

Case Study

Guiding Final Closure Options through Quantification of Internal Waste Rock Dump Conditions

Pilbara, WA, Australia

> Background

Mining companies often hold legacy waste rock dumps (WRDs) that pose some level of environmental risk through contaminant release or erosion. Okane conducted a drilling program across five WRDs aimed at investigating the physical and chemical characteristics of waste rock within each WRD due to a lack of dumping records. During drilling instrumentation was also installed within the boreholes to monitor internal conditions. The objectives of the program were to understand and quantify the nature and scale environmental issues so that effective closure options could be developed for the legacy site.

> Approach

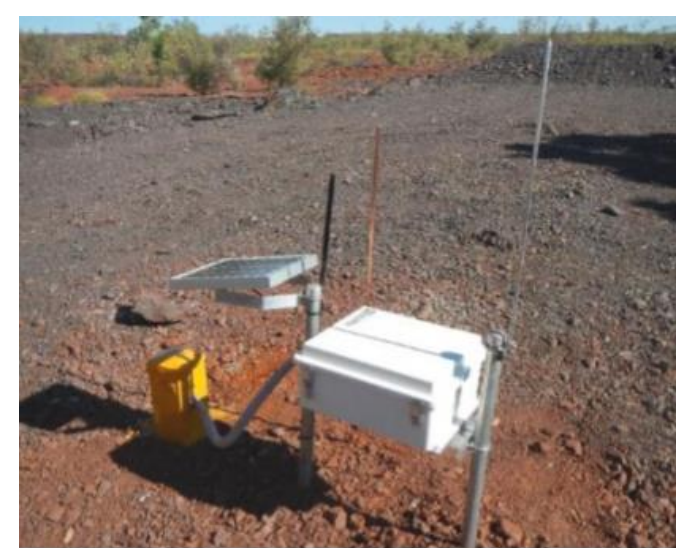
Okane developed a sonic drilling program comprising 19 boreholes which were logged on site and sent to the laboratory for physical and geochemical analysis. Geochemical testing included a kinetic testing program for materials collected during drilling to provide a range of key parameters associated with reactive wastes. During drilling the boreholes were fitted with over 90 downhole sensors to depths of up to 40 m. Downhole sensors included galvanic oxygen probes, soil matric potential sensors, temperature sensors, and vibrating wire piezometers. Monitoring of internal WRD conditions in response to environmental factors, and in combination with internal WRD characteristics allowed Okane to inform potential closure options for the site.

> Client Benefit

The investigation has provided the client with a detailed understanding of the site's geochemistry, hydrology, and geophysical properties to produce effective closure options.

A multifaceted approach to managing legacy WRD risks for closure.

**Integrated Mine Closure
and Relinquishment Solutions**



Aerial Surveys Australia (1973). State Library of WA