

## Case Study

# Cover System Design Guided by Multi-Criteria Analysis (MCA)

## Gold Mine, QLD, Australia

### > Background

Okane provided closure planning services at a decommissioned gold mine located in Central Queensland, Australia. The objective of this project was to develop suitable cover system options for rehabilitation of the tailings storage facility (TSF). Cover system design options had to satisfy previously established regulatory requirements and performance criteria for a cover system with a low permeability layer.

### > Approach

The project involved:

- A site visit to collect samples for geotechnical and geochemical analysis;
- Completing a material characterisation program;
- Undertaking numerical modelling to assess the base case conceptual cover system design against several alternatives that included low permeability layers; and
- Completing a multi-criteria analysis (MCA) supported by a cost benefit analysis (CBA) for comparison of cover system alternatives to assess the cost versus performance of each alternative.

### > Client Benefit

The analysis indicated that the cover system design be modified from the original. The alternative design decreased the overall cover thickness, included a low permeability layer, and implemented a single capillary break. The alternative design was optimized for cost and performance compared to the original design, while achieved regulatory compliance requirements.

**An approach that optimizes cover system design for cost, performance, and compliance through MCA and CBA.**

