

RELATED INITIATIVES

CHAPTER XVIII

GLOBAL RESEARCH CONSORTIUM ON TAILINGS

Daniel M. Franks, Professor & Program Leader, Governance and Leadership in Mining, Sustainable Minerals Institute, The University of Queensland, Australia

Anna Littleboy, Professor and Programme Leader, Transforming the Mine Lifecycle, Sustainable Minerals Institute, The University of Queensland, Australia

David Williams, Professor of Geotechnical Engineering & Director, Geotechnical Engineering Centre, The University of Queensland, Australia

1. INTRODUCTION

Industry and public sector investment in research have expanded the approaches available to address tailings management challenges, but much of this learning remains underutilised. The University of Queensland (UQ) in partnership with a wide range of research and education institutions convened a global series of consultation workshops in 2019 to explore how the research community could best support improved tailings management, and to specifically consider the potential value of a global research and education consortium focused on the topic of tailings. The vision of the consortium is a multi-party collaborative initiative of the world's leading thinkers and practitioners in tailings and mine waste management: researchers, industry professionals, consultants, regulators, civil society and community representatives to develop transdisciplinary knowledge-solutions (science, technology and practices) to address the technical, social, environmental and economic risks of tailings. In this Chapter we report back on the outcomes of the consultations to date and outline future directions.

2. BACKGROUND

In late February 2019, the Sustainable Minerals Institute (SMI) at UQ prepared a concept note for discussion 'Towards a Global Research Consortium on Tailings.' The concept note was released widely and proposed the formation of a global consortium of research and education institutions to:

- extract value from existing knowledge
- prioritise action in areas that require collective effort
- support evidence-based policy-making

- contribute to increased education of, and communication between, all stakeholders
- support the implementation of existing and new initiatives.

The concept note proposed that activities of the consortium could include:

- facilitating dialogue between researchers, practitioners and those impacted by tailings
- collating the state of the art of global research and practice
- defining an agreed program of applied research with consortium members addressing the critical knowledge gaps
- creating a forum for knowledge exchange and research translation with industry, government and civil society
- incubating innovations and ideas, seed research and undertake feasibility studies to implement innovations
- growing a portfolio of research solutions.

In June 2019, Professor Neville Plint, Director of the SMI, wrote to global institutions involved in tailings research and education, and invited them to express interest in the consortium and participate in a series of consultation workshops to establish the initiative. The invitation remains open to all institutions with tailings expertise and experience to get involved. Thirty-two institutions from five continents, including Africa and South America, and thirteen countries have expressed interest to date (see Figure 1).

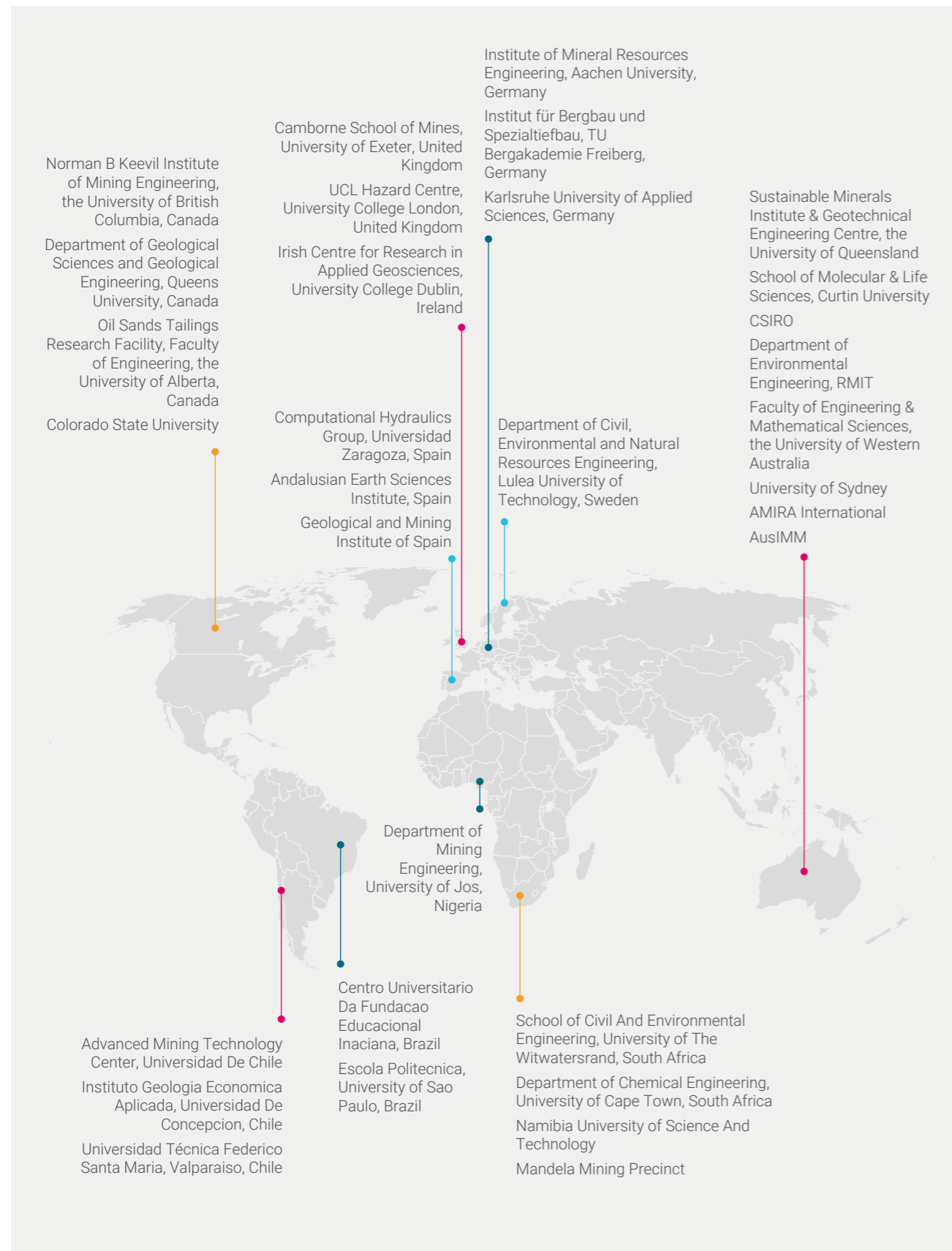


Figure 1. Institutions that have expressed interest in the Consortium.

Five consultation workshops and two presentations were held in 2019, involving more than 300 participants in total. The workshops were held in: Santiago, Chile (prior to the 6th International Seminar on Tailings Management and in partnership with the SMI-International Centre of Excellence in Chile); Cape Town, South Africa (in partnership with the Geotechnical Division of the South African Institute of Civil Engineering, The University of the Witwatersrand and The University of Cape Town); Melbourne,

Australia (in partnership with The Minerals Council of Australia and The Australasian Institute of Mining and Metallurgy); Vancouver, Canada (prior to the Tailings and Mine Waste 2019 Conference); and Brussels, Belgium (as part of EU Raw Materials Week; see Figure 2). In addition, presentations on the concept were made at the Mining and Tailings Safety Summit in London, and the ICMM Tailings Working Group meeting in Vancouver.

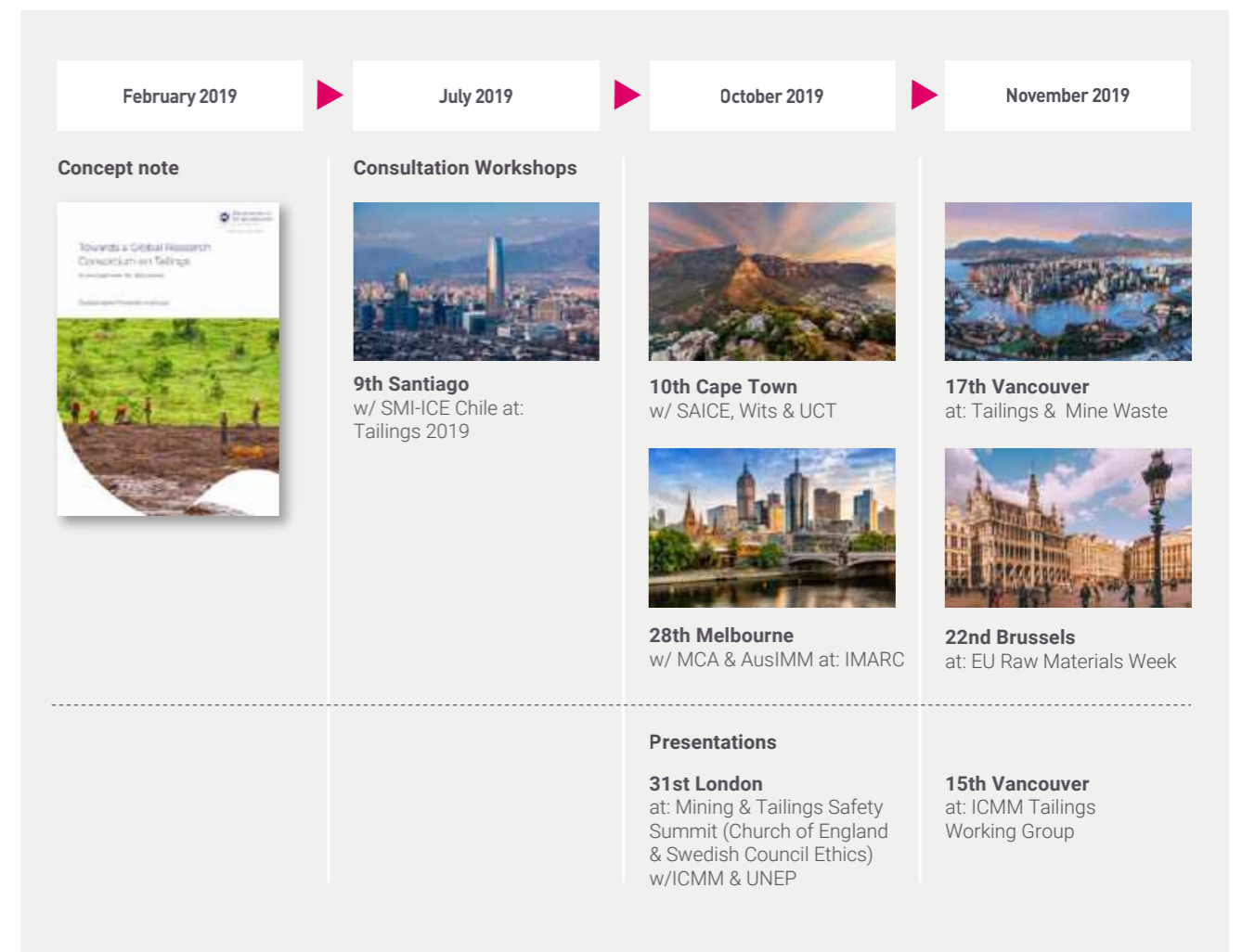


Figure 2. Timeline of the consultation workshops

3. FEEDBACK FROM THE CONSULTATION WORKSHOPS

The feedback from the consultation phase was overwhelmingly positive, with enthusiasm and support for the consortium and its potential. Participants in the consultations made recommendations under the following headings.

Focus

- Be positive and ambitious where 'failure is not an option' and 'nothing is impossible.'
- Produce public good, non-competitive, outputs that are publicly shared.
- Synthesize existing knowledge, and not repeat or duplicate existing work, unless this is needed as part of experimental design.
- Avoid the creation of additional silos or barriers to the uptake of innovative research, education and practice.
- Address the geotechnical and geochemical stability of tailings; tailings production, storage, re-use, re-processing and rehabilitation; the environmental, social and economic risks and consequences from catastrophic and chronic events; and the technical, science, policy, practice, and community aspects.
- Ensure a strong role for capacity building and education.
- Prioritise applied and action-focused research.
- Promote partnership and not duplicate or compete with the work of individual research groups.
- Involve non-traditional actors in research and practice e.g. environmental and engineering consultancies, technology and equipment providers, at-risk communities, regulators, civil society and unions.
- Avoid the promotion of one research group over another.
- Prioritise areas that require collective effort.
- Support the implementation of existing initiatives

(e.g. Global Tailings Review & standard; Global Mineral Professionals Alliance).

- Support evidence-based policy-making and practice.

Governance and structure

- Be genuinely multi-stakeholder: a necessity to rebuild public trust.
- Be global but regionally decentralised.
- Have a staged approach to establishment.
- Be managed by an independent internationally experienced minerals research management organization that is not involved in project delivery.
- Involve sponsors actively: industry, government and multi-lateral.
- Be facilitated by a Consortium Manager or Coordinator.
- Allow the possibility for sponsors to be selective in assigning projects to preferred research and education providers.

4. CONCLUSION AND FUTURE DIRECTIONS

Discussions are currently underway with Amira Global, an independent minerals research management organisation with a long-track record in the sector, to develop the initiative.

It is expected that the governance of the consortium would include:

- a global multi-stakeholder governing council
- regional nodes
- a secretariat and dedicated coordinator with tailings expertise.

It is anticipated that the consortium will focus on three pillars of tailings research and education (see Figure 3).

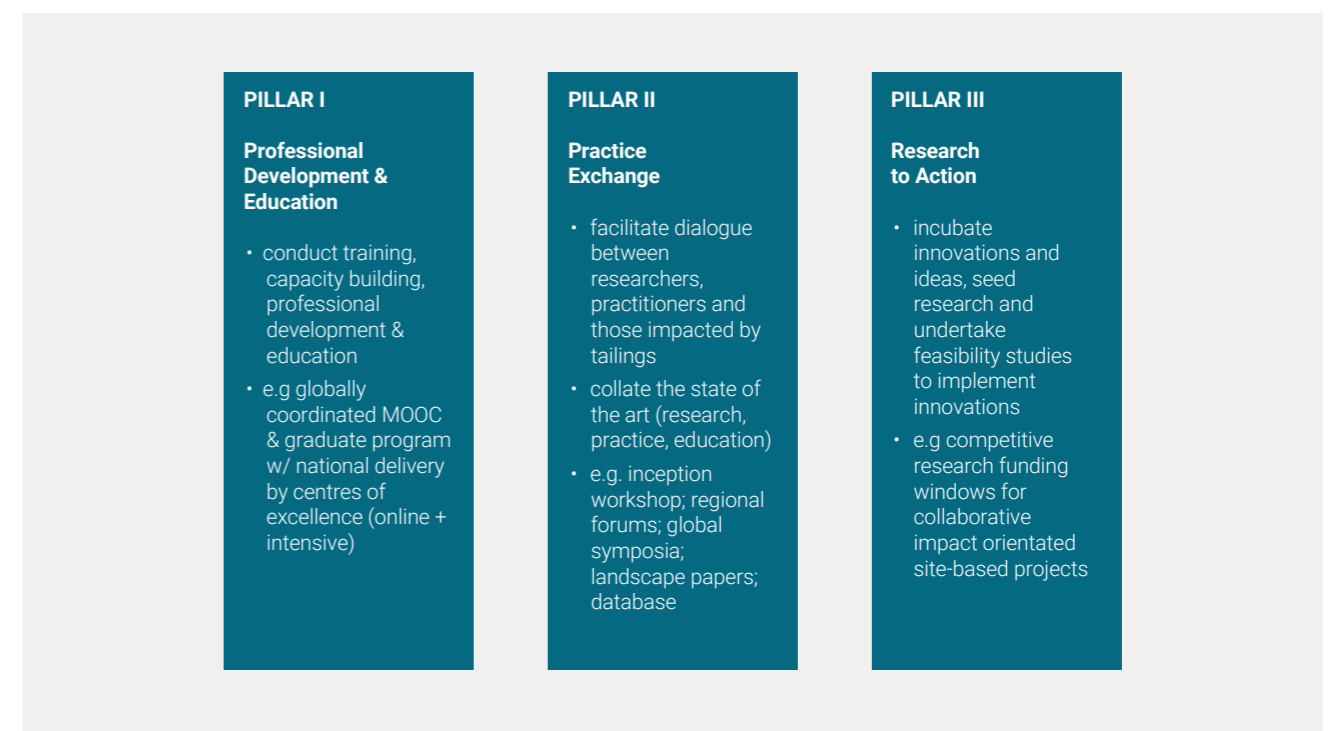


Figure 3. Proposed pillars of the Consortium

Research, education and training projects within each pillar could be proposed by collaborations of investigators across the consortium and selected by project sponsors with the input of the global multi-stakeholder governing council. Priority for the initial phase is likely to be on capacity building, professional development, and the exchange of existing knowledge. The development of education and research roadmaps would allow for later phases of the consortium to expand in these areas should there be interest.

A global research consortium on tailings could tackle a bold and globally significant agenda with the potential for meaningful impact. Members of the consortium would benefit from robust, transdisciplinary, game-changing research with partners that have deep knowledge of the sector.

KEY MESSAGES

1. Industry and public sector investment in research have expanded the approaches available to deal with tailings management challenges, but much of this learning remains underutilised.
2. The University of Queensland, in partnership with a wide range of research and education institutions, is exploring the potential to establish a global research and education consortium to support improved tailings management.
3. The overarching aim of the consortium would be to develop transdisciplinary knowledge-solutions (science, technology and practices) that address the technical, social, environmental and economic risks of tailings.
4. The vision of the consortium is a multi-party collaborative initiative of the world's leading thinkers and practitioners in tailings and mine waste management: researchers, industry professionals, consultants, regulators, civil society and community representatives.
5. A global research consortium on tailings could tackle a bold and globally significant agenda with the potential for meaningful impact.
6. Members of the consortium would benefit from robust, transdisciplinary, game-changing research with partners that have deep knowledge of the sector.
7. Discussions are currently underway with Amira Global, an independent minerals research management organisation with a long-track record in the sector, to develop the initiative.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the partners, speakers and participants who attended the consultation workshops. Financial support to hold the consultation workshops was provided by the Transforming the Mine Lifecycle Programme at UQ, SMI-International Centre of Excellence in Chile, and The University of Cape Town. Special thanks are expressed to Professor Ward Wilson at the University of Alberta, Professor Dirk Van Zyl at the University of British Columbia, Dr Michael Davies of Teck, Dr Luis A. Torres Cruz at the University of the Witwatersrand, Professor Sue Harrison and Associate Professor Jenny Broadhurst at the University of Cape Town, and Hernan Cifuentes of UQ for assistance and support.