



SGM Environmental

Creating enduring value

## SGME VALUES

Honest



Trust



Innovation



Safety



## PROJECT CASE STUDY: Small Scale Column Trials to Inform Closure Planning Strategies for a Tailing's Storage Facility

**SGM Environmental were responsible for the construction, monitoring and reporting of cover column trials (the trials) to meet the requirements of an environmental authority (EA) and inform closure planning strategies for a tailing's storage facility (TSF).**

**Site description:** The mine is an underground zinc and lead mine located in north-west Queensland. The mine tenure includes 40 mining leases, one mining lease application and one mineral development licence.

**The problem:** The mine was constructed, fully commissioned and has commenced depositing potentially acid forming tailings into a valley fill TSF. The mine Environmental Authority states trials must commence shortly after tailings deposition begins.

**What SGME did:** SGME designed and completed a project that met the Environmental Authority conditions and informed closure planning for the TSF.

The project was done in two stages: an initial desktop assessment followed by design and delivery of the trials. The desktop assessment was to determine suitable cover options to progress to trials and included an environmental risk assessment to define the design criteria of the cover options.

Prior to delivering the trials, SGME prepared a trial design specification that considered trial location needs, efficiencies, space for leachate capture and use of artificial rainfall. Six columns were constructed and fitted with volumetric water content and matric suction sensors to measure the maximum water balance. This balance was used to build a semi-calibrated one-dimensional model in SVFlux. The model was used to predict the performance of each cover under wet, average and dry scenarios.

The trials identified the likely cover composition and thickness to reduce potential seepage.

