

## Pre-mining topographic survey

The benefits of laser scanning survey methods for mining are documented. Less widely known are the advantages of topography scanning before the first cut is made.



In the northeast of South Australia, Havilah Resources Limited has discovered iron ore deposits at Maldorky and Grants, close to the railway from Broken Hill.

Drilling and exploration work identifies what is under the ground, geologists model the deposits using Maptek™ Vulcan™ software, and the engineers can plan how to mine.

'Precise topography scanning gives a very accurate pre-surface so you can design your mine properly from the start,' said Havilah Resources then Chairman Bob Johnson.

'Once we have those surveys we can start making decisions - here's the pit we'd design, and this is where the stockpiles and infrastructure should be.'

Topography surveys provide an accurate base surface for designing mines and planning mine infrastructure.

'Cost-wise, terrestrial scanning beats aerial lidar data capture hands-down', said Johnson. 'Flyovers are very expensive for non-established ground.'

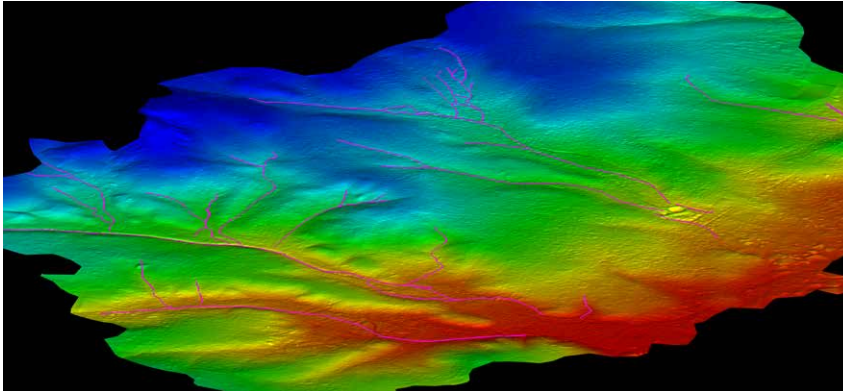
Further benefits of I-Site 8810 laser scanning systems are speed of data capture, delivery, and robust engineering.

I-Site laser scanners can be mounted on the vehicle and remain there for the entire day's scanning, withstanding temperatures in the 40°C range, dusty conditions and vibration from low speed driving on site. The scanner runs all day off the vehicle power supply.

The risk of damage to the environment is limited; the surveyor can drive on planned routes and stick to existing tracks taking advantage of the long range scanning.

Different scan resolutions can be chosen depending on the point density required. Terrain in northeastern SA is flat so standard resolution gives more than adequate survey coverage for the majority of scan locations.

Lacking high elevation vantage points, it is necessary to stop and scan every 450 metres or so. The I-Site mobile scanning system means the surveyor rarely has to leave the vehicle cab. If foliage is too dense to get a backsight, the internal compass helps with scan registration.



A coordinated photograph and a boundary polygon of the area of interest form the starting point for surveys. This information can be exported from Maptek Vulcan software and fed into GPS systems to aid in field acquisition.

Scanning beyond the extent of the orebody boundary ensures the surrounding topography is surveyed in enough detail for planning waste dumps, tailings dams and other necessary infrastructure.

I-Site systems feature internal GPS, wireless connection to the rugged scan controller tablet, vehicle compass calibration and increased operating and scanning temperature range.

At Grants, scanning was completed in about 4 hours with data captured over 6 million square metres. The Maldorky lease, with fences and creek washouts, required 16 hours for scanning over 16 million square metres.

Deploying the scanner with the vehicle mount and operating speed of the I-Site 8810 makes for very efficient field work, with time savings of about 10 minutes per scan over tripod setup.

I-Site™ Studio software is an easy to use streamlined platform for data processing. Line work and modelled surfaces can be loaded into Vulcan mine planning software. Trees and other unwanted features can be removed from the final surface.

‘Getting accurate survey data at the start of the design process can really save time later on. With an accurate surface, the volume of the orebody can be calculated. Knowing how much material has to be removed in overburden, and where to store it, is the key to good mine design,’ concluded Johnson.

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