

CASE STUDY

PROJECT

# Desaturation and dusting of tailings

SECTOR

Research and Development

COMMODITY

Zn, Cu, Pb, Au

LOCATION



ISO

9001:2015 | 14001:2015 | 45001:2018





**SGME was responsible for geochemical characterisation and soil water characteristic curves for tailings desaturation to determine dusting potential.**

### Site description

The mine is a polymetallic underground mine located approximately (~) 125 kilometres south of Burnie, Tasmania. The tailings storage facility (TSF) is a central discharge facility of ~45 hectares that receives thickened tailings from the ore processing plant.

### The Problem

Sub-aerial tailings deposition was approved by the government to increase storage capacity and provide geotechnical stability during construction of an embankment along the TSF wall. However, this may lead to dust generation if evaporation rates exceed desaturation rates.

### SGME solution

Physical and chemical characterisation of tailings samples was undertaken at the SGME laboratory including field capacity and permanent wilting point estimates, as well as metal analysis by hand-held x-ray fluorescence.

Field capacity was measured by saturating the tailings with water then measuring the water content after excess was removed under two kilopascals of pressure. This parameter indicates the maximum amount of water the tailings can hold against gravity. The permanent wilting point was measured by allowing the soil to dry under 1,500 kilopascals which indicated the point at which dusting will occur.

A desiccation test was done to examine how long it would take the tailings to desaturate under evaporation so that the mine tailings engineers could develop a water management regime that limits dusting.

SGME's laboratory offers precise analyses and rapid results that enhance decision-making and regulatory compliance. Equipped with cutting-edge technology and skilled personnel, we deliver accurate data to optimise strategies and reduce environmental risks.