

CASE STUDY

PROJECT

Laboratory leachate geochemistry and in situ cover trials

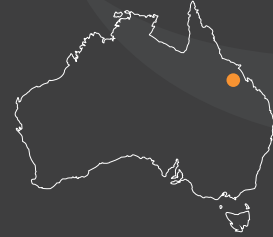
SECTOR

Research and Development

COMMODITY

Coal

LOCATION



ISO

9001:2015 | 14001:2015 | 45001:2018





SGME was engaged to perform in-situ cover trials and leach columns for a co-disposal area of the mine site.

Site description

The mine is located approximately (~) 53 kilometres north-west of Mackay and ~87 kilometres north-east of Moranbah in Central Queensland.

The problem:

The mine's dry rejects encapsulation area (DREA) has been used for the periodic disposal of coarse, fine and ultra-fine waste. Therefore, a cover is required for the DREA to ensure that it is safe, stable, non-polluting, self-sustaining and suited to the nominated post-mining land use. The cover was designed using a risk-based approach and identified knowledge gaps in relation to geochemistry.

SGME solution

Phase one of the project involved assessing the geochemistry of DREA waste using leach columns to evaluate acid generation, salt and metal release potential in leachate.

The phase two cover trials undertaken by SGME centred on three cover options that incorporated soil for the infiltration storage layer and caprock for the reduced permeability layer.

SGME used matric suction and volumetric water content sensors that were strategically placed throughout the cover layers and underlying DREA. Rainfall was monitored via a rain gauge. The resulting data, coupled with soil water characteristic curves and water balance analysis, facilitated numerical modelling to compare the performances of the three cover options.

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.