



## QUARRY MANAGEMENT

The Maptek I-Site™ 8800 laser scanner helped survey teams conducting safety studies at a large quarry in Leicestershire in the UK.



Weathering of the higher benches over decades of operation had resulted in loose rocks falling from the quarry faces to the floor.

Concerned to ensure continued safety for staff, quarry management wanted to identify the exact location of the sources of the rock falls, and also acquire detailed information on the number of falls in a given time, and the size of the rocks.

The quarry measured approximately 1000m by 600m by 150m. Surveying required a scanner capable of delivering high point density at long range.

The Maptek I-Site™ 8800 laser scanner collected data at the appropriate point density to detect 150mm changes in a rock face from a distance of more than half a kilometre.

High definition scan data was recorded from several scanner setups to collect point data for the entire quarry. The team set up the scanner at the same locations on subsequent visits. Hundreds of millions of X,Y,Z data points were collected at each session, all accurately located within the site coordinate system.

**The minimal noise in the I-Site 8800 scan data, and tight survey control ensured an error free digital representation of the quarry faces.**

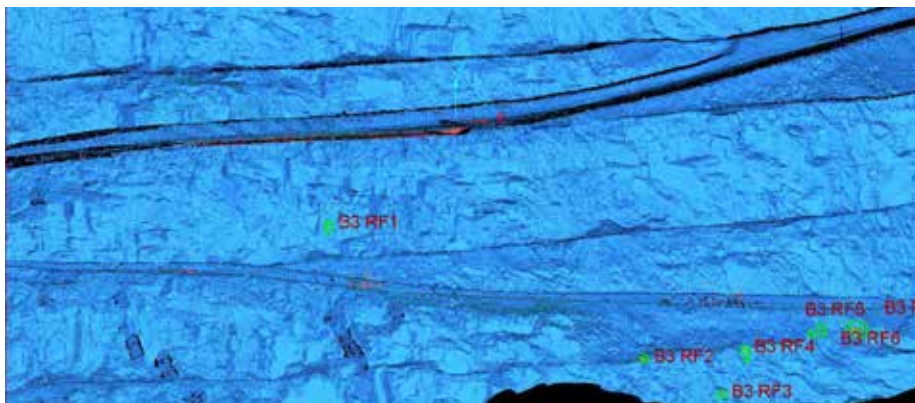
The point cloud data was processed in Maptek I-Site Studio™ software and accurate triangulated surfaces were created. Quarry surface data was divided into panels for comparing surfaces between quarterly site surveys.

Displaying the data with a colour spectrum clearly showed the size and location of change. Areas of change down to approximately 150mm were reported, along with the location and size of the material that had fallen.

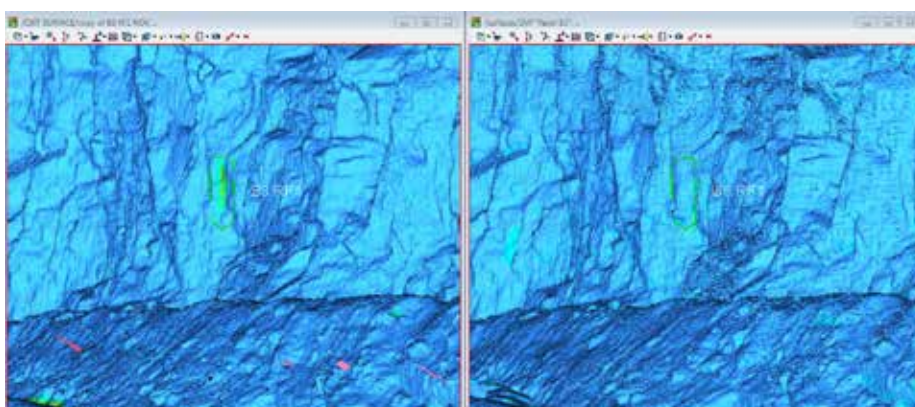
Data from consecutive visits was easily compared. Recent data could be contrasted with that from the first visit to understand how the faces were developing and changing over time.

Detailed cross-sections of the quarry faces could be generated for rock fall analysis in simulation software. The software report highlights areas where rock is falling or not falling, and can reveal where material has landed by showing changes to bench surfaces.

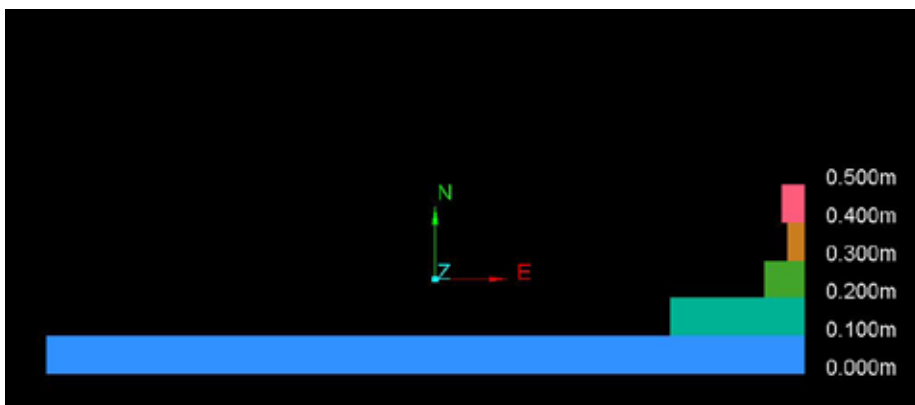
OAKES SURVEYS APPROACHED MAPTEK FOR HELP IN CONDUCTING SAFETY STUDIES AT THE QUARRY.



Survey data is processed and triangulated in Maptek I-Site Studio to create a surface for easy visualisation of structures and changes in quarry faces



Comparing surfaces surveyed at quarterly intervals allows quarry management to identify and mitigate safety issues arising from rock falls



I-Site Studio output includes bar graphs indicating the scale of changes in scanned faces

This new, targeted approach to face monitoring improves the planning of safety procedures. Implementation becomes more cost-effective, reducing the need to install expensive netting on low-risk areas of the quarry.

**Identifying the danger zones means that safety and 'stand off' berms can be appropriately placed to protect personnel from falling rock.**

Long range laser scanning is a safe, cost-effective and accurate solution to meeting the challenges of monitoring and measuring rock falls from quarry faces.

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