Integrated waste landforms for tailings storage: A step towards the goal of zero harm

J. Ranasooriya

Note: Presenting author’s name should be underlined.

1.Geotechnical Consultant, Geotechnical Safety, Malaga WA 6944. Email: Jay.Ranasooriya@outlook.com

Keywords: tailings, dams, failures, mine waste, landforms

# ABSTRACT

Tailings storage facilities (TSFs) are expected to perform without causing safety, health and environmental hazards during operation and after the end of their active life. The most common type of TSFs comprises embankment dams designed, constructed, and operated to meet the relevant guidelines, standards and regulatory requirements.

However, some of these structures have catastrophically failed at an alarming rate, causing not only severe safety, health and environmental disasters but also significant economic losses. In response to recent disasters caused by tailings dam failures, the mining industry, the regulators and other stakeholders have updated the existing guidelines and developed new guidelines and standards on tailings management. The main objective of these guidelines is to reach the ultimate goal of zero harm to people and the environment. Nonetheless, most of the guidelines and other relevant documents, for example, codes of practice and standards, focus on improving the design, construction, operation and closure of conventional tailings dams. They often overlook alternative approaches, such as Integrated Waste Landforms (IWLs), which integrate tailings dams with mine waste rock landforms.

Based on a review of the information available in the public domain, this paper briefly describes the causal factors of tailings dam failures and the advantages of IWLs that can be employed to reach the goal of zero harm by improving the longer-term stability of TSFs.