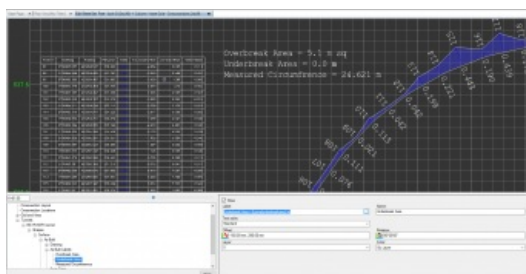


# Trimble's New Tunnel Solutions Streamline Workflows for Surveyors



Trimble has launched a suite of solutions enhancing productivity and efficiency for surveyors and professionals working on underground tunnelling projects. The solutions include new hardware and software for capturing highly accurate data in tunnels where dirt, dust, water and machinery provide a challenging work environment. The new line of products reduce the time to generate project deliverables by enabling survey and tunnelling engineers to easily compare tunnel designs with field-captured data. Remote operation of instruments and scanners allows surveyors to stand in safe locations and capture data efficiently in the often inaccessible, confined spaces of tunnels.

Tunnelling for miles underground is a costly business, requiring the utmost dependence on surveyors to ensure tunnel breakthroughs occur at the exact location (within millimetres).

To ensure accuracy, surveyors rely on precise measurements from high-accuracy total stations, such as the Trimble S9 HP. With the new Trimble TSC7 data collector and Trimble Access field software, surveyors can control the total station and manage tunnel information. The combined solution improves the ease of use and data visibility in challenging tunnel environments. The 7-inch data collector display, backlit keypad and optimised software makes it easier than ever to capture control data efficiently and accurately. In the office, traverse and network adjustments can be processed with Trimble Business Center software to ensure high-level accuracy.

## Drilling and Blasting

Survey professionals can now use Trimble Business Center Tunneling module to key-in tunnel alignment and design elements and effectively transfer tunnel designs to the field for stakeout. The large display of the Trimble TSC7 allows field engineers to view the designs more efficiently while enhancing usability for the precise stakeout of drilling locations and guide drilling and blasting machinery. The Class 3R laser pointer on the [Trimble S9 HP](#) and the Trimble Access Tunneling Application enable surveyors to clearly and quickly define drilling locations, enabling progress tracking and ensuring the project stays on schedule and on budget.

## As-built Verification

Rapid analysis and reporting on tunnel excavation and boring is critical in order to identify any potential deviations from the original design and to determine quantities for shotcrete and other linings. Trimble solutions provide surveyors with dependable solutions, whether rapidly scanning sections with the Trimble Access Tunneling Application and a Trimble S9 HP or using a [Trimble SX10](#) to quickly capture highly detailed information throughout the tunnel. All data and designs are seamlessly shared between the field and office enabling quick analysis and reporting in the field within Trimble Access, or a more detailed comparison to design files within the new Trimble Business Center Tunneling module. Analyses includes overbreak / underbreak visualisation and reporting, design to as-built comparison, clearance reporting and the accurate calculation of shotcrete lining volumes that are critical to minimizing costs and improving project efficiency.

Surveyors working in tunnelling environments rely upon quality equipment to provide the highest level accuracy with confidence, said Olivier Casabianca, director of global marketing for Trimble's Geospatial. With the new TSC7 controller and tunnelling-focused field and office software modules, Trimble is continuing to enhance the workflow for its customers engaged in tunnelling projects.