

Mine Rehabilitation Trial Design

This client is the world's largest producer of seaborne low-volatile pulverised coal injection (LV PCI) coal. Its products are in global demand, and in order to increase production capacity, the company is rehabilitating one of its mines. Furthermore, the client must ensure all efforts meet the requirements of a self-sustaining native ecosystem.

PROJECT RESULTS

The rehabilitation of this site is critical to the client as it seeks to double its 2009 production capacity by 2014.

By developing a trial to test the impact of different soil conditioning agents, Kleinfelder was able to develop methodologies to improve the rehabilitation process at the Coppabella Coal Mine.



MITIGATING SEVERE LAND EROSION

Coppabella Coal Mine has a history of severe land erosion due to its highly dispersible soils. Previous studies have attributed the severity of soil erodability to high concentrations of sodium and magnesium within the soil profile. Sodium and magnesium can cause clay particles to disperse in water, which can lead to severe rilling and tunnelling of landforms. Erosion has had adverse effects on rehabilitation efforts at Coppabella Coal Mine for the past 10 years.

METHODOLOGIES TO IMPROVE THE REHABILITATION PROCESS

Kleinfelder was commissioned by the client to conduct an assessment of the rehabilitation areas at the Coppabella Coal Mine site and to develop methodologies to improve the rehabilitation process.

Specifically, Kleinfelder developed a trial to test the benefit of incorporating different soil conditioning agents into the topsoil of the rehabilitation areas. These included: different forms of organic matter to improve soil aggregation; gypsum to displace sodium ions and improve the soil's structural stability; fertiliser to increase nutrient availability; and microbial Inoculum to improve plant growth. Kleinfelder also tested the effects of native versus exotic seed mixes.

Location:

Coppabella, QLD

Owner:

Macarthur Coal

