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ICMM Global Tailing Standard – Draft for Public comment

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Attendees: Scott Gover, Ross Cooper, Ronnie Scheurenberg, Alistair James, Martin Rust, Luis Torres-Cruz, Charles MacRobert, George Papageorgiou, Andrew Copeland, Duncan Grant-Stuart, Amon Mboweni

Apologies: John Wates, Adriaan Meintjes

Foreword from John Wates:

The standard should prescribe at least the following five key systemic critical controls that the executive and board should have sight of:

- Critical control 1: Confirmation that life cycle custodianship (throughout all stages of the TSF life) has been delegated/assigned to a suitably qualified and experienced Engineer of Record (EoR) and that adequate resources have been assigned to ensure that this task can be taken on.
- Critical control 2: Confirmation that prescribed audit (technical and management system) and review cycles are in place and that these audits confirm conformance to the key technical performance criteria.
- Critical control 3: Confirmation that recommendations from internal EoR audits, internal system audits, DSRs and independent reviews by the ITRB have been implemented and closed out.
- Critical control 4: The management system (TMS) prescribed by the corporate standard (or the formally adopted surrogate such as ICMM+MAC+SANS etc.) is confirmed to be in place and is fully operational including the emergency preparedness plan.
- Critical control 5: The executive and board have been informed of conformance and that the reports delivered meet the minimum requirements. (ITRB audit to confirm that information provided can be relied upon and has not been filtered: This would be something like a statement by the auditors that normally accompanies the annual statements)

Where the executive and board have visibility on the status of the above five controls they will be able to say with confidence:

1. Our tailings facility is designed with a full understanding of the site conditions and all reasonably-expected operating conditions.
2. Our tailings facility is constructed and operated in accordance with defined thresholds (trigger levels) and performance indicators with particular reference to containment integrity and overtopping as well as other key metrics.

3. Our tailings facility is managed in accordance with our tailings management standard and construction, operation, maintenance and surveillance of the TSF proceeds in conformance to design intent and associated plans and controls.
4. Compliance and performance is verified at the intervals defined by the management standard and there are no non-conformances that may increase risk to the point where the design intent may not be achieved. (or there may be non-conformances and we know about them).
5. The above items have been independently verified by review by suitably qualified and experienced professionals.
6. An emergency response and preparedness plan is in place that is based on a comprehensive understanding of the consequences of failure and it has been maintained and tested.

Comments on Opening:

EoR should be identified as a Key Stakeholder and the roles and responsibilities defined in this section.

The role of the state is an important consideration and in the South African context it must be emphasised that suitably qualified people need to be appointed to the oversight roles.

Comments on Requirements:

- Footnote 10: Considering climate change may be a stretch requirement when considering “Credible hypothetical failure modes” specified in Requirement 1.3. This could be interpreted to result in all failure modes being considered credible.
- Principle 4, 5, 6, 7, 8, 11 & 12 should distinguish between close, existing and future facilities and how these are dealt with, they could and should possible be dealt with different
- Requirement 6.2: Consider including “and/ or probabilities of failure” and make reference to requirements of local standards. Alternatively, delete the first 5 words and start at “Consider the variability and...”
- Requirement 6.3: If one does not consider the triggers then one cannot assess the likelihood of occurrence of a mechanism associated with a particular trigger. If the intention is to take a precautionary stance then the standard should say that it must be assumed that the triggers will exist to the extent that a brittle failure could be induced. This is however a very conservative position. Suggest rewording to clarify.
The term “brittle” may not be appropriate. A definition should be included, or consideration given to rather using “undrained”.
- Requirement 6.4: This requirement should apply to green fields as well as existing TSFs that are taken on by an Engineer. There are many legacy instances where the DBR does not exist.
- Requirement 7.8: The periodic environmental and social review could be included in the ITRB tasks. Individuals with the requisite skills could be co-opted to the board for this purpose. This would enhance integration and coherence of the independent recommendations.
- Requirement 8.1: The observational method will not always be able to provide early enough warning of a brittle failure. The standard should not imply that the observational method alone can do this. Recommend that wording be amended such that it is clear that the observational approach cannot be used to mitigate the development of rapid mechanisms that cannot be

detected by observation, that these mechanisms need to be identified and that engineering/ physical barriers or mitigations be put in place to prevent them from materializing. As Peck himself said in his 1969 Rankine Lecture in which he described the Observational Method: "The presence of brittle elements in a resisting mass may, if not appreciated, lead to failure in spite of the use of the observational method. [...] Progressive failure may thus be initiated before the movements are observed."

Consider referring to "Monitoring Program" or "TARPs" instead.

Requirement 10.4: We disagree with the suggestion of an incentive program. Proper operation of the TSF should be part of the job description.

Requirement 11.4: The standard will either need to spell out the frequency based on consequence class or make reference to CDA frequencies. Alternative is to make reference to local standards.

Consider no successive DSR's by one contractor, but alternating contractors may be acceptable. If a single contractor can only review a dam once, there is a very real possibility that we may run out of competent contractors.

Requirement 17.1: There is a need to clarify the level of transparency and/ or information that is safe to disclose and the means in which this is disclosed to the public.

Comments on Definitions:

Owner/ Operator: Definition of these should be expanded as these are very different roles in the South African context.

Major Hazard Risk: This definition could be improved such as "a major hazard risk is one associated with a high consequence event. Major hazard risks usually have a low probability of occurring and are often associated with mechanisms that are uncommon and not always patently obvious."

Reclamation: Consider using "Rehabilitation" to avoid confusing closure and reprocessing terminology.

Tailings: The definition should be expanded to include more than just "the processed rock or soil from the operation..." but also other residues from processing activities etc and particularly power station ash.

General Comments:

It is strongly recommended that the accompanying technical document be circulated for public comment prior to final publication of this document.

The rationale for developing a new Global Standard for tailings should be better explained. We are well aware that there have been multiple high-profile tailings dam failures in the past few years, but is there any evidence that inadequate standards contributed to the occurrence of such failures? If such, this evidence could be included in the Introduction of the standard.

The limited timeframe implied that we did not have an opportunity to achieve consensus on all the points presented in this document. As such not all points may be supported by all attendees.