



SGM Environmental

Creating enduring value

SGME VALUES

- Honest 
- Trust 
- Innovation 
- Safety 

PROJECT CASE STUDY: Optimised Tailings Cover Thickness from Cover Column Trials

SGM Environmental Pty Limited (SGME) was responsible for the construction, monitoring and reporting of column cover trials for a tailings storage facility (TSF).

Site description: The mine is a gold, lead and zinc underground mining operation located in Cobar, New South Wales. The mine is operated as longhole, open-stopping with waste rock reinjected as rock pillars to divide the underground workings into discrete stopping areas. The processed ore is pumped as thickened tailings slurry (the tailings) to a TSF where they are deposited from a series of raised spigots.

The problem: At closure the TSF will be rehabilitated by first allowing the tailings to desiccate and settle, followed by profiling the elevated landform to reduce the bench slope angle. Once the tailings beach final surface has been constructed a cover will be built. SGME was engaged to revise the cover thickness for the surface of the TSF to reduce the potential of environmental harm through acid mine drainage.

What SGME did: The cover column trials were completed in three stages: sensor calibration, construction of the columns including inserting the calibrated sensors and applying artificial rainfall. Three columns were constructed covering three potential cover thicknesses.

The cover column trials were subjected to one year of rainfall over a four-month period to measure a maximum water balance. Seepage from the base of the cover column trials was measured by rain gauge tipping buckets. The results of the column cover trials were used to develop a semi-calibrated model in SVFlux (the model). The model was used to simulate a wet, average and dry year to predict the likely long-term performance of the three cover thicknesses.

The outcome of the column cover trials and subsequent modelling determined the best performing cover thickness that balanced rainfall infiltration storage and seepage.

