

## Total Survey Solution

**Solid Energy has been a Maptek™ customer for 12 years.** The state-owned enterprise operates as a commercial company with the Government as sole shareholder. Stockton is the largest open pit coal mining operation in New Zealand, perched between 500 and 1,100 metres above sea level on a plateau in the Buller Coalfield.



### THE MAPTEK I-SITE ADVANTAGE

- Easily incorporated into conventional survey workflow
- Portable system with one-person setup and operation
- One-button automatic registration
- Easy to use, handheld tablet driven
- Fast acquisition => more scans, more data
- Ruggedised, purpose-built instrument

Solid Energy has 44 Maptek Vulcan™ licences at sites throughout New Zealand. Solid Energy recently purchased a Maptek I-Site™ 4400CR scanner for open cut and underground survey.

Most of the coal mined at Stockton is exported to steel mills in Japan, India, China, South Africa and Brazil. The very low ash content of some Stockton coal means it can supply niche markets for activated carbon and silicon metal manufacture.

About 8 million tonnes of recoverable coal remain in the area of the present mine, where coal is extracted from seams just below the surface.

After soil and vegetation are taken off and stored for rehabilitation, the hard layer of sandstone is blasted and removed by excavator and trucked to a mined-out area ready for rehabilitation and replanting.

In 2007 the Stockton Mine commenced a project to define the location of historic underground workings to allow recovery of the remaining reserves, and improve safety for the opencast workings.

Underground mining ceased in the 1970s after almost 90 years, with about 70% of the reserves unmined. The old mine records were outdated and spatially inconsistent. Modern mine planning practice requires all information to be updated in 3D to economically and safely extract 'lost' coal reserves. Conventional survey was labour, resource and time intensive.

Maptek planned a new underground survey approach using the I-Site 4400CR scanner, taking into account hazards such as water, collapses and working in confined spaces.

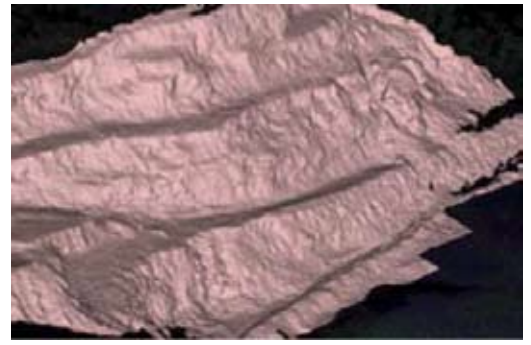
The easy registration and positional accuracy of the I-Site scanner made setup in confined spaces so much quicker.

The very high grade NZ coal initially posed a challenge for data collection. Recent trials with the latest model I-Site 4400CR showed that the Maptek technology could deliver accurate results on all types of coal, in surface conditions and underground.

Another bonus for Stockton is that I-Site Studio™ software can import and process LIDAR and CAL-S data.



*I-Site 4400CR scanner ready for topographic survey in the Stockton open pit*



*Modelled highwall from data captured with I-Site, revealing complexity of seams and structures*

## TESTIMONIAL

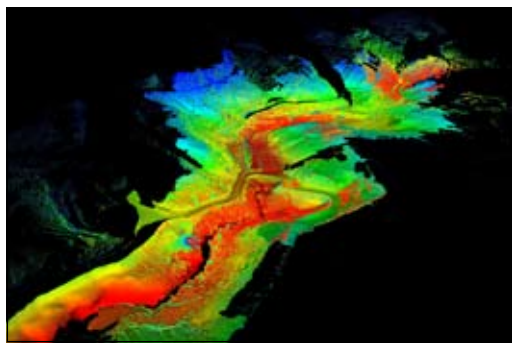
The I-Site scanner's ease-of-use coupled with I-Site Studio's advanced underground modelling tools and compatibility with Vulcan for post-mine planning applications are winning features for Solid Energy.

Two sites were selected for the initial underground trial: the Upper and Lower seam of 4 West Area; and an area known as 2 Mangatini.

In 4 West Area, surveyors acquired 323 scans (Upper, 132; Lower, 191) over 13 days. For 2 Mangatini, 46 scans were captured in the confined underground environment over 2.5 days. A further 5 days of post-processing produced detailed 3D models of the underground drives and portals.

The power of I-Site Studio was evident with super-efficient handling of the very large point cloud datasets - up to 22 million points in one instance.

The resultant models pinpointed the true position of the underground voids, information which is vital for the open cut operation. Buffer zones could then be confidently created around hidden voids for heavy vehicle movement above ground.



*Model of Mangatini Gorge created from I-Site scans, with underground portals at top of image*

While this project focused on underground scanning, 80% of survey work using the new I-Site 4400CR scanner at Stockton will be in the 7 km of open pit areas.

Applications include end-of-month reconciliation, stockpile volumes and topographic survey. Accurate pickup of the surface topography is critical as it allows the engineers to optimise the drill and blast design to target the sandstone layer above the coal seams.

Improved pit design, establishing safe, heavy vehicle access zones, and applying 3D data to machine guidance are expected outcomes.



*Approaching the portal entrance (above), and typical underground scanning conditions at Stockton (below)*

