

Peak Gold Mine



Client: Peak Gold Mines Pty Limited
Location: Cobar, New South Wales, Australia
Date: 1990-2003

The Peak Gold Mine began operations in 1992, producing a tailings product at a disposal rate of 300,000 tonnes per annum. In 2000, the New Cobar open cut was opened up to supplement Peak's underground operation and over the years, tailings disposal has increased to around 650,000 tonnes.

In 1990, ATC Williams* was engaged by Rio Tinto to undertake tailings testing, geotechnical investigation and water management studies for this new mine.

Initial testing and design predictions suggested that the central thickened discharge (CTD) technique for tailings would be successful. We subsequently undertook the design and construction of the tailings storage facility, involving a filter wall to restrict the down valley progression of the tailings, decant collection facilities, a water retaining runoff dam, and a runoff diversion drain to reduce the storm flow into the runoff dam.

Over the years, we undertook performance several reviews of the tailings disposal system. Densities and stack slopes were in line with expectations, predicted from tailings rheology test results, and anticipated discharge rates.

To further expand the scheme's capacity, we were commissioned to undertake the design and documentation of minor earthworks. Construction was undertaken in mid-1996. Later, in 2000, we

undertook design, documentation and construction of a raise to the tailings stack filter embankment.

In 2002, our suggestion to split the flow at the ramp, which would steepen the beach and reduce the need to raise the main embankment, proved so successful that it was several years before the embankment needed to be raised.

Over the 13 years, our services have covered:

- conceptual layouts
- options studies and costing
- investigation for tailings storage facility and concentrator water dam and overflow pond
- design and contract management for runoff dam, filter wall and ramp, as well as the subsequent raises to the filter wall
- development of new methods to predict beach slopes
- dam brake study
- flood attenuation
- shaft inundation protection
- dam surveillance.

During this project, we were able to collect sufficient data to make more accurate predictions of beach slope and thus a more precise measure of the long-term capacity. This has resulted in substantial savings for Peak Gold Mines due to the reduction in earthworks and having the ability to stay at the original site.