

Consultation response

Part 1: Your details

Original language of response: English

Name: David Brett

Country of residence: Australia

Are you willing to let us publish your response publicly on the Global Tailings Review website? Yes

Please select which stakeholder group you are representing: Professional organization (e.g. members of the International Association of Impact Assessment)

If 'Other', please specify below:

Are you responding on behalf of an organization? Yes

Please give the name of the organization: Australian National Committee on Large Dams (ANCOLD)

Your level within the organisation: Management

Part 2: Your views on each of the Principles and Requirements in the Standard

Topic 1: Knowledge Base

Principle 1

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

Partially

Which aspects of Principle 1 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 1

Refer to attached Spreadsheet

Principle 2

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

Partially

Which aspects of Principle 2 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 2

Refer to attached letter and spreadsheet

Topic II: Affected Communities

Principle 3

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

Partially

Which aspects of Principle 3 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 3

Refer to attached letter and spreadsheet

Topic III: Design, Construction, Operation and Monitoring of the Tailings Facility

Principle 4

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

Partially

Which aspects of Principle 4 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 4

Recommended Revision to Requirement 4

PRINCIPLE 4: Design, construct, operate manage and close the tailings storage facility in accordance with established good practice appropriate to the Consequence of Failure Classification determined by a robust, defensible and fully documented assessment in accordance with the provisions of Annexure 2.

REQUIREMENT 4.1:

Determine the consequence of failure classification (see Annex 2, Table 1: Consequence Classification Matrix) of all new tailings storage facilities by a robust, defensible and fully documented assessment process and design, construct, operate and manage the facility accordingly. This assessment should make the following allowances:

- a)The Consequence Category Assessment should consider the expected future development of the TSF and its environment over the life of the facility, including the closure and post-closure phases, and confirm that future upgrading of the Consequence Classification can be accommodated; and
- b)Undertake a sensitivity analysis to suggest what future changes to the environment of the facility could trigger an upgrade of the Consequence Classification and put in place controls to prevent or plans to respond to this; and
- c)The consequence of failure classification is reviewed by the EOR every year

and again during any Dam Safety Reviews. Review should continue 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 accept the 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 upgrading is required, 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 as low as reasonably practical (ALARP), in accordance with good practices in defensive measures and risk-informed decision making.

Principle 5

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

Partially

Which aspects of Principle 5 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 5

Refer to attached spreadsheet

Principle 6

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

Partially

Which aspects of Principle 6 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 6:

Refer to attached letter and spreadsheet

Principle 7

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

Partially

Which aspects of Principle 7 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 7

Refer to attached letter and spreadsheet

Principle 8

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

Partially

Which aspects of Principle 8 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 8

Refer to attached letter and spreadsheet

Topic IV: Management and Governance

Principle 9

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

Partially

Which aspects of Principle 9 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 9

Refer to attached letter and spreadsheet

Principle 10

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

Partially

Which aspects of Principle 10 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 10:

Refer to attached spreadsheet

Principle 11

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

Partially

Which aspects of Principle 11 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 11:

Refer to attached spreadsheet

Principle 12

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

Partially

Which aspects of Principle 12 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 12:

Refer to attached letter and spreadsheet

Principle 13

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

Partially

Which aspects of Principle 13 do your comments relate to?

Yes

Your comments on Principle 13:

Refer to attached letter and spreadsheet

Principle 14

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

Partially

Which aspects of Principle 14 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 14:

Refer to attached letter and spreadsheet

Topic V: Emergency Response and Long-Term Recovery

Principle 15

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

Partially

Which aspects of Principle 15 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 15:

refer to attached letter and spreadsheet

Principle 16

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

No

Which aspects of Principle 16 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 16:

Refer to attached letter and spreadsheet

Topic VI: Public Disclosure and Access to Information

Principle 17

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

Partially

Which aspects of Principle 17 do your comments relate to?

Comments on the Principle itself

Your comments on Principle 17:

refer to attached letter and spreadsheet

Part 3: Your views on the Standard

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

Your view as to whether the content of the Standard meets your expectations (closed question):

2: Falls somewhat below my expectations

Please summarize why you chose this option:

Expected to see more integration of ICMM and technical professional bodies Standards

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

Your view on whether the Standard will create a step change for the industry in the safety and security of tailings facilities (closed question):

3: Will strengthen some but not all aspects of the safety and security of tailings facilities

Please summarize why you chose this option:

Will have varying improvement depending on countries existing legislation and approach to industry guidelines. eg Australia has strong industry and regulatory systems in place.

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

Does the content of the Standard address all aspects of tailings facility management adequately (closed question)?

No

Please explain why and/or what is missing:

There are many technical issues glossed over in the Standard and better to implement reference to backup technical documents such as ICOLD Bulletin on Tailings Dam Safety - under preparation.

Part 4: Suggestions for topics to be included in the accompanying Recommendations Report

On which topics would you expect to have further clarification or guidance in this document?

Refer to attached letter

Other information

Non-fitting response text (text submitted which did was not in response to one of the questions above)

Attachment 1 reference (if applicable)

ref:0000001107:Q83

Attachment 2 reference (if applicable)

ref:0000001107:Q84



Dr Bruno Oberle
Chair of the Global Tailings Review (GTR)
consultation@globaltailingsreview.org

Our ref: GTR_2019

Dear Dr Oberle

ANCOLD Response to Global Tailings Standard

ANCOLD is pleased to respond to your request for comments on the Draft Global Tailings Standard as part of the current ongoing community consultation process.

ANCOLD has had comprehensive Guidelines on Tailings Dams since 1999, with updates in 2012 and 2019. These have served the Australasian region well with a history of tailings dam safety and no life loss or significant environmental impact. Nevertheless, ANCOLD supports the intent of the Draft Global Tailings Standard to improve the safety of tailings dams throughout the world and hope to be able to assist your committee in this goal.

ANCOLD understands from ICMM, that this Standard is intended to be the overarching document covering three levels of guidance to be implemented over the next few years, with the second level focussing on Governance and the third level focussing on technical detail. ANCOLD is currently assisting ICOLD to develop a technical document to provide guidance that could sit underneath and support the Standard your committee is developing. ANCOLD is prepared to revise our country Guidelines to complement any reasonable Global Standard developed through this process.

ANCOLD has circulated the Draft Standard to our members and have received a significant response as listed on a spreadsheet we will submit through the DTR website. However, we have selected the most important points for your consideration as follows:

1. ANCOLD recommends the use of the term "Tailings Storage Facility (TSF)" rather than "Tailings Facility", since the latter can have different meanings, including, for example "a filter press" or other processing plant. A suggested definition for TSF may be: "tailings storage facilities are structures intended to store tailings to ensure physical and geochemical stability into the long term".
2. ANCOLD is concerned about the limited availability of sufficient technically competent professionals to cover the requirements for Engineer of Record (EOR) and Independent Technical Review as currently defined. This could be improved by Requirement 2.2 requiring firstly an "Independent Senior Technical Reviewer", with an Independent Technical Review Board (ITRB) recommended for Very High or Extreme Consequence of Failure Classification (Dam Failure Consequence Category, as used by ANCOLD) dams, or if recommended by the Independent Senior Technical Reviewer to address specific concerns.

3. ANCOLD suggest that the GTRO carefully consider the implications of Principle 4 as written: “*Design, construct, operate and manage the tailings storage facility on the basis of the presumption that the Consequence of Failure Classification is ‘Extreme’, unless this presumption can be rebutted*”. While the intent of this Principle is understood, namely, to make all levels of management aware of the potential risk posed by tailings dams, there is a risk that it could have the unintended result that the capacity to readily distinguish tailings dams that have the most serious consequences may be weakened. Also, as Extreme dams require the most important focus on robustness of risk controls and defensive measures, artificially inflating the Consequence Classification could lead to inappropriate allocation of scarce professional resources. If the intention is to have higher design, construction, operational and closure requirements for tailings dams that could be assessed as less than Extreme consequence category, then this can be achieved in other ways, such as demonstrated by the ANCOLD Guidelines on Tailings (2012). This could involve an adjustment of Table 2 (see later).

Instead, ANCOLD proposes for consideration, a system whereby the Consequence of Failure Classification:

- a) is assessed by robust and defensible methods, including consideration of possible changes to the facility and/or the environment of the facility over time,
- b) is approved by the Board, and
- c) upgrades are implemented in accordance with appropriate industry risk reduction methodologies using ALARP (as low as reasonably practical) principles.

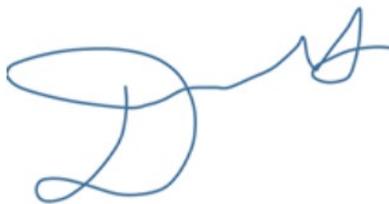
A suggested rewording of Principle 4 is attached. ANCOLD also draws to the attention of the GTRO the ANCOLD requirement that all Dam Failure Consequence Classification tailings dams be designed for Maximum Credible Earthquake (MCE) or Probable Maximum Flood (PMF) at closure, given the long period of risk exposure into perpetuity.

4. ANCOLD is concerned about the use of the word “minimize” in relation to risk, throughout the Standard, but particularly in Principles 6 and 7. Strictly, this could be interpreted as “reduce to zero”. As this is likely not the intent, the term “as low as reasonably practical (ALARP)” would be more acceptable.
5. Clearly, the liquefaction of loose, brittle, contractive materials causing catastrophic failure of tailings dams is partly responsible for this Standard being developed. However, ANCOLD considers that more clarity should be applied to Requirement 6.3, rather than just requiring “conservative design criteria and factors of safety”. “Conservative design parameters” are difficult to define without a comprehensive study. ANCOLD suggests that Requirement 6.3 require appropriate geotechnical investigation, material characterisation and geotechnical testing to determine the post-peak strength parameters. This could be dealt with more fully in the technical level document being prepared by ICOLD, noting that ANCOLD is currently developing a comprehensive guideline on the state of good practice for geotechnical investigations for dams that may assist this matter in the future..

6. Risk assessments are mentioned in the Standard many times without any guidance. This critical topic is generally poorly understood and implemented. Again, this could be dealt with more fully in the technical level document being prepared by ICOLD.
7. Similarly, Requirement 6.2 requiring factors of safety that consider the variability and uncertainty of geologic and construction materials is a crucial area requiring specific detailed advice.
8. ANCOLD considers that the timing of the DSR under Requirement 11.4: (every 3 to 10 years, depending on performance and complexity, and the Consequence Classification of the tailings facility) is too long. ANCOLD would recommend more frequent review, particularly as many dams are raised annually. Given this timing, the limited resources available in industry, and the arguable benefits of “a new set of eyes”, ANCOLD has concerns with the requirement for the DSR contractor being unable to conduct a subsequent DSR on the same facility. We note that an ongoing association by a competent reviewer may be preferable.
9. ANCOLD are very concerned with Table 2, containing recommendations likely to be in conflict with a number of other existing standards, codes and guidelines. In some instances, the recommendations in Table 2 actually result in lower (less conservative criteria) than existing documents, including ANCOLD. In particular ANCOLD Guidelines require High and Extreme Consequence Category structures to have similar design requirements. It is recommended that Table 2 be deleted from the Standard, and included under the technical level document. ICOLD is actively considering this aspect.

ANCOLD hope that these comments are constructive and would be pleased to further assist GTRO in further developing the Global Tailings Standard.

Yours Sincerely,



David Brett

Convenor, ANCOLD sub-committee on Tailings and Mine Dams

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Annexure

Recommended Revision to Requirement 4

PRINCIPLE 4: Design, construct, operate manage and close the *tailings storage facility* in accordance with established good practice appropriate to the Consequence of Failure Classification determined by a robust, defensible and fully documented assessment in accordance with the provisions of Annexure 2.

REQUIREMENT 4.1: Determine the consequence of failure classification (see Annex 2, Table 1: Consequence Classification Matrix) of all new tailings storage facilities by a robust, defensible and fully documented assessment process and design, construct, operate and manage the facility accordingly. This assessment should make the following allowances:

- a) The Consequence Category Assessment should consider the expected future development of the TSF and its environment over the life of the facility, including the closure and post-closure phases, and confirm that future upgrading of the Consequence Classification can be accommodated; and
- b) Undertake a sensitivity analysis to suggest what future changes to the environment of the facility could trigger an upgrade of the Consequence Classification and put in place controls to prevent or plans to respond to this; and
- c) The consequence of failure classification is reviewed by the EOR every year and again during any Dam Safety Reviews. Review should continue 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 accept the 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 upgrading is required, 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 as low as reasonably practical (ALARP), in accordance with good practices in defensive measures and risk-informed decision making.

Document Title

GLOBAL
TAILINGS
STANDARD

**These comments are from ANCOLD
individual members and should not
be deemed to represent the views of
ANCOLD as an organisation**

Revision

Draft for Public
Consultation

Date of issue

Nov-19

Item No.	Reference	Page	Item / Text	Comment/concern	Reviewer	Suggested changes
1	0	0	Overarching word use	The use of the words require, requirement, must, shall etc throughout the document imply that it is legally enforceable which this standard is not.	Peter McGough	These words should be replaced with words such as should and expected.
2	0	0	Title	The title Global Tailings Standard does not describe what is contained in the document. The document contains a standard for tailings storage facilities only. It is not a standard that applies to all aspects of tailings production, management, storage, rehabilitation, or closure.	Peter McGough	Change name to Global Tailings Storage Facility Standard
3		0	General	Omits Geotech in places, deferring to other stakeholders.	David Williams	
4		0	General	Makes no allowance for site setting; e.g., climate, topography, seismicity, and region.	David Williams	Could make greater reference to regional/national Guidelines; e.g., ANCOLD, CDA, etc.
5		0	General	A mix of specific/prescriptive/precautionary and very general.	David Williams	
6	Paragraph 1 of page	ii	tailings facility	There is no cross reference to the definition of a tailings facility. The term tailings facility is misleading as it may include the paste plant facility or thickener producing tailings, or it may include the dewatering facility producing dry tailings, it may even include a tailings vat leach facility.		Change terminology to Tailings Storage Facility Standard

7	Paragraph 2 of page	iii	Finally, local, regional and central authorities of the State each have a critical role to play in embedding aspects of the Standard into their laws, their mining permits and other authorizations	<p>This is an incorrect assumption. The need for this standard is not universal, or warranted in many states. It assumes the world does not have any competent standards or regulations in place.</p> <p>Regulators in a large mining country such as Australia and states such as Western Australia have more than adequate regulations, codes, guidance, permitting systems in place to ensure the standards in this document are met.</p> <p>The "pushing" of a so called standard like this would impose unnecessary additional cost burden on mining companies in Australia in demonstrating compliance with this standard whilst also complying with best practice documents such as; The Code of Practice for Tailings Storage Facilities in Western Australia, and the ANCOLD Guidelines on Tailings Dams or company Standards such as Rio Tinto Standard D5.</p>	Peter McGough	This sentence should be removed and replaced with a softer sentence that uses the term "may consider "
8	Paragraph 1 of page	1	mine tailings facility	<p>There is no definition of a tailings facility. This is critical to understanding of whether this standard is applicable to an operator and whether they should read further.</p> <p>In terms of setting a global standard, the definition of a tailings storage facility (TSF) requires clear definition (which is verified by consultation with numerous regulators). An example Some questions that require definition and clarification are: Is a dry stack a tailings facility Is co-disposal with overburden a tailings facility Is disposal in a series of stockpiles a tailings facility Is co-disposal with hard rock waste in a tailings facility Is placing as overburden with a tailings facility Is valley filling with moist/dry tailings a tailings facility</p>	Peter McGough	<p>Bring the definition of a TSF before the the Introduction. Provide a thorough definition of tailings utilising images to document the large range of potential range of TSF's.</p> <p>A first pass definition may be that TSF's are facilities used to store tailings which are physically or geochemically unstable or highly erodible without retention or improved via physical or chemical means.</p>
9	Paragraph 1 of page	1	The Standard Compels	A standard cannot legally compel anything.	Peter McGough	Change to expects

10	Paragraph 1 of page	1	An independent Expert Panel is working to develop the Standard, taking into account multiple stakeholder perspectives, including those of local communities, civil society groups, regulators, investors, insurers, and the mining industry.	<p>I find this misleading as there is insufficient global representation to reflect global expectations and economic advantage and disadvantage of each country to which this is intended to apply.</p> <p>The is a noticeable absence of regulator representation, or panel member with prior regulatory experience. As regulators are expected to adopt and enforce this apparent standard their buy in is essential to its success and should have been preferred over university academics.</p> <p>The authors (like myself) of leading tailings codes of practice, guidelines and regulations should be involved to ensure there is some credible alignment with existing enforceable regulations and laws.</p>	Peter McGough	Broaden the Panel
11	para 2	1	mining methods	In this context "mining methods" is too generic.	Keith Seddon	Could replace with "processing and tailings management methods"
12	footnote 1	1	In this Standard, 'Operator' means any person, corporation, partnership, owner, affiliate, subsidiary, joint venture, or other entity, including any State agency, that operates, or controls a tailings facility.	Nearly all facilities have staff or contractors who are classified as "operators" of the facility.	Keith Seddon	This definition needs to be sharpened to exclude them from this clause, which is essentially about Ownership.
13	Paragraph 1 of page	2	Topic Area 2 also requires respect for individual rights and the collective rights of local, indigenous and tribal peoples	No need to separate based on race or heritage or infer rights based on race, colour or heritage, the non racist collective term "people" is satisfactory and aligned with "human" rights of all people.	Peter McGough	Remove racial prejudice and use the collective term "people"

			who may own, occupy or use land or natural resources at or near a tailings facility site			
14	Paragraph 2 of page	2	Topic Area 3 aims to lift the performance bar	<p>Topic 3 is not lifting the performance bar.</p> <p>It is applying, and better explaining, criteria that is have been long applicable under the Western Australian Regulations, Codes and Guidelines which are internationally recognised as best practice.</p> <p>The issue is that the publication of ANCOLD Guideleins resulted in industry incorrectly inferring that lower risk based design criteria could be applied to facilities that may potentially have lower impact which is contrary the regulatory approach.</p> <p>The regulator only used lower consequence / hazard criteria to determine the frequency of audits (1-3 years). The proposed audit periods are greater than this and thus the proposed standard is lowering the bar.</p>	Peter McGough	Remove lifting the bar and explain that they are clarifying the postion of leading regultors that, given the longevity of tailings facilities, and the potential for population growth, in migration and economic development downstream of a tailings facility, the consequences of a potential failure are likely to increase over time. Downstream develop-ment is not within the exclusive control of Operators, and in some cases is accelerated by the economic opportunities that the mine brings. The Standard addresses the fact that an adequate design and construction at one point in time may be rendered inappropriate and it could be difficult and/or costly to upgrade later if that is not considered during initial plan-ning and design.
15	Paragraph 2 of page	2	OMS Manual	There is no reference to closure planning in the maunal	Peter McGough	Add closure planning to the manual
16	para 2	2	'greatest extent possible'	Fullest extent possible equates to 'no tailings facility'.	David Brett	should be 'fullest extent practicable' or similar. Suggest introducing the terminology "as low as reasonably possible" (ALARP)
17	para 2	2	Performance Based Approach	Need definition	David Brett	Recommend introducing the Risk Informed, Performance Based design methodology to be developed is subsequent technical guidelines to sit under this Standard

18	para 3	2		should be reworded such that the hazard/consequence category for the design is determined according to the procedures in the recognised Guidelines. The concept of adopting the Extreme classification, unless this presumption can be rebutted, is typical of the European approach to crime, guilty until proven innocent. Topic 3 Principles 5 to 7 cover what is already embed in the ANCOLD and MAC.	Chris Lane	
19	Paragraph 4 of page	3	The Standard guides the conduct of Operators but it also informs States about best practices for tailings facilities	How does it inform about best practices? Best practice may not be financially achievable, thus it may be detrimental to the goal of facilitating mining. As a former regulator, the role of the state is to ensure good practice (according to ALARP principles) is being followed.	Peter McGough	Reword
20	Paragraph 4 of page	3	The Standard is not intended to displace or preempt any requirement of applicable law, and where conflicting, applicable law shall prevail.	This contrary to the statements on Page iii Consumers can choose to buy or use mining and metal products that are responsibly sourced, and local communities can demand that a company complies with the Standard. Finally, local, regional and central authorities of the State each have a critical role to play in embedding aspects of the Standard into their laws, their mining permits and other authorizations.	Peter McGough	Remove the 4th paragraph of propaganda from the foreword as it is inferring this standard is above all and that all countries should spend hundreds of millions changing their laws to accommodate political pressure to abide by this standard developed without the input of representative form the leading mining countries.
21	Paragraph 5 of page	3	Inspectors with the credibility and authority to issue citations and to mandate appropriate corrective actions must share an understanding of these issues and possess the capacity to identify solutions to	The state by proposing or identifying solutions becomes the designer of the facility with associated liability which is not the role of the state	Peter McGough	remove words

			reported problems.			
22	para 4	3	'prevail'	<p>It would also be appropriate to recognise here that</p> <p>a) Many States not only have legislation, but also detailed Guidelines (in various formats) relating to Tailings facilities and also associated water management</p> <p>b) There are various industry related Codes and Guidelines either existing or being developed: ICOLD, CDA, ANCOLD</p> <p>In short this Global Standard is not being developed in a vacuum.</p>	Keith Seddon	Suggest how to develop integration of standards eg Global Tailings Standard overarching other guidance such as ICMM. ICOLD and local guidelines such as ANCOLD specific for Australia
23	para 4	3		<p>Where do the Guidelines in for TSF Design such as those in place in Australia and Canada (Mining Association of Canada –MAC) sit. The exiting Guidelines, ANCOLD and MAC, which are fit for purpose must be recognised as having precedence over some UN sponsored document which is based on a set of ideals which might not be acceptable/applicable to all States (countries).</p>	Chris Lane	

24	Paragraph 5 of page	4	<p>Local communities and civil society organizations have a strong interest in ensuring that tailings facilities are managed so as to protect public safety and the environment. These stakeholders can best protect this interest if they are given a meaningful role in key decisions that affect them as proposed in this Standard.</p> <p>They are also in a strong position to demand transparency from Operators regarding tailings facility plans, management plans, and other data and information relating to the tailings facility. Insisting on strict compliance with the Standard can also support positive</p>	<p>Caution. This political propaganda encouraging politicians to bow to vocal minorities.</p> <p>This Strong interest by the public is usually driven by a strong fear of the unknown and complete lack of knowledge thus the project can be easily hijacked by anti-mining groups with self interest instead of the interests of the state.</p>	Peter McGough	Remove sentences 2 and 3.
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			relationships and help foster trust.			
25	Paragraph 5 of page	4	Local communities and civil society organizations have a strong interest in ensuring that tailings facilities are managed so as to protect public safety and the environment. These stakeholders can best protect this interest if they are given a meaningful role in key decisions that affect them as proposed in this Standard.	Caution. F42	Peter McGough	Remove sentences 2 and 3.

			<p>They are also in a strong position to demand transparency from Operators regarding tailings facility plans, management plans, and other data and information relating to the tailings facility. Insisting on strict compliance with the Standard can also support positive relationships and help foster trust.</p>			
26	'Implementation' section	4	'Implementation' section	This section not clear:	Keith Seddon	more definition of who is going to be held responsible for implementation of the process?
27	Paragraph 1 of page	6	Pursue best practice	This terminology is better suited to this standard and should be used throughout the standard instead of words like demand or must or shall or requires.	Peter McGough	Use the terminology "pursue best practice throughout the document"
28	para 1	6	'henceforth'		Keith Seddon	would "herein" be better?
29	Req 1.2	6	'geotechnical'	Strictly "geotechnology"	Keith Seddon	use word geotechnology
30	Requirement 2.1	7	Undertake a formal, multi-criteria alternatives analysis of all feasible sites and	There is no recongintion here of economic constraints for different technologies, for many sites the risk of a flow failure would be reduced by utilising filtered tailings but the economic cost may make the project unviable.	Tim Rowles (Knight Piesold)	Undertake a formal, multi-criteria alternatives analysis of all feasible sites and economically viable technologies for tailings management with the goal of minimizing risk to people and the environment

			technologies for tailings management with the goal of minimizing risk to people and the environment			
31	Paragraph 3 of page	7	<p>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.</p> <p>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.</p>	<p>The second sentence is out of context.</p> <p>The term site selection study is typically used to describe the process of a formal, multi-criteria alternatives analysis of all feasible sites and technologies for tailings management</p> <p>The inundation studies inform the site selection study not the way it is written.</p> <p>ERP, Closure, and Post Closure Plans do not exist at the time of a selection study.</p> <p>TSF Monitoring will typically not exist at the time of a site selection study</p>	Peter McGough	<p>Introduce the term site selection study.</p> <p>Remove second sentence.</p>

32	Paragraph 4 of page	7	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	It is unlikely that there is sufficient experienced personnel in a State to form a ITRB let alone be truly independent of the mining operator who is likely to have many operations and engage that company or person to be the EOR or other role on other projects run by the operator.	Peter McGough	I would suggest the paragraph promote a truly independent reviewer first and a ITRB for larger or complex projects. A definition of independent would also assist.
33	Paragraph 5 of page	7	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.	The requirement is out of context. It is not reasonable or good practice to develop impact mitigation and management plans during the site selection process which is Principle 2.	Peter McGough	Change wording to impact mitigation and management concepts.
34	Topic I, Principle 2	7	<i>...select the site and the technologies to minimize the risk of tailings facility failure.</i>	There appears to be a contradiction between the Principle statement and the Footnote 9, which claims no ban on any technology particularly upstream lifting. It is difficult to envisage a case where upstream lifting minimizes the risk - perhaps upstream dry-stacking?	Todd Armstrong, AECOM	Change 'minimize' to 'optimise'.

35	Topic I, Principle 2	7		The general approach is to design a facility that will be safe - limited chance of impact. This approach suggests that one should identify the safest site and safest technology to ensure absolute minimum impact.	Derrick McKenzie. Evolution	Change 'minimize' to 'Limit'.
36	Paragraph 2 of page	8	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.	<p>How is taking insurance addressing risks or an action to mitigate risk.</p> <p>Insurance only addresses the potential financial impact to the project (commercial risk), it does not change the risk of TSF failure.</p> <p>This is coming across as propaganda for the insurance industry who benefits by charging disproportionate (not commercially reasonable) premiums for tailings storage facilities in leading mining countries such as Australia which do not have a history of major failures. It is the reason larger companies and constancies are increasingly self insuring in Australia due to the absence of reasonable premiums.</p>	Peter McGough	Remove requirement
37	Req 2.1	8	'sites'	"feasible site" often limited to the existing mine lease area.	Keith Seddon	It is recommended that the words "if necessary including site that may require an extension to the current mine lease boundaries" be added.
38	Paragraph 2 of page	9	REQUIREMENT 3.1: Demonstrate respect for human rights by conducting human rights due diligence ¹³ to understand how a tailings facility failure may cause or	The collective human rights of any group of people (farmers, fisherman, religious groups, bushwalkers, residential communities etc including indigenous peoples and tribes) irrespective of their race, colour, or heritage is not described here, only the apparent rights of racially based groups. The racist reference to indigenous or tribal is unnecessary and needs removal.	Peter McGough	Reaplace with "...individual and collective rights of people"

			contribute to adverse human rights impacts, including impacts on the individual and collective rights of indigenous peoples¹⁴ and tribal peoples¹⁵.			
39	Paragraph 3 of page	9	<p>REQUIREMENT 3.2: Meaningfully engage project-affected people (PAP) throughout the tailings facility lifecycle regarding the matters that affect them.^{16,17}</p>	<p>Term Project affected people means they are actually affected after tailings storage commences. For planning stages and engagement purposes, they are potentially affected people. They are never project affected until the project causes them harm.</p>	Peter McGough	Replace project affected people with potentially affected people
40	Paragraph 4 of page	9	<p>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</p>	<p>This refers to potential consequence of failure, not the risk.</p> <p>The risk of failure is a number that represents a probability. The term risk is inappropriately utilised at many places in this standard.</p> <p>There is no Guidance in this standard to determine an acceptable minimum annual probability of failure that must be exceeded before implementing any additional measures or resettlement.</p>	Peter McGough	<p>Replace "risk" in first sentence to "potential consequence".</p> <p>Replace "those risks" with "the likelihood or potential consequence"</p> <p>Remove "implement resettlement" or provide a standard statistical methodology and a standard (minimum annual probability) on which the decision to resettle is justifiable.</p>

			<p>resettlement following international standards¹⁸. The Operator shall communicate these decisions to those affected.</p>			
41	Requirement 4.1	10	<p>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.</p> <p>This presumption can be rebutted if the following three conditions are met:</p>	<p>All flow failures would have an impact therefore by this wording all facilities where there is potential for flow failure (which is essentially all conventional TSFs) would need to be designed as extreme facilities even if the impact is minor.</p>	Tim Rowles (Knight Piesold)	<p>a) The knowledge base demonstrates that a lower classification can be applied based on the assessed impact of failure of the facility in accordance with Annex 2, Table 1: Consequence Classification Matrix; and</p>

		<p>a) The knowledge base demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures; and</p>		
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42	Paragraph 2 of page	10	<p>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.</p>	<p>There needs to be a full explanation here of the basis for the default Extreme classification which I concur with and have been applying as a regulator, designer, and independent reviewer for many years. In Western Australia the regulator structure must be designed so that it is non polluting, erosion resistant, safe and stable in perpetuity, as it cannot be guaranteed that people or communities will not be located adjacent/downstream/on top of the facility post closure as result of ongoing human colonisation of the remote areas of the planet. Thus this is the reason for the default extreme classification.</p>	Peter McGough	<p>The paragraph on page 30 should be introduced here (and also adopt the guiding mantra of non-polluting, erosion resistant, safe and stable in perpetuity). The relevant paragraph is:</p> <p>"the Standard requires that tailings facilities be designed to be non-polluting, erosion resistant, safe and stable under the conditons defined for the most for the most severe level in the Consequence Classification Matrix, unless it can be demonstrated that a lower classification is appropriate. If this is demonstrated, it is also required that the design and construction be such that a future upgrade of the facility to a higher classification remains feasible.</p> <p>This approach recognizes that, given the longevity of tailings facilities, and the potential for population growth, in-migration and economic development downstream of a tailings facility, the consequences of a potential failure are likely to increase over time. Downstream development is not within the exclusive control of Operators, and in some cases is accelerated by the economic opportunities that the mine brings. The Standard addresses the fact that an adequate design and construction at one point in time may be rendered inappropriate and it could be difficult and/or costly to upgrade later if that is not considered during initial planning and design.given the longevity of tailings facilities, and the potential for population growth, in-migration and economic development downstream of a tailings facility, the consequences of a potential failure are likely to increase over time. Downstream development is not within</p>
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						<p>the exclusive control of Operators, and in some cases is accelerated by the economic opportunities that the mine brings. The Standard addresses the fact that an adequate design and construction at one point in time may be rendered inappropriate and it could be difficult and/or costly to upgrade later if that is not considered during initial planning and design.</p>
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43	Paragraph 2 of page	10	<p>This presumption can be rebutted if the following three conditions are met:</p> <p>a) The knowledge base demonstrates that a lower classification can be applied for the near future, including no potential for impactful flow failures; and</p> <p>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</p> <p>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</p>	<p>The primary conditions to be satisfied before lowering the classification are not satisfactory. Time is the key element that determines whether the extreme classification can be rebutted.</p>	Peter McGough	<p>In order to reduce the classification from extreme the following must occur</p> <p>a) the design life must be finite (i.e not in perpetuity), which requires that at some time in the future the TSF is removed or reinengineered so it no longer meets the definition of a Tailings Storage Facility. The finite life must be small enough ensure that the classification will not change, and small enough to to ensure that the estimates of consequences are unlikely to change as a result of population change during the operational life of the facility.</p> <p>b) Irrespective of the consequence classification it must be demonstrated that the retining structure is statically stable, as well as resistant to dynamic liquefaction by the MCE, and resistant to static liquefaction as a result of potential saturation during its design life, including saturation as a result of a PMP and PMF event. (i.e. consequence does not reduce the design criteria as suggested in Table 2). This is aligned with items a) and b) in the draft document.</p> <p>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 con-firmed 'landform' status or similar permanent non-credible flow failure state</p>
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			<p>Ma-trix, and the tailings facility is upgraded to the new classification within 3 years. This review should proceed until the facility has been safely closed²⁰ and achieved a confirmed 'landform' status or similar permanent non-credible flow failure state</p>			
44	Requirement 4.1 & 4.2	10	3 conditions to be met for a rebuttal of "Extreme" consequence	what happens if the "Accountable Executive" of "Board" do not agree with the ITRB's decision to not reduce the classification consequence?	Vicki-Ann Dimas	

45	Topic III, Principle 4 Requirement 4.1	10	<i>...no potential for impactful flow failures;...</i>	The word 'impactful' is subjective.	Todd Armstrong, AECOM	Change wording to: 'no flow failures of unacceptable consequence'
46	Topic III, Principle 4 Requirement 4.1, 4.2 and 4.3	10	<i>Presume the consequence of failure classification of all new tailings facilities as being 'Extreme'</i>	This conservative approach is ok for new facilities - however Requirement 4.3 wants this applied to existing facilities.	Derrick McKenzie. Evolution	Need to consider a mechanism to review existing facilities, and to allow for the Consequence Classification to be as designed - subject to the ITRB review.
47	Topic III, Principle 5 Requirement 5.1	10	<i>minimize the amount of tailings and water placed in external tailings facilities.</i>	There is no consideration for economics, and no faith in the ability for engineering a safe facility.	Derrick McKenzie. Evolution	Consider giving some flexibility for engineering an effective outcome (Cost and Safety)
48	Topic III, Principle 7 Requirement 7.7	10	<i>Independent senior technical reviewers carry out a full review of the ESMS and monitoring results every 3 years, with annual summary reports provided to relevant stakeholders.</i>	This is a new requirement - Not sure what is expected here.	Derrick McKenzie. Evolution	Is another independent review going to make a difference

49	Requirement 6.3	11	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.	We should not just adopt conservative parameters rather we should develop actual parameters of post peak strength and impliment those in the design.	Tim Rowles (Knight Piesold)	Identify and address brittle failure mechanisms by employing suitable geotechnical investigation, material characterisation and geotechnical testing to determine the post peak strength parameters of the tailings, embankment and foundation materials. Include geotechnical analysis of the facility utilising post peak strength parameters and apply appropriate factors of safety to minimize the likelihood of failure independent of trigger mechanisms.
50	Paragraph 4 of page	11	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.	Post Closure is not considered noting post closure maintenance may be required at some sites for hundreds of years)	Peter McGough	Add post closure
51	Paragraph 5 of page	11	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	Demonstration and verification of the post closure / rehabilitation concept before closure is missing	Peter McGough	reword to allow demonstration of the rehabilitation process and verification of the post closure design parameters during operation and before closure

			immediate implementation of elements of the design, as required. The design should include, where possible, progressive closure and reclamation during operations.			
52	Paragraph 6 of page	11	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.	Specific guidance in regard selection of time appropriate design parameters is required here to ensure best practice is being followed that accounts for loss of strength with time in geomaterials due to strain, weathering, wetting/drying cycles, liquefaction, or geochemical interaction/alteration.	Peter McGough	Design criteria must also consider the reduction in strength, and change in composition of materials with time of the design. I.e residual or fully softened strengths must be specified and adopted for earthen materials to demonstrate it is stable in perpetuity
53	Req 5.4	11	Risk Assessments	There are many forms of risk assessment and can be challenging to do properly	David Brett	Need good technical support documents in subsequent technical guidelines beneath this document
54	Req 5.6	11	Design for closure stage	Not much guidance on closure requirement	David Brett	Add some requirement for design to consider reliable safe closure from start of project with appropriate post-closure land use
55	Principal 6	11	Adopt design that minimises risk	Concern with implementation with consistent technical application	David Brett	Need good technical support documents in subsequent technical guidelines beneath this document
56	Req 4.1	11	'Presume Extreme Consequence Category	This could lead to designers avoiding proper assessment of Consequence Category. It is also noted that the presumption of Extreme Cc in the first instance is not in accordance with existing Guidelines such as ANCOLD 2019.	Keith Seddon	more logical to simply require that the TSF design etc. should be based on a robust, defensible and fully documented CC assessment in accordance with the provisions of Annex 2.

57	Req 4.1	11	'Presume Extreme Consequence Category"	This approach is likely to be considered excessive. It presumes that a facility that may initially be at LOW or SIGNIFICANT can be upgraded to EXTREME.	Keith Seddon	It would be more reasonable to require that a contingency design should be prepared for one (or at most) two categories higher than the initially assigned level. Also identify issues that could change CC and measures to prevent this (eg planning covenants
58	Req 4.1	11	'Presume Extreme Consequence Category"	I visit many mine sites around the world as part of my work with tailings. In Africa, where I have been visiting for more than 31 years. The communities adjacent to the mine site and in some cases literally surround the mine are dependent on mining. No doubt there are many other communities around the world that are also dependent on mining. It appears the GTS is proposing that these facilities be retro-fitted to meet current standards. In many cases this is difficult as it may involve relocating whole communities which might be in the path of a TSF failure and/or retro-fitting such as additional buttressing to a facility where there is no room to actually complete the required construction, or in the case of an underground mine which does not produce any waste for construction activities, or construction of a new facility might be required. All of these issues will have a significant cost attached, which may be too high for the mine to fund and the costs may be such that the mine has no option other than closing the mine. The adjacent community then pays a huge price. Where does this scenario fit into the proposed GTS	Chris Lane	
59	Req 4.1	11	'Presume Extreme Consequence Category"	The concept of adopting the Extreme classification, unless this presumption can be rebutted, is typical of the European approach to crime, guilty until proven innocent.	Chris Lane	
60	Req 4.2	11	Accountable persons concur with CC rebuttal	See discussion above.	Keith Seddon	Better would be that the Board should be required to concur with and affirm the initial CC assessment and contingency design.

61	Paragraph 2 of page	12	<p>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.</p>	<p>Verification of the design parameters is required instead of the design intent as this is non specific and subjective and leads to verifcaiton of compaction only which is QC not QA.</p>	Peter McGough	<p>Recommend removing "intent" and substitute with "parameters"</p>
62	Paragraph 8 of page	12	<p>REQUIREMENT 7.8: Independent senior technical reviewers, with qualifications and exper-tise 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</p>	<p>What defines a summary report? Annual audits are typically undertaken each year as part of the licencing conditons in Western Australia under mining and environmental regulations. The term annual audit is well understood as the the appropriate name for a report of this kind.</p>	Peter McGough	<p>Change from summary to audit report</p>

			to relevant stakeholders.			
63	Req 5.5	12	Develop a design for all stages	It is usual for the overall design to be at a Conceptual level, with additional detail for start-up and subsequent raises as required.	KS	Revise wording to allow conceptual level for future stages
64	Req 6.2	12	Apply factors of safety that consider the variability and uncertainty of geologic and construction materials	Industry variability in the selection of design parameters most of which have a statistical variability i.e. is the design to be based on average value, average -1 x SD etc?	Keith Seddon	Technical detail to be addressed by ICOLD
65	Req 6.4	12	The DBR must be reviewed by the ITRB or senior independent technical reviewer	Needs to be highlighted that DBR needs to be updated before each dam raise	Keith Seddon	The DBR report should be updated in accordance with additional knowledge e.g Requirement 1.2, 7.6, 8.1, 8.3 etc prior to the detailed design of each stage or raise
66	Topic III, Principle 7 Requirement 7.5	12	<i>Deviance Accountability Report (DAR)</i>	Unclear what is required for a DAR.	Todd Armstrong, AECOM	Would not this already be covered in annual surveillance reports, which are commonplace in Australia?
67	Req 7.2	13	Construction vs Design Intent Verification (CDIV)	Reference required: not currently included in Glossary	Keith Seddon	Define CDIV
68	Req 7.3	13	Prepare a detailed Construction Records Report at least annually	Conventional practice is for a Construction Report to be prepared at the end of construction of the starter dam, and all subsequent stages. IN ADDITION an annual surveillance report is typically required (covering facility monitoring and performance) on an annual basis (maybe two yearly for LOW CC dams).	Keith Seddon	Modify wording

69	Req 7.8	13	carry out a full review of the ESMS and monitoring results every 3 years	Not clear what monitoring results are considered to be relevant to the ESMS process	Keith Seddon	Improve definition - could be technical detail for ICOLD
70	Paragraph 3 of page	14	<p>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.</p>	There is no mention of the board assuring there are sufficient financial and personnel resources committed to the management of the TSF	Peter McGough	Address financial and personnel commitments

71	Paragraph 6 of page	14	<p>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.</p>	<p>This is not the role of a standard to determine the method of employee remuneration. It is a very poor idea,</p> <p>The earth behaves how it wants and does not pay attention to how employees are paid.</p> <p>The employees are not the designers, and thus cannot stop the implications of poor design, or poor decisions by senior management who control the operation of the facility. Thus the safety of the facility is principally controlled by other persons other than the employees. Thus there is no benefit in incentive payments especially if they are not paid and then employees become quickly disincentivised.</p>	Peter McGough	Remove Paragraph
72	Requirement 9.1 & 9.2	14	the wording for both new and existing facilities states "could have 'Very High' or 'Extreme' consequences..."	according to Principle 4, Requirement 4.1 & 4.2 all new TSFs will be assumed to have "Extreme" consequence unless 3 conditions are met for the rebuttal. Consider revising could have to if have as this wording seems to contradict earlier Requirements 4.1 & 4.2	Vicki-Ann Dimas	
73	Topic IV	14		Not much guidance on Management and governance for Low, Significant and even High Consequence Category dams	David Brett	Need to add some guidance on Low, Significant and even High Consequence Category dams
74	Req 8.3	14	Analyze monitoring data at the frequency recommended by the EOR	Potential for differing standards	Keith Seddon	Better would be to link surveillance / assessment of monitoring data to the CC of the facility, at least as a minimum requirement. Typical would be annually up to High CC. More frequently would be appropriate for VH and Extreme (intervals of 6 months and 3 months?)
75	Req 8.4	14	and as a minimum on a quarterly basis	Quarterly reporting of monitoring is considered to be overly onerous for many facilities.	Keith Seddon	Link reporting to CC - ICOLD recommendation
76	Topic IV, Principle 9 Requirement 9.1 Requirement 9.2	14	References to <i>minimize the consequences</i> is unclear.	Does this mean to take measures that reduce consequences to Low?	Todd Armstrong, AECOM	Change to 'reduce the consequences'.

77	Topic IV, Principle 10	14	Similar wording as above.	It is not reasonable to expect personnel in Operator positions to be taking actions to minimize consequences.	Todd Armstrong, AECOM	Suggest changing the wording to 'reduce the likelihood of incidents and non-conformance with procedure, or something to that effect.
78	Paragraph 4 of page	15	REQUIREMENT 11.3: The EOR or a senior independent technical reviewer shall conduct annual tailings facility construction and performance reviews.	<p>The EOR should not audit/undertake performance reviews of construction as it is typically the EOR responsibility to write the construction report. This should be undertaken by independent third parties with the review validating the EOR records and EOR's construction report.</p> <p>It is considered acceptable practice for the EOR or an Independent Third Party to undertake an annual audit / performance review of the facility against management plans, design, and regulatory criteria.</p> <p>However it is not clear how the defined "comprehensive inspections" in table 9 and 10 of ANCOLD 2012 relative to annual audits and performance reviews and dam safety reviews. It should noted the recommend maximum period between comprehensive inspections in ANCOLD is 2 years for extreme consequence structures. The Department of Mines in Western requires an annual audit is undertaken for Category 1 structures. An audit is also is considered a performance review in DMPR/DMIRS guidance material.</p>	Peter McGough	<p>Change term performance review to the commonly used term audit. Otherwise the definition of audit must be specified as being different to performance review</p> <p>Specify the construction audit should be undertaken by an independent third party.</p> <p>The expectations of a audit or performance review require extensive documentation in an appendix to the standard.</p>

79	Paragraph 5 of page	15	<p>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</p>	<p>The suggested period is completely inadequate and a demonstration of very poor practice as it not aligned with the life cycle of a tailings dam which is very often less than 10 years indicating that a DSR may often be undertaken only once in the life of a TSF, thus poor design and management cannot be identified and corrected throughout the life of the TSF. A period of 10 years can result in a legacy than cannot be corrected.</p> <p>ANCOLD 2012 Section 2.6 indicates DSR's are in addition to Independent Third Party Reviews which appaears to be what is specified for a DSR in Requirement 11.4. Despite section 2.6 of ANCOLD inferring that a DSR is defined in Section 8 of ANCOLD 2012, the simplistic definition and period for a comprehensive review is presented in Section 8, hence there is confusion in the terminology and defintion of what is a DSR and who shall conduct a DSR. It should noted the recommend maxium period between comprehensive inspections in ANCOLD is 2 years for extreme consequence structures.</p> <p>The DSR is more aptly defined as an Operational Review under the Code of Practice for TSF's in Western Australia and it constitutes a level of technical and managment review above the annual audit. The operational review is specified to be conducted by an independent third party. Whilst the period is not specified it is aligned with the hazard or consequence level and from experience would not exceed 3 years for a low consequence facility and tycpially woudl be 1-2 years for a higher consequence facility.</p>	Peter McGough	<p>Change period to align with best practice.</p> <p>Recommend set at a maxium of 2 years for extreme consequence facilities. Periods in ANCOLD Table 10 can be used for lower consequence facilities.</p> <p>Significant explantion is required to align the the DSR expectation here with other terminology in worlds best practice tailings guidance materials such as: <i>Independent Review - MAC, A Guide to the Management of Tailings Facilities third Edition</i> <i>Operational Review - DMIRS/DMP Code of Practice for TSF in Western Australia</i> <i>Comprehensive Inspection - ANCOLD Guidelines for Tailings Dams</i> <i>Dam Safety Review - CDA</i></p>
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80	Paragraph 5 of page	15	<p>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.</p>	<p>Is this an independent review in addition to the DSR, or it is more frequent than the DSR. The number of reviews stages is unclear.</p>	Peter McGough	<p>A flow chart is required to demonstrate the linkage between all levels of review and oversight.</p>
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81	Paragraph 5	15	The DSR contractor cannot conduct a subsequent DSR on the same facility.	This is completely ridiculous and must be removed. There insufficient independent professionals in the world capable of undertaking high quality DSR's to achieve this. It also provides no incentive for follow up, and it also provides a disincentive to provide a thorough DSR as there will be no further work. It also ensures that the verbal history and knowledge of the facility is lost as consultants and staff move on so that the next DSR is compromised. It would also ensure there is insufficient ongoing work available for independent parties to remain in the industry providing the integrity and oversight that is required thus defeating the purpose of this standard.	Peter McGough	Remove
82	Req 11.4	15	DSR every 3-10 years	10 years is too long and even 3 years could be too long if material changes occurring	David Brett	Recommend maximum 5 years and EOR should review every year if a DSR is required more frequently.
83	Req 11.4	15	consecutive DSRs cannot be completed by same contractor	Concern that not sufficient competent people to comply with this requirement	David Brett	remove this condition and instead qualify the requirements for the contractor undertaking the DSR in terms of experience and technical skill - could be expanded in subsequent guidelines
84	Req 10.3	15	or via a reporting line that culminates with the Accountable Executive'	Concern regarding filtering of information in a chain of communication	Keith Seddon	Direct reporting should be strongly encouraged
85	Req 13.2 and Req 13.3	16		Not clear what these requirements are	David Brett	Reword requirements
86	Req 11.1	16	Conduct and regularly update risk assessments with a qualified multi-disciplinary team	Important that EOR is involved in these risk assessments	Keith Seddon	Include the EOR in the team
87	Req 11.3	16	or a senior independent technical reviewer'	In general Construction Reports and Annuals Audits / Performance Reviews should be prepared by the EoR. The exception is independent reviews as per 11.4	Keith Seddon	Insist EOR does routine reviews

88	Req 11.4	16	A senior independent technical reviewer shall conduct an independent DSR periodically (every 3 to 10 years)	DSR needs to be defined and included in Glossary. Note also that in ANCOLD usage a DSR is a major undertaking usually only undertaken if there are indication of dam deficiencies, an NOT on a routine three yearly basis.	Keith Seddon	If might be better to dispense with the DSR terminology and use an alternative term: such as “Design and Performance Review”
89	Req 11.4	16	'The DSR contractor cannot conduct a subsequent DSR on the same facility.'	Not altogether logical. While it is true that “fresh eyes” may see new things, it is also the case that a repeat assessment may pick up changes that would not be apparent for a one off assessment.	Keith Seddon	Maybe a compromise of “not more than two consecutive assessment”?Alternatively, ANCOLD distinguished between Intermediate and Comprehensive
90	Req 11.5	16	For facilities with other consequence classifications, the ongoing senior independent review can be done by a single person.	confusing: is this meant to relate to the ITRB? Can be confused with the “senior independent technical reviewer” as per 11.4	Keith Seddon	Numbers required on ITRB (multiple or single) should be included in 2.2 when ITRB is first introduced.
91	Req 12.1	17	Engage an engineering firm with expertise and experience in design and construction of tailings facilities of comparable complexity to provide EOR services	See notes in Glossary	Keith Seddon	
92	Req 12.2	17	during transfer of ownership of mining properties		Keith Seddon	Further guidelines re duration of engagement agreement would be appropriate e.g min 3 years, renewable for another three years?
93	Req 12.4	17	decided by the Accountable Executive		Keith Seddon	add - supported by advice from the RTFE

94	Req 12.4	17	not influenced or decided by procurement personnel	ANCOLD strongly support this provision!	Keith Seddon	
95	footnote 29	18	ERP may form part of the mine-wide ERP	If this is done the ERP for TSF can be watered down and lost	David Brett	Consider requiring stand alone site specific ERP and in concise form that can be carried easily by operators
96	Req 13.4	18	Identify and implement lessons from internal incident investigations and relevant external accident reports, paying particular attention to human and organizational factors.		Keith Seddon	What would be useful here would be establishment of a centralised web based data base to collate all instances of significant failures, and provide indications of causes and remedial measures (possibly in the form of links to other web sites). Note that the intent of this site would be to document ONLY significant failures (typically embankments), not to have it inundated with instances of minor defects (dust, pipeline leaks, seepage and the like) (17.3 also refers)
97	Req 14.1	18	Establish a formal written complaint process	Intended to be used by who?	Keith Seddon	
98	Topic V, Principle 15	18	<i>Update regularly, including during closure.</i>	What is meant by 'regularly'?	Todd Armstrong, AECOM	Obviously, this requirement will depend on CC, but current wording is too broad to be meaningful.
99	Req 15.2	19	Meaningfully engage ³¹ employees and/or employee representatives	Would be more logically placed after 15.3	Keith Seddon	Would be more logical to Place Req 5.2 after 15.3, ie engage community first then employees
100	Paragraph 2 of page	20	REQUIREMENT 17.1: Publicly disclose ³⁶ relevant data and information ³⁷ about the tailings facility	This not a postive for the industry. Especially if the default classificaion is extreme. This is Strong interest by the public is usually driven by a strong fear of the unknown and complete lack of knowledge thus the project or public perception can be easily highjacked by anti-mining groups with self interest instead of the inerests of the state.	Peter McGough	Remove

			and its consequence classification in order to fairly inform interested stakeholders.38			
101	Topic VI, Principle 17, Requirement 17.2	20	<i>...to the fullest extent possible...</i>	What is meant by 'fullest extent'? This Requirement seems unreasonable.	Todd Armstrong, AECOM	Better to define the types of information that can be shared.
102	Paragraph 4 of page	22	Describes all aspects of the 'as-built' product, including all geometrical information, materials, laboratory and field test results, construction equipment and procedures, changes, non-conformances and their resolution, and construction photographs, amongst others.	The report also should contain quality assurance records to verify that construction materials and tailings contained within the facility meet the design parameter assumptions.	Peter McGough	Add: The report also should contain quality assurance records to verify that construction materials and tailings contained within the facility meet the design parameter assumptions.
103	Glossary	23	Designer of Record	Should only be applicable in the (comparatively rare) case where the Operator elects to designate one of its technical staff as EoR, and the design has to be done by consultants. In general this process should not be encouraged, unless the Operator has properly experienced and resourced personnel.	Keith Seddon	

104	Glossary	24	Engineer of Record	Concern regarding the designer v's EOR duties	Keith Seddon	This should be stronger: in general the EoR (individual and company) should be responsible for undertaking the (ongoing) design of the facility, not just signing off on a design by someone else. Expecting the EoR to take responsibility for a design by a third party is a) a duplication of effort in that the EoR must do a full due diligence on any design before accepting it, and b) nevertheless provides endless possibilities for lack of accountability in the process.
105	Glossary	27	Operator	See previous note in Introduction - confusion with field operators	Keith Seddon	

106	Paragraph 4 of page	29	<p>Where the consequence of failure includes loss of life, tailings facilities must be designed, built and operated so that there is a negligible likelihood of failure. Table 2 (below) sets the criteria for external loading, applied by floods and earthquakes. These criteria mean the tailings facility will be designed to withstand floods and earthquakes very much greater than any known previous flood or earthquake in the region where the tailings facility is or will be located, making the likelihood of failure due to floods and earthquakes negligible. The Standard also includes a number of requirements across all stages</p>	<p>Table 2 is inappropriate and incorrect</p> <p>As indicated by this reviewer previously and in a round about way in the text, the only applicable design is the design criteria applicable to extreme events.</p> <p>Table 2 is also correct as the PMP?PMF is not equal or close to a 1:10000 event. The MCE is also not comparable to a 1:10000 year event</p>	Peter McGough	<p>Design Criteria are PMP and resultant PMF and the Peak Ground Acceleration at the top of the tailings storage facility as a result of the MCE. It should be noted that the bedrock PGA from the MCE may be amplified by the tailings storage facility.</p>
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of the tailings facility lifecycle to achieve the goal of negligible likelihood of failure. It is reasonable for designers to choose less restrictive designs for tailings facilities with a Consequence Classification of 'Low' or 'Significant'. These are the facilities where the potential consequences of a hypothetical failure do not include loss of life (or other loss categories, see Table 1). However, it is noted that the criteria set out in Table 2 for 'Low' or 'Significant' Consequence Classifications also involve designing to withstand floods and earthquakes very much greater than any known previous flood or earthquake in

			<p>the region of the tailings facility. Moreover, the Standard also requires that any less rigorous tailings facility design allows for the possibility of a later upgrade to a more rigorous level, should the consequence level increase, for instance as a result of people settling in downstream areas.</p>			
107	Glossary	29	Senior Technical Reviewer	15 years experience might be considered low	Keith Seddon	Could be higher: say 20?

108	Paragraph 1 of page	30	Moreover, the Standard also requires that any less rigorous tailings facility design allows for the possibility of a later upgrade to a more rigorous level, should the consequence level increase, for instance as a result of people settling in downstream areas.	This is incorrect. Best practice does not allow for a lower design rigour. The structure must still be safe and stable. The frequency of external oversight and review is only reduced.	Peter McGough	Remove this sentence
109	Paragraph 3 of page	30	Possible ways to minimize consequences include: negotiating to resettle downstream populations, negotiating with local authorities to prevent future occupancy of land in the inundation area,	This is a short term solution that is not aligned with paragraph 4 of Page 30. It is still an extreme consequence even with the population removed for a period of time as consequence can change with time (population resettle)	Peter McGough	Remove this concept as it is not aligned with the remainder of the standard.
110	Glossary	30	'The TMS should follow the well-established Deming cycle (Plan, Do, Check and Act).'	Too prescriptive: Operators should be free to select the system most appropriate to the needs of the mine site.	Keith Seddon	Change wording
111	Table 2	32		Table guidance loadings differ from ANCOLD and are less stringent for High and Very High Consequence Categories	David Brett	Table should be omitted and refer to technical guidelines to sit under this Standard

112	Table 2	2nd page 32	External loading criteria required by the Standard	<p>These recommendations are likely to be in conflict with a number of other existing standards, codes and guidelines. In some instances the recommendations in Table 2 actually result in lower (less conservative criteria) than existing documents.</p> <p>In addition guidelines such as ANCOLD risk Management (2003) propose the ALARP concept (as low as reasonably possible) which indicates that lower probability criteria should be adopted if this is feasible.</p>	Keith Seddon	It is recommended that this Table should be put forward as a "Fall Back" provision to be used ONLY in the event that no other guidelines exist that apply to the particular site. This to apply regardless of the relative values contained in the alternative Guidelines.
113	Table 1	Around page 34	'Livelihoods'	Adjust items in each case so that the order of listing is the same in all.	Keith Seddon	
114	Table 1	Around page 34	'Life'	Needs text to define. Also references to acceptable method of calculation. Normal convention is that PLL estimate (if rigorously derived) takes precedence over PAR.	Keith Seddon	
115	Table 1	Around page 34	'Risk'	Needs text to define	Keith Seddon	
116	Table 1	Around page 34	'or'	Would be better as "of". For all instances in table	Keith Seddon	
117	Table 1	Around page 34	'effects' // /Potential contamination of livestock/fauna water supply with no health effects.'	Looks as if this has been inadvertently copied down from previous category. In itself this is hardly justification for a HIGH CC.	Keith Seddon	Review