

## Case Study

# A Cost Benefit Analysis (CBA) to Assess AMD Treatment Options

*Coal Mine, South Island, New Zealand*

### > Background

Located on the West Coast of the South Island the mine delivers high-quality steelmaking coal for export. Due to a lack of knowledge related to overall acid and metalliferous drainage (AMD) management within the mining industry when mining began at the site, placement of AMD generating material into historic mined rock stockpiles (MRSs) occurred with little consideration for strategic placement of rock for AMD management in construction. With time, the site identified potential AMD issues that required immediate and long-term management.

### > Approach

Okane was involved in the design of active and passive treatment systems to treat AMD discharges at the site. The active treatment system incorporated an ultra-fine (<100 µm) limestone dosing system capable of treating flow rates of 400-500 L/s with annual acidity loads of 12,000 t/yr. The passive treatment system utilized mussel shells to neutralise AMD discharge. The 300-t mussel shell bioreactor was the first such system built in the world and is designed to treat an acidity load of ~16 t CaCO<sub>3</sub>/yr at seepage flow rates of up to 6 L/s over a ten-year operational life. The decisions to implement active and passive treatment systems were supported by a cost-benefit analysis (CBA) and net present value (NPV) calculations based on limestone acidity neutralisation efficiency.

### > Client Benefit

The Okane led CBA and NPV calculations for assessed AMD treatment options provided the client with the financial information required to implement the best AMD treatment options for the site.

**Using financial metrics and assessment tools to inform site specific AMD treatment options.**

**Integrated Mine Closure  
and Relinquishment Solutions**



Peter James Quinn. (1995). New Zealand Geographic.

