

Global Tailings Review

Consultation on the Draft Global Tailings Standard

5 August 2020



Client	United Nations Environment Programme (UNEP), the Principles for Responsible Investment (PRI) and the International Council on Mining and Metals (ICMM)
Title	Global Tailings Review
Subtitle	Consultation on the Draft Global Tailings Standard
Dates	last published 17/02/2020 last revised 20/07/2020
Status	Final
Version	
Classification	Released
Project Code	11163
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Disclaimer

This report has been authored by Traverse. Early drafts of the report were shared with the Global Tailings Review team for their input and changes were subsequently made to style, structure, formatting and consistency with industry terminology. Reporting of responses are the independent findings of analysis of responses by Traverse and Traverse maintained editorial independence throughout.

Following the completion of the report on findings by Traverse, the GTR team updated the Standard in light of those findings. **The GTR team provided itemised material changes to the Requirements and additional narrative to explain how the feedback has been incorporated or, where relevant, to explain why it has not.** This has been done in the interest of transparency and to respond directly to those who participated in the consultation. This text is situated at the end of every Principle and is clearly marked in a text box. The GTR team also wrote Sections 1.5 and 2.2.8, as indicated with a *.

Acknowledgements

The team would like to thank Audrey Hackett for her support to the GTR Expert Panel in developing the GTR response and explanation as to how the feedback has been incorporated into the final draft of the Global Industry Standard on Tailings Management.



Acronyms used in this report

AE	Accountable Executive
ALARP	As Low As Reasonably Practical
ANCOLD	Australian National Committee on Large Dams
CBI	Confidential Business Information
CDA	Canadian Dam Association
CDIV	Construction vs Design Intent Verification
DAR	Deviance Acceptability Report
DBR	Design Basis Report
DOR	Designer of Record
DSR	Dam Safety Review
EIA	Environmental Impact Assessment
EOR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
FMEA	Failure Modes and Effects Analysis
FPIC	Full Prior and Informed Consent
GARD Guide	Global Acid Rock Damage Guide
GTR	Global Tailings Review
ICOLD	International Commission on Large Dams
INAP	International Network for Acid Prevention
ITRB	Independent Tailings Review Board
MAC	Mining Association of Canada
MWS	Marine Warranty Surveyors
OM	Observational Method
OMS Manual	Operations, Maintenance and Surveillance Manual
PAP	Project Affected People
PFMA	Potential Failure Modes Analysis
PMF	Potential Maximum Flood
PRI	Principles for Responsible Investment
RTFE	Responsible Tailings Facility Engineer
TARP	Trigger Action Response Plan
TMF	Tailings Management Facility
TSM	Towards Sustainable Mining
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNGP	United Nations Guiding Principles on Business and Human Rights



1. Executive Summary

1.1. Introduction

In early 2019, the International Council on Mining and Metals (ICMM), the United Nations Environment Programme (UNEP) and the Principles for Responsible Investment (PRI) co-convened the Global Tailings Review (GTR) to establish an international standard on tailings management. A draft Standard was presented for public consultation to elicit feedback from a variety of stakeholders to strengthen the Standard.

The Global Tailings Review team commissioned Traverse, an independent organisation specialising in consultation delivery, analysis and reporting.

In November 2019, the draft Standard was produced in seven languages: English, French, Spanish, Portuguese, Japanese, Chinese and Russian. The draft Standard set out 17 Principles, each containing a number of specific Requirements targeted at mining operators. A public consultation on the draft Standard was then held from 11:00 (GMT) on 15th November 2019 until 00:00 (GMT) on 1st January 2020.

Responses could be submitted via an online portal or a dedicated email address. In addition, the Global Tailings Review team ran a total of 21 workshops with a wide range of stakeholder types across Australia, Chile, China, Ghana, Kazakhstan and South Africa. This document reports the analysis of the responses received, including outcomes from the workshops.

The consultation received 128 online submissions, 74 email submissions, and additional responses from in-country workshops consisting of 427 participants. Responses were received from 32 countries, with the largest numbers from Australia, Canada, the United States of America and the United Kingdom.

Response Type	Total Number of Responses
Via email	74
Online via the GTR Portal	128
In person	427
TOTAL	629

Respondents were invited to respond to questions in four sections:

- Identity and demographics of the respondent;
- Overall views on the Standard;
- Views on each of the 17 Principles and their respective Requirements; and
- Suggestions for the accompanying Report (the GTS Papers, which in the consultation was named the Recommendations Report), which contains important messages and recommendations for operators and interested stakeholders.

Respondents were also given the opportunity to send accompanying files, either uploading them to the online portal or attaching them to email submissions. Below, we summarise the comments received on the Standard in each section of the questionnaire.

1.1.1. Important notes on reading this report

The majority of this report has been written independently by Traverse. Early drafts of the report were shared with the Global Tailings Review team for their input and changes were subsequently made to style, structure, formatting and consistency with industry terminology,



in order to improve the readability of the report. It is important to note that the GTR team did not add or remove any of the issues raised in this report and Traverse maintained editorial independence.

Once the draft report had been finalised, the GTR team updated the Standard in light of the consultation findings. The GTR team provided itemised material changes to the Requirements and additional narrative to explain how the feedback has been incorporated or, where relevant, to explain why it has not. This has been done in the interest of transparency and to respond directly to those who participated in the consultation. This text is situated at the end of every Principle and is clearly marked in a text box. The GTR team also wrote Sections 1.5 and 2.2.8, as indicated with a *.

1.2. Overall views on the Standard

When giving their overall views on the Standard, respondents were asked to answer questions in three sections: Your view as to whether the content of the Standard meets your expectations; Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities; and Does the content of the Standard address all aspects of tailings facility management adequately?

1.2.1. Your view as to whether the content of the Standard meets your expectations

Respondents were asked to indicate in a closed question the degree to which the content of the Standard met their expectations.

57 of the 103 respondents who answered this question indicated that the draft Standard either **meets or exceeds their expectations**. Those who indicated that the Standard exceeded their expectations consider the Standard to be clear and well thought out, praising the focus on human rights and environmental issues, the protection of affected people and communities, the design and monitoring of facilities, and the role of accountability and governance.

Respondents who indicated that the Standard **met their expectations** praise the clarity, comprehensiveness and ambition of the draft Standard and the incorporation of measures to protect people and communities. These respondents also express concerns about the disclosure requirements, post-closure stewardship, the competency of experts and measuring and monitoring.

46 of those who answered this question indicated that the draft Standard **falls somewhat or well below their expectations**. These respondents comment that the Standard could be strengthened in areas such as the role of the state, public disclosure and implementation. They also comment that the Standard may be difficult to enforce in practice. Some respondents, particularly geotechnical consultants, raise concerns about risk calculation, and others are concerned with clarifying how the Standard will interface with existing regulations. Respondents who criticise the Standard suggest that it is the 'view of a sector', inferior to existing standards, too general and open to interpretation and might put companies at risk. In contrast, other respondents feel that the recent tragedy in Brazil merits the best efforts and make suggestions to strengthen the Standard such as state-created mechanisms, clarity on responsibility, addressing barriers to engagement and differentiation on the basis of risk.



1.2.2. Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities

Most respondents (44) to this question indicated that they felt the **Standard would strengthen some but not all aspects of the safety and security of tailings facilities**. These respondents feel that the broad framework is appropriate, but have concerns about the implementation and participation, with some feeling that there should be more explicit recognition of barriers to engagement (in particular those related to gender).

41 respondents indicated that the Standard would **deliver improvements or a step change**. 29 indicated that they felt it would deliver improvements, and 12 that the Standard would deliver a step change. These respondents feel that the Standard will improve on current practice, being particularly radical for small and medium scale mining. Some praise the incorporation of human rights, clarification of responsibilities, roles and accountability and the formalisation of risk mitigation.

2 respondents indicated that they **did not feel the Standard would improve safety and security**, and 14 felt that it would **provide minor improvements**. Respondents comment that they do not feel that the Standard defines terms clearly enough, will not improve existing regulations and that it will not be adhered to or enforced. Some also comment that they considered this to be a 'tick box' exercise.

1.2.3. Does the content of the Standard address all aspects of tailings facility management adequately?

58 respondents indicated that the Standard **does not address all aspects adequately**, citing concerns about clarity and definitions (in particular for risk and Consequence Classification), the level of consideration of the whole lifecycle of tailings facilities, how some groups and communities are engaged and the recognition of their needs and attention to governance, accountability and responsibility, monitoring and definition of compliance, and the definition and incorporation of risk.

43 respondents considered the Standard to **adequately address all aspects**, with some praising the multidisciplinary perspective, governance, and environmental and social considerations. A few respondents describe the Standard as 'satisfactory' and 'a starting point' and say their positive response is conditional on the implementation of the guidelines. A few also suggest incorporating further areas, including education of 'at risk' people, commissioning, closure and abandonment phases, and communication channels, procedures and approaches. There are also some suggestions that aspects should be reviewed.

1.3. View on the 17 Principles and their Requirements

1.3.1. View expressed in closed questions

For each Principle, respondents were asked to indicate whether they felt that compliance with the Principle and its Requirements would contribute to the prevention of catastrophic failure of tailings facilities. The table below summarises the responses to those questions from those respondents who chose to answer them.



Principle	Yes	No	Partially	Not Sure	Total Responses
1	59	4	48	4	115
2	58	6	42	7	113
3	53	11	38	8	110
4	52	6	45	5	108
5	67	3	31	4	105
6	67	4	30	3	104
7	67	0	31	6	104
8	70	1	32	2	105
9	61	6	32	5	104
10	60	2	39	4	105
11	61	6	32	4	103
12	68	1	29	5	103
13	64	0	33	5	102
14	66	2	28	4	108
15	59	12	24	7	102
16	49	18	26	9	102
17	51	7	36	8	102

Table 1 - In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

1.3.2. Views expressed in open questions

Overall

Most responses to the consultation provided specific comments on details of the Principles and Requirements. These comments are reported on in detail in each of the Principle chapters below. Across all Principles, and in some submissions received via file attachments and emails, some overarching issues emerged from consultation responses.

There is some explicit support for the Standard and commendation of the Global Tailings Review for leading the process, with respondents stating that tailings management is a critical issue and expressing their hope that the Standard is implemented. There is praise for the inclusion of other stakeholders, the balance of specificity against broad applicability, and the integrated approach to design and management.

However, some respondents feel that the Standard is too vague and requires more work, in particular in detailing ‘how’ things should be done rather than just ‘what’ needs to be done. They also express the concerns that the Standard does not promote the highest possible standards; that it does not fulfil the objective of ensuring “zero harm to people and the environment and zero tolerance for human fatality”; and that it leaves too much room for interpretation.

Across nearly all Principles respondents seek more information and further clarification on exactly what is being prescribed, how the terminology used is being defined, and how implementation will work in practice. As well as within the chapter for each individual Principle below, more on this topic can be found below in the comments received for the accompanying Report.



Competent experts

Respondents commonly raise the essential role that competent and suitably qualified experts will play in implementing the Standard as reviewers and independent third parties but go on to identify a lack of competent tailings facility experts worldwide.

Respondents identify a number of impacts that this shortage could be expected to have on the Standard and its implementation, including difficulty in forming an ITRB, finding an Engineer of Record or Accountable Executive with appropriate experience and qualifications, and finding a senior independent technical reviewer to conduct the review and the subsequent Dam Safety Review (DSR). A limited pool of experts may also mean that truly independent reviewers are difficult to find.

In relation to Principles 7, 10 and 11, respondents comment that clarity is needed as to what constitutes suitable qualifications and experience and whether different expertise would be needed for different topics and roles. Respondents comment that a specified minimum requirement for qualifications and experience for the Engineer of Record would strengthen Principle 12.

In relation to Principle 11, respondents suggest that this shortage would make the Requirement for a different senior independent technical reviewer to conduct the review and the subsequent DSR impractical. They also comment that suitable succession plans are needed for the Engineer of Record in relation to Principle 7. Respondents point out in their comments on Principle 12 that, due to the Standard's consequence-based classification of facilities, the pool of available experts for higher risk facilities may be weakened due to demand for Engineers of Record at lower risk facilities.

Respondents also highlight the need for increased education and training overall to be able to find members of the ITRB and as Engineers of Record, suggesting that the professional bodies can provide this training and that competent experts determine training content.

How the Standard will be implemented

Some respondents query how the Standard can actually be implemented, especially how it will interface with other standards and existing national legislation, how it will work with multi-national businesses and how enforcement of the Requirements of the Standard will be achieved. Some express the fear that, without better alignment to existing national standards, the Standard could become redundant.

Specifically, some respondents comment that Consequence Classification is inconsistent with some existing regulations and standards, including ICOLD, ANCOLD and MAC guidelines; as well as UNECE Safety Guidelines and Good Practices for Tailings Management Facilities (TMFs).

Respondents stress the importance of enforcement, particularly of Principle 10, commenting that without clear enforcement that there would likely be a lack of compliance with parts of the Standard, particularly amongst medium and small-scale mines. Respondents seek clarity on the role of the state in enforcement, with some suggesting that this role should be to hold operators to account rather than taking corrective action, and a few wish it to be clarified that the Standard does not have precedence to relevant law.

Risk calculation

Respondents raise concerns with how risk is calculated and particularly the interaction of risk and risk calculation with affected communities. They emphasise the importance of



understanding risk and the proper calculation of risk within the Standard. A few feel that risks and consequences are occasionally conflated in the Standard.

In response to Principles 1 and 2, respondents comment that they feel communities are not properly accounted for in the calculation of risk and fear the effects of cost minimisation in risk calculation. In Principle 3, respondents raise some of the same concerns, and go on to suggest that communities that are adversely affected by tailings should be involved in the whole risk management process. In Principle 4, respondents express concerns that automatically classifying facilities as having an 'extreme' consequence could adversely affect how risk is approached (see below). In Principles 5 and 6, respondents seek greater clarity in risk evaluation and terminology, including risk assessments and the term 'minimise risk'. A few respondents also express concern with the phrase 'factors of safety', suggesting that it is an outdated and potentially misleading concept and that it cannot be reliably converted into a probability of failure.

Consequence Classification

Respondents express concerns with, and make suggestions regarding, the proposed approach to Consequence Classification. This is raised as an issue of focus in Principle 4, but the issue of Consequence Classification and particularly how this interacts with risk calculation is raised across multiple Principles and particularly in responses to the section 'Your Views on the Standard'.

A few respondents view the proposed Consequence Classification as a bureaucratic procedure that they feel doesn't actually deal with underlying causes of flow failure. More specifically, however, in Principle 4 some respondents express significant concerns over the automatic 'Extreme' classification. They comment that automatically classifying facilities in this way will lead to a loss of focus on those where the risk is highest, which they feel therefore undermines the Standard's ability to reduce risk of flow failure. There is also concern regarding the additional resources that will be required due to re-classifying facilities in this way.

Some respondents, especially in response to Principles 3 and 4, express concern about the way the Standard deals with loss of life. Some comment that the concept of 'zero harm' is incompatible with the current Consequence Classification Matrix, with a few going on to suggest that any loss of life should be considered to be an 'extreme' consequence. A few respondents suggest ways in which the Standard could be improved in relation to Consequence Classification, including:

- Giving greater consideration to how a mix of non-extreme consequences can lead to a high impact scenario being ignored;
- Connecting consequence classification to levels of monitoring and specifying clear auditing criteria; and
- Including the Operator in the consequence matrix, for example if impact of failure could bankrupt them.

A few respondents state that an internationally-recognised Consequence Classification is helpful but should take mitigation measures into account in order to highlight residual risk as well as inherent risk. Respondents suggest this information should be publicly available.

A few respondents are concerned that the Consequence Classifications are not interpreted as risk level. A few also comment that consideration needs to be given to how the Standard applies to low or no Consequence Classifications.



Transparency and accountability

The issue of accountability and transparency is raised with respect to nearly all Principles in the Standard. Some respondents praise the commitments to accountability and transparency in the Standard, particularly with regard to Principles 13, 14 and 17.

However, in nearly every Principle, comments and suggestions are made which relate to further strengthening the transparency and accountability of the various proposals, roles and mechanisms prescribed in the Standard. Respondents emphasise the need for clear guidelines about how organisations and professionals would be considered independent. As with other topics, respondents query how enforcement will work and, with regards to Principle 10, whether there should be sanctions for failings in responsibilities. A few respondents comment on the need to verify that the Standard is being carried out, including a suggestion that global tailings standards should be overseen by an international agency that is transparent, independent and accountable to affected communities.

In contrast, there is also concern from some that the Standard is over-prescriptive when it comes to transparency. Respondents who raise these concerns highlight possible dangers with publishing some types of information, due to the increased costs, the legal risks of publishing information which is normally confidential, and the worries this information can create among project-affected people. These respondents sometimes express the fear that published information could be misinterpreted by the public or cherry-picked by groups to further an anti-mining agenda.

Many specific suggestions are made regarding this topic in different Principles, including:

- The importance of appointing a senior technical reviewer with no conflicts of interest;
- That the ITRB should include representatives of different stakeholder groups;
- That project affected people should determine whether the grievance mechanism is addressing their concerns and that the grievance mechanism should be reviewed independently and a legal counsel should be assigned to support those affected;
- That the Design Basis Report (DBR) should be publicly disclosed and independent of local legislation;
- That monitoring data should be disclosed, without being at risk of being tampered with, available as electronic and hard copy during and at least 20 years after;
- That the Accountable Executive should be accountable to the Board of Directors and able to demonstrate how operational plans have been suitably funded; and
- That Principle 14 could be strengthened in relation to accountability and transparency by: using open meetings in addition to written complaints in the grievance process; requiring an independent third party is established for employees to share concerns; and including an obligation to publicly disclose information and data on the functioning and uptake of the grievance mechanism.

Respondents comment on roles and responsibilities in relation to levels of review (Principle 11), suggesting that this Principle splits responsibility and makes the reviews harder to scrutinise. A few go on to suggest that responsibility should be concentrated at a specific level (usually the EoR) to ensure accountability. A few respondents suggest that the independent review aspects (planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management) be grouped together under a single principle to emphasise their importance. A few respondents suggest the results of inspections and Dam Safety

Reviews (DSRs) should be shared with project-affected people and communities; financial stakeholders such as insurers; and the public.

Respondents made numerous comments in response to Principle 17 regarding perceived problems with transparency requirements, emphasising the perceived risks of deliberate or inadvertent mis-use of released information by the public or organisations; legal risks of releasing information which is currently considered confidential; and the costs and bureaucracy involved. These respondents typically go on to suggest enabling organisations to control the release of information through a freedom of information request requirement and only making information available to relevant stakeholders, or those directly affected (such as those in an inundation zone), rather than the wider public.

However, other respondents are more positive about complying with transparency requirements, with a few commenting that Principle 17 is crucial to the implementation of all other Principles and in maintaining a 'social licence to operate'. A few go on to suggest disclosing full data or critical changes of circumstances in company annual reports; and that all reasonable requests should be dealt with in a timely and systematic manner.

Engagement with, and effects on, affected populations

Respondents generally praise how engagement with affected populations is included in the Standard, particularly with respect to Principles 2, 3 and 17. However, some respondents in the mining industry express reluctant to share information that they fear could provoke fear and panic, like monitoring reports.

Some respondents request a further strengthening of the Standard in relation to ensuring the safety of project-affected people; meaningful engagement with, and reflecting the views of, people and communities; and chronic health and wellbeing impacts. A few respondents emphasise the importance of taking full account of potential barriers to engagement, including language, culture and social attitudes, such as to gender, and the consequent need for this to be fully accounted for in order for engagement to be meaningful.

Scope of the Standard

Some respondents query whether some or all of the Standard covers existing facilities already in operation. This is more problematic for Principles 1 to 6, as they deal with risk prevention, the knowledge base, safe design and the construction of facilities.

Respondents also raise concerns about the lifecycle of tailings facilities and say the Standard does not cover the closure, decommissioning or post-closure phases adequately. Respondents call for more information about long-term tailings management, noting that construction and operation phases last decades but closure and stewardship last in perpetuity. Respondents suggest the Standard ought to develop a more long-term approach, including design for closure concepts, monitoring and site protection, and best practice in relation to closure and rehabilitation post-closure. Main questions remain with the accountability of facilities after closure, such as in Principle 3, 11, 15 and 16.

Design and construction

Respondents acknowledge the importance of ensuring safety in the design and construction of the storage facility and designing with a longer-term view. They also support using the knowledge base to integrate various factors in selecting the right location for tailings sites to minimise risks of failure in their comments on Principle 2.

However, a few respondents feel that the issue of poor facility management has not been properly considered. They express disappointment that the banning of any specific design



technology, such as upstream tailing facilities, has not been incorporated into the Standard, despite having been banned in, for example, Latin America.

In relation to Principle 4, respondents comment on the design of the tailings facility and how this relates to Consequence Classification, including beginning with the safest design, the ability to reduce the classification from 'Extreme at design phase'. In commenting on Principle 5, respondents request the inclusion of more specific information about elements of design and construction and suggest that the Principle's Requirements should be expanded to reflect this. Respondents commenting on Principles 6 and 7 suggest specific elements of design and construction, such as technology, techniques and siting, that should be clarified, alongside the metrics and assessment approaches.

Environmental impact

Respondents comment that greater consideration of environmental impacts is needed, primarily in relation to hazardous metals and chemicals and water storage. Some suggest further strengthening protection for the environment and 'sustainability' within the Principles.

Concerns are raised about the impact on local people, including pollution, air and water quality, mud slides, impacts on fish and loss of livelihood. The quantity of ground water being used, and pollution of water sources is also raised. There are calls for the clean-up and rehabilitation of the land, rivers and forests. Better consideration of transboundary environmental issues regarding the location of tailings is also requested.

Respondents comment on environmental stewardship and energy efficiency and highlight the importance of an environmental risk and impact evaluation, suggesting the risk specific approach applied in the EU BREF for the management of waste from extractive industries is considered. A few respondents would like to see the Standard address the environmental liabilities of unowned tailings and the impact of climate change.

1.4. Comments on the accompanying Report

Frequently, the suggestions and comments made in relation to the accompanying Report mirror comments made on individual Principles. Many topics and terms used in the Standard are suggested for inclusion in the Report, or are viewed as generally in need of greater clarity and further information, including:

- 'Meaningful engagement', including what measures should be used to fully inform local stakeholders;
- Environmental issues, including defining high value biodiversity, critical habitat, 'no net loss' and 'net gain' commitments; the use of geosynthetics; water management, and 'best practice' resources for social and environmental baselines and knowledge gathering; and
- The ITRB, including clarity on accountability and governance, when the ITRB should be used and guidance on reporting, and also about ensuring whistleblowing protections and conflicts of interest.

Respondents also ask for information about the closure of tailing facilities and management post-closure, safety of the design (in particular the distinction between upstream and downstream; downgrading facilities from 'extreme'; and clarification or guidance on formalised tailings metrics), and clarification about the elements of the Standard deemed as 'guidance' for operators and those considered binding 'requirements'.



1.5. ‘GTR response’ – how was the feedback addressed in the final version of the Standard*

The response to the feedback from the GTR team presented in this section is limited to addressing the feedback received publicly during the consultation process. It aims to provide an overview of which suggestions were adopted. It is important to note that following the consultation process, the GTR did another iteration based on additional feedback received from the Multi-stakeholder Advisory Group and the three co-conveners.

In response to the many comments on implementation challenges or suggestions, the reader should note that this lies outside the scope of the GTR and cannot be addressed in the Standard. All feedback will be retained and made available to those who are appointed to take the Standard forward to implementation. In addition, all submissions where respondents gave consent for publishing have been published on the GTR website at: www.globaltailingsreview.org.

The Role of the State has been identified as key to the successful implementation of this Standard, however the Standard cannot enforce actions on governments, and nor should operators be obliged to carry out government obligations. Again, all feedback is public and the Report which will accompany the Standard will discuss some of the strategic implementation challenges that the Standard will face, including with regard to the interface with regulation.

There were several comments regarding implementation and the level of detail required. It is important to note that the Standard will be supported by implementation protocols which will provide detailed guidance for certification and for equivalence with other standards.

In response to a large body of comments that affected multiple Principles, the Standard has been amended in a number of ways, including, but not limited to:

- The current draft of the Standard no longer contains footnotes.
- Differentiation has been added between new and existing facilities where it has been acknowledged that implementation for existing facilities is either impractical or impossible.
- Differentiation has been made for the requirements for tailings facilities with consequence classifications that include potential for loss of life.
- Definitions in the Glossary strengthened and clarified.

2. Introduction and Methodology

2.1. Introduction

Following the catastrophic failure of the tailings facility at Vale's Corrego do Feijão mine in Brumadinho, Brazil, on 25 January 2019, the International Council on Mining and Metals (ICMM), the United Nations Environment Programme (UNEP) and the Principles for Responsible Investment (PRI) co-convened the Global Tailings Review (GTR) to establish an international standard on tailings management.

Led by an independent Chair, an international Expert Panel was appointed to review current mining practices and lessons learned from catastrophic failures to develop a new standard.

A draft Global Tailings Standard ('the Standard') was presented for public consultation to elicit feedback from a variety of stakeholders. The Global Tailings Review team commissioned Traverse, an independent organisation specialising in consultation delivery, analysis and reporting, to:

- Co-design the consultation questionnaire;
- Create an online response form for responding to the questionnaire;
- Receive, process and analyse all responses submitted to the consultation; and
- Produce a report of the consultation feedback.

In November 2019, the draft Standard was produced in seven languages: English, French, Spanish, Portuguese, Japanese, Chinese and Russian. It set out 17 Principles, each containing a number of specific Requirements targeted at operators. A public consultation on the draft Standard was then held from 11:00 (GMT) on 15th November 2019 until 00:00 (GMT) on 1st January 2020, in all seven languages

2.2. Methodology

2.2.1. Introduction to consultations, their purpose and their limitations

Consultations are a necessary and invaluable part of the development of a robust Standard that enjoys broad acceptance. They are the means by which decision makers can put their proposals to those who may be affected, get feedback on the proposals, and use that feedback to inform and improve their work. For the Global Tailings Review, the draft Standard was produced by the Expert Panel in consultation with the Advisory Group and reviewed by the Co-conveners prior to taking the document to public consultation via three mechanisms: an online platform, email and in person in a number of key mining jurisdictions. The responses to the consultation were analysed and the findings reported on by Traverse, an independent analysis organisation. These findings were then fed back to the Global Tailings Review team, who considered them in finalising the Standard.



As with all consultation processes, feedback can only be obtained via self-selection and the results are limited accordingly.

2.2.2. *Development of the consultation questionnaire*

The consultation questionnaire, including its overall structure and wording, was co-developed by the GTR team and Traverse. The final version was structured as follows:

- **Introduction** to the draft Standard and the questionnaire. The introduction included a link to the GTR website (where respondents could download a copy of the draft Standard in seven languages and access more information) and information about how data submitted would be used and details of the data protection officer.
- **Part 1** contained demographic and administrative information questions about respondents and the organisation and stakeholder group they represented (where applicable). Questions were chosen which were necessary to elicit information about the context of the respondent, including their country, stakeholder group and, where applicable, the name of the organisation they were representing. Respondents were also asked whether they were willing to have parts of their response quoted or their entire response published. Both of which were structured so that respondents were explicitly asked to opt-in to sharing of information, in line with General Data Protection Regulations. Respondents were asked to provide their name and email address so that those who opted in could be contacted again about the outcomes of the consultation. A few additional questions on respondent demographics, including age and gender, were asked to ascertain the range of perspectives represented.
- **Part 2** contained questions on each Principle of the draft Standard. Respondents were asked whether, in their view, compliance with the Principle and its Requirements would contribute to the prevention of catastrophic failure of tailings facilities. Respondents were also invited to give comments about each Principle and/or Requirement.
- **Part 3** contained three questions inviting respondents to provide quantitative assessments via multiple choice questions about their overarching views of the Standard and provide short comments explaining their response.
- **Part 4** invited respondents to submit suggestions on clarifications and guidance to be included in a report which would accompany the Standard.
- **Part 5** gave respondents the opportunity to attach a file and/or letter with additional feedback. This final part was added to enable respondents to submit supporting documents, pre-written responses and covering letters if preferred.

Once the final questionnaire had been agreed in English, the GTR team provided Traverse with copies in the six other languages in which the consultation process was being conducted.

A copy of the complete questionnaire (in English) can be found in Appendix A.

2.2.3. *Ways to respond*

Online responses could be submitted via two channels:

- The online portal; and
- A dedicated email address.

Both channels were designed to reduce barriers to participation for potential respondents to



the consultation. To further support participation, in-country workshops were delivered, described in the 'In-country workshops' section below.

Online response form

Respondents could complete the consultation questionnaire via an online response form, as described above. Snap Surveys was chosen as the hosting software due to its ability to handle multiple languages simultaneously, its compatibility with a wide range of browsers and operating systems and because it is tested for both capacity and security. Snap Surveys is reliable on a wide range of devices, minimises potential barriers to responding, and is robust in managing high volumes of simultaneous responses.

Recognising that the form was detailed, the response form gave respondents the opportunity to save their submission and return to their response at any time.

The response form could be reached via the consultation page of the Global Tailings Review website (<https://globaltailingsreview.org/consultation/>). The form was presented in the same format as the main GTR consultation page for consistency. This page also contained links to the draft Standard in all seven languages, which respondents were encouraged to read before submitting a response.

The response form was subjected to multiple rounds of review and testing in all languages prior to the opening of the consultation in order to confirm it was free from faults in terms of structure, question routing and wording in all languages. This included reviews by translators of each version of the form.

Email responses

A dedicated email address was created for the consultation process. The GTR website contained a link to the consultation email address: consultation@globaltailingsreview.org and emails were accepted as a response channel to make responding easier, especially for those with an intermittent internet connection. Allowing email submissions also made responding easier for those who wished to submit responses in alternative formats (reports, letters, other document formats).

In-country workshops

The Global Tailings Review team also ran workshops in Australia, Chile, China, Ghana, Kazakhstan and South Africa. A total of 21 sessions were run across these six countries to supplement the online consultation. A wide range of stakeholders were invited with varying levels of interest within each country. The in-country consultations commenced in Kazakhstan where the GTR took the opportunity to co-schedule the consultations to precede the United Nations on Economic Commission for Europe's Sub-regional workshop on mine tailings safety for Central Asia. The event was therefore attended by government representatives from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan.

The Chinese consultation consisted of an audience with the Global Mining Association of China followed by bilateral meetings with the China Mining Association.

For the consultation process in Chile, the GTR were supported by a number of in-country actors who combined to arrange a series of well-attended and diverse set of stakeholder consultation workshops.

In Ghana, the GTR team met with a number of Environmental Protection Agency and Ministry of the Environment representatives including the Honourable Minister, industry in Accra and also conducted a multi-stakeholder workshop in Tarkwa with representatives from civil society.

The South African consultations were attended primarily by industry with a smaller civil society group representing communities in and around Johannesburg living on and near abandoned tailings facilities.

The last visit on the schedule was to Australia (Perth and Brisbane) where again there was strong representation from industry, regulators and academia.

2.2.4. Consultation timing

The consultation was open for six and a half weeks, from 11:00 (GMT) on 15th November 2019 until 00:00 (GMT) on 1st January 2020. The online response form was automatically closed at this time and did not accept further responses.

Emails were accepted throughout the duration of the consultation and, in agreement with the GTR team, email responses received up until 15th January were also accepted. Responses received after this were deemed late responses and were not processed for inclusion in this report.

2.2.5. Publicising the consultation

The consultation was publicised in a number of ways:

- ‘News’ page on the GTR website was updated to announce the launch of the consultation;
- The GTR team invited approximately 200 people to participate via mailshot on the day of the launch;
- The Co-conveners announced the launch via social media, newsletters and mailshots;
- Print and online media ran a number of stories in global media channels and key mining publications; and
- Co-conveners, Expert Panel and other participants in the process promoted the consultation via their professional networks.

2.2.6. Approach to data processing, analysis and reporting

Data processing

Responses received via the online response form and email channel were processed by Traverse and input into their bespoke analytical system, Magpie. Magpie is a consultation platform, developed by Traverse, which is used for processing, analysing and reporting on responses to consultations.

- Responses received from the online portal were imported in CSV (comma-separated value) format. Attachments submitted by respondents were then attached to their response in Magpie and transcribed by Traverse, forming part of the same response.
- Responses received via email were forwarded to a dedicated Traverse email address for the consultation. These were then imported into Magpie. As with the online portal, attachments were transcribed to form part of the same response.

In all attachments, whether received via the online form or email, text where the respondent clearly indicated that it was the answer to a specific question, or comments on a specific Principle or Requirement, was transcribed as an answer to the respective question. Any text submitted which did not clearly indicate itself to be an answer to a consultation question was imported and classified as ‘non-fitting’ text. This text was analysed along with all other response text. Most non-fitting text is reported on in the Cross-cutting issues chapter, below.



Non-English submissions were translated via the GTR team and transcribed as outlined above.

Analysis

To analyse the responses in a logical and consistent way, a coding framework was designed based on the responses received. The first step in the development of this was to review a sample of the early responses to the consultation in order to create the thematic structure of the framework. The coding framework was developed using a Classic Grounded Theory methodology. This method ensured the independence of the analysis as it was guided by the data and not by pre-existing assumptions.

Having reviewed the overall structure of the coding framework with the GTR team, this structure was then applied to the coding of all questions, with new codes being added as and when new issues arose in responses which were not sufficiently covered by the existing codes. A simple two to three tier coding framework structure was agreed on by Traverse and the GTR team. For answers to questions about a specific Principle, these were coded using the following structure:

[Principle number] – [Code]

For the other questions, response text which was clearly labelled as being about a specific Principle were coded in the same way as above. Nearly all other text contained issues which were relevant to more than one Principle, or none of them at all, and these were coded with the structure:

[Cross-theme] – [Sub-theme] – [Code]

Reporting

Two outputs were created from the consultation analysis – a spreadsheet reports of consultation coding and a narrative report (this document).

Throughout the consultation, Traverse sent spreadsheet reports of the coding to the GTR team. These reports contained the text which had been coded (known as the Highlights report), the codes which had been applied, basic details about the respondent (including organisation and stakeholder type, but, in compliance with data protection regulation, not name and email address) and, where applicable, the requirement number to which the reports referred.

2.2.7. How to read this report

This report follows the structure of the consultation questionnaire and the coding framework, where each theme in the coding framework is reported on in a separate chapter in the report. The report was written by reading all text within each theme and code and summarising the issues raised.

Where percentages of respondents are quoted, these are rounded to the nearest whole number. As is normal with this method, occasionally this will result in the quoted percentages adding up to a little under to a little over 100%.

Please also see Section 1.1: Important notes on reading this report.

Use of quantifiers

The number of respondents who raised an issue was addressed in the report using quantifiers, in line with good practice for qualitative analysis. Where issues raised by between 1 and 10

respondents are referred to as a 'a few' respondents, and where issues raised by 11 or more respondents are referred to as 'some' respondents. Due to the breadth and detail of the comments, the volumes and concentrations of comments on any one issue were not sufficient to require larger quantifiers such as 'most' or 'many'.

2.2.8. Learning points*

Some learning points have been identified with respect to the consultation process, arising from comments raised in responses and an assessment of the consultation process by GTR.

- **Schedule changes** – The draft Standard was originally due to be released for consultation in October 2019. However, to allow greater consideration of a number of key topics by the Expert Panel, the multi-stakeholder Advisory Group and the Co-conveners, the release and consultation period were moved back to the latter part of November. It is recognised that this may have presented challenges with regard to both year-end processes, potentially preventing some industry representatives from attending, and the fact that school holidays in the southern hemisphere meant that some individuals may have been unavailable.
- **Opportunities for stakeholders to consider the Standard** – The in-country consultation process could only begin once the draft Standard had been published. This limited opportunities for review and consideration by stakeholders before the consultation workshops were held, which may have been particularly relevant to engagement with project affected people, civil society organisations (CSOs) and NGOs.
- **Consultation period** – The consultation period was relatively short to reflect the compressed project schedule. As a result, the time available for reflection and collation of feedback from both organisations and civil society may have been limited.
- **Language and translations** - The draft Standard was presented in seven languages to facilitate feedback from as broad a geographical spread as possible. However, the effort to translate and to review the translations from both a linguistic and importantly, a technical perspective was underestimated and generated a number of comments.
- **Supporting documents and information** - Consulting on the draft Standard without some framework for future implementation resulted in a number of queries and complaints about the Standard and its practicality in terms of implementation and the evaluation of compliance. Whilst the Global Tailings Standard will in due course be supported by a suite of documents to guide implementation and to establish and manage the assurance process, it is acknowledged that this additional supporting framework of information may have been valuable in providing a wider context and further context for respondents.
- **Overall**, the in-country consultations were well received with negative comments stemming primarily from the short timeframe and the time of year chosen.



3. Participation

3.1. Number of responses received

The consultation received 128 online submissions via the portal and 74 email submissions, in addition to 427 participants who gave feedback through the in-country workshops. Those who responded via the online portal gave answers to demographic questions, analysis of which is shown below.

3.2. Demographic breakdown of online and email respondents

3.2.1. Country

In total, 128 respondents (all respondents who submitted their response via the online portal) gave their country of residence. These are shown in the table and graph below. The numbers of attendees at the in-country consultations are also shown in the table below.

Country of residence	Number of responses	In-country attendees
Albania	1	
Argentina	1	
Australia	16	168
Belgium	1	
Brazil	8	
Canada	24	
Central African Republic	8	
Chile	2	92
China	1	33
Cyprus	1	
Denmark	1	
France	2	
Germany	3	
Ghana	2	50
Ireland	2	
Italy	2	
Japan	5	
Kazakhstan	1	50
Kenya	2	
Morocco	1	
Namibia	1	
Netherlands	1	
Other	1	
Peru	2	
Qatar	1	
South Africa	8	34
Spain	1	
Sweden	2	
Switzerland	1	
Ukraine	1	
United Kingdom	12	
United States	13	
Grand Total	128	427

Table 2 - Country of Residence

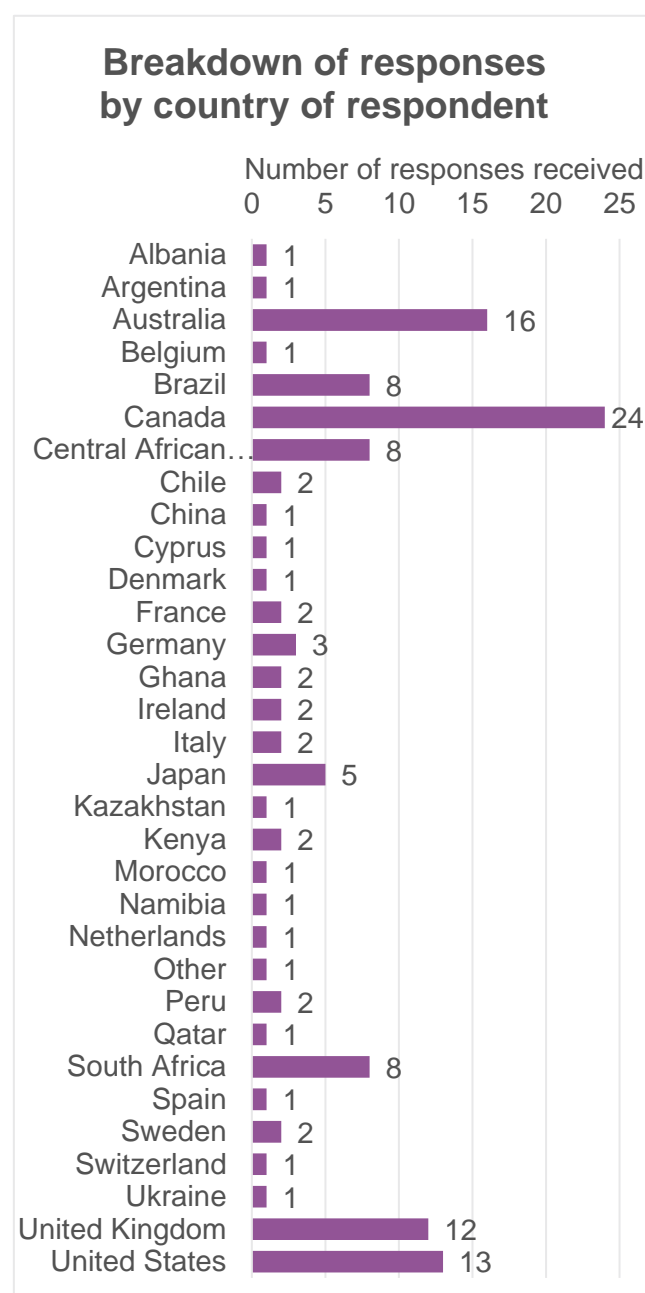


Figure 1 - Breakdown of responses by country of residence

3.2.2. Age

In total, 128 respondents (all respondents who submitted their response via the online portal) gave their age range. These are shown in the table and graph below. Participants in the in-country consultations were not asked to declare this information and are excluded from the numbers below.

Age range	Number of responses
18-24	2
25-34	11
35-44	36
45-54	28
55-64	31
65-74	10
75 and over	3
Prefer not to say	7
Grand Total	128

Table 3 - Age

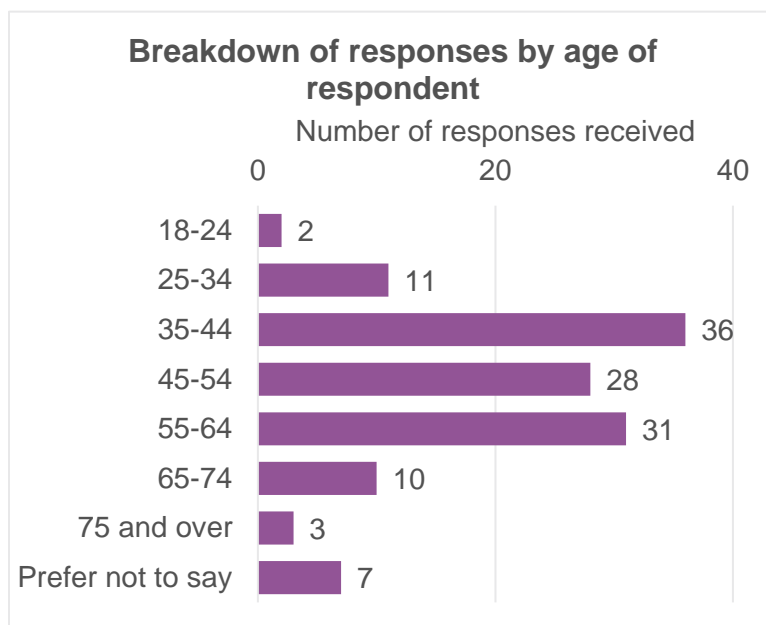


Figure 2 - Breakdown of responses by age of respondent

3.2.3. Gender

In total, 128 respondents (all respondents who submitted their response via the online portal) gave their gender or indicated that they prefer not to say. These are shown in the table and graph below. Participants in the in-country consultation are also shown below.

Gender	Number of responses	In-country consultation attendees
Female	28	105
Male	94	322
Other	1	-
Prefer not to say	5	-
Grand Total	128	427

Table 4 - Gender

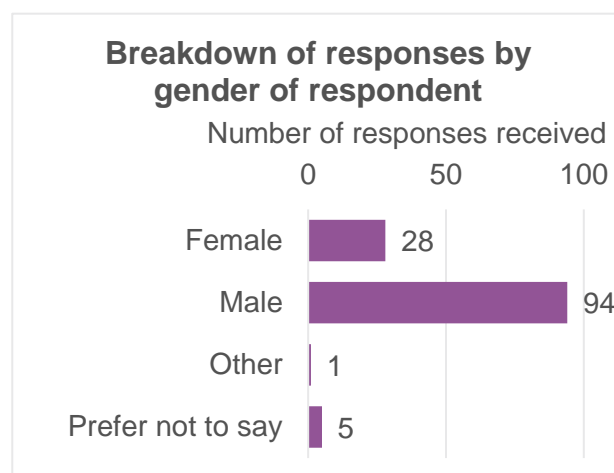


Figure 3 - Breakdown of responses by gender of respondent

3.2.4. Stakeholder group



In total, 128 respondents (all respondents who submitted their response via the online portal) gave a stakeholder type. The Global Tailings Review team also provided the stakeholder type of 8 additional responses. These are shown in the table and graph below. Participants in the in-country consultation are also shown below.

Stakeholder type	Number of responses	In-country consultation attendees
Academic (universities and other research institutes)	18	53
Civil Society / Community Organisation (CSO)	2	2
Consultant (geotechnical)	25	38
Consultant (non-geotechnical)	14	3
Government	8	64
Insurer	1	0
Investor	10	0
Mining Industry	24	194
Multilateral Organisation (e.g. UNECE, World Bank)	2	3
Non-governmental organisation (NGO) – International	5	1
Non-governmental organisation (NGO) – National	3	15
Other	18	12
Professional organisation (e.g. members of the International Association of Impact Assessment)	5	7
Project affected person	1	35
Grand Total	136	427

Table 5 - Stakeholder type

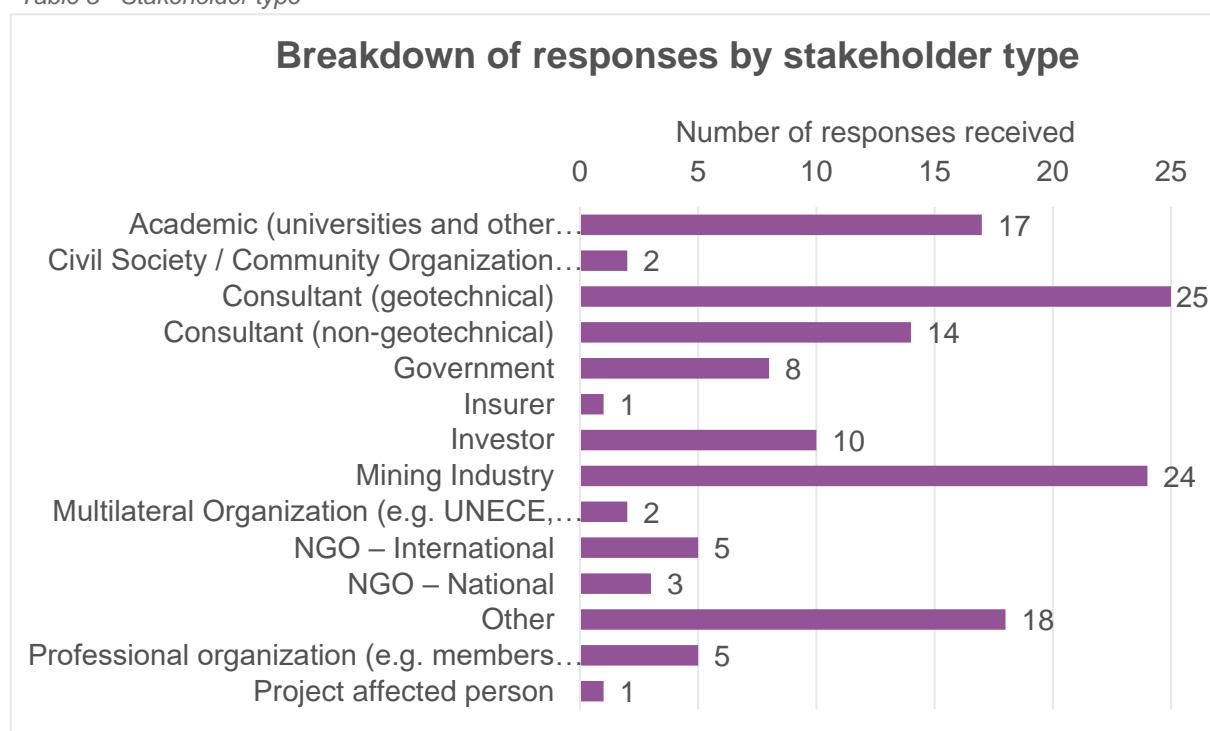


Figure 4 - Breakdown of responses by stakeholder type



3.2.5. *Partial responses*

The consultation also received 725 partial responses – responses which were started but where the respondent did not reach the last page and click to submit their response. To ensure that those who had intended to submit but had not confirmed their submission on the portal, these were downloaded and processed. All were categorised as confidential responses. The following responses were then categorised as ‘null’ responses and not imported:

- Responses where the respondent did not proceed past Part 1 (information about themselves) and therefore did not submit answers to the consultation questions (this was the vast majority of the 725 responses);
- Responses where a more complete response had separately been received from a respondent with the same personal details;
- Responses containing either no answers to the open questions or answers which were clearly test responses.

This left 25 responses which were imported and analysed in the same way as complete responses. These are included in the counts above.



4. Views on the Standard

As described in the Introduction and Methodology above, Part Three of the consultation questionnaire contained three pairs of questions asking respondents for their overall views on the Standard. Each pair of questions consisted of a closed question, where respondents chose an option indicating their view, and an open question where they could provide comments explaining their choice. These questions were:

- Your view as to whether the content of the Standard meets your expectations;
- Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities; and
- Does the content of the Standard address all aspects of tailings facility management adequately?

Responses to these questions are summarised below. For each question, we first summarise the findings from the responses to the closed question, followed by the comments received, grouped by which response was given.

4.1. Your view as to whether the content of the Standard meets your expectations

4.1.1. Responses to the closed question

Respondents were asked to pick one of the following options:

- 1: Falls well below my expectations
- 2: Falls somewhat below my expectations
- 3: Meets my expectations
- 4: Goes somewhat beyond my expectations
- 5: Goes well beyond my expectations

The percentage of respondents choosing each of these options is shown below.

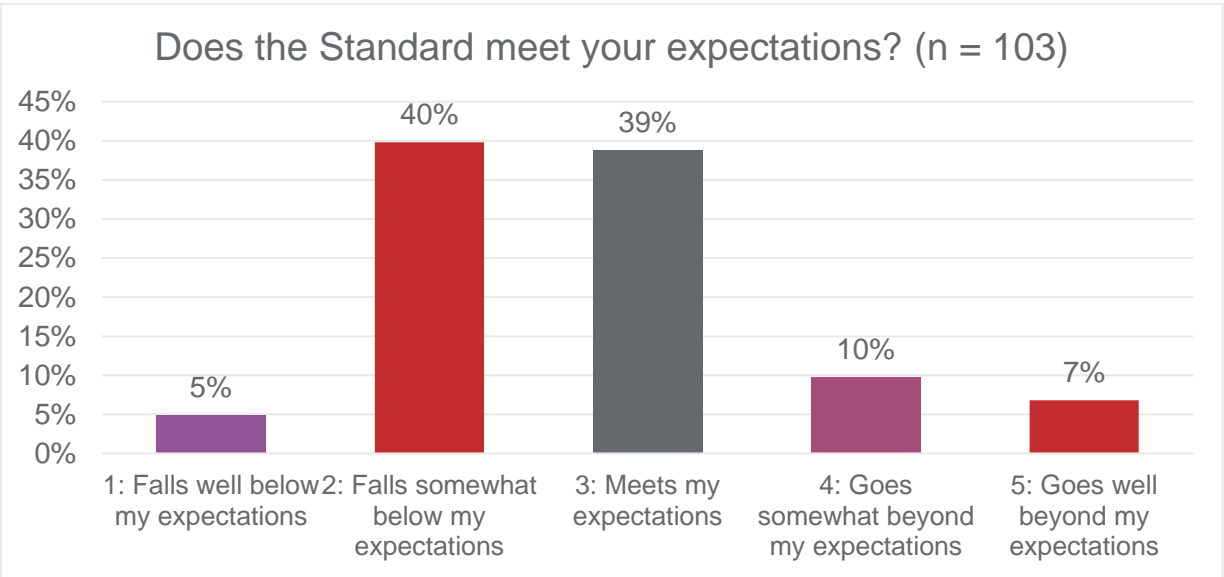


Figure 5 -- Does the Standard meet your expectations?



As can be seen above, 55% (57 of the 103) respondents who answered this question indicated that the draft Standard either meets or exceeds their expectations. 45% of those who answered this question indicated that the draft Standard falls somewhat or well below their expectations.

4.1.2. Responses to the open question: Please summarise why you chose this option

Comments from respondents who chose answers 1 or 2

Respondents who answered that the Standard falls somewhat or well below their expectations tend to comment that the Standard could be strengthened in areas such as the role of the state, public disclosure and implementation. They also comment that the Standard may be difficult to enforce in practice. Some respondents, particularly geotechnical consultants, raise concerns about risk calculation, and others are concerned with clarifying how the Standard will interface with existing regulations.

Enforcement

For some respondents, the primary issue is that of enforcement of the Standard, particularly because they feel there will be a lack of cooperation from the mining industry which, they say, is not covered in the document. Some respondents argue that many requirements are not forceful enough and others argue the Standard should include:

- A 'carrot and stick' approach;
- Information about monitoring and government involvement;
- Clarity over who will enforce the Standard;
- Requirements for companies to fund its implementation; and
- Consideration for specific facilities.

Wording

For a few respondents, the issue is a perceived lack of clarity and information in the Standard, making it difficult to implement globally and leaving it open to different interpretations. For a few respondents this is a broad concern that terms are used inconsistently, and the types of assessment are not specified or given enough emphasis. Other respondents are more specific, commenting that the following are not clear to them, and that therefore there may be inconsistent interpretations by those running tailings facilities:

- Definitions of roles and responsibilities;
- Monitoring criteria and tools; and
- Meaning of 'acceptable risk' and 'credible failure mode'.

As a result of these and other areas where the draft Standard is perceived to be unclear or inconsistent, respondents make the following suggestions:

- Make the Standard more specific to stages of the lifecycle, site, risk and consequence classification;
- Include principles applicable to state authorities;
- Be more consistent in the use of terms such as 'independent'; and
- Combine 'probability of failure' with 'Consequence Classification'.



Broader concerns and suggestions

Other respondents go further and make broader criticisms of the draft Standard as a whole. These include the belief that the draft Standard is:

- The 'view of a sector' and not a global Standard;
- Inferior to existing regulation;
- Might put companies at risk;
- Too general because mines vary according to size and location;
- Open to interpretation due to its use of language and open timeframes; and

A few respondents argue that the recent tragedy in Brazil merits 'our best efforts' and go on to suggest:

- There should be a state-created mechanism for challenging decision makers;
- More is needed to encourage public disclosure;
- Greater emphasis on the fact that the owner, represented by the board of directors, has final responsibility for safety;
- The Standard recognise and make allowances for gender specific barriers to engagement.
- There should be more focus on design and governance rather than people and communities;
- The Standard should reference existing standards and practice;
- The Standard should specify that state regulatory agencies must be separate from those that promote mining; and
- Differentiating between facilities based on risk.

Comments from respondents who chose option 3

39% of respondents answered that the Standard meets their expectations. These respondents praise the clarity, comprehensiveness and ambition of the draft Standard and the incorporation of measures to protect people and communities. A few respondents specifically state that the Standard:

- Meets their expectations and reflects the work of professional associations;
- Pulls together the measures needed to establish safe facilities;
- Ties in with existing standards (particularly the integration with NSW, Australian regulations);
- Will support good national regulations;
- Will make up for regulatory deficiencies in other localities;
- Will improve facilities management; and
- Will lead to fewer failures.

However, respondents who answered that the draft Standard meets their expectations do express the following concerns, many of which are similar to those expressed by respondents who gave a lower score:

- Disclosure requirements are too onerous for companies;
- It does not cover post-closure stewardship in sufficient detail;



- Competency of experts remains an issue;
- There is insufficient information regarding how implementation will be measured or monitored; and
- The Standard does not contain many new ideas.

In terms of suggested changes, some respondents raise the following:

- The Standard should go further in terms of disclosure to the public, investors and mining houses;
- There should be more clarity in terms of who is responsible for implementing and enforcing the Standard - whether it should be states, regions or companies; and
- There should be more references to existing technical standards and best available practice.

A few respondents are pessimistic about how much can really be achieved by the Standard, and suggest that markets, shareholders and companies will drive change rather than the Standard.

Comments from respondents who chose options 4 or 5

Respondents who answered that the Standard goes beyond or somewhat beyond their expectations comment that the draft Standard is clear and well thought out. Some specifically praise the:

- Focus on responsibility and consideration of human rights and environmental issues;
- Incorporation of measures to protect affected people and communities; and
- Emphasis on the engineers responsibility to design and monitor the facility.

A few respondents express particular support for the fact that the draft Standard covers accountability and governance.

These respondents still have a few concerns about the draft Standard, and make the following suggestions to alleviate their concerns:

- Change the classification of floods and earthquakes from 3 levels to 5 levels in the Consequence Classification tables;
- Treat safety information as 'non-competitive' to help the industry work together; and
- Clarify where the Standard aligns with existing practices and where it innovates.

In terms of the scope of the draft Standard, some respondents, particularly those from the mining industry, suggest that the Standard should:

- Cover dry tailings;
- Differentiate between facilities depending on risk and consequence;
- Include a broader scope of 'ideal' tailings facility; and
- Place more emphasis on existing facilities.

A few respondents raise concerns about implementation in national jurisdictions, but others argue that parent companies will enforce the Standard on their subsidiaries.

4.2. Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities

4.2.1. Responses to the closed question

Respondents were asked to pick one of the following options:

- 1: Will not improve the safety and security of tailings facilities
- 2: Will deliver minor improvements to the safety and security of tailings facilities
- 3: Will strengthen some but not all aspects of the safety and security of tailings facilities
- 4: Will deliver improvements across all aspects of the safety and security of tailings facilities
- 5: Will deliver a step change in all aspects of the safety and security of tailings facilities

The percentage of respondents choosing each of these options is shown below.

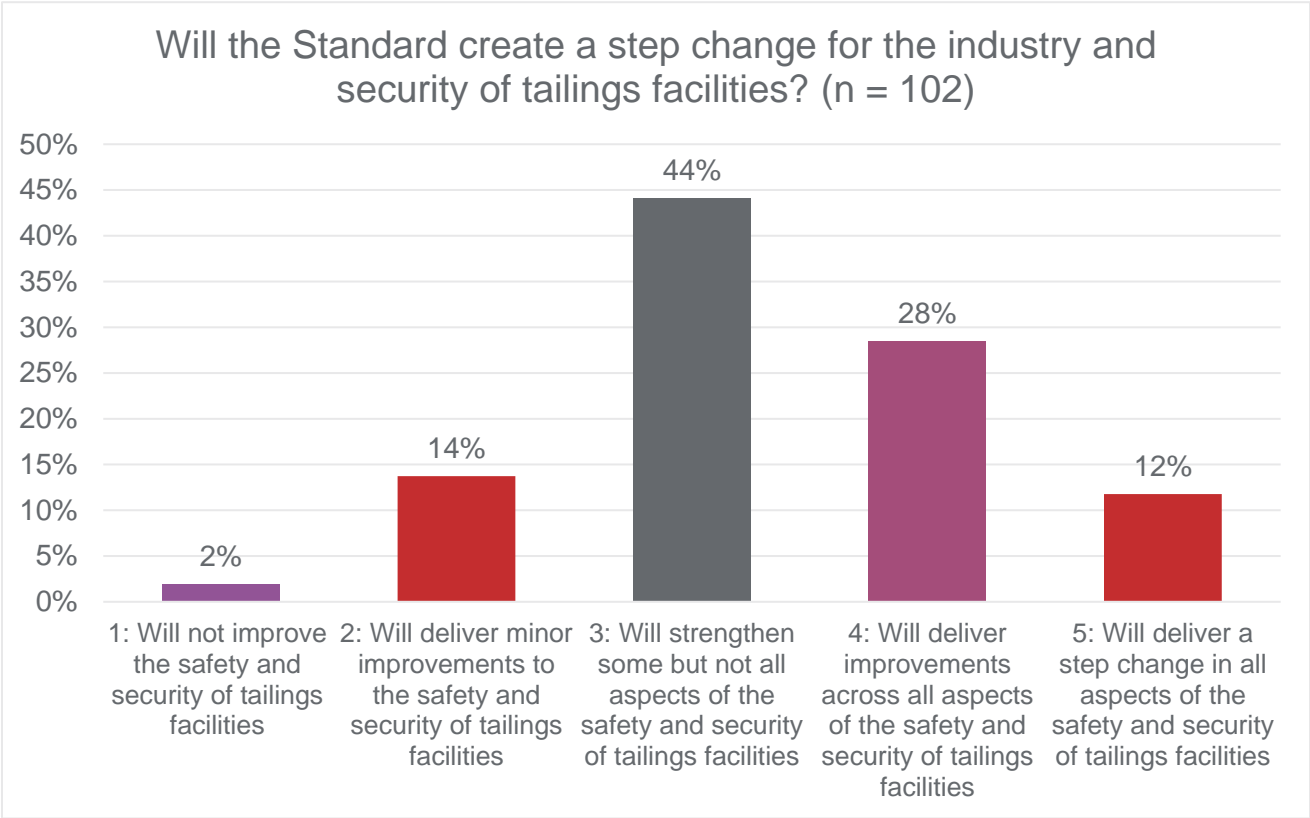


Figure 6 - Will the Standard create a step change for the industry and security of tailings facilities?

4.2.2. Responses to the open question: Please summarise why you chose this option

Comments from respondents who chose options 1 or 2

Respondents who answered that the Standard will not improve safety and security, or will only deliver minor improvements, argue that the Standard's impact will be limited because they feel it merely repackages and only slightly advances existing regulations, instead of being a true 'step change'. As with previous questions, some of these respondents comment that they feel the Standard is not clear enough in its definitions of terms throughout. Furthermore, a few respondents doubt the Standard will be implemented because they feel:

- It is not as good as existing regulations;
- It is just a 'tick box' exercise;
- Similar standards have not prevented accidents; and
- Unscrupulous mines in weak jurisdictions will not enforce it.

Similar to the previous questions, some respondents are concerned that the Standard will simply not be adhered to or enforced properly, through potential Operator ignorance and non-acceptance by national regulators.

One specific suggestion made by these respondents is that all failure modes should be assessed as operators cannot always anticipate everything.

Comments from respondents who chose option 3

Amongst those respondents who answered that the Standard will strengthen some but not all aspects of the safety and security, a few respondents argue the broad framework is appropriate for the complexities of different facilities. However, some respondents are concerned about the implementation and participation, raising concerns that:

- The Standard is not mandatory and that some companies and countries will not enforce it;
- There are not enough available experts with sufficient experience worldwide;
- Without leadership from the Accountable Executive, reviews will not get the right level of executive participation (with reference to, for example, Requirement 11.3); and
- Because 'smaller players' in the industry will be hit hardest financially, there needs to be more information about how smaller operators will implement the Standard.

With reference to engaging affected communities and individuals, a few respondents suggest that this would be greatly strengthened through more explicit recognition regarding barriers to engagement, especially gender-specific ones. For example, gender inequalities in literacy and economic status need to be taken into account in order for engagement to be meaningful.

A few respondents emphasise the interaction with local legislation and highlight the dependency on national governments to enforce it. They highlight the potential problems of regulators failing to accept the Standard in countries where regulation is weak, which will impair the ability of companies to develop safer and more secure tailings facilities. They further state that enforcement is dependent on management accountability or legislation. Furthermore, a few respondents highlight the importance of monitoring action and authority to act and believe new facilities will have a better standard of operation. They further believe the Standard strengthens governance and praise the elevation of decision making but suggest it can be clarified further.

A few respondents emphasise that more consideration needs to be made of:

- The importance of historical records, such as geotechnical research;
- Biodiversity; and
- The role of the Standard in strengthening the processes of continuous improvements of engineering.

A few respondents ask for more information and clarity about:

- The time period associated with potential maximum flood (PMF);
- Definitions of words such as 'significance' (because 'loss' is context specific);



- Rationalisation of the numerous references to 'plans', 'systems' and 'reports'; and
- What constitutes good governance.

A few respondents comment about risk and assessment of risk. A few note that the type of tailings dam discussed (earth without healthy rock anchorage) is often a very high risk. Furthermore, risk assessments are considered to be important because, as a few respondents argue, controls, management and accountabilities build on these and they caution that it is not enough to have risk reviews conducted by a qualified multi-disciplinary team, and that others, such as the Accountable Executive, the Engineer of Record (EOR) and Responsible Tailings Facility Engineer (RTFE), also need to be involved. Further to this, a few respondents call for greater emphasis on the need for formal and numerical risk and probability analysis.

A few respondents are concerned the Standard does not improve safety, but others praised its focus on health and safety. Particular points raised on safety were:

- Recommending filter tailings technology because it is safer;
- A need for greater emphasis on the responsibility for safety; and
- That the Standard does not consider the whole lifecycle of tailings facilities, including the operational phase, closure and abandoned facilities.

A few geotechnical consultants also making the following specific suggestions:

- Stricter loading conditions for design flood and ground motions for all consequence categories where loss of life is possible;
- The Potential Maximum Flood (PMF) should consider floods associated with a time period commensurate with the climatic area where the facility is located; and
- That failure can only be prevented if its causes are addressed and monitored.

Comments from respondents who chose options 4 or 5

Respondents who answered that the Standard is an improvement on current practice and can deliver step change argue that it will be particularly radical for small and medium scale mining. Respondents are optimistic but a few say they will judge the Standard once it goes into implementation.

A few respondents praise the incorporation of human rights and others believe that it will lead to better practice because the Standard clarifies responsibility, roles and accountability. This will reduce risk and minimise catastrophic consequences. Further to this, a few respondents say the Standard formalises risk mitigation and should be adopted.

A few respondents argue that obliging parent companies to report on their subsidiaries will also encourage compliance. In contrast, a few respondents argue that markets and shareholders will drive change, regardless of the Standard. They make further suggestions that investors should take a stance and express concern that the standards are not mandatory.

A few respondents state that the requirement for independent reviews needs to be implemented across the industry, with some further commenting that catastrophes happen when technical decisions are made by unqualified people. A few respondents highlight the lack of available experts within the field, which has been raised more widely by other respondents, and others are concerned about Operator knowledge of safety.



A few respondents suggest:

- The phrase ‘catastrophic failure’ be defined;
- The phrase ‘factors of safety’ be avoided;
- Using rewards to support take up;
- Relationships between the Principles be clarified; and
- The implied allowance, in the Consequence Classification Matrix, of up to 10 deaths is incompatible with the ‘zero harm’ concept.

A few respondents highlight the difference in regulations in different territories and state that the Standard must ‘really apply’ and not be limited to ‘a statement of intent’. A few believe the Standard encourages compliance and can have a major impact. A few respondents say that enough improvements will result in step change and there is praise for the assumption that tailings are very high risk. The Standard is further praised for its comprehensiveness and consideration of affected people.

Other comments (received from respondents who did not answer the above question)

A few of these respondents compliment the Standard, saying it is needed because the way tailings facilities are currently managed is not sufficient. A few go on to state that if compliance with the Standard ensures an easier permitting process, that this would indeed facilitate the desired step change. However, a few respondents praise the Standard’s ambition but express scepticism about its implementation. For example, they state that:

- Without the inclusion of performance indicators, it is impossible to assess its impact;
- An independent body is needed to provide enforcement and oversight;
- These initiatives create work for ‘foreign auditors’ and do not make a difference;
- Unspecified statements in the Standard cannot be implemented in Ghana; and
- It might be useful advocacy tool but will not ‘go anywhere’.

However, a few respondents caution against ‘rushing’ to implement it because if the Standard is to create a step change it should be developed in a careful, considered manner.

4.3. Does the content of the Standard address all aspects of tailings facility management adequately?

4.3.1. Responses to the closed question

Respondents were asked to choose either yes or no. The percentage of respondents choosing each of these options is shown below.

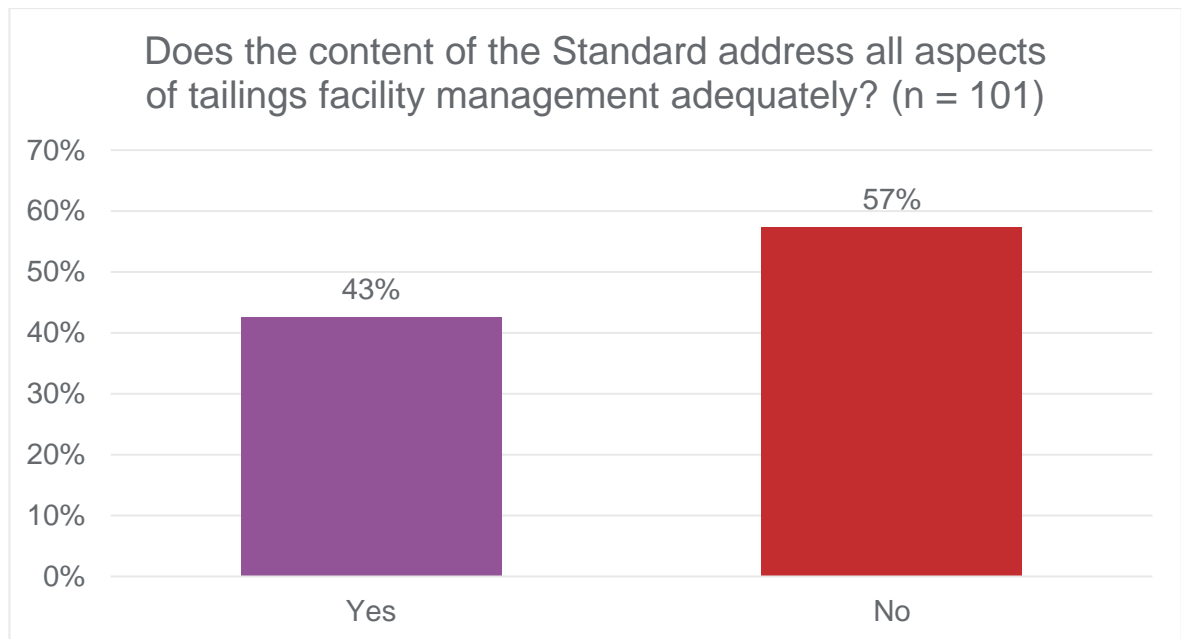


Figure 7 - Does the content of the Standard address all aspects of tailings facility management adequately?

4.3.2. Responses to the open question: Please explain why and/or what is missing

Comments from respondents who answered 'yes'

Amongst those who feel that that Standard does address all aspects adequately, a few praise the document and believe it will lead to improvements, in particular:

- The multidisciplinary perspective;
- Governance;
- The aspects not covered by Chilean regulations; and
- The environmental and social considerations.

A few respondents describe the Standard as 'satisfactory' and 'a starting point' and say their positive response is conditional on the implementation report.

A few respondents call for more detail and further consultations with experts, additionally suggesting that the following topics be incorporated into the Standard:

- Education of 'at risk' people;
- Commissioning, closure and abandonment phases;
- Operational decisions;
- Innovation and technology to become 'resource efficient'; and
- Communication channels, procedures and approaches.

Further, a few state that although the Standard is exhaustive, many aspects need to be reviewed. For example, further concerns are raised that disasters will happen because mining companies cut costs and have a disregard for the environment.



Comments from respondents who answered 'no'

Amongst those who did not feel that the content of the Standard addresses all aspects of tailings facility management adequately, the main areas of comment are the same as for previous questions:

- Concerns about clarity and definitions, in particular for risk and Consequence Classification;
- Consideration of the whole lifecycle of tailings facilities;
- How the needs of some groups and communities and their engagement are addressed; and
- The need for greater attending to governance, accountability and responsibility.

A few respondents point to the issues around monitoring and ask how compliance and non-compliance are defined. Respondents believe this issue is not adequately addressed and ask how the Standard will be met and measured. There are further suggestions that it must be implemented in parallel with improvements in regulatory processes.

A few respondents are concerned that 'risk' is not defined and state that understanding the risk structure is important. Respondents express further concerns that:

- The Standard does not address chronic risks;
- The Consequence Classifications are not interpreted as risk level;
- The Consequence Classifications are not strong enough;
- Consideration needs to be given to how the Standard applies to low or no Consequence Classifications;
- More detail is needed for formal risk and failure mode analysis; and
- Probability of failure and acceptable societal risk needs to be included.

Some respondents raise concerns about the lifecycle of tailings facilities and say the Standard does not cover the closure, decommissioning or post-closure phases adequately, reflecting comments made against earlier questions. They raise further concern about whether the Standard covers existing facilities already in operation. Other respondents call for more information about long-term tailings management, noting that construction and operation phases last decades but closure and stewardship last in perpetuity and suggesting the Standard ought to develop a long-term approach.

A few respondents call for the inclusion of a topic covering environmental impact and covering unowned facilities particularly with reference to climate change which, they feel, has not been addressed. A few respondents suggest a principle for environmental design because, they argue, a lot of damage is caused in the normal operation rather than during a failure.

A few respondents believe governance has not been addressed properly but others are concerned the Standard directs companies about what to do with staff. A few respondents suggest:

- A requirement to allocate funds to people who implement it;
- A table explaining all role responsibilities;
- Guidelines regarding what is expected of auditors, so triggers are not missed; and
- That it should be 'owner' not 'Operator' who is responsible.

A few respondents argue that some Principles (particularly Principles 7 and 8) are more



important and therefore need greater emphasis.

A few respondents express concern that:

- A consultation by the mining industry is going to produce results favourable to mine operators;
- The failure of tailings facilities is mainly caused by non-standard activities during operations;
- Many technical issues are not suitably addressed;
- Taxpayers will not want to fund waste management; and
- The draft is too prescriptive and is not adequately objective and principle driven.

5. Principle 1

5.1. Introduction

In the draft Standard, Principle 1 reads as follows:

PRINCIPLE 1: Develop and maintain an updated knowledge base to support safe tailings management across the tailings facility lifecycle.

REQUIREMENT 1.1: Develop and regularly update knowledge about the social, economic and environmental context of a tailings facility, aligned with international best practice.

REQUIREMENT 1.2: Prepare and regularly update detailed site characterization of the tailings facility site(s) that includes geomorphology, geology, geochemistry, hydrogeology, geotechnical, seismicity and hydrology. The physical and chemical properties of the tailings shall be determined and regularly updated.

REQUIREMENT 1.3: Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition.

REQUIREMENT 1.4: Identify stakeholders and how they are related to the tailings facility site, inundation area and impacted area; collect land, livelihood and demographic data for groups most at risk from a tailings facility failure.

5.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 115 respondents answered this question. Just over half (51%) of the respondents agree and 42% partially agree that Principle 1 will contribute to the prevention of catastrophic failure of tailings facilities. 3% of respondents disagree and 3% are not sure.

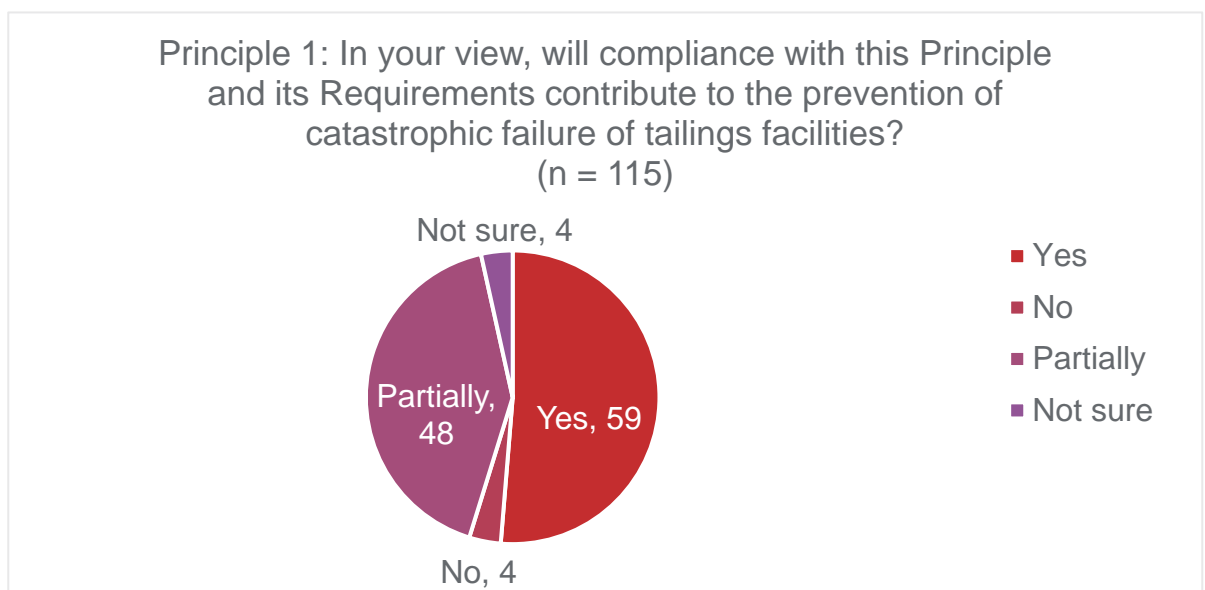


Figure 8 - Principle 1: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



5.3. Responses to the open question: ‘Your comments on Principle 1’

5.3.1. Summary

A few respondents explicitly agree with Principle 1 in the open question, particularly commenting that they welcome the inclusion of a detailed site characterisation to help to further ensure safety and reduce failures.

The majority of comments regard further expanding and defining the knowledge base, both in terms of increasing the level of detail required in relation to topics included in the requirements, and in expanding the scope of this Principle and its Requirements to new areas.

5.3.2. Expanding the Knowledge Base further

Some respondents express the desire for the Principle to incorporate a more detailed set of requirements for data acquisition, including the gathering of:

- All relevant information regarding materials used in construction and operation;
- Uncertainties created by climate change; and
- Suitable stratigraphy data and hydrology reports that impact the handling of risk.

Some respondents convey the desire to add biological and ecological knowledge to the knowledge base, especially concerning the accumulation of toxic metals in soil. Other respondents suggest expanding the knowledge base requirements to include:

- A full report on biodiversity and the impact on wildlife;
- How the land use in inundation area will change over time;
- Consideration of embankment materials, leach pads, and soil quality;
- A broader understanding of the context of tailings facility, such as political instability and conflict;
- More specific information concerning the inundation study and the ‘worst case’ scenario, such as arrival of flow, speed and time of inundation; and
- Collecting data from facilities that have failed in the past to understand previous mistakes.

On the other hand, a few respondents claim that demographic data such as social, cultural and political data should not be related to safe tailings management and it is impractical to collect this data. They also suggest that the knowledge base should make more explicit reference to use of to the ‘factor of safety’ and other existing Guidelines such as produced by Mining Association of Canada (MAC) and Canadian Dam Association (CDA).

5.3.3. Implementation, accountability and transparency

A few respondents express concerns regarding the feasibility of the Principle and the importance of a legislative framework making implementation mandatory. Two opposing opinions emerge among respondents:

- Some suggest that the knowledge base should be more detailed and regularly updated, as well as the site characterisation; and
- Others comment that regular updates are not typically necessary unless there is a ‘material change’ to the facility according to international ‘best practice’.



Some respondents argue that the knowledge base should be in the public domain to ensure transparency, particularly any parts relating to affected communities. Respondents point out a concern over too much opportunity for operators to hold back information. There is a desire amongst some respondents for more clarity on how much information should be included in the public domain and for whom it can be shared with. For example, clarifying if there is an exception for confidential financial and business information.

There is a shared desire amongst some respondents for a consistent structure, format and accessibility standard of the knowledge base, that can be shared easily amongst shareholders. Some respondents request greater clarity regarding who 'owns' and manages the knowledge repository.

5.3.4. More information and further clarification

Some respondents desire further explanation of the detail of the knowledge base.

- Some feel the Standard is too vague and requires reference to alternative Standards and Guidelines, such as the GARD Guide (INAP).
- There are technical questions over the minimum depth of investigation, details of logging and sampling of underlying soils.
- Some respondents enquire what 'flow failure' actually means.
- Respondents also ask what the difference is between 'inundation area' and 'impacted area'.
- Some respondents ask for more information about the assessment of how requirements are met and who decides this.
- A few respondents enquire what 'international best practice' means and asks for explicit examples.
- A few respondents seek clarification of the meaning of the word 'credible'.

Some respondents enquire what being 'regularly updated' means. Specifically, there is an inconsistency where Footnote 3 suggests 3 years for 'Very High' and 5 years 'for all others', but 1.2 'requires regular updates' for site characterisation.

"Updates should be carried out whenever there is a material change to the tailings facility, the social or environmental context or conditions, or at a minimum every 3 years for 'Very High' and 'Extreme' Consequence Classifications, and every 5 years for others."

A few respondents desire 'regularly reviewed' to be changed to 'regularly reviewed and updated as required', or at discretion of the EOR.

5.3.5. Comments on specific aspects of the wording of Principle 1

Respondents point out some issues in translation or in the choice of wording in the text. For example:

- The use of the word 'shall' for making it a requirement;
- In Spanish version "potencial de liquefaccion" is written instead of "potential for flow failure";
- Change geotechnical to geotechnology; and
- Remove text 'other aspect of their lives' as is too open ended.

One respondent comments that the definition of inundation study in Principle 1 contradicts the



definition provided in the Glossary.

5.3.6. Affected people and communities

Some respondents have concerns over the breadth of the Principle relating to affected people and communities. This manifests in several ways.

- Some respondents feel that the Standard does not consider the long-term impact of the release of hazardous material, but just focuses on imminent threats.
- For others, there is a desire for augmenting the definition of ‘affected people’ to include workers, families and the environment, while also maintaining a distinction from them as ‘stakeholders’. This would necessitate the need to collect more detailed socio-economic data, potentially with more community participation, for the inundation area and to keep the information on communities updated.
- Some respondents desire the acknowledgment of how failures will impact people by gender and social group differently.

In contrast, a few respondents express their opposition to the ‘political’ demarcation of risk and ‘most at risk’ amongst more ‘vulnerable’ groups of people, believing that risk or vulnerability is equally distributed amongst people in an inundation area.

5.3.7. Risk calculation

Some respondents express concern over how the knowledge base will inform the characterisation of risk.

- Some respondents are concerned that risk to communities and the environment is not adequately accounted for.
- A few respondents desire the use of a quantitative risk assessment and propose a ‘no go’ level of risk.
- A few respondents express concern that the profit imperative will lead to cost minimisation and the lowering of standards.

5.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Title of the Topic changed to “Integrated knowledge base”*
- *Footnotes integrated into the Requirement to clarify the frequency and conditions under which updates are required to the knowledge base.*
- *Uncertainties due to climate change explicitly included in the knowledge base and site characterisation.*
- *Variability in ore properties and processing included in characterising physical and chemical properties of the tailings.*
- *Reference to inundation study replaced with breach analysis.*
- *Differentiation of Requirements added with regard to flowable materials based on consequence classification that includes loss of life.*
- *Assessment of human vulnerability to be made with reference to the breach analysis as the means to identify groups most at risk from a tailings facility failure.*



Explanatory note

Numerous and varied comments were made on this Principle with some comments complimenting the holistic approach and the inclusion of social and environmental aspects and others suggesting that these are not relevant, and should be removed from the Standard. The Expert Panel held that the social, environmental and local economic aspects are indeed relevant, and while the Requirements have been refined in response to feedback, their inclusion has been retained in the Standard. Others commented that reference to the knowledge base needed to be better integrated across the Standard which has been taken on board, and additional cross-referencing to the knowledge base and the necessity to keep it updated has been included wherever possible (see Requirements 1.3, 2.4, 3.3, 4.1, 4.8, 5.3 and 10.1 in the final version of the Standard).

Embedded in the knowledge base is information on social, environmental and local economic context of the tailings facility. These discipline areas are broad in scope and their inclusion is deliberate so that all relevant aspects of each are addressed in the knowledge base. For example, environment covers biodiversity, climate, hydrology, soil etc.

On the issue of disclosure of the knowledge base, the disclosure Requirements of the Standard have been discussed and reviewed extensively and there is more information on this later in the document. Relevant to the knowledge base however is that the final Standard's Preamble and Requirement 15.1 acknowledge that it is not appropriate to disclose commercially sensitive or personal social information.

Addressing the chronic impacts of a tailings facility was an issue that was raised on multiple occasions during the in-country consultations and it is something that the Expert Panel has addressed in the final version of the Standard. Readers will notice there is a reference to acute and chronic impacts as being a fundamental part of the impact assessment process which forms part of the knowledge base (See Requirement 3.3 and the definition of Impact Assessment in the final Standard).

Some respondents suggested that there should be greater distinction between the 'impacted area' and the 'inundation area'. The wording has been amended to keep the more general term 'physical area impacted by a potential failure'. This area could be a small area at the toe of the tailings facility for a failure mode involving a small slump of the downstream slope or a larger area that is inundated by a flow failure. Additional information is required for the latter (Requirement 2.3 of the final version of the Standard). The Standard now requires that breach analyses are to be updated whenever there is a significant change to the tailings facility or the physical area impacted. The analyses should be done considering credible failure modes, which have been defined as technically feasible failure mechanisms, independent of how low the probability of their occurrence. The probability of occurrence of a particular credible failure mode is a function of how the design addressed that failure mode, how the design was implemented and, in some cases, how the facility is operated.



6. Principle 2

6.1. Introduction

In the draft Standard, Principle 2 reads as follows:

PRINCIPLE 2: Integrate the social, economic, environmental and technical information to select the site and the technologies to minimize the risk of tailings facility failure.

REQUIREMENT 2.1: Undertake a formal, multi-criteria alternatives analysis of all feasible sites and technologies for tailings management with the goal of minimizing risk to people and the environment. Use the knowledge base to inform this analysis and to develop facility designs, inundation studies, a monitoring program, Emergency Preparedness and Response Plans (EPRP), and closure and post-closure plans.

REQUIREMENT 2.2: Engage an Independent Tailings Review Board (ITRB) or an independent senior technical reviewer with no conflicts of interest to assess and review the alternatives analysis for site and technology selection.

REQUIREMENT 2.3: Use the knowledge base to assess the social, economic and environmental impacts of the tailings facility and its potential failure. Develop impact mitigation and management plans, and meaningfully engage potentially affected communities in the process.

REQUIREMENT 2.4: Update the assessment of the social, economic and environmental impact and update stakeholder identification and information for any material change to the tailings facility, the social or environmental context or conditions. If new data indicates that the impacts from the tailings facility differ from those assumed in the original assessments, the management of the facility shall be adjusted to reflect the new data using adaptive management best practices.

REQUIREMENT 2.5: The amount of financial assurance shall be reviewed periodically and updated based on estimated closure and post-closure costs.

REQUIREMENT 2.6: Taking into account actions to mitigate risks, the Operator will consider obtaining appropriate insurance to the extent commercially reasonable or providing other forms of financial assurance if appropriate to address risks relating to the construction, operation, maintenance, and/or closure of a tailings facility.

6.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 113 respondents answered this question. Just over half (51%) of the respondents agree and 37% partially agree that Principle 2 will contribute to the prevention of catastrophic failure of tailings facilities. 5% of respondents disagree and 6% are not sure.

Principle 2: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
(n = 113)

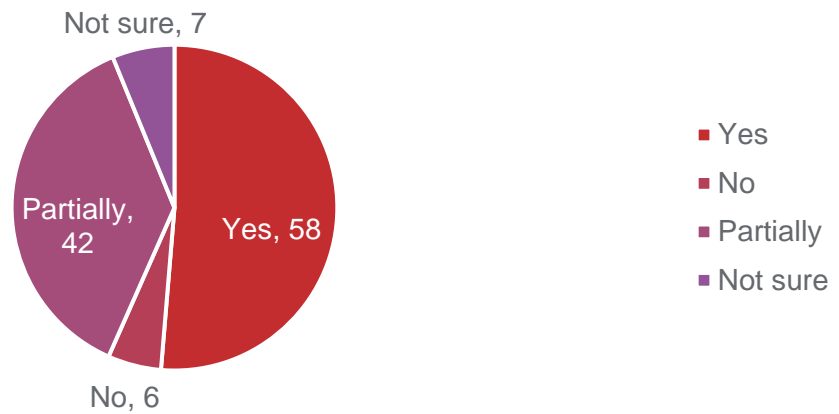


Figure 9 - Principle 2: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

6.3. Responses to the open question: ‘Your comments on Principle 2’

6.3.1. Summary

A few respondents agree with the intent of Principle 2 in ensuring that mine operators incorporate safety of tailings into the design of the facility with the oversight of an independent reviewer.

The majority of comments deal with concerns about the independence of the Independent Tailings Review Board (ITRB) and competent experts, as well as discussions over the inclusion of insurance and financial assurance.

6.3.2. Knowledge Base

Respondents express concern that the organisation of data in the knowledge base is not adequate in its current state for measuring the impact of flow failure, as well as preventing failure from occurring.

A few respondents, including non-governmental organisations, suggest that:

- The knowledge base, and hence facility design, take into consideration issues including tropical cyclones, probable maximum floods, maximum credible earthquakes and especially climate change;
- The knowledge base could be expanded with more detail and cross-disciplinary perspectives;
- The knowledge base is based on optimistic assumptions about the impacts of collapse;
- The ‘impact zone’ should be considered as covering a larger area than the present calculation;
- Human rights should be considered explicitly; and
- ‘Impact assessments’ should be included in the list of applications for the knowledge



base.

A few respondents express concern that:

- if a tailings facility is fundamentally unsound it cannot be 'adaptively managed', but rather should be replaced; and
- if the collected data reveal that the impact of the tailing's facility differs from the original assessments, then management of the facility should be changed.

A few respondents highlight that Principle 2 is not sufficiently connected to the 'knowledge base' topic, being more focused on design stages and operation than knowledge base and site selection. There is a suggestion for the Principle to be incorporated into other Principles in Topic III.

6.3.3. *Affected people and communities*

A few respondents make suggestions with regard to the role of, impact on, and engagement with, affected people and communities. Suggestions include:

- All the information and analysis of the tailing's facility and related risks should be made accessible to local regulators and affected communities to facilitate meaningful feedback collection;
- The whole of Principle 3 should be integrated into Principles 1 and 2 so affected people and communities are holistically considered throughout every part of the knowledge base; and
- The ITRB should consider 'civil society', or the people affected, and not just rely on an Expert Panel.

A few respondents highlight a concern for settlements that do not have an 'official status' and therefore could be at risk of human rights abuses which would not be recognised.

A few respondents suggest that engagement with communities is already covered within Environmental Impact Assessment (EIA) and therefore should be less of a concern for the knowledge base.

6.3.4. *Closure*

A few respondents support the inclusion of closure and post-closure within the Principle. A few others emphasise the importance of closure and post-closure engineering for the calculations of the guarantees and insurance amounts. A few respondents highlight the importance of consideration of post-closure within the Principle. They suggest that the post-closure period is defined, and that this definition takes full account of the potentially long length of the post-closure period.

Conversely, a few others express concern that closure plans are almost never undertaken because mining is inherently uncertain due to commodity price. They propose an incentive scheme for assets that are transferred near commercial resource exhaustion.

6.3.5. *Implementation*

Some respondents agree with the creation of the Independent Tailings Review Board (ITRB), but raise a series of concerns:

- Whether the ITRB is feasible for small mining projects with the associated costs;
- How impartiality will be ensured and how thorough the review will be;

- What the enforcement mechanism of the ITRB will be;
- At which point engagement with the ITRB would commence and under which jurisdiction they would operate; and
- Whether the review process would take over the design and operating process which they believe, it should not.

6.3.6. Accountability and transparency

A few respondents emphasise the importance of a reviewer with no conflicts of interest, and the need to establish clear guidelines about how organisations and professionals would be considered independent. They suggest that:

- Membership on the ITRB should include representatives of different stakeholder groups;
- Conflicts of interest should be managed according to ethical standard governing the conduct of engineers in the relevant jurisdictions; and
- Operators should demonstrate that sufficient funds have been set aside and publicly disclose the amount of financial assurance.

Conversely, there is a concern that the ITRB removes autonomy in controlling the business from the owner, making the ITRB very powerful without accountability. Similarly, there is a concern in the risk of over-reporting information and a reminder that if explicitly needed, the public can receive information through the Freedom of Information Act. Some respondents made comments in response to Principle 11 also apply to this Principle.

6.3.7. Competent experts

Several respondents stress the importance of the presence of an independent third-party reviewer but raise concerns.

- Due to the limited pool of qualified reviewers internationally, it will difficult to find reviewers who are truly independent. See more details on the cross-cutting section 23.10.
- There is uncertainty over who would pay the reviewer(s), given that if it is the responsibility of the mining company, a clear conflict of interest emerges. They suggest that the Standard should remove the power of mining corporations to choose their own reviewers to remove this conflict. Whereas, others believe the Standard should acknowledge that firms and engineers with requisite experience can serve as independent reviewers when not engaged by the Operator for engineering services at the same time.

A few respondents make suggestions for improving independence:

- The ITRB should be gender-balanced;
- To use the Marine Warranty Surveyors (MWS) as an example of best practice for truly independent review process;
- Promoting the use of an independent reviewer first and then use ITRB for larger/complex projects, avoiding using ITRB across all types of project;
- The creation of a Global Registry of independent reviewers;
- The facility should be reviewed by more than one person, particularly for facilities with 'Extreme' and 'Very High' potential for loss of life; and
- Include methodology and lives at risk in the consequence assessment.



6.3.8. Cost and finance

Several respondents support the intent of the financial assurances as a key part of the Principle. Some support fully funded mine reclamation bonds upfront to help ensure that safer tailings facilities are built.

Respondents make suggestions regarding financial assurances:

- Financial assurances should be aligned with the requirements of the jurisdiction with authority and not be an additional requirement;
- Updates on financial assurances should be done annually and it should cover contingency action;
- Increase the level of detail of information provided, such as what the financial assurance is for, whether it is reclamation, closure, long-term care or maintenance. In addition, include some examples of best practice;
- Emphasise the need for it to cover all costs, loss to public finance, loss to society, cultural and environmental assets;
- Funds could be held by an external regulator; and
- Companies should be expected to publicly disclose the amount of financial assurance.

6.3.9. Insurance

A few respondents appear unclear as to the difference ‘insurance’ and ‘financial assurance’ in the Principle.

- There is a suggestion to make insurance and financial assurance part of a separate principle.
- Because of the need for more clarity and guidance around insurance, they suggest using other industries as reference, such as the insurance schemes relating to oil tankers and nuclear power.
- There is a request for the Principle to clarify whether Operators should have third party insurance or self-insure.
- A few respondents see it as a positive for insurers to cover tailings projects and would turn insurance companies into good ‘watchdogs’ if compliance is not met.

Some respondents don’t see insurance as relevant to the mitigation of risk and safety improvements as they believe:

- It is only addressing the potential financial impact of the project (commercial risk);
- It provides insurance companies huge benefits for charging large premiums;
- It doesn’t provide incentives to improve their practice for industry as the cost of failure is mitigated by insurers;
- The only way to assure safety is to have full assurance of payback of economic, social and environmental losses; and
- The appropriate insurance may not always be obtainable, and it is too optimistic to assume insurance companies would take such challenges on.

Several respondents see the combination of insurance and ‘financial assurance’ as important to allow companies flexibility as they believe that:

- It allows Operators the ability to choose their own coverage whether it be insurance,



financial provision, bonds, a levy to which all stakeholders pay; and

- Unexpected unplanned closure of facilities often leaves insufficient financial resources to complete rehabilitation.

Additionally, a few respondents raise issues with the phrasing of Requirement 2.6, specifically that Operator's should 'consider' taking out insurance to the extent 'commercially reasonable'; commenting that, instead, Operators should be required to take out full insurance for closure and for accidents. They also ask for clarification as to whether this Requirement refers to third party insurance or whether Operators can self-insure.

6.3.10. Scope

There is general support amongst respondents to integrate social, economic, environment and technical information into the selection of the site for tailings. There is also support for the development of an alternatives assessment as a decision-making tool in the planning phase of project.

A few respondents believe that there should be more emphasis in the Principle on reviewing all options for tailings disposal and assessing the 'business case' for each storage option appropriately, while also incorporating the long-term risks. They believe that there is a missing requirement to ensure that 'no-go' zones and land-use plans are respected.

Some respondents question the purpose of Principle 2.

- A few respondents see the ITRB as an overarching requirement, not just for the selection of site and technologies, making it redundant as part of Principle 2.
- There is a suggestion to split the Principle into two parts because it covers more than one topic (ITRB and insurance).
- There is a comment that Requirements 2.5 and 2.6 are outside the scope of the review and should be removed.
- A few respondents suggest that the rights to compensation are already established in the laws of mining jurisdictions and given the Standard aims to forecast and prevent catastrophe upfront, preparation and assurance should not be a requirement.

6.3.11. Design and construction

Some respondents support using the knowledge base to integrate various factors in selecting the right location for tailings sites to minimise risks of failure. However, a few respondents feel that the issue of poor facility management has not been properly considered.

A few respondents, including NGOs, express disappointment that the banning of any specific design technology, such as upstream tailings facilities has not been incorporated into the Standard, despite having been banned in Latin America. Some go further, explicitly arguing for a ban on upstream dams at new mines and new tailings facilities immediately upstream of inhabited areas.

A few respondents believe it is unclear why the Principle is included under the 'knowledge base' topic given that it is addressing the design of the tailings facility.

6.3.12. Environment

A few respondents consider that much of what is required by the Principle should already be a part of the Environmental Impact Assessment (EIA). However, a few respondents request that greater consideration of the uncertainties produced by climate change should be included within the knowledge base.



6.3.13. Use of technology

Some respondents suggest that the Principle should go further in attempting to promote the best available technology.

Some respondents raise issues with Footnote 9:

“The Standard does not ban any specific design technology, such as upstream tailings facilities. Banning particular technologies was outside the Expert Panel’s scope of work, available here: <https://globaltailingsreview.org/about/scope/>”

They reference the banning of specific waste technologies, suggesting that it should be part of the Expert Panel’s scope to ban dangerous technologies.

6.3.14. Language

Some respondents suggest that some terminology should have a clear definition to avoid misinterpretation and other issues, including:

- ‘Material change’
- ‘Best practices’ in relation to insurance and assurance and technologies;
- ‘Engaging communities’; and
- ‘Feasible site’.

Some respondents ask for clarification that this Principle’s approach is to minimise the risk of a tailings failure occurring, rather than also locating the facility in a location that, should a failure occur, will minimise the impacts of its failure.

Some respondents express concern over the language used in Principle 2, and the risk of losing or changing meanings, particularly during translation. Other comments and suggestions include:

- Selecting a different terminology related to tribal people, as respondents think it reads as though non-tribal living people wouldn’t have the same rights protection;
- The title ‘knowledge base’ is thought to be confusing, as it is claimed that there is a general agreement in the industry that competency, skills and knowledge are key to decision making.

6.3.15. Other comments

A few respondents appreciate the incorporation of risk mitigation within the location or design type of facility. However, a few do not believe this will eliminate failure all together.

A few respondents express concern over the risk of confusion and failure of the studies if there is no formal leader assigned to it. A few respondents comment that there are many different elements in Requirement 2.1, making measurement of performance challenging.



6.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Differentiation added between how new and existing facilities are required to support innovation.*
- *Reference to chronic impacts included as a focus of impact assessments and as a facet of impact mitigation planning.*
- *References to monitoring programmes and emergency planning removed from this Principle.*
- *Engagement of ITRB for tailings facilities with Very High and Extreme Consequence Classification relocated to the Topic IV Management and Governance.*
- *Reference to meaningful engagement removed with regard to the development of impact mitigation plans.*
- *Requirements on financial assurances and insurance merged into one Requirement and relocated to the Topic IV Management and Governance in the final Standard.*

Explanatory note:

In response to comments stressing the importance of climate change, Footnote 10 from the Consultation draft is now included as Requirement 2.1 and several other Requirements have been strengthened with respect to climate change. In the final Standard, Requirement 2.1 refers to uncertainties due to climate change, Requirement 2.2 refers to climate data, and Requirements 3.1, 3.3, 3.4 and 5.3 refer to climate change (see also below). Some comments indicated that climate change might be restricted to consideration of impacts on the facility, but this was rejected given the importance of climate change for the social, environmental and local economic context. Climate change is also taken into consideration by the Adaptive Management approach which is to be understood across the Standard and wherever the ESMS is mentioned. In the final Standard, the definition of Adaptive Management explicitly references climate change.

Climate has also been explicitly included as part of site characterisation data to respond to comments stressing the importance of climate change (see Requirement 2.2 in the final Standard). Assessments and ongoing management are to be informed by climate change predictive modelling and by measurements of changes in environmental and social conditions (see Requirement 3.3 in the final Standard).

There were a number of comments suggesting a stronger reference the statutory ESIA/EIA process. While it is true that aspects of the knowledge base will be required as part of the statutory process, the Standard is driving for a much more tailings facility-centric knowledge base that is both more tailored than would be required for the general ESIA/EIA process and, crucially, one that is developed from the earliest possible point in the planning process. The point at which information is traditionally gathered for the statutory ESIA/EIA process is too late in the eyes of this Standard as relevant information can and should be gathered as early as project conception.

To respond to comments about the chronic impacts associated with tailings facilities, the final Standard requires that where the impact assessments indicate either acute or chronic impacts, that the Operator address these through impact mitigation plans.

The inclusion of financial assurance and insurance provisions in the Standard was met with conflicting opinions. The Expert Panel has maintained its position that responsible mining includes financial provisions to mitigate and remediate damage caused by their operations. These

provisions have been relocated to be closer to the other governance-related Requirements in the final Standard. It is hoped that, over time, this level of protection will form part of state approval and permitting process and that the investment community will insist on this as a condition of investment or debt financing. It is now also a Requirement that the Operator's financial capacity to cover these costs be assessed periodically and that the conclusions of this review be disclosed annually. To acknowledge the issue of abandoned and legacy sites, the Standard now requires Operators to make best efforts to ensure that any future acquirer be in a position to similarly uphold the obligations that the Standard requires.

There are many references to the tailings facility lifecycle in the standard and the phases of a tailings facility lifecycle are listed in the Glossary. The phases include interim and closure and post-closure. The reason the Standard has been written without a specific and separate Principle on closure is to highlight that the Operator must consider closure at every phase of the lifecycle, most crucially, from the earliest possible planning phases. This approach increases the chances of achieving a safe, realistic closure that is also cost effective. It is also the intent that meaningful engagement, as an ongoing process, would include, for example, future land use.

In the final Standard, human rights due diligence is the first Requirement (1.1) and, to enshrine a focus on project-affected people, the sequence of the Standard has been amended to so that project-affected people appear in the first-listed Principle.

With regard to ITRB, the Expert Panel acknowledges the shortage of qualified and independent technical experts globally however this was not accepted as a valid limitation on the ambition of the Standard. In order to implement the Standard effectively, this skills shortage will need to be addressed by the entire sector. The Standard also indicates that the ITRB must include experts from different disciplines. The glossary definition is clear that expertise of the ITRB members shall reflect the range of issues relevant to the facility and its context, as well as the complexity of these issues. The final Standard is also explicit on the meaning of independence.

The Standard has evolved not only in terms of content but also in terms of language and terminology used. Drafting a global document has meant that the language needed to be accessible to as many people as possible and applicable in multiple operational contexts and jurisdictions. The titles given to specific roles, reports and reviews vary from one country to the next and care has been taken to ensure these are reasonably generic. One limitation to the final Standard is that it is presented without implementation protocols or other guidance on how the Requirements are to be interpreted. It is for this reason that terms like 'material', 'reasonable' and 'credible' have been defined in the Glossary with the intention that the implementation guidelines will clarify how compliance can be achieved where there may be the potential for subjectivity.

The Standard does not ban any specific design and construction technology as this is not intrinsically related to safety of a tailings facility. There could be facilities built using upstream construction that are designed, implemented and operated in a manner that effectively minimises risk. Likewise, there could be facilities built using downstream construction that have an unacceptable level of risk. The Standard instead requires a robust review of all feasible technologies and strategies, to make decisions that optimise outcomes from the perspective of people and the environment, while continuing to protect business interests. The review of technologies and strategies should encourage Operators to test and deploy innovative solutions to tailings management that might allow them to minimise the construction of new tailings facilities (see Requirement 3.2 in the final Standard). The Standard includes several Requirements to consider and manage risk across the tailings facility lifecycle, including concept phase, and to support the design, implementation, management and operation of a safe facility.



7. Principle 3

7.1. Introduction

In the draft Standard, Principle 3 reads as follows:

PRINCIPLE 3: Respect the rights of project-affected people and meaningfully engage them at all stages of the tailings facility lifecycle.

REQUIREMENT 3.1: Demonstrate respect for human rights by conducting human rights due diligence to understand how a tailings facility failure may cause or contribute to adverse human rights impacts, including impacts on the individual and collective rights of indigenous peoples and tribal peoples.

REQUIREMENT 3.2: Meaningfully engage project-affected people (PAP) throughout the tailings facility lifecycle regarding the matters that affect them.

REQUIREMENT 3.3: Where the risks of a potential tailings facility failure could result in loss of life or sudden physical and/or economic displacement of people, the Operator shall consider in good faith additional measures to minimize those risks or implement resettlement following international standards. The Operator shall communicate these decisions to those affected.

REQUIREMENT 3.4: Establish an effective operational-level, non-judicial grievance mechanism that addresses the concerns, complaints and grievances of project-affected people that relate to the tailings facility.

7.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 110 respondents answered this question. Just under half (48%) of the respondents agree and 35% partially agree that Principle 3 will contribute to the prevention of catastrophic failure of tailings facilities. 10% of respondents disagree and 7% are not sure.

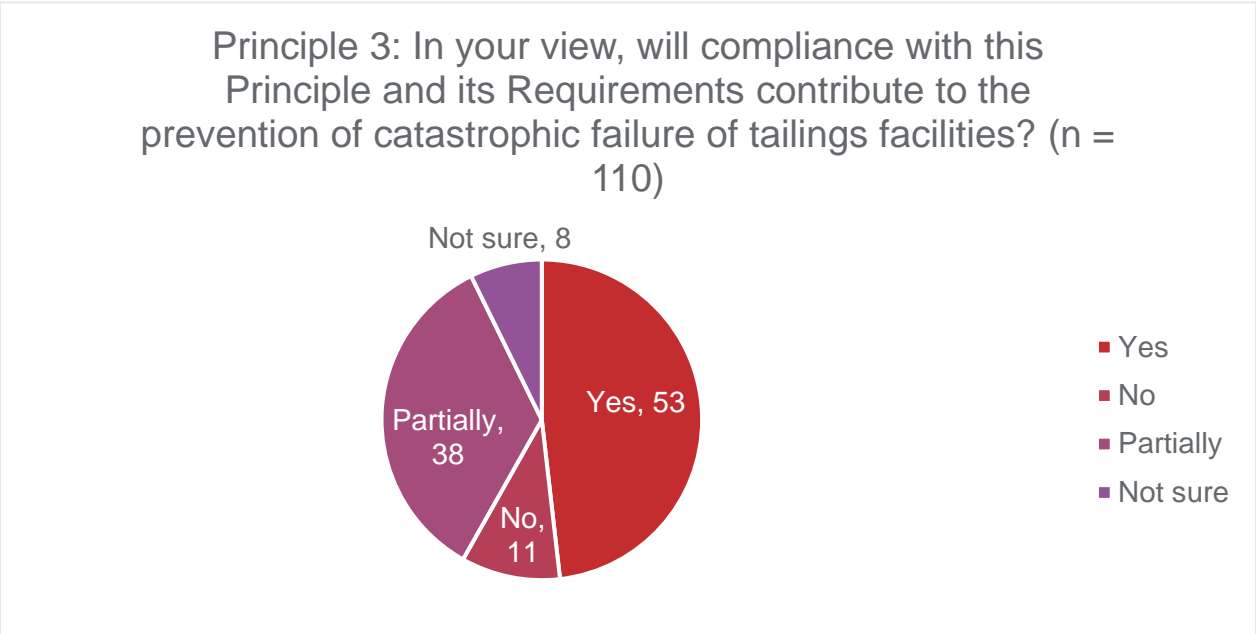


Figure 10 - Principle 3: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



7.3. Responses to the open question: ‘Your comments on Principle 3’

7.3.1. Summary

Most respondents agree with the importance of considering project-affected people and communities within the Standard. They believe that engaging with communities should be in a way that is meaningful, transparent and is maintained through the lifecycle of a tailings facility. There are also concerns about the process of resettlement and the feasibility of the commitment to zero-tolerance of lives lost.

7.3.2. Affected people and communities

A few respondents comment that it is affected communities that ultimately bear the consequences of catastrophic failure and suggest that the wording of the Principle should reflect this. There are various issues that respondents highlight in relation to project-affected people and communities.

Lack of knowledge:

- Belief that if it is demonstrated that the issues have been managed to the level of the Standard there is no point in asking communities about them;
- Belief that providing project-affected people with too much information could lead to confusion;
- Suggest that responsibility of physical and economic displacement is shared with government; and
- Request for specific consideration to women’s perspectives, and consideration of how gender-related complaints are often not filed.

How to engage:

- Concern over translation of complex and technical information to affected communities. Respondents highlight the need to simplify the language to educate and empower communities;
- Concern over the meaning of ‘meaningful engagement’ and what that looks like, which could vary depending on categorisation of the facility;
- Suggest engagement through public hearings to bring people together. Alternatively, talking to community leaders who are trusted and can feedback to communities;
- Suggest that a native speaker should review the information to ensure there are no issues with translation;
- Suggest considering alternative ways to engage with illiterate communities;
- Concern that people potentially affected are widely dispersed and hold different interests and are often marginalised from political processes;
- Question how consent is to be reached with the community and suggest incorporating the Full Prior and Informed Consent (FPIC) into the Requirements.

Health and wellbeing:

- Suggest a requirement to warn public about a hazardous situation particularly related to their health;
- Suggest that the ‘grievance mechanism’ should be independent of Operators, and people



should have access to different forms of support such as legal and medical;

- Suggest that the Standard should consider wellbeing of communities in the closure stage of the facility;
- Concern that the Principle does not go far enough in the event of a disaster, given the widespread impact it can have on people's lives and suggest a 'Just Transition' to ensure people are compensated; and
- Another concern that a few participants express is that should failure happen, material may end up in a bordering country in a major water resource where livelihoods depend on water.

7.3.3. *Grievance mechanism:*

A few respondents enquire whether the grievance mechanism would be tailored to the potential needs of project-affected-people (PAP) from a particular site and how it would be staffed or robustly regulated.

Respondents suggest:

- The 'grievance mechanism' should be designed to address the concerns, but those affected will have to determine whether the mechanism actually addresses those concerns;
- An independent problem-solving service, including members of the community and an independent body who will then assess situation with the company; and
- The 'grievance mechanism' should be reviewed independently and a legal counsel should be assigned to support those affected.

There are some concerns that all information will not be openly accessible for the public.

7.3.4. *Implementation*

A few respondents raise concerns over how mining companies will prove the standards have been reached. They suggest that companies should document and report all steps taken towards meaningful engagement. There is a desire from a few respondents, including NGOs, for more stringent demands, including the need to prove that requirements have been met, particularly for small to medium sized companies.

For Requirement 3.3, a few respondents suggest that the Operator should consider working with relevant State authorities, together with potentially impacted communities, to assess implementation of additional measures, such as resettlement in the case of new facilities. The Operator should follow international standards for resettlement and communicate these decisions to those affected. Other respondents comment that resettlement is the only means to achieve zero tolerance of lives lost.

7.3.5. *More information and further clarification*

A few respondents call for more detail on the use of specific concepts:

- Clarification and definition of project-affected people;
- Definition of 'tailings facility lifecycle' so affected or interested persons know how long the facility will be in use;
- Clarification over whether Principle 3 is rooted in international human rights and environmental law, not voluntary standards.

For Requirement 3.3, a few respondents seek greater clarity on its intent; what the minimum



criteria are for initiating the process of resettlement; and who makes the decision to initiate resettlement, if the Operator has put meaningful measures in place.

7.3.6. Scope

A few respondents welcome the requirement to apply international standards to resettlement processes and to maintain ongoing engagement throughout the tailing's facility lifecycle. They suggest referencing Towards Sustainable Mining (TSM) for project affected people.

A few respondents believe that this Principle could be expanded in certain areas:

- Human rights considerations could be an integral part of the updated knowledge base and there should be a specific link to the Inundation Study;
- It could make reference to specific human rights related guidelines from the UN;
- There should be an inclusion of biodiversity within the affected people and communities section;
- The Standard should go further in relation to providing more benefits to the community, in terms of social responsibilities such as healthcare, education, access roads; and
- A few respondents point out that human rights due diligence occurs during the State-mandated processes applicable to mining rather than a separate process and therefore the Principle should work in collaboration with this process.

Conversely, a few respondents suggest removing or amending some aspects of the Principle.

- A possible contradiction between the Principle and the Standard, as it is supposed to remove failure, but then considers failure in order to guarantee things such as resettlement.
- Principle 3 should be integrated into Principles 1 and 2.
- The Principle should be a part of the whole mining site not just the tailings facility.

7.3.7. Risk calculation

Many respondents believe that the risk of loss of life should be minimised. They suggest that communities that are adversely affected by tailings should be involved in the whole risk management process.

A few respondents raise concerns with the use of 'wet tailings' facilities and how feasible it will be to achieve 'zero harm'. The promotion of alternative storage techniques such as 'dry storage' is preferred.

Another suggestion is to analyse the 'incremental risk' (defined as risk with tailings facility versus natural risk without tailings facility) before considering the resettlement of communities.

7.3.8. Other comments

A few respondents suggest that the references to resettlement in particular should be explicit about whether they are referring to existing versus new tailings facilities.

A few respondents express concerns over people remaining in zones of danger after a facility has been closed, but still at risk of a catastrophe.



7.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Reference to United Nations Guiding Principles on Business and Human Rights (UNGP) elevated to the Requirement (from the footnote) and included in reference to remedying grievances.*
- *Use of human rights due diligence to inform management decisions across the tailings facility lifecycle added and differentiation made between new and existing facilities.*
- *Free, Prior and Informed Consent (FPIC) explicitly referenced for new facilities.*
- *Resettlement Requirement moved to Topic IV Design, Construction, Operation and Monitoring, alongside other risk mitigation considerations from design through all phases of the tailings facility lifecycle.*

Explanatory note:

There were contradictory comments on this particular Principle in terms of its applicability to the scope of the Review. The Expert Panel is firm that communities and project-affected people are central to the success of this Standard. Part of the impetus for this Review was to establish a mechanism for rebuilding trust in an industry that experienced a series of high-profile catastrophic tailings facility failures.

It is also for this reason that the Standard retains Requirements for transparency and accountability. Several comments imply that because project-affected people do not have the capacity to comprehend technical information, public disclosure of information is not warranted. The Expert Panel rejects this suggestion. The Standard makes an important distinction between publicly available information and the information which is to be shared as part of meaningful engagement at the local level.

Meaningful engagement is one of the central tenets of this Standard and, in the context of the document, intended to include the tailings facility as part of meaningful engagement.

Some respondents suggest that the Standard should refer to Principle 12 of the UNGP which had been included in a footnote. Reference to the UNGP now appears in two places, requiring Operators: to demonstrate respect for human rights (Requirement 1.1), and to provide remedy via a formal grievance mechanism in line with UNGP (Requirement 1.4).

The industry requested some form of 'filter' or differentiation of Requirements for existing facilities on the grounds that, implementation of the Standard for existing facilities would occur after the decisions have been made to construct the facility. The UNGP allows for salient human rights to be prioritised initially, and so this was introduced for where Operators chose to implement the Standard at existing facilities.

Several civil society groups and major international institutions requested a stand-alone Requirement for Free Prior and Informed Consent (FPIC). In the draft Standard, FPIC was referred to in a footnote and, in direct response to feedback, this now appears as a separate Requirement for all new facilities (see Requirement 1.2 in the final Standard).

The definition of 'meaningful engagement' addresses many of the comments and strengthens the concept as it applies within the Standard. The Standard itself is stronger on the need for project-affected people to meaningfully participate in decisions that have a bearing on public safety and on the fact that it also specifically requires Operators to share information to support



the process of meaningful engagement. Some respondents raised definitional issues in terms of 'stakeholders' and 'project-affected people' which have been resolved in the Glossary definitions.

The Requirement about involuntary resettlement to minimise consequences received varied comments with the majority of feedback seeking clarity of intent. The revised Requirement is clearer on the need to avoid resettlement as a first principle. This Requirement has been relocated to sit alongside other risk mitigation Requirements under the topic of Design, Construction, Operation and Monitoring of the Tailings Facility (see Requirement 5.8 in the final Standard). The Expert Panel acknowledges those respondents who requested that no facility be built that requires resettlement.

There was general support for the Requirement to provide a grievance mechanism however some respondents perceived an overlap with the mechanism established elsewhere in the Standard for contractors and employees to report potential permit violations. The difference between these two channels has been made clearer.



8. Principle 4

8.1. Introduction

In the draft Standard, Principle 4 reads as follows:

PRINCIPLE 4: Design, construct, operate and manage the tailings facility on the presumption that the consequence of failure classification is ‘Extreme’, unless this presumption can be rebutted.

REQUIREMENT 4.1: Presume the consequence of failure classification of all new tailings facilities as being ‘Extreme’ (see Annex 2, Table 1: Consequence Classification Matrix) and design, construct, operate and manage the facility accordingly. This presumption can be rebutted if the following three conditions are met:

- a) The knowledge base demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures; and*
- b) A design of the upgrade of the facility to meet the requirements of an ‘Extreme’ consequence of failure classification in the future, if required, is prepared and the upgrade is demonstrated to be feasible; and*
- c) The consequence of failure classification is reviewed every 3 years or sooner if there is a material change in any of the categories in the Consequence Classification Matrix, and the tailings facility is upgraded to the new classification within 3 years. This review should proceed until the facility has been safely closed and achieved a confirmed ‘landform’ status or similar permanent non-credible flow failure state.*

REQUIREMENT 4.2: The decision to rebut the requirement to design for ‘Extreme’ Consequence Classification, shall be taken by the Accountable Executive or the Board of Directors (the ‘Board’), with input from an independent senior technical reviewer or the ITRB. The Accountable Executive or Board shall give written reasons for their decision.

REQUIREMENT 4.3: Existing facilities shall comply with Requirements 4.1 and 4.2. Where the required upgrade is not feasible, the Board, or senior management (as appropriate based on the Operator’s organizational structure), with input from the ITRB, shall approve the implementation of measures to reduce the risks of a potential failure to the greatest extent possible.

8.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 108 respondents answered this question. Just under half (48%) of the respondents agree and 42% partially agree that Principle 4 will contribute to the prevention of catastrophic failure of tailings facilities. 6% of respondents disagree and 5% are not sure.

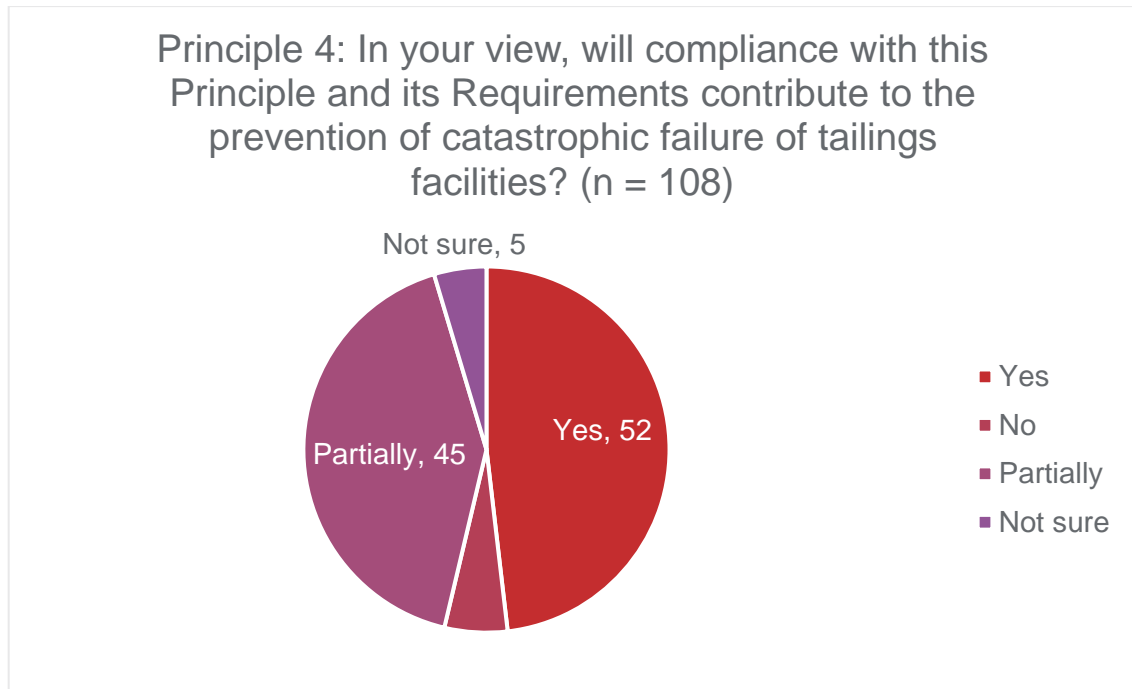


Figure 11 - Principle 4: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

8.3. Responses to the open question: ‘Your comments on Principle 4’

8.3.1. Summary

This Principle 4 includes comments about the use of a Consequence Classification for tailings facilities about which respondents are supportive but raise concerns. Most of the concerns deal with the classification being considered as a bureaucratic procedure that doesn’t deal with underlying causes of flow failure. In addition, there is concern about the automatic ‘Extreme’ allocation, which treats all facilities in the same way regardless of geography, social context and size and risks wasting resources. Respondents also criticise the definition of ‘extreme’ as the loss of 100 lives or more, commenting that this conflicts with the stated objective of ‘zero tolerance for human fatality.’ There are also concerns with the accountability of the Board of Directors and how realistic it would be to implement this Principle.

8.3.2. Consequence Classification

A few respondents support the use of the consequence matrix and consider it as essentially a ‘precautionary principle’, importantly making safety the primary consideration in tailings facility design, construction, operation and closure.

Conversely, a few others express concern over the weighting of consequences, specifically the loss of lives or economic and social consequences. They believe that the loss of one life is an extreme event and so, there are ethical problems with certifying facilities with potential to cause more than 100 deaths.

Some respondents consider the Classification too narrow for definitions of environmental standards, such as site water balance, and suggest that it should include more environmental considerations, such as the concentration of metals in the soil downstream as an early warning sign. They also comment that some locations should not be allowed to be developed due to environmental risks.

Some respondents express significant concerns over the automatic ‘Extreme’ classification.



They comment that automatically classifying facilities in this way will lead to a loss of focus on those where the risk is highest, which therefore undermines the Standard's ability to reduce risk of flow failure. A few strongly object to what they see as the presumption of guilt until proven innocent. There is also concern regarding the additional resources that will be required due to re-classifying in this way, and a few believe that this Classification will not align with local regulatory frameworks and companies' internal standards. A few go on to suggest that:

- the Operator should be able to demonstrate their own Consequence Classification with appropriate information;
- there should be a reference to an external document for the classification matrix rather than it being incorporated into the Standard; and
- that the Classification should be based on actual environmental, and human safety context and not be arbitrarily assigned.

8.3.3. Accountability

Some respondents comment on the accountability of the Board of the Directors and the ITRB. A few of them believe that the downgrading from 'Extreme' classification should be a decision for the Board of Directors instead of Executive. They argue that the ultimate corporate authority (whether it is for profitability or safety), should rest with the Board.

A few respondents suggest that the Board should be required to receive recommendations from the ITRB before making the rebuttal.

There are concerns about:

- What would happen in the event of a new Accountable Executive transitioning into a position on the Board;
- What would happen in the event where the Board and Executive disagree with the ITRB; and
- The extent to which the ITRB will be held to account.

There is a request for more clarity and guidance about the role and responsibilities of the State wherein facilities are located.

8.3.4. Design and construction

Some respondents comment on the design of the tailings facility and how this relates to Consequence Classification. Suggestions include:

- To start with the safest design, not retrofit it later as facilities risk grows as its size increases;
- To be able to reduce the classification from 'Extreme at design phase', while ensuring the design life should be finite and small enough to ensure that the classification would not change;
- Operators and regulators should make an affirmative commitment to make safety the 'primary' consideration in tailings dam design, construction, operation, and closure;
- The objective of improving the safety of tailings facilities and addressing root causes of failure would be better accomplished through design engineers, design procedures and review process;
- Irrespective of Consequence Classification it must be demonstrated that the structure is statically stable, as well as resistant to dynamic liquefaction; and



- Request for clarity on actions required for extreme consequences.

8.3.5. Existing versus new tailings facilities

A few respondents raise concerns regarding the implementation of retrofitting to existing facilities and believe that there is risk that mining companies that already adopted schemes refuse to retrofit. They also express concerns over what would or could happen to small sites without financial resources, site-specific issues that make retrofitting unviable and abandoned sites.

A few respondents support the presumption of the consequence of failure of all new tailings facilities as being 'Extreme'. They express concern that the requirements pose significant challenges for existing facilities, particularly small or remote.

Other comments include:

- That Requirement 4.3 will be difficult to enforce or is unrealistic;
- Retrofitting will be difficult for existing sites to adhere to the Standard;
- Retrofitting could specifically mean relocating whole communities; and
- It needs to be clearer how the retrofitting will be done for smaller companies.

8.3.6. Risk calculation

A few respondents believe that the issue of disguising risks posed by more critical facilities by applying 'Extreme' automatically, could misdirect away from reducing risk towards evading risk. A few others believe that the Principle seems contrary to a risk-based and site-specific hazard classification approach and the principle of the knowledge base. They suggest that the risk matrix should be made clear, to facilitate its use.

8.3.7. Scope

A few respondents express concerns over the Consequence Classification, as they believe it does not improve the safety of the facility.

A few others suggest that there should be attention given Source-Pathway-Receptor (S-P-R) linkage, to achieve zero tolerance for loss of life. There is a concern that the Principle is mostly focused on potential Source, whereas it should also be possible to take more efficient measures to eliminate Pathways and Receptors.

A few respondents make suggestions that:

- Monitoring needs to be done on the specific causes for failure, for water in slopes and in holding ponds; and
- The rebuttal of Consequence Classification of 'Extreme' should be broadened to also include a Potential Failure Modes Analysis (PFMA) or Failure Modes and Effects Analysis (FMEA).

8.3.8. Language

Some respondents comment on the definition and use of terminologies. Often, they request for further clarification on the meaning of certain words or sentences which could be subject to interpretation.

A few others suggest that there should be more details on the following points:

- The rebuttal process, as it is unclear if the EOR is to assign a classification;



- The process of review every '3 years' and whether this changes for facilities with different sizes; and
- Whether the Principle applies to other ways of disposing of waste.

8.3.9. Closure

A few respondents question why decommissioning is not considered with the Principle. Particularly, given that the conditions may change as a closure plan is integrated, making it more feasible to reduce the potential consequences. Others comment that the Standard, particularly the concept of 'landform' status, does not go far enough when it comes to monitoring of the closure of facilities.

They consider that if the facility cannot meet the design criteria for a facility classified as 'Extreme', then closure may be the best approach.

8.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Explicit Requirement added to determine the Consequence of failure Classification of the tailings facility and wording sharpened to clarify how this is to be done.*
- *Reworded what became known informally as the 'Rebuttable principle' to promote an assessment of the design for both the current Consequence Classification and the 'Extreme' Classification to allow the implementation of the minimum requirements while still proactively considering and maintaining the feasibility of upgrading the design when the downstream conditions change.*
- *More granularity provided on the applicability of Requirements to new compared with existing tailings facilities, including explicitly dealing with cases where the upgrade of an existing facility is not viable and requiring the risk to be reduced to ALARP.*

Explanatory note:

There were several concerns relative to what was perceived as an automatic classification of all tailings facilities as having an Extreme Consequence Classification. The text was clarified to make it clearer that the intent of the Requirement was to keep optionality for the lifecycle of the facility, recognising both that the conditions downstream of the tailings facility can vary with time and that most tailings facilities will be in place for a significant time from implementation to the closure phase. The objective of looking at what would be required if the facility ever was to become classified as 'Extreme' is to promote proactive assessment and maintenance of options. The Expert Panel comments that in some cases there is no significant cost or schedule impact from using larger loading criteria and this Requirement remains unchanged but clarified.

The Expert Panel addressed comments received throughout the Standard on the Consequence Classification matrix which appears in Annex 2. There were comments on the fact that the consequence table as presented was unnecessary given the existence of other Consequence Classification tables, and that it was confusing because an additional category had been added by the Expert Panel which dealt with the range of impacts on livelihoods. It was argued that the Standard should not be mandating the use of any one scheme as this may contradict regulation in some jurisdictions. The scope of work for the GTR was to establish a consequence-based, risk-



informed Standard and, as such, this has been interpreted as having a specific Consequence Classification criteria as a framework for the Requirements of the Standard.

In response to feedback received and to account for the evolving global standards landscape in this area, the Consequence Classification table has been replaced with a draft table that was issued by ICOLD in late 2019. This has been done deliberately in order to maintain reference to one international organisation. The Consequence Classification table refers exclusively to the potential consequences downstream of a tailings facility should a failure occur. The table does not refer to the risk of failure. The failure risk of a tailings facility is associated with the probability of a failure occurring in addition to the potential consequences of such a failure. The probability of failure must also be evaluated on the basis of site-specific conditions. The inclusion of a column on potential loss of life is not an acceptance of loss of life but rather a measure of the potential consequences of a failure and the level of oversight and management required for that facility.

The comments on this Principle also included accountability and the documentation of decision processes. In response to the comments that it may not be realistic to have the Board of Directors involved in these decisions, the final version of the Standard places the responsibility for the decision on the Accountable Executive. The documentation of the decision process has been clarified to mean that when existing tailings facilities cannot be upgraded as assessed by the EOR, and independently reviewed by the ITRB or an senior independent technical reviewer, the Accountable Executive shall take the decision to adopt a design for the current Consequence Classification and to maintain flexibility to upgrade the design as required. The Accountable Executive shall also 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) (see Requirement 4.7 in the final Standard).



9. Principle 5

9.1. Introduction

In the draft Standard, Principle 5 reads as follows:

PRINCIPLE 5: Develop a robust design that integrates the knowledge base and minimizes the risk of failure for all stages of the tailings facility lifecycle.

REQUIREMENT 5.1: Consider implementation of alternative options, including but not limited to in-pit disposal and underground tailings placement, and application of the technologies selected according to Requirement 2.1, to minimize the amount of tailings and water placed in external tailings facilities.

REQUIREMENT 5.2: Develop and implement water balance and water management plans for the tailings facility, taking into account the knowledge base, upstream and downstream hydrological basins, the overall mine site, mine planning and operations and the integrity of the tailings facility for all stages of its lifecycle.

REQUIREMENT 5.3: Develop a robust design that considers the social, economic and environmental context, the tailings facility Consequence Classification, site conditions, water management, mine plant operations, tailings operational issues, and the construction, operation and closure of the tailings facility.

REQUIREMENT 5.4: Address all credible failure modes of the structure, its foundation, abutments, reservoir (tailings deposit and pond), reservoir rim and appurtenant structures to minimize risk. Risk assessments must be used to inform the design.

REQUIREMENT 5.5: Develop a design for all stages of the facility, including but not limited to start-up, partial raises and interim configurations, final raise, and all closure stages. The design should be reviewed and updated as performance and site data become available and in response to material changes to the risk assessment.

REQUIREMENT 5.6: Design the closure stage in a manner that meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario and allows immediate implementation of elements of the design, as required. The design should include, where possible, progressive closure and reclamation during operations.

9.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 105 respondents answered this question. Just under two-thirds (64%) of the respondents agree and 29% partially agree that Principle 5 will contribute to the prevention of catastrophic failure of tailings facilities. 3% of respondents disagree and 4% are not sure.

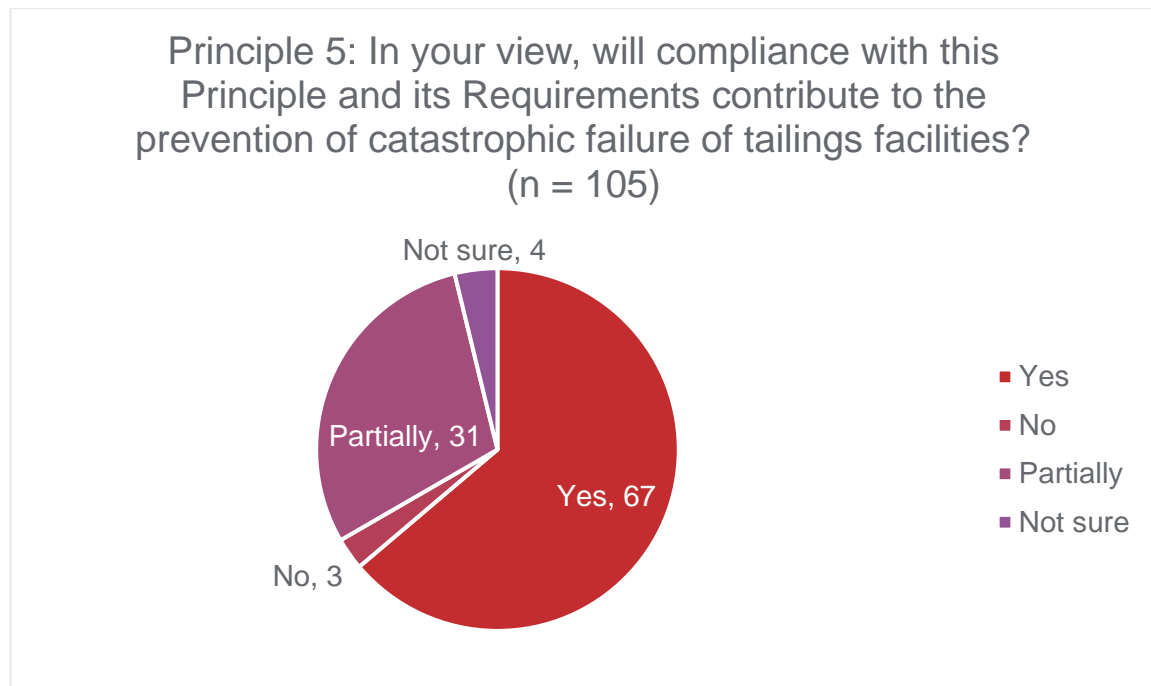


Figure 12 - Principle 5: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

9.3. Responses to the open question: 'Your comments on Principle 5'

9.3.1. Summary

Comments on Principle 5 deal mostly with issues related to the design of the tailings facility. The majority of comments discuss the need for the design to incorporate more detail, such as the environment, 'closure' phase, or water balance information.

9.3.2. Design and Construction

There are some requests for the inclusion of more information and to expand the Principle Requirements:

- More detail on dry stack or high-density tailings;
- More incentives for adopting alternatives to wet tailings, and when wet tailings are adopted, they should be justified by Operator;
- Consideration of other alternatives such as geo-synthetics;
- More details of the whole lifecycle of facility;
- Specific performance outcomes for the design;
- Address seismic and climate change;
- Details on level of design expected and clarity on whether this is just 'conceptual' stage; and
- Emphasis on first project mining companies where internal capacity is limited.

A few respondents comment on water balance and consider it as a crucial aspect of safety for facility design. They suggest that the Principle should state clearly that the purpose of water balance is to prevent failures via overtopping and other mechanisms.

A few respondents comment that there should be more reference within the Principle to other



guides and standards, using best practice and improvements made by existing operations.

9.3.3. Environment

A few respondents support the inclusion of the environmental context in this Principle, but express concerns over the possibility that the Principle may be too focused on reducing the water and not the toxicity of the water.

A few respondents make suggestions to:

- Consider expanding the Principle to include the process of desulphurisation to reduce leaching potential;
- Establish the long-term effects on ground water within the knowledge base; and
- Add the assessment of climate variability and continuous re-assessment to the risk requirements.

9.3.4. Closure

A few respondents comment on the closure and post-closure of the mining facility, often requesting more guidelines on the closure and post-closure process, feasibility, timelines, and ensuring that there is the establishment of an end-land use consultation with communities. There are some concerns that:

- The closure terminology is too general, and suggest considering aspects such as passive closure and relinquishment; and
- Immediate implementation of closure would be difficult to achieve.

9.3.5. Risk calculation

Some respondents comment on the detail and guidance of the 'risk assessment':

- There is a request for more guidance on what types of risk assessment would be useful in constructing a facility;
- the term 'minimise risk' would need the definition of terms and thresholds;
- the requirements for risk assessment should consolidated into one single requirement for clarity; and
- there should be clear performance expectations and measurements for Operators.

9.3.6. Independence

There is a concern for oversight of 'workers' by an engineer not being possible due the associated costs. Other respondents emphasise the importance of assessments to be carried out by an independent and suitably qualified geotechnical engineer.

9.3.7. More information and further clarification

A few respondents express the desire for additional clarity within this requirement about:

- timing and economic considerations regarding analysis of alternative options;
- what 'immediate implementation' is meant to convey; and
- what constitutes a minimum water balance plan.

9.3.8. Scope

Respondents express the desire for the Principle to be broader and make the following suggestions for alteration/improvement:



- Consider providing guidance on how to establish, prove and document that a failure mode is not credible;
- There should be adequate consideration of a gender analysis in the impact/risk assessment;
- The implementation of Standard, innovation and risk minimisation could be linked to the insurance scheme to provide incentives; and
- Adding discussion of the role of economic considerations in decision making.

A few respondents comment that some requirements, such as Requirement 5.2 require plans for "the overall mine site". These requirements should be revised so that they apply only to the site containing the tailings facility when the mining and milling occur at separate locations.

9.3.9. Management and governance

A few respondents express the opinion that there should be a mandatory development of annual operational plans describing in detail the actions, goals, operational audits and plans to manage the facility. This, they feel, could help foster proper governance.

9.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Differentiation added between new and existing facilities in terms of tailings technology innovation to minimise risk.*
- *Technical context of the tailings facility included in the list of considerations for the design criteria.*
- *The language around water management tightened and reference to protecting against unintended release included.*
- *Requirement on progressive closure and reclamation during operations strengthened by the removal of reference to 'where possible'*

Explanatory note:

The emphasis of the Standard is on the use of a robust design and strong risk management practices. The Standard retains a push for innovative approaches to tailings technologies both at early planning phases and asks the Operator to continually assess for opportunities to adopt new technologies as the tailings facility moves through its lifecycle (see Requirements 5.1 and 6.6 in the final Standard).

The comments relating to water management and toxicity levels are well noted and Requirement 5.3 in the final Standard has been expanded to mandate that water management plans are such that they should be designed to prevent unintentional releases. The knowledge base includes environmental considerations such as water as mentioned in the commentary on Principle 1 earlier in this document.

The comments to the lifecycle approach and closure are addressed, as in other parts of the Standard, through clarifying that a number of Principles and their related Requirements apply throughout the tailings facility lifecycle which has been defined to include closure and post closure.

An important concept here is the extension of the design of the closure phase to a level of detail sufficient to demonstrate the feasibility of safe closure of the tailings facility. The Standard does not



treat closure as a 'stand-alone' topic. Instead, closure considerations are embedded from the very outset of the design process and all throughout the tailings facility lifecycle. This approach was adopted because the most effective way of achieving feasible, timely, economical and safe closure is by effectively embedding closure in the entire process of developing and managing a tailings facility. In this way, the Standard supports robust designs and promotes a proactive approach that increases the likelihood of a safe closure being implemented, not only by requiring an early feasible design, but by creating opportunities to optimise its implementation.

There were various comments related to the water balance (see Requirement 5.2 of the Consultation Draft and Requirement 5.3 of the final Standard). Water management is an important aspect of tailings management and must be well understood at a cross-functional level (including, for example, among the operations, planning, regulatory affairs, social performance and environment functions).

There were some comments on references to best practices or other guides and standards. It should be noted that where the Expert Panel has identified leading practices in specific fields, these have been referenced in the document.

A number of comments were received with regard to risk assessments and the language related to risk in Standard has been streamlined throughout. Noting the integrated approach of the Standard, it is worth highlighting here that there are risk management practices embedded in the TMS, the ESMS, the OMS and other ongoing assurance processes, including construction and performance reviews. It was a conscious decision to not locate all aspects relating to risk in the same Principle so as to underline the prevalence and importance of ongoing and active risk management throughout the multitude of activities connected with the tailings facility and the various functions involved. As part of this point of integration, it is intended that these interconnecting systems and processes adequately integrate considerations crucial to risk management of the tailings facility (see Principles 5 to 10 and their associated Requirements as well as the definitions of ESMS and TMS in the Glossary of the final Standard).

A final point on the comments related to governance against this Principle is to say that the Standard now explicitly requires a tailings governance framework which has been defined to include planning and resourcing within which it would be expected that operational plans reside.



10. Principle 6

10.1. Introduction

In the draft Standard, Principle 6 reads as follows:

PRINCIPLE 6: Adopt design criteria that minimize risk.

REQUIREMENT 6.1: Select and clearly identify design criteria that are appropriate to reduce risk for the adopted Consequence Classification for all stages of the tailings facility lifecycle and for all credible failure modes.

REQUIREMENT 6.2: Apply factors of safety that consider the variability and uncertainty of geologic and construction materials and of the data on their properties, the parameters selection approach, the mobilized shear strength with time and loading conditions, the sensitivity of the failure modes and the strain compatibility issues, and the quality of the implementation of risk management systems.

REQUIREMENT 6.3: Identify and address brittle failure mechanisms with conservative design criteria and factors of safety to minimize the likelihood of their occurrence, independent of trigger mechanisms.

REQUIREMENT 6.4: The EOR shall prepare a Design Basis Report (DBR) that details the design criteria, including operating constraints, and that provides the basis for the design of all stages of the tailings facility lifecycle. The DBR must be reviewed by the ITRB or senior independent technical reviewer.

10.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 104 respondents answered this question. Just under two-thirds (64%) of the respondents agree and 29% partially agree that Principle 6 will contribute to the prevention of catastrophic failure of tailings facilities. 4% of respondents disagree and 3% are not sure.

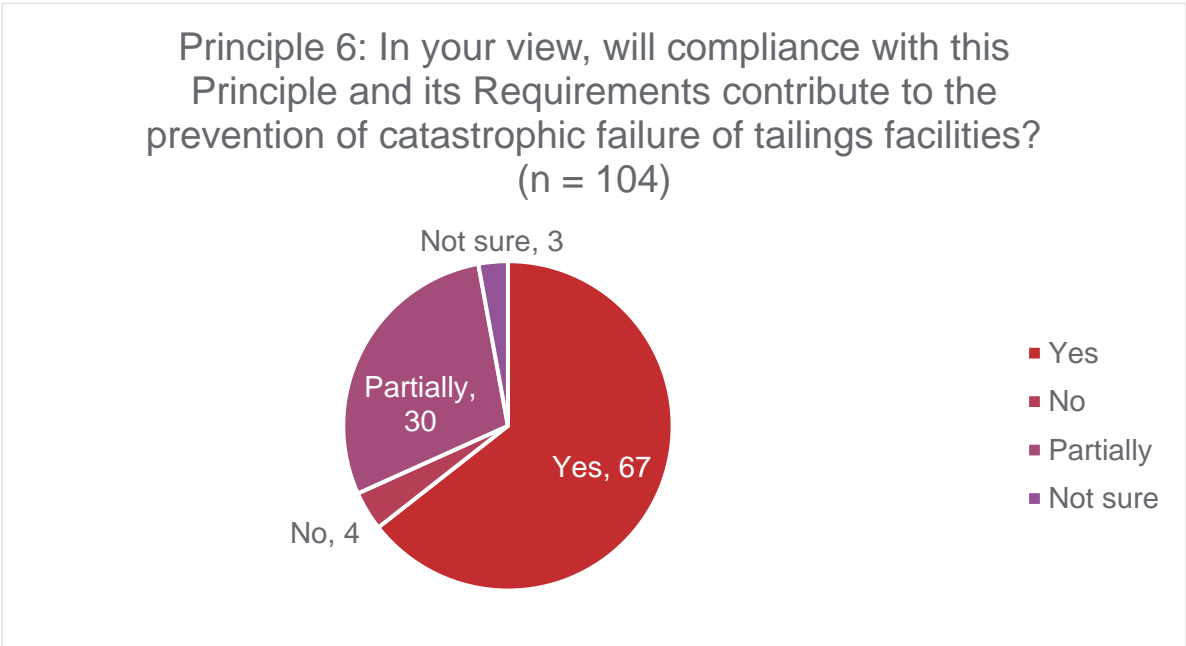


Figure 13 - Principle 6: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



10.3. Responses to the open question: ‘Your comments on Principle 6’

10.3.1. Summary

Principle 6 deals mostly with issues related to the risk aspect of the design of the tailings facility, as do the comments made in response. The majority of comments relate to the use of the phrase ‘Factors of Safety’ and there are various suggestions for the safest design for the facility. There are both positive and negative comments relating to the Engineer of Record (EOR) and accountability.

10.3.2. Risk calculation

A few respondents, both from the mining industry and outside the industry, express concern with the use of ‘factor of safety’. They believe that:

- It is an outdated concept with limited regulation. These respondents feel that ‘factors of safety’ cannot be converted into a probability of failure without making statistical assumptions; and
- The ‘factor of safety’ can be a misleading indicator of the safety of a tailings facility because the phrase can have different meanings for tailings that are cohesive compared to tailings that are frictional.

A few respondents make suggestions for how to understand risk:

- Explore including an aspirational goal for a specific level of risk;
- To analyse the fragility of the system and make a decision by focusing on the consequences (which you can know) rather than the likelihood (which you cannot know);
- Encourage probability analysis;
- That human rights, probability and severity should be given equal weighting in the risk prioritisation process; and
- There could be a QA/QC process and that the ‘factors of safety’ be aligned with the Consequence Classification.

10.3.3. Design and construction

A few respondents make general comments about the design of a tailings facility:

- Due to consistent failures, ‘upstream style’ tailings dam should be banned;
- The desire for more attention to citing, soil condition and then depending on the completion of tailings, there is a need to take into consideration the height and thickness of the dam;
- Expressing general concern with achieving consistent technical implementation;
- The design plans should complement the pre-existing national legislation; and
- The importance of specificity on dam size that could require different management requirements.

A few respondents make suggestions for the design:

- The design criteria must also consider the reduction in strength and change in composition of materials with time;
- The design should appropriately manage all failure modes equally and consider the triggers for those failure modes. Appropriate methods to do so are not the same for all failure modes (e.g. brittle, ductile), which must be defined in the Guidance document; and



- Using resistivity mapping for mine design.

10.3.4. Accountability and transparency

A few respondents express the point that the detailed testing should be done to an acceptable level that is reviewed by an independent person. Other comments include:

- A few respondents express support for the Design Basis Report (DBR) to be reviewed by the Tailings Facility Site Responsible Person and the ITRB;
- The DBR should be publicly disclosed and independent of local legislation; and
- There is a request for clarification in the Requirement that the use of the ITRB be only used for tailings facilities classified as 'Very High' or 'Extreme'.

10.3.5. Competent experts

Respondents emphasise that the EOR and responsible tailings facility engineer are key people. They suggest that:

- The EOR is often an offsite consultant and, therefore, there is a need for training people for working on tailings facilities on the ground; and
- The DBR should not be the sole responsibility of the EOR, as it should be a multi-disciplinary approach.

10.3.6. Scope

Respondents make comments suggesting the removal of certain requirements or extending the parameters of Principle.

- There is an applicable 'factor of safety' for different conditions and should be emphasised within the Principle.
- There is a concern about alignment with local regulatory frameworks, the Principle is very detailed and could also clash with internal standards.

10.3.7. More information and further clarification

Respondents request for clarification or further explanation of some aspects of the Principle:

- What is meant by 'conservative' safety factors;
- Differentiate between facilities where catastrophic failure cannot occur and others; and
- Differentiate between different Consequence Classifications and risks.

10.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Principles 4 and 6 in the Consultation Draft were combined into Principle 4 in the final Standard as they both referred to defining parameters and criteria for the design and management of risk of a tailings facility.
- Reference to designs based on deformation analyses added.
- Detail on the periodicity and responsibility for reviewing the Design Basis Report added.



Explanatory note:

There were comments suggesting the inclusion of recommended factors of safety in the Standard. The intent of this Requirement is to move beyond fixed values of factor of safety that are adopted independently from the large number of factors that affect what an appropriate value for the factor of safety should be, including: variability and uncertainty of geological and construction materials; variability and uncertainty of the data on material properties; the approach to parameters selection; the estimated mobilised shear strength with time and loading conditions; the sensitivity of the failure modes; strain compatibility issues and uncertainties in water flow paths and seepage regimes; quality of risk management systems such as construction control or performance monitoring systems; precedence with similar designs and materials, and performance of these cases. This approach to defining the factor of safety applies to all aspects of the design and not only to slope stability. For example, in the case of seepage integrity, the factor of safety for flow rates may be higher than the typical value of 10, if uncertainty and variability are high or if precipitates or bio-clogging of drains is expected. A well-considered factor of safety selection helps improve the safety of the design.

There was broad support for the assumption that the tailings will liquefy (a brittle failure mode) independent of trigger mechanisms.

There were further comments associated with the prohibition of specific tailings technologies which have been addressed earlier in this document. In addition, there were comments that the design should address all failure modes.

Clearer distinction has now been made between the design criteria for non-brittle and brittle mechanisms.



11. Principle 7

11.1. Introduction

In the draft Standard, Principle 7 reads as follows:

PRINCIPLE 7: Build and operate the tailings facility to minimize risk.

REQUIREMENT 7.1: Build, raise, operate, monitor and close the tailings facility according to the design intent of all stages of the tailings facility lifecycle, using qualified personnel and appropriate methodology, equipment, procedures, data acquisition, the TMS and the environmental and social management system (ESMS).

REQUIREMENT 7.2: Manage the quality and adequacy of the construction and operation process by implementing Quality Control, Quality Assurance and Construction vs Design Intent Verification (CDIV). CDIV shall be used to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.

REQUIREMENT 7.3: Prepare a detailed Construction Records Report at least annually or whenever there is any change to the tailings facility, its infrastructure or its monitoring system. The EOR shall sign this report.

REQUIREMENT 7.4: Develop, implement and annually update an Operations, Maintenance and Surveillance (OMS) Manual that supports effective risk management as part of the TMS. The OMS Manual should follow best practices, clearly provide the context and critical controls for safe operations, and be reviewed for effectiveness. The EOR and RTFE shall provide access to the OMS Manual and training to all personnel involved in the TMS.

REQUIREMENT 7.5: Implement a formal change management system that triggers the evaluation, review, approval and documentation of all changes to design, construction, operation and monitoring during the tailings facility lifecycle. The change management system shall also include the requirement for a periodic Deviance Accountability Report (DAR), prepared by the EOR that provides an assessment of the cumulative impact of the changes on the risk level of as-constructed facility. The DAR shall provide any resulting requirements for updates to the design, DBR, OMS and the monitoring program.

REQUIREMENT 7.6: Refine the design, construction and operation throughout the tailings facility lifecycle by considering the lessons learned from ongoing work and the evolving knowledge base, and by using opportunities for the inclusion of new and emerging technologies and techniques.

REQUIREMENT 7.7: Ensure that the ESMS is designed and implemented to align decisions about the tailings facility with the changing environmental and social context as identified in the knowledge base, in accordance with the principles of adaptive management.

REQUIREMENT 7.8: Independent senior technical reviewers, with qualifications and expertise in social and environmental sciences and performance management, shall carry out a full review of the ESMS and monitoring results every 3 years, with annual summary reports provided to relevant stakeholders.



11.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 104 respondents answered this question. Just under two-thirds (64%) of respondents agree and 30% partially agree that Principle 7 will contribute to the prevention of catastrophic failure of tailings facilities. No respondents disagree and 6% are not sure.

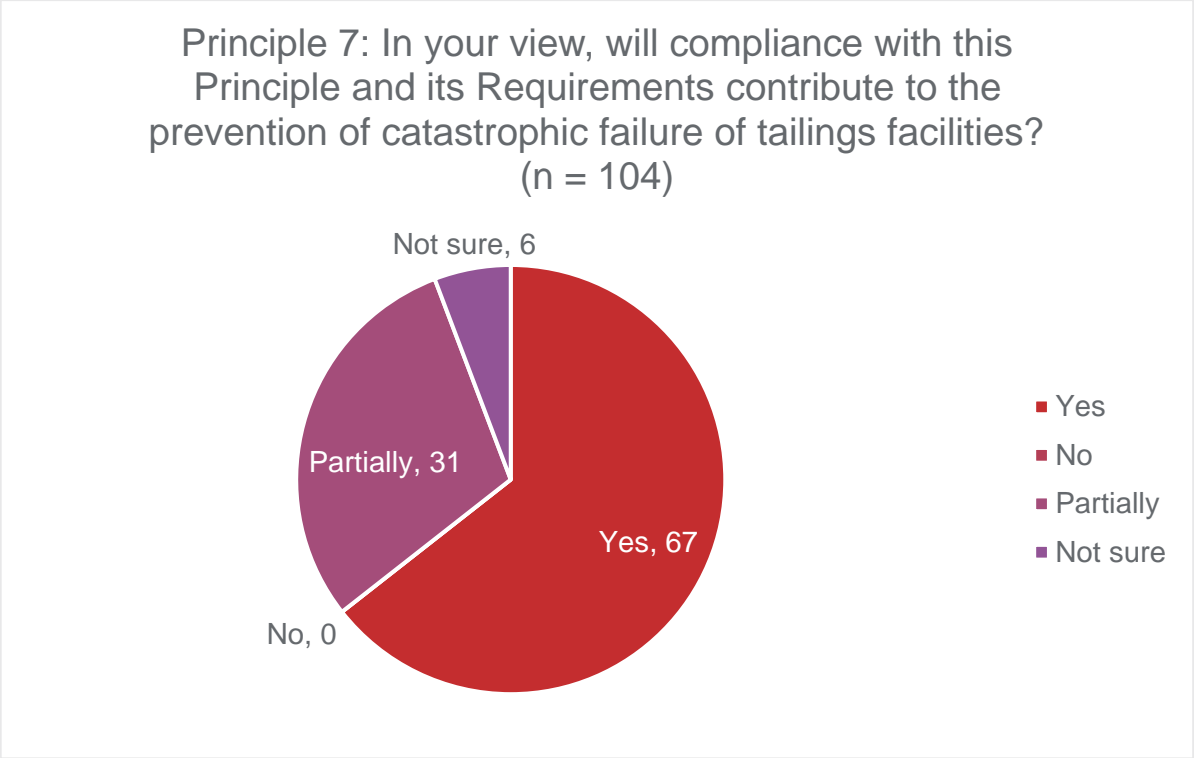


Figure 14 - Principle 7: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

11.3. Responses to the open question: ‘Your comments on Principle 7’

11.3.1. Summary

Principle 7 deals mostly with issues related to building and operating the facilities according to a safe design, with the majority of comments focusing on the Quality Control, Quality Assurance and Construction vs Design Intent Verification (CDIV), the Operations, Maintenance and Surveillance (OMS) Manual and the Deviance Accountability Report (DAR). In addition, there are a number of comments related to the scope of the requirements in relation to design and construction.

11.3.2. Design and construction

Respondents comment that the Principle effectively manages operations, and some go on to make a series of points in relation to the design of the facility:

- That the only sure way to remove risk is to locate the facility and other infrastructure so it cannot impact communities or workers;
- There is a concern that the term “design intent” introduces unnecessary uncertainty and that the requirement should be for the facility to be built in accordance with the design;
- That the OMS Manual should be prepared or approved by the EOR to ensure it is



consistent with the design intent;

- That the Quality Control, Quality Assurance and Construction vs Design Intent Verification (CDIV) be used to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions; and
- that the creation of the DAR could be seen as a duplication of the construction records report.

Additionally, a few respondents support the development and implementation of an OMS manual.

11.3.3. Accountability and transparency

Respondents make a series of comments in relation to accountability and transparency.

- The Construction Records report should include complete documents for the dam and its structures, with all related records.
- The importance of the OMS manual, DAR and CDIV made available in this section should be open to public domain.
- The early stages of construction represent the biggest risk and therefore must be monitored carefully by the accountable EOR.

Respondents raise concerns that:

- Regular disclosure of monitoring reports does not directly contribute to improving safety; and
- There would be potentially confidential information included in these documents that operators could not legally disclose.

Respondents suggest:

- That the Standard should promote the release of documents being subject to an international review system; and
- The owner should be able to determine who has access to information, not the EOR.

11.3.4. Scope

Respondents comment on how the requirements could be updated.

- A few respondents highlight how the environmental and social management system (ESMS) is for the entire mine and is not just a tailings facility-specific system and therefore should be removed;
- It is important that system is not restricted by expert capacity on low consequence facilities; and
- The Standard does not actually include a requirement to develop an ESMS, and that it may be useful to include requirements describing what constitutes an effective ESMS.

Respondents express the desire for the Principle to extend its focus to incorporate more consideration of:

- The potential risk of climate change during the construction phase;
- Addressing gendered risks is critical to ensure that tailing facilities do not have negative impacts on women and that gender inequalities are not exacerbated; and
- All of the relevant stakeholders and PAP within the review of the ESMS.



Respondents comment on the frequency of preparing the detailed Construction Records Report and OMS manual and suggest:

- At the completion of each stage of construction;
- In the event of significant structural and functional changes;
- That the Standard should not prescribe a frequency for updating the OMS manual, it must be always up to date;
- Rather than state the period, state that the period should be appropriate for the facility; and
- The facility or asset changes everyday day and therefore needs a daily status, health and performance.

11.3.5. More information and further clarification

Respondents request more information and clarification regarding elements of the design, construction and risk of facilities:

- Requirement 7.1 should be revised to clarify what the intent is;
- How 'qualified personnel' are determined;
- What is required for the DAR;
- Who should write the OMS manual;
- That the term "any change" is excessively broad and recommend revising to indicate "any material change" as this is less subjective;
- If the Requirement applies to tailings facilities with lower Consequence Classifications or where catastrophic failures is not a possibility;
- That temporary cessation and closure should be addressed with their own requirement, given that occurs during economic downturn and could be time to cut costs; and
- There should be guidance for the case where mines are located nowhere near populations or environmentally sensitive areas;

11.3.6. Competent experts

A few respondents express the desire for more clarification on what constitutes qualifications and experience and the mandate for the senior technical reviewers of the ESMS. There is a suggestion that different expertise should be used for issues such as the environment and social issues.

11.3.7. Management and governance

A few respondents express the desire for an explicit statement that the people on-site who are responsible for the day to day management of the facility are getting sign off from an Independent Expert.

11.3.8. Implementation

A few respondents express concern about the implementation of the necessary safety requirements, feeling that companies would try to reduce the cost of implementing these requirements which could undermine safety. There is a suggestion for a strict method of enforcing the plan.



11.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- ESMS included as one of the tools required to support the management of building, operating, monitoring and closing a tailings facility.
- The term 'as-built report' added to account for variation in terminology used to describe the Construction Records Report.
- Clarification added that the OMS needs to be reviewed and updated as required.
- Accountable Executive is responsible for approving the Deviance Accountability Report.
- The intent of Requirements 7.7 and 7.8 integrated in other Requirements and no longer appear.
- A specific Requirement added to consider new and emerging technologies in the refinement of the design, construction and operation of the tailings facility.

Explanatory note:

The Expert Panel acknowledges the support from the consultation regarding the integrative approach to minimising risk. The language has been clarified to reinforce using the TMS and integrating components of the ESMS as part of the tailings management approach, making it clear that for those relevant aspects of the site-wide ESMS, sufficient focus is placed on the tailings facility (i.e. no need for a tailings-specific ESMS). The Standard now also draws on existing good practice for the regular updates to the ESMS and cross references to climate change provisions.

The proposition to implement a CDIV and DAR as key reports to assist managing the risk of a tailings facility was well received. The intent of adding the CDIV report to this Requirement is to counterbalance a common deficiency in the QA programme whereby it is limited to checking the results of measurements and tests conducted by the QC team.

In response to comments related to the frequency of preparing Construction Records Reports, the periodicity has been clarified to be whenever there is a material change to the tailings facility, its infrastructure or its monitoring system. A material change is defined as a change that merits attention, or which has an effective influence on the facility performance or risk level.

The need to maintain the OMS Manual as a live document has been emphasised in the Standard along with the role of the EOR in providing support for the development and implementation of the OMS Manual.

The importance of the change management system and the recommendation of implementing a Deviance Accountability Report (DAR) received consistent support from the consultation.

There were comments on the publication or otherwise of key documentation such as the OMS, the DAR and CDIV and, as mentioned elsewhere in this document, the Expert Panel has taken a step back to assess what specific information from these documents is required to adequately inform interested and affected stakeholders. To this end, the reader will note that the disclosure Principle now contains a more precise list of information that is relevant to public safety.

Requests for clarity on roles and responsibilities have been addressed by the inclusion in an annex of a 'Key roles and responsibilities' table which outlines participation in key reports and processes.



12. Principle 8

12.1. Introduction

In the draft Standard, Principle 8 reads as follows:

PRINCIPLE 8: Design, implement and operate monitoring systems.

REQUIREMENT 8.1: Design, implement and operate a comprehensive performance monitoring program for the tailings facility that allows full implementation of the Observational Method and covers all potential failure modes.

REQUIREMENT 8.2: Establish performance objectives, indicators, criteria, and performance parameters and include them in the design a monitoring program that measures performance at all stages of the tailings facility lifecycle. Record, evaluate and publish the results at appropriate frequencies. Based on the data obtained, update the monitoring program throughout the tailings facility lifecycle to confirm that it remains effective.

REQUIREMENT 8.3: Analyze monitoring data at the frequency recommended by the EOR, and assess the performance of the facility, 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 EOR for review and update the risk assessment and design, if required. Performance outside the expected ranges shall be addressed swiftly through critical controls or trigger response action plans (TARPs).

REQUIREMENT 8.4: Report the results of the monitoring program at the frequency required to meet company, regulatory and public disclosure requirements, and as a minimum on a quarterly basis. The RTFE and the EOR shall review and approve these reports.

12.2. Responses to the closed question: 'In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?'

In total, 105 respondents answered this question. Just over two-thirds (67%) of the respondents agree and 30% partially agree that Principle 8 will contribute to the prevention of catastrophic failure of tailings facilities. 1% of respondents disagree and 2% are not sure.

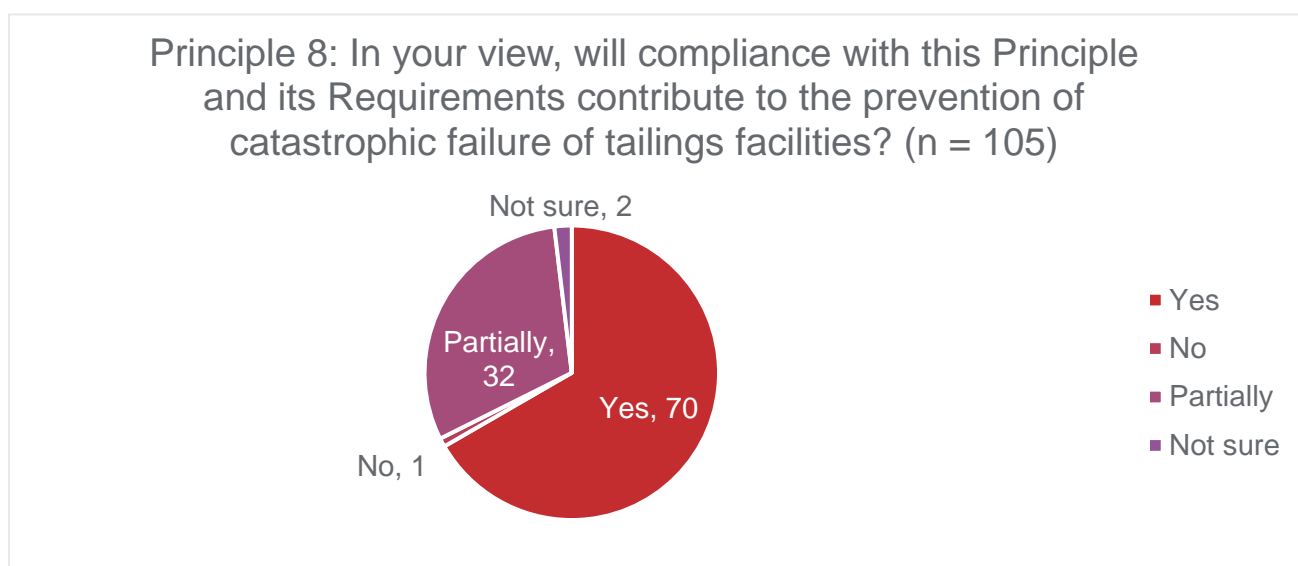


Figure 15 - Principle 8: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



12.3. Responses to the open question: ‘Your comments on Principle 8’

12.3.1. Summary

Regarding Principle 8, there is split opinion on how much information should be published. Some believe all information should be available, whereas others see this as unnecessary. In addition, there are concerns regarding the use of the ‘Observational Method’ (OM). There are also comments on the use of technology and management and governance.

Some participants seek further information and clarification on the Requirements or comment on specific aspects of the wording used and sometimes on how it has been translated.

12.3.2. Transparency

Respondents highlight the importance of transparency of data. They believe that:

- The monitoring of data should not just be up to the opinion of the EOR;
- The data should be disclosed, without being at risk of being tampered with, available as electronic and hard copy during and at least 20 years after.

A few respondents, particularly from the mining industry, express concern over unnecessary detail within the reports. They believe that:

- The Principle is unduly prescriptive and public disclosure should be restricted to high-consequence facilities;
- Publication of raw data is neither appropriate nor helpful;
- There could be confidential information that Operators could not legally disclose; and
- The publication of all monitoring results creates duplicate reporting requirements for jurisdictions, doesn’t necessarily reduce risk.

12.3.3. Implementation

A few respondents raise some concerns and questions regarding the implementation of the Principle and safety of the facility, including:

- Whether consideration has been given to how companies will report on the Standard’s implementation;
- That the ‘Observational Method’ is problematic to rely on, given that if failure occurs, there is no time to act on corrective measures;
- The Observational Method will not identify ‘brittle soil’ or undrained failure modes
- The Observational Method should be considered but should not be compulsory for all facilities; and
- That ‘appropriate frequency’ is not stringent enough for recording, evaluating and publishing.

12.3.4. Management and governance

A few respondents highlight the importance of effective monitoring to provide an early warning of potential failure. Similarly, a few respondents comment that establishing and refining performance objectives are integral to the planning and design phases.

A few respondents highlight issues in relation to the monitoring of the facilities.

- Certain monitoring measures should only be applied to the appropriate facility. For example, if upstream lifts are allowed, the Requirement for closer monitoring should



dissuade usage.

- Similarly, the disclosure of information and the governance of the facility should take into account the Consequence Classification or risk.
- The Standard should set out clear minimum frequency of monitoring.
- A few respondents comment that the ‘trigger action response plans’ (TARPs) are a key part of management and there should more guidance on the responsibilities and roles for setting and reviewing TARPs.
- Setting up ‘operational control centres’ that receive information from all the facility’s sensors should be mandated.
- The owner should specify internal reporting requirements in the OMS manual, not just for surveillance activities, but also for reporting related to operation and maintenance activities.
- Should be clear that monitoring of all failure modes does not help monitoring the cause of failure but only how the facility may fail.
- The lifecycle of a tailings facility is ‘forever’ and the Standard should address who is going to monitor them on an ongoing basis.

12.3.5. Scope

Respondents highlight some of the ways that they feel the Principle should be extended:

- Detail on the section on monitoring systems;
- Consideration of post-closure, specifically monitoring and funding;
- Social and environmental aspects the monitoring plan;
- Reference to the OMS manual within the Requirements; and
- An analysis, monitoring & evaluation of the gender related impact of constructing the tailing’s facility.

Respondents suggest ways the Principle could be reformulated:

- With the creation of a separate Principle for adaptive management including TARPs;
- Requirements 8.1 and 8.2 illustrate the disjointed nature of some of the requirements in the draft Standard; and
- Ordering the Requirements so that owners first develop performance objectives and then develop a surveillance plan to align with those objectives.

12.3.6. More information and further clarification

A few respondents request clarity regarding to whom the results of the monitoring programme would be reported and that this should be in accordance with the law of the country concerned.



12.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Clear link made between monitoring programmes under the TMS and those aspects of the ESMS which are related to the tailings facility.*
- *Clarified that the Observational Method is only applicable to non-brittle failure modes. This Requirement also clarifies that brittle failure modes are addressed by conservative design criteria, rather than through monitoring.*
- *Performance objectives are now required to be both specific and measurable.*
- *The Operator now required to publish the results of the monitoring programmes at a minimum annually.*

Explanatory note:

Performance management through monitoring and appropriate responses is the recommended approach. The integration aligns with the systems approach taken throughout the Standard.

Some respondents requested additional details on the requirements for monitoring tailings facilities while others appreciated the lack of prescribing details on monitoring programmes, recognising that these requirements need to be derived based on the individual aspects of each facility. The Standard now makes it clear that there are different monitoring activities required under the technical monitoring system and the relevant aspects of the ESMS. The language has also been strengthened to ensure that objectives are specific and measurable in response to those comments that suggested stricter controls.

It was clarified that the Observational Method shall be adopted for non-brittle failure modes only and that brittle failure modes are to be addressed by conservative design criteria.

In response to comments related to the publication of the monitoring results, the Expert Panel acknowledges that raw data are not necessarily helpful information however there is a growing movement towards greater disclosure of live data, evident in jurisdictions such as Canada, Chile and through the work of the Church of England disclosure request. It is with this in mind that transparency is encouraged throughout the Standard, though not where this would breach confidentiality or commercial interests.



13. Principle 9

13.1. Introduction

In the draft Standard, Principle 9 reads as follows:

PRINCIPLE 9: Elevate decision-making responsibility for tailings facilities with a ‘Very High’ or ‘Extreme’ Consequence Classification

REQUIREMENT 9.1: For a proposed new facility where a potential credible failure could have ‘Very High’ or ‘Extreme’ consequences, the Board or senior management (as appropriate based on the Operator’s organizational structure) shall be responsible for approving the proposal, after deciding what additional steps shall be taken to minimize the consequences.

REQUIREMENT 9.2: For an existing facility, where a potential credible failure could have ‘Very High’ or ‘Extreme’ consequences, the Board or senior management (as appropriate based on the Operator’s organizational structure) shall mandate additional steps to minimize the consequences and publish reasons for its decision. This process is to be repeated at the time of every Dam Safety Review (DSR).

13.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 104 respondents answered this question. Well over half (59%) of the respondents agree and 30% partially agree that Principle 9 will contribute to the prevention of catastrophic failure of tailings facilities. 6% of respondents disagree and 5% are not sure.

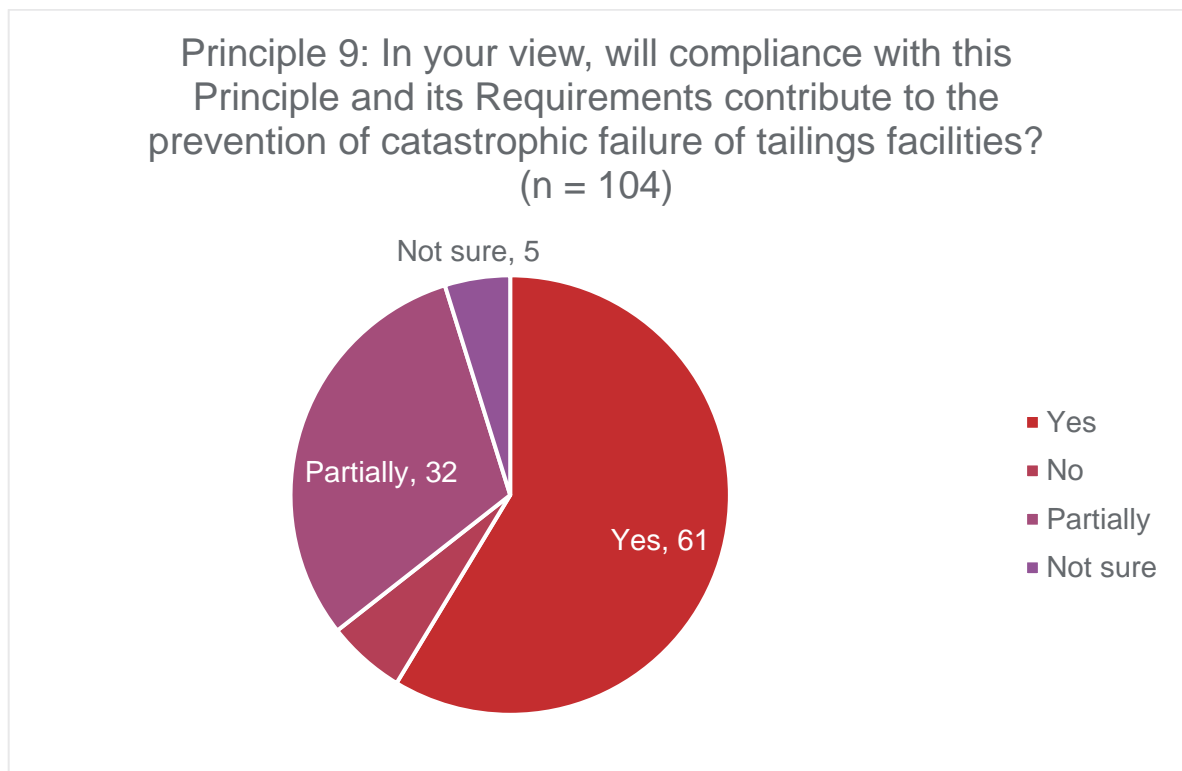


Figure 16 - Principle 9: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



13.3. Responses to the open question: ‘Your comments on Principle 9’

13.3.1. Summary

A few respondents express their support and agreement with Principle 9, engaging with the issue of decision-making and accountability for facilities. Overall, there is a desire for greater clarity on where decision-making and accountability should rest, with suggestions ranging from owners to investors, the Board and Senior Management and to those with the highest technical expertise.

There are also some comments related to broadening or narrowing the scope of the Principle.

13.3.2. Accountability

A few respondents highlight the importance of establishing sanctions and measures for those responsible in the event of failure. A few respondents suggest that:

- Having clear accountability at the highest level of the company;
- Murder or manslaughter charges be laid against the Board for loss of life on mining sites;
- Communication and responsibility should be jointly taken by owners, partners and shareholders with over 2% participation in business;
- The Board to be fully responsible on behalf of owners; and
- There is significant difference between Board and senior management and this should be made clear.

A few respondents highlight that the Board should not review and approve designs and proposals. They suggest that:

- The higher organisational level does not necessarily mean higher technical competence;
- The Board often do not live in the region or country of the facility and are not aware of geographically specific conditions;
- Decision-making should be done on the most competent level;
- The government representatives should be included within the Principle as they are authorising the concessions; and
- The senior management should take decisions, but the Board should take responsibility.

13.3.3. Management and governance

Respondents raise questions regarding the management and governance of consequences.

- What is the ICMM’s role in management and governance of this type of facility?
- What will happen when the owner sells the project?

A few respondents express concern that decision making on a new facility often rests with junior mining companies with little or no experience, making it essential that a fully functioning tailings management system and ITRB are in place prior to construction.

13.3.4. Implementation

Respondent raise a series of points in relation to the implementation of the Principle.

- For facilities that are already designed and operated to a high standard a DSR may not always be necessary.
- Corruption can mean that this Principle simply will not work.



- Whether ICMM will take any remedial action against its membership in case of a non-compliance.

13.3.5. Scope

A few respondents comment on aspects of the Principle that could be broadened or narrowed. They suggest that:

- The requirements should not only target reduced consequences, but also reduced probabilities for minimisation of risk;
- The Principle is contradictory to Principle 4 in which every tailings storage facility is considered as being 'Extreme';
- Requirement 9.2 should be deleted or reworded as it is claimed that the Board has no technical capacity to determine steps to minimise risk;
- A no-go decision is included and, if the Board decides to proceed, they must publish reasons for the decision;
- The concept of As Low as Reasonably Practical (ALARP) is included instead of the term 'minimise'; and
- There should be a requirement for consideration of the tailing facility footprint in the context of biodiversity.

13.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Requirements under Principle 9 merged, relocated and extended to require that the facility's risk level satisfies ALARP.
- Final decision making relative to risk level assigned to the Accountable Executive (Requirement 5.7 in the final version of the Standard).

Explanatory note:

The intent of the Requirements under this Principle has been integrated in those related to the development of a robust design. It should also be noted that the Standard now contains multiple references to ensuring that risk is managed to ALARP via a number of mechanisms and across the tailings facility lifecycle.



14. Principle 10

14.1. Introduction

In the draft Standard, Principle 10 reads as follows:

PRINCIPLE 10: Establish roles, functions, accountabilities and remuneration systems to support the integrity of the tailings facility.

REQUIREMENT 10.1: The Board of the parent corporation shall adopt and publish a policy on or commitment to the safe management of tailings facilities, to emergency preparedness and response, and to recovery after failure that is mandatory for all its subsidiaries and joint ventures. The commitment shall require the Operator to establish a Tailings Management System (TMS), and a governance framework to assure the effective implementation and continuous improvement of the TMS.

REQUIREMENT 10.2: A member of senior management shall be accountable for the safety of tailings facilities and for minimizing the social and environmental consequences of a tailings facility failure. This Accountable Executive will also be accountable for a program of tailings management training, for emergency preparedness and response, and for recovery after failure. The Accountable Executive or delegate must have regular scheduled communication with the Engineer of Record (EOR).

REQUIREMENT 10.3: Appoint a site-specific Responsible Tailings Facility Engineer (RTFE) who is accountable for the integrity of the tailings facility, liaises with the EOR, the Operations and the Planning teams and who either reports directly to the Accountable Executive, or via a reporting line that culminates with the Accountable Executive. The RTFE will have a dotted reporting line to mine management to represent the delivery of services to the site.

REQUIREMENT 10.4: For employees who have a role in the TMS, consider implementing a performance incentive program to include a component linked to the integrity of tailings facilities.

REQUIREMENT 10.5: Identify appropriate qualifications and experience requirements for all personnel who play safety-critical roles in the operation of a tailings facility, in particular, for the RTFE, the EOR and the Accountable Executive. Ensure that occupants of these roles have the identified qualifications and experience, and develop succession plans for these personnel.

14.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 105 respondents answered this question. Over half (57%) of the respondents agree and 37% partially agree that Principle 10 will contribute to the prevention of catastrophic failure of tailings facilities. 2% of respondents disagree and 4% are not sure.

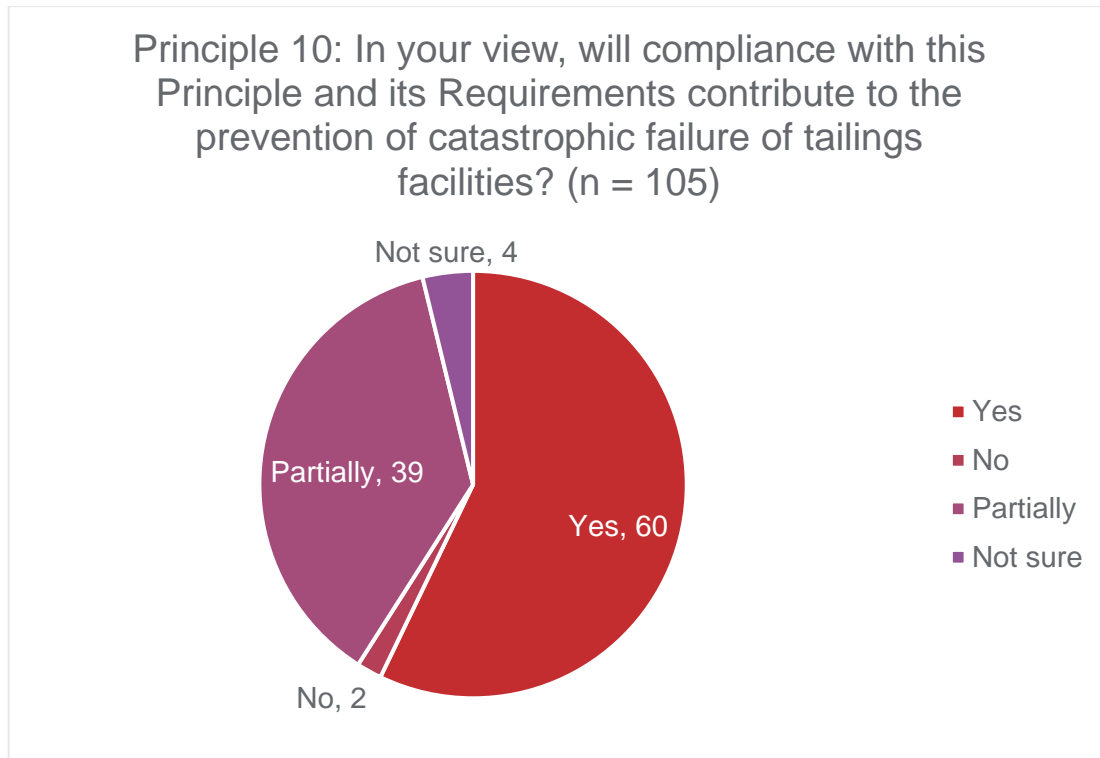


Figure 17 - Principle 10: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

14.3. Responses to the open question: ‘Your comments on Principle 10’

14.3.1. Summary

Principle 10 focuses primarily on roles, and respondents focused their comments on the desire for further clarity on these roles, particularly the roles of Accountable Executive, Engineer of Record and the Responsible Tailings Facility Engineer. A few other respondents say that clarity is needed regarding the ‘dotted reporting line’.

In terms of broader comments, a few respondents are concerned by the lack of qualified experts worldwide and a few suggest Principle 10 is too prescriptive about qualifications. Other respondents question the implementation of Principle 10, with particular concern for joint ventures and different sized companies suggesting these be accounted for in the Principle but others argue individual companies should decide.

14.3.2. Accountability

A few respondents suggest responsibility should be with the corporation not individuals. Others, however, argue the CEO or Board should be personally responsible and the Principle should include sanctions.

A few respondents highlight the role of the Accountable Executive, arguing it should be accountable to the Board and able to demonstrate how operational plans have been suitably funded. A few respondents state that ownership means responsibility, even within joint ventures.

A few respondents suggest that the Principle could make a more explicit commitment to transparency by clarifying that policies must be published and made publicly available.



14.3.3. Competent Experts

A few respondents ask for clarity over qualifications and the succession plans for the Engineer of Record (EOR).

A few respondents state that the responsible person does not need to be an engineer. Others suggest the Responsible Tailings Facility Engineer (RTFE) can act for multiple sites and senior management should not have primary responsibility because 'the tailings person should be tailings first'.

A few respondents suggest the Operator should decide the level of expert competency required. Others, however, feel the Principle should specify competencies and suggest it is strengthened by linking minimum experience required to the Consequence Classification.

14.3.4. Implementation

A few respondents highlight concerns about the implementation of Principle 10, including:

- Stressing the importance of enforcement, as there would likely be a lack of compliance amongst medium and small-scale mines;
- Questioning how the Principle would be implemented in medium-sized mines, particularly in places like Chile and Peru and suggesting the Principle should therefore be more flexible, whilst maintaining its safety objectives;
- Suggesting that for companies with multiple facilities (50+), the Principle could lead to an unsustainable workload for the EOR and unmanageable reporting and communication demands; and
- Suggesting that incentive programmes can often lead to the suppression of reporting issues, particularly in budget constrained departments, and may encourage individuals to cover up problems.

A few respondents suggest that for multinational companies, the most stringent requirements should apply to all facilities operated by the company, including where operations take place in countries with weak national legislation.

14.3.5. Management and governance

Some geotechnical consultants suggest that the Principle should specify a standardised management hierarchy, similar to the Mining Planning Management Hierarchy, whilst others request further clarification on reporting lines and roles. A few respondents stress the need for good leadership and management structures.

A few respondents argue that the organisational structure shown in Annex 3 is overly prescriptive and creating an artificial barrier between mine operational and tailings management could have negative consequences. They suggest tailings and mine management should be integrated rather than separated.

Some respondents comment about reporting lines. A few highlight the importance of:

- Communication between senior and tailings facility management;
- A direct line between the responsible person and Accountable Executive.

A few respondents express concern that:

- The dotted line creates ambiguity over authority;
- The EOR and RTFE will not be independent if the Accountable Executive controls

funding;

- Companies often employ multiple EORs'; and
- The Tailings Management System (TMS) should be documented and standalone, to avoid the risk of it becoming inadvertently buried in a complex corporate information system.

With regard to the Accountable Executive, a few respondents suggest that the role:

- Should update the Board quarterly on tailings facility performance;
- Needs to be clearly identified; and
- Should be independent from the mine manager.

A few respondents argue the responsible person does not need to be an engineer, but others suggest the EOR should be an experienced geotechnical engineer.

A few respondents believe the Principle could be improved to cover different sized companies and joint ventures. They suggest joint venture Boards review high or extreme consequence facilities and that a single Accountable Executive reports back to all joint venture partners.

A few respondents raise concerns about the proposed incentive scheme outlined in Requirement 10.4, arguing it may discourage reporting. In contrast, others suggest any incentive programme should also apply to the Board. A few respondents call for the inclusion of disincentives, such as retrieving previous bonuses in the event of a failure, whilst others want to also see whistle blowers rewarded.

14.3.6. More information and further clarification

A few respondents express a desire for more detail in general but others call for clarification regarding:

- What Operators are expected to include in a TMS;
- The definition of 'dotted reporting line';
- The responsibilities of the EOR; and
- Evidence that incentives work.

A few respondents ask who would judge 'integrity', they suggest a minimum set of items that must be communicated and ask further clarification about the role of the RTFE such as whether they should be a third party. A few respondents also suggest the role of the Accountable Executive be linked to some definition of Standard of Care.

A few academics also ask for clarification about the role of the EOR.

14.3.7. Risk calculation

A few respondents state that remuneration should dis-incentivise excessive risk taking and others state that some systems are inherently risky so a 'zero-fail' approach should not be ruled out. A few respondents suggest reducing risks is more practical than reducing consequences.

14.3.8. Scope

A few respondents call for the identification of qualifications and experience outlined in Requirement 10.5 to include responsible Board members and persons, in addition to engineers. Other respondents believe this Requirement is unnecessary.

A few respondents express concern that the Principle is too prescriptive, arguing it should be



left to companies to decide how the aims of the Principle should be met. A few respondents suggest that the TMS can be integrated into existing systems and the requirements should not apply to facilities with lower Consequence Classifications or small mines. In contrast, a few respondents state that Requirement 10.1 should include reference to joint ventures, contractors and sub-contractors.

14.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Organisational chart removed.
- Summary table of Key Roles and Functions mentioned in the Standard added in an Annex.
- 'Joint venture' added to the list of entities encompassed by the term 'Operator' within the Glossary.
- Requirement on incentive schemes strengthened and long-term incentive programmes included.
- Requirement to develop a tailings governance framework split from the requirement to publish a policy.
- Accountable Executive to have regular scheduled communication with the Board of Directors and the EOR.
- RTFE to have regular two-way communication with the Accountable Executive and requirement to have dotted line to mine management removed.
- ITRB to report to the Accountable Executive.

Explanatory note:

Despite the range of feedback on the issue of accountability, the Expert Panel remains convinced that this needs to sit at the highest level within an organisation. The Standard remains true to this idea by making the Accountable Executive directly answerable to the CEO.

Throughout the consultation, there was much discussion about accountability and reporting lines, driven in part by the variety of ways in which organisations are structured and in part because the Requirements may involve a significant change for many Operators. A key point of clarification was the difference between what it means to "report to" a position in terms of line management and to "report on" issues or risks to the Board or senior management. To resolve this, the wording has been changed to make it clear that the Accountable Executive is answerable to the CEO and accountable to the Board. In the Standard, accountability to the Board means that there is regular scheduled communication, which can be initiated by either party, to provide an account of the tailings facility and its performance and that the Board documents how they hold the Accountable Executive accountable. This avenue of communication has been enshrined to allow the Accountable Executive to circumvent the traditional reporting line structure, should this be required. Several people wanted legal accountability to reside with the CEO and Board, but as this is not something this Standard can enforce, it has not been included.

For larger companies, the feedback suggests that it may be difficult for the Accountable Executive to have regular communication with all of the RTFEs and EORs. However, the Standard envisages that the Accountable Executive can delegate some of these responsibilities, but not their accountability, to a subordinate and that it is possible to have more than one appointed Accountable Executive to cater for the variety of organisational structures that exist and the number of tailings facilities that some organizations have. Conversely, there were concerns that there would be implementation difficulties at smaller companies. To account for the variability of the companies,



the Standard stops short of prescribing how an Operator should achieve two key aspects: An appointed Accountable Executive for the safety of tailings facilities who is answerable to the CEO and scheduled and direct communication between this Accountable Executive the Board. The purpose of the direct line between the Accountable Executive and the Board is to ensure that Board members are informed of any tension between production and risk control and can satisfy themselves that this is being managed appropriately.

An implementation constraint was identified about RTFE reporting to the Accountable Executive with only a dotted line to mine management. This has been accepted and the Requirement dropped however the Standard now requires that there is scheduled and two-way communication between these two roles. This is to prevent information being filtered before reaching the Accountable Executive.

On the issue of the need for the responsible person to be an engineer, the Expert Panel believes strongly that, to bring tailings construction in line with other engineering and construction industries, this role must be filled by an engineer and therefore this Requirement has not been changed.

The RTFE is the key internal role responsible for the development and implementation of the design of tailings facilities, which are some of the largest engineered structures in the world. Consistent with the international practice for design coordination and construction of major engineered structures, this role should be fulfilled by an engineer with skills and experience compatible with the project. There are three key aspects to this requirement: 1) liaising with other functions that affect the planning, design, construction, operation, monitoring and maintenance of the tailings facility, 2) communicating with the Accountable Executive to support adequate risk management for the tailings facility, and 3) being familiar with the design requirements, including the design assumptions.

The intent of the Requirement on incentives is that individuals who have roles associated with maintaining the integrity of the tailings facility are not dis-incentivised to prioritise this task in order to meet production or cost reduction targets. The Standard has been strengthened on this point so that it now expressly requires that a system be implemented and, further, that safety be considered in the determination of long-term bonuses.



15. Principle 11

15.1. Introduction

In the draft Standard, Principle 11 reads as follows:

PRINCIPLE 11: Establish and implement levels of review as part of a strong quality and risk management system for all stages of the tailings facility lifecycle.

REQUIREMENT 11.1: Conduct and regularly update risk assessments with a qualified multi-disciplinary team using best practice methodologies. Transmit risk assessments to the ITRB for review, and address with urgency all risks considered as unacceptable.

REQUIREMENT 11.2: Conduct internal audits to verify consistent implementation of company procedures, guidelines and corporate governance requirements consistent with the TMS and the ESMS developed to manage risks.

REQUIREMENT 11.3: The EOR or a senior independent technical reviewer shall conduct annual tailings facility construction and performance reviews.

REQUIREMENT 11.4: A senior independent technical reviewer shall conduct an independent DSR periodically (every 3 to 10 years, depending on performance and complexity, and the Consequence Classification of the tailings facility). The DSR shall include technical, operational and governance aspects of the tailings facility and shall be done according to best practices. The DSR contractor cannot conduct a subsequent DSR on the same facility.

REQUIREMENT 11.5: For tailings facilities with 'Very High' or 'Extreme' Consequence Classification, the ITRB, reporting to the Accountable Executive and/or the Board, shall provide ongoing senior independent review of the planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management at appropriate intervals across all stages of the tailings facility lifecycle. For facilities with other Consequence Classifications, the ongoing senior independent review can be done by a single person.

15.2. Responses to the closed question: 'In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?'

In total, 103 respondents answered this question. Over half (59%) of the respondents agree and 31% partially agree that Principle 11 will contribute to the prevention of catastrophic failure of tailings facilities. 6% of respondents disagree and 4% are not sure.

Principle 11: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?
(n = 103)

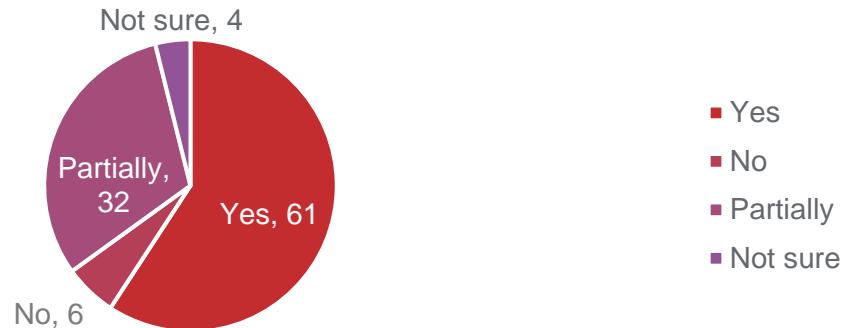


Figure 18 - Principle 11: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

15.3. Responses to the open question: 'Your comments on Principle 11'

15.3.1. Summary

A few respondents support regular updates of risk assessments and internal audits as part of Principle 11, as well as the requirement for a senior independent technical reviewer conducting a periodic review.

Respondents emphasise the importance of accountability and transparency for the independent review of the facility. There are concerns raised over availability of competent experts for the DSR, as well as how often they should be held and what they should consist of.

15.3.2. Accountability and transparency

A few respondents express concern that the Principle splits responsibility, making it harder to scrutinise. They argue instead that responsibility should be concentrated at a specific level to ensure accountability. Others question how reviewers are held accountable if the tailings facility fails and highlight the need for regular internal audits.

A few respondents make suggestions as to how the Principle could be strengthened in relation to accountability and transparency, including:

- That the independent review aspects (planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management) be grouped together under a single principle to emphasise their importance;
- Adding a requirement to prevent scenarios where a reviewer has a financial conflict with the mine being reviewed, such as when the same firm audits most of the mines of a single operating company;
- To include the development a global inventory of independent risk assessments;
- Adding the implementation of an accreditation system for inspection bodies under ISO 17020 or for people under ISO 17024; and
- To remove the option for a 'senior independent technical reviewer' to conduct reviews,



and instead make it more explicit that this is the EORs responsibility.

A few respondents suggest the results of inspections and DSRs should be shared with:

- Project affected people and communities;
- Financial stakeholders such as insurers;
- The Accountable Executive; and
- The public.

The ‘senior independent technical reviewer’ is another level of oversight so should be the ‘Engineer of Record (EOR) or their designate’ and some respondents state that it should be made explicit that the EOR is responsible for reviews.

A few respondents call for a group of employees to conduct a peer review.

15.3.3. Aspiration versus prescription

A few respondents argue that their previous experience with tailings review Boards have not been productive, and often resulted in misdirected priorities.

A few respondents enquire how the 3-10 year review timeframe is decided and note that the tailings lifecycle is often less than 10 years, so 5-10 years is an inappropriate time scale for DSRs. They suggest reviews should be conducted every 1-3 years, unless justified otherwise. Others suggest aligning DSR frequencies with existing guidance.

One respondent argues the Principle is too prescriptive and already covered by existing codes. They argue a ‘police force’ of consultants will be counterproductive, expensive and will not prevent failures from occurring without elaborating further.

Other respondents suggest that the emphasis on ‘Very High’ and ‘Extreme’ classifications might lead to complacency at other facilities because the Standard implies these facilities do not need the same level of care.

15.3.4. Competent experts

As noted in previous chapters, respondents, including geotechnical consultants and those from the mining industry, highlight the difficulty in finding competent experts worldwide. They argue this makes the requirement for a different senior independent technical reviewer to conduct the review and the subsequent DSR impractical. Others raise concerns about the independence of the reviews, suggesting it is unclear how this will make tailings safer.

A few ask for the Principle to state the qualifications for senior independent technical reviewer. They further cite familiarity with and experience of the facility as being essential to carrying out the review.

15.3.5. Consequence classification

A few respondents recommend including “High” classification facilities in Requirement 11.5, as this classification can also involve loss of human life. Others suggest widening the Requirement further to also include “Significant” classifications.

15.3.6. Implementation

A few respondents express a desire for Requirement 11.5 to more strongly emphasise the responsibilities of the facility owner, as the ITRB has limited mandate in relation to when and what it reviews. Others highlight that in many cases, the EOR is already required to conduct annual reviews.



15.3.7. Management and governance

A few respondents seek clarification as to whether the DSR contractor is a person or a team (which would be the preference). A few geotechnical consultants state that in the latter case, they should be allowed to conduct a subsequent review, if done by a different individual.

A few respondents make suggestions about who should be involved in the reviews described in Principle 11, including that:

- It should insist that the EOR does routine reviews, rather than giving the alternative option of an ‘independent technical reviewer’;
- The ITRB should not be involved in DSRs;
- An independent engineer carries out the reviews;
- The senior independent technical reviewer are different positions with different mandates;
- The Accountable Executive should be involved in reviews;
- The Principle specify that the EOR be included in the multi-disciplinary review team referenced in Requirement 11.1;
- Independent review by an individual may still be inappropriate for facilities with a lower Consequence Classification than ‘very high’, and that this should therefore be determined on a site-specific basis; and
- The responsibilities of the ITRB be extended to the EOR and the independent senior technician, to provide continual, independent technical assessments.

A few respondents emphasise the importance of the risk assessment being done with the full participation of those who face the risk (workers, members of potentially affected communities, etc.).

A few respondents stress that consideration should be given to the different practicalities of low and high-risk facilities. Others suggest the development of a framework for identifying deficiencies during reviews and planning corrective action, including outlines of timings and the tracking and reporting of progress.

15.3.8. Scope

A few respondents wish to emphasise that the risk assessment should take priority when conducting reviews, stressing that if the risk assessments are wrong, the TMS is likely to fail.

Respondents make specific references to how the Principle can be expanded or shortened to improve:

- there is concern that Requirement 11.1 is not robust enough; and;
- there is a request for the Standard to incorporate guidance on document retention practices in Requirement 11.2., for example “Ensuring all risk assessments, internal audits and reviews must be archived in an applicable data system”.

15.3.9. More information and further clarification

Respondents express a desire for more information in relation to the DSR, including:

- How to align the DSR expectations with other terminology in other guidance materials;
- Requesting more details about the content of the proposed DSR mechanism and the technical, operational and governance aspects and best practices that it implies;



- Whether there is an independent review in addition to the DSR, currently the number of review stages is unclear;
- With reference to the phrase ‘performed by a single person’ - which review should be led by one person; and
- There is confusion about the difference between the role of the EOR and the “independent technical reviewer”.

15.3.10. Relationship with other Principles

A few respondents express the view that the Requirements outlining different standards of review according to Consequence Classification are unclear, highlighting significant crossover with Requirement 2.2. Respondents also suggest that if a multi-disciplinary team is used for risk assessment, then the ITRB review is unnecessary.

Other respondents suggest that the change management system described in Requirement 7.5 should initiate an update to the risk assessments referenced in Requirement 11.1.

Strengthen Requirement 11.3 to specify that the Accountable Executive should be involved in performance review.

15.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Strengthened risk assessment Requirement.*
- *Differentiation of periods for reviews of TMS and ESMS, construction and performance reviews and independent Dam Safety Reviews added based on consequence classification involving potential loss of life.*
- *Specificity on review periods included across the Principle.*
- *Clarification added that the Standard is not expecting a separate ESMS for the tailings facility.*
- *Wording clarified and Requirement added for contractors conducting DSR to minimise the risk that conflict of interest exists.*
- *Reference to the ITRB reporting to the Board removed.*
- *Requirement on financial assurances and insurance now located within this Principle.*

Explanatory note:

In response to comments regarding the frequency at which some of these reviews should take place, this detail and, where appropriate, the triggers for review have been specified. Selecting a new contractor for subsequent DSR is important as it is essential that the DSR benefits from a set of “fresh eyes”

There were comments that implied some confusion around the levels of review both in terms of those responsible and potential overlaps. To this end, a table has been added to an Annex which provides a ‘Summary of Levels of Review’ listing key components and responsibilities in relation to each for various roles.

The different levels of review are intended to bring different sets of eyes on the design, construction and operation of a tailings facility to reduce the risk of issues being missed. They are not intended to divide the responsibility, which continues to be held by the Operator.



There was much discussion and many comments related to the need for independence and transparency in the review process and the potential conflict that might exist when it comes to the relatively small pool of external experts in existence. The lack of expert capacity both to act as EOR and to sit on ITRBs has been discussed on a number of occasions in general terms. This is an issue that Expert Panel believes is resolved by working on the development of additional experts, by training programmes, mentoring activities and support for such professionals, and not by limiting the ambition of the Standard.

In terms of reviewing and keeping focus on risk assessments, the Standard is clear that risk assessments need to be undertaken by a qualified multi-disciplinary team and that ongoing risk assessment processes are embedded across a number of management systems and reviews. In addition, the ITRB is responsible for reviewing the risk assessments and risk management processes on an ongoing basis so the Expert Panel believes this to be adequate without adding too much prescription.



16. Principle 12

16.1. Introduction

In the draft Standard, Principle 12 reads as follows:

PRINCIPLE 12: Appoint and empower an Engineer of Record.

REQUIREMENT 12.1: Engage an engineering firm with expertise and experience in design and construction of tailings facilities of comparable complexity to provide EOR services for the tailings facility. Require that the firm nominate an individual to represent the firm as the EOR, in concurrence with the Operator, and verify that the individual has the necessary experience, skills and time to fulfil this role. Alternatively, the Operator may appoint an employee with expertise and experience in comparable facilities as the EOR. In this instance, the EOR may delegate the design to a firm ('Designer of Record') but shall remain thoroughly familiar with the design in executing their responsibilities as EOR.

REQUIREMENT 12.2: Empower the EOR through a written agreement that clearly describes their authority, role and responsibilities throughout the lifecycle of all facilities, including closed facilities, and during transfer of ownership of mining properties.

REQUIREMENT 12.3: Establish and implement a system to manage the quality of all engineering work, the interactions between the EOR, the RTFE and the Accountable Executive, and their involvement in the tailings facility lifecycle as necessary to confirm that both the implementation of the design and the design intent are met in all cases.

REQUIREMENT 12.4: Given its potential impact on the risks associated with a tailings facility, the selection of the EOR shall be decided by the Accountable Executive and not influenced or decided by procurement personnel.

REQUIREMENT 12.5: Where it becomes necessary to change the EOR firm, develop a detailed plan for the comprehensive transfer of data, information, knowledge and experience with the construction procedures and materials.

16.2. Responses to the closed question: 'In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?'

In total, 103 respondents answered this question. Two-thirds (66%) of respondents agree and 28% partially agree that Principle 12 will contribute to the prevention of catastrophic failure of tailings facilities. 1% of respondents disagree and 5% are not sure.

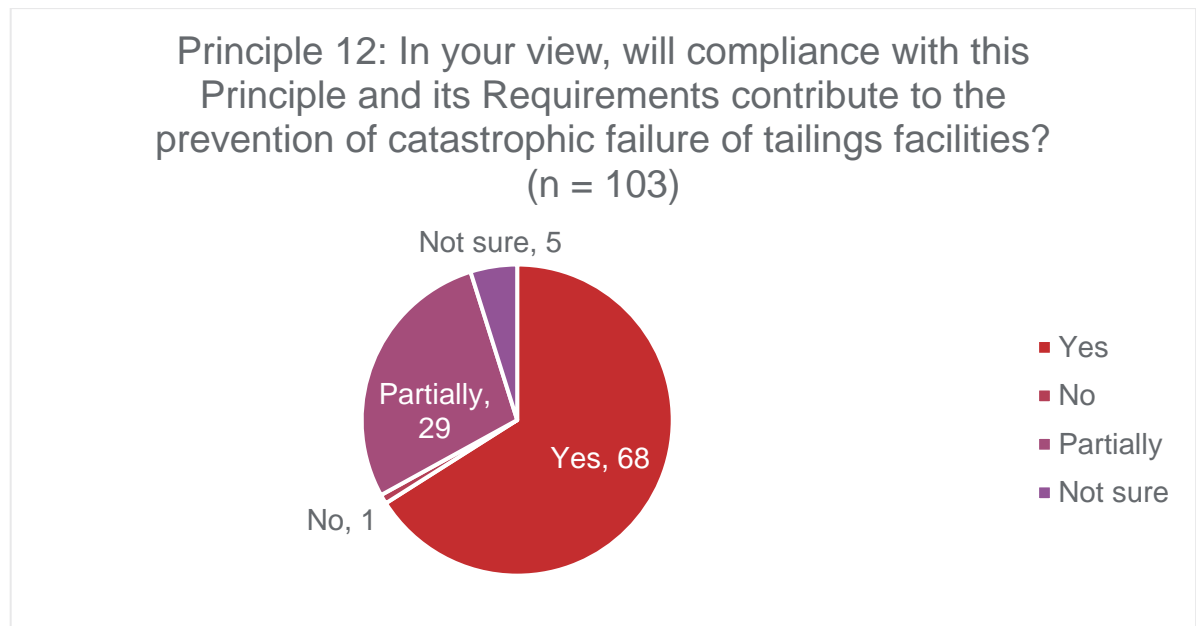


Figure 19 - Principle 12: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

16.3. Responses to the open question: ‘Your comments on Principle 12’

16.3.1. Summary

A few respondents express their support for the Principle 12 and emphasise its importance. However, some respondents also highlight concerns about aspects of the Principle, including issues related to expert competency, EOR independence and succession planning. In addition, some respondents express a desire for further clarification regarding the responsibilities and required level of experience of the EOR. Lastly, whilst a few respondents question the Principle’s necessity, others suggest ways in which the scope of the Principle could be broadened.

16.3.2. Knowledge base

A few respondents wish to emphasise, in relation to Requirement 12.5, that succession planning for EOR roles is critical to knowledge retention. Others suggest that professional organisations could provide valuable support in developing guidelines to address the aims of the Principle.

16.3.3. Competent experts

A few respondents express concern about the implementation of the Principle, given the limited availability of technical experts and EORs compared to the numbers of tailings facilities worldwide. In particular respondents point out that, due to the Standard’s consequence-based classification of facilities, the pool of available experts for higher risk facilities may be weakened due to demand for EORs at lower risk facilities.

A few respondents also express a desire to strengthen the Principle by specifying minimum requirements for the qualification and experience level of the EOR. Specifically, respondents suggest:

- Establishing a minimum qualification level for the EOR;
- Specifying that the EOR or DOR, particularly where an employee is appointed



(Requirement 12.1) must have competency and experience commensurate with the Consequence Classification and complexity of the tailings facility;

- Adding a required number of years' experience, similar to the requirement in the Standard for the Senior Technical Reviewer; and
- Requiring the EOR to be experienced in the use and application of international design practices.

In addition, a few respondents express strong support for the selection of the EOR being independent of procurement personnel.

16.3.4. Management and governance

Some respondents express views about the Principle in relation to its implementation from a management and governance perspective, including:

- Expressing a desire for further definition of what the EOR role involves and how it inter-relates with other roles;
- Concern that, despite the Requirements of the Principle, the EOR may be too removed from day to day operations to have the desired impact on safety;
- A need for Requirement 12.5 to emphasise how ultimate responsibility still belongs to the Operator, irrespective of external project leadership;
- Concern that an internally appointed EOR could introduce conflict of interests and may not be sufficiently independent from the Operator;
- A suggestion that checks should be made to assess the degree to which the EOR is independent from the Operator; and
- Disagreement with allowing the EOR to externally delegate responsibility for design of the facility.

A few respondents also wish to emphasise the importance of the proper transfer of EOR knowledge and responsibility, particularly given the typically high turnover rates in large companies. Respondents offer the following suggestions for ways in which Requirement 12.5 could be strengthened in this regard:

- Requiring Operators to take a more proactive approach to succession planning than is currently articulated in the Requirement, as developing a plan only when it becomes necessary to change EOR is too late;
- Specifying that it is the responsibility of the Tailings Facility Site Responsible Person (TFSRP) to develop a succession plan;
- Including a requirement that a change in EOR should initiate the change management process outlined in Requirement 7.5; and
- Including a requirement that information and data should be logged with the regulator throughout the tailings facility lifecycle.

A few respondents convey opinions on Requirement 12.4 specifically, including:

- Stressing that there cannot be any conflict of interest between operational requirements and the realities of running a tailings facility;
- Agreeing that the EOR should be selected primarily on technical competence, however, also highlighting that procurement processes are important for reasons aside from budget responsibility, such as ensuring that contractors are financially and socially responsible; and

- Stating that the procurement requirement is somewhat confusing and also may be not aligned with current legislation.

16.3.5. Individual versus organisational responsibility

A few respondents highlight that the nomination of an individual EOR potentially places significant levels of liability on the individual, and it therefore may be difficult to persuade suitably experienced people to take on such roles. Others seek further clarification regarding what the minimum level of expected responsibility should be for the EOR and DOR, and how this responsibility relates to design, construction and operations.

16.3.6. Scope

A few respondents express the view that the Principle is unnecessary and costly, suggesting that the professionals charged with operation and management of a facility can already use relevant data to manage risks.

Others consider Requirement 12.1 to be unnecessarily complex in specifying ‘who’ an EOR is and ‘what’ they do, citing other professional bodies that recognise there are many different, but nonetheless effective, models for the EOR. In addition, a few respondents suggest the requirement to create a system of managing the quality of engineering work, separate to the TMS, would create unnecessary complexity and potential confusion.

A few respondents express differing views about the selection of the EOR, such as:

- Stating that it should be the responsibility of the owner, not the Operator where they are different, to select the EOR;
- Suggesting that the Accountable Executive be supported by the RTFE in selection of the EOR;
- Stressing the value of the EOR’s independence from the Operator and suggesting that tailings facilities with very high or extreme Consequence Classifications should not be allowed to appoint an employee as EOR; and
- Arguing that internal and external EORs can be equally effective.

Other respondents wish to stress the importance of having a direct line of communication between the EOR and the Accountable Executive, or even the regulator, in the event that the EOR feels their concerns are not being addressed.

A few respondents suggest ways in which the scope of the Principle could be broadened, including:

- Adding a statement encouraging long-term retention of an EOR through long-term contractual agreements;
- Specifying that agreements should be bespoke to each facility;
- Adding a requirement for the creation of a deputy EOR position to improve succession planning;
- Further clarification that the EOR is considered an individual and not a firm;
- Further clarification of the EOR’s role and competency and the addition of a requirement for a minimum handover period;
- Making explicit the EOR’s responsibility to keep up to date with industry best practices; and
- Stating that lifecycle custodianship should be assigned to a suitably qualified and



experienced EOR and that adequate resources should be allocated to ensure this task can be taken on.

Other respondents suggest ways in which the scope of the Principle could be limited, including:

- Avoiding using national and regional concepts like the EOR, as this has a legal definition in some jurisdictions but not others; and
- Removing the prescription of a written agreement in Requirement 12.2 and focusing instead on clearly documenting the authority, roles and responsibilities of the EOR.

Lastly, a few respondents suggest the requirements for the EOR and the RTFE roles should be combined within the same Principle, whilst others express the view that the Principle should be moved higher up in the Standard due to reference to the EOR in Requirements prior to Principle 12. A few respondents suggest the intent of the Principle is already captured in Principle 10.

16.3.7. Implementation

A few respondents express the view that the substance of Requirement 12.3 is already met by existing engineering licence standards and could therefore lead to bureaucratic processes that do not improve or maintain quality. Others express a desire for further specification as to the degree of responsibility expected of the EOR, as this currently varies between countries and any requirements need to maintain consistency with national regulatory frameworks.

16.3.8. More information and further clarification

Some respondents express a desire for further clarification or additional information regarding the Principle, including:

- Defining a process for an internal EOR to have autonomy in making decisions in the absence of influence from management;
- Addressing how many facilities an EOR might be likely to oversee;
- Providing further guidelines regarding the duration of engagement expected during the transfer of ownership of mining properties;
- Questioning why there is the prescription to engage an engineering firm to provide EOR services, yet the EOR responsibilities themselves are delegated to an individual; and
- Clarifying the role of the EOR after cessation of mining and who would be responsible for long term stability.

16.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Requirement added for an EOR during active closure phases based on Consequence Classification with potential loss for life.
- Clarity added on the fact that the chosen engineering firm must nominate a senior engineer to act as EOR and that the Operator must select a senior engineer to act in the role of the in-house EOR.
- Clarity added to confirm that the experience and competence levels of the EOR must be appropriate to the Consequence Classification and complexity level of the tailings facility.



- *The written agreement strengthened to include added support for the EOR by specifying the Operator's obligations to them.*
- *Wording changed to incorporate the fact that procurement teams provide advice on the selection of an EOR firm, although the decision on the EOR remains with the Accountable Executive.*
- *Additional clarity that a succession plan is required whether the EOR is internal or external to the Operator.*

Explanatory note:

Some of the respondents did not agree with the option of the Operator appointing an employee with expertise and experience in comparable facilities as the EOR. It is recognised that in many cases the Operator does not have the staff, an appropriate culture or sufficiently strong quality management systems to do, in-house, the type of engineering that is required for these facilities, however there are a few cases where an in-house EOR can work well. The Standard has retained this flexibility; however, the Requirement is very clear that the requirements of the role remain the same whether the EOR is internal or external.

As per some of the comments received, a written agreement that clearly describes the authority, role and responsibilities of the EOR, enhances the conditions for a productive and collaborative relationship with the EOR.

There are some jurisdictions where the management of quality of engineering work is covered by regulation however this is not the case globally. It is for this reason that the Standard seeks to cover this level of care and quality. The Standard now clearly establishes the connection between the EOR, the RTFE and the Accountable Executive as suggested.

In support of the comments received from the consultation process, the intent of the Standard is to select EOR firms based on their qualifications and experience for the work on the tailings facility. The integrity of the selection process is fundamental and it is for this reason that there is specific reference made to avoiding a situation where procurement personnel are in a position to appoint the EOR, since they may not be best-qualified to evaluate the technical competency of the EOR candidates relative to the technical complexities of the tailings facility or may inadequately prioritise the reduction of costs. The Standard places the responsibility for the selection of the EOR on the Accountable Executive with input from technical personnel to ensure that the EOR has the required qualifications for the tailings facility and is not hired purely on the basis of cost.

The Expert Panel was pleased to receive comments regarding the importance of continuity of the EOR, implementation of a succession plan and proper transition mechanisms should an EOR need to be replaced. One small change in this respect is the clarification that this transfer of knowledge and data needs to be done regardless of whether the EOR is internal or external to the company.



17. Principle 13

17.1. Introduction

In the draft Standard, Principle 13 reads as follows:

PRINCIPLE 13: Develop an organizational culture that promotes learning and early problem recognition.

REQUIREMENT 13.1: Educate personnel who have a role in the TMS about the reason for and importance of their job procedures for the prevention of a tailings facility failure.

REQUIREMENT 13.2: Incorporate workers' experience-based knowledge into planning for all stages of the tailings facility lifecycle.

REQUIREMENT 13.3: Establish mechanisms that promote cross-functional collaboration to ensure data and knowledge integration and communication across the TMS and the ESMS.

REQUIREMENT 13.4: Identify and implement lessons from internal incident investigations and relevant external accident reports, paying particular attention to human and organizational factors.

REQUIREMENT 13.5: Develop procedures to recognize and reward employees and contractors who speak up about problems or identify opportunities for improvement. Respond in a timely manner and communicate actions taken and their outcomes.

17.2. Responses to the closed question: 'In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?'

In total, 102 respondents answered this question. Just under two-thirds (63%) of the respondents agree and 32% partially agree that Principle 13 will contribute to the prevention of catastrophic failure of tailings facilities. No respondents disagree and 5% are not sure.

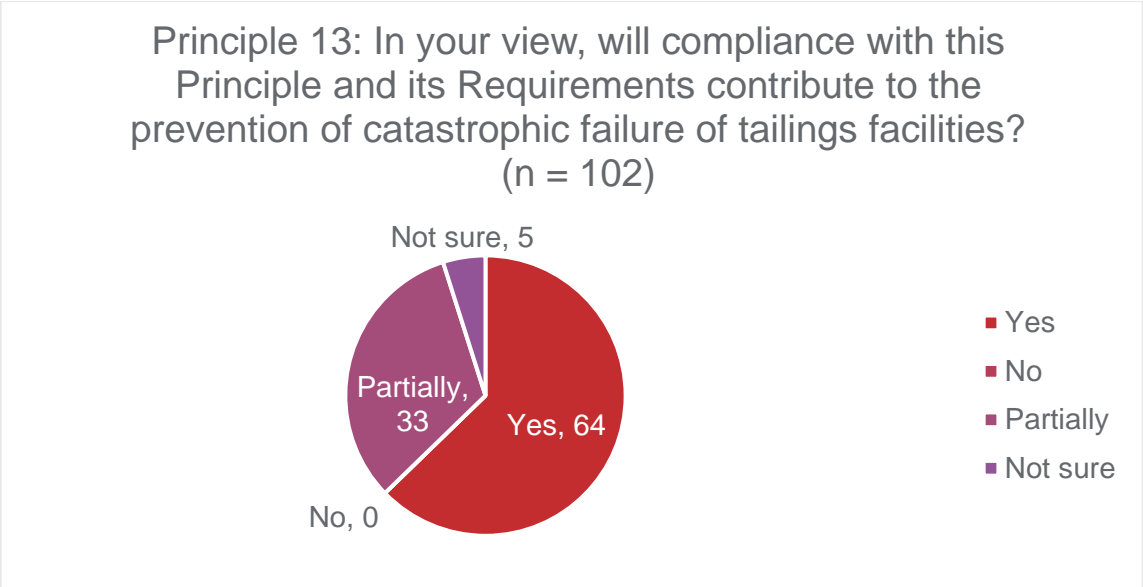


Figure 20 - Principle 13: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



17.3. Responses to the open question: ‘Your comments on Principle 13’

17.3.1. Summary

A few respondents wish to express support for Principle 13 in the open question, stressing its importance to the overall aims of the Standard, whilst also offering suggestions for how the Principle could be broadened and strengthened. Others highlight some of the challenges related to meeting information and training needs, particularly in relation to the development of expert competency.

In addition, a few respondents stress the importance of systematic knowledge management practices in developing strong safety cultures. However, others question whether prescriptions about organisational culture can and should be made by the Standard. Lastly, a few respondents propose ways in which the Principle could be reworded.

17.3.2. Accountability and transparency

A few respondents highlight the importance of encouraging dialogue, stressing that people should feel able to air their concerns, even if they prove to be unfounded. A few respondents express the view that best practice exchanges are an important aspect of enhancing safety, suggesting that insurance companies should refuse to insure a tailings facility if they do not engage with such practices.

A few respondents point out difficulties in ensuring accountability and transparency in relation to the Principle. For example, publication of information about an accident may be prevented by company lawyers or regulators while an investigation is ongoing. Other respondents suggest an independent system for recording problems would be crucial in ensuring transparency and limiting the potential for parties to manipulate systems to suit their own agenda.

17.3.3. Competent experts

A few respondents highlight the challenges involved in meeting the training and information needs of the Principle. These include:

- Difficulties in finding local and regional level training expertise that meets the needs of the tailings facility regardless of its size or type; and
- A lack of expertise amongst regulators, with Operators often educating regulators at their own cost.

Other respondents offer suggestions as to how the Principle could help improve expert competency. Such as:

- Adding an information management requirement to provide continuity in periods of high staff turnover, particularly when the EOR changes;
- Including the training and expertise of tailings construction workers within the Requirements;
- Including a suggestion for the training of relevant government staff; and
- Modifying Requirement 13.1 to include emphasis on TSF management as well as failure.

17.3.4. Management and governance

A few respondents highlight how there is often variation in standards between senior and local

levels of a company resulting in a lack of transparency about systems for grievance lodging. In a similar vein, a few respondents suggest the need for grievance mechanisms to be managed by an independent third party. Others propose including a requirement for incident reporting systems within Requirement 13.4.

A few respondents also question how a reliable management framework can be developed in the absence of any training on tailings facility operations management.

17.3.5. Scope

A few respondents express a desire for the Principle to be broadened, offering the following suggestions:

- Including a requirement for an incident reporting system, with the aim of encouraging a culture of incident reporting;
- Adding a requirement for risk awareness training as often they add that only the RTFE has a full understanding of the tailings risks;
- Including a statement about cultural biases and how these may pose challenges to the successful implementation of the Principle;
- Alongside the inclusion of worker-based knowledge, site specific knowledge of affected communities and indigenous peoples should also be available at all stages of tailings facility planning; and
- Expanding the training requirement to include education on the history of mining in the locality and general aspects of the social and economic life of workers.

A few respondents express the view that the Standard should restrict requirements related to education and training to one section, whilst others state that the reward and recognition procedures outlined in Requirement 13.5 fall outside the remit of the Standard.

17.3.6. Implementation

A few respondents question how compliance with the Principle could be measured in practice, particularly the Requirement to incorporate workers' experience-based knowledge. Others express the opinion that it is somewhat unrealistic for the Standard to make prescriptions about organisational culture.

A few respondents offer suggestions for ensuring the successful implementation of the Principle, including:

- Incorporating within the Requirements the communication of risk assessments to personnel involved in a TMS;
- Developing knowledge of best practices in other industries by investigating the topic of 'safety culture' in relation to nuclear power plants; and
- Emphasising the need for senior mine personnel to dedicate time and effort in creating awareness of the importance of dam safety amongst their teams.

17.3.7. Knowledge base

A few respondents emphasise the importance of implementing lessons learned from internal and external incident investigations, paying close attention to human and organisational factors, whilst also suggesting the establishment of a centralised database to document knowledge gained from previous significant failures.

17.3.8. More information and further clarification



A few respondents express a need for further information, such as examples of the mechanisms referred to in Requirement 13.3 and a list of potential training organisations.

A few respondents also seek clarification over whether the reward and recognition systems outlined in Requirement 13.5 refer specifically to tailings operations, or whether Operators should develop broader systems of recognition that are not limited to the tailings facility.

17.3.9. Wording and translation

A few respondents suggest ways in which the Principle could be reworded. Specifically, respondents question the use of the words 'recognise' and 'reward' and suggest changing to 'encourage' and/or 'support'.

In addition, a few respondents propose reviewing what types of evidence will be necessary for assessing compliance with the Principle and rewording the Requirements accordingly.

17.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Education expanded to people involved in any phase of the tailings facility lifecycle.
- Implementation of management measures added as part of cross-functional collaboration.
- Explicit connection made between the TMS and the relevant aspects of the ESMS much earlier in the Standard.
- The term 'accident' changed to 'incident' reports to broaden the Requirement.
- Explicit protection from retaliation on those who report problems added.

Explanatory note:

The feedback on this Principle has been broadly positive in terms of the intent of the Standard though there are comments on the implementability of certain requirements, such as finding appropriate competence externally to provide training. As ever, the Standard is directed at Operators and it is their responsibility to provide appropriate training and education to explain the relevance of job procedures to the safety of the tailings facility based on the design, construction and monitoring requirements.

The Standard has been developed to strengthen cross-functional collaboration in a number of ways which was well-received and, deliberately, these are not all reflected in the same Principle. For instance, the Requirement for a multi-disciplinary risk assessment process, the Requirement for the RTFE to liaise with operational teams, the connection between the ESMS and the TMS, the need for meaningful engagement specifically on issues related to the tailings facility and the knowledge base are all mechanisms by which the Standard seeks to embed a culture of collaboration at the operational level.

The push to systematise the inclusion of worker's experience-based remains unchanged as it is acknowledged that this is one of the most effective ways in preventing incidents since workers are often best-placed to improve the operation and maintenance of a tailings facility.

The Requirement to reward and recognise those who report concerns had some supporting it and others suggesting that the mechanism be managed independently. To the latter point, the Standard is directed at what is within the Operator's control and this suggestion has therefore not been adopted.



18. Principle 14

18.1. Introduction

In the draft Standard, Principle 14 reads as follows:

PRINCIPLE 14: Respond promptly to concerns, complaints and grievances.

REQUIREMENT 14.1: Establish a formal written complaint process that provides the Operator and the appropriate regulatory authority with information about possible permit violations or other conditions relating to the tailings facility that pose a risk to public health, safety, or the environment.

REQUIREMENT 14.2: Establish an effective pathway that guarantees anonymity for employees and contractors to express concerns about tailings facility safety.

REQUIREMENT 14.3: Initiate prompt investigations of all credible employee and stakeholder complaints and grievances, swiftly resolve concerns and complaints and provide remedy as required.

REQUIREMENT 14.4: In accordance with international best practices for whistleblower protection, the Operator shall not discharge, discriminate against, or otherwise retaliate in any way against a whistleblower, or any employee or person who, in good faith, has reported a possible violation or unsafe condition.

18.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 100 respondents answered this question. Two-thirds (66%) of the respondents agree and 28% partially agree that Principle 14 will contribute to the prevention of catastrophic failure of tailings facilities. 2% of respondents disagree and 4% are not sure.

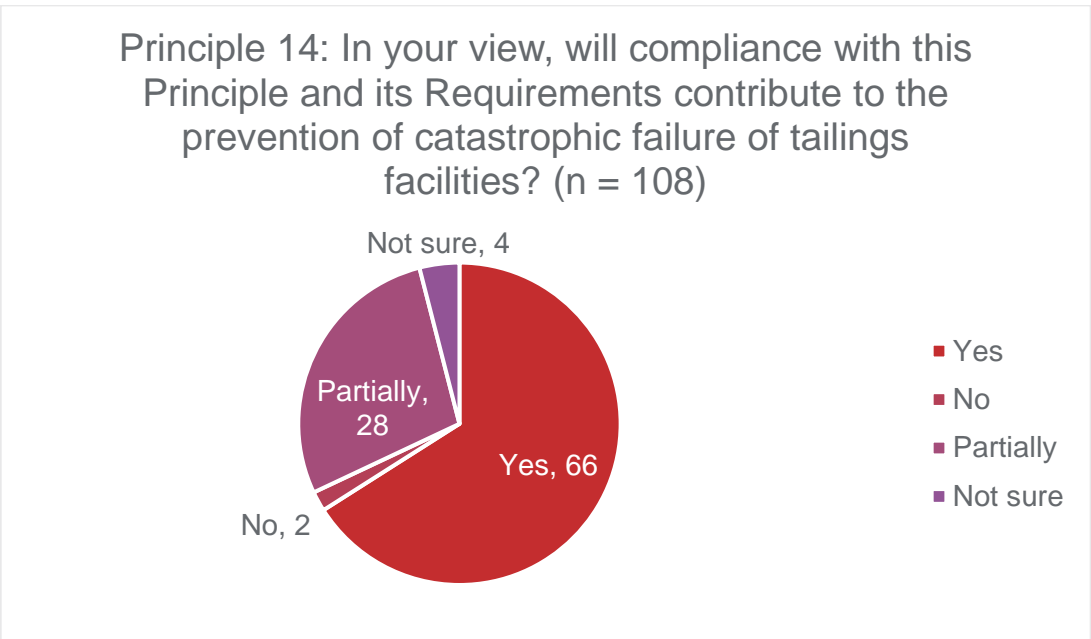


Figure 21 - Principle 14: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



18.3. Responses to the open question: ‘Your comments on Principle 14’

18.3.1. Summary

Overall, respondents welcome Principle 14, with some respondents making suggestions for ways in which the Requirements could be strengthened. A few respondents raise concerns about implementation and integration with Operator management and governance structures.

18.3.2. Accountability and transparency

A few respondents express support for the aims of Principle 14 and its commitment to accountability and transparency, emphasising the importance of dialogue and communication in preventing failures and welcoming the whistle-blower protections outlined in Requirement 14.4.

Others caution that grievance mechanisms need to establish genuine engagement to have an effect, and not just be set up ‘for the sake of it’. A few respondents stress the need for direct communication between stakeholders and management, with a clearly defined pathway to deal with complaints as well as established timelines in which to resolve them.

A few respondents suggest ways that the Principle could be strengthened in relation to accountability and transparency, such as:

- Suggesting open meetings be a key part of any grievance process, in addition to written complaints;
- Requiring the establishment of an independent third party for employees to express their concerns to;
- Mandating a two-step grievance process, whereby the credibility of a complaint is first assessed, then investigated promptly if deemed credible;
- Including an obligation to publicly disclose information and data on the functioning and uptake of the grievance mechanism; and
- Including a protective requirement, similar to that which already exists in Brazil, whereby employees are allowed to stop work if they identify imminent risk to health and safety.

18.3.3. Implementation

A few respondents highlight that similar protections to those outlined in Requirement 14.4 already exist in many jurisdictions, such as North America. Others suggest that Board members, as well as the Accountable Executive, should be required to receive complaints. A few respondents also point out that cultural barriers can often weaken whistle-blower protection, citing recent failures where whistle-blowers were not taken seriously by senior management.

18.3.4. Management and governance

A few respondents suggest the Principle should be flexible enough to allow for integration with corporate governance. Others wish to express that Operators may not be comfortable with the establishment of a joint grievance mechanism with regulators outlined in Requirement 14.1.

18.3.5. Scope

Some respondents offer suggestions for ways in which the Principle could be limited or broadened in scope. For example, a few respondents suggest extending the Principle to ensure regulatory authorities also have processes for the receipt of comments and complaints. One the other hand, a few respondents express that sharing any grievance mechanism with



the regulator is unnecessary; such mechanisms are used to manage relationships between the Operator and affected community, not with the regulator. In addition, a few respondents convey the view that Requirements 14.2 – 14.4 are beyond the scope of the Standard, as providing a safe environment for raising issues is part of corporate governance.

A few respondents express a desire to strengthen the whistle-blower protections outlined in the Principle, suggesting that:

- Anonymity and protection should be granted to any whistle-blower or person, not just employees and contractors, including others working on the facility such as the EOR;
- Provision should also include protection from legal retaliation for communities making general complaints, not just those related to violations or unsafe conditions;
- Government whistle-blowers should be included within the protections outlined in the Principle;
- Whistle-blower protection best practices should include all those involved in tailings design, monitoring and oversight; and
- Pathways to express concerns should be aligned with best practice in global whistle-blower mechanisms.

In addition, a few respondents suggest Principle 14 could be strengthened through reference to integration between tailings complaints procedures and mine-wide community grievance mechanisms. Others state that where possible, complaint investigations should be carried out by representatives with relevant technical knowledge from another area, to ensure independent judgement.

A few respondents wish to highlight that men and women often have unequal access to grievance mechanisms and that gender-related complaints are often not filed at all or filed inappropriately.

Lastly, a few respondents feel that the issue of external grievances is already addressed in Requirement 3.4.

18.3.6. More information and further clarification

A few respondents seek further clarification of the terms ‘good faith’ and ‘possible violation’, whilst others question by whom the written complaints process is intended to be used. In a similar vein, a few respondents question why Requirement 14.3 refers to stakeholders yet Requirements 14.1 and 14.2 refer only to employees and contractors. In addition, they suggest combining Requirements 14.2 and 14.4 due to duplication.

18.3.7. Relationship with other principles and requirements

A few respondents suggest there is a contradiction between Principle 14 and Requirement 13.5, in relation to the rewarding of employees and contractors who speak up about problems.



18.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Compressed into two Requirements.
- Requirements focused on employees and contractors and their concerns related to regulatory compliance, public safety, tailings facility integrity or the environment.
- Reference to regulatory authorities as recipients of complaints removed.
- Best practices for whistleblowers are understood to include avenues for anonymous reporting.

Explanatory note:

While generally supportive, some respondents offered suggestions for improving the complaint process including, for example, a requirement that complaints and concerns be received and addressed by an independent third party. The final Requirement requires the Accountable Executive to establish a process that provides for employee and contractor concerns, relating to regulatory compliance, public safety, tailings facility integrity or the environment, to be made in writing and kept confidential, offering some level of independence from the Operator. Several respondents also suggested that the complaint procedures should be integrated with mine-wide grievance mechanisms. The Preamble to the final Standard addresses this issue for this and other requirements where existing systems may meet the requirements of the Standard. Finally, while some respondents suggested that the process should not be limited to employees and contractors, a separate process is available for project affected people which is established early in the Standard (Requirement 1.4 of the final Standard).

Respondents expressed widespread support for the whistleblower protection provisions although some thought it should be further strengthened by assuring, for example, that whistleblowers could preserve their anonymity. The Standard now explicitly requires adherence to international best practices which specifically include protections for the anonymity of the whistleblower.



19. Principle 15

19.1. Introduction

In the draft Standard, Principle 15 reads as follows:

PRINCIPLE 15: Prepare for emergency response to tailings facility failures and support local level emergency preparedness and response using best practice methodologies.

REQUIREMENT 15.1: Prepare and implement a site-specific Emergency Response Plan (ERP) based on credible tailings facility failure scenarios and the assessment of potential consequences, using the knowledge base. Update regularly, including during closure.

REQUIREMENT 15.2: Meaningfully engage employees and/or employee representatives, site contractors, public sector agencies, first responders and at-risk communities to participate in emergency planning and implementation, including development of specific ERPs for at-risk communities.

REQUIREMENT 15.3: Meaningfully engage with public sector agencies and first responders, and other organizations involved in emergency response for the purpose of developing and implementing a site-specific Emergency Preparedness and Response Plan (EPRP). The plan shall assess the capacity and capability of emergency response services and the Operator shall act accordingly.

REQUIREMENT 15.4: Maintain a state of readiness at the mine site and within at-risk communities by training all appropriate personnel, public sector agencies, first responders and at-risk communities and by testing emergency response plans and procedures with all involved stakeholders.

19.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 102 respondents answered this question. Well over half (58%) of the respondents agree and 23% partially agree that Principle 15 will contribute to the prevention of catastrophic failure of tailings facilities. 12% of respondents disagree and 7% are not sure.

Principle 15: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities? (n = 102)

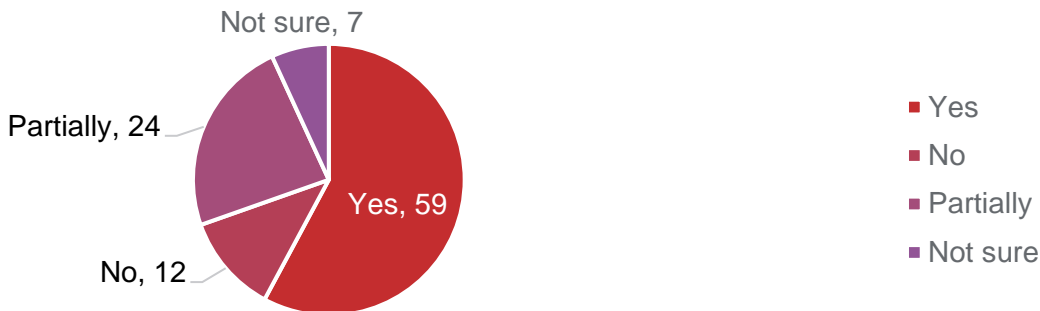


Figure 22 - Principle 15: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



19.3. Responses to the open question: ‘Your comments on Principle 15’

19.3.1. Summary

Respondents broadly express support for the intent behind Principle 15, but a few go on to comment that emergency preparedness is not in itself a measure that prevents failures. Some respondents offer suggestions for how emergency preparedness could be improved, as well as how the Principle itself could be broadened and strengthened. Others seek clarification over the requirements or suggest ways in which their scope should be limited. A few respondents express concern regarding Requirement 15.3. In particular, the perceived implication that Operators may have to compensate for potentially weak public sector emergency response capacity. Lastly, a few respondents wish to emphasise the importance of involving affected communities in the development of ERPs.

19.3.2. Emergency preparedness

A few respondents wish to emphasise the feelings of fear that exist within at-risk communities, who express concern about inadequate ERPs and slow responses to past failures. They highlight concerns regarding gaps in tailings monitoring systems, such as supervision staff only being on duty until 7pm.

Some respondents offer suggestions for how emergency preparedness can be improved, including:

- Provision of signage, alarm systems and dedicated evacuation routes, to help communities feel more at ease;
- Better education about local ERPs, so that people follow the correct instructions in an emergency;
- Connecting emergency preparedness to the Knowledge Base, so that responses can be continually updated in accordance with changing circumstances;
- Modelling and preparing for worst-case flow scenarios; and
- Mandating that ‘testing’ should include things like full-scale mock evacuations.

A few respondents express support for the Principle, particularly agreeing with the necessary inclusion of the Operator, state and affected communities in emergency drills. They suggest that harmonisation between the response plans of the state and Operator would be a good way to improve emergency preparedness. However, a few respondents express concerns about the training and participation requirements of the Principle. These include:

- The Operator lacking the mandate or resources to train public sector agencies;
- Weak state capability in certain areas, potentially impeding Operators in meeting the requirement for ‘significant participation’ of the public sector;
- The low capacity of many mine rescue services;
- Emergency services lacking the capacity to respond to failures, particularly when services may already be inundated due to seismic activity or heavy rainfall; and
- Questioning where the line would be drawn in terms of expectation of the Operator in supporting local emergency services, particularly in remote areas with little existing infrastructure.

19.3.3. Implementation

A few respondents point out that national regulations already legislate for the development of



ERPs, and that the real challenge for Operators is the upkeep and practical implementation of such plans. Others stress that the responsibility for development of ERPs should be shared with government.

A few respondents state that it should be a requirement to develop an ERP prior to construction of a mine.

19.3.4. Affected people and communities

A few respondents from affected communities and NGOs stress the importance of involving communities in the development of ERPs, whilst also expressing frustration that such processes have previously been slow and lacking in transparency. However, other respondents express the concern that it is often difficult to meaningfully engage local people in trial runs of ERPs, suggesting that better education is needed to fully involve communities.

A few respondents offer suggestions for how the Principle can be improved in relation to affected people and communities, including:

- Referring to the inclusion of marginalised and vulnerable people from at-risk communities in Requirement 15.2;
- Highlighting the importance of obtaining information about the community, including who will be affected by different levels of failure, when developing an ERP; and
- Clarification of who 'at-risk' communities refers to in practice.

19.3.5. Scope

A few respondents question the scope of the Principle, by highlighting that Emergency Response Plans serve to limit the consequences of a failure, rather than prevent the failure from happening.

Respondents are divided on the scope of the Principle, with some preferring it to be narrowed and others preferring it to be broadened. Reflecting that these points were raised by a low number of respondents, those suggesting narrowing the scope were from those representing the mining industry, whilst those suggesting broadening the scope were generally from those representing independent interests (such as technical consultants) and communities. Those respondents who wish the scope to be narrowed suggest:

- Qualifying Requirement 15.2 to note that disclosure of emergency planning and implementation should not include material that would pose an operational or security risk;
- Specifying a proportional approach to assessing conformance with certain requirements, such as 'As Low as Reasonably Achievable'; and
- Limiting the training aspect of Requirement 15.4 to awareness of risks associated with tailings facilities operations and contingency plans.

In contrast, those who wish for the scope to be broadened or strengthened suggest the following ways:

- Specifically mandating the type and frequency of ERP testing required, potentially linking this with the requirement to update articulated in 15.1;
- Adding various requirements, such as the evaluation of early warning devices, minimum standards for signage, integrating the ERP with the Environmental Management Plan of the mine and minimum distances between facilities and existing communities;



- Clarifying that ‘readiness’ means having sufficient equipment and material on site to reduce the impact of a failure;
- Strengthening Requirement 15.2 by articulating that community participation should be inclusive of gender, age, status and other factors; and
- Giving due consideration to how requirements will continue to be met once a facility has closed.

A few respondents also express a desire for the Principle to refer to other directives as examples of best practice, such as the European Mining Waste Directive requirements for Major Accident Prevention Plan.

A few respondents suggest combining Requirements 15.2 and 15.3 due to what is seen as overlapping intent. Others suggest integrating the Principle within Topic VI: Public Disclosure and Access to Information.

19.3.6. More information and further clarification

Some respondents express a desire for further clarification and definitions of some aspects of the Principle, including:

- Clarification of ‘act accordingly’ in Requirement 15.5, particularly how much the Operator is expected to compensate for weak state capacity;
- Clarification over whether the ERP should be in the public domain;
- A clearer distinction made between ERP and EPRP;
- A more detailed definition of ‘meaningful engagement’ including examples, such as translating complex concepts into plain language;
- Further clarification of what is meant by ‘testing’, as currently this could range from table-top exercises to full-scale drills;
- Clarification of who will be responsible for funding the training of local government staff; and
- Differentiation between facilities where catastrophic failure can and cannot occur, with separate requirements applied accordingly.

Finally, a few respondents question what the threshold level of risk is for a community to be considered ‘at-risk’.

19.3.7. Accountability and transparency

A few respondents express concern about the implications of what Operator conformance with the Principle would look like in practice, highlighting in particular that it feels inappropriate to require Operators to maintain a state of readiness amongst third parties, as per Requirement 15.4.

In addition, a few respondents express concern regarding the public disclosure requirements of the Principle, suggesting:

- That publicly disclosing ERPs is inappropriate, as publishing things like inundation maps without additional explanation can cause problems;
- Clarification of Requirement 15.2 to state that CBI information would not be required for disclosure; and
- It is unnecessary to publicly disclose training and testing performance results, but that these could be provided to public sector agencies first.



19.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- Emergency planning to focus on credible flow failure scenarios.
- Testing of emergency preparedness measures explicitly required.
- Minimum frequency for full simulations mandated for facilities with potential failures that could lead to loss of life.
- Reference to Emergency Response Plan (ERP) removed. The Standard now refers to a site-specific Emergency Preparedness and Response Plan only.
- Co-development of emergency preparedness measures clarified.
- Operators to take reasonable steps to assess capability of emergency response services and to use this information to support the development of collaborative plans.
- Reference to Operators having to fill gaps in State capacity removed.

Explanatory note:

This Principle requires local disclosure of information for effective emergency planning and public disclosure of a summary of emergency response actions that involve project affected people, public sector agencies but which does not include confidential information related to the Operator or its assets.

In response to extensive comments on this Principle, it now focuses on those aspects of emergency planning within the responsibility of an Operator, but with a focus on 1) an integrated planning process to improve effectiveness of response, and 2) meaningful engagement and co-development of community-focused response measures. Instead of producing separate EPRPs for communities, project-affected people are to co-develop with the Operator emergency preparedness measures. Reference to using best practices and appropriate expertise was added to this Requirement to strengthen the process and outcomes.

This Principle received considerable feedback and concern regarding the role of Operators where public sector capacity is weak, and the extent to which the Operator was expected to fill the gap in the absence of public sector services. In response, the Principle has been revised to require the Operator to take reasonable steps to collaboratively support improved public emergency response services, in alignment with many comments. This was to make clear that the Operator is not required to build and equip public sector infrastructure such as hospitals in order to ensure that the public sector has the ability to respond, although some consultation comments did expect that.

Furthermore, the Principle was re-focused to require the Operator to engage and take reasonable steps to work collaboratively with the public sector to assess response capability gaps and to use this information in the development of collaborative preparedness plans. This slight change in focus recognises that the public sector and other actors cannot be compelled under a voluntary industry standard to work with Operators to address lack of emergency response capacity.

Meaningful engagement requires inclusivity and should address structural inequality. The Standard includes meaningful engagement with employees and contractors under this Principle and with project-affected people earlier in the Standard (See Principle 1 of the final Standard). Inclusion and participation have been further strengthened to ensure that training and simulations include public sector agencies and community, and that these take place at specified frequencies.



20. Principle 16

20.1. Introduction

In the draft Standard, Principle 16 reads as follows:

PRINCIPLE 16: Prepare for long term recovery in the event of catastrophic failure.

REQUIREMENT 16.1: Meaningfully engage with public sector agencies and other organizations that would participate in medium- and long-term social and environmental post-failure response strategies.

REQUIREMENT 16.2: In the event of tailings facility disaster, assess social, economic and environmental disaster impacts as soon as possible after people are safe and short-term survival needs have been met.

REQUIREMENT 16.3: Work with public sector agencies and other stakeholders to facilitate the development of a Reconstruction and Recovery Plan that addresses medium- and long-term social, economic and environmental impacts of a tailings facility disaster.

REQUIREMENT 16.4: Enable the participation of affected people in restoration, disaster recovery works and ongoing monitoring activities. Design and implement plans that take an integrated approach to remediation, reclamation and the re-establishment of functional ecosystems.

REQUIREMENT 16.5: Facilitate the monitoring and public reporting of post-failure outcomes that are aligned with the thresholds and indicators outlined in the plans and adapt recovery activities in response to findings and feedback.

20.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 102 respondents answered this question. Just under half (48%) of the respondents agree and 25% partially agree that Principle 16 will contribute to the prevention of catastrophic failure of tailings facilities. 18% of respondents disagree and 9% are not sure.

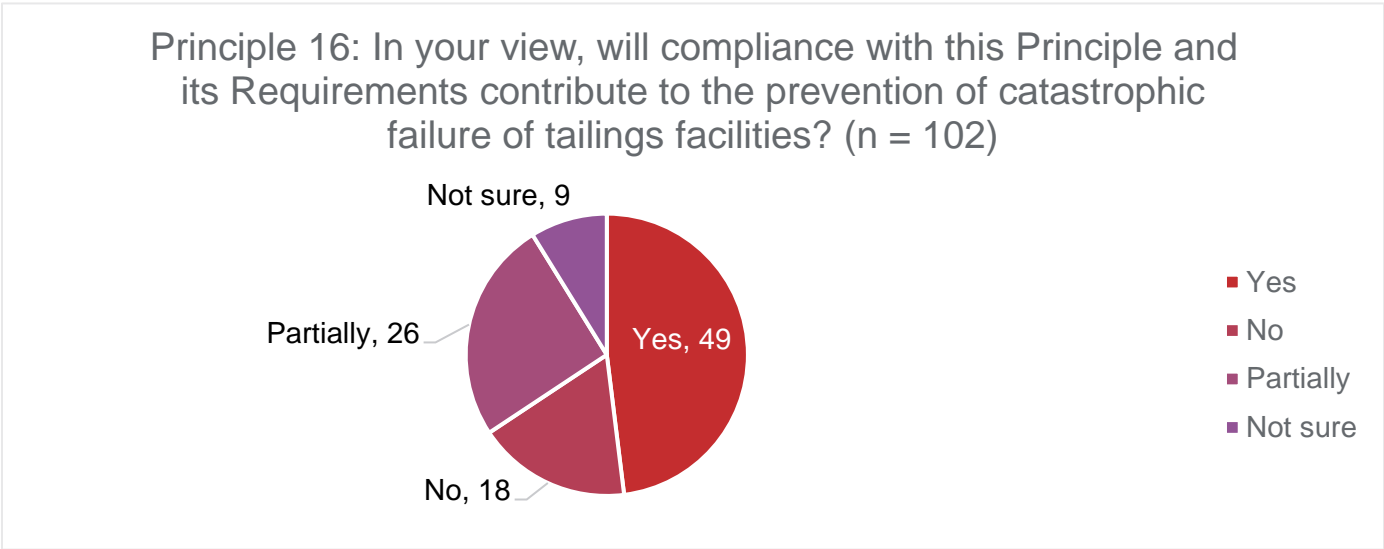


Figure 23 - Principle 16: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



20.3. Responses to the open question: ‘Your comments on Principle 16’

20.3.1. Summary

Whilst some respondents wish to express support for Principle 16, they also question its inclusion in the Standard, commenting that recovery actions do not do anything to prevent failures. A few respondents therefore wish to clarify that they selected ‘no’ in the closed question, not because they disagree with the intent behind the Principle, but because they feel it runs contrary to the preventative aims of the Standard.

Other respondents argue that the Principle may help to highlight the economic consequences of failures, and therefore help prevent them occurring. A few respondents point out that insurers will likely wish to provide input on response and mitigation strategies whilst also suggesting ways in which the scope of the Principle could be broadened, particularly in relation to financial assurance. A few respondents express concerns about implementation and seek further clarification on details regarding certain Requirements.

20.3.2. Scope

Some respondents express a desire for Principle 16 to be strengthened, particularly in relation to social and environmental recovery planning. Respondents comment that:

- The focus on re-establishment of ecosystems is too narrow - it should also include things like livelihood restoration;
- The Principle should also cover water regulations, to address issues of water contamination after a collapse; and
- Requirements should include assessments of the social and environmental impacts of emergency and long-term recovery actions.

In addition, a few respondents welcome the integrated approach to remediation, reclamation and re-establishment of ecosystems, and argue that this should be replicated in the Affected Communities section of the Standard.

Other respondents express the need for clarification that environmental restoration plans need only restore to pre-disaster levels, and do not necessarily need to address environmental issues which may have pre-dated the disaster.

A few respondents, particularly those from the mining industry, doubt the necessity of the Principle, suggesting the Standard should focus solely on prevention rather than post failure recovery. One respondent questions how an Operator could show conformity to the Principle in the absence of a failure.

A few respondents propose including the requirements in a separate document, such as the GTS Papers (which was named the Recommendations Report in the consultation and the comments received), instead of in the Standard. A few go on to explain that this is because they feel the requirements run contrary to the preventative aims of the Standard, such as Requirements 16.2 – 16.5. In addition, a few respondents suggest the amalgamation of certain requirements due to overlap, for example, 16.4 and 16.3.

20.3.3. Implementation

A few respondents raise questions and concerns about the implementation of Principle 16, for example, highlighting that recovery planning is already extensively dealt with in many jurisdictions through national regulations.



A few respondents from within the mining industry, whilst appreciating the need for public sector involvement in recovery planning, question how this might work in practice, particularly in instances when local government capability is weak. Respondents seek assurances that Requirements be phrased in such a way that they can be realistically met, regardless of public sector action. A few respondents also, whilst expressing support for the Principle, question what role insurance companies and mutual aid agreements should have in emergency and recovery planning.

Others express concern about opening up participation in the recovery process to all affected stakeholders, as outlined in Requirement 16.4, and suggest limiting participation to experts only.

Lastly, a few respondents suggest broadenings Requirement 16.5 to also include an obligation for Operators to issue public reports related to failure investigations no later than one year after a disaster.

20.3.4. More information and further clarification

Some respondents express a desire for further clarification on the requirements articulated in Principle 16, including further defining the terms ‘disaster’, ‘Reconstruction and Recovery Plan’ and ‘integrated approach’ to remediation, reclamation and reestablishment of functional ecosystems.

In addition, some respondents express the view that the following areas need greater clarity:

- The timings of when the Reconstruction and Recovery plan outlined in 16.3 should be developed;
- What ‘community involvement in ongoing monitoring’ means in practice - whether this refers to only after a disaster, or also preceding a disaster;
- The standards for assessing the environmental, social and economic impact of a disaster, as outlined in Requirement 16.2;
- How Requirement 16.5 would be met in practice, particularly given that much post-disaster research does not begin until years after an accident; and
- What the engagement outlined in Requirement 16.1 would look like in practice.

20.3.5. Cost and finance

A few respondents highlight ways in which the Principle could be strengthened to include requirements for compulsory financial provision covering remediation (which is also relevant to Requirements 2.5 and 2.6) and compensation after a failure, pointing out that when these are not covered by the Operator, the public ultimately bears the cost. Suggestions include:

- Adding a specific requirement for Operators to provide emergency and long-term recovery support to affected stakeholders, including a minimum level of financial provision for post failure recovery;
- A proposal for Operators to provide financial assurance worth \$1 billion US dollars to cover economic damages for affected parties after a catastrophic tailings failure (which mirrors legislation from other resource extraction industries); and
- Restoration costs should be calculated by an independent assessor.

20.3.6. Other comments

A few respondents question whether performance against the Requirements, particularly 16.2 and 16.5, is measurable in practice.



Others wish to emphasise that responsibility for recovery, and adherence to contingency and emergency plans, ultimately falls on the Operator.

A few respondents suggest that the Principle 16 is redundant, due to overlap with Principle 15.

20.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Requirements based on tailings facility credible flow failure scenarios.*
- *Operator is required to take reasonable steps to meaningfully engage with public sector agencies.*
- *Clarity added that some of these Requirements will only apply in the event of a failure.*
- *Reconstruction, restoration and recovery plans can take many formats so the reference to a discrete 'Reconstruction and Recovery Plan' removed.*
- *Reference to 'remediation, reclamation and the re-establishment of functional eco-systems' removed.*

Explanatory note:

Comments from industry highlighted that most of the Requirements were not auditable as they apply post-failure. These were balanced with comments from other stakeholders expressing support for these Requirements as they represent the task of long-term recovery and outline what would be expected of Operators. These Requirements also address the chronic impacts from an acute event - which was important to many stakeholder groups. While the wording is clarified, the Requirements are retained.

For consistency, the Requirements under this Principle now refer to "reconstruction", restoration and "recovery", with restoration defined in the Glossary.



21. Principle 17

21.1. Introduction

In the draft Standard, Principle 17 reads as follows:

PRINCIPLE 17: Provide public access to information on tailings facility decisions, risks and impacts, management and mitigation plans, and performance monitoring.

REQUIREMENT 17.1: Publicly disclose relevant data and information about the tailings facility and its Consequence Classification in order to fairly inform interested stakeholders.

REQUIREMENT 17.2: Respond in a systematic and timely manner to all reasonable stakeholder requests for information about the tailings facility, to the fullest extent possible and to fairly inform the interested party making the request.

REQUIREMENT 17.3: Commit to transparency and participate in credible global initiatives led by qualified independent organizations to create standardized, independent, industry-wide and publicly accessible databases, inventories or other information repositories about tailings facilities.

21.2. Responses to the closed question: ‘In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?’

In total, 102 respondents answered this question. Half (50%) of the respondents agree and 35% partially agree that Principle 17 will contribute to the prevention of catastrophic failure of tailings facilities. 7% of respondents disagree and 8% are not sure.

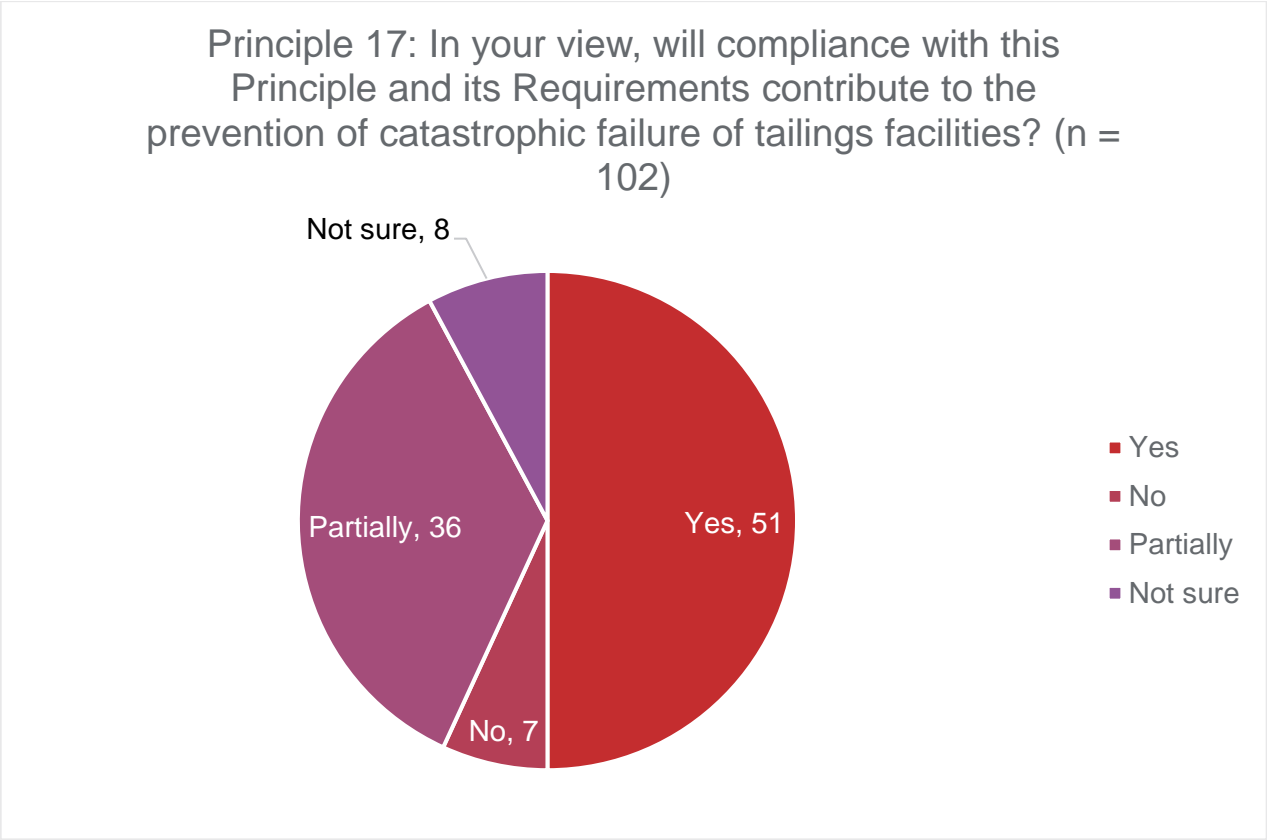


Figure 24 - Principle 17: In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?



21.3. Responses to the open question: ‘Your comments on Principle 17’

21.3.1. Summary

Some respondents express strong support for this Principle and its Requirements. Generally, these are NGO or civil society organisations, although some investor and mining industry organisations also express support.

Respondents agree with the Principle for a variety of reasons, including:

- A view that it will improve accountability and transparency as well as being crucial to maintaining a ‘social licence to operate’;
- A belief that it is integral to the successful implementation of other Principles;
- The potential for public access to fully independent inspection reports; and
- A view that public disclosures could be a useful mechanism for communicating tailings standards to investors and supporting best practice within the industry.

On the other hand, some respondents, particularly those representing the mining industry, express concern about the accountability and transparency requirements of the Principle, suggesting that there will be a reluctance to share information as well as practical issues relating to the public disclosure requirements.

Despite this, some respondents express support for the Principle, highlighting, amongst other things, the rights of affected communities to have access to risk information.

Some respondents also express a desire for further clarification and detail relating to the Requirements, whilst also suggesting ways in which the scope of the Principle could be broadened or changed. Lastly, some respondents propose certain changes to the wording of the Principle.

21.3.2. Transparency

Reluctance to share

Some respondents share the view that the disclosure requirements of the Principle may be unrealistic, with a few outlining specific ways in which the requirements may cause problems and create a significant time burden for professionals in the mining industry. For example:

- Misinterpretation of risk and hazard information may cause unnecessary fear and panic amongst nearby communities and the wider public.
- Anti-mining groups may cherry-pick information, or use it out of context, to further their own aims.
- Transparency may increase the risk of legal liability.

One respondent expresses concern that the Principle could increase the risk of catastrophic dam failures caused by intentional action, as publicly available information could be used by individuals or terrorist organisations aiming to target key infrastructure.

Respondents offer suggestions for how some of the above concerns can be managed, including:

- Enabling organisations to control the release of information through a freedom of information request requirement; and
- Requiring information only be available to relevant stakeholders, rather than the wider public.



When to share

A few respondents express the opinion that the timing and manner in which information is shared is important.

Others state that the industry needs to be able to ‘say no’ to transparency without causing distress, whilst at the same time expressing the view that a certain level of transparency can help counter sensational reporting about tailings issues.

A few respondents suggest context specific limitations be placed on the requirement to disclose information, such as:

- Requiring a response to requests from stakeholder organisations or groups, but not from individuals;
- Only disclosing information to the public who are at risk, i.e. those who live in the inundation zone; and
- Disclosing full data or critical changes of circumstances in company annual reports.

A few respondents feel that all reasonable requests should be dealt with in a timely and systematic manner.

Lastly, a few respondents express concern over the wording of Footnote 37:

“Relevant information to be disclosed shall at a minimum include those items referred to in Requirements 1.3, 2.3, 2.4, 3.1, 4.2, 4.3, 5.5, 5.6, 7.8, 8.2, 8.4, 9.1, 9.2, 10.1, 10.2, 11.1, 11.4, 11.5, 12.1, 13.5, 14.3, 15.1, 15.3, 15.4, 16.1, and in case of a tailings failure 16.2-16.5, provided that such disclosure: (i) is subject to applicable law; (ii) may be complied with through relevant regulatory agencies in accordance with applicable legal requirements; and (iii) will in some cases be subject to the consent of external parties (for example where third party reports and external stakeholder information are involved).”

They suggest rephrasing it to make it clearer that all listed documents must always be disclosed, unless forbidden by law.

Practical issues

Some respondents highlight practical issues relating to the bureaucratic and legal compliance of the Principle, such as:

- A need for clarification about how companies will show they are compliant with the Principle and who is responsible for enforcement;
- Concerns over standards of self-reported data and the consequent need for coordination between reporting organisations in order to maintain standards;
- Ensuring continued compliance with national information laws and consistency with existing legislation. For example, some jurisdictions (e.g. Sweden) already legislate on this issue; and
- Cost and time burden of compliance, particularly for small operators.

Some respondents also express concerns about practical issues related to communicating risk information to the public, including:

- Challenges in presenting very technical information to the public in a way that is accessible and avoids misinterpretations or information overload. There is a suggestion that stakeholders should be trained in how to interpret data; and



- Concerns over the quality of existing information, such as company impact assessments, not being independently audited.

21.3.3. More information and further clarification

Some respondents express the desire for further clarification on what this Principle entails in practice, including:

- Clarifying what is meant by ‘relevant data’, as this phrase is highly subjective;
- Specifying the type and format of the data;
- Clarifying what is meant by ‘reasonable request’. One respondent feels that ‘interested party’ is too vague to be a reasonable criterion for granting such a request;
- Specifying the required timing and frequency of disclosures; and
- Clarification on ‘reporting boundaries’. For example, how the Standard applies to the Operator versus facility owner.

A few respondents feel that clarifying requirements with the wider public is also important, to manage expectations. For example, clarifying that not all documents will be subject to full public disclosure.

In addition, a few respondents suggest differentiated requirements based on type of facility and Consequence Classification, whilst others propose adding a specific requirement to disclose summaries of audits and independent reviews.

21.3.4. Scope

Some respondents express a desire for the scope of the Principle to be broadened in a variety of ways. Suggestions include:

- Adding a requirement to disclose DSR, particularly to those liable for damages as a result of dam failure;
- Conduct, and make public, an independent risk assessment of all tailings dam facilities worldwide;
- Placing responsibility on the EOR to assess when a request is ‘reasonable’ and determining an adequate response time;
- Development of a disclosure framework and guidelines, similar to the SASB standards, so that data is made available to stakeholders in a useful and accessible format;
- Requiring full public transparency of operational plans and audits, similar to those provided by Canadian oil sands operators;
- Linking the Principle to the grievance mechanism outlined earlier in Standard;
- Adding a requirement for disclosures to be included in company regulatory filings, to aid investor decision making;
- Adding a requirement for Operators to explain why they will not disclose information requested by PAPs;
- Making available mediation and problem-solving services to affected parties;
- The creation of a common glossary of definitions for risks and other issues; and
- Further emphasising, within the Standard, the consequences of a failure to communicate, particularly after an incident.

In contrast, a few respondents provide suggestions for how the Principle could be narrowed in scope. A few also suggest that the accountability and transparency requirements of the



Principle could be incorporated into Topic II: Affected Communities.

A few respondents express a need for further clarification and detail relating to the Principle. They suggest:

- Specifying the minimum level of information disclosure required, including: inundation studies, risk assessments and management measures, Consequence Classification and current conformity with the Standard;
- A requirement for disclosures to be reported annually; and
- A requirement for information to be produced in formats that are accessible and comprehensible to different stakeholder groups.

21.3.5. Affected people and communities

A few respondents wish to highlight how access to information about tailings risks is a human rights issue, stating that under many constitutions and national laws, stakeholders often have a right to know the risks to which they are exposed. Respondents suggest that information about risks should therefore be disclosed in ways that can be easily understood by affected communities.

A few respondents express how there is often a lack of trust between Operators and local communities, due to a feeling that community concerns are frequently not listened to. Others emphasise how the commitment to transparency articulated in the Principle could be a good way of (re)building trust.

21.3.6. Implementation

A few respondents express points related to the implementation of the Principle, including:

- Noting that disclosure requirements and rights to access information are already enshrined in international agreements and national constitutions;
- The need for phased implementation, particularly in relation to financial stakeholders under existing confidentiality agreements; and
- The need for implementation to be subject to annual review and consultation.

21.4. How the comments above were addressed in the final version of the Standard

Specific changes related to this Principle:

- *Differentiation made between items which should be kept public and information or data which need to be regularly disclosed.*
- *Differentiation made between new and existing facilities.*
- *A list of reports or summary documents that should be published in plain language and kept updated provided.*
- *Clarity added to ensure that participation in global transparency initiatives is only required where these are related to the safety and integrity of tailings facilities.*

Explanatory note:

In the face of highly divergent opinions on public disclosure, the Expert Panel identified a set of minimum requirements that are considered adequate to balance public access to information against legitimate concerns about security as well as the time and cost of extensive public



disclosure requirements. The Expert Panel recognises concerns about disclosing highly technical information and took the position that transparency and disclosure are required for accountability and that meaningful engagement with potentially affected people to explain the disclosed information is a necessary activity to build trust in the Operator's management of the risks.

In Requirement 15.1 in the final Standard, minimum disclosures are specified and summaries of technical documents are required in order to provide accessible information for the broader audience. Specific references to the Requirements from which information can be obtained for these summary documents are also provided.

Disclosure of the EPRP was subject to much discussion both during and after the consultation period and four key themes emerged. 1) It is understood that relevant information on emergency preparedness and post emergency activities needs to be shared as part of meaningful engagement with project affected people. 2) There is a broader need for disclosure of those aspects of emergency planning to public sector agencies. 3) EPRPs by nature contain highly confidential operational and personal information such as contact details. 4) The scope of EPRPs can be broad ranging and include hypothetical and/or combination events which could unduly alarm the public if presented without context. The solution was to require a summary of the EPRP to be shared via appropriate means depending on the audience. For project affected people, this summary will provide contextualised emergency response measures as part of the meaningful engagement process (Principle 13 of the final Standard). For public disclosure (Principle 15 of the final Standard), the summary will provide sufficient information to support emergency response activities by public sector agencies and whilst maintaining necessary confidentiality. In both scenarios, the information will be based on credible tailings facility flow failure scenarios and informed by the breach analysis.

The language in Requirement 17.2. was changed in response to comments, with the term 'material' replacing 'reasonable'. Material is a well-established concept in sustainability reporting, has been used throughout the Standard and is defined in the glossary to provide more precision.

There was general acceptance of Requirement 17.3 with the industry seeking clarity on scope which has now been made clearer in terms of referring to initiatives focused on the 'public safety and integrity of the facility'.



22. Topics requiring further clarification or guidance in the accompanying Report

22.1. Introduction

Part Four of the consultation questionnaire asked respondents for their views on the Report which would accompany the Standard. In the consultation and the comments received, this was referred to as the Recommendations Report, but has since been renamed GTS Papers:

This Standard will be supplemented by a Recommendations Report which will:

- *Provide the context surrounding the development of the Standard;*
- *Provide guidance on how the Requirements of the Standard can be achieved;*
- *Outline a proposal on how implementation and assurance will be managed; and*
- *Illustrate best practice in some of these issues.*

On which topics would you expect to have further clarification or guidance in this document?

For example, it could include topics such as: ‘what does meaningful engagement require in the context of tailings facilities’; and ‘guidance on monitoring technologies that offer multi-layered protection’.

22.2. Responses to the open question: ‘On which topics would you expect to have further clarification or guidance in this document?’

22.2.1. Introduction

The sub-sections below set out the topics on which respondents requested further clarification, guidance or information be included in the accompanying Report. These are drawn from responses to this question, but also from non-fitting responses which included comments relevant to this section. Frequently, the suggestions and comments mirror comments made by respondents, sometimes in more detail when commenting on individual Principles. These can be found under the ‘More information and further clarification’ subsection of each Principle chapter.

22.2.2. Affected people and communities

A few respondents express the desire for more information on ‘meaningful engagement’, including what measures should be used to fully inform local stakeholders.

22.2.3. Environment

Respondents request more information on several issues related to the environment:

- A few respondents request a section defining high value biodiversity, critical habitat, ‘no net loss’ and ‘net gain’ commitments;
- More information about the use of geosynthetics in tailings facilities and impacts on the various options such as embankment dam or input disposal;
- A few respondents request more information on water management, which they feel is an important part of risk management; and
- More information or a list of current ‘best practice’ resources for social and environmental baselines and knowledge gathering.



22.2.4. Accountability

There are several requests for more information about the ITRB:

- Who takes responsibility if there is a failure but the ITRB is involved and has approved the design;
- Further details about the make-up of the ITRB, how often they meet, how they interact with the organisational structure shown in Annex 3 and in what form (e.g. report and/or meeting);
- A clearer explanation of how the technical reviewer will not have a financial conflict with the mine/project they are reviewing;
- More clarification regarding when it is necessary to use the ITRB or an independent senior technical reviewer; and
- Clearer guidance in the Standard for the minimum necessary level of reporting about the facility.

In terms of broader accountability, there are requests for more detail on how the Standard ensures whistleblowing protections and a few respondents feel that the Standard could be greatly strengthened by providing more information on conflicts of interest.

22.2.5. Closure and post-closure

A few respondents would like more information on the following aspects related to closure of tailings facilities:

- How a facility will be treated differently depending on whether it is open, closed or planned;
- A definition of 'long-term' in the context of a tailings facility; and
- More specific information about the ongoing management responsibilities post-closure.

22.2.6. Design and construction

A few respondents make a request for more information regarding safety of the design in the following areas:

- A clear distinction between upstream and downstream;
- Information about the precise point at which a new facility can be downgraded from 'extreme'; and
- Further clarification or guidance on formalised tailings metrics - such as size/volume in cubic meters, volume changes, horizontal shift displacement trends, tailings facility contents by percentage, improved timelines on reporting and escalatory protocols for non-compliance, changes/sensitivities in ratings, external assessments and verifications on surrounding eco-systems and eco-services.

22.2.7. Implementation

In reference to the Standard as a whole, a few respondents request clarification on which elements of the Standard are deemed as 'guidance' for Operators and which parts are binding 'requirements'. There is a request for guidance on how specific issues (such as baseline studies, best practice in design/construction/operation, mitigation measures, and public participation) could be provided as independent reports.



A few respondents express concerns with how Operators will comply with the Standard in practice. They raise concerns, and seek clarity, regarding:

- What precisely the enforcement mechanism will be;
- The precise definition of 'failure';
- What a company in economic difficulties should do to maintain 'good practice';
- What the incentive mechanism for Operators will be;
- What the length of time is to get certified; and
- How long certification lasts for.

A few respondents also comment that some of the requirements do not appear to have measurable items, making it difficult for them to assess their performance. Further, clarity is sought regarding clarification on the issues of monitoring the facility, specifically the frequency and volume of water sampling, analysis and review.



23. Cross-cutting issues

The following issues, raised by respondents, apply to more than one Principle or aspect of the Standard. This section contains:

- Over-arching themes which emerge across, and apply to, multiple Principles; and
- Comments received in the form of documents and emails submitted by respondents, instead of in response to a specific question in the online portal.

As a result, many of the sub-section headings below mirror those in the Principle chapters but contain cross-cutting issues related to these topics, rather than issues which are specific to just one Principle.

23.1. *Overall comments on the Standard*

Some respondents express explicit support for the Standard, stating that tailings management is a critical issue and that the draft Standard is an excellent response to recent tragedies. They commend the Global Tailings Review for leading the process and hope the Standard is implemented. Others comment that:

- It is good to see governance of tailings facilities now expanded to include other stakeholders;
- The Standard has sufficiently balanced being adequately specific, to cater to the global mining industry, whilst sufficiently general, to avoid being onerous on companies already operating in jurisdictions with strong governance; and
- The integrated approach to design and management is welcomed.

In contrast, however, some respondents express concern that the Standard is too vague and requires more work, commenting that the Standard:

- Could be more prescriptive in detailing ‘how’ things should be done rather than just ‘what’ needs to be done;
- Does not emphasise safety enough, and that this should be a guiding principle;
- Remains relatively modest in terms of promoting the highest possible standards;
- Does not fulfil the objective of ensuring “zero harm to people and the environment and zero tolerance for human fatality”; and
- Leaves too much room for interpretation to claim the Principles are being met when they are not.

23.2. *Aspiration versus prescription*

A few respondents suggest that the Standard should focus more on practicalities. They feel that currently it mostly contains high sounding principles and generalised practices, when in their opinion it is actions and not policies that are needed. In contrast, other respondents express concern that the Standard is too prescriptive and might not be financially viable.

A few respondents comment that there seems to be a lack of clarity over the aims of the Standard, questioning whether the intent is:

- To be a set of prescriptive requirements or general guiding principles;
- To outline a minimum level of compliance expected or to illustrate best practice; or
- To ensure facilities are 100% reliable.



A few respondents welcome the multidisciplinary perspective of the Standard, stating this will improve safety and security. Others, however, argue that in absence of strong regulatory bodies, the Standard could place too great a burden on companies. Other respondents comment that much of the Standard is good but suggest that the industry will be slow to change.

23.3. Relationship with existing standards

A few respondents comment that the Consequence Classifications are not consistent with existing regulations such as:

- ICOLD, ANCOLD or MAC guidelines;
- UNECE Safety Guidelines and Good Practices for TMFs

They request further clarification about the relationship between the proposed Standard and existing regulations. Some of these respondents express the concern that, without better alignment to national standards, the Standard itself could become redundant. More generally, a few respondents express the desire for the Standard to make use of more examples of 'best practice', though without specifying further. For a few respondents, the relationship between the Standard and existing standards raises the question of whether the Operator's mandate of the management of the facility could potentially supersede national authorities.

A few respondents believe consideration is needed as to whether the Standard is an improvement on existing regulations and suggest it should be flexible to accommodate good existing regulations. There are suggestions for the establishment of a shared database to share knowledge between companies.

A few respondents comment that the Standard is heavily weighted toward historic 'best practice' rather than innovation and advances in technology and practice. There is further concern that the Standard makes incorrect assumptions that behaviour of tailings facilities is understood, design is enough to ensure safety, and that the industry needs to be policed.

23.4. Implementation of the Standard

A few respondents ask who will be responsible for tracking progress and determining compliance and others state that implementation of the Standard should be 'auditable'. Respondents highlight the global nature of businesses and raise questions about to what extent companies or countries will be responsible for implementation and enforcement. In contrast, a few respondents argue that a workable standard is one companies can embrace and does not need enforcement.

A few respondents are concerned that:

- If the Standard creates barriers for entry it might fall foul of competition laws;
- State enforcement has not prevented previous failures;
- Many of the requirements are not forceful enough; and
- There is no requirement for mining companies to fund implementation.

A few respondents prefer indirect enforcement through reputational concerns, international finance and insurance. Others, however, argue that an independent team is needed to check compliance or states need to police it. Furthermore, a few respondents suggest it should establish mandatory regulations for each country. A few respondents ask for:

- Definitions of 'compliance' and 'non-compliance';



- A certification process;
- Enforcement and sanction mechanisms; and
- Clarity regarding the relationship between the Standard and ‘implementation process’ and state regulators.

A few respondents suggest an independent study to investigate options about which type of global oversight governance body would be best suited to achieve this objective and effect change at a global scale.

Some respondents make comments about implementation guidance. For example, they call for consideration of how it will be communicated to stakeholders and to foster industry engagement.

A few respondents ask how guidelines fit into existing processes and others state significant work is needed to develop guidelines. A few respondents further call for:

- Guidelines to be prepared by the independent Expert Panel and overseen by a multi-stakeholder governance structure;
- Guidelines for states to enforce;
- A phased implementation;
- Allowance of site-specific solutions for each facility;
- Detailed guidance for the Dam Safety Reviews; and
- Guidance on the vision.

Some respondents argue that the Standard should recognise equivalency with existing standards and make clear that failure to be accredited under the Standard is not necessarily a sign of poor management. They raise concerns that ‘External loading criteria required by the Standard’ is inconsistent with other standards.

A few respondents ask if the Standard supersedes existing regulations, others suggest that the ICMM takes the governance issues and ICOLD take the technical aspects.

Some respondents comment about the Standards interface with legislation. They suggest the Standard consider existing legislation in different countries and how it will be met across different jurisdictions. Some legislation is said to be stronger and other respondents argue that it unjustifiably discredits state sovereignty. A few respondents suggest that states will have a critical role to integrate it into laws and the Standard allows flexibility so that companies can meet legal requirements. A few respondents are concerned that some jurisdictions will ignore the Standard and that the government is a silent partner in mining companies.

A few respondents suggest civil society organisations, communities and the industry should be involved in the implementation. They call for the Standard to acknowledge implementation barriers and allow for feedback to be incorporated before implementation begins. Others ask if the Standard will be further revised. They suggest an international organisation be established to share best practice and review on new or upgraded or expanded tailings.

A few respondents express concern that the Standard places too great a mandate on the State, commenting that the State’s role is to hold the Operator accountable, not to carry out corrective action.

There is also a request to clearly add at the end that ‘The Standard is not intended to displace or pre-empt any requirement of applicable law, and where conflicting, applicable law shall prevail’.



Other respondents are concerned about corruption and suggest that the Standard ought to address this issue.

23.5. Existing versus new tailings facilities

A few respondents ask if the Standard will apply to facilities that have existed for years and others call for clarification about whether certain Principles apply to new or existing facilities. A few respondents are worried that if the Standard does not distinguish between old and new facilities that retrospective enforcement will be a big challenge. Others agree because it is difficult to capture information about older facilities.

A few respondents comment on the application to new facilities and transitional arrangements for existing facilities. Others state that it is more important to ensure existing facilities are safe. A few respondents suggest that the Standard:

- Should be explicit about applying to existing facilities;
- Encourage application to existing mines as well as new ones;
- Distinguish between closed and existing facilities; and
- Should provide clarity on the transition.

23.6. Chronic environmental impacts

Some respondents comment on hazardous metals and chemicals with a few raising concerns about water storage, because tailings are often used as dumping grounds for toxic material. Respondents argue that as acid generation and metal leaching potential increases, the risk also increases. A few respondents express further concern that protection for the environment and ‘sustainability’ is weak within the Principles and request for an additional Principle on environmental impact and management would be helpful. There are suggestions that the Standard:

- Further integrate geochemical elements and measures to minimise toxicity;
- Include the topic of seepage from tailings storage facilities;
- Take on board other regulations, such as the Multilateral Environmental Agreements regulating chemicals; and
- Should require concurrent reclamation that will limit dust production and infiltration to groundwater during the operation and closure phases.

Some users are concerned about the impact on local people from pollution. They state that sludge from tailings facilities has caused mud slides which significantly damage the environment, kill fish and damage livelihoods. They express further concerns about the air quality and sediment and sand being washed downstream from tailings. Respondents are also worried about the quantity of ground water being used and the pollution of water sources. A few respondents call for the clean-up and rehabilitation of the land, rivers and forests. They ask for better consideration of transboundary environmental issues regarding the location of tailings.

A few respondents comment about environmental stewardship and energy efficiency. Others highlight the importance of an environmental risk and impact evaluation and suggest the risk specific approach applied in the EU BREF for the management of waste from extractive industries is considered. A few respondents would like to see the Standard address the environmental liabilities of unowned tailings and the impact of climate change.



23.7. Knowledge base

A few respondents emphasise the importance of data and maintaining organisational memory to learn from previous experience. Respondents state that mine site topographic surfaces are continually changing so frequent, accurate, topographic surveys and photographic mosaics of the mine sites and surrounding areas are needed. As is historical mine site survey data to determine there can be problems patching together surveys. A few respondents suggest the need for:

- A full knowledge for each facility;
- Real time data of each mine;
- Operators to share their knowledge base with other operators; and
- A global inventory to collect information about failures and consequences.

A few respondents ask for more details about the knowledge base and greater specificity regarding data. Other respondents caution that models should be more accurate to reflect tailings behaviour before advocating techniques required by the Standard.

23.8. Accountability and transparency

Some respondents, especially those from project-affected communities, express support for the Standard in relation to its commitment to accountability and transparency. Others express support but also feel that the Standard is a knee jerk reaction to the high number of recent failures, particularly Feijão.

23.8.1. Accountability

A few respondents comment on the use of the term 'Operator' as opposed to 'Owner' throughout the Standard, suggesting that this could allow the legal owner of a tailings facility to absolve itself of accountability if it has contracted out all aspects of tailings management to a third party. Others express a desire for the Standard to further emphasise that the Board of Directors has ultimate responsibility for safety (Principle 4), suggesting that current reference to highest level decision makers is unacceptable. Similarly, a few respondents point out that accountability for preventing failure cannot fall on the EOR or employees alone. (See also Principle 10).

23.8.2. Public disclosure

A few respondents express concern that the public disclosure requirements of the Standard could pose challenges to Operators, which are the same and they are described in Principle 17.

A few respondents suggest ways to tackle these issues, including:

- Linking disclosure requirements to the Consequence Classification of the tailings facility;
- Communicating regularly with affected communities, not just when there is bad news, in order to build trust and reduce the stress that public disclosures about risk may cause; and
- Providing information in such a way that it is accessible to different stakeholders.

Other respondents suggest ways in which the public disclosure aspects of the Standard could be strengthened. Suggested additional requirements include:



- The Board of Directors recording and making public the reasons for any decision to design a tailings dam for other than an Extreme event;
- Publicly disclosing an annual Adaptive Management Report for the tailings facility and communicating this report to stakeholders via a public meeting;
- The Expert Panel to decide the level of appropriate disclosure; and
- The development of a mechanism to facilitate the public reporting of facility-level performance results.

More on the issue of public disclosure requirements can be found under Principle 17.

23.8.3. Conformance

A few respondents suggest ways that conformance with the accountability and transparency requirements of the Standard could be assessed, including:

- The development of an appropriate framework for independent verification, to ensure that self-assessed results accurately reflect performance;
- Giving the ITRB auditing responsibilities to confirm that information provided can be relied upon;
- Requiring implementation to be overseen by a transparent, independent, international agency; and
- Clarifying minimum reporting requirements and defining what a high level of conformance looks like, to inform investor decision making.

However, a few respondents also express the view that there is currently a lack of transparency around how auditors arrive at their conclusions.

A few respondents question the reporting measures with concern raised about self-reporting. Others question the frequency and suggest the Standard consider anonymous reporting.

23.8.4. Practical issues and other suggestions

A few respondents raise practical issues related to the accountability and transparency requirements of the Standard, including:

- Questioning the source of financing for the implementation of the Standard;
- Highlighting that many of the accountability requirements are already covered in the ICMM Tailings Management Protocol;
- Concern about the implication that conformance with these requirements may depend on the action, or inaction, of third parties; and
- That the UN guiding principles already infer many of these responsibilities on governments.

More on these issues can be found under Principles 16 and 17.

A few respondents offer other suggestions for how the accountability and transparency aspects of the Standard could be strengthened, including:

- Further emphasising the need for best-practice and knowledge sharing; and
- Give greater consideration to promoting best practices in data and records management, including an additional requirement for long-term record management and data storage.



23.9. Affected people and communities

23.9.1. Responsibilities

A few respondents suggest ways in which the Standard could be strengthened in relation to how Operators can further ensure the safety of project-affected people, including:

- Emphasising the importance of implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP);
- Moving toward the goal of zero harm to people and the environment (see also Principle 3);
- Ensuring adequate financial assurances for closures and disasters; and
- Requiring a tax to contribute towards a disaster fund, which could be accessed by affected communities via an independent panel.

A few respondents also express concern that the Standard focuses solely on tailings facilities, highlighting that the effects of the whole mine on communities is detrimental.

A few respondents propose ways to improve the public accountability aspects of the Standard. Suggestions include:

- Providing appropriate incentives for recognising proactive Operators; and
- Giving affected people or communities the opportunity to challenge Operator decisions before a neutral tribunal.

Lastly, a few respondents highlight the consequences of weak accountability measures, citing instances where Operators have failed to meet the social commitments made when gaining their mining rights, despite these being legally binding.

More information on the issue of ensuring ‘zero loss of life’ can be found under Principle 3.

23.9.2. How to engage

A few respondents comment on what meaningful engagement involves and processes for best achieving this, and express concern that voices are often not heard in engagement processes. In particular, respondents emphasise the importance of communication, translation and community involvement. In keeping with these comments, a few respondents express concern over the use of an electronic survey to consult on the Standard, given that people in affected communities may not have access to such technology.

For more specific detail on these issues see Principle 3 and ‘Views on the Standard’.

23.9.3. Chronic health and wellbeing impacts

Respondents raise explicit concerns about illness from pollutants and request more information about how these issues will be mitigated. Issues include:

- Contaminated drinking water and developing diarrhoea and vomiting, with children being particularly at risk;
- The impact of tailings on arable land resulting in more people spending time in the water panning for gold, and the subsequent health risks this poses;
- Flooding and the destruction of communities’ sacred sites;
- The loss of hunting and fishing grounds or poor crop yields due to contaminated soil



- having a severe impact on the wellbeing and livelihood of local communities; and
- The highly polluted nature of the rivers creating areas of quicksand.

A few respondents suggest that there should be better access to medical services to treat health problems created by the pollution. Other respondents question why there has not been a greater focus on health within the Standard.

23.10. Competent experts

Respondents raise concerns about the lack of available tailings facility experts globally and a shortage of 'senior experts' in some countries or locally, e.g. Ghana, and argue the Standard will exacerbate this problem. This issue is explored in Principle 2, 6, 7, 10, 11, 12, and 13. They also comment that the Standard does not define what constitutes 'qualified' when referring to qualified personnel.

Respondents highlight the need for increased education and training overall to be able to find members of the ITRB and EOR. They suggest the professional bodies can provide this training and suggest competent experts to decide on training content due to significant gaps in the curriculum of many engineering programmes and request experts to be qualified by international standards. There is also a suggestion that the co-conveners of the Standard should contribute to the development of training programmes and encourage the mining industry to do the same.

23.11. Risk

Some respondents make general comments about the importance of understanding risk. A few respondents praise the assumption that facilities are high risk and support the focus on consequences.

A few respondents raise further concern about the way risk is calculated in the Standard because it does not take into account the practicalities of tailings operations. Respondents are also concerned about the safety of tailings facility workers. Further suggestions are made that the Standard should:

- Use other approaches (such as those outlined in the Equator Principles or in ICOLD Bulletin 154);
- Look at the elevated risk from upstream facilities; and
- Include risk analysis at all stages and for all failure modes.

More information can be found in Principle 5.

23.12. Consequence Classification

Some respondents express concern about the way the Standard deals with loss of life. More detail on this issue and the Consequence Classification are discussed in response to Principle 3 and 4 and 'Views on the Standard'.

A few respondents suggest ways in which the Standard could be improved in relation to Consequence Classification, including:

- Giving greater consideration to how a mix of non-extreme consequences can lead to a high impact scenario being ignored;
- Connecting Consequence Classification to levels of monitoring and specifying clear auditing criteria; and
- Including the Operator in the consequence matrix, for example if impact of failure could



bankrupt them.

A few respondents state that an internationally-recognised Consequence Classification is helpful but should take mitigation measures into account in order to highlight residual risk as well as inherent risk. Respondents suggest this information should be publicly available.

23.13. Cost and finance

Some respondents are concerned about the cost of implementing the Standard and others ask how it will be financed. A few respondents express further concern that operators and governments have different financial capabilities and cutting costs will lead to disasters.

A few respondents call for a review of the true costs and benefits of the safe and secure storage of tailings, but caution that this may lead to the consumer paying more for their mineral and metal commodities.

A few respondents suggest the Standard should include financial assurance to cover the full cost of closure of the failing facilities. There are further suggestions for the Standard to:

- Define resources needed for monitoring; and
- Outline its value compared to other regulations.

More detail can be found in Principle 2.

23.14. Design and construction

Some respondents comment about the design and construction, making general suggestions that the overarching principle should be safe design. This includes emphasising that facilities should be designed with a long-term view ('forever'), not just for the short-term. Respondents believe that good data and monitoring has to start at the design stage with a few commenting that design and planning aspects of the Standard need to be better integrated. Others stress the importance of good design during operations and that safety should be considered all times. A few respondents point out that good design does not automatically lead to good construction.

A few respondents debate the use of upstream facilities with a few arguing they should not be used, though others acknowledge the risk but say they can be used responsibly. A few respondents also question the need for high water facilities and ask for a minimum or lowest water level that can be pushed for. A few respondents suggest that if one is coarse grinding, the amount of water in the dam can be reduced. Other respondents, however, state that there is no incentive to move towards dry tailings.

Some respondents suggest that:

- Factors of safety depend on the data, otherwise they can give a false sense of security;
- Designs for potential expansions cannot be as detailed as those for planned contractions;
- Algorithms are used to monitor and manage safety indicators;
- The only applicable design is the design criteria applicable to extreme events;
- Geochemical balance, materials and minerals should be considered, and it is important to evaluate and quantify these risks;
- Undertaking an assessment of alternatives to inform the selection of a location for a tailings facility and technologies to be used for tailings management; and
- Design criteria should be decided by the company and intended to remain in compliance



with local guidelines.

A few respondents state that mistakes can be made anywhere in the design process and others argue that tailing facilities are not sufficiently stable. Some respondents raise concerns that:

- The Standard gives no explanation for increasing external loading factor for design criteria;
- Levees and mine pits can collapse, causing flooding and landslides; and
- Larger dams are more likely to fail due to having greater strains.

More details about the design are discussed in Principle 5 and 6.

23.15. Emergency preparedness

A few respondents suggest emergency and evacuation drills should be held on a regular basis and that operators must avoid complacency. There are further suggestions that the topic be reframed as tailings disaster risk reduction, to make it proactive rather than reactive and that it covers both existing and future tailings facilities.

A few respondents believe the Standard might be perceived to be expecting and planning for failures. They suggest that topic area be kept brief with details of capacity-building and long-term recovery provided in supporting guidance for relevant professionals.

A few respondents call for the Fire Service and operators to share information during the planning, building, and closure stages. This should include conducting regular simulations together. They further recommend that the Fire Services publish its own intervention plans for major risk scenarios.

More detailed about Emergency preparedness are discussed in Principle 15.

23.16. Management and governance

A few respondents praise the Standard and others say it will lead to step change because most tailings issues come from poor management. A few respondents assert the importance of identifying responsibility and clearly defined roles. They comment that the prevention of failure will require the Accountable Executive to acquire the required knowledge to accept taking responsibility.

A few respondents comment that responsibility sits with the owner and that the training and development programmes for management roles are important.

There are specific suggestions such as:

- Managerial functions should not be moved into the Board;
- Community engagement should be included;
- Focus on weak links between technology and management; and
- Strengthen conflict of interest requirements.

A few respondents make further comments that the Standard does not integrate with existing corporate and regulatory governance systems. A few respondents suggest that the reporting person does not have to be an engineer, but others disagree and praise the Standard incorporation of an *Engineer of Record*.

23.17. Closure

Some respondents express concern that the Standard does not deal with closure in enough detail and request greater clarity on this issue. In relation to tailings closure, a few respondents suggest further consideration of aspects such as:

- Tailings facility ‘design for closure’ concepts;
- Progressive reclamation;
- Tailings facility operation, including deposition planning;
- Monitoring and site data collection; and
- Geochemical and water quality concerns.

Other respondents provide more specific suggestions regarding closure requirements, such as:

- Emphasising dry closure as best practice;
- Designing closure to minimise liabilities; and
- Requiring closure planning, including planning for ‘largest dam scenario’, from the outset.

A few respondents express concern over the cost of closure and the safe disposal of waste. Other respondents praise the Standard’s plans for rehabilitation of the environment; however, a few respondents argue these requirements could be strengthened.

23.18. Post-closure

A few respondents are concerned about the danger from legacy sites. Respondents call for more information and ask if the Standard has considered rehabilitation and subsequent land use. A few respondents further suggest the Standard distinguish between operating and abandoned or inactive mines. They suggest the latter category merit different requirements.

A few respondents argue that the issue of post-closure is poorly addressed by the Standard and should be strengthened. Others are unclear about whether the Standard is intended to cover closed facilities as well as those in operation.

23.19. Use of technology

Some participants comment on the use of technology, with a few raising concerns that the Standard does not encourage any particular technology. Respondents say the Standard could do so without dictating certain technologies. Others say the Standard could be more prescriptive by highlighting technologies that have been identified to increase risks and must be re-evaluated and discouraged.

A few respondents note that “Best Available Techniques” includes both the technology and the way the installation is designed, maintained, operated and decommissioned.

23.20. Structure

A few respondents suggest that some Principles (e.g. Principles 7, 8) are of higher importance to prevent accidents. Others comment that the most important topics should start with formal corporate acceptance of responsibility followed by key corporate policy prescriptions and governance and management requirements. A few respondents call for the Standard to make safety the clear driver of dam design, construction, operation, and closure.

A few respondents support the Standard because they recognise the urgency of the problem, but others ask why facilities with ‘Extreme’ consequences are allowed to be constructed.

23.21. Development of the Standard



A few respondents express concern that the consultation has not included sufficient representation for affected people and communities. Others state that the mining industry must have further opportunity to provide feedback. A few respondents say that changes to the draft must be explained and a revised draft should be circulated for public review.

A few respondents say it is not clear whether the Standard is to be developed from first principles or to be preceded by a critical review of current standards. A few other respondents ask if there are any points of disagreement within the ICMM or parts to which their member companies object.

A few respondents also express concern about the short time frame given to produce the Standard and suggest providing more time for review and development of the document, whilst others criticise potential interference from Co-conveners in the Drafting process.

Some respondents express gratitude for the opportunity to comment and look forward to further productive engagement. Respondents say the strength of the initiative is the extensive stakeholder consultation process to ascertain the sentiments of the stakeholder groups across the world.

However, a few respondents ask for the consultation to be extended further and raise concerns that the process seems too quick. Concerns raised include:

- There has not been enough time to consult with local people and organisations, including many of those who will be most affected by changes;
- There has been insufficient engagement with ICOLD;
- Issues communicating with NGOs led to a low response rate;
- Access to internet is bad in parts of South Africa; and
- The online forms are time consuming.

A few respondents say the suggested revisions will not be easy to resolve but are needed before any further consultation. A few respondents ask:

- Whether comments, particularly those made by corporations, will be made available to all participants;
- If the stakeholders can include local universities and indigenous people who have local historical knowledge of the natural environment and the ecology;
- If the information is being shared between companies; and
- If there is an expectation that the Standard be in effect in Q1 2020 and if there are concerns this may not be achieved.

23.22. Wording of the draft Standard

Respondents point out some confusion regarding wording in the Standard.

Generally, a few respondents believe significant further work is needed to make the language of the Standard clear and unambiguous. In its current format they feel it leaves too many issues subject to interpretation.

More specifically, they comment that 'catastrophic failure' lacks a definition which is clear to them.

A few respondents highlight that the text of the Russian version needs to be improved to correspond the English version.



23.23. Scope of the Standard

Respondents make suggestions on how the Standard could be extended.

- The protocols for determining compliance or non-compliance with the Standard should be part of the Standard and not a separate document generated in a different instance.
- An international networking platform must be established, to share good practices, technological developments, accident learning.

Respondents request more information about the Scope of the Standard.

- A few respondents comment that the scope of the document should be clearer on the purpose, audience and how it should be used.
- There is a suggestion for making a Problem Statement, a clear and comprehensive statement of the issues being addressed or the condition to be improved on.



Appendix A: Consultation questions

Part 1: Your details

Please enter your details. Personal information will only be used to ascertain how representative the responses to this consultation are. It will not be used for any other purpose and it will not be seen by those analyzing your responses to the rest of the consultation questions.

Questions in this section which must be completed are marked with a *. For the multiple-choice questions, you can select 'prefer not to say' or 'other' if you prefer not to divulge the answer to the question.

Q1

Name

Q2

Age range*

☐

 Under 18

☐

 18-24

☐

 25-34

☐

 35-44

☐

 45-54

☐

 55-64

☐

 65-74

☐

 75 and over

☐

 Prefer not to say

Q3

Gender*

☐

 Male

☐

 Female

☐

 Other

☐

 Prefer not to say

Q4

Country of residence*

Q5

Email address*

Q6

Would you like to receive updates on the outcome of this consultation and the Global Tailings Review? If you select 'Yes', we will store your contact details in order to email you future updates. You can opt-out of these updates at any time.*

☐

 Yes

☐

 No

Q7

The consultation report will contain quotes from some responses to illustrate the points made. If you are responding on behalf of an organization, are you happy to let us include your organization name alongside any quotes? Those not responding on behalf of an organization will be quoted as 'Individual'.*

☐

 Yes - you may quote parts of my response alongside my organization



- name
- ☐ No - if quoted, I want it to read 'Anonymous'
- Q8 Are you willing to let us publish your response publicly on the Global Tailings Review website?*
- ☐ Yes
- ☐ No
- Q9a Please select which stakeholder group you are representing*
- ☐ Academic (universities and other research institutes)
- ☐ Civil Society / Community Organization (CSO)
- ☐ Consultant (geotechnical)
- ☐ Consultant (non-geotechnical)
- ☐ Government
- ☐ Insurer
- ☐ Investor
- ☐ Labour representative
- ☐ Mining Industry
- ☐ Multilateral Organization (e.g. UNECE, World Bank)
- ☐ Non-governmental organization (NGO) – International
- ☐ Non-governmental organization (NGO) – National
- ☐ Professional organization (e.g. members of the International Association of Impact Assessment)
- ☐ Project affected person
- ☐ Other
- Q9b If 'Other', please specify below:*
- Q10a Are you responding on behalf of an organization?*
- ☐ Yes
- ☐ No
- Q10b Please give the name of the organization*
- Q10c Your level within the organization*
- ☐ Executive Management
- ☐ Management
- ☐ Officer
- ☐ Other



Part 2: Your views on each of the Principles and Requirements in the Standard

Topic I: Knowledge Base

Principle 1

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 1: Develop and maintain an updated knowledge base to support safe tailings management across the tailings facility lifecycle.

- *REQUIREMENT 1.1: Develop and regularly update knowledge about the social, economic and environmental context of a tailings facility, aligned with international best practice.*

- *REQUIREMENT 1.2: Prepare and regularly update detailed site characterization of the tailings facility site(s) that includes geomorphology, geology, geochemistry, hydrogeology, geotechnical, seismicity and hydrology. The physical and chemical properties of the tailings shall be determined and regularly updated.*

- *REQUIREMENT 1.3: Where there is a potential for flow failure, conduct and regularly update an inundation study for the tailings facility using a methodology that considers credible hypothetical failure modes, site conditions, tailings facility conditions, hydraulic routing models of the slurry, and the amount of tailings and downstream materials entrained in the outflow. The results of the study should include estimates of the inundation area, flow arrival times, depth and velocities, duration of flooding, and depth of material deposition.*

- *REQUIREMENT 1.4: Identify stakeholders and how they are related to the tailings facility site, inundation area and impacted area; collect land, livelihood and demographic data for groups most at risk from a tailings facility failure.*

Q11 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q12 Do you wish to comment on Principle 1 or any of its Requirements?

- ☐ Yes
- ☐ No

Q13 Which aspects of Principle 1 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 1.1
- ☐ Requirement 1.2
- ☐ Requirement 1.3
- ☐ Requirement 1.4



Q14 Your comments on Principle 1:* (up to 9999 characters)

Principle 2

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in *italics* are defined in Annex 1 of the Standard.

PRINCIPLE 2: Integrate the social, economic, environmental and technical information to select the site and the technologies to minimize the risk of tailings facility failure.

- REQUIREMENT 2.1: Undertake a formal, multi-criteria alternatives analysis of all feasible sites and technologies for tailings management with the goal of minimizing risk to people and the environment. Use the knowledge base to inform this analysis and to develop facility designs, inundation studies, a monitoring program, Emergency Preparedness and Response Plans (EPRP), and closure and post-closure plans.

- REQUIREMENT 2.2: Engage an Independent Tailings Review Board (ITRB) or an independent senior technical reviewer with no conflicts of interest to assess and review the alternatives analysis for site and technology selection.

- REQUIREMENT 2.3: Use the knowledge base to assess the social, economic and environmental impacts of the tailings facility and its potential failure. Develop impact mitigation and management plans, and meaningfully engage potentially affected communities in the process.

- REQUIREMENT 2.4: Update the assessment of the social, economic and environmental impact and update stakeholder identification and information for any material change to the tailings facility, the social or environmental context or conditions. If new data indicates that the impacts from the tailings facility differ from those assumed in the original assessments, the management of the facility shall be adjusted to reflect the new data using adaptive management best practices.

- REQUIREMENT 2.5: The amount of financial assurance shall be reviewed periodically and updated based on estimated closure and post-closure costs.

- REQUIREMENT 2.6: Taking into account actions to mitigate risks, the Operator will consider obtaining appropriate insurance to the extent commercially reasonable or providing other forms of financial assurance if appropriate to address risks relating to the construction, operation, maintenance, and/or closure of a tailings facility.

Q15 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q16 Do you wish to comment on Principle 2 or any of its Requirements?

- ☐ Yes
- ☐ No

Q17 Which aspects of Principle 2 do your comments relate to?

- ☐ Comments on the Principle itself



- ☐ Requirement 2.1
- ☐ Requirement 2.2
- ☐ Requirement 2.3
- ☐ Requirement 2.4
- ☐ Requirement 2.5
- ☐ Requirement 2.6

Q18 Your comments on Principle 2:* (up to 9999 characters)

Topic II: Affected Communities

Principle 3

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 3: Respect the rights of project-affected people and meaningfully engage them at all stages of the tailings facility lifecycle.

- REQUIREMENT 3.1: Demonstrate respect for human rights by conducting human rights due diligence to understand how a tailings facility failure may cause or contribute to adverse human rights impacts, including impacts on the individual and collective rights of indigenous peoples and tribal peoples.

- REQUIREMENT 3.2: Meaningfully engage project-affected people (PAP) throughout the tailings facility lifecycle regarding the matters that affect them.

- REQUIREMENT 3.3: Where the risks of a potential tailings facility failure could result in loss of life or sudden physical and/or economic displacement of people, the Operator shall consider in good faith additional measures to minimize those risks or implement resettlement following international standards. The Operator shall communicate these decisions to those affected.

- REQUIREMENT 3.4: Establish an effective operational-level, non-judicial grievance mechanism that addresses the concerns, complaints and grievances of project-affected people that relate to the tailings facility.

Q19 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q20 Do you wish to comment on Principle 3 or any of its Requirements?

- ☐ Yes
- ☐ No

Q21 Which aspects of Principle 3 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 3.1



- ☐ Requirement 3.2
- ☐ Requirement 3.3
- ☐ Requirement 3.4

Q22 Your comments on Principle 3:* (up to 9999 characters)

Topic III: Design, Construction, Operation and Monitoring of the Tailings Facility

Principle 4

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in *italics* are defined in Annex 1 of the Standard.

PRINCIPLE 4: Design, construct, operate and manage the tailings facility on the presumption that the consequence of failure classification is 'Extreme', unless this presumption can be rebutted.

- REQUIREMENT 4.1: Presume the consequence of failure classification of all new tailings facilities as being 'Extreme' (see Annex 2, Table 1: Consequence Classification Matrix) and design, construct, operate and manage the facility accordingly. This presumption can be rebutted if the following three conditions are met:

a) The knowledge base demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures; and

b) A design of the upgrade of the facility to meet the requirements of an 'Extreme' consequence of failure classification in the future, if required, is prepared and the upgrade is demonstrated to be feasible; and

c) The consequence of failure classification is reviewed every 3 years, or sooner if there is a material change in any of the categories in the Consequence Classification Matrix, and the tailings facility is upgraded to the new classification within 3 years. This review should proceed until the facility has been safely closed and achieved a confirmed 'landform' status or similar permanent non-credible flow failure state.

- REQUIREMENT 4.2: The decision to rebut the requirement to design for 'Extreme' Consequence Classification, shall be taken by the Accountable Executive or the Board of Directors (the 'Board'), with input from an independent senior technical reviewer or the ITRB. The Accountable Executive or Board shall give written reasons for their decision.

- REQUIREMENT 4.3: Existing facilities shall comply with Requirements 4.1 and 4.2. Where the required upgrade is not feasible, the Board, or senior management (as appropriate based on the Operator's organizational structure), with input from the ITRB, shall approve the implementation of measures to reduce the risks of a potential failure to the greatest extent possible.

Q23 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure



Q24 Do you wish to comment on Principle 4 or any of its Requirements?

- ☐ Yes
- ☐ No

Q25 Which aspects of Principle 4 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 4.1
- ☐ Requirement 4.2
- ☐ Requirement 4.3

Q26 Your comments on Principle 4:* (up to 9999 characters)

Principle 5

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 5: Develop a robust design that integrates the knowledge base and minimizes the risk of failure for all stages of the tailings facility lifecycle.

- REQUIREMENT 5.1 Consider implementation of alternative options, including but not limited to in-pit disposal and underground tailings placement, and application of the technologies selected according to Requirement 2.1, to minimize the amount of tailings and water placed in external tailings facilities.

- REQUIREMENT 5.2: Develop and implement water balance and water management plans for the tailings facility, taking into account the knowledge base, upstream and downstream hydrological basins, the overall mine site, mine planning and operations and the integrity of the tailings facility for all stages of its lifecycle.

- REQUIREMENT 5.3: Develop a robust design that considers the social, economic and environmental context, the tailings facility Consequence Classification, site conditions, water management, mine plant operations, tailings operational issues, and the construction, operation and closure of the tailings facility.

- REQUIREMENT 5.4: Address all credible failure modes of the structure, its foundation, abutments, reservoir (tailings deposit and pond), reservoir rim and appurtenant structures to minimize risk. Risk assessments must be used to inform the design.

- REQUIREMENT 5.5: Develop a design for all stages of the facility, including but not limited to start-up, partial raises and interim configurations, final raise, and all closure stages. The design should be reviewed and updated as performance and site data become available and in response to material changes to the risk assessment.

- REQUIREMENT 5.6: Design the closure stage in a manner that meets all the Requirements of the Standard with sufficient detail to demonstrate the feasibility of the closure scenario and allows immediate implementation of elements of the design, as required. The design should include, where possible, progressive closure and reclamation during operations.

Q27 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes



- ☐ No
- ☐ Partially
- ☐ Not sure

Q28 Do you wish to comment on Principle 5 or any of its Requirements?

- ☐ Yes
- ☐ No

Q29 Which aspects of Principle 5 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 5.1
- ☐ Requirement 5.2
- ☐ Requirement 5.3
- ☐ Requirement 5.4
- ☐ Requirement 5.5
- ☐ Requirement 5.6

Q30 Your comments on Principle 5:* (up to 9999 characters)

Principle 6

Before completing these questions, we strongly suggest reading the full . All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 6: Adopt design criteria that minimize risk.

- REQUIREMENT 6.1: Select and clearly identify design criteria that are appropriate to reduce risk for the adopted Consequence Classification for all stages of the tailings facility lifecycle and for all credible failure modes.

- REQUIREMENT 6.2: Apply factors of safety that consider the variability and uncertainty of geologic and construction materials and of the data on their properties, the parameters selection approach, the mobilized shear strength with time and loading conditions, the sensitivity of the failure modes and the strain compatibility issues, and the quality of the implementation of risk management systems.

- REQUIREMENT 6.3: Identify and address brittle failure mechanisms with conservative design criteria and factors of safety to minimize the likelihood of their occurrence, independent of trigger mechanisms.

- REQUIREMENT 6.4: The EOR shall prepare a Design Basis Report (DBR) that details the design criteria, including operating constraints, and that provides the basis for the design of all stages of the tailings facility lifecycle. The DBR must be reviewed by the ITRB or senior independent technical reviewer.

Q31 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially



☐ Not sure

Q32 Do you wish to comment on Principle 6 or any of its Requirements?

☐ Yes

☐ No

Q33 Which aspects of Principle 6 do your comments relate to?

☐ Comments on the Principle itself

☐ Requirement 6.1

☐ Requirement 6.2

☐ Requirement 6.3

☐ Requirement 6.4

Q34 Your comments on Principle 6:* (up to 9999 characters)

Principle 7

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in *italics* are defined in Annex 1 of the Standard.

PRINCIPLE 7: Build and operate the tailings facility to minimize risk.

- REQUIREMENT 7.1: Build, raise, operate, monitor and close the tailings facility according to the design intent of all stages of the tailings facility lifecycle, using qualified personnel and appropriate methodology, equipment, procedures, data acquisition, the TMS and the environmental and social management system (ESMS).

- REQUIREMENT 7.2: Manage the quality and adequacy of the construction and operation process by implementing Quality Control, Quality Assurance and Construction vs Design Intent Verification (CDIV). CDIV shall be used to ensure that the design intent is implemented and is still being met if the site conditions vary from the design assumptions.

- REQUIREMENT 7.3: Prepare a detailed Construction Records Report at least annually or whenever there is any change to the tailings facility, its infrastructure or its monitoring system. The EOR shall sign this report.

- REQUIREMENT 7.4: Develop, implement and annually update an Operations, Maintenance and Surveillance (OMS) Manual that supports effective risk management as part of the TMS. The OMS Manual should follow best practices, clearly provide the context and critical controls for safe operations, and be reviewed for effectiveness. The EOR and RTFE shall provide access to the OMS Manual and training to all personnel involved in the TMS.

- REQUIREMENT 7.5: Implement a formal change management system that triggers the evaluation, review, approval and documentation of all changes to design, construction, operation and monitoring during the tailings facility lifecycle. The change management system shall also include the requirement for a periodic Deviance Accountability Report (DAR), prepared by the EOR, that provides an assessment of the cumulative impact of the changes on the risk level of as-constructed facility. The DAR shall provide any resulting requirements for updates to the design, DBR, OMS and the monitoring program.

- REQUIREMENT 7.6: Refine the design, construction and operation throughout the tailings facility lifecycle by considering the lessons learned from ongoing work and the



evolving knowledge base, and by using opportunities for the inclusion of new and emerging technologies and techniques.

- REQUIREMENT 7.7: Ensure that the ESMS is designed and implemented to align decisions about the tailings facility with the changing environmental and social context as identified in the knowledge base, in accordance with the principles of adaptive management.

- REQUIREMENT 7.8: Independent senior technical reviewers, with qualifications and expertise in social and environmental sciences and performance management, shall carry out a full review of the ESMS and monitoring results every three years, with annual summary reports provided to relevant stakeholders.

Q35 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q36 Do you wish to comment on Principle 7 or any of its Requirements?

- ☐ Yes
- ☐ No

Q37 Which aspects of Principle 7 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 7.1
- ☐ Requirement 7.2
- ☐ Requirement 7.3
- ☐ Requirement 7.4
- ☐ Requirement 7.5
- ☐ Requirement 7.6
- ☐ Requirement 7.7
- ☐ Requirement 7.8

Q38 Your comments on Principle 7:* (up to 9999 characters)

Principle 8

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 8: Design, implement and operate monitoring systems.

- REQUIREMENT 8.1: Design, implement and operate a comprehensive performance monitoring program for the tailings facility that allows full implementation of the Observational Method and covers all potential failure modes.

- REQUIREMENT 8.2: Establish performance objectives, indicators, criteria, and



performance parameters and include them in the design a monitoring program that measures performance at all stages of the tailings facility lifecycle. Record, evaluate and publish the results at appropriate frequencies. Based on the data obtained, update the monitoring program throughout the tailings facility lifecycle to confirm that it remains effective.

- REQUIREMENT 8.3: Analyse monitoring data at the frequency recommended by the EOR, and assess the performance of the facility, 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 EOR for review and update the risk assessment and design, if required. Performance outside the expected ranges shall be addressed swiftly through critical controls or trigger response action plans (TARPs).

- REQUIREMENT 8.4: Report the results of the monitoring program at the frequency required to meet company, regulatory and public disclosure requirements, and as a minimum on a quarterly basis. The RTFE and the EOR shall review and approve these reports.

Q39 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q40 Do you wish to comment on Principle 8 or any of its Requirements?

- ☐ Yes
- ☐ No

Q41 Which aspects of Principle 8 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 8.1
- ☐ Requirement 8.2
- ☐ Requirement 8.3
- ☐ Requirement 8.4

Q42 Your comments on Principle 8:* (up to 9999 characters)

Topic IV: Management and Governance

Principle 9

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 9: Elevate decision-making responsibility for tailings facilities with a ‘Very High’ or ‘Extreme’ Consequence Classification.

- REQUIREMENT 9.1: For a proposed new facility where a potential credible failure could have ‘Very High’ or ‘Extreme’ consequences, the Board or senior management (as appropriate based on the Operator’s organizational structure) shall be responsible for



approving the proposal, after deciding what additional steps shall be taken to minimize the consequences.

- REQUIREMENT 9.2: For an existing facility, where a potential credible failure could have 'Very High' or 'Extreme' consequences, the Board or senior management (as appropriate based on the Operator's organizational structure) shall mandate additional steps to minimize the consequences and publish reasons for its decision. This process is to be repeated at the time of every Dam Safety Review (DSR).

Q42 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q44 Do you wish to comment on Principle 9 or any of its Requirements?

- ☐ Yes
- ☐ No

Q45 Which aspects of Principle 9 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 9.1
- ☐ Requirement 9.2

Q46 Your comments on Principle 9:* (up to 9999 characters)

Principle 10

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 10: Establish roles, functions, accountabilities and remuneration systems to support the integrity of the tailings facility.

- REQUIREMENT 10.1: The Board of the parent corporation shall adopt and publish a policy on or commitment to the safe management of tailings facilities, to emergency preparedness and response, and to recovery after failure that is mandatory for all its subsidiaries and joint ventures. The commitment shall require the Operator to establish a Tailings Management System (TMS), and a governance framework to assure the effective implementation and continuous improvement of the TMS.

- REQUIREMENT 10.2: A member of senior management shall be accountable for the safety of tailings facilities and for minimizing the social and environmental consequences of a tailings facility failure. This Accountable Executive will also be accountable for a program of tailings management training, for emergency preparedness and response, and for recovery after failure. The Accountable Executive or delegate must have regular scheduled communication with the Engineer of Record (EOR).

- REQUIREMENT 10.3: Appoint a site-specific Responsible Tailings Facility Engineer (RTFE) who is accountable for the integrity of the tailings facility, liaises with the EOR, the Operations and the Planning teams and who either reports directly to the Accountable



Executive, or via a reporting line that culminates with the Accountable Executive. The RTFE will have a dotted reporting line to mine management to represent the delivery of services to the site.

- REQUIREMENT 10.4: For employees who have a role in the TMS, consider implementing a performance incentive program to include a component linked to the integrity of tailings facilities.

- REQUIREMENT 10.5: Identify appropriate qualifications and experience requirements for all personnel who play safety-critical roles in the operation of a tailings facility, in particular, for the RTFE, the EOR and the Accountable Executive. Ensure that occupants of these roles have the identified qualifications and experience, and develop succession plans for these personnel.

Q47 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q48 Do you wish to comment on Principle 10 or any of its Requirements?

- ☐ Yes
- ☐ No

Q49 Which aspects of Principle 10 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 10.1
- ☐ Requirement 10.2
- ☐ Requirement 10.3
- ☐ Requirement 10.4
- ☐ Requirement 10.5

Q50 Your comments on Principle 10:* (up to 9999 characters)

Principle 11

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 11: Establish and implement levels of review as part of a strong quality and risk management system for all stages of the tailings facility lifecycle.

- REQUIREMENT 11.1: Conduct and regularly update risk assessments with a qualified multi-disciplinary team using best practice methodologies. Transmit risk assessments to the ITRB for review, and address with urgency all risks considered as unacceptable.

- REQUIREMENT 11.2: Conduct internal audits to verify consistent implementation of company procedures, guidelines and corporate governance requirements consistent with the TMS and the ESMS developed to manage risks.



- *REQUIREMENT 11.3: The EOR or a senior independent technical reviewer shall conduct annual tailings facility construction and performance reviews.*

- *REQUIREMENT 11.4: A senior independent technical reviewer shall conduct an independent DSR periodically (every 3 to 10 years, depending on performance and complexity, and the Consequence Classification of the tailings facility). The DSR shall include technical, operational and governance aspects of the tailings facility and shall be done according to best practices. The DSR contractor cannot conduct a subsequent DSR on the same facility.*

- *REQUIREMENT 11.5: For tailings facilities with 'Very High' or 'Extreme' Consequence Classification, the ITRB, reporting to the Accountable Executive and/or the Board, shall provide ongoing independent review of the planning, siting, design, construction, operation, maintenance, monitoring, performance and risk management at appropriate intervals across all stages of the tailings facility lifecycle. For facilities with other Consequence Classifications, the ongoing senior independent review can be done by a single person.*

Q51 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q52 Do you wish to comment on Principle 11 or any of its Requirements?

- ☐ Yes
- ☐ No

Q53 Which aspects of Principle 11 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 11.1
- ☐ Requirement 11.2
- ☐ Requirement 11.3
- ☐ Requirement 11.4
- ☐ Requirement 11.5

Q54 Your comments on Principle 11:* (up to 9999 characters)

Principle 12

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 12: Appoint and empower an Engineer of Record.

- *REQUIREMENT 12.1: Engage an engineering firm with expertise and experience in design and construction of tailings facilities of comparable complexity to provide EOR services for the tailings facility. Require that the firm nominate an individual to represent the firm as the EOR, in concurrence with the Operator, and verify that the individual has the necessary experience, skills and time to fulfil this role. Alternatively, the Operator may*



appoint an employee with expertise and experience in comparable facilities as the EOR. In this instance, the EOR may delegate the design to a firm ('Designer of Record') but shall remain thoroughly familiar with the design in executing their responsibilities as EOR.

- REQUIREMENT 12.2: Empower the EOR through a written agreement that clearly describes their authority, role and responsibilities throughout the lifecycle of all facilities, including closed facilities, and during transfer of ownership of mining properties.

- REQUIREMENT 12.3: Establish and implement a system to manage the quality of all engineering work, the interactions between the EOR, the RTFE and the Accountable Executive, and their involvement in the tailings facility lifecycle as necessary to confirm that both the implementation of the design and the design intent are met in all cases.

- REQUIREMENT 12.4: Given its potential impact on the risks associated with a tailings facility, the selection of the EOR shall be decided by the Accountable Executive and not influenced or decided by procurement personnel.

- REQUIREMENT 12.5: Where it becomes necessary to change the EOR firm, develop a detailed plan for the comprehensive transfer of data, information, knowledge and experience with the construction procedures and materials.

Q55 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q56 Do you wish to comment on Principle 12 or any of its Requirements?

- ☐ Yes
- ☐ No

Q57 Which aspects of Principle 12 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 12.1
- ☐ Requirement 12.2
- ☐ Requirement 12.3
- ☐ Requirement 12.4
- ☐ Requirement 12.5

Q58 Your comments on Principle 12:* (up to 9999 characters)

Principle 13

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 13: Develop an organizational culture that promotes learning and early problem recognition.

- REQUIREMENT 13.1: Educate personnel who have a role in the TMS about the reason



for and importance of their job procedures for the prevention of a tailings facility failure.

- REQUIREMENT 13.2: Incorporate workers' experience-based knowledge into planning for all stages of the tailings facility lifecycle.

- REQUIREMENT 13.3: Establish mechanisms that promote cross-functional collaboration to ensure data and knowledge integration and communication across the TMS and the ESMS.

- REQUIREMENT 13.4: Identify and implement lessons from internal incident investigations and relevant external accident reports, paying particular attention to human and organizational factors.

- REQUIREMENT 13.5: Develop procedures to recognize and reward employees and contractors who speak up about problems or identify opportunities for improvement. Respond in a timely manner and communicate actions taken and their outcomes.

Q59 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q60 Do you wish to comment on Principle 13 or any of its Requirements?

- ☐ Yes
- ☐ No

Q61 Which aspects of Principle 13 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 13.1
- ☐ Requirement 13.2
- ☐ Requirement 13.3
- ☐ Requirement 13.4
- ☐ Requirement 13.5

Q62 Your comments on Principle 13:* (up to 9999 characters)

Principle 14

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 14: Respond promptly to concerns, complaints and grievances.

- REQUIREMENT 14.1: Establish a formal written complaint process that provides the Operator and the appropriate regulatory authority with information about possible permit violations or other conditions relating to the tailings facility that pose a risk to public health, safety, or the environment.

- REQUIREMENT 14.2: Establish an effective pathway that guarantees anonymity for employees and contractors to express concerns about tailings facility safety.



- *REQUIREMENT 14.3: Initiate prompt investigations of all credible employee and stakeholder complaints and grievances, swiftly resolve concerns and complaints and provide remedy as required.*

- *REQUIREMENT 14.4: In accordance with international best practices for whistleblower protection, the Operator shall not discharge, discriminate against, or otherwise retaliate in any way against a whistleblower, or any employee or person who, in good faith, has reported a possible violation or unsafe condition.*

Q63 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q64 Do you wish to comment on Principle 14 or any of its Requirements?

- ☐ Yes
- ☐ No

Q65 Which aspects of Principle 14 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 14.1
- ☐ Requirement 14.2
- ☐ Requirement 14.3
- ☐ Requirement 14.4

Q66 Your comments on Principle 14:* (up to 9999 characters)

Topic V: Emergency Response and Long-Term Recovery

Principle 15

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 15: Prepare for emergency response to tailings facility failures and support local level emergency preparedness and response using best practice methodologies.

- *REQUIREMENT 15.1: Prepare and implement a site-specific Emergency Response Plan (ERP) based on credible tailings facility failure scenarios and the assessment of potential consequences, using the knowledge base. Update regularly, including during closure.*

- *REQUIREMENT 15.2: Meaningfully engage employees and/or employee representatives, site contractors, public sector agencies, first responders and at-risk communities to participate in emergency planning and implementation, including development of specific ERPs for at-risk communities.*

- *REQUIREMENT 15.3: Meaningfully engage with public sector agencies and first responders, and other organizations involved in emergency response for the purpose of developing and implementing a site-specific Emergency Preparedness and Response Plan*



(EPRP). The plan shall assess the capacity and capability of emergency response services and the Operator shall act accordingly.

- REQUIREMENT 15.4: Maintain a state of readiness at the mine site and within at-risk communities by training all appropriate personnel, public sector agencies, first responders and at-risk communities and by testing emergency response plans and procedures with all involved stakeholders.

Q67 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q68 Do you wish to comment on Principle 15 or any of its Requirements?

- ☐ Yes
- ☐ No

Q69 Which aspects of Principle 15 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 15.1
- ☐ Requirement 15.2
- ☐ Requirement 15.3
- ☐ Requirement 15.4

Q70 Your comments on Principle 15:* (up to 9999 characters)

Principle 16

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 16: Prepare for long term recovery in the event of catastrophic failure.

- REQUIREMENT 16.1: Meaningfully engage with public sector agencies and other organisations that would participate in medium- and long-term social and environmental post-failure response strategies.

- REQUIREMENT 16.2: In the event of tailings facility disaster, assess social, economic and environmental disaster impacts as soon as possible after people are safe and short-term survival needs have been met.

- REQUIREMENT 16.3: Work with public sector agencies and other stakeholders to facilitate the development of a Reconstruction and Recovery Plan that addresses medium- and long-term social, economic and environmental impacts of a tailings facility disaster.

- REQUIREMENT 16.4: Enable the participation of affected people in restoration, disaster recovery works and ongoing monitoring activities. Design and implement plans that take an integrated approach to remediation, reclamation and the re-establishment of functional ecosystems.



- *REQUIREMENT 16.5: Facilitate the monitoring and public reporting of post-failure outcomes that are aligned with the thresholds and indicators outlined in the plans and adapt recovery activities in response to findings and feedback.*

Q71 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☐ Not sure

Q72 Do you wish to comment on Principle 1 or any of its Requirements?

- ☐ Yes
- ☐ No

Q73 Which aspects of Principle 1 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 16.1
- ☐ Requirement 16.2
- ☐ Requirement 16.3
- ☐ Requirement 16.4
- ☐ Requirement 16.5

Q74 Your comments on Principle 16:* (up to 9999 characters)

Topic VI: Public Disclosure and Access to Information

Principle 17

Before completing these questions, we strongly suggest reading the full Standard. All terms that appear below in italics are defined in Annex 1 of the Standard.

PRINCIPLE 17: Provide public access to information on tailings facility decisions, risks and impacts, management and mitigation plans, and performance monitoring.

- *REQUIREMENT 17.1: Publicly disclose relevant data and information about the tailings facility and its Consequence Classification in order to fairly inform interested stakeholders.*

- *REQUIREMENT 17.2: Respond in a systematic and timely manner to all reasonable stakeholder requests for information about the tailings facility, to the fullest extent possible and to fairly inform the interested party making the request.*

- *REQUIREMENT 17.3: Commit to transparency and participate in credible global initiatives led by qualified independent organizations to create standardized, independent, industry-wide and publicly accessible databases, inventories or other information repositories about tailings facilities.*

Q75 In your view, will compliance with this Principle and its Requirements contribute to the prevention of catastrophic failure of tailings facilities?

- ☐ Yes



- ☐ No
- ☐ Partially
- ☐ Not sure

Q76 Do you wish to comment on Principle 17 or any of its Requirements?

- ☐ Yes
- ☐ No

Q77 Which aspects of Principle 17 do your comments relate to?

- ☐ Comments on the Principle itself
- ☐ Requirement 17.1
- ☐ Requirement 17.2
- ☐ Requirement 17.3

Q78 Your comments on Principle 17:* (up to 9999 characters)

Part 3: Your views on the Standard

This section is for your overall views about the Standard - whether it has met your expectations and whether you believe it will create a step change in the safety and security of tailings storage facilities.

If you need to clear any options you have selected on this page, you can do this by pressing 'Reset' at the bottom. Note that this will also clear any text that you have entered on this page.

Q79a Your view as to whether the content of the Standard meets your expectations:

- ☐ 1: Falls well below my expectations
- ☐ 2: Falls somewhat below my expectations
- ☐ 3: Meets my expectations
- ☐ 4: Goes somewhat beyond my expectations
- ☐ 5: Goes well beyond my expectations

Q79b Please summarize why you chose this option: (up to 750 characters)

Q80a Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities:

- ☐ 1: Will not improve the safety and security of tailings facilities
- ☐ 2: Will deliver minor improvements to the safety and security of tailings facilities
- ☐ 3: Will strengthen some but not all aspects of the safety and security of tailings facilities
- ☐ 4: Will deliver improvements across all aspects of the safety and security of tailings facilities
- ☐ 5: Will deliver a step change in all aspects of the safety and security of tailings facilities

Q80b Please summarize why you chose this option: (up to 750 characters)



Q81a Does the content of the Standard address all aspects of tailings facility management adequately?

☐ Yes

☐ No

Q81b Please explain why and/or what is missing: (up to 750 characters)

Part 4: Suggestions for topics to be included in the accompanying Recommendations Report

Q82 This Standard will be supplemented by a Recommendations Report which will:

- Provide the context surrounding the development of the Standard;
- Provide guidance on how the Requirements of the Standard can be achieved;
- Outline a proposal on how implementation and assurance will be managed; and
- Illustrate best practice in some of these issues.

On which topics would you expect to have further clarification or guidance in this document?

For example, it could include topics such as: 'what does meaningful engagement require in the context of tailings facilities'; and 'guidance on monitoring technologies that offer multi-layered protection'.

Part 5: Upload a file (optional)

If you are submitting consolidated feedback or if you prefer to work offline, you can simply upload your comments here by clicking on the icon on the left of the box. (We can accept files up to 10 Mb in size, including PDF and Word documents. Executable file types, such as JavaScript or Visual Basic, are not permitted for security reasons).



Appendix B: List of participating organisations

The list below is of all those who responded to the consultation, indicated that they response was on behalf of an organisation (Q10a, above) and gave an organisation name:

3v Geomatics Inc

Aberdeen Standard Investments

Advanced Mining Technology Center de la Facultad de Ciencias Físicas y Matemáticas de la Universidad de Chile

Alberta Energy Regulator

Alcoa Corporation

American Exploration & Mining Association

Aqseptence Group srl

Association of State Dam Safety Officials (ASDSO)

Australian National Committee on Large Dams (ANCOLD)

BAUER Spezialtiefbau GmbH

BC Ministry of Energy, Mines and Petroleum Resources

BCI

BGRIMM&CHINCOLD

BlackRock Investment Stewardship

BMO Global Asset Management

British Columbia Investment Management Corporation (BCI)

Business & Human Rights Resource Centre

Corpo de Bombeiros Militar do Estado de Mato Grosso do Sul

Corporación Alta Ley

Corporate Human Rights Benchmark (CHRB), part of World Benchmarking Alliance (WBA)

Dams Safety NSW

D'Appolonia Engineering Division of Ground Technology, Inc.

DOWAホールディングス株式会社

Earthlife Namibia

Earthworks

Edgard Duarte Consultores Asociados LTDA

ERM

European Association of Mining Industries (Euromines)

European Bank for Reconstruction and Development

Fauna & Flora International

GAIA Ecoingeniería S.A.



Geotecnia Ambiental Chile

Geotheta (Pty) Limited

Ghana Chamber of Mines

GHD

Global Sustainability Services Inc

Golder

GRID-Arendal

Hecla Mining Company

Human Rights Law Centre, Jubilee Australia Research Centre and Dr Volker Boege

International Council on Mining and Metals (ICMM) *Note: ICMM provided feedback based on collective input from its company members. ICMM's company members include: African Rainbow Minerals, Alcoa, Anglo American, AngloGold Ashanti, Antofagasta Minerals S.A., BHP, CODELCO, Freeport-McMoRan, Glencore, Gold Fields, Hydro, JX Nippon Mining & Metals, Minera San Cristobal, Mitsubishi Materials, MMG, Newcrest, Newmont, Minsur, Barrick, Polyus, Rio Tinto, Orano, Sibanye Stillwater, South32, Sumitomo Metal Mining, Teck Resources, Vale*

IMET Chile (Asociación de Ingenieros Metalúrgicos de Chile)

Initiative for Responsible Mining Assurance (IRMA)

Inmarsat

Japan Mining Industry Association

JP Morgan Chase

K+S Aktiengesellschaft

Kirkland Lake Gold

KLM Consulting Services

KLM Consulting Services Pty Ltd Johannesburg, Gaborone (Botswana) and London (UK)

Klohn Crippen Berger

Knight Piesold

Local Authority Pension Fund Forum (LAPFF)

Materion

Mineral and Natural Resources Division, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry

Minerals Council of Australia

Minerals Council South Africa

Minerals Council South Africa

Mining Association of Canada (MAC)

Mining Dams Committee (MDC) of the Canadian Dam Association (CDA)

MiningWatch Canada



Ministry of the Environment - Brazil

Minnesota Center for Environmental Advocacy

Mrs

NOVAGOLD

NPCT Solutions

Pacific Road Capital

Palabora Copper

Phibion

PhotoSat

Principles for Responsible Investment (PRI) *Note: a full signatory list can be viewed, [here](#).*

Prospectors and Developers Association of Canada

Riskope

RLAM

Rusal Aughinish (Ireland) subsidiary of United Company RUSAL

Saskatchewan Ministry of Environment - Environmental Protection Branch

Servicio Nacional de Geología y Minería, SERNAGEOMIN, Chile

Simtars | Resources Safety and Health

SMI-ICE-Chile

South African Institute of Civil Engineers (SAICE) Geotechnical Division

Sustainable Minerals Institute International Centre of Excellence Chile The University of Queensland

Sustainable Minerals Institute, the University of Queensland

Sustainalytics

SveMin (Swedish Association of Mines, Mineral and Metal producers)

SwedCOLD as the Swedish representative in the ICOLD Tailings committee (Committee L. Tailings Dams and Waste Lagoons)

Swiss Re

Swiss Re Corporate Solutions

The Mosaic Company

Toho Zinc Co., Ltd

Transparency International Australia (TIA)

United Nations Environment Programme

University College London

US Society on Dams (USSD) Tailings Dams Committee

Western Australian Department of Mines, Industry Regulation and Safety

Women's Rights and Mining

TRAVERSE

