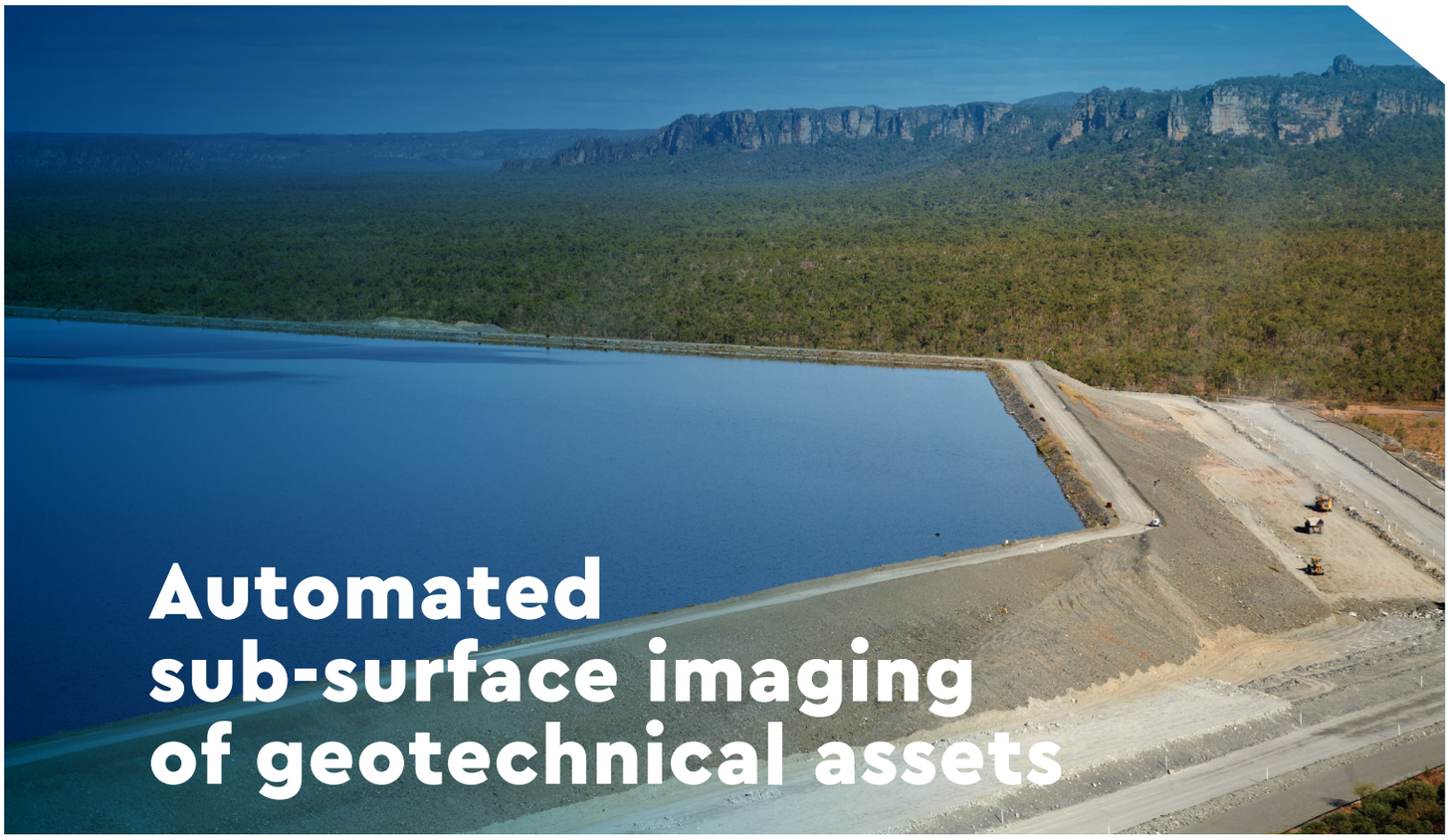
SOCOTEC



Automated sub-surface imaging of geotechnical assets

PRIME (Proactive Infrastructure Monitoring and Evaluation) is an innovative new monitoring system designed to deliver non-intrusive imaging of geotechnical assets and provide valuable insight into sub-surface processes for improved asset management and risk mitigation.

Developed by the British Geological Survey (BGS), PRIME combines geophysical ground imaging technology, remote data acquisition and web-based data visualisation with intelligent monitoring, to develop the basis of a new generation of 'smart' earthworks technology, capable of imaging the internal physical condition of infrastructure earthworks, whilst simultaneously monitoring ground movements.

socotec.co.uk/monitoring

BGS 1835

PRIME

PRIME

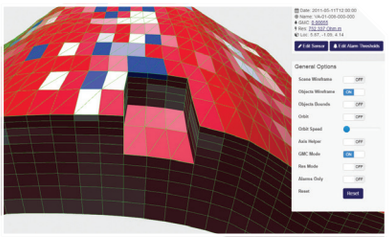
Central to the monitoring system is the PRIME instrument, a stand-alone battery powered unit, complete with GSM modem for remote communication and interrogation. Connected to this are cabled lines of electrodes which are shallow buried and deployed in lines or grids across the asset for 2D or 3D imaging respectively. Electrical current is then passed through these electrodes into the ground and the obtained resistivity measurements are automatically processed to generate a resistivity map of the sub-surface, from which we can infer changes in groundwater. In parallel to this, PRIME can measure movements of the electrodes, potentially resolved to centimetric accuracy, creating a truly comprehensive monitoring system.

Once the instrument is installed, PRIME data is then delivered through Calyx Online Monitoring Software, allowing asset owners access to near-real-time data from any internet-enabled device. The system also includes options to set response thresholds to alert stakeholders when resistivity and slope movement measurements might impact asset integrity.

SOCOTEC Monitoring are proud to be working with the BGS to bring this technology to the geotechnical community.

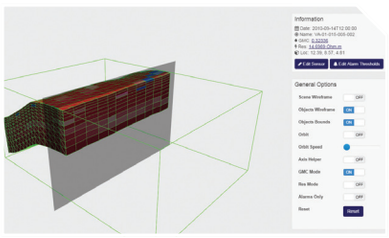
FEATURES	BENEFITS
2D or 3D imaging arrays	Customisable deployments to cover a range of requirements
Typically non-intrusive installation	No requirement for boreholes when using surface electrodes
Electrodes can also be installed in boreholes	Provides higher resolution measurements at depth
Readings can be scheduled, requested or reactive to changes of environmental conditions on site	Autonomous operation
Expandable number of electrode channels	Coverage of up to 1km linear asset from a single PRIME instrument
Up to centimetric accuracy measurements of electrode movements in the horizontal plane	Effective for monitoring slope movement
SDI interface capability	Rain gauge compatibility to allow reactive data sampling
Measurement data stored locally then relayed using GSM/Mobile network link	Automatic data delivery
System housed in a standard GRP enclosure	Discreet deployment
Powered from high capacity 12V batteries and solar array	Long operational life between site visits
Automated Interface to Calyx monitoring software	Access to Calyx features and integration with complementary monitoring instrumentation data

The outputs of the PRIME system are site-specific and, due to the varied nature of geotechnical assets, can only be defined following initial consultations with the PRIME team



Example of PRIME groundwater distribution in Calyx

PRIME electrode installation



Investigation of PRIME groundwater distribution in Calyx

MORE ABOUT OUR SERVICES

For more information and advice on PRIME please call us on 01825 701801 or email monitoring@socotec.com

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