

Case Study

Future Proofing Mined Rock Landforms

Gold Mine, Mwanza, Tanzania

> Background

Okane were retained to complete a landform scale erosion assessment on a waste rock dump (WRD) at a Tanzanian Gold Mine found in the Geita greenstone belt (GGB). The design principles and recommendations developed during the erosion assessment were also designed to guide future landform designs and rehabilitation at the site.

> Approach

The project consisted of comparing estimated erosion rates for a range of potential outer embankment configurations using measured geotechnical characteristics of site materials. The assessment employed a combination of 3D and numerical modelling tools including Civil3D, SIBERIA landform evolutions modelling, and the Water Erosion Prediction Project (WEPP) model.

> Client Benefit

Okane assessed the relative performance of various proposed and alternative embankment configurations on several WRDs with varying material properties. Better performing embankment configurations were identified for further consideration. Modelling also indicated a significant factor leading to the high erosion observed on the WRD was likely the result of landform-plateau surface water contributing to incidental flows, which in turn caused ponding followed by overtopping of crests and a series of cascading-type failures. Okane also provided surface water management recommendations to further improve the erosion performance of the preferred landform designs.

"Effective mined rock landform designs and surface water management strategies achieved through landform evolution modelling.

Integrated Mine Closure
and Relinquishment Solutions



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