

Case Study

Optimizing Waste Rock Landform Reshaping to Achieve Closure Objectives

Iron Ore Mines, WA, Australia

> Background

Okane were tasked with determining the construction methodologies and reclaimed final waste rock landform (WRL) designs across several operational and non-operational open cut iron ore mines in Southwestern Australia. WRL re-profiling works had already commenced in compliance to the current closure plan. Modelling for erosion and catchment capacity outlined that the current profile specifications were not sufficient to achieve stable and sustainable final landforms required for relinquishment. To meet required design specifications, a solution utilizing material movement only would likely result in excessive cost.

> Approach

Okane developed a practical solution through application of both mine planning and closure principles. The latest technology in erosion modelling was coupled with bulk earthworks design, scheduling, and cost modelling to determine an optimal path to achieve long term landform stability. A review and amendment of the existing closure plans was completed in tandem to reflect the updated design specifications. Berm and batter profile matrices were developed which referenced each site's specific geological and environmental conditions. Utilizing these matrices to determine various batter profiling options, Okane was able to determine the most efficient combination of profiles to achieve the landform closure objectives.

> Client Benefit

The proposed designs resulted in a material change to the reprofiling approach for all assessed sites, which greatly decreased the total material movement and costs required to achieve design compliant, safe, and stable final WRL's ready for final relinquishment.

Reducing closure costs and liabilities through optimization of WRL designs.

**Integrated Mine Closure
and Relinquishment Solutions**

