

Report of the TSM Tailings Review Task Force

Recommendations to Strengthen the Mining Association of Canada's Tailings Management
Requirements and Guidance

NOVEMBER 18, 2015

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PREFACE

The tailings failure that occurred on August 4, 2014 at the Mount Polley Mine - owned and operated by Imperial Metals, a member of the Mining Association of Canada (MAC) - led the Board of MAC to ask: "Are there improvements in the tailings protocols under Towards Sustainable Mining (TSM) that could have prevented this tailings spill?"

Starting in the late 1990s, MAC's TSM initiative was developed after the Canadian mining industry faced an erosion of public confidence following a series of tailing spill incidents. In the face of these incidents, members of MAC embarked on a collective initiative to improve company performance and ensure public and environmental safety. After years of development in consultation with communities of interest, TSM was officially launched in 2004.

It is, therefore, with a deep sense of regret that we must undertake this review of tailings performance in the face of another major tailings spill incident. However, while it is without doubt that engineered systems can fail, the question always is: "What action have parties taken to address the failure?" In this case, MAC has launched an effort to determine what improvements can be made in the TSM tailings management requirements to drive toward the goal of zero major tailings failures. It was with this objective in mind that this independent Task Force was given the job of reviewing the TSM Tailings Management Protocol and associated guidance documents (the Guides) and making the recommendations that form the basis of this report.

It is our hope as Task Force members that this report sets out measures which, when incorporated into the tailings management component of TSM, will promote continual improvement in company performance and help restore public confidence through the knowledge that MAC's member companies are doing all that they can to protect public safety and the environment.

On behalf of the TSM Tailings Review Task Force, we respectfully submit this report for consideration by the Board of MAC.

Doug Horswill

Chairman

SUMMARY OF RECOMMENDATIONS

The Task Force, in its review of the TSM Tailings Management Protocol and the three MAC Guides, is making a total of 29 recommendations. For ease of reference, the Task Force has divided these according to the performance indicator (1-5) or guide that they relate too. The Task Force also puts forward cross-cutting recommendations that are aimed to improve TSM as a whole. The Task Force has also grouped the 29 recommendations into two broad categories; those that we recommend that the MAC Board consider on a priority basis and others that may require additional consideration by MAC members and the MAC Tailings Working Group or that the Task Force considers less critical to achieving the goal of zero failures.

In the body of this report, the Task Force provides a rationale for each of the recommendations.

PRIORITY RECOMMENDATIONS:

Indicator 1 – Development and Implementation of Tailings Management Policy and Commitment	
Recommendation 1.1	Include criteria to require that the policy be understood by employees with direct or indirect responsibility for the safety of tailings facilities.
Recommendation 1.2	Add criteria that, in addition to endorsement at the executive officer level, the policy is endorsed at a governance level.
Indicator 2 – Implementation of a Tailings Management System	
Recommendation 2.1	<p>Consider new criteria for Levels A, AA and AAA for each of the Indicators in the Tailings Management Protocol related to the types of audits and assessments required at each level. Specifically:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A: internal audit <input type="checkbox"/> AA: external audit <input type="checkbox"/> AAA: external assessment, which includes an element of performance related to it and properly identifies risks <p>With this change, FAQ # 6 should be deleted.</p>
Indicator 4 – Annual Review to Evaluate the Performance and Adequacy of the Tailings Management System	
Recommendation 4.1	<p>Add criteria to Level A that specifies that:</p> <ul style="list-style-type: none"> <input type="checkbox"/> the review includes an identification of deficiencies and a plan for corrective action with timelines. <input type="checkbox"/> progress towards completing corrective actions are tracked and reported to the accountable executive officer.
Cross Cutting Recommendations	

Recommendation 6.1	Remove Levels C and B and require members that have not achieved Level A in all tailings management Indicators to develop action plans to achieve Level A and identify a reasonable timeframe to complete the action plans.
Recommendation 6.2	Integrate into the new member application process a mechanism to determine whether a prospective member currently meets Level A performance and how to treat prospective members who are not yet at Level A in all of the tailings management Indicators.
Recommendation 6.3	Require members that are not yet at Level A to disclose in the TSM progress report the actions planned to achieve Level A.
Recommendation 6.4	Identify good practice examples of actual OMS manuals and post them on the MAC website alongside the OMS Guide.
Recommendation 6.5	Bring high risk closed facilities into TSM <ul style="list-style-type: none"> <input type="checkbox"/> Developing a risk-assessment based threshold to identify high risk closed facilities. <input type="checkbox"/> Engaging regulators on the benefits of applying the Protocol and Guides to closed sites.
Recommendation 6.6	Encourage MAC members to engage in the ongoing improvement of TSM and its tailings components through the active participation of senior representatives with appropriate level of knowledge, experience and decision-making authority.
<i>A Guide to the Management of Tailings Facilities</i>	
Recommendation 7.1	Amend the Tailings Guide to require an independent review of site investigation and selection, design, construction, operation, closure and post-closure of tailings facilities.
Recommendation 7.2	In regards to the Expert Panel Review of Mount Polley that included commentary on Best Available Technology (BAT) and Best Applicable Practice (BAP), MAC should evaluate how best to include the assessment and selection of both BAT and BAP in the Tailings Guide and reference them in Indicator 2 of the Tailings Management Protocol.
Recommendation 7.3	Develop and include definitions and/or guidance related to managing a change of Engineer-of-Record and a change of ownership in the change management section of the Tailings Guide.
Recommendation 7.4	Include a risk-based ranking classification system for non-conformances and have corresponding consequences. Guidance on risk assessment methodology should be included in the Tailings Guide.

Recommendation 7.5	Review and amend, as required, the Tailings Guide to include more specific technical guidance related to site selection and design, including how to select objectives and set design criteria.
<i>Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i>	
Recommendation 8.1	The Emergency Preparedness Planning section of the OMS Guide should be enhanced to provide greater guidance in the development of Emergency Preparedness and Response Plans.
Recommendation 8.2	Change the sections of the OMS Guide that address the requirements to list of all regulatory requirements to include all community-based commitments and require that this list be publicly available.
Recommendation 8.3	Integrate into the guide a requirement that communities directly affected by a potential failure are included in the development of Emergency Preparedness and Response Plans, including training simulations.
Aboriginal and Community Engagement	
Recommendation 9.1	Bring all aspects of community engagement from the Guides and Indicators into a new single indicator to address Aboriginal and community of interest (COI) engagement. The Indicator should be adaptable to reflect the priorities and concerns of individual communities.

OTHER RECOMMENDATIONS:

Indicator 1 – Development and Implementation of Tailings Management Policy and Commitment	
Recommendation 1.3	Include a criterion to require that the policy be communicated to all employees.
Indicator 2 – Implementation of a Tailings Management System	
Recommendation 2.2	Modify Indicator 2 to clearly state that the site investigation and selection, design, construction, operation, closure and post-closure of tailings facilities must be managed in conformance with the <i>Guide to the Management of Tailings Facilities</i> .
Recommendation 2.3	Add post-closure to Section 9, Checklist for the Decommissioning and Closing a Tailings Facility.

Recommendation 2.4	Clearly state that the cycle for conducting internal and external audits or assessments is at least every three years.
Recommendation 2.5	Include the definitions of audit and assessment from the <i>A Guide to Audit and Assessment of Tailings Facility Management</i> in the FAQ.
Indicator 3 – Assigned Accountability and Responsibility at the Executive Level for Tailings Management	
Recommendation 3.2	Develop guidance on how to implement independent review mechanisms.
Recommendation 3.3	Strengthen language regarding role of the accountable executive officer and identify actions that should be taken to discharge accountability such as: <ul style="list-style-type: none"> <input type="checkbox"/> reviewing risk assessment results; <input type="checkbox"/> ensuring regulatory compliance; and <input type="checkbox"/> signing off on the OMS manual.
<i>A Guide to the Management of Tailings Facilities</i>	
Recommendation 7.6	The Tailings Guide should be revised to address the following: <ol style="list-style-type: none"> 1. Include a clear statement that dam safety is paramount and that the goal is zero major failures of tailings facilities. 2. Define the term “sound engineering practice” in plain language. 3. Make the Tailings Guide clearer to audit against. 4. Figure 1 – “Elements of the Tailings Management Framework” – should incorporate the role of audit and assessment into the “checking and corrective action” box.
<i>Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i>	
Recommendation 8.4	The requirement in Chapter 2 of the OMS Guide for the evaluation of OMS manuals (last paragraph, Page 2-2) needs to be strengthened to include guidance on what an evaluation should include and how frequently it should be conducted.
<i>A Guide to the Audit and Assessment of Tailings Facility Management</i>	
Recommendation 10.1	Revise the Audit Guide to better link to the Tailings Guide checklists.

1. INTRODUCTION

BACKGROUND

On August 4, 2014, a Mining Association of Canada (MAC) member company, Imperial Metals Corporation, experienced a major failure of the tailings dam at the Mount Polley Mine near Williams Lake, British Columbia. This event led to an Independent Review Panel constituted by the BC Government, which examined the causes of the failure. The Panel concluded that the “dominant contribution to the failure resides in the design,” which “did not take into account the complexity of the sub-glacial and pre-glacial geological environment associated with the perimeter embankment foundation.”¹ The Independent Review Panel’s report stated that the failure occurred notwithstanding effective regulatory oversight and found no evidence that the failure was due to human intervention or overtopping of the perimeter embankments, and that piping and cracking, which is often the cause of the failure of earth dams, was not the cause of the breach.

The report made seven recommendations to improve practice and reduce the potential of future failures. One of these recommendations referred to TSM’s tailings management requirements and guidance, stating that corporations seeking to operate a tailings facility should be “required to be a member of MAC—ensuring adherence to the TSM—or be obliged to commit to an equivalent program for tailings management, including the audit function.” The report also stated that compliance with the TSM initiative is an element of global best practice for the mining industry today.

MAC members must commit, as a condition of membership, to implement the TSM initiative. TSM is a system of requirements aimed at protecting public safety and reducing the risk of environmental harm from members’ operations. TSM covers a variety of areas, including tailings management (see Appendix 1 for details on the TSM Protocols). Imperial Metals had recently become a MAC member and was in the early stages of implementing TSM when the tailings dam failure at Mount Polley occurred.

Notwithstanding the endorsement of TSM by the Independent Review Panel, the MAC Board of Directors decided to initiate a review of the elements of TSM that address tailings management. Specifically, the Board wanted to determine whether or not the TSM requirements could be modified or strengthened to help meet the goal of zero major incidents. The review consisted of two parts: 1) an internal analysis by the Tailings Working Group, a MAC committee of representatives of the Association’s member companies; and 2) an external review by an independent task force.

MAC launched the external review following a decision at the MAC Board meeting on March 5, 2015. The Task Force was asked to advise the Board on potential improvements to the TSM Tailings Management Protocol and MAC’s three tailings management Guides.

¹ Government of British Columbia, [Report on Mount Polley Tailings Storage Facility Breach](#), Independent Expert Engineering Investigation and Review Panel, January 30, 2015, 105.

MEMBERS OF THE TASK FORCE

The Task Force was designed to be broad-based and represent a variety of specialties and interests. The seven members include specialists in engineering and geotechnical issues, First Nations representatives, environmental specialists, and individuals with experience in executive management. The members of the Task Force included:

Category of Expertise	Representative
Executive Management	Doug Horswill, former MAC Board Chair and senior executive with Teck Resources Limited. Chair of the Task Force.
Tailings Management	Dr. Michael Davies, Teck Resources Limited and Chair of MAC's Tailings Working Group.
Executive Management/TSM Expertise	Dr. Craig Ford, Corporate Responsibility Solutions Inc., and Executive in Residence at the Schulich School of Business.
Geotechnical Engineer	Peter Lighthall, independent consultant, formerly with AMEC and Klohn Crippen.
First Nations/ Environment/Engineering	Nalaine Morin, Tahltan Nation, ArrowBlade Consulting Services.
Geotechnical Engineer	Dr. John Sobkowicz, Thurber Engineering Ltd.
Environmental/Community Perspectives	Alan Young, International Boreal Conservation Campaign and member of MAC's Community of Interest Advisory Panel.

Dr. Dirk van Zyl, Professor of Mining Engineering at the University of British Columbia and a member of the BC Independent Review Panel, served as a special advisor to the Task Force.

For biographical information about the members of the Task Force, please refer to Appendix 2.

SCOPE OF REVIEW

The mandate of the Task Force is set out in the Terms of Reference, which are found in Appendix 3. The Task Force would consider the report of the BC Independent Review Panel as well as any other input they determined to be useful. While not limited to the following, the MAC Board asked the Task Force to consider:

- Are the current requirements for Level A designation sufficient to reduce, to near zero, the likelihood of a catastrophic tailings failure as a result of a deficiency or weakness in the tailings management system or regime? If not, what should be added to the TSM Tailings Management Protocol?
- What are the elements of the MAC tailings management Guides that should be considered critical controls necessary to prevent catastrophic failures? Are the appropriate critical controls currently in the Guides? If not, what critical controls should be added to the Guides?
- Is MAC support for new and existing members as it relates to TSM tailings management sufficient?
- Is the verification schedule appropriate or should the initial external verification of tailings management be accelerated?
- Should an independent review of tailings management (e.g. a gap analysis against the TSM Tailings Management Protocol) be undertaken for new members prior to the application of TSM?
- Is the focus of TSM and the Tailings Management Protocol and Guides on operation management systems appropriate, or should the TSM Tailings Management Protocol and Guides incorporate standards and/or design elements? If so, how?
- How can the TSM process better build confidence in our communities of interest in the tailings management systems and tailings regulatory regimes across the life cycle of a mine?

TASK FORCE PROCEDURES

The work of the Task Force took place from March to November 2015 and culminates in this final report. The report was presented to MAC's Board of Directors on November 18, 2015.

The Task Force held seven teleconferences from April to September 2015. Most calls included all Task Force members, however, when there was an instance that a member could not participate, their views were sought in advance of the discussion. Each teleconference focused on one of the five Indicators of the TSM Tailings Management Protocol and the corresponding information within the tailings management Guides. The Task Force met in person in Vancouver for a full-day and a half in October 2015 to consider the results of the previous teleconferences, and to identify recommendations for MAC on improvements to TSM and the Guides.

To help guide the discussion during each meeting, the Chair of the Task Force developed the following questions for members to consider during their review of the Tailings Management Protocol and Guides:

- Are the Indicator and guidance clear? If not, how could they be clearer?
- Does the Indicator set an adequate standard of practice? If not, how could it be strengthened?
- Does the guidance set an adequate standard of practice? If not, how could it be strengthened?
- Is there a role for this Indicator in building or re-enforcing Aboriginal and community of interest (COI) confidence? If so, does the Indicator contribute to Aboriginal and COI confidence? If not, how could it be strengthened?
- Is this Indicator or accompanying guidance in any way redundant with other tailings components of TSM or with regulation?
- Are there alternative approaches to the intent of this Indicator and/or guidance that should be considered?
- Is there anything missing from this Indicator or supporting guidance that should be added?
- Given that TSM is intended to measure performance and drive continuous improvement, is the subject of this Indicator an area that should be measured and publicly reported annually? If not, is there some other aspect of tailings management that should be measured and reported instead?
- Is this Indicator measuring a useful aspect of tailings performance from a management perspective and/or from a community of interest perspective?

2. TOWARDS SUSTAINABLE MINING IN BRIEF

OVERVIEW OF TOWARDS SUSTAINABLE MINING

TSM is a stewardship initiative developed by MAC and its members. Launched in 2004, participation in TSM is mandatory for MAC members' Canadian-based mining, smelting and refining operations. Participation in TSM consists of the following obligations:

- Annual self-assessment of performance by each operation against 23 Performance Indicators contained in six TSM Protocols that cover the following areas: tailings management, biodiversity conservation management, safety and health, energy use and greenhouse gas emissions management, crisis management planning, and Aboriginal and community outreach.
- External verification of self-assessed results every three years by a certified external verifier.
- Selection for post-verification review by the external, multi-stakeholder Community of Interest Advisory Panel, established by MAC in 2004 that includes representatives from the following groups: First Nation, Inuit and Métis, environmental organizations, organized labour, religious organizations, the financial sector, and local mining communities.
- Public reporting of performance results every year in the *TSM Progress Report* on MAC's website (www.mining.ca/tsm).

Each Performance Indicator is based on a five-point scale (C, B, A, AA, and AAA), with distinct criteria needing to be met at each Level before a facility can move to the next one. MAC defines Level A as “good practice” and attaining at least a Level A is a goal for every MAC member site. Levels AA and AAA represent leadership, the latter being best practice in the industry. Three Performance Indicators for crisis management differ and are based on a Yes/No system, whereby facilities must meet all criteria to achieve a “yes” result. The Performance Indicators are publicly available on MAC’s website according to each category (e.g. tailings management, biodiversity conservation, etc.) at www.mining.ca/tsm.

OVERVIEW OF THE TSM TAILINGS MANAGEMENT PROTOCOL

One of the main drivers behind the development of TSM in the late 1990s was to ensure tailings dam safety through effective tailings management practices. Through TSM, mining operations have access to best practices in tailings management and are evaluated on their performance against the indicators under the TSM Tailings Management Protocol (see Appendix 1). This helps to ensure that mining operations manage their tailings facilities responsibly to protect human safety and the environment.

The TSM Tailings Management Protocol seeks to confirm whether a facility has implemented a system for responsible tailings management. The Protocol sets out the general expectations of MAC member companies as they relate to tailings management in support of the TSM initiative. The Protocol contains five Indicators against which facilities must measure their performance:

1. Development and implementation of a tailings management policy and commitment
2. Implementation of a tailings management system
3. Assigned accountability and responsibility at the executive level for tailings management
4. Annual review to evaluate the performance and adequacy of the tailings management system
5. Development and implementation of an Operation, Maintenance and Surveillance (OMS) manual

Several of these indicators require conformance with three MAC tailings management Guides, which are as follows:

[A Guide to the Management of Tailings Facilities](#)

Originally published in 1998 and updated in 2011, the Tailings Guide provides information on the safe and environmentally-responsible management of tailings facilities. It is intended to help companies develop tailings management systems that include environmental and safety criteria, and to help improve the consistency of application of sound engineering and management principles to tailings facilities.

[Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities](#)

The OMS Guide, originally published in 2003 and updated in 2011, details the rationale, organization and contents for an OMS manual, and describes sound industry practices and procedures. It was

developed by MAC's Tailings Working Group after a need was identified for further guidance in preparing OMS manuals.

A Guide to the Audit and Assessment of Tailings Facility Management

Published in 2011, the purpose of the Audit Guide is to provide protocols for the audit and assessment of conformance with the tailings management framework presented in *A Guide to the Management of Tailings Facilities*.

As part of TSM, facilities are measured on their implementation of the Guides and publicly report their performance in this area. The Guides are publicly available on MAC's website, extending the availability of the guidance beyond the MAC membership to encourage best practices in tailings management industry-wide.

3. EVALUATION OF TSM TAILINGS MANAGEMENT SYSTEM AND PRIORITY RECOMMENDATIONS

The Task Force, in undertaking its review, has identified a number of areas where improvements are possible and warranted, and that could help to achieve the goal of zero failures. These recommendations are submitted to the MAC Board either on a priority basis or as others that may require additional consideration by MAC members and the MAC Tailings Working Group or that the Task Force considers less critical to achieving the goal of zero failures.

A) ASSESSMENT OF TSM TAILINGS MANAGEMENT PROTOCOL & RECOMMENDATIONS

INDICATOR 1 - DEVELOPMENT AND IMPLEMENTATION OF TAILINGS MANAGEMENT POLICY AND COMMITMENT

Recommendation 1.1: *Include criteria to require that the policy be understood by employees with direct or indirect responsibility for the safety of tailings facilities.*

The purpose of this Indicator is to confirm that companies have established a policy and commitment that expresses intention, commitments and principles in relation to tailings management. Currently, Level A for Indicator 1 requires that a company's tailings management system be "endorsed by senior management." While a good management system would, in practice, ensure that such a policy is well-communicated and understood within the company, this is by no means assured. The Task Force, therefore, recommends that this indicator be amended to include specific, auditable language that requires that the policy be understood by all site-level and corporate personnel that have direct or indirect responsibility for tailings management.

Recommendation 1.2: *Add criteria that, in addition to endorsement at the executive officer level, the policy is endorsed at a governance or board level.*

Level A for this indicator currently requires that a tailings' policy be endorsed by senior management. As a tailings failure is one of a mine's and company's greatest material risks, however, the Task Force believes that endorsement should be elevated to the level of governance or Board.

INDICATOR 2 - IMPLEMENTATION OF A TAILINGS MANAGEMENT SYSTEM

Recommendation 2.1: *Consider new criteria for Levels A, AA and AAA for each of the Indicators in the Tailings Management Protocol related to the types of audits and assessments required at each level. Specifically:*

- A: internal audit*
- AA: external audit*
- AAA: external assessment, which includes an element of performance related to it and properly identifies risks*

With this change, FAQ # 6 should be deleted.

The role of audit and assessment is critical in ensuring tailings management systems are effectively implemented. The current protocol requires internal and external audits and assessments at Levels AA and AAA; however, there is currently no requirement for either at Level A. The Task Force found that for all the indicators, but specifically for Indicator 2, the lack of an audit requirement at Level A significantly compromises TSM's ability to determine that a tailings management system is being effectively implemented at this level. Additionally, the group took the view that an assessment is a more rigorous check of effectiveness because it goes beyond measuring against stipulated criteria to incorporate professional judgment in evaluating effectiveness (this is the distinction articulated in Section 2.1 of the *Guide to Audit and Assessment of Tailings Facility Management*). As such, it is appropriate to require an assessment, rather than an audit, at the AAA level. Therefore, the Task Force recommends that the criteria for all indicators be revised to require an internal audit at Level A, an external audit at Level AA and an external assessment at Level AAA. This will result in the likelihood that effective implementation is assured. With these changes, it was further noted that FAQ #6 is no longer relevant and should be deleted.

The current text for FAQ #6 is as follows:

Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?

Yes, because the TSM Performance Indicator assessment is a snapshot in time of a company's or facility's status as it relates to each specific performance indicator. Assigning a rating of Level AA or AAA is based on whether an audit or assessment is internal or external. A company or facility

does not need to do an internal audit or assessment (qualifying for a rating of Level AA) before receiving a rating of Level AAA for an external audit or assessment.

INDICATOR 4 - ANNUAL REVIEW TO EVALUATE THE PERFORMANCE AND ADEQUACY OF THE TAILINGS MANAGEMENT SYSTEM

Recommendation 4.1: *Add criteria to Level A that specify that:*

- the review includes an identification of deficiencies and a plan for corrective actions with timelines.*
- progress towards completing corrective actions is tracked and reported to the accountable executive officer.*

The purpose of this Indicator is to confirm that companies have implemented a tailings management system in conformance with the tailings management framework in MAC's *A Guide to the Management of Tailings Facilities*. There is currently no requirement to track the progress of corrective actions identified in the annual review through to completion. In order to ensure that corrective actions are completed, it is recommended that this Indicator should be strengthened by requiring that the review identifies deficiencies, presents a plan for corrective action with appropriate timelines, and that progress towards completing those actions is tracked and reported back to the accountable executive officer.

B) CROSS-CUTTING RECOMMENDATIONS

In addition to Priority Recommendation 2.2 regarding the adjustment of Levels A, AA and AAA criteria, which is intended to apply to all Indicators, the Task Force identified a series of additional recommendations that are also cross-cutting.

Recommendation 6.1: *Remove Levels C and B and require members that have not achieved Level A in all tailings management indicators to develop action plans to achieve Level A and identify a reasonable timeframe to complete the action plans.*

The Task Force found that it was largely inappropriate to continue with the Indicators containing a Level C. Instead, facilities should be required to have management systems in place before they are able to register on the rating scale. It is recommended that Levels B and C be removed and require that members that have not yet achieved Level A be required to develop action plans and reasonable timeframes to complete the work required to achieve Level A.

Recommendation 6.2: *Integrate into the new member application process a mechanism to determine whether a prospective member currently meets Level A performance and how to treat prospective members who are not yet at Level A in all of the tailings management Indicators.*

TSM currently provides new members with a phased-in implementation period that can take up to four years before the first verification is conducted on TSM performance scores. While this may be appropriate for other indicators, given the potentially catastrophic consequences associated with

tailings dam failures, the Task Force is of the view that this is too long. The Task Force recommends that a means be developed to require new members to assess their tailings management performance at the time they make an application to join MAC.

The Task Force also recommends that MAC determine how to treat prospective members who are not yet at Level A in the tailings management indicators. MAC should consider a probational membership category but there may be other options available to achieve the same objective of getting new members to Level A as quickly as possible.

Recommendation 6.3: *Require members that are not yet at Level A to disclose in the TSM Progress Report the actions planned to achieve Level A.*

The Task Force believes that greater transparency with respect to facilities that have not achieved Level A in the tailings management indicators would serve to improve public confidence and would provide an added incentive for improvement. Building on Recommendation 6.1, with the removal of Levels C and B, the Task Force recommends that facilities that have not yet achieved Level A should disclose the actions they plan to take to achieve Level A in the annual TSM Progress Report.

Recommendation 6.4: *Identify good practice examples of actual OMS manuals and post them on the MAC website alongside the OMS Guide.*

The Task Force identified an opportunity to provide examples of best practice. In particular, the Task Force suggests that MAC could provide added value to the industry, communities and regulators by providing examples of robust OMS manuals. MAC could establish an evaluation process to determine whether examples represent good practice. Examples deemed good practice could be posted on the MAC website alongside the OMS Guide, so that they are readily available.

Recommendation 6.5: *Bring high risk closed facilities into TSM by:*

- Developing a risk-assessment based threshold to identify high risk closed facilities.*
- Engaging regulators on the benefits of applying the Protocol and Guides to closed sites.*

While TSM currently only applies to active mine sites, MAC recently clarified that it should also apply to inactive tailings facilities within active operating mine sites. However, the Task Force noted that there can remain considerable risk associated with tailings facilities at closed facilities that are not currently being addressed by the tailings management protocol. Given that not all closed sites pose the same risk, the Task Force recommends that MAC should develop a risk-based threshold to bring closed facilities into TSM.

Recommendation 6.6: *Encourage MAC members to engage in the ongoing improvement of TSM and its tailings components through the active participation of senior representatives with appropriate level of knowledge, experience and decision-making authority.*

The Task Force concluded their cross-cutting recommendations with a recognition that given the importance of safe tailings management, MAC should continue to engage in the ongoing improvement of TSM and its tailings components. It is critical that senior company representatives with appropriate level of knowledge, experience and decision-making authority continue to be engaged in these efforts.

C) ASSESSMENT OF TAILINGS MANAGEMENT GUIDES AND RECOMMENDATIONS

A GUIDE TO THE MANAGEMENT OF TAILINGS FACILITIES

Recommendation 7.1: *Amend the Tailings Guide to require an independent review of site investigation and selection, design, construction, operation, closure and post-closure of tailings facilities.*

Independent review is now considered as emerging best practice in tailings management. It is a necessary tool to provide additional oversight and advice on how a site for a tailings facility is selected and whether that facility is designed, constructed, operated and closed according to design specifications. Independent review provides an important layer of due diligence on both the Engineer-of-Record and the owner of the facility. As such, it should be viewed as being in addition to, rather than a replacement for, external audits or assessments, and the role of the Engineer-of-Record. It is, therefore, the recommendation of the Task Force that the Tailings Guide be amended to include a requirement for independent review of the site selection, design, construction, operation, closure and post-closure of tailings facilities.

Recommendation 7.2: *In regards to the Expert Panel Review of Mount Polley that included commentary on Best Available Technology (BAT) and Best Applicable Practice (BAP), MAC should evaluate how best to include the assessment and selection of both BAT and BAP in the Tailings Guide and reference them in Indicator 2 of the Tailings Management Protocol.*

The Task Force examined the concepts of Best Available Technology (BAT) and Best Applicable Practice (BAP), as referenced by the Expert Review Panel on Mount Polley, and noted that they are not currently referenced in the Tailings Management Protocol or the Tailings Guide. The Task Force recommends that a section be included in the Tailings Guide on the application of BAT and BAP, and that the Tailings Guide also provide guidance on how to evaluate what constitutes both BAT and BAP for a given facility. It was also recommended that this could be referenced in Indicator 2 of the Protocol.

Recommendation 7.3: *Develop and include definitions and/or guidance related to managing a change of Engineer-of-Record and a change of ownership in the change management section of the Tailings Guide.*

The current change management elements in the Tailings Guide, for the most part, address the changing dynamic of tailings facilities well. However, it was noted that change management for a change of Engineer-of-Record and change of ownership are not currently addressed and should be incorporated into the Tailings Guide. It is recommended that a change of Engineer-of-Record and a change of ownership should be incorporated into the Tailings Guide.

Recommendation 7.4: *Include a risk-based ranking classification system for non-conformances and have corresponding consequences. Guidance on risk assessment methodology should be included in the Tailings Guide.*

The Task Force discussed non-conformances identified through the audit and assessment process. There is currently no formal classification system for non-conformances and it is at the discretion of the verifier to decide whether a non-conformance is significant enough to result in a downgrade of the TSM rating for this Indicator. Consideration of the risk and consequences associated with non-conformances would be helpful.

Recommendation 7.5: Review and amend, as required, the Tailings Guide to include more specific technical guidance related to site selection and design, including how to select objectives and set design criteria.

The purpose of the second Indicator is to confirm that companies have implemented a tailings management system in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities. The Task Force found that, for the most part, the Tailings Guide and the Indicator are effective tools for developing appropriate tailings management systems. With this in mind, consideration was given to how to further strengthen and improve tailings management systems. The Task Force found that while the Tailings Management Protocol and Tailings Guide do a good job of providing guidance for management systems, there is an important opportunity to include more specific technical guidance. Therefore, the Task Force recommends that the Tailings Guide be reviewed and amended, as required, to include technical guidance related to site selection and design, including guidance on how to select objectives and set design criteria. This guidance could include, where relevant, references to guidance from salient documents provided by organizations such as Canadian Dam Association, International Committee on Large Dams, BC Hydro's Dam Safety Program, etc.

DEVELOPING AN OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL FOR TAILINGS AND WATER MANAGEMENT FACILITIES

Recommendation 8.1: *The Emergency Planning and Response section of the OMS Guide should be enhanced to provide greater guidance in the development of Emergency Preparedness and Response Plans.*

As with the Tailings Guide, the Task Force found that the OMS Guide broadly provides useful guidance to tailings operators at an appropriate level of detail. There were; however, a few areas in this Guide that the Task Force believed could be enhanced. These are summarized as follows.

The design, construction, operation and closure of tailings facilities are subject to a wide range of regulatory requirements, and the OMS Guide requires that an OMS manual include "reference to all relevant regulatory requirements and, to facilitate due diligence, delineate the performance measures that will demonstrate these requirements are being met." To further strengthen this aspect of OMS manuals, the Task Force recommends that the OMS Guide include a requirement to establish a comprehensive registry of all regulatory commitments. However, in addition to regulatory commitments, there are often commitments made to communities of interest related to tailings management. The scope of commitments required in the registry in the OMS manual should include all of these commitments and any other commitments that the company is legally or morally responsible for. This registry should be included in the surveillance flow chart of the OMS Guide.

The OMS Guide includes requirements for Emergency Preparedness and Response Plans (EPRPs), but the Task Force was of the view that the current requirements need to be strengthened with a greater level of specificity as to what should be included in an EPRP. This is especially relevant because a key part of preventing failures is reacting to emergencies before they become catastrophic.

The Task Force concerns about the EPRP requirements are particularly important since members pointed out that this area is too often a weak point in OMS manuals. The basis of the EPRP should be a

risk assessment, but that link is not currently made in the OMS Guide. A risk assessment component should be added to the OMS Guide and needs to consider both potential failure modes and potential outcomes in the event of failure.

The EPRP section should also include guidance for conducting testing and evaluation of EPRPs and include an indicator of what constitutes an adequate test or test outcome. Such guidance should include the involvement of external people (e.g., local community, relevant experts) in testing, which would help increase public confidence.

Recommendation 8.2: *Change the sections of the OMS Guide that address the requirements to list of all regulatory requirements to include all community-based commitments and require that this list be publicly available.*

The OMS Guide currently includes a requirement to list all regulatory requirements. Commitments made to aboriginal communities and other COIs, through various forms of agreements, are becoming increasingly common and should be treated as rigorously as regulatory requirements. As such, the Task Force recommends this requirement in the OMS Guide be expanded to include community-based commitments. Further, as these are commitments to communities, they should be publicly available should a member of the community request to see the list.

Recommendation 8.3: *Integrate into the guide a requirement that communities directly affected by a potential failure are included in the development of Emergency Preparedness and Response Plans, including training simulations.*

In addition to striving for zero major failures, there is a need for companies to be prepared for a failure, and to respond appropriately in the event that such a failure occurs. This is made clear in the requirements for the development of EPRPs. Equally, however, the Task Force noted that there is a need for communities that would be directly affected by a potential failure to be involved in the development and updating of EPRPs, and if necessary, in their implementation. The Task Force, therefore, recommends that this Indicator be strengthened by creating a role for those communities in the development and testing of the EPRP. This will help provide greater comfort within the community and confidence that the company has taken the necessary steps to be prepared in the event of a failure and will help the community understand what, if any, steps they need to take to be prepared.

4. TASK FORCE CONSIDERATION OF ABORIGINAL AND COI ENGAGEMENT

Recommendation 9.1: *Bring all aspects of community engagement from the Guides and Indicators into a new single indicator to address Aboriginal and community of interest (COI) engagement. The Indicator should be adaptable to reflect the priorities and concerns of individual communities.*

Proposed Level A Requirements for Recommended New COI Engagement Indicator in the Tailings Management Protocol

Purpose:

To confirm that efforts have been made to identify COIs, including Aboriginal communities, affected or perceived to be affected by the management of tailings facilities or who have a genuine interest in the performance and activities related to tailings management. This includes understanding their viewpoints, transparently informing them of company activities and performance, actively engaging them in dialogue and participation on tailings-related issues of concern to them, and identifying how issues might be addressed through measures such as mitigation or other actions.

Tailings Management COI Engagement - ASSESSMENT CRITERIA

Level	Criteria
A	<p>A documented system is in place to identify relevant COIs, build capacity and engage with those COIs on issues relevant to tailings management, including:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A process to identify COIs with specific relevance to or interest in tailings management that could include: <ul style="list-style-type: none"> <input type="checkbox"/> those who are engaged in business relationships with the company; <input type="checkbox"/> those who are Aboriginal or Indigenous; <input type="checkbox"/> those who are in the geographic zone of consequence in the event of the failure of a tailings facility; and <input type="checkbox"/> those whose interests are affected by the tailings facility <input type="checkbox"/> A process to identify specific capacity building needs for tailings management knowledge for those COIs identified as having specific relevance to or interest in tailings management to enable effective engagement. <input type="checkbox"/> Work with identified COIs to establish engagement forums or protocols to enable effective engagement on tailings management issues. <input type="checkbox"/> A process is in place to work with COIs to determine the issues of relevance with respect to the full life cycle of tailings

FAQ – What types of tailings-related information do communities want to engage with companies on?

Every community is unique and may have different views on which elements of tailings facilities and tailings management practices they may want to engage with a company on. Below is a list of common elements associated with tailings facilities that communities may want to have included as part of their engagement with companies. Note that this list is not comprehensive and the purpose of this Indicator is to enable communities and companies to collaboratively identify the issues for engagement.

- Basic tailings information (e.g., what is in the tailings, site selection, design, etc.).
- Potential likelihood and consequences identified through risk assessment process and how those risks are managed and mitigated at the facility.
- Results of annual tailings management system reviews, with a focus on the identification and status of corrective actions to address deficiencies.
- The company’s tailings management policy and how that policy is implemented at the facility.
- The tailings management system and its implementation, including the OMS manual and the registry of regulatory compliance and all other commitments.
- Emergency preparedness and response plans.
- Audit processes, findings and corrective action(s).

Over the course of its evaluation of all five Indicators in the Tailings Management Protocol, the Task Force had extensive discussions about the manner in which Aboriginal and communities of interest (COI) engagement is incorporated into the current Indicators. These discussions led to some important findings that are aimed at improving both how companies engage with communities on tailings-related issues and what issues are addressed during this type of engagement.

The Task Force agreed that there is a lot of repetition in the Protocol around Aboriginal and COI engagement, but it does not adequately prioritize tailings-related topics that are of high importance to COIs, such as Emergency Preparedness and Response Plans. Instead, it focuses on the policy commitment and management system. Aboriginal and COI engagement-related content is sprinkled throughout the Protocol and is not a key area of focus. The requirements would be clearer and more effective if better focused with a single indicator.

Establishing a single indicator to address Aboriginal and COI engagement would allow for a more comprehensive, substantive approach, although the Protocol would still need to strike an appropriate balance between prescriptiveness and site-specific flexibility. If a separate indicator for Aboriginal and COI engagement is developed, the Task Force has proposed Level A criteria, which is included in the recommendation section below.

The Task Force also identified a need to develop clearer guidance on how to identify COIs. Beyond Aboriginals, the rest of the communities are not well defined and, as a result, they risk being left out. Identification of COIs is addressed in the Aboriginal and Community Outreach Protocol, but could be strengthened in the Tailings Management Protocol or in the Tailings Guide in the context of COIs with a specific relevance to tailings. The Task Force noted that communication with Aboriginals and COIs is not the same as engagement, and that to engage meaningfully, companies need to help build capacity.

There is also a need for greater transparency from companies on how they identify COIs. One possible route is for a company to define, within public reporting, how they have identified COIs. This would provide a feedback mechanism, and communities left out would then be able to question their omission.

5. OTHER RECOMMENDATIONS

In addition to the priority recommendations addressed above, the Task Force makes several additional recommendations for MAC to consider, as follows.

INDICATOR 1 - DEVELOPMENT AND IMPLEMENTATION OF TAILINGS MANAGEMENT POLICY AND COMMITMENT

Recommendation 1.3: *Include a criterion to require that the policy be communicated to all employees.*

The priority recommendations for indicator 1 point to a need to ensure that those who have direct or indirect responsibility for the safety of tailings facilities understand the company's tailings policy. The Task Force is of the view that beyond the deeper understanding for those with responsibility for the tailings facility, it is important that the company communicate that it has a tailings policy and that the contents are shared with all employees.

INDICATOR 2 - IMPLEMENTATION OF A TAILINGS MANAGEMENT SYSTEM

Recommendation 2.2: *Modify Indicator 2 to clearly state that the site investigation and selection, design, construction, operation, closure and post-closure of tailings facilities must be managed in conformance with the Guide to the Management of Tailings Facilities.*

The Task Force recognized that it is not sufficient to have effectively implemented tailings management systems at the operational stage, as currently required by Indicator 2, in order to ensure the safe management of a tailings facility. It was emphasized that these systems are needed throughout the life of the tailings facility. With this in mind, the Task Force recommends that the Level A criterion within Indicator 2 should be amended to reflect that management systems in conformance with the Tailings Guide should be implemented at the site selection, design, construction, operation, closure and post-closure phases to reflect the organization of the checklists included in the Tailings Guide.

Recommendation 2.3: *Add post-closure to Section 9, Checklist for the Decommissioning and Closing a Tailings Facility.*

While the Tailings Guide currently uses the terms 'decommissioning' and 'closure', in order to indicate the reality that after the facility is closed, there are almost always ongoing management requirements to ensure the continued safety of closed facilities. Hence, the Task Force recommends that this should be amended to refer to 'closure' and 'post-closure'.

Recommendation 2.4: *Clearly state that the cycle for conducting internal and external audits or assessments is at least every three years.*

The Task Force found that while the practice is that audits and assessments are conducted at least every three years for the level AA and AAA requirements, this is not clearly stated. The Task Force agreed that this frequency is sufficient but recommends that it be clearly stated in the protocol.

Recommendation 2.5: *Include the definitions of audit and assessment from the A Guide to Audit and Assessment of Tailings Facility Management in the FAQ.*

Related to recommendation 2.2, the Task Force found that the distinction articulated in the Audit Guide between audit and assessment is much clearer than the definitions provided in FAQ #5. It is, therefore, recommended that FAQ #5 be amended to include the definitions from the Audit Guide.

The current FAQ #5 text is as follows:

What does "audit or assessment" mean?

Audit or assessment of tailings facility management is undertaken to demonstrate conformance with MAC's A Guide to the Management of Tailings Facilities, to the standards recommended in MAC's A Guide to Audit and Assessment of Tailings Facility Management. It is conducted by a team which, although perhaps employed by the company, is in a position to be independent, impartial and objective with regard to the evaluated site or facility.

This should not be confused with the verification system as described in the TSM Assessment Protocols, which is – largely a desk-top exercise in which the TSM rating self-assigned by a facility or company against a given indicator is verified. The TSM verification is not equivalent to an audit or assessment of tailings facility management as outlined in the preceding paragraph.

MAC's A Guide to Audit and Assessment of Tailings Facility Management defines audit and assessment as follows:

Audit is the formal, systematic and documented examination of an organization's or facility's conformance with explicit, agreed, prescribed criteria, often requirements stipulated in law or regulation or, in the case of this Guide, the MAC tailings management framework. Audits seek to evaluate and report on conformance or non-conformance with stipulated criteria based on the systematic collection and documentation of competent evidence. Audits are not based on opinion, nor are they designed to determine root cause of deficiencies, or to evaluate management system effectiveness.

Assessment goes beyond measuring against stipulated criteria (audit), to incorporate professional judgment in an evaluation of the effectiveness, implementation, application and maintenance of a management system. Assessment is driven by a concern for quality of system design and management process implementation. It can identify system deficiencies and determine their root cause(s) to provide a basis for process improvement.

INDICATOR 3 - ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY AT THE EXECUTIVE LEVEL FOR TAILINGS MANAGEMENT

Recommendation 3.2: *Develop guidance on how to implement independent review mechanisms.*

Building on Priority Recommendation 3.1, the Task Force noted that the role and effectiveness of an independent review mechanism is entirely dependent on the mandate given by the company. As such, it is recommended that guidance be developed that outlines the appropriate scope and mandate of an independent review mechanism. Guidance should also address the link between an independent review mechanism and a corporate Board of Directors, and whether the mandate should come from the Board.

Recommendation 3.3: *Strengthen language regarding role of the accountable executive officer and identify actions that should be taken to discharge accountability such as:*

- reviewing risk assessment results;*
- ensuring regulatory compliance; and*
- signing off on the OMS manual.*

The Task Force is of the view that assigning accountability to an executive officer, as currently required by this Indicator, is critical but recommends that the language of this requirement be strengthened to identify actions that should be undertaken to discharge this accountability.

A GUIDE TO THE MANAGEMENT OF TAILINGS FACILITIES

Recommendation 7.3: *The Tailings Guide should be revised to address the following:*

- 1. Include a clear statement that dam safety is paramount and that the goal is zero major failures of tailings facilities.*
- 2. Define the term “sound engineering practice” in plain language.*
- 3. Make the Tailings Guide clearer to audit against.*
- 4. Figure 1 – “Elements of the Tailings Management Framework” – should incorporate the role of audit and assessment into the “checking and corrective action” box.*

The Task Force recommends a number of amendments to refine and strengthen other aspects of the Tailings Guide. These are summarized as follows.

The tailings management framework should clearly state that the goal is zero major failures of tailings facilities. This is consistent with the industry’s safety goals and tailings should be treated no differently.

The Tailings Guide uses of the term “sound engineering practice”, but this term is not defined. “Sound engineering practice” should be defined and consideration should be given to defining standards that constitute sound engineering practices.

The Task Force noted that Indicator 1 of the Tailings Management Protocol requires a tailings facility to have a tailings policy ‘in conformance’ with Section 2.1 of the Tailings Guide. However, the Task Force found that this section is not sufficiently clear from an audit point of view. Furthermore, the Task Force found that the Tailings Guide as a whole could be re-organized to make it clearer from an audit process perspective.

The tailings management framework needs to be clearer about the role of audit and assessment as being separate from annual engineering or dam safety reviews. The framework refers specifically to checking and corrective action, which need to be acknowledged as ongoing activities, but does not refer to audit and assessment, which are more discrete activities. Discussion also addressed the need to reflect in Figure 1 the changing risk profile of dams over the life of tailings facilities, as well as a need to focus more on performance, results, and outcomes.

DEVELOPING AN OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL FOR TAILINGS AND WATER MANAGEMENT FACILITIES

Recommendation 8.4: *The requirement in Chapter 2 of the OMS Guide for the evaluation of OMS manuals (last paragraph, Page 2-2) should be strengthened to include guidance on what an evaluation should include and how frequently it should be conducted.*

The Task Force suggested that Section 2-2 could be enhanced to provide greater clarity about what is required for an evaluation of an OMS manual. This section could spell out specific requirements, including such items as when full updates are required and how closed tailings facilities should be included.

A GUIDE TO THE AUDIT AND ASSESSMENT OF TAILINGS FACILITY MANAGEMENT

Recommendation 10.1: *Revise the Audit Guide to better link to the Tailings Guide checklists.*

The Task Force made only one recommendation regarding the Audit Guide. The members found that the audit and assessment protocols contained in this Guide are not as well linked to the Tailings Management Protocol, the Tailings Guide and the OMS Guide as they could be. Specifically, the Task Force suggests that revising this Guide to better link to the checklists contained in Chapters 6-9 of the Tailings Guide would help make the audit and assessment process more transparent, more rigorous and clearer.

6. CONCLUSION

The Task Force believes that this review has been thorough and complete, and that the review process was strong and well organized. Members studied each Indicator in the Tailings Management Protocol; considered supporting material, including the requirements for each Level; related MAC tailings management Guides; and the Frequently Asked Questions. The Task Force also considered cross-cutting issues, which would apply commonly to all Indicators.

It is the Task Force's considered view that the TSM system for tailings management is robust and comprehensive. If the elements of TSM are fully applied using the broadest possible interpretation of the requirements, the Task Force believes that environmental and public safety would be adequately protected. However, the Task Force did identify areas where the Tailings Management Protocol could be clarified and strengthened as set out in the recommendations above.

The Task Force sees these recommendations as a step in the evolution of TSM towards ever higher standards. Implementation of these recommendations within TSM will help reduce the likelihood of tailings failure incidents to zero. The Task Force sincerely hopes that the Board of MAC will give all possible consideration to these recommendations and will take action as quickly and completely as possible.

The Task Force believes that external parties including: Federal, Provincial and Territorial Regulators; affected Aboriginal and indigenous peoples; and Communities of Interest all have a need and right to

know the progress MAC is making over time in implementing these recommendations. To that end, the Task Force hopes the MAC will develop and publish an action plan to respond to this report and will publish periodic updates on the progress in implementing that plan. The Task Force believes that this is the only way in which public confidence in the efficacy of TSM will be preserved.

The Task Force understands that the relationship between mining companies and various external interested parties is becoming ever more important as time moves on. Social license is one term used to describe this relationship where people who could be affected by a particular undertaking can and will have the strongest influence on determining whether that undertaking will actually proceed. If properly implemented and explained, TSM can and should be a major factor in giving the public confidence that the company is doing the right thing to protect public safety and the environment. These recommendations should, therefore, help make this relationship smoother and more effective.

The Task Force understands that TSM must fit into Canada's regulatory system for mining activity that starts with provincial/territorial and federal environmental assessment and approval processes and includes ongoing regulatory oversight throughout the mining life cycle. The Task Force believes that, by fully implementing TSM, a company is demonstrating a strong commitment to public and environmental safety and is implementing a good-practice level of performance. The Task Force calls on government regulators to explicitly recognize this commitment by a company and to consider this fact in the review and approval of a project and for determining compliance with regulatory requirements.

The implementation of these recommendations will not be without a cost. However, the benefits from improved public confidence in operational safety will far outweigh that cost in the long run. The Task Force, therefore, sees these recommendations as a positive investment in the future success of Canadian mining companies both here in Canada and abroad.

APPENDIX 1 – TAILINGS MANAGEMENT PROTOCOL

A Tool for Assessing Tailings Management Performance

Introduction

Launched in 2004, Towards Sustainable Mining (TSM) is an initiative of The Mining Association of Canada designed to enhance the industry’s reputation by improving its performance. MAC members subscribe to TSM guiding principles, a set of commitments that addresses all areas of our industry’s performance.

These guiding principles are backed by specific performance indicators, which member companies began reporting against in 2004. These indicators are designed to identify the industry’s current performance in key areas, and point to actions that could be taken to improve. Areas for which performance indicators have been developed include tailings management, energy use and greenhouse gas emissions management, Aboriginal and community outreach, crisis management planning, safety and health, and biodiversity conservation management.

This document provides a tool to assist companies in the assessment of the standard of tailings management currently being implemented by their sites, in conformance with the TSM tailings management performance indicators. It enables key performance indicators to be segregated, and performance improvements for each indicator tracked year to year. The use of this protocol also enhances the consistency of assessments conducted across companies. In addition, this tool has been designed to enable external verification of company performance, consistent with the TSM verification system and the initiative’s commitment to transparency and accountability.

Assessing Tailings Management Implementation

Tailings management has been an area of significant focus by The Mining Association of Canada, first through a Board Task Force and subsequently through the Tailings Working Group. This focus has led to the preparation and publication of: *A Guide to the Management of Tailings Facilities; Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities; and A Guide to Audit and Assessment of Tailings Facility Management*. This effort reflects recognition by The Mining Association of Canada of the risk posed by tailings facilities, and the importance of ensuring their environmentally responsible management.

What is a tailings facility?

MAC’s A Guide to the Management of Tailings Facilities defines a tailings facility “includes the collective structures, components and equipment pertaining to tailings impoundment and management, including dams and reservoirs, other related facilities and appurtenances”

The purpose of the assessment protocol is to provide guidance to the member companies in completing their evaluation of tailings management against TSM indicators. The assessment protocol sets out the general expectations of MAC for tailings management by its member companies in support of the TSM initiative. Assessment should also:

- Assist member companies to develop capacity to monitor and improve performance; and
- Provide a basis for company assurance.

As with any assessment of a management system, professional judgment is required in assessing the degree of implementation of a system indicator and the quality of management processes and intervention. Application of this protocol will therefore require a level of expertise in auditing and systems assessment and some knowledge of and experience in the practice of tailings management. This assessment protocol provides an indicator of the level of implementation of tailings management systems in support of the TSM initiative and is not, of itself, a guarantee of the effectiveness of tailings management activities.

Performance Indicators

Five performance indicators have been established.

1. Tailings management policy and commitment
2. Tailings management system
3. Assigned accountability and responsibility for tailings management
4. Annual tailings management review
5. Operation, maintenance and surveillance (OMS) manual

A base assumption is made that all MAC members are in compliance with all legal and regulatory requirements.

Five levels of performance are identified for each indicator. Criteria further define performance at each level, as illustrated below.

<i>Tailings Management Performance Assessment Criteria</i>	
LEVEL	CRITERIA
C	No systems in place; activities tend to be reactive; procedures may exist but they are not integrated into policies and management systems
B	Procedures exist but they are not fully consistent or documented; systems/ processes planned and being developed
A	Systems/processes, in conformance with the tailings management framework as presented in MAC's <i>A Guide to the Management of Tailings Facilities</i> are developed and implemented
AA	Systems/processes have been formally verified through internal, independent audit or assessment
AAA	Excellence and leadership is demonstrated through validation by external, independent audit or assessment

Specific criteria for each performance indicator are provided in subsequent tables to enable the assessor to determine an appropriate level of performance (Levels C-AAA).

When conducting the assessment, assessors should note that the five indicators complement one another. As such, performance improvements in one indicator may depend and/or coincide with performance improvements in another. For example, a facility cannot achieve a Level A for *Tailings management system* if it has not achieved a Level A or higher for *Tailings management policy*.

The assessor is required to select the level that most clearly represents the status of the operation. Only one level can be selected for each indicator, and it can be chosen only if all criteria for that level and all preceding levels have been met.

Where a performance element or indicator is not relevant, then an assessment of N/A should be assigned.

The goal of each MAC member is to achieve, at a minimum, a consistent “A” ranking on the TSM Tailings Management assessment and, having achieved this, to work towards demonstration of these best practices through internal and/or external audit or assessment (levels “AA” and “AAA”).

Facility-level Assessments

Respondents are expected to provide facility-level assessments for each specified indicator.

By “facility-level assessments”, it is intended that companies will complete an assessment and report on tailings management for each distinct operating unit, or facility, of the company. It is recognized that companies may categorize their facilities in different ways.

Facility-level reporting has been found to be the most reliable, informative and useful approach for performance evaluation. The TSM on-line performance reporting database has been designed to facilitate assessment on a facility by facility basis.

Assessment Process

It is recommended that the assessment be completed using a process of interview, discussion and document review, including representative site management, operations and environmental personnel. A level of expertise in auditing and systems assessment and some knowledge of and experience in the technical aspects of mining and tailings management is required.

Only one level can be selected for each indicator, and it can be chosen only if all criteria for that level and all preceding levels have been met. No partial levels of performance (e.g. B+) can be reported. Where a performance element or indicator is not relevant, then an assessment of N/A should be assigned.

Reporting is encouraged for each distinct operating unit of the company. For clarity, if more than one tailings facility falls within the company’s distinct operating unit, results can be consolidated into a TSM facility-level assessment.

Policies, programs and resources are often provided or reinforced at the corporate level that guide or complement facility-level activities. An assessment of facility-level tailings management performance will need to take this into account.

Where an operation is shared between two parties, e.g. a joint venture, the two parties are encouraged to discuss amongst themselves who should complete the assessment, whether it should be undertaken jointly or divided so that the results reflect the appropriate activities of each company.

Structure of the Assessment Protocol

For each indicator, the protocol provides:

- A statement of purpose that expresses the spirit and intent of the indicator
- Assessment criteria for each level of performance
- Supporting guidelines to help the assessor to understand the general scope of each indicator and to act as a framework for reviewing documentation and conducting interviews necessary for the assessment of the company's (or facility's) performance
- Frequently Asked Questions (FAQs) that provide further information, such as definitions for key terms and answers to common questions that arise.

1. TAILINGS MANAGEMENT POLICY AND COMMITMENT

Purpose:

To confirm that companies have established a policy and commitment that expresses intention, commitments and principles in relation to tailings management.

<i>Tailings Management Policy and Commitment</i>	
ASSESSMENT CRITERIA	
LEVEL	CRITERIA
C	No formal tailings management policy and commitment developed. Policy and commitment assumed to be covered by overall site management policies, but these do not specifically address tailings management.
B	Tailings management policy and commitment in place, but not in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> ; or in preparation, to be in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> .
A	Effective implementation: Policy and commitment in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> , developed and/or reviewed in consultation with COI, endorsed by senior management, and implemented with budget allocation.
AA	Internal audit or assessment: Formal internal, independent audit or assessment that the tailings management policy and commitment is in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> .
AAA*	External audit or assessment: Formal external, independent audit or assessment that the tailings management policy and commitment is in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> .

Tailings Management Policy and Commitment

FREQUENTLY ASKED QUESTIONS

#	FAQ	PAGE #
1	Does a "tailings policy" have to be a stand-alone document?	See page 16
2	Can corporate documentation be used to demonstrate commitment?	See page 16
3	What does COI consultation mean?	See page 16
5	What does "audit or assessment" mean?	See page 17
6	Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?	See page 17
7	What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?	See page 18
8	What is a Community of Interest (COI)?	See page 18
9	What does "formal" mean?	See page 18
10	What does "effective" mean?	See page 19
12	What does "independent" mean?	See page 19
13	What does "accountability" mean?	See page 18
14	What does "responsibility" mean?	See page 18

Tailings Management Policy and Commitment

SUPPORTING GUIDELINES

Through interview and review of documentation, determine:

- That the company has established and maintains a policy and commitment respecting tailings management in conformance with MAC's "*A Guide to the Management of Tailings Facilities*".
- That the policy and commitment accurately reflects the existing commitments and views of senior management regarding expected tailings management performance.
- That there has been consultation with COI in developing and/or reviewing the policy and commitment.
- That the policy and commitment has been implemented, as demonstrated by allocation of budget and resources. Managers and employees appear to be familiar with the policy and commitment and understand its basic intent.
- How management and employee awareness of the policy and commitment is maintained over time, and the specific means employed.
- That the policy and commitment establishes an ongoing program of review and continual improvement.
- What audit or assessment processes are in place to ensure that the policy and commitment is in conformance with MAC's "*A Guide to the Management of Tailings Facilities*".
- Whether an internal or external audit or assessment of the tailings management policy and commitment has been carried out within the last three years.

2. TAILINGS MANAGEMENT SYSTEM

Purpose:

To confirm that companies have a tailings management system in conformance with the tailings management framework in MAC's *A Guide to the Management of Tailings Facilities* to provide a formal systematic structure for the assessment of risks, setting of goals and objectives, consultation with COI, implementing activities to achieve goals, assignment of responsibilities, and assurance processes to ensure that tailings facilities are managed effectively.

Tailings Management System <u>ASSESSMENT CRITERIA</u>	
LEVEL	CRITERIA
C	No formal tailings management system developed or implemented.
B	Tailings management system implemented but not in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> ; or Gap analysis of existing management practices against the MAC tailings management framework prepared. Development of a tailings management system in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> underway.
A	Effective implementation: Tailings management system, in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> , developed and/or reviewed in consultation with COI, and implemented.
AA	Internal audit or assessment: Formal internal, independent audit or assessment that the implementation of the tailings management system is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> .
AAA*	External audit or assessment: Formal external, independent audit or assessment that the implementation of the tailings management system is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> .

Tailings Management System

FREQUENTLY ASKED QUESTIONS

#	FAQ	PAGE #
3	What does COI consultation mean?	See page 16
4	Can a facility effectively implement a tailings management system without having a tailings management policy in place?	See page 17
5	What does "audit or assessment" mean?	See page 17
6	Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?	See page 17
7	What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?	See page 18
8	What is a Community of Interest (COI)?	See page 18
9	What does "formal" mean?	See page 18
10	What does "effective" mean?	See page 19
11	What is a "system"?	See page 19
12	What does "independent" mean?	See page 19

Tailings Management System

SUPPORTING GUIDELINES

Through interview and review of documentation, determine:

- That a tailings management system is in place that is in conformance with the tailings management framework in MAC's *"A Guide to the Management of Tailings Facilities"*.
- That there has been consultation with COI in the development and/or review of the tailings management system.
- That the tailings management system is reviewed annually to ensure it remains current and effective, and if the reviews are reported to senior management.
- What audit or assessment processes are in place to ensure that the tailings management system is in conformance with the tailings management framework in MAC's *"A Guide to the Management of Tailings Facilities"*.
- Whether an internal or external audit or assessment of the tailings management system has been carried out within the last three years.

3. ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT

Purpose:

Executive accountability for tailings management is necessary to signal the importance of tailings facilities to our business and the adverse impacts improper tailings management practices have on the environment and our reputation. This indicator confirms that companies have an executive officer (CEO or COO) who has overall accountability to ensure that an appropriate management structure is in place to provide assurance to the corporation and its COIs that tailings are managed responsibly. It is expected that the executive officer will delegate responsibility for tailings management, budgetary issues and other tailings-related functions to operations and/or corporate personnel, while retaining ultimate accountability for the management of tailings and its outcomes.

Assigned Accountability and Responsibility for Tailings Management	
ASSESSMENT CRITERIA	
LEVEL	CRITERIA
C	No formal assignment of accountability to an executive officer. No formal delegation of responsibility for tailings-related issues and performance.
B	Formal assignment of accountability to an executive officer. No formal delegation of responsibility for tailings-related issues and performance.
A	Effective implementation: Accountability formally assigned to an executive officer. Responsibility, budgetary authority and accountability for implementation of, and reporting on, the tailings management system in conformance with the tailings management framework in MAC’s <i>A Guide to the Management of Tailings Facilities</i> formally delegated to operations and/or corporate personnel.
AA	Internal audit or assessment: Formal internal, independent audit or assessment: <ul style="list-style-type: none"> • of the assignment of accountability to an executive officer; and • that the responsibility, budget authority and accountability for the tailings management system in conformance with the tailings management framework in MAC’s <i>A Guide to the Management of Tailings Facilities</i> are formally delegated to operations and/or corporate personnel.

Assigned Accountability and Responsibility for Tailings Management

ASSESSMENT CRITERIA continued

AAA	<p>External audit or assessment: Formal external, independent audit or assessment:</p> <ul style="list-style-type: none"> • of the assignment of accountability to an executive officer; and • that the responsibility, budget authority and accountability for the tailings management system in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> has been formally delegated to operations and/or corporate personnel.
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Assigned Accountability and Responsibility for Tailings Management

FREQUENTLY ASKED QUESTIONS

#	FAQ	PAGE #
5	What does "audit or assessment" mean?	See page 17
6	Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?	See page 17
7	What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?	See page 18
9	What does "formal" mean?	See page 18
10	What does "effective" mean?	See page 19
12	What does "independent" mean?	See page 19

Assigned Accountability and Responsibility for Tailings Management

SUPPORTING GUIDELINES

Through interview and review of documentation, determine:

- That an executive officer has been assigned specific accountability for tailings management.
- That the accountable executive officer has formally delegated responsibility for tailings management, budgetary issues and other tailings-related functions to operations and/or corporate personnel.
- What audit or assessment processes are in place to ensure that the tailings management accountability and responsibilities have been assigned in conformance with the tailings management framework in MAC's "*A Guide to the Management of Tailings Facilities*".
- Whether an internal or external audit or assessment of the assigned accountability and responsibility for tailings management has been carried out within the last three years.

4. ANNUAL TAILINGS MANAGEMENT REVIEW

Purpose:

To confirm there is an annual corporate review of tailings management that is reported to the accountable executive officer to ensure that the corporation is satisfied that the tailings management structure and systems are effective and continue to meet the needs of the organization.

Annual Tailings Management Review	
ASSESSMENT CRITERIA	
LEVEL	CRITERIA
C	No formal, annual corporate review of tailings management reported to the accountable executive officer. Periodic, informal reviews of the tailings management system and performance at the facility level, but not in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> .
B	No formal, annual corporate review of tailings management reported to the accountable executive officer. Periodic formal reviews of the tailings management system and performance at the facility level in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> .
A	Effective implementation: formal annual corporate review of tailings management reported to the accountable executive officer. The review is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> .
AA	Internal audit or assessment: Formal internal, independent audit or assessment: <ul style="list-style-type: none"> • that the annual corporate review of tailings management is reported to the accountable executive officer; and • that the review is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i>.

AAA*	<p>External audit or assessment: Formal external, independent audit or assessment:</p> <ul style="list-style-type: none"> • that the annual corporate review of tailings management is reported to the accountable executive officer; and • that the review is in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities.
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Annual Tailings Management Review

FREQUENTLY ASKED QUESTIONS

#	FAQ	PAGE #
5	What does "audit or assessment" mean?	See page 17
6	Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?	See page 17
7	What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?	See page 18
9	What does "formal" mean?	See page 18
10	What does "effective" mean?	See page 19
12	What does "independent" mean?	See page 19

Annual Tailings Management Review

SUPPORTING GUIDELINES

Through interview and review of documentation, determine:

- That the company performs an annual corporate review of tailings management.
- That the results of the review are reported to the accountable executive officer.
- That the process employed for the annual corporate review of tailings management addresses requirements of the tailings management framework in MAC's *A Guide to the Management of Tailings Facilities*.
- That the annual corporate review of tailings management reported to the accountable executive officer has been subject to internal or external audit or assessment within the last three years.

5. OMS MANUAL

Purpose:

To confirm that the facility has developed and implemented a tailings OMS manual in conformance with *Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities*.

OMS Manual	
ASSESSMENT CRITERIA	
LEVEL	CRITERIA
C	No OMS manual developed.
B	OMS manual developed, but not in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> ; or OMS manual, in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> , in preparation; and Roles and responsibilities for facility personnel defined and documented.
A	Effective implementation: OMS manual developed and implemented in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> . Emergency preparedness and response plans documented.
AA	Internal audit or assessment: Formal internal, independent audit or assessment that the development and implementation of the OMS manual are in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> . Results of verification are reported to the annual corporate review of tailings management. Emergency preparedness and response plans tested.
AAA	External audit or assessment: Formal external, independent audit or assessment that the development and implementation of the OMS Manual are in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> . Results of the external verification are reported to the annual corporate review of tailings management.

OMS Manual

FREQUENTLY ASKED QUESTIONS

#	FAQ	PAGE #
5	What does "audit or assessment" mean?	See page 17
6	Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?	See page 17
7	What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?	See page 18
10	What does "effective" mean?	See page 19
12	What does "independent" mean?	See page 19

OMS Manual

SUPPORTING GUIDELINES

Through interview and review of documentation, determine:

- That an OMS manual has been prepared and implemented for tailings facilities.
- That the OMS manual is in conformance with the MAC guide *Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities*.
- That the roles and responsibilities of facility personnel are defined.
- That the facility has audit or assessment processes in place to ensure that the requirements of its OMS manual are being followed, that action plans are executed to address any deficiencies, and that the OMS manual implementation is reported to the annual corporate review of tailings management.
- Whether an internal or external audit or assessment of the OMS manual's conformance with MAC's *Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities* has been carried out within the last three years.
- That emergency preparedness and response plans are prepared, documented, and tested.

FREQUENTLY ASKED QUESTIONS

Protocol-Specific Guidance

1. Does a "tailings policy" have to be a stand-alone document?

No. MAC's *A Guide to the Management of Tailings Facilities* states (Section 2.1) that the requirement for a specific tailings policy can be met within an overarching company operations or environmental policy if that policy contains specific reference to tailings management, which includes the policies and commitments as outlined [in the Guide].

2. Can corporate documentation be used to demonstrate commitment?

Written senior management commitment at the corporate level (e.g. a corporate policy) can be accepted as evidence during a corporate and/or facility-level self-assessment or TSM verification if it is accompanied by evidence that the corporate commitment is being applied and adhered to. There must be evidence of a link between the corporate documentation and facility-level practices. If this linkage is established, then the corporate documentation can be accepted as evidence of corporate and/or facility-level commitment.

3. What does COI consultation mean?

Consultation is a process by which a company communicates with communities of interest to understand their viewpoint(s), to inform them of company activities and performance, and to actively engage them in discussion and participation on issues of concern.

Consultation on the development of a company's tailings management policy and statement of commitments (Indicator 1) and tailings management system (Indicator 2) are explicit elements of MAC's *A Guide to the Management of Tailings Facilities*. To meet consultation criteria in Indicators 1 and 2, companies should undertake efforts to consult with relevant COI as stated in the *Guide*. To achieve the Level A commitment on these two indicators, companies should be able to demonstrate that efforts were undertaken to identify and consult with COI at the local and site level, at a minimum.

Companies are encouraged to refer to the TSM Assessment Protocol for Aboriginal and Community Outreach Performance, which includes four performance indicators and guidance addressing:

- COI identification process
- COI engagement and dialogue processes
- COI response mechanisms
- Reporting performance.

The Aboriginal and Community Outreach Protocol outlines a process for identifying and consulting with COI beginning with those having local and site interest, extending up to corporate and more general, issues-based interest. To achieve Level A for the first indicator, COI Identification Process, companies must demonstrate that they have a formal and documented system in place for identification of COI at the local or site level.

4. Can a facility effectively implement a tailings management system without having a tailings management policy in place?

No. There is a direct linkage between Indicators 1 and 2 of this protocol. A facility must have a tailings management policy in place in order to effectively implement a tailings management system, since the policy provides direction and is part of the management system. A facility cannot achieve a Level A for Indicator 2 (Tailings Management System) if it has not achieved a Level A or higher for Indicator 1 (Tailings Management Policy).

AUDIT OR ASSESSMENT

5. What does "audit or assessment" mean?

Audit or assessment of tailings facility management is undertaken to demonstrate conformance with MAC's *A Guide to the Management of Tailings Facilities*, to the standards recommended in MAC's *A Guide to Audit and Assessment of Tailings Facility Management*. It is conducted by a team which, although perhaps employed by the company, is in a position to be independent, impartial and objective with regard to the evaluated site or facility.

This should not be confused with the verification system as described in the TSM Assessment Protocols, which is – largely a desk-top exercise in which the TSM rating self-assigned by a facility or company against a given indicator is verified. The TSM verification is not equivalent to an audit or assessment of tailings facility management as outlined in the preceding paragraph.

MAC's *A Guide to Audit and Assessment of Tailings Facility Management* defines audit and assessment as follows:

Audit is the formal, systematic and documented examination of an organization's or facility's conformance with explicit, agreed, prescribed criteria, often requirements stipulated in law or regulation or, in the case of this Guide, the MAC tailings management framework. Audits seek to evaluate and report on conformance or non-conformance with stipulated criteria based on the systematic collection and documentation of competent evidence. Audits are not based on opinion, nor are they designed to determine root cause of deficiencies, or to evaluate management system effectiveness.

Assessment goes beyond measuring against stipulated criteria (audit), to incorporate professional judgment in an evaluation of the effectiveness, implementation, application and maintenance of a management system. Assessment is driven by a concern for quality of system design and management process implementation. It can identify system deficiencies and determine their root cause(s) to provide a basis for process improvement.

6. Can a company or facility achieve a Level AAA on satisfactory completion of an external audit or assessment, without having completed a Level AA internal audit or assessment?

Yes, because the TSM Performance Indicator assessment is a snapshot in time of a company's or facility's status as relates to each specific performance indicator. Assigning a rating of Level AA or AAA is based on whether an audit or assessment is internal or external. *A company or facility does not need to do an internal audit or assessment (qualifying for a rating of Level AA) before receiving a rating of Level AAA for an external audit or assessment.*

7. What if a company or facility receives an audit or assessment that indicates non-conformance with the Assessment Criteria?

If the audit or assessment identifies a significant non-conformance, a rating of Level B should be assigned. Some examples of significant non-conformance might include lack of or inadequate:

- documentation of key aspects;
- COI consultation;
- guiding policy and commitment;
- assignment of accountability and responsibility for tailings management;
- annual corporate review of tailings management.

Professional judgment must be applied in assessing the significance of identified non-conformances.

DEFINITION OF KEY TERMS

8. What is a Community of Interest (COI)?

COI include individuals and groups who have an interest in, or believe they may be affected by decisions respecting the management of operations. They include, but are not restricted to:

- employees
- Aboriginal or indigenous peoples
- mining community members
- suppliers
- neighbours
- customers
- contractors
- environmental organizations and other non-governmental organizations
- governments
- the financial community, and

- shareholders.

Companies are encouraged to refer to the TSM Assessment Protocol for Aboriginal and Community Outreach Performance, which includes performance indicators addressing the identification of COI.

9. What does "formal" mean?

The term “formal” is used frequently in the assessment, and usually in conjunction with ‘system’ or “process”. Formalized systems, processes or activities are usually given status through clear and precise requirements, documented as a written procedure. This means that the business can clearly and easily demonstrate that the process or system is in place. It would also typically require documented processes or an “audit trail”.

10. What does "effective" mean?

Where the term “effective” is used, it requires the element to be fully operational in order that desired outcomes can be achieved.

11. What is a “system”?

A system, or “management system” represents processes and procedures that collectively provide a systematic framework for ensuring that tasks are performed correctly, consistently and effectively to achieve a specified outcome and to drive continual improvement in performance. A systems approach to management requires an assessment of what needs to be done, planning to achieve the objective, implementation of the plan and review of performance in meeting the set objective. A management system also considers necessary personnel, resources and documentation requirements. Other definitions associated with systems are:

- **Policy:** The formal expression of management’s commitment to a particular issue area that presents the stance of the company to interested external parties.
- **Practice:** Informal, undocumented approaches to carrying out a task.
- **Procedure:** A formalized, documented description of how a task is to be carried out.

12. What does "independent" mean?

Audit or assessment conducted by verifiers who are external to the activity being audited or assessed and who are free from bias and conflict of interest. **External audit or assessment** must be conducted by verifiers who are also external to the company being audited or assessed. Verifiers maintain an objective state of mind throughout the verification process to ensure that findings and conclusions are based only on the evidence. (Adapted from ISO 19011)

13. What does “accountability” mean?

Accountability: The tailings management system must identify the party who is ultimately answerable for tailings management performance and the development and implementation of the tailings management system at the facility. This accountability cannot be delegated. Resources are available to

the accountable party to ensure proper systems (training, equipment, communications, etc) are in place to effectively meet their tailings management goals.

14. What does "responsibility" mean?

Responsibility: Within the tailings management system, specific tailings management related requirements and tasks are identified and assigned to specific positions within the facility. It is important that responsibilities are clearly communicated so that each position understands what is expected of them.

SELF-ASSESSMENT CHECKLIST

Tailings Management

Facility name:		Company name:	
Assessed by:		Date submitted:	

SUPPORTING DOCUMENTATION / EVIDENCE:	
NAME OF DOCUMENT	LOCATION

Interviewees:			
NAME	POSITION	NAME	POSITION

	Question	Y	N	NA	Description & Evidence
INDICATOR 1: TAILINGS MANAGEMENT POLICY AND COMMITMENT					
Indicator 1 Level B	Is a tailings management policy and commitment in place, or is one being developed in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> ?				
	<i>If you have answered "Yes" to all of the Level B questions, continue to the Level A questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level C.</i>				
Indicator 1 Level A	Is a tailings management policy and commitment in place that is in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> ?				
	Was the policy and commitment developed and/or reviewed in consultation with COI?				
	Is the policy and commitment endorsed by senior management?				
	Is the policy and commitment implemented with budget allocation?				
	<i>If you have answered "Yes" to all of the Level A questions, continue to the Level AA questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level B.</i>				
Indicator 1 Level AA	Has a formal <u>internal</u> , independent audit or assessment been conducted to confirm that the tailings management policy and commitment is in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> ?				
	<i>If you have answered "Yes" to all of the Level AA questions, continue to the Level AAA questions. If you have not answered "Yes" to all of the Level AA questions, assess the facility as a Level A.</i>				
Indicator 1 Level AAA	Has a formal <u>external</u> , independent audit or assessment been conducted to confirm that the tailings management policy and commitment is in conformance with MAC's <i>A Guide to the Management of Tailings Facilities</i> ?				
	<i>If you have answered "Yes" to all of the Level AAA questions, assess the facility as a Level AAA. If you have not answered "Yes" to all of the Level AAA questions, assess the facility as a Level AA.</i>				
ASSESSED LEVEL OF PERFORMANCE FOR INDICATOR 1					Level: _____

	Question	Y	N	NA	Description & Evidence
INDICATOR 2: TAILINGS MANAGEMENT SYSTEM					
Indicator 2 Level B	Has a tailings management system been implemented, or has a gap analysis of existing management practices against the MAC tailings management framework been prepared?				
	Is development underway of a tailings management system that is in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities?				
	<i>If you have answered "Yes" to all of the Level B questions, continue to the Level A questions. If you have not answered "Yes" to all of the Level B questions, assess the facility as a Level C.</i>				
Indicator 2 Level A	Is a tailings management system in place that is in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities?				
	Was the tailings management system developed and/or reviewed in consultation with COI?				
	Is the tailings management system being implemented?				
	<p>If you have answered "Yes" to all of the Level A questions, continue to the Level AA questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level B.</p> <p>NOTE: A tailings management policy is an inherent component of the tailings management system, and a facility cannot achieve Level A on Indicator #2 without achieving Level A or higher on Indicator #1.</p>				
Indicator 2 Level AA	Has a formal <u>internal</u> , independent audit or assessment been conducted to confirm that the implementation of the tailings management system is in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities?				
	<i>If you have answered "Yes" to all of the Level AA questions, continue to the Level AAA questions. If you have not answered "Yes" to all of the Level AA questions, assess the facility as a Level A.</i>				
Indicator 2 Level AAA	Has a formal <u>external</u> , independent audit or assessment been conducted to confirm that the implementation of the tailings management system is in conformance with the tailings management framework in MAC's A Guide to the Management of Tailings Facilities?				

	Question	Y	N	NA	Description & Evidence
	<p><i>If you have answered "Yes" to all of the Level AAA questions, assess the facility as a Level AAA. If you have not answered "Yes" to all of the Level AAA questions, assess the facility as a Level AA.</i></p>				
	<p>ASSESSED LEVEL OF PERFORMANCE FOR INDICATOR 2</p>			<p>Level: _____</p>	

	Question	Y	N	NA	Description & Evidence
INDICATOR 3: ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT					
Indicator 3 Level B	Has accountability for tailings management been formally assigned to an executive officer?				
	<i>If you have answered "Yes" to all of the Level B questions, continue to the Level A questions. If you have not answered "Yes" to all of the Level B questions, assess the facility as a Level C.</i>				
Indicator 3 Level A	Has responsibility, budgetary authority and accountability for implementation of, and reporting on, the tailings management system in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> been formally delegated to operations and/or corporate personnel?				
	<i>If you have answered "Yes" to all of the Level A questions, continue to the Level AA questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level B.</i>				
Indicator 3 Level AA	Has a formal <u>internal</u> , independent audit or assessment been conducted to confirm: <ul style="list-style-type: none"> assignment of accountability to an executive officer; and 				
	<ul style="list-style-type: none"> formal delegation of the responsibility, budget authority and accountability for the tailings management system in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> to operations and/or corporate personnel. 				
	<i>If you have answered "Yes" to all of the Level AA questions, continue to the Level AAA questions. If you have not answered "Yes" to all of the Level AA questions, assess the facility as a Level A.</i>				
Indicator 3 Level AAA	Has a formal <u>external</u> , independent audit or assessment been conducted to confirm: <ul style="list-style-type: none"> assignment of accountability to an executive officer; and 				
	<ul style="list-style-type: none"> formal delegation of the responsibility, budget authority and accountability for the tailings management system in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> to operations and/or corporate personnel. 				

	Question	Y	N	NA	Description & Evidence
	<p><i>If you have answered "Yes" to all of the Level AAA questions, assess the facility as a Level AAA. If you have not answered "Yes" to all of the Level AAA questions, assess the facility as a Level AA.</i></p>				
	<p>ASSESSED LEVEL OF PERFORMANC FOR INDICATOR 3</p>			<p>Level: _____</p>	

	Question	Y	N	NA	Description & Evidence
INDICATOR 4: ANNUAL TAILINGS MANAGEMENT REVIEW					
Indicator 4 Level B	Are there periodic formal reviews of the tailings management system and performance at the facility level in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i> ?				
	<i>If you have answered "Yes" to all of the Level B questions, continue to the Level A questions. If you have not answered "Yes" to all of the Level B questions, assess the facility as a Level C.</i>				
Indicator 4 Level A	Are the results of the formal annual corporate review of tailings management reported to the accountable executive officer?				
	<i>If you have answered "Yes" to all of the Level A questions, continue to the Level AA questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level B.</i>				
Indicator 4 Level AA	Has a formal <u>internal</u> , independent audit or assessment been conducted to confirm that:				
	<ul style="list-style-type: none"> the annual corporate review of tailings management is reported to the accountable executive officer; and 				
	<ul style="list-style-type: none"> the review is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i>. 				
<i>If you have answered "Yes" to all of the Level AA questions, continue to the Level AAA questions. If you have not answered "Yes" to all of the Level AA questions, assess the facility as a Level A.</i>					
Indicator 4 Level AAA	Has a formal <u>external</u> , independent audit or assessment been conducted to confirm that:				
	<ul style="list-style-type: none"> the annual corporate review of tailings management is reported to the accountable executive officer; and 				
	<ul style="list-style-type: none"> the review is in conformance with the tailings management framework in MAC's <i>A Guide to the Management of Tailings Facilities</i>. 				
<i>If you have answered "Yes" to all of the Level AAA questions, assess the facility as a Level AAA. If you have not answered "Yes" to all of the Level AAA questions, assess the facility as a Level AA.</i>					
ASSESSED LEVEL OF PERFORMANCE FOR INDICATOR 4					Level: _____

	Question	Y	N	NA	Description & Evidence
INDICATOR 5: OMS MANUAL					
Indicator 5 Level B	Has an OMS manual been developed, or is an OMS manual, in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> , being prepared?				
	Have roles and responsibilities for facility personnel been defined and documented?				
	<i>If you have answered "Yes" to all of the Level B questions, continue to the Level A questions. If you have not answered "Yes" to all of the Level B questions, assess the facility as a Level C.</i>				
Indicator 5 Level A	Has an OMS manual been developed and implemented in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> .				
	Are emergency preparedness and response plans documented?				
	<i>If you have answered "Yes" to all of the Level A questions, continue to the Level AA questions. If you have not answered "Yes" to all of the Level A questions, assess the facility as a Level B.</i>				
Indicator 5 Level AA	Has a formal <u>internal</u> , independent audit or assessment been conducted to confirm that the development and implementation of the OMS manual are in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> ?				
	Are the results reported to the annual corporate review of tailings management?				
	Are emergency preparedness and response plans tested?				
	<i>If you have answered "Yes" to all of the Level AA questions, continue to the Level AAA questions. If you have not answered "Yes" to all of the Level AA questions, assess the facility as a Level A.</i>				

	Question	Y	N	NA	Description & Evidence
Indicator 5 Level AAA	Has a formal <u>external</u> , independent audit or assessment been conducted to confirm that the development and implementation of the OMS manual are in conformance with MAC's <i>Developing an Operating, Maintenance and Surveillance Manual for Tailings and Water Management Facilities</i> ?				
	Are the results reported to the annual corporate review of tailings management?				
	<i>If you have answered "Yes" to all of the Level AAA questions, assess the facility as a Level AAA. If you have not answered "Yes" to all of the Level AAA questions, assess the facility as a Level AA.</i>				
	ASSESSED LEVEL OF PERFORMANCE FOR INDICATOR 5				Level: _____

APPENDIX 2 – BIOGRAPHIES OF INDEPENDENT TASK FORCE MEMBERS

Dr. Michael Davies, P.Eng/P.Geo

Dr. Michael Davies has an undergraduate degree in Geological Engineering along with Masters and PhD degrees in Civil Engineering (Geotechnical/Environmental). Over the past 30 years, he has worked throughout the world in mining with particular emphasis on mine waste management, including tailings design, operations and closure.

Dr. Davies is Vice President, Environment, Teck Resources Ltd. Most recently prior to joining Teck in early 2012, he was Vice-President of Mining for AMEC Earth & Infrastructure where he worked from 1998. He has a number of publications in the areas of tailings/mine waste and risk management.

He is currently chair of the Mining Association of Canada's Tailings Working Group, a committee comprising tailings management professionals from across the MAC membership, including mining and engineering consulting firms. He has served on the Group for many years and was deeply involved in the development of MAC's Guides and Towards Sustainable Mining's tailings management protocol.

Dr. Craig Ford, Ph.D.

Dr. Craig Ford is President and Owner of Corporate Responsibility Solutions Inc., a firm providing advisory services to the resource development and financial sectors in the areas of safety, health and security, environmental affairs, community relations and development, human rights and government relations. Dr. Ford is also Executive-in-Residence at the Schulich Global Mining Management MBA specialization and is a member of the ICMM Independent Expert Review Panel which assesses a prospective member company's appropriateness for ICMM membership. He has worked in the mining industry for 35 years and for the past 20 years has been involved in corporate responsibility issues at mine sites around the world.

Dr. Ford is the former Vice-President, Corporate Responsibility (CR) at Inmet Mining Corporation, where he led the CR function for 13 years until Inmet was purchased by First Quantum Minerals in March, 2013. Under his leadership, Inmet established a strong reputation for excellence in a range of CR issues to create clear business value for the enterprise, culminating in the start of construction of Cobre Panama, a \$6.2 billion greenfield development project in Panama located within a challenging socio-environmental context.

Dr. Ford has demonstrated ability to effectively influence across organizations to build a strong business case for enhancing corporate responsibility policies, systems and performance incorporating evolving international best practice to build reputation and drive enterprise value. He is a strong advocate for the business value of integrated and comprehensive CR management systems to address the increasingly complex and material matters that are common in the resource development sector today.

Dr. Ford is a member of the Board of the Mining Association of Canada (MAC) and has been an Executive Board member of MAC and Chair of the Towards Sustainable Mining Governance Team. He was closely involved in the development of MAC's TSM initiative, where he served as Chair of the Initiative Leaders. He was a member of the Principal Liaison Committee of the International Council on Mining and Metals and is a founding member of the Devonshire Initiative, an extractives-development organization network established to foster dialogue and to achieve on-the-ground improvements in development outcomes, where he served on its Steering Committee. Craig was Technical Co-Chair of the 9th International Conference on Acid Rock Drainage (ICARD) and Chair of the 5th ICARD Organizing Committee and was also involved in the founding of the International Network for Acid Prevention (INAP), and served as its first Operating Committee Chair. He sits on the Ontario Board of the Nature Conservancy of Canada.

Dr. Ford holds Bachelors and Masters degrees in Geology from Western University and a Ph.D. in Geology and Geochemistry from the Colorado School of Mines. He also holds an ICD.D designation from the Institute of Corporate Directors.

Doug Horswill

Doug Horswill retired as Senior Vice President, Sustainability and External Affairs, Teck Resources in April 2014.

Following 20 years in the Public Service, culminating in the positions of Deputy Minister of Finance and Corporate Relations and Deputy Minister of Energy, Mines and Petroleum Resources for the Province of British Columbia, Mr. Horswill joined Cominco Ltd. as Vice President, Environment and Public Affairs in September 1992. He spent the next 22 years developing and leading Teck's sustainability, community relations, environment, health, safety and external relations areas including Teck's international zinc and health program.

Mr. Horswill holds a Bachelor of Applied Science degree in Mineral Engineering and a Master of Arts degree in Economics from the University of British Columbia. He was awarded the Queen Elizabeth Diamond Jubilee medal for service in international development charitable sector.

Mr. Horswill is past Chairman of the Mining Association of Canada and the Mining Association of British Columbia. He currently serves as Chairman of the Board of Resource Works and is a member of the Boards of the Sunny Hill Health Care Centre for Children, CARE Canada, and the Vancouver Aquarium. He is Executive in Residence for the Asia Pacific Foundation of Canada.

Peter Lighthall, P.Eng

Peter Lighthall is an independent geotechnical consultant, based in Naramata, BC, with over 40 years of experience, specializing in tailings dams and tailings impoundments, mine waste and mine water management.

Mr. Lighthall was educated at the University of British Columbia (BSc, Civil Engineering, 1971) and University of London, Imperial College of Science and Technology (MSc., Civil Engineering Soil Mechanics, 1979). He has worked throughout the world, including South America, Eastern and Western Europe, Russia and former Soviet Union states, China, the Middle East, Africa and Australia, as well as extensively within Canada and USA. He has worked on development and implementation of

leading edge technologies for tailings management, including thickened and paste tailings and filtered dry stack tailings. He is well experienced in tailings dam design in high earthquake risk areas. He has focused in recent years on tailings dam and tailings management review and/or technical advisory roles on major mine developments and mine operations.

Nalaine Morin

Nalaine Morin is Principal of ArrowBlade Consulting Services. Ms. Morin is nationally recognized for her work in environmental assessment. She has led and managed the environmental review of several large resource development projects on behalf of multiple First Nations. Her deep technical background in both mining and environmental assessment processes combined with being of Tahltan descent has enabled her to understand and to identify methods for the connection and support of both First Nation traditional knowledge and western science together in a way that bridges cultural understanding on both sides. She provides services in technical review, regulatory support, negotiations, community consultation and environmental resource management.

In 2006, Ms. Morin helped establish the Tahltan Heritage Resources Environmental Assessment Team on behalf of the Tahltan Nation. The THREAT team is an innovative team that incorporates the expertise of the Tahltan people with Western science. As the lead manager of THREAT, she has helped the Tahltan Nation navigate the environmental assessment processes of several large-scale resource projects from mines to run-of-river projects to transmission lines. Ms. Morin continues to work with her nation as one of the project managers for the Tahltan Heritage Resources Environmental Assessment Team where she is instrumental in the development of processes for the inclusion of Tahltan knowledge in the environmental assessment and permitting processes for resource development projects. Ms. Morin has gained a national reputation for effectively managing complicated resource project issues in a cross cultural setting. Many of the innovative processes she has helped develop have been subsequently adopted for use at the Provincial level.

Ms. Morin works with First Nations across Canada on projects as varied as mining, pipelines and highway infrastructure. In 2009, her expertise was recognized by the Canadian Environmental Assessment Agency as she was selected as a panel member for the review of a major mining project in BC. Ms. Morin has been asked to speak at a number of conferences both provincially and nationally. She most recently shared a keynote address discussing impact assessment at the International Association of Impact Assessment conference and was a featured speaker at the Prospectors and Developers Association of Canada conference.

Ms. Morin holds a Bachelor of Applied Science degree from the University of British Columbia and a Mechanical Engineering Technology Diploma from the British Columbia Institute of Technology. She currently resides in Leduc, Alberta. Nalaine continues to develop her consulting and professional expertise to meet the needs of her clients and has recently acquired certification as an Environmental Professional, certified by the Canadian Environmental Certification Approvals Board.

Dr. John Sobkowicz, Ph.D., P.Eng

Dr. John Sobkowicz is a Principal and senior geotechnical engineer with Thurber Engineering Ltd. in Calgary, Canada. Over his 40-year career, he has developed expertise in natural hazard risk assessment, water resources (including dam and canal design, construction, and maintenance; and

dam safety reviews), and mine and tailings geotechnique, and has published over 60 technical papers in these fields.

Dr. Sobkowicz is a member of geotechnical engineering review boards for all five active oil sand mining companies in Alberta. He recently finished a two-year term as Vice-President, Technical of the Canadian Geotechnical Society, and in 2013 received the Frank Spragins Award for Technical Excellence from the Association of Professional Engineers and Geoscientists of Alberta.

Alan Young

Since 1990 Alan Young has worked as a facilitator, planner, analyst and activist with a wide range of conservation groups, Aboriginal organizations, companies and governments across Canada. His focus has been on sustainability strategies for the extractive sector, which have involved projects throughout North America, Latin America and Europe.

He started his work as coordinator of the joint federal/territorial and Aboriginal Porcupine Caribou Co-Management Board in the Yukon. From 1994 to 2002, he served as Executive Director of the Environmental Mining Council of BC. In 2002, he left EMCBC to form the Materials Efficiency Research Group to focus on his interest in bringing different sectors together to build joint solutions to social and environmental issues in the extractive industries. Since 2003 he was work on diverse projects, including socio-economic impact assessments, large scale conservation strategies, certification programs in the forestry and mining sectors, as well as various legislative reform initiatives in the extractive sectors nationally and internationally. Since 2003 has served as Director of Corporate Programs the Canadian Boreal Initiative (now International Boreal Conservation Campaign), and has been the Director of the Secretariat of the Boreal Leadership Council, a multi-stakeholder alliance including banks, investors, leading extractive companies, Aboriginal organizations and NGOs working towards large-scale conservation and sustainable development across Canada's boreal forest region.

Mr. Young is Chair of the Centre for Science in Public Participation, Vice Chair of Global ForestWatch Canada and Director of the International Institute for Sustainable Development. He is former chair of the Forest Stewardship Council of Canada and currently sits on the Mining Association of Canada's Community of Interest Advisory Panel.

APPENDIX 3 – INDEPENDENT REVIEW OF TSM TAILINGS REQUIREMENTS TERMS OF REFERENCE

Mandate: To review MAC's *Towards Sustainable Mining* tailings management requirements, including MAC's Tailings Management Guides and TSM Tailings Management Protocol, and to provide advice on potential improvements to them.

Composition: The review will be conducted by an Independent Task Force chaired by former MAC chair Doug Horswill and will include the following representatives:

1. Geotechnical Engineer – Peter Lighthall (independent consultant, formerly with AMEC and Kohn-Crippen)
2. First Nations/Environmental/Engineering – Nalaine Morin (Tahltan Heritage Resources Environmental Assessment Team (THREAT))
3. Environmental NGO/COI Panel Representative – Alan Young (International Boreal Conservation Campaign and MAC COI Panel Member)
4. Management Systems/TSM Expertise – Dr. Craig Ford (Corporate Responsibility Solutions Inc., Executive in Residence at the Schulich School of Business)
5. Geotechnical Engineer – Dr. John Sobkowicz, Ph.D., P.Eng., Thurber Engineering Ltd.
6. Chair of MAC Tailings Working Group – currently Dr. Michael Davies (Teck Resources)

Dr. Dirk Van Zyl (UBC), who served on the BC Independent Expert Engineering Investigation and Review Panel, will serve as a special advisor to the task force. MAC staff (Ben Chalmers, Nathalie Ross) will provide secretarial and logistical support).

Scope: To review MAC's TSM requirements against the Report of the Mount Polley Independent Expert Engineering Investigation and Review Panel.

While not limited to the following, the independent review is expected to consider:

- Are the current requirements for Level A designation sufficient to reduce, to near zero, the likelihood of a catastrophic tailings failure as a result of a deficiency or weakness in the tailings management system or regime? If not, what should be added to the Tailings Management Protocol?
- What are the elements of the MAC Tailings Guides that should be considered critical controls necessary to prevent catastrophic failures? Are the appropriate critical controls currently in the Guides? If not, what critical controls should be added to the Tailings Management Guides?
- Is MAC support for new and existing Members as it relates to TSM tailings management sufficient?
- Is the verification schedule appropriate or should the initial external verification of tailings management be accelerated?
- Should an independent review of tailings management (e.g. a gap analysis against the TSM protocol) be undertaken for new members prior to the application of TSM?
- Is the focus of TSM and the Tailings Management Protocol and Guides on operation management systems appropriate or should the TSM Tailings Protocol and Guides incorporate standards and/or design elements? If so, how?

- How can the TSM process better build confidence in our communities of interest in the tailings management systems and tailings regulatory regimes across the lifecycle of a mine?

The review may include seeking input and learnings from other associations that have similar initiatives (e.g., Chemistry Industry Association of Canada's *Responsible Care*), and the task force will be expected to consult with MAC's TSM COI Advisory Panel.

Panel Deliverables:

A preliminary report will be presented to the MAC Board at its meeting on June 17 (Ottawa) with a final report due on October 14, to be followed by a presentation to the MAC Board on November 18.

The final report will be made public and posted on MAC's website.