



# KANMANTOO UNDERGROUND COPPER MINE

## EXECUTIVE SUMMARY

At Hillgrove's Kanmantoo Underground Copper Mine, OreSense® has redefined underground mapping and grade control – delivering same-shift geological intelligence, minimising hazardous face access, and providing consistent, high-quality data in minutes.

The system scans a standard heading in just 20 minutes, enabling rapid ore destination decisions that maximise resource utilisation and reduce waste. By removing routine mapping duties from geologists, enhancing workplace safety, and integrating seamlessly into mine planning systems, OreSense® has become essential for operational efficiency, data accuracy, and economic performance.

OreSense® is now a core part of Kanmantoo's underground mining operations, delivering faster decision-making, improved safety, and more reliable data, directly enhancing productivity and economic return.

## KEY COMMERCIAL OUTCOMES

- **Faster Mapping & Decision-Making**
  - 5 × 5 m heading scanned in **20 minutes**, outputs available to geologists within **30 minutes**
  - Same-shift geological intelligence enables rapid operational adjustments
- **Safety Improvement**
  - Eliminates need for personnel to physically access development faces
  - Removes exposure to ground and strata hazards inherent in traditional mapping
- **Workforce Efficiency**
  - Routine mapping conducted by field technicians, freeing geologists for high-value analysis and strategic planning
  - Improves return on skilled labour and reduces non-productive underground travel
- **Real-Time Grade Control**
  - Copper grades calculated within 30 minutes vs. 12 hours for traditional assays
  - Ensures correct material routing, maximising resource utilisation and reducing waste processing
- **Consistent, High-Quality Data**
  - Quantitative, standardised outputs eliminate operator variability
  - Detects subtle mineralisation and alteration features often missed manually
  - Accelerates upskilling for tasks like drive grade calls and reconciliation
- **Management Confidence**
  - Variable metal output over reporting periods is better understood and articulated to internal and external stakeholders
  - Consistent grade estimates support better reconciliation and reduce surprises
- **Seamless Integration**
  - RGB and spectral imagery draped over LiDAR scans, fully georeferenced
  - Outputs integrate directly into mine planning software for faster, more accurate modelling

OreSense® delivers a **step-change in operational efficiency, significant safety benefits, and high-fidelity geological data**, enabling Kanmantoo to optimise resource extraction, reduce costs, and maintain a competitive advantage in a cost-sensitive market.

At Hillgrove's Kanmantoo underground copper mine, the integrated OreSense® system has become a critical part of daily operations, underpinning both development face mapping and stope optimisation with unprecedented speed, safety and consistency.

Permanently mounted to the underground geology light vehicle and operated by field technicians, its semi-automated design ensures rapid adoption across a dynamic workforce while delivering repeatable, high-quality results. A standard 5 × 5 m heading is scanned in just 20 minutes, processed locally, and uploaded via the underground Wi-Fi network, making outputs available to geologists within 30 minutes of scan commencement.

Automated corrections overcome the challenges of mesh and surface moisture, ensuring reliable data in all conditions. By eliminating the need for geologists or technicians to physically access the face, OreSense® reduces exposure time to development face hazards, while freeing geologists from low-value underground travel so their expertise can be focused on higher-value analysis, planning, and strategic decision-making.

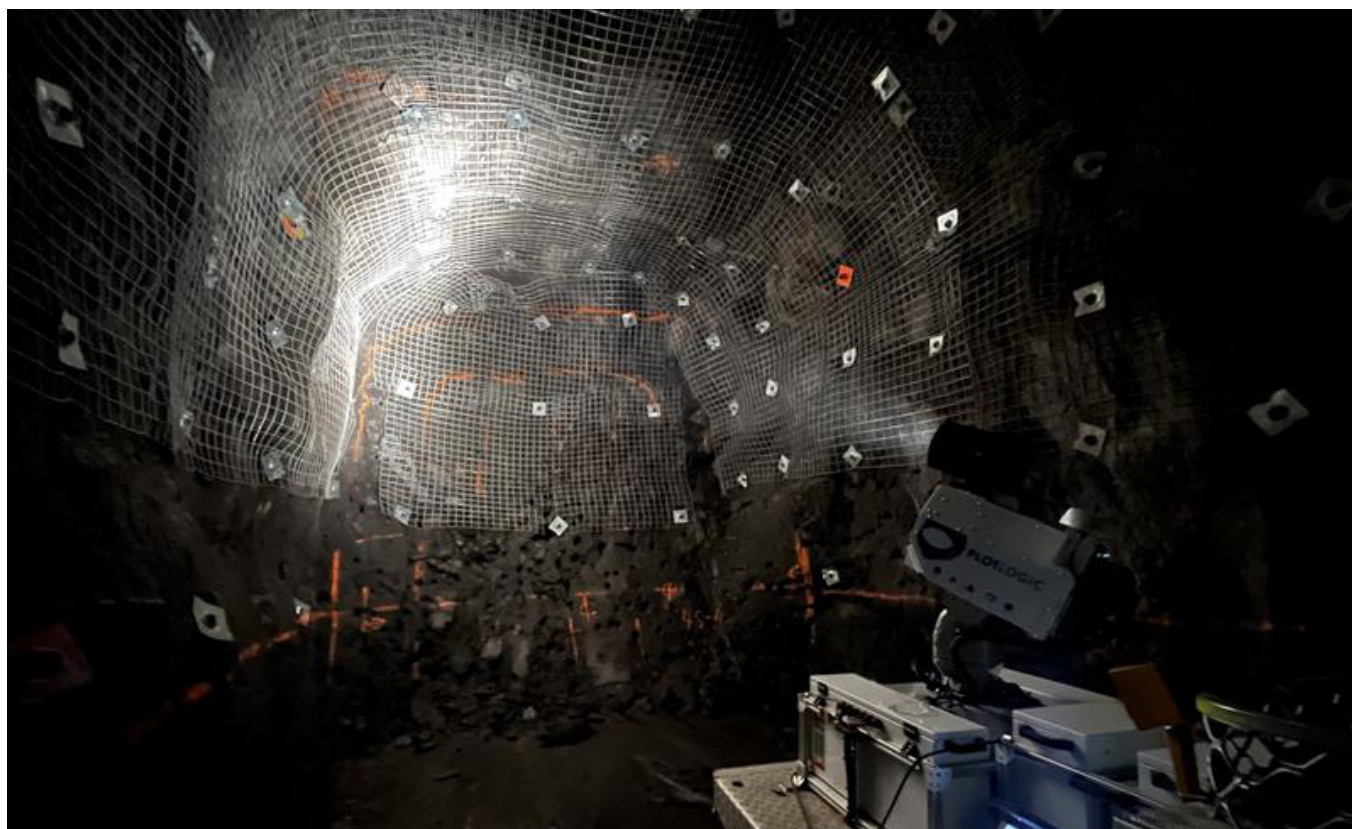


Figure 1 OreSense® Underground at Kanmantoo



The system's calibrated spectral scans have transformed material management by delivering copper grade estimates within one hour, compared to the 12-hour delay of traditional face chip assays. This enables same-shift decisions on ore destination, ensuring high-grade material is sent directly to the correct stockpiles and waste is excluded from processing.

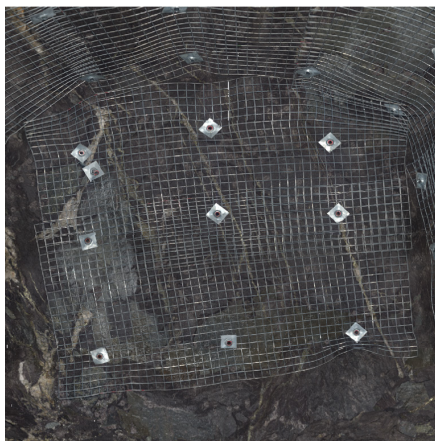


Figure 2 RGB Scan

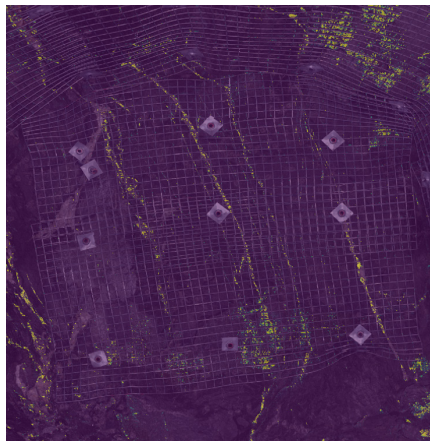


Figure 3 Copper Scan

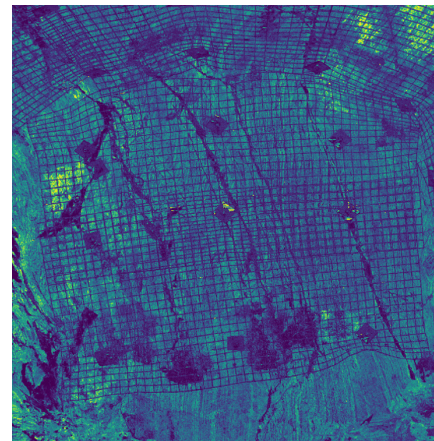


Figure 4 Alumina Oxide Scan

The result is improved resource utilisation, reduced processing of low-value material, and measurable gains in both operational efficiency and economic return, directly enhancing the mine's competitive position. Beyond speed, OreSense® delivers a step-change in data quality and consistency.

Traditional mapping is subject to variability in geological interpretation, but OreSense® produces quantitative, standardised outputs that are identical regardless of operator. Its calibrated spectral data detects subtle mineralisation, small-scale bedding, and alteration features often missed in manual inspections, providing a richer, more reliable input for mineralisation modelling and material classification.

This consistency not only strengthens the geological database but also accelerates the upskilling of staff to confidently perform critical tasks such as drive grade calls and reconciliation.

All scan data is fully georeferenced, with RGB and spectral imagery overlaid on LiDAR scans to produce highly interactive 3D maps that integrate seamlessly into existing mine planning software. This direct link from field collection to digital modelling streamlines workflows, enhances spatial accuracy, and supports faster, more informed operational and planning decisions.

Taken together, OreSense® delivers measurable productivity improvements, safer working conditions, and higher-quality geological intelligence, all while maximising the return on skilled labour and capital investment.



Figure 5 Georeferenced Face Scans Displayed Alongside Mine Strings

## CLIENT TESTIMONIAL

“The greatest win from OreSense® is that our team no longer needs to access the development face for mapping. We have minimised exposure time at the development face while still getting higher-quality data, faster.”

**Caitlin Rowett, Technical Services Manager & Chief Geologist**  
*Kanmantoo Underground Copper Mine*



## APPENDIX

This appendix has been included to provide larger, higher-resolution versions of Figures 2, 3 and 4, as presented on page 4. These images show the RGB scan, Copper scan, and Alumina Oxide scan captured using the OreSense® scanner in the Kanmantoo Underground Copper Mine.

The enhanced size allows viewers to examine finer details within each scan, offering a clearer view of the material composition, surface characteristics, and scanning accuracy. These visualisations are valuable for technical review, further analysis, and quality assurance purposes.

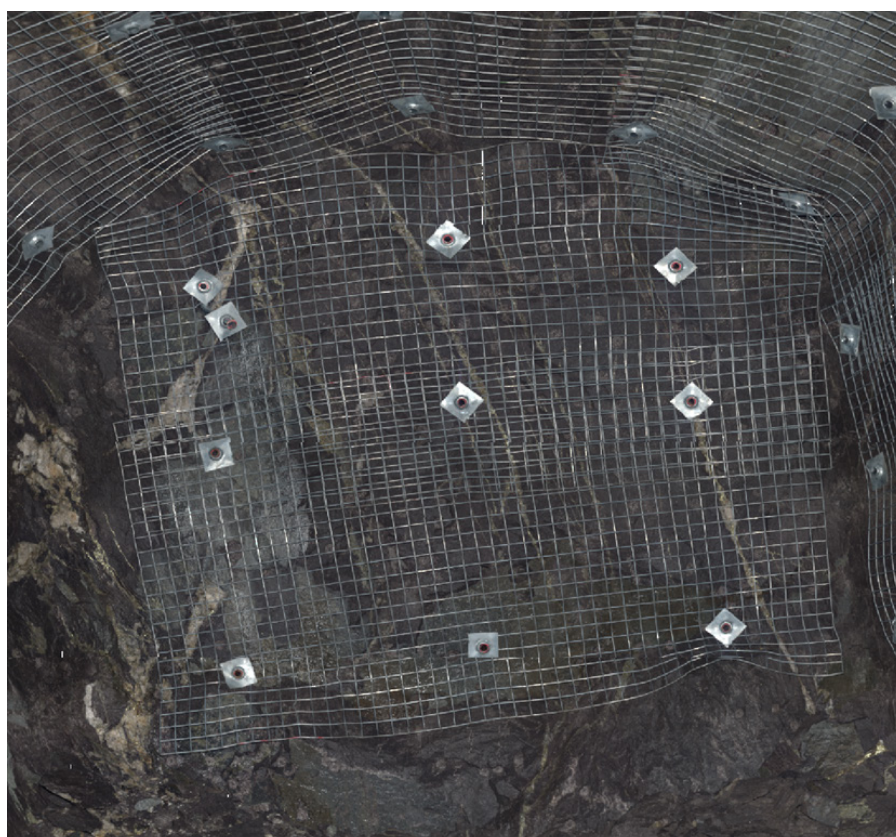


Figure 2 RGB Scan

*Referenced from page 4*



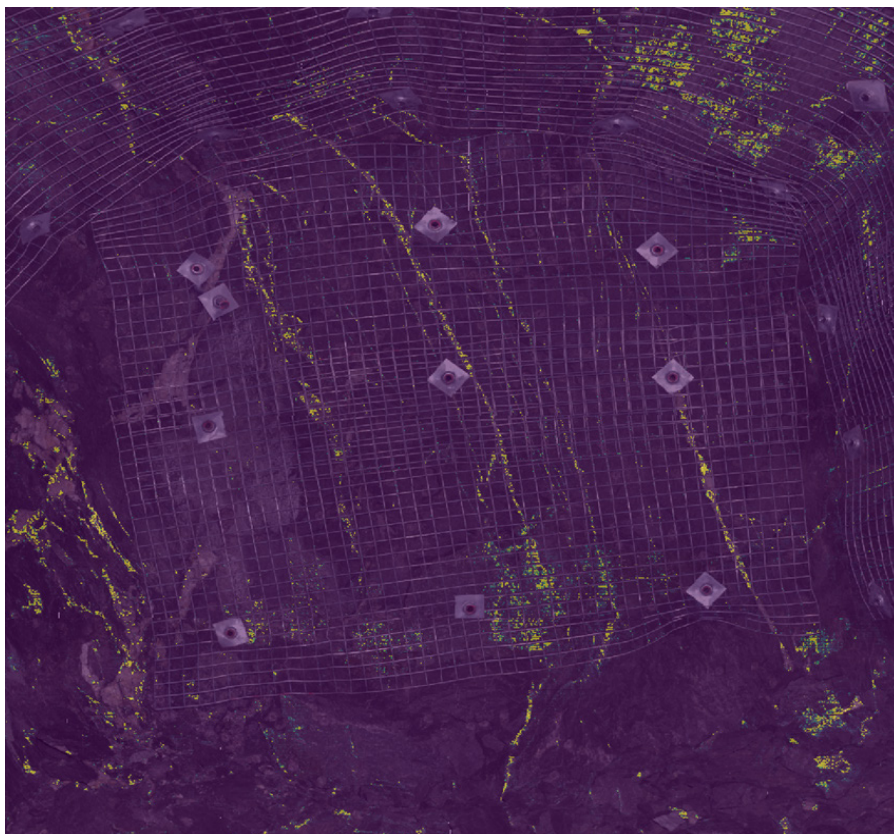


Figure 3 Copper Scan  
*Referenced from page 4*

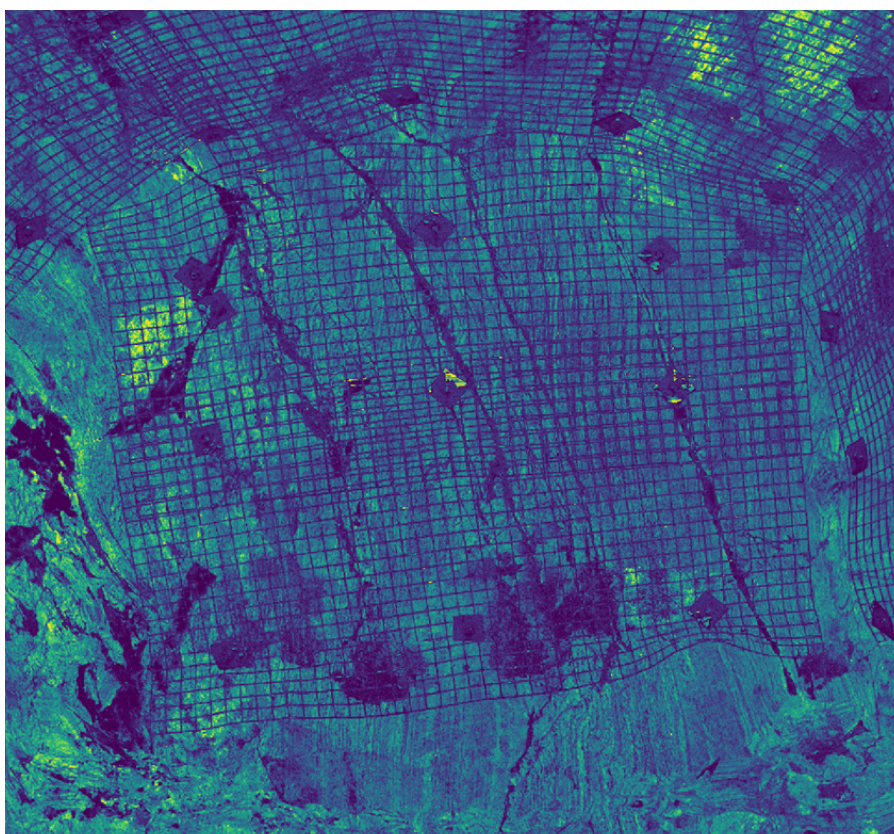


Figure 4 Alumina Oxide Scan  
*Referenced from page 4*



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