <i>tailings</i> typically consider geotechnical and hydrotechnical mechanisms. Not all <i>tailings facilities</i> have <i>credible failure</i> modes and of those, not all have <i>credible failure scenarios</i> that could lead to the need for a breach assessment. Site conditions typically consider topography, embankment fill properties, potential water volumes, and <i>tailings</i> properties. / The flowability of solids typically consider the in situ <i>tailings</i> properties and the volume of water available for transport. Numerical models are typically used to estimate flow arrival times, flow velocities and depth of deposited <i>material</i>. The understanding of <i>breach analysis</i> for <i>tailings facilities</i> continues to evolve and assumptions and sensitivity analysis are typically documented and considered. Examples of <i>material</i> changes could be elimination of the ability to store water within the <i>tailings facility</i> on closure or adjustments to <i>credible failure</i>.
Assessment							
Conformance	Criteria						
Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Where a <i>tailings facility</i> has a <i>credible failure mode / scenario</i>¹, there is a documented <i>breach analysis</i> for the <i>tailings facility</i> using a methodology that considers <i>credible failure</i> modes, site conditions and properties of the <i>tailings</i>. The physical area potentially affected by a failure is estimated and defined. For facilities with <i>credible failure scenarios</i> involving flowable <i>materials</i> (water and liquefiable solids) and with consequence classification of 'High', 'Very High' or 'Extreme' or greater, the flow arrival times, flow depths, flow velocities, and depth of deposited <i>material</i> are estimated. For facilities meeting all the conditions of a, b and c, a <i>breach analysis</i> is completed / updated if there is a <i>material change</i>¹ to the <i>tailings facility</i> or to the <i>knowledge base</i> that results in a <i>credible failure scenario</i> that could lead to a flow failure. <p>Examples</p> <ol style="list-style-type: none"> <i>Credible failure scenarios</i> that involve flowable <i>tailings</i> typically consider geotechnical and hydrotechnical mechanisms. Not all <i>tailings facilities</i> have <i>credible failure</i> modes and of those, not all have <i>credible failure scenarios</i> that could lead to the need for a breach assessment. Site conditions typically consider topography, embankment fill properties, potential water volumes, and <i>tailings</i> properties. / The flowability of solids typically consider the in situ <i>tailings</i> properties and the volume of water available for transport. Numerical models are typically used to estimate flow arrival times, flow velocities and depth of deposited <i>material</i>. The understanding of <i>breach analysis</i> for <i>tailings facilities</i> continues to evolve and assumptions and sensitivity analysis are typically documented and considered. Examples of <i>material</i> changes could be elimination of the ability to store water within the <i>tailings facility</i> on closure or adjustments to <i>credible failure</i>. 						
3	Interpretive and Clarification Notes: <ol style="list-style-type: none"> ICMM Tailings Management Good Practice Guide: Section 2.7.2 (Assessing Credible Potential Consequences), 3.6.3 (Potential Material Changes) Canadian Dam Association: Dam: Tailings Dam Breach Analysis – Draft 2020. 						
4	Equivalent Standards for demonstrating conformance /						

PRINCIPLE 2

Develop and maintain an interdisciplinary *knowledge base* to support safe *tailings* management throughout the *tailings facility lifecycle*, including closure.

1	Requirement 2.4		
	In order to identify the groups most at risk, refer to the updated <i>tailings facility breach analysis</i> to assess and document potential human exposure and vulnerability to <i>tailings facility</i> credible failure scenarios. Update the assessment whenever there is a <i>material</i> change either to the <i>tailings facility</i> or to the <i>knowledge base</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are addressed and can be demonstrated:</p> <ul style="list-style-type: none"> a. Groups at most risk are identified, with consideration of the <i>breach analysis</i> for those facilities with <i>credible failure scenarios</i> as per Requirement 2.3. b. Potential human exposure and vulnerability to <i>tailings facility credible failure scenarios</i> is documented. c. The assessment of human exposure and vulnerability is updated if there is a <i>material</i> change¹ to the credibility of flow failure potential and the corresponding <i>breach analysis</i> or the <i>knowledge base</i>. 	<ul style="list-style-type: none"> a. People within the inundation area from the <i>tailings facility</i> with <i>credible flow failure scenario</i> (per Requirement 2.3) will be most at risk; however, all groups downstream and nearby the <i>tailings facility</i> with a <i>credible flow failure scenario</i> should be considered e.g. via modelling, use of aerial photography etc. The level of impact to the <i>project-affected people</i> should be identified, e.g., life safety vs. reduced water quality. b. GIS-based tools may provide for useful display of data relevant data layers – topography, dwellings, critical town functions such as water supply etc. c. Refer to Requirement 2.1 for changes to the <i>knowledge base</i>. Refer to Requirement 2.3 for changes to the <i>breach analysis</i>.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	ICMM Performance Expectations 4.1-4.3 in respect of risk management (under Mining Principle 4) are partially equivalent to conformance with this protocol, but not specific enough to address criteria a-c .		

PRINCIPLE 3

Use all elements of the *knowledge base* – social, environmental, local economic and technical – to inform decisions throughout the *tailings facility lifecycle*, including closure.

1	Requirement 3.1 To enhance resilience to climate change, evaluate, regularly update and use climate change knowledge throughout the <i>tailings facility lifecycle</i> in accordance with the principles of <i>Adaptive Management</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. To enhance resilience, climate change knowledge is regularly updated and used to evaluate risks and opportunities to the <i>tailings facility lifecycle</i> , in accordance with the principles of <i>adaptive management</i> , with the aim of enhancing resiliency to climate change.	a. Climate change knowledge can be developed through a climate change resilience assessment based on recognized global standards (example IPCC1,2) applicable to the region where the Company operates. Examples include 5, 10, 25 year conceptual plans for the <i>tailings facility/ies</i> that consider +/- temperature differences and the impacts on hydrogeological cycle, <i>tailings</i> dust generation, stability, etc. Examples include establishing a frequency for updating the climate change <i>knowledge base</i> and applying this to the risks and opportunities evaluation such that the goal of resiliency is maintained. <i>Adaptive Management</i> example includes identification and implementation of mitigation and management measures that are responsive to climate change with the aim of reducing uncertainty over time via system monitoring.
3	Interpretive and Clarification Notes:		
	1. The 'Intergovernmental Panel on Climate Change (IPPC)' defines adaptation as 'any adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities'. 2. ICMM members can apply the <u>Mining Climate Assessment Tool (MICA)</u> to understand uncertainties due to climate change at the Asset level, which use of the latest IPCC climate projections data. 3. ISO FDIS 14090: 2019. Adaptation to Climate Change – Principles, Requirements and Guidelines outlines general approaches to climate change adaptation.		
4	Equivalent Standards for demonstrating conformance		
	a. ICMM Position Statement on Climate Change (2019) requires that climate change risks and opportunities are considered in business decision making and to advance operational level adaptation and mitigation solutions, taking in consideration local opportunities and challenges. This is partially equivalent to conformance with this protocol, but would be fully equivalent where it can be demonstrated that climate change knowledge is regularly updated and used to evaluate risks and opportunities to the <i>tailings facility lifecycle</i> .		

PRINCIPLE 3

Use all elements of the *knowledge base* – social, environmental, local economic and technical – to inform decisions throughout the *tailings facility lifecycle*, including closure.

Requirement 3.2	
1	<p>For new <i>tailings facilities</i>, the <i>Operator</i> shall use the <i>knowledge base</i> and undertake a multi-criteria <i>alternatives analysis</i> of all feasible sites, technologies and strategies for <i>tailings</i> management. The goal of this analysis shall be to: (i) select an alternative that minimises risks to people and the environment throughout the <i>tailings facility lifecycle</i>; and (ii) minimises the volume of <i>tailings</i> and water placed in external <i>tailings facilities</i>. This analysis shall be an objective constraint analysis reviewed by the <i>Independent Tailings Review Board (ITRB)</i> or a <i>senior independent technical reviewer</i>.</p> <p>For existing <i>tailings facilities</i>, the <i>Operator</i> shall periodically review and refine the <i>tailings</i> technologies and design, and management strategies to minimise risk and improve environmental outcomes. An exception applies to facilities that are demonstrated to be in a state of <i>safe closure</i>.</p>

2

Assessment		
Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <p>a. For new <i>tailings facilities</i>, a multi-criteria <i>Alternatives Analysis</i>¹ is conducted that examines feasible sites, technologies, and strategies for <i>tailings</i> management through the <i>lifecycle</i>, that aims to minimise:</p> <ul style="list-style-type: none">– risks to people and the environment.– volumes of <i>tailings</i> and water stored in surface facilities. <p>b. For existing facilities that are not in a state of <i>safe closure</i>, there are periodic reviews of the <i>tailings</i> technologies, design and management strategies, and assessments of the potential to implement improvements arising from the reviews.</p> <p>c. For new facilities, the analysis is reviewed by the <i>ITRB</i> or <i>senior independent technical reviewer</i>.</p>	<p>a. The <i>Alternatives Analysis</i> usually includes a structured and documented decision-making process that considers options for management of <i>tailings</i> aimed at reducing risks to people and the environment. Risk reviews¹ have been undertaken of alternatives, that consider environmental, social, technical and economic risks informed by the <i>knowledge base</i> (see R2.1 and the <i>ALARP</i> principle).</p> <p>Opportunities may be considered for placement in underground working, mined open pits, co-disposal with waste rock, and the continuum of <i>tailings</i> dewatering.</p> <p>b. Periodic reviews may be carried out when there is a <i>material</i> change (such as a major expansion of the project).</p> <p>c. /</p>

Interpretive and Clarification Notes:	
3	1. ICMM Tailings Management Good Practice Guide: Section 3.2.4.3 (Risk Management), Section 3.3.4 (Multi-Criteria Analysis)

Equivalent Standards for demonstrating conformance	
4	/

PRINCIPLE 3

Use all elements of the *knowledge base* – social, environmental, local economic and technical – to inform decisions throughout the *tailings facility lifecycle*, including closure.

1	Requirement 3.3		
	For new <i>tailings facilities</i> , use the <i>knowledge base</i> , including uncertainties due to climate change, to assess the social, environmental and local economic impacts of the <i>tailings facility</i> and its potential failure throughout its <i>lifecycle</i> . Where <i>impact assessments</i> predict <i>material</i> acute or chronic impacts, the <i>Operator</i> shall develop, document and implement impact mitigation and management plans using the <i>mitigation hierarchy</i> .		
2	Assessment		
	Conformance	Requirements	Examples
	Meets	<p>The following are demonstrated for new <i>tailings facilities</i>:</p> <ol style="list-style-type: none"> Environmental, social and local economic <i>impact assessments</i> are conducted and inform the existing <i>knowledge base</i>. Environmental, social and local economic assessments demonstrate that climate change uncertainties are considered in assessing life of <i>tailings facility</i> impacts and whether there is any potential for a <i>credible failure</i> throughout the <i>tailings facility lifecycle</i>. Mitigation measures and management plans are developed, documented and implemented to address <i>material</i> chronic¹ and acute² impacts. Management plans are based on the principles and practice of a <i>mitigation hierarchy</i> and management plans for the <i>tailings facility</i> and are updated throughout the <i>tailings facility lifecycle</i>. 	<ol style="list-style-type: none"> Baseline knowledge of environmental, social and environmental values are usually completed to support a structured <i>impact assessment</i>, including thresholds and management plans; Credible failure evaluations and, as required, water balance and water management assessments, can show how climate change uncertainty, such as trends in precipitation, frequency and intensity, evaporation rates, have been considered; For example, annual reports that compile monitoring data collected to validate impact predictions. Assessments and plans should be well documented and could be informed by continuous improvements in the <i>knowledge base</i> and <i>impact assessment</i> methodologies.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> 'Chronic' means persisting for a long time and difficult to eradicate. 'Acute' means present or experienced to a severe or intense degree. ISO FDIS 14090: 2019. Adaptation to Climate Change – Principles, Requirements and Guidelines outlines general approaches to climate change adaptation. 		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> ICMM Performance Expectation 6.3 requires ICMM members to 'design, construct, operate, monitor and decommission <i>tailings disposal/storage facilities</i> using comprehensive, risk-based management and governance practices in line with internationally recognised good practice, to minimise the risk of catastrophic failure'. Performance Expectation 4.1 requires that companies assess environmental and social risks and opportunities of new projects and of significant changes to existing operations in consultation with interested and affected <i>stakeholders</i>, and publicly disclose assessment results. This is fully equivalent to conformance with this protocol for criteria a and b, and partially equivalent for criteria c and d. IFC Sustainability Framework Performance Standard 1 – <i>Assessment and Management of Environmental and Social Risks and Impacts</i>; Performance Standard 4 – <i>Community Health, Safety and Security</i> – demonstrating a dynamic and continuous process based on a methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis as represented in an effective Environmental and Social Management System (ESMS). This is fully equivalent to conformance with this protocol for criteria a and b, and partially equivalent for criteria c and d. This requirement can typically be met through permitting efforts or Environmental and Social Impact Assessment processes and associated mitigation measures. 		

PRINCIPLE 3

Use all elements of the *knowledge base* – social, environmental, local economic and technical – to inform decisions throughout the *tailings facility lifecycle*, including closure.

Requirement 3.4	
1	Update the assessment of the social, environmental and local economic impacts to reflect a <i>material</i> change either to the <i>tailings facility</i> or to the social, environmental and local economic context. If new data indicates that the impacts from the <i>tailings facility</i> have changed <i>materially</i> , including as a result of climate change knowledge or long-term impacts, the <i>Operator</i> shall update <i>tailings facility</i> management to reflect the new data using <i>Adaptive Management best practices</i> .

Assessment		
Conformance	Criteria	Examples
2	<p>The following are demonstrated:</p> <p>a. <i>Material</i> change as defined by the <i>Operator</i> is consistently applied to trigger updates to the environmental, social and economic assessment of the <i>tailings facility</i>.</p> <p>b. <i>Tailings facility</i> management is updated in accordance with <i>adaptive management best practices</i> if new data (including climate change knowledge) indicates that the impacts from the <i>tailings facility</i> have changed materially.</p>	<p>a. The <i>Operator</i> can demonstrate that they have established a definition for a <i>material</i> change and that this definition is tied to a documented process to update the <i>tailings facility</i>, environmental, social or economic <i>impact assessment</i>;</p> <p>This could be demonstrated by a program for acquiring, storing and retrieving additional knowledge to determine if a <i>material</i> change has occurred and an <i>adaptive management</i> strategy, including documentation of how <i>adaptive management best practice</i> methodologies are used to improve mitigation and management plans.</p>

Interpretive and Clarification Notes:	
3	1. As per the ICMM Tailings Management Good Practice Guide (Section 1.3.1) the knowledge base should be revisited every five years or whenever there is a material change to the <i>tailings facility</i> or the climate change context that impacts the social, environmental and economic context.

Equivalent Standards for demonstrating conformance	
4	<p>a. IFC Sustainability Framework Performance Standard 1 – <i>Assessment and Management of Environmental and Social Risks and Impacts</i> characterises an effective environmental and social management system (ESMS) as a dynamic and continuous process based on a methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis and is partially equivalent to conformance with this protocol.</p> <p>b. ICMM Position Statement on Climate Change (2019) requires that climate change risks are considered in business decision-making and is partially equivalent to conformance with this protocol.</p>

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

Requirement 4.1	
1	Determine the consequence of failure classification of the <i>tailings facility</i> by assessing the downstream conditions documented in the <i>knowledge base</i> and selecting the classification corresponding to the highest Consequence Classification for each category in Annex 2, Table 1. The assessment and selection of the classification shall be based on credible failure modes, and shall be defensible and documented.

Assessment		
	Conformance	Criteria
2	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Determine the consequence of failure classification of the <i>tailings facility</i> by assessing the downstream conditions documented in the <i>knowledge base</i> and adopt: (i) the consequence classification for the highest level in each category in Annex 2, Table 1, <i>or</i> (ii) a more conservative approach by adopting 'Extreme' post-closure design loading criteria in Annex 2. For a(i) base the assessment and selection of classification on <i>credible failure modes / scenarios</i>. Document the assessment and selection with defensible evidence.
		<p>Examples</p> <ol style="list-style-type: none"> For facilities with <i>credible failure modes / scenarios</i>¹, the breach assessment (R 2.3) is used to estimate potential effects on people, environment, health, social and cultural, and infrastructure and economics within the potentially affected areas and supported with appropriate data and information. Semi-quantitative estimates of the effects are often used to support the assessment. Where a credible scenario is not present, and consequence classification is not possible, the <i>Operator</i> may still select loads consistent with higher classifications for determinations of external loading criteria. Credible failure modes / scenarios are considered to support realistic estimates of the consequence of failure. Documentation should consider outcomes of <i>credible failure scenarios</i> and sensitivity cases to demonstrate robustness such as stability evaluations with a range of conceivable parameters. The <i>Operator</i> may select a higher consequence classification for purposes of setting design loading criteria (R 4.2).

Interpretive and Clarification Notes:	
3	1. ICMM Tailings Management Good Practice Guide: Section 2.7.2 (Assessing Credible Potential Consequences) section 3.4.3.9 (External Loading Criteria for Design).

Equivalent Standards for demonstrating conformance	
4	/

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

Requirement 4.2	
1	<p>With the objective of maintaining flexibility in the development of a new <i>tailings facility</i> and optimising costs while prioritising safety throughout the <i>tailings facility lifecycle</i>:</p> <ol style="list-style-type: none"> Develop <i>preliminary designs</i> for the <i>tailings facility</i> with external loading design criteria consistent with both the consequence of failure classification selected based on current conditions and higher Consequence Classifications (including 'Extreme'). Informed by the range of requirements defined by the <i>preliminary designs</i>, either: <ul style="list-style-type: none"> Implement the design for the 'Extreme' Consequence Classification external loading criteria; or Implement the design for the current Consequence Classification criteria, or a higher one, and demonstrate that the feasibility, at a proof of concept level, to upgrade to the design for the 'Extreme' classification criteria is maintained throughout the <i>tailings facility lifecycle</i>. If option B.2 is implemented, review the consequence of failure classification at the time of the <i>Dam Safety Review (DSR)</i> and at least every five years, or sooner if there is a <i>material</i> change in the social, environmental and local economic context, and complete the upgrade of the <i>tailings facility</i> to the new Consequence Classification as determined by the <i>DSR</i> within three years. This review shall proceed until the <i>tailings facility</i> has been safely closed according to this Standard. The process described above shall be reviewed by the <i>Independent Tailings Review Board (ITRB)</i> or the <i>senior independent technical reviewer</i>, as appropriate for the <i>tailings facility</i> Consequence Classification. <p>Subject to Requirement 4.7, Requirements 4.2.c and 4.2.d shall also apply to existing <i>tailings facilities</i>.</p>

2

Assessment		
Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <p>a. Prepare <i>preliminary designs</i> for the <i>tailings facility</i>, with consideration of the <i>lifecycle</i> stages, using external loading design criteria consistent with both the consequence of failure classification based on current conditions and higher Consequence Classifications (including 'Extreme').</p> <p>b. Adopt (i) the 'Extreme' Consequence Classification external loading criteria, or (ii) adopt the current Consequence Classification loading criteria or a higher one, and demonstrate that the feasibility, at a proof of concept level, to upgrade to the design for the 'Extreme' classification criteria is maintained throughout the <i>tailings facility lifecycle</i>.</p>	<p>a. For <i>tailings facilities</i> that do not use 'Extreme Consequence classification, <i>preliminary designs</i> consider the sensitivity of the <i>tailings facility</i> to higher seismic loads and extreme flood events (considering both duration and intensity) to assess what additional works or measures could be required to meet Extreme consequence loading criteria. The review would typically also consider the cost and risks associated with the <i>preliminary designs</i> and <i>ALARP</i>.</p> <p>b. Examples to demonstrate the feasibility of proof of concept could include owning land to allow downstream expansion, designs that could accommodate a buttress if</p>

PRINCIPLE 4

Assessment continued		
Meets	<p>c. If option b(ii) above is implemented, the Consequence Classification is reviewed at the time of the <i>Dam Safety Review (DSR)</i>¹ and at least every five years, or sooner if there is a <i>material</i> change in the social, environmental and local economic context, and complete the upgrade of the <i>tailings facility</i> to the new Consequence Classification as determined by the <i>DSR</i> within three years. This review shall proceed until the <i>tailings facility</i> has been safely closed according to this Standard.</p> <p>d. The process described in a., b., and c. shall be reviewed by the <i>Independent Tailings Review Board (ITRB)</i> or the <i>senior independent technical reviewer</i>, as appropriate for the <i>tailings facility</i> Consequence Classification.</p> <p>e. Subject to Requirement 4.7, Requirements 4.2 c. and 4.2 d. shall also apply to existing <i>tailings facilities</i>.</p>	<p>required for stability and <i>material</i> sources for construction, or the ability to increase freeboard to store extreme floods or expand spillways.</p> <p>c. When <i>DSRs</i> indicate an increase in the Consequence Classification, and the change has been approved by the <i>Accountable Executive</i>, a work plan has been developed for design, permitting and construction of the required works, if required to meet increases in external loading criteria.</p> <p>d. The reviews are documented in the <i>ITRB</i> or <i>senior independent reviews</i>.</p>
Interpretive and Clarification Notes:		
3	1. ICMM Tailings Management Good Practice Guide: Section 2.6.4 (Independent Reviews), Section 2.6.5 (Dam Safety Reviews, Section 3.2.4 (Managing Uncertainty and Risk), Section 3.4.3.9 (External Loading Criteria for Design)	
Equivalent Standards for demonstrating conformance		
4	/	

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1	Requirement 4.3		
	The <i>Accountable Executive</i> shall take the decision to adopt a design for the current Consequence Classification criteria and to maintain flexibility to upgrade the design for the highest classification criteria later in the <i>tailings facility lifecycle</i> . This decision shall be documented.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. Extreme loads are already in place. b. If Extreme Consequence Classification external loading criteria are not adopted, the <i>Accountable Executive</i> shall take the decision to adopt a design for the current Consequence Classification criteria and maintain flexibility to upgrade the design for the highest classification criteria later in the <i>tailings facility lifecycle</i>. 	<ul style="list-style-type: none"> a. / b. Flexibility may be required if conditions change in the future, for example, for facilities with <i>credible failure scenarios</i>, if additional populations at risk move into the potential breach inundation areas, or if the consequence of failure based upon <i>credible failure</i> mode(s) changes due to significant increases in volumes of <i>tailings</i> and water stored, or the <i>tailings facility</i> is being transitioned to a <i>safe closure</i> state. Additional examples of flexibility are provided in the examples for R- 4.2(b). <p>The basis for the decision should include information and assessment details to demonstrate the feasibility of upgrading the design at a later stage of the <i>lifecycle</i>. The decision (or design criteria) has been approved by the <i>Accountable Executive</i>.</p>
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 3.2.4 (Managing Uncertainty and Risk), Section 3.4.3 (Tailings Facility Design)		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1	Requirement 4.4		
	Select, explicitly identify and document all design criteria that are appropriate to minimise risk for all credible failure modes for all phases of the <i>tailings facility lifecycle</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Select and identify design criteria that are appropriate to minimise risk for all <i>credible failure</i> modes during each phase of the <i>tailings facility lifecycle</i>. Document the rationale for the design criteria selected to minimise risk². 	<ol style="list-style-type: none"> Design criteria¹ for the current and all subsequent <i>lifecycle</i> phases should be documented in the <i>Design Basis Report (DBR)</i>. Examples could include the common <i>credible failure</i> modes associated with facility foundations, water management structures and water storage requirements, natural hazards, and others. Examples of addressing <i>credible failure</i> modes include those listed, which are commensurate with the complexity of the site conditions and/or the design. Rationale for decisions / discussions is included in the <i>DBR</i> and reviewed by the <i>ITRB</i>.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> Examples of design criteria to minimize risk could include using conservative parameters, using extreme loading criteria, limit equilibrium target factors of safety and / or allowable deformation objectives, and measures to minimise water storage and water management requirements. ICMM Tailings Management Good Practice Guide: Section 3.2.4 (Managing Uncertainty and Risk), Section 3.4.3 (Tailings Facility Design). 		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> ICMM Performance Expectation 6.3 requires members to 'design, construct, operate, monitor and decommission tailings disposal/storage facilities using comprehensive, risk-based management and governance practices in line with internationally recognised good practice, to minimise the risk of catastrophic failure' but do not explicitly cover criteria and b so is partially equivalent to conformance with this protocol. 		

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1	Requirement 4.5		
	Apply design criteria, such as factors of safety for slope stability and seepage management that consider estimated operational properties of materials and expected performance of design elements, and quality of the implementation of risk management systems. These issues should also be appropriately accounted for in designs based on deformation analyses.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Develop and apply design¹ criteria such as factors of safety for slope stability and seepage management, for each <i>lifecycle</i> phase that considers: <ul style="list-style-type: none"> the estimated operational properties² of materials and expected performance of the design elements³, and the quality of the implementation of the risk management systems. Account for these design and implementation issues in assessments that are based on deformation analyses. 	<ol style="list-style-type: none"> Design and construction reports incorporate design criteria¹. Design criteria for the current and subsequent <i>lifecycle</i> phases should be documented in the <i>DBR</i> <p>Comprehensive risk management systems may be required when the performance of the embankment(s) is sensitive to variations in design elements, such as deformation and freeboard. Risk management systems should capture, reflect and be used to manage key design elements.</p> <ol style="list-style-type: none"> Examples of application of aspects of a. above, for deformation-based design include stress-strain modeling and calibration of modeling with in situ deformation monitoring.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> Selection stability criteria often consider regulatory or local guidance requirements and stress-strain properties of contractive materials. Examples of seepage management include low permeability zones in the embankment(s), liners, and seepage cut-off walls to manage environmental requirements and filters and drain zones to manage seepage in embankments. Operational properties of materials may include the strength of the tailings when they form part of the structural zone of the embankments and beach slopes. Performance of design elements may include allowable deformation in materials or strength variability. ICMM Tailings Management Good Practice Guide: Section 3.4.3 (Tailings Facility Design) and Section 3.2.4.3 (Risk Management). 		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> ICMM Performance Expectation 6.3 requires members to 'design, construct, operate, monitor and decommission <i>tailings</i> disposal/storage facilities using comprehensive, risk-based management and governance practices in line with internationally recognised good practice, to minimise the risk of catastrophic failure' but does not explicitly cover criteria and b so is partially equivalent to conformance with this protocol. 		

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1	Requirement 4.6		
	Identify and address brittle failure modes with conservative design criteria, independent of trigger mechanisms, to minimise their impact on the performance of the <i>tailings facility</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. An assessment of the potential for brittle failure modes is documented and the analyses are addressed in the <i>Design Basis Report (DBR)</i> ² .	a. Site characterisation has been undertaken to identify brittle <i>materials</i> within the <i>tailings facility</i> or its foundations, or used for closure activities. If brittle <i>materials</i> have been identified which have potential to impact one or more <i>credible failure</i> modes, conservative ¹ design criteria ² have been adopted that are independent of trigger mechanisms. Design reports may also document the assessment.
3	Interpretive and Clarification Notes:		
	1. If conservative design criteria were not adopted, testing has been undertaken in sufficient detail and of sufficient quality to establish that materials, if present, do not behave in a brittle manner. 2. ICMM Tailings Management Good Practice Guide: Section 3.4.3 (Tailings Facility Design).		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1

Requirement 4.7

Existing *tailings facilities* shall conform with the Requirements under Principle 4, except for those aspects where the *Engineer of Record (EOR)*, with review by the *ITRB* or a *senior independent technical reviewer*, determines that the upgrade of an existing *tailings facility* is not viable or cannot be retroactively applied. In this case, the *Accountable Executive* shall approve and document the implementation of measures to reduce both the probability and the consequences of a *tailings facility* failure in order to reduce the risk to a level *as low as reasonably practicable (ALARP)*. The basis and timing for addressing the upgrade of existing *tailings facilities* shall be risk-informed and carried out as soon as reasonably practicable.

2

Assessment

Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <p>a. Existing <i>tailings facilities</i> shall conform with the Requirements under Principle 4, except for those aspects where the <i>Engineer of Record (EOR)</i>, with review by the <i>ITRB</i> or a <i>senior independent technical reviewer</i>, as appropriate, determines that the upgrade of an existing <i>tailings facility</i> is not required, or viable, or cannot be retroactively applied.</p> <p>b. If the condition in (a.) above applies, the <i>Accountable Executive</i> shall approve and document the implementation of measures to reduce both the probability and the consequences of a <i>tailings facility</i> failure to reduce the risk to a level <i>as low as reasonably practicable (ALARP)</i>.</p> <p>c. The basis and timing for addressing the upgrade of existing <i>tailings facilities</i> shall be risk-informed and carried out as soon as reasonably practicable.</p>	<p>a. The <i>EOR</i> would typically support the assessment with analyses of the works required to meet the Requirements and documentation of the limitations as to why it is not viable¹ and risk assessments² to assist in quantifying the risk and identification of risk mitigation measures. The assessments should consider <i>credible failure</i> modes / scenarios and the risk of <i>catastrophic failure</i>.</p> <p>b. Approval and documentation of implementation measures to reduce risk would typically be based on the <i>EORs</i> assessment in alignment with the independent review, and a mutual resolution achieved. The risk assessment would be used to demonstrate the <i>ALARP</i> principle.</p> <p>c. The basis and timing for addressing the upgrades could be supported by a. and b. above and the formally adopted implementation plan would typically consider design, permitting and construction schedule.</p>

3

Interpretive and Clarification Notes:

1. An example of this may be legacy facilities where current conditions make it very difficult or impossible to reconfigure the tailings facility to conform to the Requirements, or such a reconfiguration would pose a larger risk than the current condition.

2. ICMM Tailings Management Good Practice Guide: Section 3.2.4.3 (Risk Management), Section 3.4.3 (Tailings Facility Design).

4

Equivalent Standards for demonstrating conformance

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PRINCIPLE 4

Develop plans and design criteria for the *tailings facility* to minimise risk for all phases of its *lifecycle*, including closure and post-closure.

1	Requirement 4.8 The <i>EOR</i> shall prepare a <i>Design Basis Report (DBR)</i> that details the design assumptions and criteria, including operating constraints, and that provides the basis for the design of all phases of the <i>tailings facility lifecycle</i> . The <i>DBR</i> shall be reviewed by the <i>ITRB</i> or <i>senior independent technical reviewer</i> . The <i>EOR</i> shall update the <i>DBR</i> every time there is a <i>material</i> change in the design assumptions, design criteria, design or the <i>knowledge base</i> and confirm internal consistency among these elements.		
2	Assessment		
	Conformance Meets	Criteria The following are demonstrated: a. The <i>EOR</i> shall prepare a <i>Design Basis Report (DBR)</i> ^{1,2} that details the design assumptions and criteria, including operating constraints, and that provides the basis for the design of all phases of the <i>tailings facility lifecycle</i> . b. The <i>DBR</i> shall be reviewed by the <i>ITRB</i> or <i>senior independent technical reviewer</i> . c. The <i>EOR</i> shall update the <i>DBR</i> every time there is a <i>material</i> change in the design assumptions, design criteria, design or the <i>knowledge base</i> and confirm internal consistency among these elements.	Examples a. Designs for the <i>lifecycle</i> phases should be addressed. The level of designs for the <i>lifecycle</i> phases should be sufficient to specify the criteria during the <i>lifecycle</i> . The <i>DBR</i> ¹ is typically supported by other reports and would be referenced in the <i>DBR</i> . b. Review of the <i>DBR</i> is documented in a review report by the <i>ITRB</i> or <i>senior independent technical reviewer</i> . c. The <i>DBR</i> is updated with edits to the last report and with clarification of <i>material</i> changes and revisions to report. Consistency between elements of the <i>DBR</i> typically form part of the overall update.
3	Interpretive and Clarification Notes: 1. The <i>DBR</i> provides details on site characterization, climate, seismicity, design, stability, deposition and water management plans, geotechnical and geochemical properties, strength and properties of materials, design assumptions, design criteria, operating criteria (such as freeboard, beach length), environmental criteria (such as seepage), etc. 2. ICMM Tailings Management Good Practice Guide: Section 3.4.3 (Documentation of Design).		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.1		
	<p>For new <i>tailings facilities</i>, incorporate the outcome of the multi-criteria <i>alternatives analysis</i> including the use of <i>tailings technologies</i> in the design of the <i>tailings facility</i>.</p> <p>For expansions to existing <i>tailings facilities</i>, investigate the potential to refine the <i>tailings technologies</i> and design approaches with the goal of minimizing risks to people and the environment throughout the <i>tailings facility lifecycle</i>.</p>		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. For new <i>tailings facilities</i>, the design incorporates the outcomes of the <i>alternatives analysis</i>¹ (as per Requirement 3.2). b. For expansions to existing facilities, assess the outcomes of periodic reviews of potential refinements to <i>tailings technologies</i> and design approaches (as per Requirement 3.2). c. Where the design differs from the <i>alternatives analysis</i>, there is a rationale that incorporates the goal of minimising risks to people and the environment throughout the <i>tailings facility lifecycle</i>. 	<ul style="list-style-type: none"> a. The <i>Design Basis Report (DBR)</i>¹ is used as an input to inform the multi criteria <i>alternative analysis</i>, which in turn informs the accepted design. b. Periodic review reports or documentation in design updates by <i>ITRB</i> or other <i>senior reviews</i>. c. Rationale for differences in the design from the multi-criteria <i>alternative analysis</i> may be included in the <i>DBR</i> and /or addressed in <i>ITRB</i> or other <i>senior reviews</i>.
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 3.3.4 (Multi-Criteria Analysis, 3.4 (Design)).		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.2		
	Develop a <i>robust design</i> that considers the technical, social, environmental and local economic context, the <i>tailings facility</i> Consequence Classification, site conditions, water management, mine plant operations, <i>tailings</i> operational and construction issues, and that demonstrates the feasibility of <i>safe closure</i> of the <i>tailings facility</i> . The design should be reviewed and updated as performance and site data become available and in response to <i>material</i> changes to the <i>tailings facility</i> or its performance.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <p>a. A <i>robust design</i>^{1,2} that considers:</p> <ul style="list-style-type: none"> – The technical, social, environmental, and local economic context of the <i>tailings facility</i>. – The Consequence Classification, site conditions, water management, mine plant operations, <i>tailings</i> operational and construction issues. – The design demonstrates the feasibility of <i>safe closure</i>³ of the <i>tailings facility</i>. <p>b. The design is reviewed and updated as performance and site data become available throughout the <i>tailings facility lifecycle</i> and / or in response to <i>material</i> changes.</p>	<p>a. May be done as part of the <i>alternatives analysis</i> [Requirement 3.2] and documented in supporting design reports⁴. Reports by the <i>EOR</i>, <i>ITRB</i> or other Senior Technical Reviewers may provide reviews of robustness that could be used as examples.</p> <p>b. Typically addressed in the annual report for the <i>tailings facility</i> and/or in updates to the <i>DBR</i>. Performance and site data typically include instrumentation, site investigations and site inspections.</p> <p><i>Material</i> changes should be documented in the <i>Change Management System</i> and the <i>DAR</i> and addressed in the <i>DBR</i>.</p>
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> 1. The degree of robustness is related to the facility maintaining its overall integrity despite less-than-ideal performance of one or more of its components. For example, designing a facility assuming brittle behaviour with liquefaction of all susceptible tailings and/or foundation materials, with lower-bound post-liquefaction strengths. Other examples include simple designs without complex zonation that are not sensitive to deformations 2. Examples include seepage control measures to minimize potential groundwater quality impacts; designs that have less reliance on highly skilled labour; designs that perform robustly under current climate condition and a range of future climate conditions. 3. Safe closure elements typically include geotechnical, hydrotechnical and geochemical risks, which should be documented in the <i>DBR</i> or may be included in a supporting separate closure plan report. 4. ICMM Tailings Management Good Practice Guide: Section 3.4 (Design) 		
4	Equivalent Standards for demonstrating conformance		
	<p>a. ICMM Performance Expectation 6.3 requires members to ‘design, construct, operate, monitor and decommission <i>tailings</i> disposal/storage facilities using comprehensive, risk-based management and governance practices in line with internationally recognised good practice, to minimise the risk of catastrophic failure’ but does not explicitly cover all of the criteria so is partially equivalent to conformance with this protocol.</p>		

PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.3 Develop, implement and maintain a water balance model and associated water management plans for the <i>tailings facility</i> , taking into account the <i>knowledge base</i> including climate change, upstream and downstream hydrological and hydrogeological basins, the mine site, mine planning and overall operations and the integrity of the <i>tailings facility</i> throughout its <i>lifecycle</i> . The water management programme must be designed to protect against unintentional releases.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are addressed and can be demonstrated: a. A water management plan ^{1,3} that takes into account the <i>knowledge base</i> , the mine plan for the current state of the <i>tailings facility lifecycle</i> , upstream and downstream hydrological and hydrogeological basins, and the potential for climate change. b. A water balance model ^{2,3} that considers the overall water management plan. c. The water management plan and water balance address the safety of the <i>tailings facility</i> and the prevention of unintentional releases.	a. Key elements of the water management plan would typically be documented in the <i>DBR</i> and supporting Design Reports. b. The water balance model accounts for all inputs and outputs for the <i>tailings facility</i> this may comprise Excel spreadsheets, or more complex models ¹ . c. The water management plan includes provision for storage and/or spillway discharge of design floods and design requirements should be documented in the <i>DBR</i> .
3	Interpretive and Clarification Notes:		
	1. The water management plan considers: a) surface and groundwater flows; and, b) the integrity of water management structures (e.g. diversion channels and structures, decants, pump systems) have been assessed. 2. The water balance model considers the physical and hydrogeologic characteristics of the site and climatic conditions. The water balance model includes characterization of, and provisions for, wet/dry periods and climate change. 3. ICMM Tailings Management Good Practice Guide: Section 3.2.3 (Integration of Tailings and Water Management), Section 3.4.3.9 (External Loading Criteria for Design).		
4	Equivalent Standards for demonstrating conformance		
	a. ICMM Water Stewardship Position Statement, i.e., 2.1 Maintain a water balance and understand how it relates to the cumulative impact of other users; 2.2 Set context-relevant water targets or objectives for sites with <i>material</i> water-related risks; and 2.3. Proactively manage water quantity and quality to reduce potential socio-environmental impacts and realise opportunities. This is partially equivalent to conformance with this protocol as criteria a and c are more prescriptive.		

PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.4		
	Address all potential failure modes of the structure, its foundation, abutments, reservoir (<i>tailings</i> deposit and pond), reservoir rim and appurtenant structures to minimise risk to <i>ALARP</i> . Risk assessments must be used to inform the design.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> Potential failure modes to the structure, its foundation, abutments, reservoir (<i>tailings</i> deposit and pond), Reservoir rim, and appurtenant structures are identified, categorized by risk assessments¹, and addressed through preventative measures incorporated into the design and/or through operational controls. Risk assessments are used to inform the design to minimize risk to <i>ALARP</i>. Risk assessments should be used to determine whether the potential <i>credible failure mode(s)/scenario</i> are credible. 	<ol style="list-style-type: none"> This may be done as part of a Potential Failure Modes Analysis (PFMA) that includes assessment of <i>credible failure</i> modes / scenarios. The PFMA complements the FMEA and the two aspects are sometimes combined in one analysis. Risk assessments¹ consider all potential failure modes until deemed non-<i>credible</i>. Risk assessments typically include preventative² design and operational controls along with likelihood of failure to implement, which are documented in risk assessment and/or in a Design Report. Risk assessments may be part of a corporate risk management process and/or under the guidance of an individual with suitable experience in assess risks of <i>tailings facilities</i>.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> Risk assessments typically include a semi-quantitative Failure Modes and Effects Analysis (FMEA) and/or a Quantitative Risk Assessment (QRA) and/or other methods. Potential preventative design and preventative operational controls are typically screened to reduce risks <i>ALARP</i>. See Requirement 4.7. ICMM Tailings Management Good Practice Guide: Section 3.2.4 (Managing Uncertainty and Risk). 		
4	Equivalent Standards for demonstrating conformance		
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PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.5		
	Develop a design for each stage of construction of the <i>tailings facility</i> , including but not limited to start-up, partial raises and interim configurations, final raise, and all closure stages.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. Designs are conducted for each stage of construction ¹ of the <i>tailings facility</i> , including but not limited to start-up, partial raises and interim configurations, final raise, and all closure stages prior to construction. The level of detail of the design should be commensurate with the phase of the <i>tailings facility lifecycle</i> ² .	a. Typically documented in the <i>DBR</i> ³ and supporting design reports or closure design report. Construction drawings and specifications may be developed for specific construction stage.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> 1. See also ICMM Tailings Management Good Practice Guide: Section 3.5 (Construction), Section 3.4.3 (Tailings Facility Design). 2. Closure designs are recommended to be completed to pre-feasibility study level, as permitted by local jurisdictional requirements. 3. The Design Basis Report is a discrete deliverable that provides the basis for the design, operation, construction, monitoring and risk management of a tailings facility. 		
4	Equivalent Standards for demonstrating conformance		
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PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.6		
	Design the closure phase in a manner that meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario and to allow implementation of elements of the design during construction and operation as appropriate. The design should include progressive closure and <i>reclamation</i> during operations.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. The closure design¹ meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario. b. The closure design allows implementation of elements of the closure design during construction and operation, as appropriate. c. The design includes progressive closure and <i>reclamation</i> during operations. 	<ul style="list-style-type: none"> a. See Requirement 5.2, 5.5, 6.1. b. Elements of the closure design could include, for example, building outer slopes at the final closure design angle rather than re-sloping at closure. c. Progressive closure and <i>reclamation</i> opportunities during operations should be assessed, and where feasible could involve; for example, soil covers and <i>reclamation</i> of disturbed areas and the facility slopes.
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 3.7 (Closure and Post Closure).		
4	Equivalent Standards for demonstrating conformance		
	<ul style="list-style-type: none"> a. Performance Expectation 6.1 requires ICMM members to 'plan and design for closure in consultation with relevant authorities and stakeholders, implement measures to address closure-related environmental and social aspects, and make financial provision to enable agreed closure and post-closure commitments to be realised' but does not explicitly cover all of the criteria so is only partially equivalent to conformance with this protocol. 		

PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1

Requirement 5.7

For a proposed new *tailings facility* classified as 'High', 'Very High' or 'Extreme', the *Accountable Executive* shall confirm that the design satisfies *ALARP* and shall approve additional *reasonable steps* that may be taken downstream, to further reduce potential consequences to people and the environment. The *Accountable Executive* shall explain and document the decisions with respect to *ALARP* and additional consequence reduction measures.

For an existing *tailings facility* classified as 'High', 'Very High' or 'Extreme', the *Accountable Executive*, at the time of every *DSR* or at least every five years, shall confirm that the design satisfies *ALARP* and shall seek to identify and implement additional *reasonable steps* that may be taken to further reduce potential consequences to people and the environment. The *Accountable Executive* shall explain and document the decisions with respect to *ALARP* and additional consequence reduction measures, in consultation with external parties as appropriate.

2

Assessment

Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <p>For a proposed new <i>tailings facility</i>, the <i>Accountable Executive</i> (AE) shall:</p> <ul style="list-style-type: none">a. Confirm that the design satisfies <i>ALARP</i>².b. Approve additional <i>reasonable steps</i> that may be taken downstream, to further reduce potential consequences to people and the environment.c. Explain and document the decisions with respect to <i>ALARP</i> and additional consequence reduction measures. <p>For an existing <i>tailings facility</i>, the <i>Accountable Executive</i>, at the time of every <i>DSR</i> or at least every five years, shall:</p> <ul style="list-style-type: none">d. Confirm that the design satisfies <i>ALARP</i>.e. Seek to identify and implement additional <i>reasonable steps</i> that may be taken to further reduce potential consequences to people and the environment.f. Explain and document the decisions with respect to <i>ALARP</i> and additional consequence reduction measures, in consultation with external parties as appropriate.	<ul style="list-style-type: none">a. The AE may consult with or review recommendations from the <i>ITRB</i>, <i>EOR</i> and <i>RTFE</i> with respect to technical, economic, environment and social aspects of the decision¹.b. These steps or controls may be informed by risk assessments (Requirements 5.4 & 10.1) by <i>breach analysis</i> and <i>tailings facility credible failure scenarios</i> (Requirements 2.3 & 2.4).c. /d. Potential failure mode assessments. (Requirement 5.4) complement the consideration of <i>ALARP</i>. The AE may consult with, or review recommendations from the <i>ITRB</i>, <i>EOR</i> and <i>RTFE</i> with respect to technical, economic, environment and social aspects of the decision.e. Refer to b. abovef. Supporting design reviews, ongoing risk assessments over the <i>tailings facility lifecycle</i> may inform and support the documentation.

3

Interpretive and Clarification Notes:

1. The *alternatives analysis* (Requirement 3.2) and potential failure mode assessments (Requirement 5.4) should address the ALARP principle.

2. ICMM Tailings Management Good Practice Guide: Section 3.2.4.3 (Risk Management), Section 3.3.4 (Multi-Criteria Analysis).

4

Equivalent Standards for demonstrating conformance

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PRINCIPLE 5

Develop a *robust design* that integrates the *knowledge base* and minimises the risk of failure to people and the environment for all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 5.8 Where other measures to reduce the consequences of a <i>tailings facility credible failure</i> mode as per the <i>breach analysis</i> have been exhausted, and pre-emptive resettlement cannot be avoided, the <i>Operator</i> shall demonstrate conformance with international standards for <i>involuntary resettlement</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. <i>Operators</i> who have a facility with a <i>credible failure</i> mode, as per the <i>breach analysis</i> , have exhausted measures to reduce consequences, and cannot avoid pre-emptive resettlement. b. <i>Operator</i> has conformed to international standards for <i>involuntary resettlement</i> .	a. Analysis, memorandums or reports demonstrating that pre-emptive resettlement cannot be avoided. For example, analyses demonstrating that residual risks to downstream communities remain unacceptable after consideration of all mitigation measures. b. Evidence of an appropriately managed and resourced <i>involuntary resettlement</i> process. For example: – Draft and final planning documents, such as a Resettlement Action Plan and/or Livelihood <i>Restoration</i> Plan; – Database of household-level information, impacts, and entitlements, as well as compensation agreements and transaction records; – Engagement and <i>grievance</i> management records; – Implementation records, including progress reports; and – Monitoring and evaluation reports.
3	Interpretive and Clarification Notes:		
	1. This requirement applies to new and modifications to existing facilities. 2. ICMM Land Acquisition and Resettlement: Lessons Learned is valuable in implementing this Requirement.		
4	Equivalent Standards for demonstrating conformance		
	a. ICMM Performance Expectation 3.2 requires members to ‘avoid the involuntary physical or economic displacement of families and communities. Where this is not possible apply the mitigation hierarchy and implement actions or remedies that address residual adverse effects to restore or improve livelihoods and standards of living of displaced people’ and is equivalent to conformance with criterion b of this protocol. b. International Finance Corporation Performance Standard 5 (IFC PS5) on Land Acquisition and Involuntary Resettlement is the <i>de facto</i> international standard for addressing the impacts and risks associated with involuntary resettlement, whether physical or economic in nature, and is equivalent to conformance with criterion b of this protocol.		

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 6.1 Build, operate, monitor, and close the <i>tailings facility</i> according to the design intent at all phases of the <i>tailings facility lifecycle</i> , using qualified personnel and appropriate methodology, equipment and procedures, data acquisition methods, the <i>Tailings Management System (TMS)</i> and the overall <i>Environmental and Social Management System (ESMS)</i> for the mine and associated infrastructure.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. The design intent, established in the <i>DBR</i> , is understood and implemented for construction, operation and closure for each phase of the <i>tailings facility lifecycle</i> . b. Construction and operating personnel assigned to <i>tailings</i> -related tasks are qualified based on the qualifications defined in the <i>Tailings Management System (TMS)</i> . c. Throughout all stages of the <i>tailings facility lifecycle</i> the appropriate methodology, equipment and procedures ¹ , data acquisition methods, are used and incorporated into the <i>TMS</i> and the Environmental and Social Management System (ESMS) for the mine and associated infrastructure. d. The <i>TMS</i> and the ESMS are implemented during construction, operation, and closure.	a. Designer must demonstrate that design drawings, technical specifications and facility raising plans for construction works should be approved by the <i>EOR</i> and aligned with the <i>DBR</i> (where the <i>EOR</i> is not the designer). Annual performance reports by the <i>EOR</i> and the <i>CDIV</i> system are usually used to confirm alignment with the design intent and the <i>DBR</i> . b. Qualifications of key construction and operating personnel may be documented in the <i>OMS</i> and/or verified by completion of training, certifications and education. c. Examples include, <i>tailings facility</i> construction, <i>tailings</i> deposition, water management and monitoring plans which are developed in conjunction with the <i>EOR</i> . The <i>Construction vs. Design Intent Verification (CDIV)</i> programme can be used. A system may exist for acquiring and documenting construction, operational and monitoring data throughout the <i>tailings facility lifecycle</i> . d. There may be variable components of the <i>TMS</i> and <i>ESMS</i> that will be applicable depending on the stage of the <i>tailings facility</i> . Usually the applicable system elements would be linked to the risks that are present.
3	Interpretive and Clarification Notes: 1. ICMM Tailings Management Good Practice Guide: Section 2.4.3.4 (Surveillance), Section 3.5.2 (Construction Management Plan), Section 3.5.3 (Deviation from Design), Section 3.6 (Operations).		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 6.2 Manage the quality and adequacy of the construction and operation process by implementing Quality Control, Quality Assurance and <i>Construction vs Design Intent Verification (CDIV)</i> . The <i>Operator</i> shall use the <i>CDIV</i> to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.		
2	Assessment		
	Conformance Meets	Criteria The following are demonstrated: a. Quality Control ¹ (QC) and Quality Assurance ² (QA) programmes are established to monitor the quality and adequacy of the construction ² and operation processes. b. A <i>CDIV</i> programme that confirms that the design intent is met if site conditions vary from design assumptions.	Examples a. QC plans will usually include construction works and guidance for testing and record documentation. QC plans are typically documented in the <i>Construction Records Reports</i> . QA Plans that cover construction works and operations are typically documented in <i>Construction Record Reports</i> and/or the <i>OMS Manual</i> or other relevant documents such as an annual report for operating <i>tailings facilities</i> . b. The <i>CDIV</i> could be documented as part of the <i>Construction Records Report</i> or separately. The <i>CDIV</i> should document <i>material</i> changes to the design and confirm the design intent is met.
3	Interpretive and Clarification Notes: 1. Quality Control (QC) is the inspection of construction works and material verification, via testing, to ensure compliance with the requirements of the drawings and technical specifications. 2. Quality Assurance (QA) is the implementation of a system to ensure design and construction activities will deliver the project requirements in accordance with the design intent. 3. ICMM Tailings Management Good Practice Guide: Section 3.5 (Construction).		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 6.3		
	Prepare a detailed <i>Construction Records Report</i> ('as-built' report) whenever there is a <i>material</i> change to the <i>tailings facility</i> , its infrastructure or its monitoring system. The <i>EOR</i> and the <i>Responsible Tailings Facility Engineer (RTFE)</i> shall sign this report.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <p>a. <i>Construction Records Reports (CRR)</i>^{1,2,3} are up to date and are prepared when there is a <i>material</i> change to the <i>tailings facility</i>, its infrastructure, or its monitoring system.</p> <p>b. The <i>CRRs</i> are signed by the <i>RTFE</i> and the <i>EOR</i>.</p>	<p>a. <i>Construction Record Reports</i> typically include representative 'as-built' cross sections over the <i>tailings facility lifecycle</i>. They also typically document key information such as: geotechnical conditions of foundation preparation, fills and <i>tailings</i>, geometry of zones, instrumentation descriptions and locations, quality control and quality assurance, and other relevant information. Where <i>CRRs</i> are not available for historic works, the 'as-built' condition is estimated based upon the <i>knowledge base</i>.</p> <p>b. /</p>
3	Interpretive and Clarification Notes:		
	<p>1. Historical construction record data may be contained in other reports.</p> <p>2. ICMM Tailings Management Good Practice Guide: Section 3.5.4 (Documentation of Construction Conditions).</p>		
4	Equivalent Standards for demonstrating conformance		
	<p>a. The ICMM Position Statement on Tailings Governance (2016) commitment 4 on 'change management' requires: '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'. This should be fully equivalent to conformance with this protocol provided the appropriate signoffs are observed.</p>		

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 6.4 Develop, implement, review annually and update as required an <i>Operations, Maintenance and Surveillance (OMS) Manual</i> that supports effective risk management as part of the <i>TMS</i> . The <i>OMS Manual</i> should follow <i>best practices</i> , clearly provide the context and <i>critical controls</i> for safe operations and be reviewed for effectiveness. The <i>RTFE</i> shall provide access to the <i>OMS Manual</i> and training to all levels of personnel involved in the <i>TMS</i> with support from the <i>EOR</i> .		
2	Assessment		
	Conformance Meets	Criteria The following are demonstrated: a. An <i>Operation, Maintenance and Surveillance (OMS) Manual</i> is implemented, covers each <i>tailings facility</i> and includes the requirements for the <i>OMS</i> activities necessary for the effective risk management based on <i>best practice</i> . b. The <i>OMS</i> is reviewed annually or more frequently if there are any updates following a <i>material</i> change as defined by the <i>Operator</i> . c. The <i>OMS</i> provides clear context and includes the inspection, maintenance and monitoring of the requirements identified including <i>critical controls</i> for safe operation and is reviewed for effectiveness. d. The <i>RTFE</i> ensures that personnel involved in the <i>TMS</i> have access to the <i>OMS Manual</i> . e. The <i>RTFE</i> should provide access to training to all levels of personnel involved in the <i>TMS</i> .	Examples a. <i>Best practice</i> includes the requirements outlined in the Canadian Dam Association, MAC's <i>Towards Sustainable Mining OMS Guideline</i> , the ICMM <i>Tailings Management Good Practice Guide</i> , or those that are recommended by the <i>EOR</i> the <i>ITRB</i> or <i>senior independent technical reviewer</i> . b. / c. An effectiveness review of an <i>OMS</i> would look not only at whether the data collected during surveillance activities were in fact collected, but also whether these data were evaluated to confirm that the <i>tailings facility</i> was meeting the performance objectives in the <i>OMS</i> . d. The list of personnel requiring access is often listed in the <i>OMS</i> and may include third parties that have a role or responsibility for the <i>tailings facility</i> management. e. See (d) above.
3	Interpretive and Clarification Notes: /		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

Requirement 6.5	
1	Implement a formal <i>change management system</i> that triggers the evaluation, review, approval and documentation of changes to design, construction, operation or monitoring during the <i>tailings facility lifecycle</i> . The <i>change management system</i> shall also include the requirement for the <i>EOR</i> to prepare a periodic <i>Deviance Accountability Report (DAR)</i> that provides an assessment of the cumulative impact of the changes on the risk level of the as-constructed facility. The <i>DAR</i> shall provide recommendations for managing risk, if necessary, and any resulting updates to the design, <i>DBR</i> , <i>OMS</i> and the monitoring programme. The <i>DAR</i> shall be approved by the <i>Accountable Executive</i> .

Assessment		
Conformance	Criteria	Examples
2	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> A <i>Change Management System</i>¹ has been established. The <i>Change Management System</i> includes processes for the identification of changes and processes for evaluation, review, approval and documentation of changes throughout the facility <i>lifecycle</i>. The <i>Change Management System</i> addresses and documents <i>material</i> changes to design, construction, operations, or monitoring. A <i>DAR</i> is periodically prepared and updated by the <i>EOR</i> that addresses the cumulative impact of <i>material</i> changes to the as-constructed facility. Recommendations from the <i>DAR</i> have been implemented through updates to the construction, operations, design, <i>DBR</i>, <i>OMS Manual</i> and the monitoring programme. The <i>Accountable Executive</i> has approved the <i>DAR</i>. 	<ol style="list-style-type: none"> The <i>Change Management System</i> may be documented in the <i>OMS manual</i>. / <i>Material</i> design and construction changes may be addressed and documented in <i>Construction Record Reports</i> and the <i>DBR</i> and captured in revisions to the <i>OMS manual</i>. The <i>DAR</i> may refer to supporting studies, risk assessments or other relevant documents. The <i>DAR</i> may be addressed in the Annual Performance Report. The <i>OMS manual</i>, <i>DBR</i> and monitoring programme are up to date and reflect the most recent <i>DAR</i>. /

Interpretive and Clarification Notes:	
3	1. ICMM Tailings Management Good Practice Guide: Section 2.3.2.1 (Managing Change), Section 3.6.3 (Deviations in Design).

Equivalent Standards for demonstrating conformance	
4	The ICMM Position Statement on Tailings Governance (2016) commitment 4 on 'change management' requires: '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'. This should be fully equivalent to conformance with this protocol provided that documentation referred to are produced and signoffs are observed.

PRINCIPLE 6

Plan, build and operate the *tailings facility* to manage risk at all phases of the *tailings facility lifecycle*, including closure and post-closure.

1	Requirement 6.6		
	Include new and emerging technologies and approaches and use the evolving knowledge in the refinement of the design, construction and operation of the <i>tailings facility</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. Reviews of new and emerging technologies and approaches for <i>tailings</i> management are carried out considering the <i>tailings facility lifecycle</i>. b. <i>Material</i> results of the reviews have been incorporated into refinements of the facility design, construction and operations. 	<ul style="list-style-type: none"> a. An evaluation of new and emerging technologies and approaches may be documented in supporting studies or as part of an Alternative Analysis¹. b. Details of the updates and/or refinements to technologies and approaches may be documented in the <i>DBR</i>, <i>OMS Manual</i> or other relevant documents.
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 3.3.4 (Multi-Criteria Analysis).		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 7

Design, implement and operate monitoring systems to manage risk at all phases of the *facility lifecycle*, including closure.

Requirement 7.1	
1	Design, implement and operate a comprehensive and integrated performance monitoring programme for the <i>tailings facility</i> and its appurtenant structures as part of the <i>TMS</i> and for those aspects of the <i>ESMS</i> related to the <i>tailings facility</i> in accordance with the principles of <i>Adaptive Management</i> .

2

Assessment		
Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none">a. A comprehensive and integrated performance monitoring programme for the <i>tailings facility</i> and its appurtenant structures has been developed, and forms part of the <i>TMS</i>, and includes activities for inspection, reviews, and monitoring requirements in alignment with the facility <i>OMS</i>.b. Aspects of the <i>ESMS</i> that are linked to <i>tailings facility's</i> performance monitoring are identified and included in the performance monitoring program.c. The performance monitoring programme is integrated and reflects other programs such as the <i>OMS</i> and is updated in keeping with the principles of <i>Adaptive Management</i>.	<ul style="list-style-type: none">a. Performance monitoring programmes may consider all aspects of a <i>tailings</i> management facility through construction, operation, and long-term care and maintenance and may include items such as monitoring phreatic conditions, deformation and other physical conditions of the facility, environmental aspects such as seepage flow rates and quality or management system components such as tracking of completed corrective actions. The content of the performance monitoring programme may be collaboratively established with environmental, social, geotechnical professionals in consultation with the <i>EOR</i> and reflects the content of the <i>OMS</i>.b. Examples from the <i>ESMS</i>, which may be considered for performance monitoring could include leading indicators such as percent of workforce trained on <i>tailings</i>, number of community complaints etc. The <i>ESMS</i> need not be certified but should be considered a management system.c. The monitoring program may be integrated with other elements of the <i>tailings facility</i>, including the <i>OMS</i>, <i>emergency response plans</i> (e.g., <i>EPRP/TARPs</i> etc.). The performance monitoring programme should keep pace with changes to the overall <i>tailings management system</i> and may be updated when those systems change.

Interpretive and Clarification Notes:	
3	1. Appurtenant structures are structures that are integral to the functioning of the tailings facility such as those to control water levels and prevent facility failure. They include outlet works, spillways, discharge pipes. The <i>OMS</i> for the tailing facility would include a description of all the appurtenant structures as defined by the <i>EOR</i> .

Equivalent Standards for demonstrating conformance	
4	<ul style="list-style-type: none"> a. The ICMM Position Statement on Tailings Governance (2016) commitment 6 on 'review & assurance' requires: '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; and Performance of risk management programs for TSFs is reported to executive management on a regular basis'. This should be fully equivalent to conformance with this protocol provided that they are incorporated into the <i>TMS</i>, <i>ESMS</i> and that criterion c is observed

PRINCIPLE 7

Design, implement and operate monitoring systems to manage risk at all phases of the *facility lifecycle*, including closure.

1	Requirement 7.2		
	Design, implement and operate a comprehensive and integrated engineering monitoring system that is appropriate for verifying design assumptions and for monitoring potential failure modes. Full implementation of the <i>Observational Method</i> shall be adopted for non-brittle failure modes. Brittle failure modes are addressed by conservative design criteria.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A comprehensive and integrated engineering monitoring system¹ has been designed and used to verify design assumptions and to monitor potential failure modes. b. Monitoring procedures² for non-brittle failure modes are developed and implemented to support the <i>Observational Method</i>. c. Brittle failure modes are addressed by conservative design criteria. 	<ul style="list-style-type: none"> a. A monitoring system is in place that can be used to routinely verify facility performance relative to design assumptions (e.g. phreatic levels, deformations, pond water levels). Progress reports and, in some cases, on-line monitoring systems can demonstrate that monitoring is being carried out. b. The details of the installed monitoring system are typically in the <i>DBR</i> and the <i>OMS</i>. c. Conservative design criteria may include, for example, higher loading criteria, higher factors of safety, lower bound strength parameters, and others.
3	Interpretive and Clarification Notes:		
	<ul style="list-style-type: none"> 1. ICMM Tailings Management Good Practice Guide: Section 2.4 (Operation, Maintenance, and Surveillance), Section 2.7.2 (Assessing Credible Potential Consequences), Section 2.4.3.4 (Surveillance), Section 3.2.4 (Managing Uncertainty and Risk), Section 3.4.3 Tailings Facility Design), Section 3.6.4.3 (Trigger Action Response Plans). 2. An assessment of detection methods for the specific failure modes can support whether it is feasible to monitor the initiation of a particular failure mode. Determination of investigatory and operational monitoring methods, where applicable and/or available, for verification of the design intent (assumptions) are typically considered. 		
4	Equivalent Standards for demonstrating conformance		
	<ul style="list-style-type: none"> a. ICMM Position Statement: Tailings Governance (2016) commitment 3 requires that 'risk controls and their associated verification activities are identified based on failure modes and their associated consequences, and evaluated on a <i>tailings facility</i> specific basis considering all phases of the <i>tailings facility lifecycle</i>' and is partially equivalent to conformance with this protocol but the criteria are more prescriptive (e.g. referring to brittle and no-brittle failure modes). 		

PRINCIPLE 7

Design, implement and operate monitoring systems to manage risk at all phases of the *facility lifecycle*, including closure.

1	Requirement 7.3 Establish specific and measurable performance objectives, indicators, criteria, and performance parameters and include them in the design of the monitoring programmes that measure performance throughout the <i>tailings facility lifecycle</i> . Record and evaluate the data at appropriate frequencies. Based on the data obtained, update the monitoring programmes throughout the <i>tailings facility lifecycle</i> to confirm that they remain effective to manage risk.		
2	Assessment		
	Conformance Meets	Criteria The following are demonstrated: a. Performance objectives, indicators and criteria ¹ are set that measure the performance of the <i>tailings facility</i> . These are specific and measurable and included in the monitoring programmes. b. Routine and regular inspecting, monitoring, testing, recording, evaluating and reporting of the data from the monitoring programmes is conducted according to the established appropriate frequency. c. The monitoring programme is updated throughout the <i>tailings facility lifecycle</i> based on the evaluation of the data to confirm that the performance objectives, indicators and criteria remain effective to manage risk.	Examples a. Performance objectives may take many forms and may be quantitative or qualitative and be inclusive of a wide set of factors. Performance objectives can relate to human factor such as the number of completed inspections, closed corrective actions as well as operational or engineering considerations, such as freeboard, or results of geotechnical monitoring. The objectives should be in alignment with the <i>tailings facility lifecycle</i> and could include items related to <i>reclamation</i> or closure. These should be established in consultation with the <i>EOR</i> and may be documented in the <i>OMS</i> . Facilities with higher risk and potential consequences usually have more mechanisms to monitor performance as well as more frequent checks of the performance. b. Inspection and monitoring program content and frequency are usually based on the risk and potential consequences of the facility as well as the past performance of the <i>tailings facility</i> as set with the <i>EOR</i> . c. This is normally completed by the <i>EOR</i> along with the <i>Operator's</i> team to determine whether the monitoring achieved the stated performance goals.
3	Interpretive and Clarification Notes: /		
4	Equivalent Standards for demonstrating conformance		
	a. ICMM Positions Statement Tailings Governance (2019) commitment 3 requires 'performance criteria are established for risk controls and their associated monitoring, internal reporting and verification activities' and is partially equivalent to conformance with this protocol, as criteria b and c are more prescriptive.		

PRINCIPLE 7

Design, implement and operate monitoring systems to manage risk at all phases of the *facility lifecycle*, including closure.

1	Requirement 7.4 Analyse technical monitoring data at the frequency recommended by the <i>EOR</i> , and assess the performance of the <i>tailings facility</i> , clearly identifying and presenting evidence on any deviations from the expected performance and any deterioration of the performance over time. Promptly submit evidence to the <i>EOR</i> for review and update the risk assessment and design, if required. Performance outside the expected ranges shall be addressed promptly through <i>Trigger Action Response Plans (TARPs)</i> or <i>critical controls</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. The <i>tailings facility</i> performance is assessed by analyzing technical monitoring data at a frequency established by the <i>EOR</i> . b. The analysis of <i>tailings facility</i> technical monitoring data clearly identifies and presents evidence on deviations from the expected performance objectives and deterioration of the <i>tailings facility</i> performance over time. c. The results from the <i>tailings facility</i> performance monitoring analysis are promptly reported to the <i>EOR</i> . d. The <i>EOR</i> promptly reviews the <i>tailings facility</i> performance monitoring analysis results and if required, directs that the risk assessment and design be updated. e. Performance expectations are incorporated into <i>Trigger Action Response Plans</i> or <i>critical controls</i> as criteria to state when action is or is not needed.	a. Technical monitoring data may cover a wide variety of information such as data from instrumentation such as piezometers, monitoring such as seepage quantities, <i>tailings</i> slurry density, <i>tailings</i> production rates, as well as results of visual surveillance. b. Analysis would be temporal and could include daily reviews, monthly, quarterly, annual etc. and may consider trends in performance over time. Where performance does not meet expectations, it may be included in the <i>DAR</i> . c. Notification to the <i>EOR</i> may be in the form of reporting from the site or the <i>EOR</i> may have direct access to performance data from online systems; in this case the system should consider a process for notifying the <i>EOR</i> regarding data that may not be available in this format, or to address situation where there is an interruption in the communication of online systems. d. Example of reviews could include formal reviews of data such as completed during a facility safety inspection or more informal routine monthly reviews. The frequency of the analysis would be included in the <i>OMS</i> . e. <i>TARPs</i> will typically have various levels of alerts and actions to be taken that escalate in severity depending on the type of data being collected. Other systems to address performance outside of the expected range may be in the form other <i>critical controls</i> , such as the <i>OMS</i> or other standard operating procedures, which detail the action to be taken.
3	Interpretive and Clarification Notes: 1. ICMM Tailings Management Good Practice Guide: Section 2.4.3.4 (surveillance) and Section 3.6.4.3 (TARPs)		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 7

Design, implement and operate monitoring systems to manage risk at all phases of the *facility lifecycle*, including closure.

1	Requirement 7.5		
	Report the results of each of the monitoring programmes at the frequency required to meet company and regulatory requirements and, at a minimum, on an annual basis. The <i>RTFE</i> and the <i>EOR</i> shall review and approve the technical monitoring reports.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. The results of the monitoring programmes are reported at a frequency that meets company expectations and regulatory requirements and at a minimum is completed annually. b. Technical monitoring reports are reviewed and approved by the <i>RTFE</i> and the <i>EOR</i>. 	<ul style="list-style-type: none"> a. Reporting mechanisms could include interpretation of the results in comparison to stated criteria. Company expectations could include internal communication of monitoring results in addition to what may need to be reported to a regulatory agency. The reporting mechanisms in both cases should be clear in terms of expectations. b. There is typically a sign off or stamp from <i>EOR</i> and <i>RTFE</i> verifying completion of the review but may come in other forms where the <i>EOR</i> or <i>RTFE</i> have approved report generation. For example, through an independent statement referencing the reports.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

Requirement 8.1	
1	The <i>Board of Directors</i> shall adopt and publish a policy on or commitment to the safe management of <i>tailings facilities</i> , to <i>emergency preparedness and response</i> , and to recovery after failure.

Assessment		
Conformance	Criteria	Examples
2	<p>Meets</p> <p>The following are demonstrated:</p> <p>a. A documented corporate <i>tailings</i> management policy¹ that commits the <i>Operator</i> to the safe management of <i>tailings</i>, development of emergency response plans, and mechanisms for recovery after failure. This may be in the form of a standalone policy or embedded in a document that the <i>Board of Directors</i> adopts.</p> <p>b. The policy and its endorsement by the <i>Board of Directors</i> is in writing and is publicly available.</p>	<p>a. A <i>tailings</i> management policy can be a standalone policy that is endorsed by the <i>Board of Directors</i> or be a component of a larger policy statement or commitment, which clearly commits to the safe operation, emergency response and recovery efforts.</p> <ul style="list-style-type: none"> Examples of commitment in policy statements could include: Commitment to the plan, design, construct and operate <i>tailings facilities</i> in a manner that reduces long-term impacts, risks and liability; Ensuring sufficient resources are allocated to achieve the policy objectives; Operate to meet regulatory compliance requirements, internal company standards or third party recognized standards; Manage <i>tailings facilities</i> based on the level of risk; Engage with the community of interest on the design, management and review of the <i>tailings facility</i>, communicating the degree of risk inherent to the facility; Reevaluate the policy periodically to confirm the policy is adequate considering changes to the tailings management portfolio² that would impact its safety, emergency management or response mechanisms. If changes to the tailings portfolio or management system introduces a new risk that requires an update to a policy commitment the policy is updated. Examples could be if an <i>Operator</i> purchases new Assets that introduces new risks; Establish a review process of internal, external and independent reviewers, with the intent of continuously improving performance and safety. <p>b. The policy is publicly accessible online or is available directly from the company.</p>

Interpretive and Clarification Notes:	
3	<p>1. A corporate tailings management policy is a set of principles, or a statement of intent that is implemented which guides decision making to achieve safe operation, emergency response and recovery efforts related to an <i>Operator's</i> tailings facilities.</p> <p>2. Tailings management portfolio could be a single tailings management facility or a group of tailings management facilities throughout the Company, but is to be inclusive of all tailings management facilities owned and operated by the Company</p>

Equivalent Standards for demonstrating conformance	
4	/

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

1	Requirement 8.2		
	Establish a <i>tailings governance framework</i> and a performance based <i>TMS</i> and ensure that the <i>ESMS</i> and other critical systems encompass relevant aspects of the <i>tailings facility</i> management.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A performance based <i>TMS</i>, follows established Plan-Do-Check-Act processes and is suitable for the organization and its <i>tailings facilities</i>. b. Accountabilities, responsibilities and associated competencies for the implementation of that framework are defined that supports appropriate identification and management of <i>tailings facility</i> risks. c. The governance framework supports the <i>TMS</i>, its relevant critical systems and other related <i>ESMS</i>. d. The linkages between the <i>TMS</i> and other systems such as the <i>ESMS</i> are clear to ensure effective integrated management of the <i>tailings facility</i>. 	<p>The <i>TMS</i> may include:</p> <ul style="list-style-type: none"> a. The <i>TMS</i> may be site specific or adopt the Corporate <i>TMS</i> with demonstrated implementation at the site level. Job profiles, training and competency requirements for associated workers, including front line employees to the board level. b. Critical systems in the <i>TMS</i> have a clear governance process including assignment of roles and responsibilities and an indication on how escalating issues may be addressed through the governance process. c. / d. /
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 2.3 (TMS)		
4	Equivalent Standards for demonstrating conformance		
	<ul style="list-style-type: none"> a. The ICMM Position Statement on Tailings Governance (2016) commitment 1 requires: 'accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks' and is partially equivalent to conformance with this protocol (criterion b), but the linkages to the documents referred to in the other criteria are not explicit. b. Adoption of an ISO management system standard such as ISO14001:2015 Environmental Management System, ISO31000:2015 Risk Management or ISO 45001 which require that a governance framework be established to implement the management system is partially equivalent to conformance with this protocol. 		

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

1	Requirement 8.3		
	For roles with responsibility for <i>tailings facilities</i> , develop mechanisms such that incentive payments or performance reviews are based, at least in part, on public safety and the integrity of the <i>tailings facility</i> . These incentive payments shall reflect the degree to which public safety and the integrity of the <i>tailings facility</i> are part of the role. Long-term incentives for relevant executive managers should take <i>tailings</i> management into account.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. For persons with responsibility for <i>tailings facilities</i>, their performance reviews and or incentive payments are based in part, on public safety and the integrity of the <i>tailings facilities</i>. b. Where incentive payments are used, they are based on the degree to which public safety and <i>tailings facility</i> integrity are a component of that role. c. Long-term incentives, as part of executive compensation, take <i>tailings</i> management, facility performance, and public safety into account. 	<ul style="list-style-type: none"> a. The mechanisms for incentives may be incorporated into documented position descriptions or annual performance objectives and be tied to <i>tailings</i> safety objectives. b. Examples of roles where <i>tailings facility</i> safety is a significant consideration could include <i>AE</i>, <i>RTFE</i> and general manager, while supporting roles would include emergency response manager, community affairs manager, environmental manager, etc. A percent range may be specified to a maximum of the incentive that could be achieved. Roles related to <i>tailings facility</i> integrity/ public safety may have a larger impact on incentive payments, then those with less significant role. c. Long-term incentives could be in the form of equity, which by its nature inherently incorporates company performance criteria encompassing safety, <i>tailings</i> management, and avoidance of major incidents. Such equity-based incentives can, in appropriate circumstances, include additional performance metrics.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

Requirement 8.4	
1	<p>Appoint one or more <i>Accountable Executives</i> who is/are directly answerable to the CEO on matters related to this Standard. The <i>Accountable Executive(s)</i> shall be accountable for the safety of <i>tailings facilities</i> and for avoiding or minimising the social and environmental consequences of a <i>tailings facility</i> failure. The <i>Accountable Executive(s)</i> shall also be accountable for a programme of <i>tailings</i> management training, and for <i>emergency preparedness and response</i>. The <i>Accountable Executive(s)</i> must have scheduled communication with the <i>EOR</i> and regular communication with the <i>Board of Directors</i>, which can be initiated either by the <i>Accountable Executive(s)</i>, or the Board. The <i>Board of Directors</i> shall document how it holds the <i>Accountable Executive(s)</i> accountable.</p>

Assessment		
Conformance	Criteria	Examples
2	<p>Meets</p> <p>The following are demonstrated:</p> <ol style="list-style-type: none"> <i>Accountable Executive(s)</i> who is directly answerable to the CEO have been identified and assigned the safety aspects of a <i>tailings facility</i> and for avoiding or minimising the social and environmental consequences of a <i>tailings facility</i> failure. The accountability¹ referred to in (a) includes developing and implementing a program of <i>tailings</i> management training, and for <i>emergency preparedness and response</i>. The <i>Accountable Executive(s)</i> has regular and scheduled communications with the <i>EOR</i> and <i>Board of Directors</i> which can be initiated either by the <i>Accountable Executive</i> or the Board. The process by which the <i>Board of Directors</i> holds the <i>Accountable Executive(s)</i> responsible is documented. 	<ol style="list-style-type: none"> The roles and responsibilities of the <i>Accountable Executive(s)</i> could be documented in an organizational chart or role description profile. / The schedule of meetings or other communication could be at a frequency that is aligned to the risk of the <i>tailings facility</i> and increase if there are any related safety concerns identified. The standing agenda for the meetings or communication may include reporting on the safety, environmental and social performance aspects relating to the <i>tailings facility</i>. The <i>Accountable Executive(s)</i> accountable could undertake the following activities: <ul style="list-style-type: none"> ensuring that the senior management team and/or Board or governance level are appropriately informed on tailings management issues; reviewing risk assessment results; participating in tailings reviews; reviewing and approving adequate resources for tailings management; participating in independent tailings review meetings; and participating in crisis management planning simulation exercises.

Interpretive and Clarification Notes:	
3	<ol style="list-style-type: none"> Accountability: The answerability of an individual for their own performance and that of any personnel they direct, and for the completion of specified deliverables or tasks in accordance with defined expectations. An accountable person may delegate responsibility for completion of the deliverable or task, but not the accountability. The ICMM Tailings Management Good Practice Guide (Section 2.2.2.2) indicates that the <i>Accountable Executive</i> may delegate responsibilities for tailings management and the development and implementation of the systems needed for safe, responsible tailings management, but accountability cannot be delegated. The EOR should have regular, scheduled communications with the <i>Accountable Executive</i> or delegate (S 2.2.2.4)

PRINCIPLE 8

Equivalent Standards for demonstrating conformance	
4	<p>a. The ICMM Position Statement on Tailings Governance (2016) commitment 1 requires: ‘Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks; Accountability for the overall governance of <i>tailings facilities</i> 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; and Role competency and experience requirements are defined for critical roles within the established organizational structures’. This is partially equivalent to conformance with this protocol as there is no explicit mention of an Accountable Executive.</p>

Embargoed

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

1	Requirement 8.5 Appoint a site-specific <i>Responsible Tailings Facility Engineer (RTFE)</i> who is accountable for the integrity of the <i>tailings facility</i> , who liaises with the <i>EOR</i> and internal teams such as operations, planning, regulatory affairs, social performance, and environment, and who has regular two-way communication with the <i>Accountable Executive</i> . The <i>RTFE</i> must be familiar with the <i>DBR</i> , the design report and the construction and performance of the <i>tailings facility</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. A <i>Responsible Tailings Facility Engineer (RTFE)</i> ¹ is appointed to the role. b. Roles and responsibilities are clearly defined and documented for the <i>RTFE</i> position including accountability for the integrity of the <i>tailings facility</i> . c. The <i>RTFE</i> liaises with the <i>EOR</i> and internal teams. d. The <i>RTFE</i> must be familiar with the <i>DBR</i> , relevant design reports, and the construction and operations/performance of the <i>tailings facility</i> . e. Communication occurs between the <i>RTFE</i> and the <i>Accountable Executive</i> , or designee.	a. A job description that defines the roles and responsibilities of the <i>RTFE</i> and the organization (reporting, communication and decision-making process flow) chart. The qualifications of the <i>RTFE</i> demonstrating abilities commensurate with the complexity of the <i>tailings facility</i> and the abilities of the internal teams and similar professional and operational experience. b. Organisation chart and role description. c. Evidence of communications could include minutes of operating and review meetings. d. / e. /
3	Interpretive and Clarification Notes: 1. ICMM Tailings Management Good Practice Guide: Section 2.2.2.3 (Responsible Tailings Facility Engineer)		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

1	Requirement 8.6		
	Identify appropriate qualifications and experience requirements for all personnel who play safety-critical roles in the operation of a <i>tailings facility</i> , including, but not limited to the <i>RTFE</i> , the <i>EOR</i> and the <i>Accountable Executive</i> . Ensure that incumbents of these roles have the identified qualifications and experience, and develop succession plans for these personnel.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated</p> <ol style="list-style-type: none"> Qualification and experience requirements for all personnel with safety critical roles are clearly defined and are appropriate to the level of responsibility for that position. This includes but is not limited to critical roles such as the <i>RTFE</i>, <i>EOR</i> and <i>Accountable Executives</i>. Succession plans are developed for safety-critical roles. 	<ol style="list-style-type: none"> Examples of where qualifications and experience may be documented include organizational charts, job profiles, and contracts with the <i>EOR</i>, where appropriate. The expectations on what is acceptable to be qualified for a safety critical role is usually defined and include a mix of education, training and certifications. Qualifications for critical roles often reference relevant standards or professions such as those endorsed by Tailings Standards Associations or other local professional associations (i.e., Professional engineer, geotechnical engineer). Examples include documenting that a new <i>EOR</i> receives all relevant historical documentation pertaining to the design, construction, and operation of the <i>tailings facility</i>. The qualification of the <i>EOR</i> is usually documented to ensure that a successor to that role equivalent qualifications. Other safety critical roles could follow the same framework.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> Succession Planning Clarification: The ICMM Tailings Management Good Practice Guide indicates that the focus of succession planning is not on the staffing or human resources aspects. Rather, it is to ensure that a plan is put in place, proactively, to manage changes in such key roles, whether such changes are expected or unexpected. Succession plans should include descriptions of the roles and responsibilities, required qualifications, and the process for filling external roles in the event of change. 		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> The ICMM Position Statement on Tailings Governance (2016) commitment 1 requires: 'Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks; Accountability for the overall governance of <i>tailings facilities</i> 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; and Role competency and experience requirements are defined for critical roles within the established organizational structures'. This is partially equivalent to conformance with this protocol as there is no explicit mention of individual roles or of succession planning. 		

PRINCIPLE 8

Establish policies, systems and accountabilities to support the safety and integrity of the *tailings facility*.

	Requirement 8.7						
1	For <i>tailings facilities</i> with Consequence Classification of 'Very High' or 'Extreme', appoint an <i>Independent Tailings Review Board (ITRB)</i> . For all other facilities, the <i>Operator</i> may appoint a <i>senior independent technical reviewer</i> . The <i>ITRB</i> or the reviewer shall be appointed early in the project development process, report to the <i>Accountable Executive</i> and certify in writing that they follow <i>best practices</i> for engineers in avoiding conflicts of interest.						
	Assessment						
	<table><tr><th>Conformance</th><th>Criteria</th><th>Examples</th></tr><tr><td>2 Meets</td><td><p>The following are demonstrated:</p><ul style="list-style-type: none">a. For a <i>tailings facility</i> with a consequence classification of failure of 'Very High' to 'Extreme', the <i>Operator</i> has appointed an <i>Independent Tailings Review Board (ITRB)</i>.b. For a <i>tailings facility</i> with a consequence classification of failure of 'High' or lower, in the absence of an <i>ITRB</i>, the <i>Operator</i> has appointed a <i>senior independent technical reviewer</i>.c. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> report to the <i>Accountable Executive</i> for the <i>tailings facility</i> or delegate.d. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> is appointed during the early phase of <i>tailings facility</i> site investigation and design engineering (suggested pre-feasibility).e. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> have certified in writing the absence of a conflict of interest with the <i>tailings facility</i> as defined by <i>best practice</i>.</td><td><p>The following are examples of how the requirement is addressed and documented:</p><ul style="list-style-type: none">a. The <i>Operator</i> has established a Terms of Reference (ToR), approved by the <i>Accountable Executive</i>, to appoint an <i>ITRB</i> or <i>Independent Technical Reviewer</i> in accordance with the <i>tailings facility</i> projected impacts (consequences) as appropriate. The ToR should consider the primary purpose of this role as outlined in the GISTM.b. The <i>Operator</i> has documented engagement of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> in the early phases of engineering investigation and design of the <i>tailings facility</i>.c. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> submit regular reports following early engagement, to the <i>Accountable Executive</i> conforming to requirement 10.6 of the GISTM Standard.d. Records are maintained of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> involvement in the Project, including documentation required in 10.6 of the GISTM Standard.e. The <i>Operator</i> maintains on file the professional conflict of interest disclosure of the <i>ITRB</i> members and a <i>senior independent technical reviewer</i>.</td></tr></table>	Conformance	Criteria	Examples	2 Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none">a. For a <i>tailings facility</i> with a consequence classification of failure of 'Very High' to 'Extreme', the <i>Operator</i> has appointed an <i>Independent Tailings Review Board (ITRB)</i>.b. For a <i>tailings facility</i> with a consequence classification of failure of 'High' or lower, in the absence of an <i>ITRB</i>, the <i>Operator</i> has appointed a <i>senior independent technical reviewer</i>.c. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> report to the <i>Accountable Executive</i> for the <i>tailings facility</i> or delegate.d. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> is appointed during the early phase of <i>tailings facility</i> site investigation and design engineering (suggested pre-feasibility).e. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> have certified in writing the absence of a conflict of interest with the <i>tailings facility</i> as defined by <i>best practice</i>.	<p>The following are examples of how the requirement is addressed and documented:</p> <ul style="list-style-type: none">a. The <i>Operator</i> has established a Terms of Reference (ToR), approved by the <i>Accountable Executive</i>, to appoint an <i>ITRB</i> or <i>Independent Technical Reviewer</i> in accordance with the <i>tailings facility</i> projected impacts (consequences) as appropriate. The ToR should consider the primary purpose of this role as outlined in the GISTM.b. The <i>Operator</i> has documented engagement of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> in the early phases of engineering investigation and design of the <i>tailings facility</i>.c. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> submit regular reports following early engagement, to the <i>Accountable Executive</i> conforming to requirement 10.6 of the GISTM Standard.d. Records are maintained of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> involvement in the Project, including documentation required in 10.6 of the GISTM Standard.e. The <i>Operator</i> maintains on file the professional conflict of interest disclosure of the <i>ITRB</i> members and a <i>senior independent technical reviewer</i>.
Conformance	Criteria	Examples					
2 Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none">a. For a <i>tailings facility</i> with a consequence classification of failure of 'Very High' to 'Extreme', the <i>Operator</i> has appointed an <i>Independent Tailings Review Board (ITRB)</i>.b. For a <i>tailings facility</i> with a consequence classification of failure of 'High' or lower, in the absence of an <i>ITRB</i>, the <i>Operator</i> has appointed a <i>senior independent technical reviewer</i>.c. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> report to the <i>Accountable Executive</i> for the <i>tailings facility</i> or delegate.d. The <i>ITRB</i> or a <i>senior independent technical reviewer</i> is appointed during the early phase of <i>tailings facility</i> site investigation and design engineering (suggested pre-feasibility).e. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> have certified in writing the absence of a conflict of interest with the <i>tailings facility</i> as defined by <i>best practice</i>.	<p>The following are examples of how the requirement is addressed and documented:</p> <ul style="list-style-type: none">a. The <i>Operator</i> has established a Terms of Reference (ToR), approved by the <i>Accountable Executive</i>, to appoint an <i>ITRB</i> or <i>Independent Technical Reviewer</i> in accordance with the <i>tailings facility</i> projected impacts (consequences) as appropriate. The ToR should consider the primary purpose of this role as outlined in the GISTM.b. The <i>Operator</i> has documented engagement of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> in the early phases of engineering investigation and design of the <i>tailings facility</i>.c. The <i>ITRB</i> members and a <i>senior independent technical reviewer</i> submit regular reports following early engagement, to the <i>Accountable Executive</i> conforming to requirement 10.6 of the GISTM Standard.d. Records are maintained of the <i>ITRB</i> or a <i>senior independent technical reviewer</i> involvement in the Project, including documentation required in 10.6 of the GISTM Standard.e. The <i>Operator</i> maintains on file the professional conflict of interest disclosure of the <i>ITRB</i> members and a <i>senior independent technical reviewer</i>.					
3	Interpretive and Clarification Notes: /						
	Equivalent Standards for demonstrating conformance						
4	<ul style="list-style-type: none">a. The ICMM Position Statement on Tailings Governance (2016) commitment 6 on 'review & assurance' requires: '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; and Performance of risk management programs for TSFs is reported to executive management on a regular basis'. This is partially equivalent to conformance with this protocol as it does not mention the specific requirements that apply to ITRBs or senior independent technical reviewers.						

PRINCIPLE 9

Appoint and empower an *engineer of record*.

1	Requirement 9.1 Engage an engineering firm with expertise and experience in the design and construction of <i>tailings facilities</i> of comparable complexity to provide <i>EOR</i> services for operating the <i>tailings facility</i> and for closed facilities with 'High', 'Very High' and 'Extreme' Consequence Classification, that are in the active closure phase. Require that the firm nominate a senior engineer, approved by the <i>Operator</i> , to represent the firm as the <i>EOR</i> , and verify that the individual has the necessary experience, skills and time to fulfil this role. Alternatively, the <i>Operator</i> may appoint an in-house engineer with expertise and experience in comparable facilities as the <i>EOR</i> . In this instance, the <i>EOR</i> may delegate the design to a firm (' <i>Designer of Record</i> ') but shall remain thoroughly familiar with the design in discharging their responsibilities as <i>EOR</i> . Whether the <i>EOR</i> or the <i>DOR</i> is in-house or external, they must be competent and have experience appropriate to the Consequence Classification and complexity of the <i>tailings facility</i> .									
2	<table><tr><th colspan="3">Assessment</th></tr><tr><th>Conformance</th><th>Criteria</th><th>Examples</th></tr><tr><td>Meets</td><td><p>The following are demonstrated:</p><p>a. For all operating <i>tailings facilities</i>, and for closed facilities with consequence categories of 'High', 'Very High' and 'Extreme' an engineering firm which has the design and construction expertise for <i>tailings facilities</i> of comparable complexity has been engaged.</p><p>b. The appointed <i>Engineer of Record (EOR)</i>¹ has experience and expertise commensurate with the complexity of the <i>tailings facility</i> and the consequence class and the appointment has been approved by the <i>Operator</i>.</p><p>c. A <i>DOR</i>¹, if appropriate either due to selection of an <i>EOR</i> internal to the <i>Operator</i> or other circumstances, is appointed that meets the essential qualifications and requirements of the <i>EOR</i>.</p></td><td><p>a. Statements of Qualifications of the <i>EOR</i> firm.</p><p>b. Curricula vitae of the <i>EOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p><p>c. Curricula vitae of the <i>DOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p></td></tr></table>	Assessment			Conformance	Criteria	Examples	Meets	<p>The following are demonstrated:</p> <p>a. For all operating <i>tailings facilities</i>, and for closed facilities with consequence categories of 'High', 'Very High' and 'Extreme' an engineering firm which has the design and construction expertise for <i>tailings facilities</i> of comparable complexity has been engaged.</p> <p>b. The appointed <i>Engineer of Record (EOR)</i>¹ has experience and expertise commensurate with the complexity of the <i>tailings facility</i> and the consequence class and the appointment has been approved by the <i>Operator</i>.</p> <p>c. A <i>DOR</i>¹, if appropriate either due to selection of an <i>EOR</i> internal to the <i>Operator</i> or other circumstances, is appointed that meets the essential qualifications and requirements of the <i>EOR</i>.</p>	<p>a. Statements of Qualifications of the <i>EOR</i> firm.</p> <p>b. Curricula vitae of the <i>EOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p> <p>c. Curricula vitae of the <i>DOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p>
Assessment										
Conformance	Criteria	Examples								
Meets	<p>The following are demonstrated:</p> <p>a. For all operating <i>tailings facilities</i>, and for closed facilities with consequence categories of 'High', 'Very High' and 'Extreme' an engineering firm which has the design and construction expertise for <i>tailings facilities</i> of comparable complexity has been engaged.</p> <p>b. The appointed <i>Engineer of Record (EOR)</i>¹ has experience and expertise commensurate with the complexity of the <i>tailings facility</i> and the consequence class and the appointment has been approved by the <i>Operator</i>.</p> <p>c. A <i>DOR</i>¹, if appropriate either due to selection of an <i>EOR</i> internal to the <i>Operator</i> or other circumstances, is appointed that meets the essential qualifications and requirements of the <i>EOR</i>.</p>	<p>a. Statements of Qualifications of the <i>EOR</i> firm.</p> <p>b. Curricula vitae of the <i>EOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p> <p>c. Curricula vitae of the <i>DOR</i> supported with qualifications, which are commensurate with the complexity of the design.</p>								
3	Interpretive and Clarification Notes: 1. ICMM Guide Tailings Management Good Practice Guide: Section 2.2.2.4 (Engineer of Record (EOR) and Design Team), Section 2.2.4 (Competency and Promoting Continual Learning)									
4	Equivalent Standards for demonstrating conformance /									

PRINCIPLE 9

Appoint and empower an *engineer of record*.

1	Requirement 9.2 Empower the <i>EOR</i> through a written agreement that clearly describes their authority, role and responsibilities throughout the <i>tailings facility lifecycle</i> , and during change of ownership of mining properties. The written agreement must clearly describe the obligations of the <i>Operator</i> to the <i>EOR</i> , to support the effective performance of the <i>EOR</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. An <i>EOR</i> is appointed and in place at all times throughout the <i>tailings facility lifecycle</i> . The appointed <i>EOR</i> may change during the <i>tailings facility lifecycle</i> . b. The <i>EOR</i> is appointed through a written agreement that clearly describes their authority, role and responsibilities throughout the <i>tailings facility lifecycle</i> , and during change of ownership of mining properties. c. The written agreement clearly describes the obligations of the <i>Operator</i> to the <i>EOR</i> , to support the effective performance ¹ of the <i>EOR</i> during the <i>tailings facility lifecycle</i> .	a. The <i>tailings facility Operator</i> maintains a written agreement with an <i>EOR</i> that outlines the <i>EOR</i> authority, roles and responsibilities. b. The <i>EOR</i> is enabled to effectively perform their roles and responsibilities by clear written direction from the <i>Operator</i> . c. /
3	Interpretive and Clarification Notes: 1. Effective performance means that the <i>EOR</i> is empowered to fulfil their roles and responsibilities in a manner that is supported by meaningful engagement of the <i>Operator</i> through a written agreement, and the results of the <i>EOR</i> involvement are used by the <i>Operator</i> to manage the tailings facility performance risk at all stages of the tailings facility lifecycle, including post-closure.		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 9

Appoint and empower an *engineer of record*.

1	Requirement 9.3		
	Establish and implement a programme to manage the quality of all engineering work, the interactions between the <i>EOR</i> , the <i>RTFE</i> and the <i>Accountable Executive</i> , and their involvement in the <i>tailings facility lifecycle</i> as necessary to confirm that both the implementation of the design and the design intent are met.		
2	Assessment		
	Conformance	Requirements	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A programme is established to manage the quality of all engineering work and interactions between the <i>EOR</i>, the <i>RTFE</i> and the <i>Accountable Executive</i>. b. The established programme is implemented to manage the quality of all engineering work and the interactions between the <i>EOR</i>, the <i>RTFE</i> and the <i>Accountable Executive</i>. c. The programme, developed by the <i>Operator</i>, covers the involvement of the <i>EOR</i>, the <i>RTFE</i> and the <i>Accountable Executive</i> in the <i>tailings facility lifecycle</i> as necessary to confirm that both the implementation of the design and the design intent are met. 	<ul style="list-style-type: none"> a. Examples of programme elements established and owned by the <i>Operator</i> to include <i>EOR</i> selection, Quality Controls that the <i>EOR</i> has in place, <i>CDIV</i> and <i>DAR</i>. b. Implementation of quality management may be illustrated with the <i>Tailings Management System</i>. c. Examples of involvement include planned meetings, agenda and minutes, annual <i>tailings facility</i> reviews and independent reviews. Examples of interactions include planned meetings between the <i>EOR</i>, the <i>RTFE</i> and the <i>Accountable Executive</i>. <p>Examples of a. to c. may be part of the <i>Tailings Management System</i> established by the <i>Operator</i>.</p>
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 2.6 (Programme for Reviewing Tailings Safety), Section 3.5.3 (Deviations from Design).		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 9

Appoint and empower an *engineer of record*.

1	Requirement 9.4		
	Given its potential impact on the risks associated with a <i>tailings facility</i> , the selection of the <i>EOR</i> shall be decided by the <i>Accountable Executive</i> and informed, but not decided, by procurement personnel.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. The risks and associated potential impacts with a <i>tailings facility</i> are considered by the <i>Accountable Executive</i> in selecting the <i>EOR</i>. b. The selection of the <i>EOR</i> shall be decided by the <i>Accountable Executive</i> and informed¹, but not decided, by procurement personnel. c. <i>EOR</i> selection is consistent with Requirement 9.1. 	<ul style="list-style-type: none"> a. The selection of the <i>EOR</i> by the <i>Accountable Executive</i> is based on rationale documented and approved by the <i>Accountable Executive</i> with guidance from in-house or external <i>tailings facility</i> subject matter expertise. b. Procurement personnel maintain records of criteria and selection process for <i>EOR</i> recommendations to, discussion with, and decision by the <i>Accountable Executive</i>. c. /
3	Interpretive and Clarification Notes:		
	1. Informed means that the selection decision benefits from accurate and relevant information in a transparent manner.		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 9

Appoint and empower an *engineer of record*.

1	Requirement 9.5		
	Where it becomes necessary to change the <i>EOR</i> (whether a firm or an in house employee), develop a detailed plan for the comprehensive transfer of data, information, knowledge and experience with the construction procedures and materials.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A succession plan is in place when it is necessary to change the <i>EOR</i>¹ (whether a firm or within a firm, or an in-house employee) b. The succession plan² includes the comprehensive transfer of data, information, knowledge and experience with the construction procedures and <i>materials</i>. 	<ul style="list-style-type: none"> a. The succession plan is described in a document with the key elements outlined in (b). The succession plan is developed when an <i>EOR</i> transition is foreseeable. The level of detail of the plan is commensurate with the immediacy of the succession and the complexity of the <i>tailings facility</i>. b. Data, information, and knowledge could be transferred via a comprehensive database, which may be stored with the <i>EOR</i> and/or with the <i>RTFE</i>. <p>Transfer of knowledge and experience with the construction procedures and <i>materials</i> could occur via internal training of the successor.</p> <p>Transfer of knowledge may be assisted with by a comprehensive <i>DSR</i> carried out by the new <i>EOR</i>. The <i>knowledge base</i> (Requirement 2.1 and 2.2) is formally transferred to the new <i>EOR</i>.</p> <p>Where gaps exist there are plans in progress to address them.</p>
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: Section 2.2.2.4 (Engineer of Record (EOR) and Design Team), Section 2.3.2.1 (Managing Change).		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

Requirement 10.1

1 at a minimum every three years and more frequently whenever there is a *material* change either to the *tailings facility* or to the social, environmental and local economic context. Transmit risk assessments to the *ITRB* or *senior independent technical reviewer* for review, and address with urgency all unacceptable *tailings facility* risks.

Assessment

Conformance	Criteria	Examples
Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A risk assessment process is in place for the <i>tailings facility</i> and is based on an up to date <i>knowledge base</i> for the <i>tailings facility</i>. b. The risk assessment is updated at least every three years and more frequently whenever there is a <i>material</i> change either to the <i>tailings facility</i> or to the social, environmental and local economic context. c. Risk assessment scope to include the full potential area of influence of the <i>tailings facility</i>, and to actively incorporate industry experience in risk assessment. d. Sources of risk are regularly identified, assessed and managed at all phases of the <i>tailings facility lifecycle</i>, including projected climate change impacts under a range of credible future climate scenarios. e. A multi-disciplinary team is qualified to undertake the risk assessment specific to the phase of the <i>tailings facility lifecycle</i> (i.e. construction, operation, suspension, expansion, closure) and has the ability to apply <i>best practice</i> methodology in a <i>cross-functional</i> manner. f. Following review by the <i>ITRB</i> or <i>senior independent technical reviewer</i>, action plans are prepared, implemented and reported when risk assessments identify unacceptable <i>tailings facility</i> risks. 	<ul style="list-style-type: none"> a. Examples include where the risk assessment process that is well documented in versioned, and approved documents that demonstrate that they will typically be up-to-date and reported to the most senior levels of <i>tailings facility</i> management. b. / c. Status of <i>tailings facility critical controls</i> may be known at any given time, which could be shared with the <i>AE, Board of Directors</i> and <i>project-affected people</i>. A management of change process is in place to identify when a change is forecast or has occurred (for example, staffing, mine life extension, suspensions to care and maintenance, re-starts, and process and technology changes). d. The risk assessment process has well developed definitions of <i>materiality</i>, including environmental, social and economic context, scope and sources of risk. e. For example, the risk assessment team and Terms of Reference (ToR) are documented, along with a record of the <i>Operator</i> and <i>ITRB</i> Meetings / outcomes related to risk assessment. The risk assessment methodology employs <i>best practice</i> and is documented and referenced to prevailing standards and international risk review practice. Risk assessments are, for example, consistent with the ISO 31000 process. The <i>ITRB</i> credentials and Terms of Reference (ToR) are documented, along with a record of <i>Operator-ITRB</i> meetings, and record of actions. f. Typically, the action plan would address non-acceptable risk includes due date, accountabilities and appropriate budget to support timely resolution.

PRINCIPLE 10

Interpretive and Clarification Notes:

3

1. Qualified multi-disciplinary team means a team of subject matter experts from technical, social, environmental and economic disciplines whose are qualified by virtue of academic training and experience.
2. General comment: Clearly defined accountability/ownership of key risk management components is critical to effective risk management (risk owner, control owners).
3. ICMM Tailings Management Good Practice Guide: Section 2.6.7 (Review of Tailings Management System).
4. ISO / FDIS ISO 14090:2019. Adaptation to climate change – principles, requirements and guidelines. <https://www.iso.org/standard/68507.html> – in respect of climate change adaptation.

Equivalent Standards for demonstrating conformance

4

- a. The ICMM Position Statement on Tailings Governance (2016) commitment 3 requires: '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; and Performance criteria are established for risk controls and their associated monitoring, internal reporting and verification activities. This is partially equivalent to conformance with this protocol as the criteria are more specific in a number of respects.
- b. International Standards Organization, Risk Management Principles and Guidelines. ISO31000. <https://www.iso.org/iso-31000-risk-management.html> is partially equivalent as the risk management principles in ISO31000 are not specific to *tailings* management.

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

1	Requirement 10.2		
	Conduct regular reviews of the <i>TMS</i> and of the components of the <i>ESMS</i> that refer to the <i>tailings facility</i> to assure the effectiveness of the management systems. Document and report the outcomes to the <i>Accountable Executive</i> , <i>Board of Directors</i> and <i>project-affected people</i> . The review shall be undertaken by <i>senior technical reviewers</i> with the appropriate qualifications, expertise and resources. For <i>tailings facilities</i> with 'High', 'Very High' or 'Extreme' Consequence Classification, conduct the review at least every three years.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> The <i>TMS</i> and components of the <i>ESMS</i> are reviewed sufficiently often to assure that the <i>tailings facility</i> management system is effective and applicable for the risks across the full <i>lifecycle</i> of the facility. The outcomes of the <i>TMS</i> and <i>ESMS</i> reviews are documented and reported to the <i>Accountable Executive</i>, <i>Board of Directors</i> and <i>project-affected people</i>. The review shall be undertaken by <i>senior technical reviewers</i> with the appropriate qualifications, expertise and resources. For <i>tailings facilities</i> with 'High', 'Very High' or 'Extreme' Consequence Classification, the review is conducted at least every three years. 	<ol style="list-style-type: none"> Systems are in place for the regular reviews and evaluation of effectiveness for <i>TMS</i> and <i>ESMS</i>, are documented and show, for example, how <i>change management systems</i> are effective. The <i>TMS</i> and <i>ESMS</i> review outcomes are reported to the <i>Accountable Executive</i>, and <i>Board of Directors</i>. <i>Project affected people</i> are <i>meaningfully engaged</i> and concerns are documented and tracked. A <i>senior technical reviewer</i> is a professional who can demonstrate in-depth knowledge and relevant experience. Documented confirmation from <i>senior technical reviewers</i> can be accessed in the records and verified as required, including their independent/ objective approach. Dated reports to confirm the frequency of review occurs at least every three years.
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> The three-year cycle may vary depending on tailings facility component as necessary per R 10.2. For criteria d). For tailings facilities with 'High', 'Very High' or 'Extreme' Consequence Classification it is important to leave flexibility where Operators have adopted loads consistent with such Classification but not been able to demonstrate through endorsed independent review that the risks have achieved the equivalent of lower consequence facilities, the review is conducted at least every three years. 		
4	Equivalent Standards for demonstrating conformance**		
	<ol style="list-style-type: none"> ICMM Performance Expectation 4.3 requires members to 'implement risk-based controls to avoid/prevent, minimise, mitigate and/or remedy health, safety and environmental impacts to workers, local communities, cultural heritage and the natural environment, based upon a recognised international standard or management system', which is partially equivalent to conformance with this protocol as the criteria above are more prescriptive. 		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

1	Requirement 10.3 Conduct internal audits to verify consistent implementation of company procedures, guidelines and <i>corporate governance</i> requirements consistent with the <i>TMS</i> and aspects of the <i>ESMS</i> developed to manage <i>tailings facility</i> risks.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. Internal audits are completed at a frequency to ensure consistent implementation of established requirements that related to company procedures, guidelines and <i>corporate governance</i> ¹ requirements that is consistent with the <i>TMS</i> and aspects of the <i>ESMS</i> relating to <i>tailings facility</i> risks.	a. The process for completing internal audits should be defined and may reference auditing standards such as ISO19001, Mining Association of Canada, A Guide to the Management of Tailings Facilities, or the ICMM performance Expectations, as related to Assurance and Validation activities. The scope of the audit is usually inclusive of technical aspects defined in the <i>TMS</i> as well as system elements (i.e., training, governance processes, corrective action planning) of the <i>TMS</i> or relevant aspects of the <i>ESMS</i> . The frequency of internal audits will depend on several factors, including the risk of the elements to be audited and past performance of the <i>tailings facility</i> or <i>TMS</i> . The audit may be included as an element of a larger auditing program and does not necessarily need to be a stand-alone program.
3	Interpretive and Clarification Notes:		
	1. The ICMM Tailings Management Good Practice Guide, Section 2.6.8 provides further guidance indicating Audits or verifications evaluate and report on the degree of conformance with stipulated criteria, based on the systematic collection and documentation of relevant evidence. These review mechanisms involve some degree of judgment but are not designed to determine root cause of deficiencies, or to evaluate effectiveness. The frequency would depend on several factors, including the objective and scope of the audit or verification.		
4	Equivalent Standards for demonstrating conformance		
	a. ISO 19001:2018, Guidelines for auditing management systems, is a comprehensive standard for planning and conducting audits of management systems and is partially equivalent to conformance with this protocol. b. The ICMM Position Statement on Tailings Governance (2016) commitment 6 on 'review and assurance' requires: '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; and Performance of risk management programs for TSFs is reported to executive management on a regular basis'. This is fully equivalent to conformance with this protocol.		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

1	Requirement 10.4		
	The <i>EOR</i> or <i>senior independent technical reviewer</i> shall conduct <i>tailings facility</i> construction and performance reviews annually or more frequently, if required.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <p>a. An annual <i>tailings facility</i> review¹ is conducted throughout the construction and operational periods to assess condition and performance. The reviews are performed by the <i>EOR</i> or the <i>senior independent technical reviewer</i>, as assigned for the <i>tailings facility</i>, and the review is documented.</p> <p>Reviews may be conducted more frequently, if required by identified issues or the implementation of necessary corrective measures.</p>	<p>a. Examples of construction elements of the review typically include design¹ and specifications, QA/QC plans and data, <i>Construction Record Reports</i> and <i>CDIV</i></p> <p>Examples of performance elements of the review typically include consideration of instrumentation and monitoring, site inspections, and <i>DARs</i>, performance parameters such as deformations, pore pressures, water/beach levels and water balance, water quality, and other potential changes that may influence the safety of the <i>tailings facility</i>.</p> <p>More frequent reviews may be required if there are <i>material</i> changes or major construction works are planned or in progress. Less frequent reviews may be appropriate in the post-closure and closure phases.</p>
3	Interpretive and Clarification Notes:		
	1. ICMM Tailings Management Good Practice Guide: 2.6.3 (Template for a Programme for Reviewing Tailings Safety), 3.4.5 (Documentation of Design)		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

	Requirement 10.5		
1	Conduct an independent <i>DSR</i> at least every five years for <i>tailings facilities</i> with 'Very High' or 'Extreme' Consequence Classifications and at least every 10 years for all other facilities. For <i>tailings facilities</i> with complex conditions or performance, the <i>ITRB</i> may recommend more frequent <i>DSRs</i> . The <i>DSR</i> shall include technical, operational and governance aspects of the <i>tailings facility</i> and shall be completed according to <i>best practices</i> . The <i>DSR</i> contractor cannot conduct consecutive <i>DSRs</i> on the same <i>tailings facility</i> and shall certify in writing that they follow <i>best practices</i> for engineers in avoiding conflicts of interest.		
	Assessment		
	Conformance	Criteria	Examples
2	Meets	<p>The following are demonstrated:</p> <p>a. <i>DSRs</i> are conducted and documented:</p> <ul style="list-style-type: none">– every five years for <i>tailings facilities</i> with 'Very High' or 'Extreme' Consequence Classifications.–– every 10 years for all other facilities, or,– more frequently as recommended by the <i>ITRB</i>. <p>b. <i>DSRs</i> include technical³, operational⁴ and governance⁵ aspects of the <i>tailings facility</i> and shall be completed according to <i>best practice</i>².</p> <p>c. <i>DSR</i> individuals cannot conduct consecutive <i>DSRs</i> on the same <i>tailings facility</i>.</p> <p>d. <i>DSR</i> individuals certify in writing that they follow <i>best practices</i> for engineers in avoiding conflicts of interest.</p>	<p>a. <i>DSRs</i> may follow the conventional process currently in use in some jurisdictions or 'equivalent'¹ processes for assuring <i>dam safety review</i> components are assessed. More frequent <i>DSRs</i> may be recommended when there are <i>material</i> changes to the design or stability, complex conditions, or performance parameters for safety of the <i>tailings facility</i>.</p> <p>b. /</p> <p>c. /</p> <p>d. This is commonly incorporated into engineers professional practice requirements in many jurisdictions.</p>
	Interpretive and Clarification Notes:		
3	<p>1. 'Equivalent' <i>DSR</i> is one that contains the key elements of a dam safety review and is carried out by an Independent Reviewer.</p> <p>2. ICM Tailings Management Good Practice Guide: Section 2.6.3 (Template for a Programme for Reviewing Tailings Safety), Section 2.6.4 (Independent Review), Section 2.6.5 (Dam Safety Reviews)</p> <p>3. Examples of technical elements include facility construction and history, design criteria, stability and hydrotechnical, instrumentation and monitoring and performance, seepage, and groundwater aspects.</p> <p>4. Examples of operational elements include completeness of the <i>OMS</i> and <i>EPRP</i>, inspections and monitoring, pumping and piping systems and tailings and water management practices.</p> <p>5. Examples of governance aspects include roles and responsibilities, Term of Reference for key roles, <i>CDIV</i> and <i>DAR</i>.</p>		
	Equivalent Standards for demonstrating conformance		
4	/		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

	Requirement 10.6		
1	For <i>tailings facilities</i> with 'Very High' or 'Extreme' Consequence Classifications, the <i>ITRB</i> , reporting to the <i>Accountable Executive</i> shall provide ongoing senior independent review of the planning, siting, design, construction, operation, water and mass balance, maintenance, monitoring, performance and risk management at appropriate intervals across all phases of the <i>tailings facility lifecycle</i> . For <i>tailings facilities</i> with other Consequence Classifications, this review can be done by a <i>senior independent technical reviewer</i> .		
	Assessment		
	Conformance	Criteria	Examples
2	Meets	<p>The following are demonstrated:</p> <p>a. For <i>tailings facilities</i> with 'Very High' or 'Extreme' Consequence Classifications, the <i>ITRB</i>, reporting to the <i>Accountable Executive</i> provides ongoing <i>senior independent technical review</i> of the planning, siting, design, construction, operation, water and mass balance, maintenance, monitoring, performance and risk management at appropriate intervals across all phases of the <i>tailings facility lifecycle</i>.</p> <p>b. For <i>tailings facilities</i> with other Consequence Classifications, this review can alternatively be performed by a <i>senior independent technical reviewer</i>.</p> <p>c. The ongoing reviews are conducted at appropriate intervals across all phases of the <i>tailings facility lifecycle</i>.</p>	<p>a. Reviews typically consider the <i>knowledge base DBR, CRR, OMS, CDID</i>, interviews with key staff and other potentially relevant information. The content and the focus of the <i>ITRB</i> reviews are typically developed in collaboration with the <i>EOR</i> and <i>RTFE</i> and reported to the <i>Accountable Executive</i>. The <i>ITRB</i> will document their observations and report those observations to the <i>Accountable Executive</i>. Typically, a Terms of Reference for the <i>ITRB</i> would be in place.</p> <p>b. /</p> <p>c. Examples of appropriate intervals could include annually for most <i>tailings facilities</i> and more frequently if there are complex issues, <i>material</i> changes with design, construction or operating conditions. Longer intervals may be appropriate for a closed facility, which has minimal changes to its condition. The frequency of the reviews is typically determined by the <i>RTFE</i> in collaboration with the <i>EOR</i> and <i>ITRB</i> or <i>senior independent technical reviewer</i>.</p>
3	Interpretive and Clarification Notes:		
	1. ICM Tailings Management Good Practice Guide: Section 2.6.4 (Independent Review).		
	Equivalent Standards for demonstrating conformance		
4	<p>a. The ICM Position Statement on Tailings Governance (2016) commitment 6 on 'review and assurance' requires: '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; and Performance of risk management programs for TSFs is reported to executive management on a regular basis'. This is partially equivalent to conformance with this protocol, as it doesn't link who should conduct the review to the consequence classification.</p>		

PRINCIPLE 10

Establish and implement levels of review as part of a strong quality and risk management system for all phases of the *tailings facility lifecycle*, including closure.

Requirement 10.7	
1	The amount of estimated costs for planned closure, early closure, <i>reclamation</i> , and post-closure of the <i>tailings facility</i> and its appurtenant structures shall be reviewed periodically to confirm that adequate financial capacity (including insurance, to the extent commercially reasonable) is available for such purposes throughout the <i>tailings facility lifecycle</i> , and the conclusions of the review shall be publicly disclosed annually. Disclosure may be made in audited financial statements or in public regulatory filings. Subject to the provisions of local or national regulations on this matter, <i>Operators</i> shall use best efforts to assess and take into account the capability of an acquirer of any of its assets involving a <i>tailings facility</i> (through merger, acquisition, or other change in ownership) to maintain this Standard for the <i>tailings facility lifecycle</i> .

Assessment		
Conformance	Criteria	Examples
2	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. A process and governance mechanisms have been established for closure planning and closure cost estimating. b. A closure plan¹ for the <i>tailings facility</i> has been established and associated closure cost estimates has been prepared. c. Closure cost estimates¹ are reviewed periodically and public disclosure² is made annually to confirm that adequate financial capacity (including insurance, to the extent commercially reasonable) is in place to meet the closure requirements and expected timing for the <i>tailings facility</i> in their current state. d. If any of an <i>Operator's</i> assets involving a <i>tailings facility</i> underwent a change in Ownership since the last review, the <i>Operator</i> must provide documentation that they assessed and took into account the capability of an acquirer to maintain this Standard (subject to provisions of local/ national regulations). 	<ul style="list-style-type: none"> a. The closure planning process, including cost estimates align to the principles contained in ICMM's Integrated Mine Closure: Good Practice Guide and the ICMM document Financial Concepts for Mine Closure. b. The closure planning process, including cost estimates align to the principles contained in the ICMM's Integrated Mine Closure: Good Practice Guide and the ICMM document Financial Concepts for Mine Closure. c. Audited financial statements, public regulatory filings, and supporting documentation demonstrating costs have been reviewed, including the results of this review. d. For a change in ownership, the <i>Operator</i> may take into account a jurisdiction's regulatory requirements regarding closure plans and closure cost estimates in evaluating an acquirer's financial capacity to comply with such plans.

Interpretive and Clarification Notes:	
3	<ol style="list-style-type: none"> 1. 'Closure plans' and 'closure cost estimates' for the tailings facility and its appurtenant structures may be contained within, and as a component of, asset wide plans. The scope, activities, and resultant cost estimates for the tailings facility and associated structures must be extractable from any asset wide plans for the purpose of this assessment. 2. 'Disclosure' may be made in audited financial statements or in public regulatory filings. Disclosure may be aggregated at a whole of asset or company level as per legal requirements. Financial disclosure can only be made within that legally permitted within a given jurisdiction. 3. ICMM Financial Assurance for Mine Closure and Reclamation: Guidance Paper provides guidance on environmental financial assurance for mine closure based on current practices and policies.

PRINCIPLE 10

Equivalent Standards for demonstrating conformance

4

- a. International Finance Reporting Standard (IFRS), IAS 37 Provisions, Contingent Liabilities, and Contingent Assets. – Full equivalency.
- b. Jurisdictional requirements for closure plans and closure cost estimates – Full equivalency.
- c. Performance Expectation 6.1 requires ICMM members to ‘plan and design for closure in consultation with relevant authorities and stakeholders, implement measures to address closure-related environmental and social aspects, and make financial provision to enable agreed closure and post-closure commitments to be realised’ but does not explicitly cover all of the criteria so is only partially equivalent to conformance with this protocol.

Embargoed

PRINCIPLE 11

Develop an organisational culture that promotes learning, communication and early problem recognition.

Requirement 11.1	
1	Educate personnel who have a role in any phase of the <i>tailings facility</i> lifecycle about how their job procedures and responsibilities relate to the prevention of a failure.

Assessment		
	Conformance	Criteria
2	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> The <i>Operator</i> has developed an educational program inclusive of job procedures and responsibilities for prevention of a failure. Those with roles for preventing a failure in any phase of the <i>tailing facility lifecycle</i> is included in the education program.
		<p>Examples</p> <ol style="list-style-type: none"> Training or education requirements could be identified through a training needs analysis and may be broad and consider those with roles in planning, construction, operational, emergency prevention and response and community engagement that may relate to prevention of a failure. Specialized technical training may be required for specific roles. A variety of training methods may be used that are based on the learning objectives and includes classroom-based training, computer based training and hands-on training where appropriate. Examples could include training logs or attendance sheets.

Interpretive and Clarification Notes:	
3	1. The ICMM Tailings Management Good Practice Guide indicates that the Key elements of developing and maintaining competence are qualifications, training, and experience and outlines examples of the types of knowledge requirements for key tailings management roles.

Equivalent Standards for demonstrating conformance	
4	<ol style="list-style-type: none"> ISO 14001:2015 or 45001:2018; Elements 7.2 Competence; 7.3 Awareness; 7.4 Communication is partially equivalent to conformance with this protocol but doesn't explicit refer to <i>tailings</i> management. The ICMM Position Statement on Tailings Governance (2016) commitment 1 requires: 'Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks; Accountability for the overall governance of <i>tailings facilities</i> 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; and Role competency and experience requirements are defined for critical roles within the established organizational structures'. This is fully equivalent to conformance with this protocol.

PRINCIPLE 11

Develop an organisational culture that promotes learning, communication and early problem recognition.

1	Requirement 11.2		
	Establish mechanisms that incorporate workers' experience-based knowledge into planning, design and operations for all phases of the <i>tailings facility</i> lifecycle.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <p>a. Mechanisms have been established that incorporate workers' experience-based knowledge into planning, design and operations for all phases of the <i>tailings facility lifecycle</i>.</p>	<p>a. Examples could include documentation of having workers with experience in <i>tailings</i> management, or with the specific <i>tailings facility</i>:</p> <ul style="list-style-type: none"> – involved in the development or review of <i>tailings management systems</i>, <i>tailings</i> design, <i>OMS</i>, and closure planning. – providing training to new workers. – communicating deviations from normal operating conditions. – Incorporating the information and experience they have in managing the <i>tailings facility</i> into action plans and related documents.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 11

Develop an organisational culture that promotes learning, communication and early problem recognition.

1	Requirement 11.3		
	Establish mechanisms that promote <i>cross-functional</i> collaboration to ensure effective data and knowledge sharing, communication and implementation of management measures to support public safety and the integrity of the <i>tailings facility</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <p>a. The <i>Operator</i> has established mechanisms that promote <i>cross-functional</i> collaboration to support public safety and the integrity of the <i>tailings facility</i> through:</p> <ul style="list-style-type: none"> – effective data and knowledge sharing, – effective communication, and – implementation of management measures. 	<p>a. <i>Cross-functional</i> collaboration could be established through <i>tailings</i> management working groups which involve different departments within an organisation that regularly meet to discuss the various aspects of the <i>tailings facility</i>. Information sharing may include operations and maintenance crews in <i>tailings</i> area, relevant process and mine personnel, safety and emergency preparedness personnel, etc. Sharing could include relevant activities of each group and/or sharing of incident investigations, <i>tailings</i> performance results and other key <i>tailings</i> performance indicators as appropriate.</p>
3	Interpretive and Clarification Notes:		
	1. As per the ICM Tailings Management Good Practice Guide (section 2.3.1), there should be a means to facilitate effective communications to address risk and drive action, including communication between senior management, and those with direct and indirect responsibilities for tailings management.		
4	Equivalent Standards for demonstrating conformance		
	<p>a. The ICM Position Statement on Tailings Governance (2016) commitment 1 requires: ‘Accountabilities, responsibilities and associated competencies are defined to support appropriate identification and management of TSF risks; Accountability for the overall governance of <i>tailings facilities</i> 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; and Role competency and experience requirements are defined for critical roles within the established organizational structures’. This is partially equivalent to conformance with this protocol (e.g. the emphasis on communication), but doesn’t explicitly focus on cross-functional collaboration.</p>		

PRINCIPLE 11

Develop an organisational culture that promotes learning, communication and early problem recognition.

1	Requirement 11.4		
	Identify and implement lessons from internal incident investigations and relevant external incident reports, paying particular attention to human and organisational factors.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. The <i>Operator</i> has identified and implemented lessons from internal incident investigations. b. The <i>Operator</i> has identified and implemented lessons from relevant external incident reports. c. Internal and external incident lessons learned pay particular attention to human and organisational factors. 	<ul style="list-style-type: none"> a. The <i>Operator</i> has a documented process to review internal incidents (including near misses) and identify root causes of incidents or key learning that includes <i>tailings facilities</i>. These learnings or preventative actions are shared as needed with the relevant parties, and incorporated into management systems. b. The <i>Operator</i> has a documented process to review relevant incidents from other organisations (including from grievance mechanisms) and apply these lessons learned as applicable, such as through involvement with industry associations, regulatory bodies, or reliable news sources. c. There is evidence that lessons learned did not just focus on the technical failures which led to the incident but also the human and organisational factors¹, which were based on understanding the capabilities and limitations of humans (cognitive, physiological, physical) to design work to be feasible, usable, reliable (resilient to human error) and sustainable over time.
3	Interpretive and Clarification Notes: <ol style="list-style-type: none"> 1. 'Human factors refer to environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety'. Health and Safety Executive (1999). Reducing error and influencing behaviour. HSG48. 2nd Edition. HSE Books, Sudbury, Suffolk. ISBN 0 7176 2452 8. 2. As per the ICM Tailings Management Good Practice Guide (section 2.4.2), the OMS should reference action plans to address lessons learned; and (section 3.4.3.6) performance-based approaches should include discussion of lessons from design failures at facilities with specific conditions. 		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 11

Develop an organisational culture that promotes learning, communication and early problem recognition.

1	Requirement 11.5		
	Establish mechanisms that recognise, reward and protect from retaliation, employees and contractors who report problems or identify opportunities for improving <i>tailings facility</i> management. Respond in a timely manner and communicate actions taken and their outcomes.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> The <i>Operator</i> has established a documented mechanism¹ that recognises, rewards and protects employees and contractors who report problems or identify opportunities for improving <i>tailings facility</i> management. The <i>Operator</i> has responded in a timely manner, and communicated to employees and contractors the actions taken in response to concerns and opportunities raised. 	<ol style="list-style-type: none"> Documented mechanisms may include: <ul style="list-style-type: none"> The channels to report problems and identify opportunities (e.g. telephone, email, face to face, online form, etc.) Provisions for confidentiality Provisions preventing retribution against employees or contractors Clear timeframes for investigation, resolution and response Provision of acknowledgement and feedback when problems and opportunities are raised Measures to escalate urgent or unresolved issues in a timely manner, where appropriate. Training or inductions and onsite collateral, with related logs. <p>Existing (potentially site-wide) mechanisms may be used where appropriate based on examples above.</p> Examples may include systems to record and track issues and opportunities raised by employees and contractors, with appropriate feedback. <i>Operators</i> should respond within the timeline established by <i>Operator's</i> SOP.
3	Interpretive and Clarification Notes:		
	1. 'Mechanism' can be in the form of a procedure or process.		
4	Equivalent Standards for demonstrating conformance		
	a. IFC PS 2 Labour and Working Conditions (2012) section 20 is partially equivalent to conformance with this protocol in terms of grievance mechanisms (ability to raise workplace concerns without fear of retribution).		

PRINCIPLE 12

Establish a process for reporting and addressing concerns and implement whistleblower protections.

1	Requirement 12.1		
	The <i>Accountable Executive</i> shall establish a formal, confidential and written process to receive, investigate and promptly address concerns from employees and contractors about possible permit violations or other matters relating to regulatory compliance, public safety, <i>tailings facility</i> integrity or the environment.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following can be demonstrated: a. <i>Accountable Executive</i> has established a formal, confidential and written process to receive, investigate and promptly address concerns from employees and contractors related to the <i>tailings facility</i> , including possible permit violations or other matters related to regulatory compliance, public safety, <i>tailings facility</i> integrity or the environment.	a. A formal, written document, specific to the <i>tailings facility</i> , site as-a-whole, or company, which: – Is widely communicated and made easily accessible ¹ at the facility level; – Includes defined processes for receiving, investigating and addressing concerns, including timelines, escalation measures for urgent or unresolved concerns, and communications; – Describes the means and frequency for internal reporting; and, – Provides for active oversight by the <i>Accountable Executive</i> .
3	Interpretive and Clarification Notes:		
	1. 'Accessible' means that it is understood by all intended users, available and usable by all users without barriers.		
4	Equivalent Standards for demonstrating conformance		
	a. IFC PS 2 Labour and Working Conditions (2012) Section 13 Grievance Mechanism is partially equivalent to conformance with this protocol in terms of grievance mechanisms.		

PRINCIPLE 12

Establish a process for reporting and addressing concerns and implement whistleblower protections.

1	Requirement 12.2 In accordance with international <i>best practices</i> for whistleblower protection, the <i>Operator</i> shall not discharge, discriminate against, or otherwise retaliate in any way against a whistleblower who, in good faith, has reported possible permit violations or other matters relating to regulatory compliance, public safety, <i>tailings facility</i> integrity or the environment.		
2	Assessment		
	Conformance Meets	Criteria The following can be demonstrated: a. The <i>Operator</i> maintains whistleblower protection practices that do not discharge, discriminate or retaliate against a whistleblower who in good faith reports possible violations relating to regulatory compliance, public safety, <i>tailings facility</i> integrity or the environment.	Examples a. Examples include: <ul style="list-style-type: none"> – provisions for confidentiality and continued access to other systems of redress – provisions to prevent retribution against complainants. – anonymity of records and communication – an independent service or 'hotline' for dealing with such reports of potential violations – separation of personnel implicated from those responding to the reports. – In interests of transparency, <i>Operators</i> may choose to disclose publicly, the number of reports made vs closed out regarding the <i>tailings facility</i> within a particular period, i.e., evidence of the system working in practice.
3	Interpretive and Clarification Notes: /		
4	Equivalent Standards for demonstrating conformance		
	a. IFC PS 2 Labour and Working Conditions (2012) section 20 is partially equivalent to conformance with this protocol in terms of grievance mechanisms (ability to raise workplace concerns without fear of retribution).		

PRINCIPLE 13

Prepare for emergency response to *tailings facility* failures.

Requirement 13.1	
1	As part of the <i>TMS</i> , use <i>best practices</i> and emergency response expertise to prepare and implement a site-specific <i>tailings facility Emergency Preparedness and Response Plan (EPRP)</i> based on <i>credible flow failure scenarios</i> and the assessment of potential consequences. Test and update the <i>EPRP</i> at all phases of the <i>tailings facility lifecycle</i> at a frequency established in the plan, or more frequently if triggered by a <i>material</i> change either to the <i>tailings facility</i> or to the social, environmental and local economic context. <i>Meaningfully engage</i> with employees and contractors to inform the <i>EPRP</i> , and co-develop community-focused emergency preparedness measures with <i>project-affected people</i> .

Assessment		
Conformance	Criteria	Examples
2	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. The <i>Tailings Management System (TMS)</i> includes a site-specific <i>tailings facility Emergency Preparedness and Response Plan (EPRP)</i>. The <i>EPRP</i> includes specific actions to both prepare, to manage an escalating event, and to respond after an event has occurred. b. The <i>tailings facility EPRP</i> is responsive to <i>credible flow failure scenarios</i> and the assessment of potential consequences, and clearly identifies potentially affected areas and the approximate degree of expected consequences. c. The <i>EPRP</i> was developed with input from appropriate expertise in emergency response, site operation and <i>project affected people</i> using <i>best practices</i>. d. The <i>tailings facility EPRP</i> for operating facilities is tested and reviewed based on the process and frequency specified in the plan, every 3 years, or more frequently if triggered by a <i>material</i> change to the <i>tailings facility</i> or to the social, environmental or economic context occur. Reference R. 13.2 and R. 13.3. e. <i>EPRP</i> development and updates involve <i>meaningful engagement</i> of employees, contractors, community emergency response providers, and <i>project-affected people</i> are engaged to co-develop community-focused emergency preparedness and communication of the plan to <i>project-affected peoples</i>. 	<ul style="list-style-type: none"> a. The <i>tailings facility EPRP</i> may be presented as a stand-alone document or as part of the overall Mine Site Emergency Response Plan (MERP). The controls listed in the <i>EPRP</i> should be informed by the risk management processes. b. The <i>tailings facility EPRP credible flow failure scenarios</i> may change through the life of the <i>tailings facility</i> that has such credible scenarios, for example in response to climate change. c. Contributors to the <i>EPRP</i> are documented. d. Good practice is demonstrated in adherence to the testing frequency and documented updates to the <i>EPRP</i>. e. Meaningful engagement of employees, contractors, community emergency response providers, and <i>project-affected people</i> in the <i>EPRP</i> co-development, and communication to <i>project-affected peoples</i> is documented and represented in the post-training event analysis and updates to the <i>EPRP</i>. The diversity of <i>project-affected peoples</i> is considered (language, mobility, livelihood dependencies).

PRINCIPLE 13

3	Interpretive and Clarification Notes: <ol style="list-style-type: none">1. Emergency response providers are not part of R13.1 although inclusion could be considered. Community emergency response providers may include but is not limited to: public /government emergency response providers, not for profit organizations, temporary shelter and search and rescue organizations, and others with a focus on assisting the community in time of crisis.2. ICMM Tailings Management Good Practice Guide: Section 3.2.4 (Managing Uncertainty and Risk).
4	Equivalent Standards for demonstrating conformance <ol style="list-style-type: none">a. P-E The ICMM Position Statement on Tailings Governance (2016) commitment 5 requires: '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; and Emergency preparedness and response plans are periodically tested. In addition, Performance Expectation 4.4 requires members to 'Develop, maintain and test emergency response plans. Where risks to external <i>stakeholders</i> are significant, this should be in collaboration with potentially affected <i>stakeholders</i> and consistent with established industry good practice'. This is fully equivalent to conformance with this protocol.

PRINCIPLE 13

Prepare for emergency response to *tailings facility* failures.

Requirement 13.2	
1	Engage with <i>public sector agencies</i> , first responders, local authorities and institutions and take <i>reasonable steps</i> to assess the capability of emergency response services to address the <i>hazards</i> identified in the <i>tailings facility EPRP</i> , identify gaps in capability and use this information to support the development of a collaborative plan to improve preparedness.

Assessment		
	Conformance	Criteria
	Meets	Based on the nature of the <i>emergency preparedness and response</i> requirements for a given facility, following conformance with Requirement 13.1, the following are demonstrated:
2		<ul style="list-style-type: none"> a. <i>Operator</i> has identified <i>public sector agencies</i>, first responders, local authorities and institutions that would participate in any emergency response to <i>tailings facility</i> failures. b. <i>Operator</i> has engaged with identified organizations. c. <i>Operator</i> has taken <i>reasonable steps</i> to assess the capability of identified organizations to address the hazards identified in the <i>tailings facility EPRP</i>, to identify gaps in capability, and to use this information to support the development of a collaborative plan to improve preparedness if gaps are identified.
2		<ul style="list-style-type: none"> a. List of <i>public sector agencies</i>, first responders, local authorities and institutions that would participate in any emergency response to <i>tailings facility</i> failures, as well as anticipated roles and responsibilities. <ul style="list-style-type: none"> – Examples of relevant parties may include local and/or regional government, emergency response services (ambulance, hospital, fire), and transportation and communications infrastructure managers. b. Evidence of engagement with identified organizations, such as: <ul style="list-style-type: none"> – Disclosures of relevant information about the <i>hazards</i> identified in the <i>EPRP</i> and potential emergency response scenarios; – Records of engagement, such as meeting records, including a list of participants and summary notes; and, – Development of a clear communication plan and related protocols. c. Evidence of steps taken, including: <ul style="list-style-type: none"> – Characterization of capabilities relative to anticipated emergency response roles and responsibilities; – Identification of gaps in capabilities; and, – Support for the development of a collaborative plan to improve preparedness.

Interpretive and Clarification Notes:	
3	1. UNEP APELL for Mining: Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level (2001) is a useful source of guidance.

Equivalent Standards for demonstrating conformance	
4	<ul style="list-style-type: none"> a. IFC Performance Standard 4 'Community Health, Safety and Security': Section 11 Emergency Preparedness and Response, regarding assistance and collaboration with potentially affected communities and local government agencies in preparations to respond effectively to emergency situations is partially equivalent to conformance with this protocol. b. The ICMM Position Statement on Tailings Governance (2016) commitment 5 requires: '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; and Emergency preparedness and response plans are periodically tested. In addition, Performance Expectation 4.4 requires members to 'Develop, maintain and test emergency response plans. Where risks to external <i>stakeholders</i> are significant, this should be in collaboration with potentially affected <i>stakeholders</i> and consistent with established industry good practice'. This is equivalent to conformance with this protocol.

PRINCIPLE 13

Prepare for emergency response to *tailings facility* failures.

Requirement 13.3	
1	Considering community-focused measures and <i>public sector</i> capacity, the <i>Operator</i> shall take all <i>reasonable steps</i> to maintain a shared state of readiness for <i>tailings facility credible flow failure scenarios</i> by securing resources and carrying out annual training and exercises. The <i>Operator</i> shall conduct emergency response simulations at a frequency established in the <i>EPRP</i> but at least every 3 years for <i>tailings facilities</i> with potential loss of life.

Assessment		
Conformance	Criteria	Examples
2	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> The <i>Operator</i> incorporates knowledge of community-focused measures and public sector capacity when establishing a state of readiness in the <i>EPRP</i>. The <i>Operator</i> has taken all <i>reasonable steps</i> to maintain a shared state of readiness by engaging with <i>public sector agencies</i>, first responders, local authorities, institutions, which would participate in an emergency response (as identified in 13.2). The <i>Operator</i> has secured and maintains resources in a state of readiness to respond to <i>tailings facility credible flow failure scenarios</i> if such apply to their facility. Annual internal and community-focused training and exercises on the <i>EPRP</i> are conducted. The <i>Operator</i> has a program to conduct emergency response simulations with emergency service providers, and <i>project-affected peoples</i> at a frequency defined in the <i>EPRP</i>. For facilities with <i>credible flow failure scenarios</i>, the <i>Operator</i> conducted emergency response simulations are undertaken at least every 3 years for those <i>tailings facility credible flow failure scenarios</i>, which may result in loss of life. Simulations can range from tabletop exercises to field exercises of an emergency and can include testing of multiple <i>credible flow failure scenarios</i>. 	<ol style="list-style-type: none"> The <i>EPRP</i> state of readiness can demonstrate how it has considered community-focused measures and public sector capacity information in defining the response resources and training exercises. The <i>EPRP</i> documents the available resources, their locations, and responsible personnel for deployment. These elements are confirmed as ready and available via site audits and inspections. A list of resources is available. Training and exercises can take many forms and may include knowledge quizzes or a tabletop exercise of the <i>EPRP</i> implementation. The results of regular emergency response simulations, in either tabletop or field format, are documented and learnings are used to inform and update the state of readiness and annual training needs. The <i>Operator's EPRP</i> includes information on the frequency of emergency response simulations. /

Interpretive and Clarification Notes:	
3	<ol style="list-style-type: none"> 'Exercises' differ from training in that they require testing of elements of the <i>EPRP</i>. Exercises and simulations may be designed to be commensurate with the consequence classification and risk level of the <i>tailings facility</i>; and may involve desk vs field, full vs partial testing of critical components. Community-focused measures and state of readiness should also involve knowledge of essential infrastructure and facilities (power, sanitation, water networks, and health facilities) which might be impacted by a failure and how these may be protected or replaced quickly. Continuity of essential infrastructure is an important learning from major failure experience. 'Potential loss of life' as per CDA/ANCOLD definition/interpretation

PRINCIPLE 13

Equivalent Standards for demonstrating conformance

4

- a. The ICMM Position Statement on Tailings Governance (2016) commitment 5 requires: '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; and Emergency preparedness and response plans are periodically tested. In addition, Performance Expectation 4.4 requires members to 'Develop, maintain and test emergency response plans. Where risks to external *stakeholders* are significant, this should be in collaboration with potentially affected *stakeholders* and consistent with established industry good practice'. This is partially equivalent to conformance with this protocol, as the criteria are more prescriptive.

Embargoed

PRINCIPLE 13

Prepare for emergency response to *tailings facility* failures.

1	Requirement 13.4 In the case of a <i>catastrophic tailings facility failure</i> , provide immediate response to save lives, supply humanitarian aid and minimise environmental harm.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated: a. The <i>EPRP</i> includes specific actions to immediately respond if a <i>catastrophic tailings facility failure</i> has occurred (refer to Requirements in 13.1). b. Immediate response in the wake of a <i>catastrophic tailings facility failure</i> clearly prioritizes the saving of lives, provision of humanitarian aid and minimization of environmental harm.	a. Evidence of emergency services capability and availability (internal and external) to mobilize within specified timeframes (refer to 13.2). b. <i>Operator EPRP</i> related policies and procedures clearly demonstrated priorities of saving lives, providing humanitarian aid and minimizing environmental harm. Key roles in implementing the <i>EPRP</i> as needs arise are aware of these priorities.
3	Interpretive and Clarification Notes: 1. This protocol is written with a focus on pre-emptive measures Operators may take, rather than taking the approach of a post-event assessment, which is considered insufficiently frequent to drive the desired Operator behaviours.		
4	Equivalent Standards for demonstrating conformance		
	a. IFC Performance Standard 1, Emergency Preparedness and Response (sections 20-21) and IFC Performance Standard 4 (section 11) is fully equivalent if the ability to respond within relevant timeframes is clear.		

PRINCIPLE 14

Prepare for long-term recovery in the event of *catastrophic failure*.

1	Requirement 14.1		
	Based on <i>tailings facility credible flow failure scenarios</i> and the assessment of potential consequences, take <i>reasonable steps</i> to meaningfully engage with <i>public sector agencies</i> and other organisations that would participate in medium- and long-term social and environmental post-failure response strategies.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>For facilities that have <i>credible flow failure scenarios</i>, based on those scenarios and assessment of potential consequences (see Protocols 2.3 and/or 2.4), the following are demonstrated:</p> <ul style="list-style-type: none"> a. <i>Operator</i> has identified <i>public sector agencies</i> and other organizations that would participate in medium and long-term social and environmental post-failure response strategies. b. <i>Operator</i> has taken <i>reasonable steps</i> to <i>meaningfully engage</i> with such organizations. 	<ul style="list-style-type: none"> a. List of appropriate <i>public sector agencies</i> and other organizations that would participate in the planning and delivery of any post-failure response strategies, as well as anticipated roles and responsibilities. <ul style="list-style-type: none"> – Examples of relevant parties may include local, regional, national government bodies, civil society organizations, religious organizations, education and training providers, and health facilities. b. Evidence of steps undertaken to <i>meaningfully engage</i> with identified organizations, such as correspondence, communication <i>materials</i> and meeting minutes.
3	Interpretive and Clarification Notes:		
	1. UNEP APELL for Mining: Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level (2001) is a useful source of guidance.		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 14

Prepare for long-term recovery in the event of *catastrophic failure*.

1	Requirement 14.2		
	In the event of a <i>catastrophic tailings facility failure</i> , assess social, environmental and local economic impacts as soon as possible after people are safe and short-term survival needs have been met.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated in the event of a <i>catastrophic tailings facility failure</i>:</p> <ul style="list-style-type: none"> a. The <i>Operator</i> has undertaken a post-incident <i>impact assessment</i> that addresses social, environmental and local economic impacts. b. The post-incident <i>impact assessment</i> has been undertaken as soon as possible after people are safe and short-term survival needs have been met. 	<ul style="list-style-type: none"> a. The scope of a post-incident <i>impact assessment</i> included social, environmental, and local economic impacts in sufficient detail to enable medium and long-term impacts to be assessed. b. The post-incident <i>impact assessment</i> was undertaken in a timely manner once short-term survival needs had been met.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 14

Prepare for long-term recovery in the event of *catastrophic failure*.

1	Requirement 14.3 In the event of a <i>catastrophic tailings facility failure</i> , work with <i>public sector agencies</i> and other <i>stakeholders</i> to develop and implement reconstruction, <i>restoration</i> and recovery plans that address the medium- and long-term social, environmental and local economic impacts of the failure. The plans shall be disclosed if permitted by public authorities.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated in the event of a <i>catastrophic tailings facility failure</i> : a. The <i>Operator</i> has developed plans, in conjunction with <i>public sector agencies</i> and other <i>stakeholders</i> , to address the medium- and long-term social, environmental and local economic impacts of the <i>failure</i> . b. The <i>Operator</i> has provided for disclosure of the reconstruction, <i>restoration</i> , <i>reclamation</i> and recovery plans, if permitted by public authorities. c. The <i>Operator</i> has implemented the plans in collaboration with <i>public sector agencies</i> and other <i>stakeholders</i> .	a. Reconstruction, <i>restoration</i> and recovery plans may include: – Stakeholder Engagement Plan (SEP); – SEP Implementation Plan; – Social, Environmental and Economic Recovery Plan; – Resettlement Plan; – Livelihood Restoration Plan; – Business Continuity Plan; – Urban Development Plan; and – Infrastructure Plan. b. Disclosure of plans (where permitted) includes all <i>public sector agencies</i> and other <i>stakeholders</i> reasonably expected to be involved in the aftermath of a <i>catastrophic tailings facility failure</i> . c. Implementation records; progress reports; monitoring and evaluation reports.
3	Interpretive and Clarification Notes: /		
4	Equivalent Standards for demonstrating conformance /		

PRINCIPLE 14

Prepare for long-term recovery in the event of *catastrophic failure*.

1	Requirement 14.4		
	In the event of a <i>catastrophic tailings facility failure</i> , enable the participation of affected people in reconstruction, <i>restoration</i> and recovery works and ongoing monitoring activities.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	The following are demonstrated in the event of a <i>catastrophic tailings facility failure</i> : a. The <i>Operator</i> has enabled the participation of affected people in reconstruction, restoration and recovery works and ongoing monitoring activities.	a. Examples may include agendas, minutes, audio/visual recordings, presentations, attendance records from stakeholder engagement. Records of ongoing monitoring activities, evaluation reports, meeting minutes and other documents are examples that may demonstrate participation of affected people
3	Interpretive and Clarification Notes:		
	1. Activities conducted 'prior to failure' are detailed in other Requirements.		
4	Equivalent Standards for demonstrating conformance		
	a. IFC Performance Standard 1.25-1.31 (regarding effective community engagement– is partially equivalent to conformance with this protocol. b. ICMM Performance Expectation 9.3 is partially equivalent to conformance with this protocol, as it requires 'stakeholder engagement based upon an analysis of the local context and provide local <i>stakeholders</i> with access to effective mechanisms for seeking resolution of grievances related to the company and its activities'.		

PRINCIPLE 14

Prepare for long-term recovery in the event of *catastrophic failure*.

1	Requirement 14.5		
	Facilitate the monitoring and public reporting of post-failure outcomes that are aligned with the thresholds and indicators outlined in the reconstruction, <i>restoration</i> and recovery plans and adapt activities in response to findings and feedback.		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>In the event of a <i>catastrophic tailings facility failure</i>, the following are demonstrated:</p> <ul style="list-style-type: none"> a. The <i>Operator</i> facilitates monitoring and public reporting of post-failure outcomes. b. Monitoring and public reporting of post-failure outcomes are aligned with the thresholds and indicators outlined in the reconstruction, <i>restoration</i> and recovery plans. c. Monitoring and public reporting of post-failure outcomes activities are adapted in response to findings and feedback. 	<ul style="list-style-type: none"> a. Monitoring and public reports of post-failure outcomes are documented. This can be through established or new public reporting mechanisms (e.g., media, website, government reporting, and community groups). b. Reconstruction, <i>restoration</i> and recovery plans include thresholds, indicators to guide monitoring, and public reporting of post-failure events. These are expected to be many and various and as relevant to the environmental, social and local economic context of the <i>tailings facility</i> in question. c. The <i>Operator</i> demonstrates that findings and feedback from the outcomes of monitoring and public reporting inform adaptations of the programme. Feedback can include both feedback on the restoration activities as well as the existing mechanisms for public reporting.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

PRINCIPLE 15

Publically disclose and provide access to information about the *tailings facility* to support public accountability.

Requirement 15.1

Publish and regularly update information on the *Operator's* commitment to safe *tailings facility* management, implementation of its *tailings governance framework*, its organisation-wide policies, standards or approaches to the design, construction, monitoring and closure of *tailings facilities*.

- a. For new *tailings facilities* for which the regulatory authorisation process has commenced, or that are otherwise approved by the *Operator*, the *Operator* shall publish and update, in accordance with Principle 21 of the UNGP, the following information:
 1. A plain language summary¹ of the rationale for the basis of the design and site selected as per the multi-criteria *alternatives analysis*, *impact assessments*, and mitigation plans (Information may be obtained from the output of multiple Requirements including, but not limited to, Requirements 3.2, 3.3, 5.1, 5.3, 6.4, 6.6, 7.1 and 10.1); and
 2. The Consequence Classification. (Requirement 4.1).
- b. For each existing *tailings facility* and in accordance with Principle 21 of the UNGP, the *Operator* shall publish and update at least on an annual basis, the following information:
 1. A description of the *tailings facility* (information may be obtained from the output of Requirements 5.5 and 6.4);
 2. The Consequence Classification (Requirement 4.1);
 3. A summary of risk assessment findings relevant to the *tailings facility* (Information may be obtained from the output of Requirement 10.1);
 4. A summary of human exposure and vulnerability to *tailings facility credible flow failure scenarios* (Information may be obtained from the output of Requirements 2.4);
 5. A description of the design for all phases of the *tailings facility lifecycle* including the current and final height (Information may be obtained from the output of Requirement 5.5);
 6. A summary of material findings of annual performance reviews and *dam safety review (DSR)*, including implementation of mitigation measures to reduce risk to *ALARP* (Information may be obtained from output of Requirements 10.4 and 10.5);
 7. A summary of *material* findings of the environmental and social monitoring programme including implementation of mitigation measures (Requirement 7.5);
 8. A summary version of the *tailings facility EPRP* for facilities that have a *credible failure mode(s)* that could lead to a flow failure event that:
 - (i) informed by *credible flow failure scenarios* from the *tailings facility breach analysis*;
 - (ii) includes emergency response measures that apply to *project affected people* as identified through the *tailings facility breach analysis* and involve cooperation with *public sector agencies*; and
 - (iii) excludes details of emergency preparedness measures that apply to the *Operator's* assets, or confidential information (Requirements 13.1 and 13.2);
 9. Dates of most recent and next independent reviews (Requirement 10.5); and
 10. Annual confirmation that the *Operator* has adequate financial capacity (including insurance to the extent commercially reasonable) to cover estimated costs of planned closure, early closure, *reclamation*, and post-closure of the *tailings facility* and its appurtenant structures (Requirement 10.7).

Such disclosures shall be made directly, unless subject to limitations imposed by regulatory authorities.
- c. Provide local authorities and emergency services with sufficient information derived from the *breach analysis* to enable effective disaster management planning (Information may be obtained from the output of Requirement 2.3).

PRINCIPLE 15

Assessment		
	Conformance	Criteria
2	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. All of the disclosures specified in 15.1(A) and (B) above are addressed. b. The disclosures specified in 15.1(C) are addressed.
		<p>a. <i>Operators</i> can communicate through their reporting plan/cycle, for example, within an annual report, sustainability report, or website declaration. Disclosure could be made through a medium of the choosing of the <i>Operator</i> and its regulator, such as <i>Operator's</i> website or through of information to relevant authorities or otherwise.</p> <p>A single reporting 'event' or location covering both new and existing <i>tailings facilities</i> (i.e. covering summaries and descriptions required¹) could support simplicity for readers.</p> <p>Information may be excluded from public disclosure if required to be kept confidential by legislation or other third party requirements, if considered proprietary information related to competitive advantage, or if disclosure could result in harm to a third party that is not offset by the value of disclosure promoted by this standard. Any exclusion of required information should be documented in site records and approved by the <i>Accountable Executive</i>.</p> <p>b. The requirements under 15.1 (C) may be demonstrated on the basis of a robust approach employed for meeting requirements under 13.1, 13.3 and 14.1.</p> <p>In testing whether the disaster management planning would be effective, the facility may for example coordinate an exercise/drill with the responsible regulatory agency/agencies.</p>
Interpretive and Clarification Notes:		
3		<p>1. 'Summary' and 'description' in the headline requirements above mean a condensed presentation of information with sufficient detail for a stakeholder to understand the context behind the risks. In provision of the requisite detail, Operators should present such information summaries and descriptions as proportional to the risk the tailings facility presents to human and environmental receptors, and should be sufficiently clear to an auditor.</p>
Equivalent Standards for demonstrating conformance		
4		/

PRINCIPLE 15

Publically disclose and provide access to information about the *tailings facility* to support public accountability.

1	Requirement 15.2		
	Respond in a systematic and timely manner to requests from interested and affected <i>stakeholders</i> for additional information <i>material</i> to the public safety and integrity of a <i>tailings facility</i> . When the request for information is denied, provide an explanation to the requesting <i>stakeholder</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ol style="list-style-type: none"> The <i>Operator</i> maintains a systematic and timely approach to responding to requests from <i>project-affected people</i> for information <i>material</i>¹ to public safety and integrity of a <i>tailings facility</i>. In instances where such requests are denied by the <i>Operator</i>, an explanation shall be provided to the requesting <i>project-affected people</i> in a reasonable timeframe and records shall be kept of relevant explanations provided to the requesting <i>project-affected people</i>. 	<ol style="list-style-type: none"> A systematic approach to requests may include: <ul style="list-style-type: none"> A log or register tracks the date and nature of request, the name and contact details of the <i>project-affected people</i> making the request, the response provided, and follow-up actions (or any other formalized process for receiving and responding to requests for information that is suitable to the local context and ensures that requests are systematically closed out) Evidence that personnel have been appointed and trained to respond to requests from <i>project-affected people</i> Evidence of the engagement (see protocols 1.2 and 1.3) or <i>grievance</i> process (see protocol 1.4) being communicated to project-affected people It is anticipated that aspects of the approach will be public (as for <i>grievance</i> and complaint mechanisms/ procedures i.e. expected timeline for acknowledgement/ response). Written evidence (e.g. email, copy of letter, agreed meeting minutes) of explanations to <i>project-affected people</i> in each instance where information was not provided².
3	Interpretive and Clarification Notes:		
	<ol style="list-style-type: none"> Regarding 'information material to public safety' – although not italicized as a formal GISTM definition, for the purposes of this protocol, the GISTM definition of material shall apply. Where requests may be related to situations where forward-looking information is involved, it may not be possible for Operators to fulfil such requests due to securities law. Operators should retain appropriate documentation to demonstrate this in the context of an audit. 		
4	Equivalent Standards for demonstrating conformance		
	<ol style="list-style-type: none"> UN Guiding Principles on Business and Human Rights 2011, sections 31c & d in respect of provision of timeframes and access to information is partially equivalent to conformance with this protocol. 		

PRINCIPLE 15

Publically disclose and provide access to information about the *tailings facility* to support public accountability.

1	Requirement 15.3		
	Commit to cooperate in credible global transparency initiatives to create standardised, independent, industry-wide and publicly accessible databases, inventories or other information repositories about the safety and integrity of <i>tailings facilities</i> .		
2	Assessment		
	Conformance	Criteria	Examples
	Meets	<p>The following are demonstrated:</p> <ul style="list-style-type: none"> a. Contribute information to credible global transparency initiatives relating to safety and integrity of <i>tailings facilities</i>. b. Update disclosed information relating to safety and integrity of <i>tailings facilities</i> periodically, as a minimum in line with requirements in 15.1. 	<ul style="list-style-type: none"> a. Evidence that information is disclosed via credible transparency... initiatives. b. Evidence that the safety and integrity of <i>tailings facilities</i> information is updated periodically.
3	Interpretive and Clarification Notes:		
	/		
4	Equivalent Standards for demonstrating conformance		
	/		

ANNEX A: GLOSSARY OF TERMS



ANNEX A: GLOSSARY OF TERMS

The source of the definition is provided in brackets as follows; *The Global Industry Standard on Tailings Management* [GISTM] and *The ICMM Tailings Management Good Practice Guide* [ICMMGPG]. Other terms included in the Conformance Protocols also contain the source in brackets.

Accountability: The answerability of an individual for their own performance and that of any personnel they direct, and for the completion of specified deliverables or tasks in accordance with defined expectations. An accountable person may delegate responsibility for completion of the deliverable or task, but not the accountability. [ICMMGPG]

Accountable Executive: One or more executive (s) who is/are directly answerable to the CEO on matters related to this Standard, communicates with the Board of Directors, and who is accountable for the safety of tailings facilities and for minimising the social and environmental consequences of a potential tailings facility failure. The Accountable Executive(s) may delegate responsibilities but not accountability. [GISTM and ICMMGPG]

Adaptive Management: A structured, iterative process of robust decision-making with the aim of reducing uncertainty over time via system monitoring. It includes the implementation of mitigation and management measures that are responsive to changing conditions, including those related to climate change, and the results of monitoring throughout the tailings facility lifecycle. The approach supports alignment on decisions about the tailings facility with the changing social, environmental and economic context and enhances opportunities to develop resilience to climate change in the short and long term. [GISTM]

Alternatives Analysis: An analysis that should objectively and rigorously consider all available options and sites for mine waste disposal. It should assess all aspects of each. Mine waste disposal alternative throughout the project life cycle (i.e. from construction through operation, closure and ultimately long-term monitoring and maintenance). The alternatives analysis should also include all aspects of the project that may contribute to the impacts associated with each potential alternative. The assessment should address environmental, technical and socio-economic aspects for each alternative throughout the project life cycle. [GISTM]

As Low As Reasonably Practicable: ALARP requires that all reasonable measures be taken with respect to 'tolerable' or acceptable risks to reduce them even further until the cost and other impacts of additional risk reduction are grossly disproportionate to the benefit. [GISTM]

Assurance: The act of obtaining and considering evidence in order to enhance the degree of confidence regarding a particular topic. [ICMM Assurance and Validation Procedure]

Authority: The power to make decisions, assign responsibilities, or delegate some or all authority, as appropriate. The ability to act on behalf of the Operator. [ICMMGPG]

Best Practices: A procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption. [GISTM]

Board of Directors: The ultimate governing body of the Operator typically elected by the shareholders of the Operator. The Board of Directors is the entity with the final decision-making authority for the Operator and holds the authority to, among other things, set the Operator's policies, objectives, and overall direction and oversee the firm's executives. As the term is used here, it encompasses any individual or entity with control over the Operator, including, for example, the owner or owners. Where the State serves as the Operator, the Board of Directors shall be understood to mean the government official with ultimate responsibility for the final decisions of the Operator. [GISTM]

Breach Analysis: A study that assumes a failure of the tailings facility and estimates its impact. Breach Analyses must be based on credible failure modes. The results should determine the physical area impacted by a potential failure, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition. The Breach Analysis is based on scenarios which are not connected to probability of occurrence. It is primarily used to inform emergency preparedness and response planning and the consequence of failure classification. The classification is then used to inform the external loading component of the design criteria. [GISTM]

Catastrophic Failure: A tailings facility failure that results in material disruption to social, environmental and local economic systems. Such failures are a function of the interaction between hazard exposure, vulnerability, and the capacity of people and systems to respond. Catastrophic events typically involve numerous adverse impacts, at different scales and over different timeframes, including loss of life, damage to physical infrastructure or natural

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assets, and disruption to lives, livelihoods, and social order. Operators may be affected by damage to assets, disruption to operations, financial loss, or negative impact to reputation. Catastrophic failures exceed the capacity of affected people to cope using their own resources, triggering the need for outside assistance in emergency response, restoration and recovery efforts. [GISTM]

Change Management System: Changes in projects are inevitable during design construction and operation and must be managed to reduce negative impacts to quality and integrity of the tailings facility. The impact and consequences of changes vary according to the type and nature of changes, but most importantly according to how they are managed. Managing changes effectively is crucial to the success of a project. A change management system has the objective of disciplining and coordinating the process, and should include an evaluation of the change, a review and formal approval of the change followed by detailed documentation including drawings and, where required, changes to equipment, process, actions, flow, information, cost, schedule or personnel. [GISTM]

Closure: begins when placement of tailings into the tailings facility ceases permanently. The closure plan is implemented, including:

- Transitioning from Operations to permanent closure.
- Removal of infrastructure such as pipelines.
- Changes to water management or treatment.
- Construction of covers, recontouring or revegetation of tailings and any embankments or other structural elements. [ICMMGPG]

Community: A social group possessing shared beliefs and values, stable membership and the expectation of continued interaction. It may be defined geographically, by political or resource boundaries, or socially as a community of individuals with common interests. [ICMMGPG]

Construction: A recurring lifecycle activity that includes:

- Initial construction prior to start-up of a new tailings facility (e.g. starter embankment, tailings lines).
- Ongoing construction through the operating life of the mine to increase the capacity of the tailings facility (e.g. facility raises).

Construction may also include:

- Construction for any material changes (e.g. increase capacity beyond original design intent, buttress to strengthen a tailings facility).
- Construction for closure (e.g. installation of covers). [ICMMGPG]

Construction vs Design Intent Verification: Intended to ensure the design intent is implemented and still being met if the site conditions vary from the design assumptions. The CDIV identifies any discrepancies between the field conditions and the design assumptions, such that the design can be adjusted to account for the actual field conditions. [GISTM]

Construction Records Report: Describes all aspects of the 'as-built' product, including all geometrical information, materials, laboratory and field test results, construction activities, schedule, equipment and procedures, Quality Control and Quality Assurance data, CDIV results, changes to design or any aspect of construction, non-conformances and their resolution, construction photographs, construction shift reports, and any other relevant information. Instruments and their installation details, calibration records and readings must be included in the CRR. Roles, responsibilities and personnel, including independent review should be documented. Detailed construction record drawings are fundamental. [GISTM]

Consequence classification: Consequence Classification is typically used in the water dam industry to assess potential downstream impacts if a hypothetical failure scenario were to occur. The results of consequence classification may be used to establish design criteria and review frequency in prescriptive water dam regulatory regimes. Typical regimes define five classes (e.g. extreme, very high, high, moderate significant and low) based on an evaluation of the potential downstream consequences of a facility breach and subsequent flow failure in terms of three criteria: (i) incremental loss of life and/or population at risk; (ii) environment and cultural values; and (iii) infrastructure and economics.

The GISTM included a draft consequence classification based on ICOLD included in Table 1 of Annex 2. The GISTM differs from conventional water dam classification as it notes that classification is to be based upon credible failure modes versus purely hypothetical ones. Operators may elect to adopt a more conservative approach by adopting 'Extreme' external loading criteria. Consequence of failure should not be confused with risk of failure, which is determined by considering both consequence and likelihood of a credible failure scenario.

Continual improvement: The process of implementing incremental improvements and standardisation to achieve better environmental and management system performance. [ICMMGPG]

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Corporate Governance: Refers to the organisational structures and processes that a company puts in place to ensure effective management, oversight and accountability. [GISTM]

Credible Failure Modes / Scenarios: Refers to technically feasible failure mechanisms given the materials present in the structure and its foundation, the properties of these materials, the configuration of the structure, drainage conditions and surface water control at the facility, throughout its lifecycle. Credible failure modes can and do typically vary during the lifecycle of the facility as the conditions vary. A facility that is appropriately designed and operated considers all of these credible failure modes and includes sufficient resilience against each. Different failure modes will result in different failure scenarios. Credible catastrophic failure modes do not exist for all tailings facilities. The term 'credible failure mode' is not associated with a probability of this event occurring and having credible failure modes is not a reflection of facility safety. [GISTM]

Critical Controls: A control that is critical to preventing a potential undesirable event or mitigating the consequences of such an event. The absence or failure of a critical control would disproportionately increase the risk despite the existence of the other controls. [GISTM]

Cross-functional: A system or a practice whereby people from different areas of an organisation share information and work together effectively as a team. [GISTM]

Dam Safety Review: A periodic and systematic process carried out by an independent qualified review engineer to assess and evaluate the safety of a tailings facility that has a retention embankment or system of embankments (or in this case a tailings facility) against failure modes, in order to make a statement on the safety of the facility. A safe tailings facility is one that performs its intended function under both normal and unusual conditions; does not impose an unacceptable risk to people, property or environment; and meets applicable safety criteria. [GISTM]

Design Basis Report: Provides the basis for the design, operation, construction, monitoring and risk management of a tailings facility. [GISTM]

Design: A recurring lifecycle activity that builds upon the decisions made in Project Conceptions. Once a preferred alternative has been selected, all aspects of that alternative are designed in detail, based on the design intent and defined performance objectives. [ICMMGPG]

Designer of Record: A qualified professional engineer designated by the Engineer of Record to design the tailings facility in the case where the Engineer of Record is an internal professional. [GISTM]

Deviance Accountability Report: Provides an assessment of the cumulative impact of changes to the tailings facility on the risk level of the achieved product and defines the potential requirement for updates to the design, DBR, OMS or the monitoring programme. [GISTM]

Embankment: A term used to denote engineered structures designed and built to retain tailings solids and, where applicable, water. Constructed of tailings and/or other materials, embankments may grow over time to include previously developed structures. [ICMMGPG]

Emergency: A situation that poses an impending or immediate risk to health, life, property, and/or the environment, and which requires urgent intervention to prevent or limit the expected adverse outcomes. [ICMMGPG]

Emergency Preparedness and Response Plan: A site-specific plan developed to identify hazards, assess capacity and prepare for an emergency based on tailings facility credible flow failure scenarios, and to respond if it occurs. This may be part of operation-wide emergency response planning and includes the identification of response capacity and any necessary coordination with off-site emergency responders, local communities and public sector agencies. The development of the EPRP includes a community-focused planning process to support the co-development and implementation of emergency response measures by those vulnerable to a tailings facility failure. [GISTM]

Engineer of Record: The qualified engineering firm responsible for confirming that the tailings facility is designed, constructed, and decommissioned with appropriate concern for integrity of the facility, and that it aligns with and meets applicable regulations, statutes, guidelines, codes, and standards. The Engineer of Record may delegate responsibility but not accountability. In some highly-regulated jurisdictions, notably Japan, the role of EOR is undertaken by the responsible regulatory authorities. [GISTM]

Environmental and Social Management System: A methodological approach which draws on the elements of the established process of 'Plan, Do, Check, Act', and is used to manage environmental and social risks and impacts in a structured way in the short and longer term. An effective ESMS, appropriate to the nature and scale of the operation, promotes sound and sustainable environmental and social performance, and can also lead to improved financial outcomes. The ESMS helps companies integrate

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the procedures and objectives for the management of social, environmental (and, local economic) impacts into core business operations, through a set of clearly defined, repeatable processes. An ESMS is a dynamic and continuous process initiated and supported by management, and involves engagement between the Operator, its employees and contractors, project affected people and, where appropriate, other stakeholders. The interaction of the ESMS with the TMS facilitates alignment of decisions about the tailings facility with the changing social, environmental and local economic context and reflects the fact that a tailings facility is situated within a complex and dynamic local and global environment. [GISTM]

Free, Prior and Informed Consent: A mechanism that safeguards the individual and collective rights of indigenous and tribal peoples, including their land and resource rights and their right to self-determination. The minimum conditions that are required to secure consent include that it is 'free' from all forms of coercion, undue influence or pressure, provided 'prior' to a decision or action being taken that affects individual and collective human rights, and offered on the basis that affected peoples are 'informed' of their rights and the impacts of decisions or actions on those rights. FPIC is considered to be an ongoing process of negotiation, subject to an initial consent. To obtain FPIC, 'consent' must be secured through an agreed process of good faith consultation and cooperation with indigenous and tribal peoples through their own representative institutions. The process should be grounded in a recognition that the indigenous or tribal peoples are customary landowners. FPIC is not only a question of process, but also of outcome, and is obtained when terms are fully respectful of land, resource and other implicated rights. A perceived injustice, which may be based on law, contract, explicit or implicit promises, customary practice, or general notions of fairness of aggrieved communities. [GISTM]

Grievance: a perceived injustice, which may be based on law, contract, explicit or implicit promises, customary practices, or general notions of fairness of aggrieved communities. [GISTM]

Hazard: Any substance, human activity, condition or other agent that may cause harm, loss of life, injury, health impacts, loss of integrity of natural or built structures, property damage, loss of livelihoods or services, social and economic disruption, or environmental damage. [GISTM]

Impact Assessment: A decision-making and management support instrument for identifying, predicting, measuring and evaluating the impact of development proposals, both prior to major decisions being made, and throughout the lifecycle of a project. While impact assessments typically

focus on a single project, assessments can be scoped at the landscape level, and consider strategic implications of a change. Depending on the context, the circumstances, and the issues at hand, impact assessments may be discipline-specific, or conducted as part of an integrated set of studies. Assessments can be conducted in advance of impacts, or retrospectively. In this context, impacts are consequences to people, built infrastructure or the natural environment caused by a tailings facility or its failure, including impacts to the human rights of workers, communities, or other rights holders and including sensitive ecological receptors and ecosystem services. Impacts can be positive or adverse, tangible or intangible, direct or indirect, acute, chronic or cumulative, and measurable quantitatively or qualitatively. [GISTM]

Independent Review: Independent, objective, expert commentary, advice, and, potentially, recommendations to assist in identifying, understanding, and managing risks associated with tailings facilities. This information is provided to the Operator to:

- Facilitate informed management decisions regarding tailings management so that tailings-related risks are managed responsibly and in accordance with an acceptable standard of care.
- Ensure that the Accountable Executive has a third-party opinion regarding the risks and the state of the tailings facility and the implementation of the tailings management system, independent of the teams (employees, consultants, and contractors) responsible for planning, designing, constructing, operating, and maintaining the facility. [ICMMGPG]

Independent Tailings Review Board: A board that provides independent technical review of the design, construction, operation, closure and management of tailings facilities. The independent reviewers are third-parties who are not, and have not been directly involved with the design or operation of the particular tailings facility. The expertise of the ITRB members shall reflect the range of issues relevant to the facility and its context and the complexity of these issues. In some highly regulated jurisdictions, notably Japan, the role of ITRB is undertaken by the responsible regulatory authorities. [GISTM]

Involuntary Resettlement: Resettlement can be either voluntary or involuntary, and may involve either physical or economic displacement. Involuntary resettlement occurs when Project-affected people do not have the right to refuse resettlement. This includes cases where a company has the legal right to expropriate land. Voluntary resettlement occurs when resettled households have a genuine choice to move. When the voluntary nature of resettlement cannot be confirmed, resettlement should be treated as involuntary. [GISTM]

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Knowledge Base: The sum of knowledge required to support the safe management of a tailings facility throughout its lifecycle. The knowledge base has an iterative nature and needs to be updated as the need arises and the context changes. Fundamental elements would include a detailed site characterisation and baseline knowledge of the social and environmental context. As design, construction and performance monitoring proceeds additional data are collected and required and the knowledge base evolves. [GISTM]

Legal Requirement: Any law, statute, ordinance, decree, requirement, order, judgment, rule, or regulation of, and the terms of any license or permit issued by, any governmental authority. [ICMMGPG]

Maintenance: Includes preventative, predictive, and corrective activities carried out to provide continued proper operation of all infrastructure (e.g. civil, mechanical, electrical, instrumentation, etc.), or to adjust infrastructure to ensure operation in conformance with performance objectives. [ICMMGPG]

Material (adj): Important enough to merit attention, or having an effective influence or bearing on the determination in question. For the Standard, the criteria for what is material will be defined by Operator, subject to the provisions of local regulations, and evaluated as part of any audit or external independent assessment that may be conducted on implementation. [GISTM]

Material change: A change to the design or operation of a tailings facility, proposed or made after the design for initial construction has been finalized and initial construction has commenced. A material change would be a change important enough to merit attention, such as a potential influence on risk or performance of a tailings facility. The criteria for what would constitute a material change should be defined by Operator, with input from the EOR and Independent Review. [ICMMGPG]

Meaningful Engagement: A process of mutual dialogue and decision-making whereby Operators have an obligation to consult and listen to stakeholder perspectives, and integrate those perspectives into their business decisions. Meaningful engagement involves measures to overcome structural and practical barriers to the participation of diverse and vulnerable groups of people. Strategies for addressing barriers must be appropriate to the context and the stakeholders involved, and may include, for example, logistics and other support to enable participation. Preconditions to meaningful engagement include: access to material information that can be reasonably understood; a structure that enables transparent communication; and accountability for engagement processes and outcomes. [GISTM]

Mitigation Hierarchy: Identifies a series of essential, sequential steps that Operators must follow through the project lifecycle in order to limit negative impacts and to enhance opportunities for positive outcomes. It describes a process to anticipate and avoid adverse impacts on workers, communities and the environment from a proposed action. Where avoidance is not possible, actions must be taken to minimise, and where residual impacts remain, to compensate fairly or offset for the risks and impacts. [GISTM]

Observational Method: A continuous, managed, integrated, process of design, construction control, monitoring and review that enables previously defined modifications to be incorporated during or after construction as appropriate. All of these aspects must be demonstrably robust. The key element of the Observational Method is the proactive assessment at the design stage of every possible unfavourable situation that might be disclosed by the monitoring programme and the development of an action plan or mitigative measure to reduce risk in case the unfavourable situation is observed. This element forms the basis of a performance-based risk management approach. The objective is to achieve greater overall safety. See Peck, R.B. (1969) 'Advantages and Limitations of the Observational Method in Applied Soil Mechanics' *Geotechnique* 19, No2, pp.171-187. [GISTM]

Operations, Maintenance and Surveillance Manual: Describes the performance indicators and criteria for risk controls and critical controls, and the ranges of performance linked to specific pre-defined management actions. An OMS manual also describes the procedures for collecting, analysing and reporting surveillance results in a manner consistent with the risk controls and critical controls and that supports effective, timely decision-making. The link between OMS activities and critical controls management underscores the fact that it is essential that OMS Manuals be developed to reflect site-specific conditions and circumstances. An OMS Manual cannot be purchased 'off-the-shelf'. To be effective, it must be tailored to the site. [GISTM]

Operations: period in the lifecycle when tailings are transported to, and placed in, the tailings facility, inclusive of any periods of inactivity prior to the commencement of implementation of the closure plan. Construction may be ongoing or periodic throughout the Operations phase. In addition, progressive reclamation in preparation for closure and consistent with the closure plan may occur during the Operations phase. In some cases, after the end of the active deposition of tailings, tailings may be removed from the tailings facility for reprocessing or other uses. Such activity would also be considered Operations. [ICMMGPG]

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Operator: An entity that singly, or jointly with other entities, exercises ultimate control of a tailings facility. This may include a corporation, partnership, owner, affiliate, subsidiary, joint venture, or other entity, including any State agency that controls a tailings facility. [GISTM]

Performance: There are three key terms related to performance, defined as follows:

- **Performance objectives** are overall goals, arising from the Owner's policy and commitment, which are quantified where practicable. They may be defined at various levels of detail such as this tailings facility will not experience a catastrophic failure versus deformation of the embankment will be minimised.
- **Performance indicators** are detailed performance requirements that arise from the performance objectives and that need to be established and met in order to achieve those objectives. Performance indicators must be measurable and quantifiable.
- **Performance criteria** are established based on expected or predicted performance and are used to evaluate performance indicators, and define limits of performance outside which risk management action needs to be taken. [ICMMGPG]

Personnel: includes employees, contractors and consultants (e.g. designer, Engineer-of-Record) and includes those with direct responsibilities for tailings management as well as those with indirect responsibilities whose roles may be related in some manner to tailings management (e.g. heavy equipment operators working on or adjacent to tailings facilities). [ICMMGPG]

Policy: The expression of management's commitment to a particular issue area that presents the stance of the company to interested external parties. [ICMMGPG]

Post-Closure: begins when the closure plan has been implemented and the tailings facility has transitioned to long-term maintenance and surveillance. In some jurisdictions, during post-closure, responsibility for a tailings facility may transfer from the Operator to jurisdictional control. [ICMMGPG]

Practice: Documented approaches to carrying out a task. [ICMMGPG]

Preliminary Design: For the purpose of Requirement 4.2 of the Standard, preliminary design is a design performed to a level of detail sufficient to determine the differences between viable designs that adopt different external loading design criteria in terms of required footprints, volumes and drainage requirements. [GISTM]

Procedure: A documented description of how a task is to be carried out. [ICMMGPG]

Project Conception: A recurring lifecycle activity that is the first step in planning and design for:

- Construction and Operations phases of new tailings facilities.
- Closure and post-closure of tailings facilities.
- Any material changes to the design or operation of tailings facilities.
- Re-commissioning of an existing tailings facility for a mine re-opening.
- Project Conception consists of the analysis of a range of alternatives (e.g. location of a new tailings facility, technologies to be applied). [ICMMGPG]

Project-affected People: People who may experience impacts from a tailings facility. People affected by a tailings facility may include, for example, people who live nearby; people who hear, smell or see the facility; or people who might own, reside on, or use the land on which the facility is to be located or may potentially inundate. [GISTM]

Public Sector Agencies: All governmental agencies at the State, regional, and/or local level with some responsibility or authority for regulating mining activities that occur within or impact their jurisdictions. [GISTM]

Quality: The degree to which a set of inherent characteristics fulfils requirement.

- **Quality assurance (QA):** All those planned and systematic activities implemented to provide adequate confidence that the entity will fulfil requirements for quality.
- **Quality control (QC):** The operational techniques and activities that are used to fulfil requirements for quality. [ICMMGPG]

Reasonable Steps: Steps taken to achieve a specific objective such that any negative impact on people, social systems, environment, local economy or costs is not out of balance with the intended benefits. [GISTM]

Reclamation: The process of restoring the mine site to a natural or economically useable state as provided in a reclamation plan. Reclamation results in productive and sustainable landscapes to meet a range of conditions that might allow for biodiversity conservation, recreational or agriculture uses, or various forms of economic development. [GISTM]

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Responsibility: The duty or obligation of an individual or organisation to perform an assigned duty or task in accordance with defined expectations, and which has a consequence if expectations are not met. An individual or organisation with responsibility is accountable to the person that delegated that responsibility to them. [ICMMGPG]

Responsible Tailings Facility Engineer: An engineer appointed by the Operator to be responsible for the tailings facility. The RTFE must be available at all times during construction, operations and closure. The RTFE has clearly defined, delegated responsibility for management of the tailings facility and has appropriate qualifications and experience compatible with the level of complexity of the tailings facility. The RTFE is responsible for the scope of work and budget requirements for the tailings facility, including risk management. The RTFE may delegate specific tasks and responsibilities for aspects of tailings management to qualified personnel but not accountability. [GISTM]

Risk: A potential negative impact, detrimental to operations, a facility, the environment, public health, or safety, that may arise from some present process or future event. When evaluating risk, both the potential severity and consequence of the impact and its probability of occurrence are considered. [ICMMGPG]

Risk controls: Measures put in place to either:

- Prevent or reduce the likelihood of the occurrence of an unwanted event.
- Minimise or mitigate the negative consequences if the unwanted event does occur.

Risks need to be managed via controls, and risk controls should have designated owners and defined accountabilities. Some risk controls are designated as critical controls. [ICMMGPG]

Safe closure: A closed tailings facility that does not pose ongoing material risks to people or the environment which has been confirmed by an ITRB or senior independent technical reviewer and signed off by the Accountable Executive. [GISTM]

Senior Independent Technical Reviewer: An independent professional with in-depth knowledge and at least 15 years' experience in the specific area of the review requirements, e.g. tailings design, operations and closure, environmental and social aspects or any other specific topic of concern. The independent reviewer is a third-party who is not, and has not been directly involved with the design or operation of the particular tailings facility. [GISTM]

Senior Technical Reviewer: A professional who is either an in-house employee or an external party with in-depth knowledge and at least 15 years' experience in the specific area of the review requirements, e.g. tailings design, operations and closure, environmental and social aspects or any other specific topic of concern. [GISTM]

Stakeholder: Persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, positively or negatively. Stakeholders may include workers, trade unions, project-affected people or communities and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organisations and groups with special interests, the academic community, or other businesses. Different stakeholders will often have divergent views, both within and across stakeholder groupings. [GISTM]

Surveillance: Includes the inspection and monitoring (i.e. collection of qualitative and quantitative observations and data) of activities and infrastructure related to tailings management. Surveillance also includes the timely documentation, analysis, and communication of surveillance results, to inform decision making and verify whether performance objectives and risk management objectives, including critical controls, are being met. [ICMMGPG]

Tailings: A by-product of mining, consisting of the processed rock or soil left over from the separation of the commodities of value from the rock or soil within which they occur. [GISTM]

Tailings Facility: A facility that is designed and managed to contain the tailings produced by the mine. Although tailings can be placed in mined-out underground mines, for the purposes of the Standard, tailings facilities refer to facilities that contain tailings in open pit mines or on the surface ('external tailings facilities'). For the purposes of the Standard, tailings facilities are higher than 2.5 m measured from the elevation of the crest to the elevation of the toe of the structure, or have a combined water and solids volume more than 30,000 m³, unless the Consequence Classification is 'High', 'Very High' or 'Extreme', in which case the structure is considered a tailings facility regardless of its size. For the purposes of this Standard, existing tailings facilities are facilities that are accepting new mine tailings on the date that the Standard takes effect or not currently accepting new mine tailings but are not in a state of safe closure. All other facilities will be treated as New for the purposes of this Standard. [GISTM]

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Tailings Facility Lifecycle: The phases in the life of a facility, which may occur in linear or cyclical succession, consisting of:

1. Project conception, planning and design;
2. Initial construction;
3. Operation and ongoing construction (may include progressive reclamation);
4. Interim closure (including care and maintenance);
5. Closure (regrading, demolition and reclamation);
6. Post-closure (including relinquishment, reprocessing, relocation, removal) [GISTM]

Tailings Governance Framework: A framework that focusses on the key elements of management and governance necessary to maintain the 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. [GISTM]

Tailings Management System: The site-specific TMS comprises the key components for management and design of the tailings facility and is often referred to as the 'framework' that manages these components. The TMS sits at the core of the Standard and is focused on the safe operation and management of the tailings facility throughout its lifecycle (see above). The TMS follows the well-established Plan-Do-Check-Act cycle. Each Operator develops a TMS that best suits their organisation and tailings facilities. A TMS includes elements such as: establishing policies, planning, designing and establishing performance objectives, managing change, identifying and securing adequate resources (experienced and/or qualified personnel, equipment, scheduling, data, documentation and financial resources), conducting performance evaluations and risk assessments, establishing and implementing controls for risk management, auditing and reviewing for continual improvement, implementing a management system with clear accountabilities and responsibilities, preparing and implementing the OMS and EPRP. The TMS, and its various elements, must interact with other systems, such as the environmental and social management system (ESMS), the operation-wide management system, and the regulatory system. This systems interaction is fundamental to the effective implementation of the Standard. [GISTM]

Technical: the term 'technical' refers to the physical science and engineering aspects of tailings management. [ICMMGPG]

Temporary Suspension of Mine Operations: mine operations have been suspended and the placement of tailings into the facility is not occurring. Suspension may be short-term (e.g. temporary suspension due to wildfires, labour disruption) or of a longer, indeterminant duration (e.g. due to low commodity prices). During temporary suspension, maintenance and surveillance continue and the closure plan is not implemented. However, temporary suspension may lead to closure in some cases. [ICMMGPG]

Trigger Action Response Plan: A TARP is a tool to manage risk controls, including critical controls. TARPs provide pre-defined trigger levels for performance criteria that are based on the risk controls and critical controls of the tailings facility. The trigger levels are developed based on the performance objectives and risk management plan for the tailings facility. TARPs describe actions to be taken if trigger levels are exceeded (performance is outside the normal range), to prevent a loss of control. A range of actions is pre-defined, based on the magnitude of the exceedance of the trigger level. [GISTM]

Validation: The act of confirming the reasonableness and authenticity of assertions made. [ICMM Assurance and Validation Procedure]

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