

Project Profile

Cockatoo Island

A 15 Metre coastal dam was required to facilitate access to a rich iron ore deposit. Maxwell GeoSystems provided complex consulting and real-time monitoring services to enable the safe and secure construction of the dam whilst accommodating a 10M tidal range.



In 2000, Cliffs Asia Pacific and HWE Mining entered into an agreement to jointly mine 1.5 million tonnes of remnant ore at Cockatoo Island, off the Kimberley Coast, in Western Australia. With one of the richest iron ore bodies in the world, it was no surprise that when the Cockatoo Island mine reached sea level they looked for further ways to uncover this exceptional, virtually pure haematite ore body.

A Study revealed it was possible to access an additional four million tonnes of iron ore from various sections of the ore body extending out below the sea water level. Further excavation would require a 15m dam to be built around the site, but unlike conventional tailings dams, this one would have to accommodate a tidal range which at 10m is one of the highest in the world.

The pore pressures in the foundation materials were proving almost impossible to track and a result dam foundation stability was uncertain. Maxwell GeoSystems installed real-time instrumentation and its core system was called upon to manage the data.

With communications by satellite, it was critical for transfer of data to be efficient, reliable and secure.

Maxwell GeoSystems' Engineers in Hong Kong worked closely with the mining team in Perth together with their geotechnical team in Brisbane to develop the complex algorithms to correct measured pore pressures in real-time using a variety of data collected from the site.

This involved calculating the current fill-level at a piezometer comparing to the tidal level and the removing the influence of the tides using the functions and constants derived by numerical analysis. This procedure occurred every 30 minutes. Data was made available to all the teams via the web and the dam successfully reached full height, allowing access to the ore body. Maxwell GeoSystems continued to work with the client providing key data on the next phase of the project.

Sector	Mining	Location	The Kimberley, Australia
Client	HWE Mining	Budget	AUS\$ 10 Million