Geo4Sight

Wireless Subsurface Monitoring System

MONITORING REDEFINED

Elexon
MINING

About Elexon

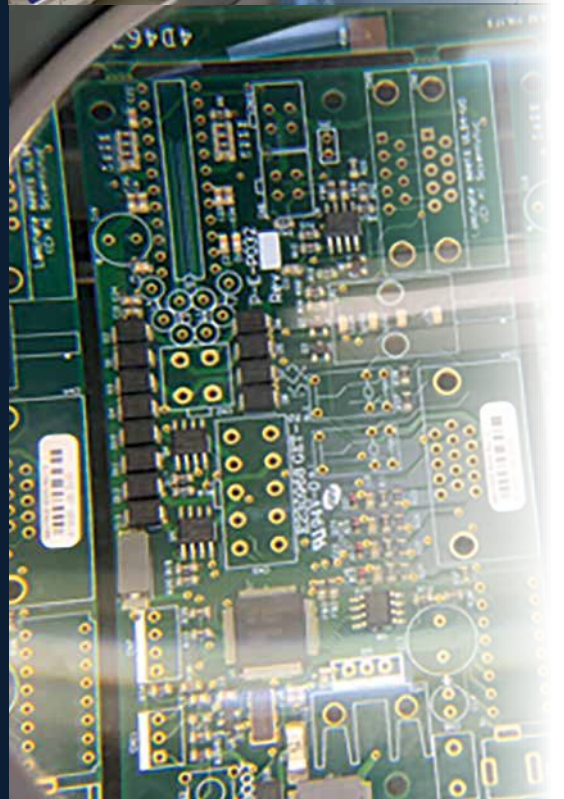
"At Elexon Mining, we offer the most advanced wireless monitoring solutions for above-and below-ground mining applications. We design, develop and manufacture our systems right here in Australia.

Our CaveTracker and Geo4Sight systems are used by mines around the world, and we are committed to constantly improving outcomes for our valued customers.

From Elexon's humble beginnings in 2006, to the global leader we are today, we are proud of our team and the partnerships we have built with miners, geotechnical engineers, geologists and researchers.

Collaboration is key and we invite you to join us on this exciting journey."

- Pieter Kuiper Managing Director & CEO



The Geo4Sight history

Elexon's Geo4Sight system started out as the Smart Marker System (SMS), which used RFID technology to log timestamped recovery of blast-resistant Markers.

In 2012 Networked Smart Markers were developed allowing in-situ data collection, followed by additional in-ground sensing capabilities in 2017, transforming the Marker system into what is now known as the Geo4Sight family.

The Geo4Sight system is now used by mines all over the world.

Our systems are utilised by industry leaders globally in:

- Over 50 Mines
- Over 15 Countries
- Across 6 Continents

The Geo4Sight System

is a first of its kind, in-ground wireless IoT instrumentation platform that measures **angular movement**, **pore pressure**, and **temperature** in subsurface environments to optimise mining output and allow early detection and management of geotechnical concerns.

World first wireless capability

Monitoring where others can't

Early detection

and your mine

Elexon Mining's **Geo4Sight** in-ground system detects crucial changes below the surface, where most failures occur, long before surface monitoring methods notice a problem.

BLOCK CAVING

The wireless Geo4Sight system can be used for:

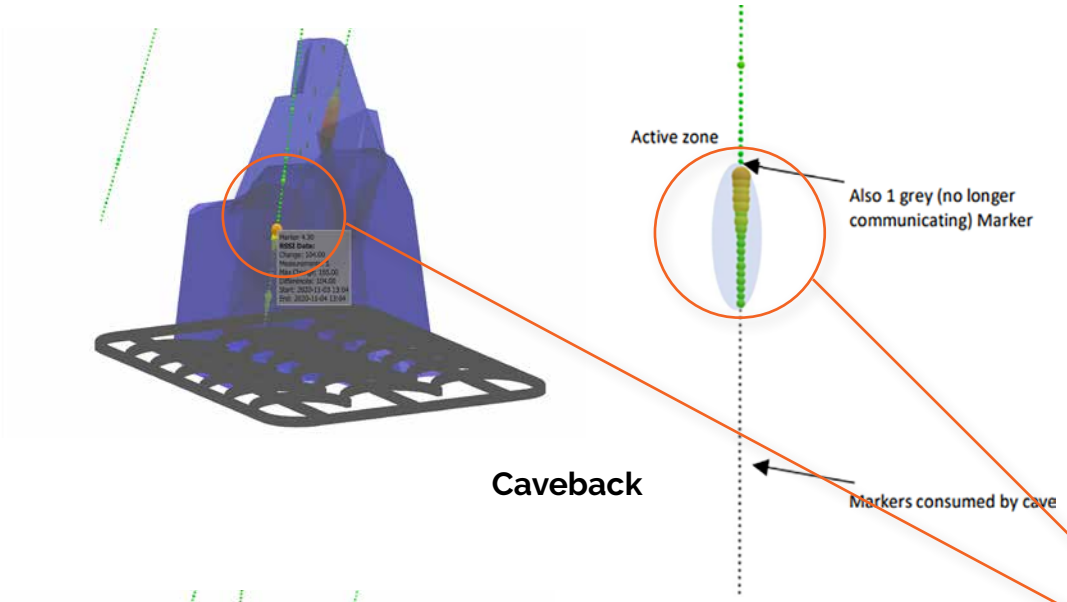
- Tracking of cave propagation
- Locating of caveback
- Subsidence and cave break-through
- Fault monitoring
- Drawbell recovery for ore tracking
- Additional inground monitoring with:
  - Tilt – 3 axis dimensional tilt
  - Pore pressure
  - Temperature

Integrates well with the **Cave Tracker system** (used for ore flow tracking).*

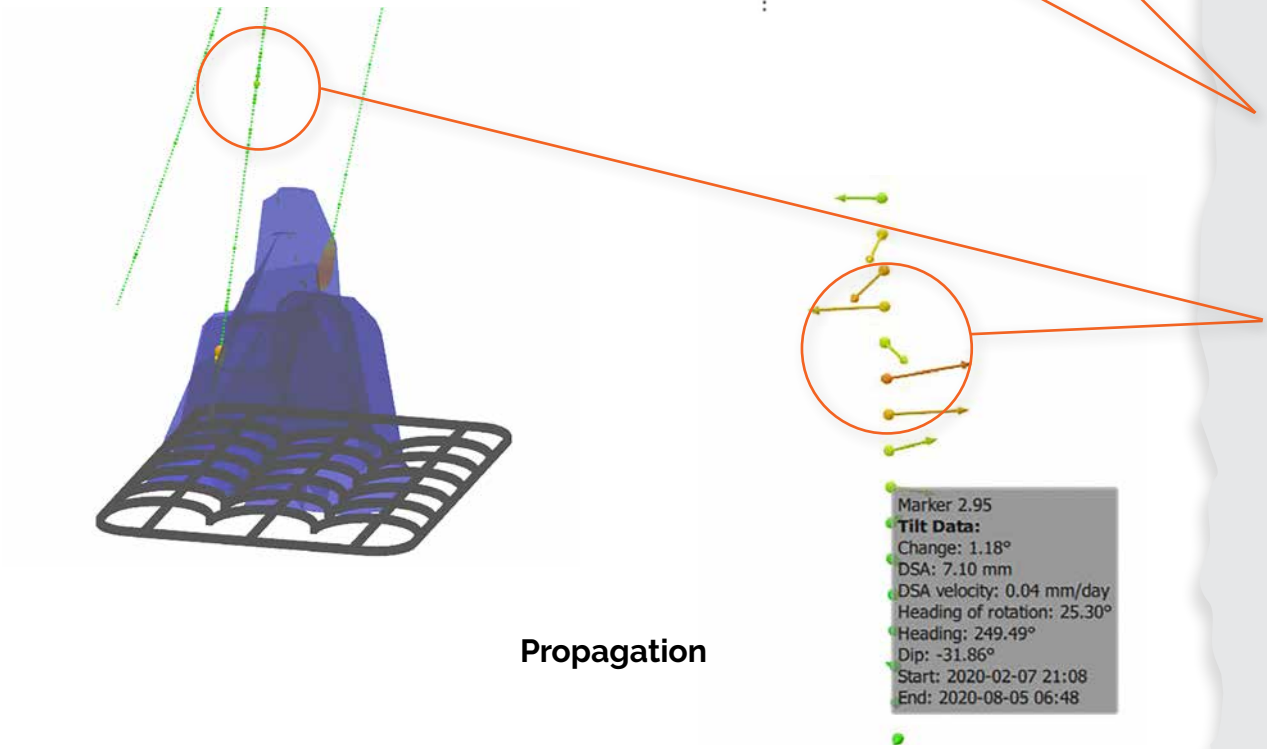
*refer Cave Tracker Brochure

BLOCK CAVE

MONITORING



Caveback



Propagation

The Geo4Sight system allows for geotechnical monitoring of critical events such as caving ramp-up, as well as long-term monitoring of caveback and propagation.

The Geo4Sight markers use:

RSSI (Received Signal Strength Indication) to measure the signal strength between itself and its neighbouring Markers.

Inclinometers & accelerometers to measure and monitor tilt movement in the X, Y, and Z axis.

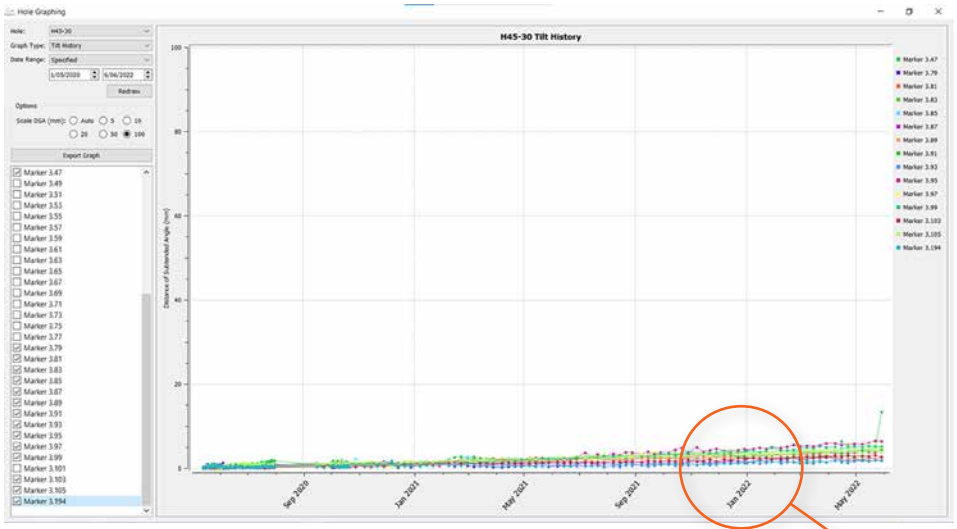
SUB LEVEL CAVING & SUBSIDENCE

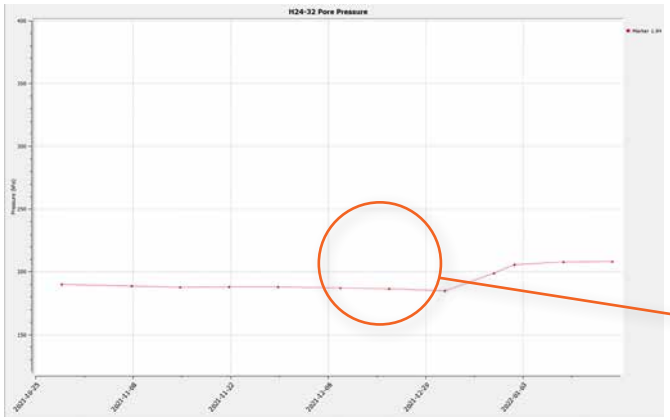
The wireless Geo4Sight system can be used for:

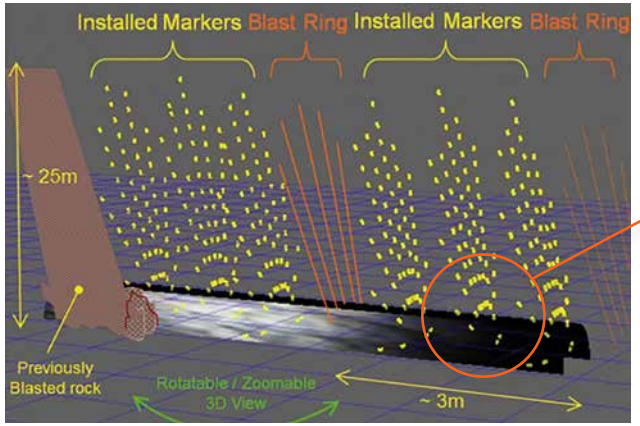
- In situ ground monitoring for subsidence
- Marker recovery for ore tracking
- Additional inground monitoring with:
  - -Tilt – 3 axis dimensional tilt
  - -Pore pressure
  - -Temperature

SUB LEVEL & SUBSIDENCE

MONITORING







The Geo4Sight system can provide real time data and early detection of changes well before they are visible on the surface.

The Geo4Sight markers use:

Inclinometers & accelerometers to measure and monitor tilt movement in the X, Y, and Z axis.

Pore pressure sensors to measure and monitor phreatic surface Levels.

Timestamped RFID marker detection logging to monitor ore recovery.

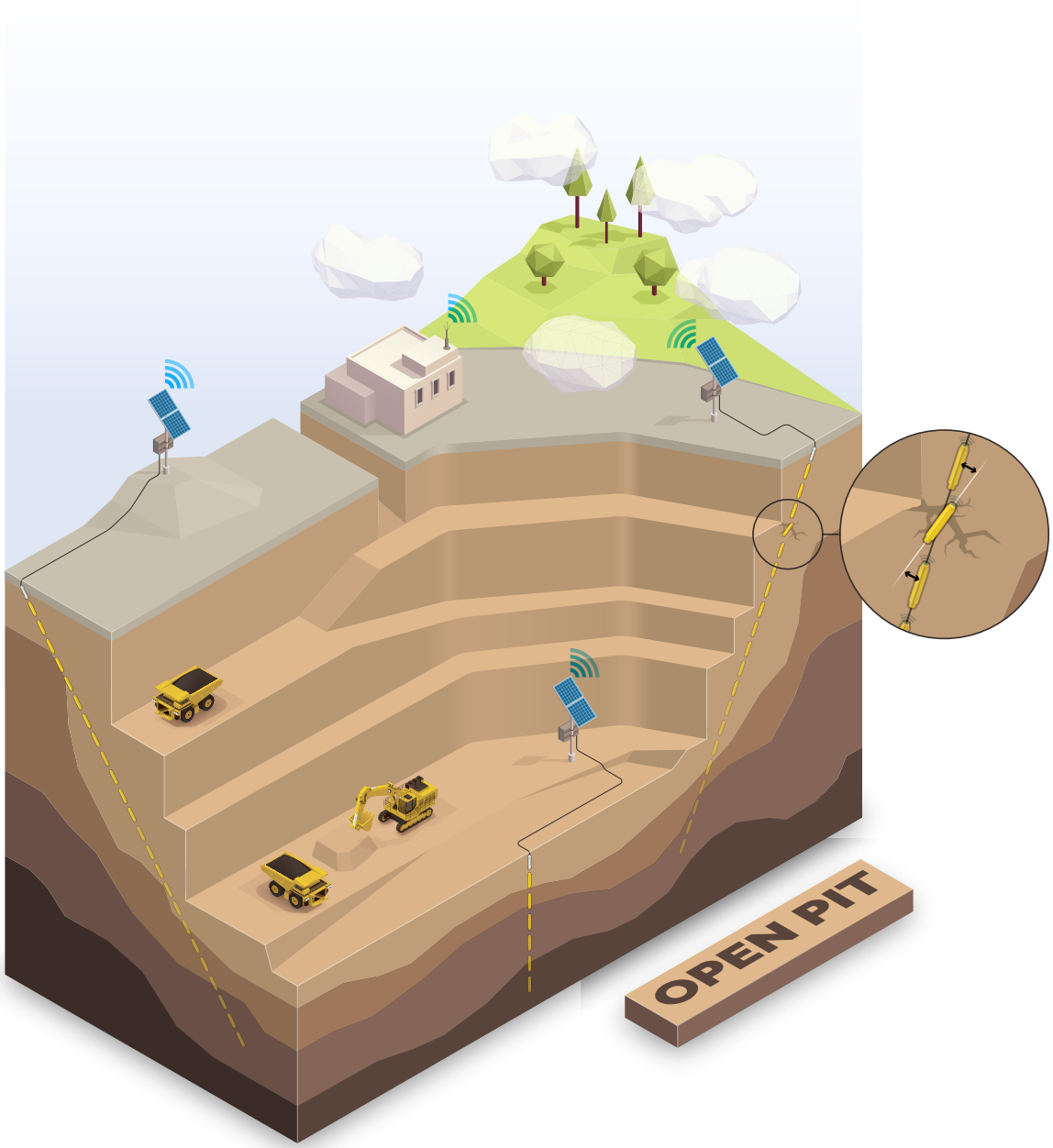
OPEN PIT

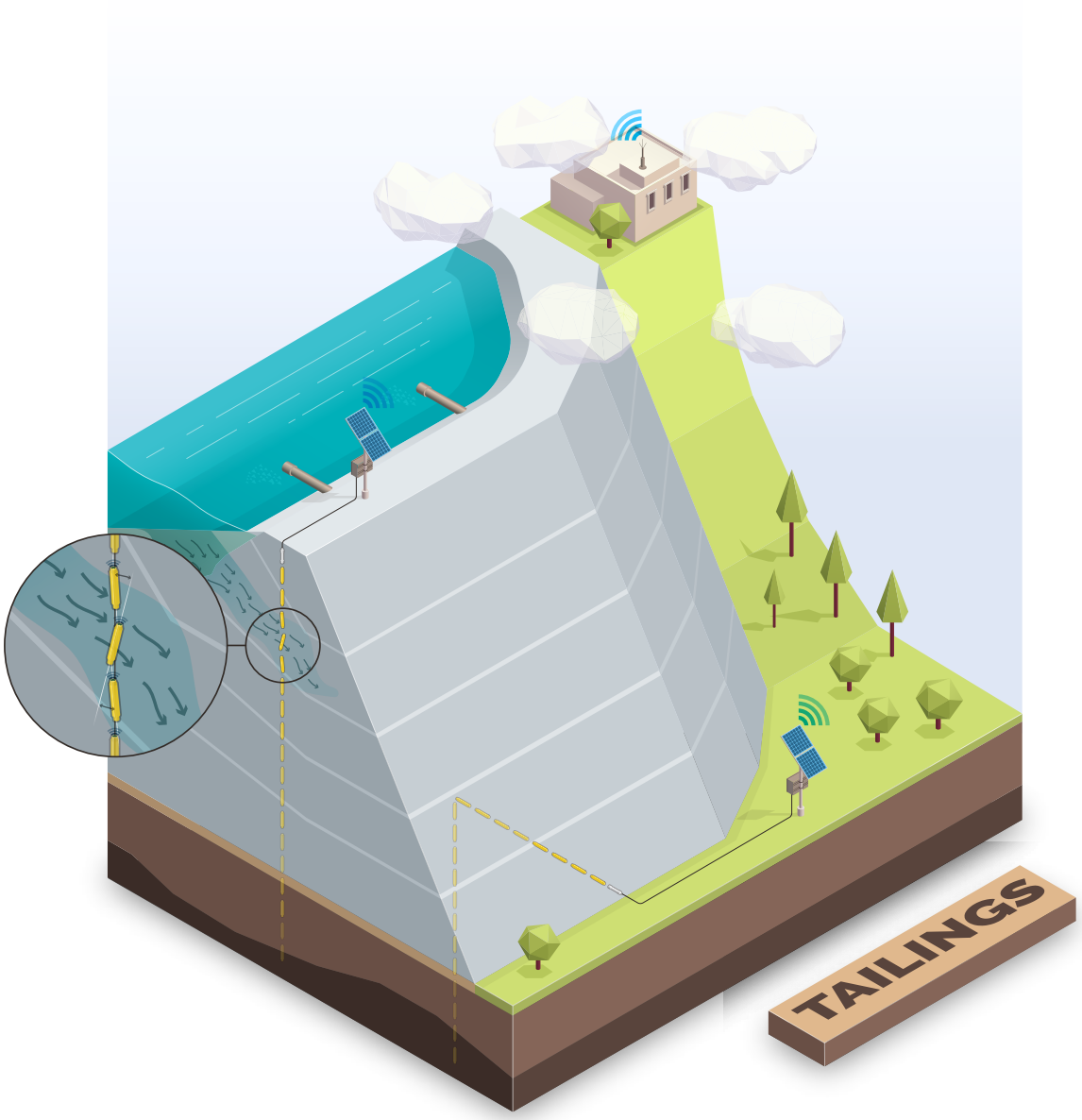
The wireless Geo4Sight system can be used for:

- Slope stability and landslide monitoring
- Fault line discovery and monitoring
- Early detection of rock bridge ruptures

<u>How it's useful</u>

- Can monitor areas where access is prohibitive & critical to stability
- No site access required for data retrieval
- Extensible if infrastructure grows
- Extensive data helps monitor movement, improve design and increases overall mining safety





TAILINGS & WASTE STORAGE

The wireless Geo4Sight system can be used for:

- Phreatic flow and liquefaction concerns
- Deformation monitoring using tilt data
- Real-time temperature data collection

<u>How it's useful</u>

- Multi-sensing system
- Pore pressure
- Inclinometer and Accelerometer – 3D Tilt
- Temperature
- Battery life of up to 10 years*
- Extensible system that allows for infrastructure expansion

*Based on query volume.

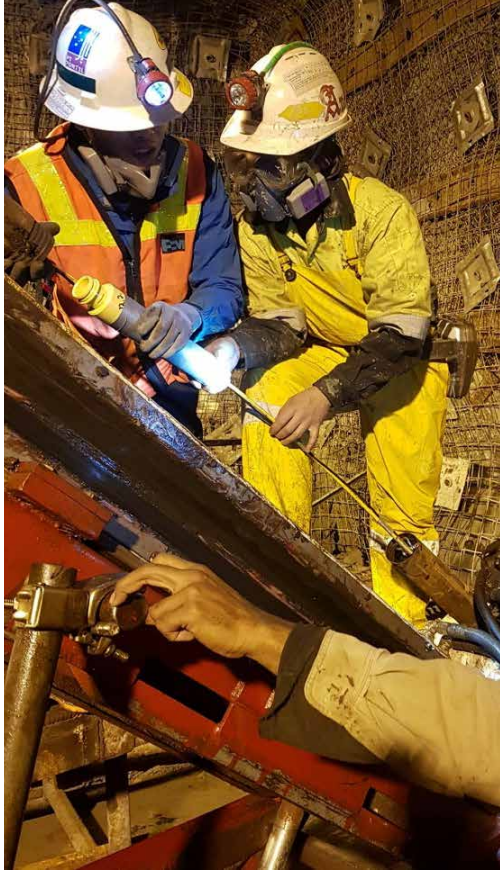
Geo4Sight System Installation

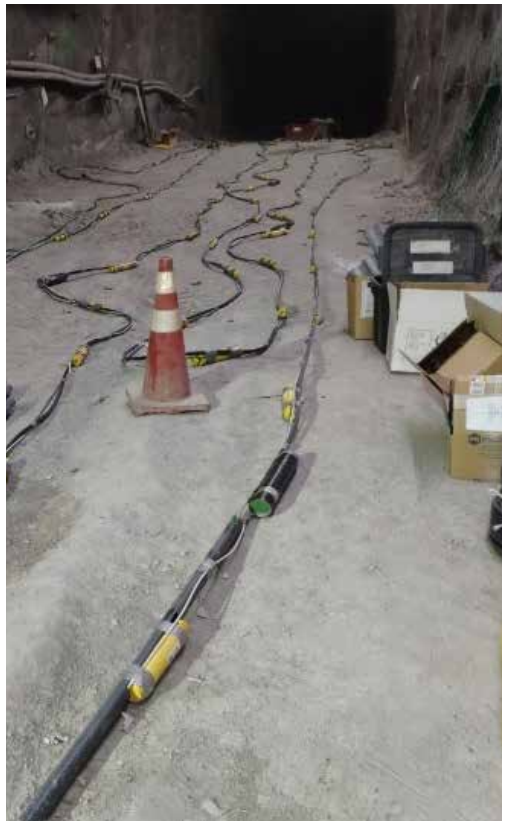
Can be installed in:

- Upholes and downholes.
- HQ and PQ sized drillholes, cased or uncased.

- Geo4Sight Markers installed at 2m spacing by taping/ fixing to rodder, rope or grout tube.
- Grouted in place (bentonite is added if installing pore pressure Markers).
- Reader can be installed outside of prohibited areas, up to 500m away from Marker string.

*Installation procedures to suit your needs can be provided by Elexon Mining.





Geo4Sight Specifications

Specifications	
Length	**325mm**
Diameter	**65mm**
Weight	**1.3kg**
Power	**Internal**
Communication	**RF 13.56MHz**
Operating Limits	
Operating Temperature Range	**- 0°C to +40°C**
Maximum Sensor Distance	**2 metres**
Battery life	**Up to 10 years****
Tilt Accuracy	**±0.028 degrees**
Pore Pressure Accuracy	**≤±0.125% of span**
Waterproof	**60 bar**

*Full system specifications available on request

**Based on query volume.

Service & Support

Elexon Mining provides comprehensive support, installation assistance, system maintenance and data distribution and reporting to our clients as part of our system offerings.

We consider your success to be our success.

We stand behind all of our products and consult with you to ensure you have a tailored solution for your project and a smooth transition from feasibility to delivery.

Great results depend on proper installation. Elexon Mining works hard to deliver simple procedures and training. Our skilled team can explain and aid with installation, boosting your confidence and outcomes.

Design of tailored solution

System installation & support

Ongoing monitoring & data evaluation for the life of project

Data and software

Elexon Mining created **GeoHive** to automatically extract and manage your Geo4Sight data.

This hosting interface correlates and stores system data for the end user and allows for visualisation.

GeoHive facilitates data exports in CSV format, allowing operators to feed it into their preferred visualisation and monitoring tools, such as **Voxler**, **Canary**, **Maptek**, and **Vulcan**.

“Your eyes into the mine”

Elexon
MINING

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