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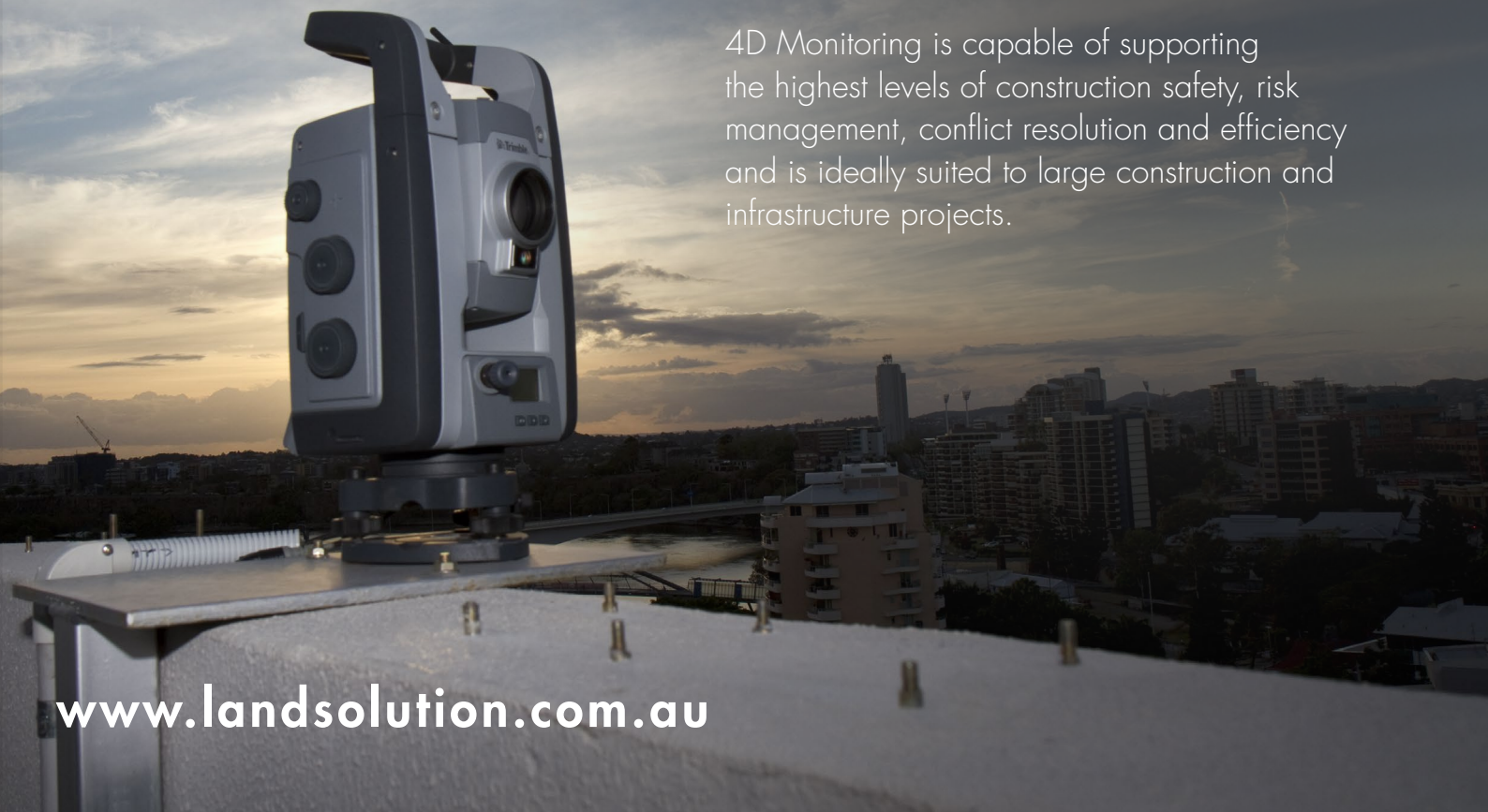
AUSTRALIA

4D MONITORING
SURVEY & GEOTECHNICAL
FACT SHEET

Land Solution Australia delivers cutting edge innovation through a structural and environmental monitoring product we call **4D Monitoring**. This product is a fully automated cloud platform that automates survey, environmental and geotechnical data collection and presents it to the user in virtual real time. This unique product is based on highly accurate measurements from instruments capable of alerting users of very small changes in the physical and natural environment almost instantly.

4D Monitoring is capable of supporting the highest levels of construction safety, risk management, conflict resolution and efficiency and is ideally suited to large construction and infrastructure projects.



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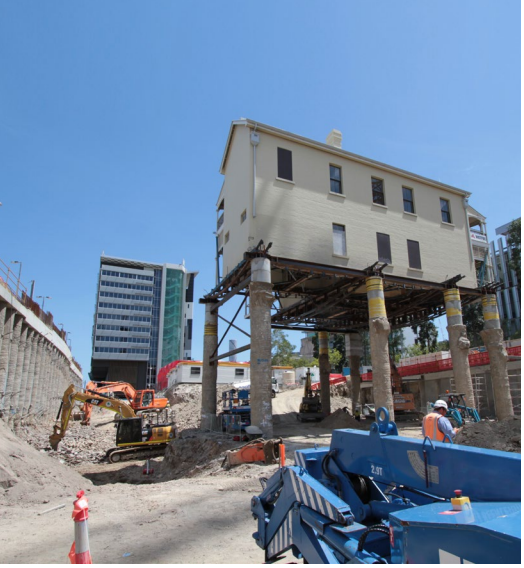

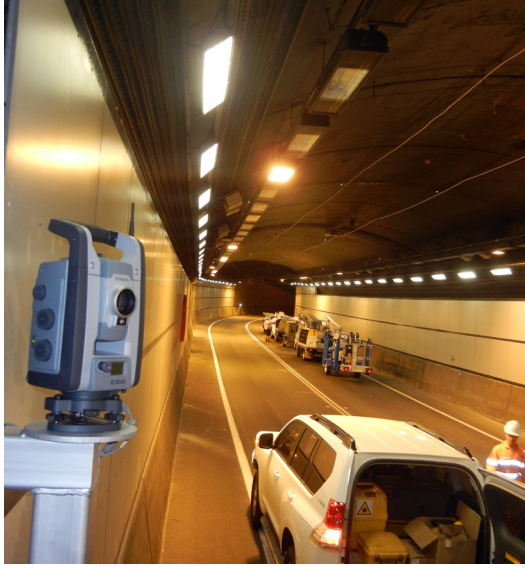

WHAT IS 4D MONITORING?

Monitoring is the systematic 'high accuracy' measurement and tracking of an object(s), structure or the environment. This data is then analysed to predict or measure stresses induced by applied loads.

Traditionally monitoring is observed manually, which meant lower frequency observations, longer response times and high cost for relatively small amounts of data.

4D automated monitoring can record data at virtually any rate, at any time and report the results to an infinite list of users in near real time. It's also capable of integration and analysis of results from a variety of survey and geotechnical sensors on a single platform.

WHAT ARE THE APPLICATIONS?

Construction and Infrastructure

- Transport infrastructure; roads, railways, bridges, tunnels and embankments
- Building preservation for high rise or historical buildings
- Foundations and Settlement areas
- Dam walls and embankments
- Mining pit benches, active workings and plant.
- Natural disaster recovery and response

WHAT TYPE OF EQUIPMENT IS USED?

Survey monitoring of multiple points uses single or multiple robotic total stations capable of remote operation via the web. Global Navigation Satellite System (GNSS) receivers are more commonly used for single point positioning.

Geotechnical and environmental sensors can include extensometers (crackmeters), piezometers, inclinometers (tilt meters),accelerometers (vibration), thermometers, rain gauges and seismometers.

A combination of mobile GSM and radio communications are established to transmit and receive data to a central IT server. Specialised software controls the instruments and manages the data so it is secure, safe and reliable.

WHAT EXPERTISE IS REQUIRED?

Land Solution Australia tailor a monitoring solution that designs the system, installs and maintains the components and manages the integration of data. This is critical to make correct and accurate decisions from the system.

WHAT ARE THE ADVANTAGES 4D MONITORING?

- Minimises disruption to construction programs
- Delivers enhanced collaboration between stakeholders
- Provides continual verification of change in the project environment
- Enhances forecasting of impact (proactive rather than reactive)
- Gives greater understanding and superior risk management
- Near real time response
- Automated alarming and reporting
- Data integration from a variety of sources and sensors
- The ability to increase observation frequency at minimal cost
- Removes need for repeated access to conduct measurements

WHAT ARE THE LIMITATIONS?

- Inducive to longer construction timeframes
- Higher establishment costs
- Lead time for installation

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