

Movement tracking and stability monitoring

Maptek™ Sentry is a safe, accurate and cost-effective method for tracking movement and monitoring deformation of surfaces.

In July 2015, Consolidated Mining & Civil Pty Ltd (CMC) acquired a Maptek™ Sentry monitoring system for use at the Havilah Resources Limited Portia Mine in South Australia, 100 km northwest of Broken Hill.

CMC is responsible for removing all of the overburden and bringing the ore to the surface at the gold mine. Sentry is an active monitoring system for tracking movement and notification of potentially unsafe areas of an operation.

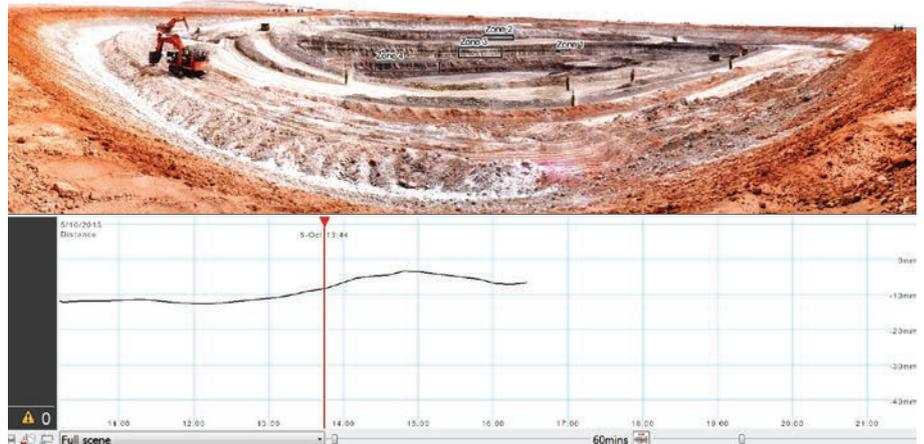
A long range Maptek I-Site™ 8820 laser scanner and dedicated software measures and analyses wall movement. The wide coverage of I-Site laser scanners ensures a clear picture of surrounding areas in 3D, as well as detailed data for areas of interest.

At Portia, CMC uses Sentry to track movement and stability of walls in the open pit. Sentry is easy to deploy. Concrete rafts support the I-Site laser scanner on stationary bollards at 5 locations around the pit.

Sentry can run continuously 24 hours a day and the system can be easily moved between locations around the rim for monitoring surface movements.



Setting up the Sentry system at Portia mine



Sentry output shows a laser scan of the open pit draped with a coloured digital image. Zones 1-4 represent areas of interest for monitoring movements. The graph shows the slight variation (maximum 7mm) in distance of the far pit wall over a six-hour period. The variation could be due to thermal expansion of the material coinciding with the warmest time of day.

‘Safety is very important to us. The Sentry solution provides us with a diagnostic tracking tool with clear visualisation and analysis capabilities so we can make reliable engineering decisions’, said CMC Principal Steve Radford.

Intensity measurements allow operations to track changes in moisture content and identify seepage as a predictor of potential failure. Repeated mapping allows a stringent audit of pit wall stability for regulatory needs.

Sentry streamlines scanning and monitoring workflows and allows multiple zones of interest to be watched. The weather station supplied with Sentry automatically calibrates scans taken during different conditions. Displacement, velocity and inverse velocity can be reported for safety assessments.

‘Pit wall monitoring data provided by the laser scanning system gives us a better understanding of how the clay and sand behaves during mining,’ said Havilah Resources Managing Director Chris Giles.

‘This is crucial because the material has never been mined in this region. The monitoring data combined with geotechnical studies will help us to balance a structurally safe pit wall angle against minimising the volume of waste that must be removed,’ concluded Giles.

CMC also uses the I-Site laser scanner for routine survey applications throughout the Portia operation.

The I-Site point cloud data can be modelled for stockpile volumetrics and reconciliation, geological mapping and geotechnical analysis. Animations and graphical reports provide comprehensive information for reviewing results to guide future monitoring.

Thanks to CMC and Havilah Resources