AConsiderations for Design, Construction and Operation of Protective Levees and Diversion Drains for In-Pit TSFs and Mine Infrastructure

W. Ludlow1, N.Lumby,2 R. Harrington3 and A. Goto4 (initials and surnames only)

Note: Presenting author’s name should be underlined.

1.Senior Principal, Red Earth Engineering, Brisbane, QLD 4000.   
Email: [wade.ludlow@redearthengineering.com.au](mailto:wade.ludlow@redearthengineering.com.au)

2. Tailings and Dams Specialist, Anglo American, Brisbane, QLD 4000.   
Email: [nicholas.lumby@angloamerican.com](mailto:nicholas.lumby@angloamerican.com)

3. Principal, Red Earth Engineering, Brisbane, QLD 4000.   
Email: robert.harrington@redearthengineering.com.au

3. Senior Engineer, Red Earth Engineering, Brisbane, QLD 4000.   
Email: anna.goto@redearthengineering.com.au

Keywords: Levee, Diversion Drain, Protection, In pit tailings

# ABSTRACT

Levees and diversion drains are widely used to protect in-pit Tailings Storage Facilities (TSFs) and mine infrastructure (including underground portals, population areas) to ensure suitable risk reduction and flood immunity from nearby channels and creeks and/or potential dam failure inundation extents. Despite the wide use of levees and diversion drains in the mining industry, a complete industry guidance document has not been developed to cover all the key aspects of design, construction and operation for Australian conditions. Levees and diversion drains designed and/or constructed without proper considerations inevitably turn into a maintenance burden for the owners for the remaining mine life. This paper presents an assembly of key design criteria from various guidance documents and experience. The paper also presents key considerations, including use and management of local soils, geomorphic approach to diversion drain design, mitigation of construction issues in dispersive soils and common operational issues such as “caught catchments”.