



## Client Guide

# Instrumentation and Monitoring

## Summary

Issues surrounding geospatial monitoring to be considered by clients, concentrating on settlement monitoring and the movement of assets.

### Common questions

The right monitoring solution should provide cost effective results and add value to a project. Clients, designers and contractors ask many questions during a monitoring scheme, from the initial inception through to installation. Technological enhancements and innovations offer various solutions for a monitoring project, but looking at *what* is being monitored and *why* it is being monitored is fundamental.

The client should formulate both general and specific project requirements. This initial information will then allow a monitoring specialist to propose, design and implement an optimum solution, with the advantage that they will be aware of the technical solutions as well as advances in technology. The questions that need to be considered by both the client and monitoring specialist are:

- ◆ What scale of movement is predicted?
- ◆ What size of movement needs to be detected?

### Benefits

Accurate and precise monitoring systems deliver data for representation and analysis. The information collected allows for:

- ◆ Lifecycle planning and preventative maintenance of an asset.
- ◆ Movement trend analysis to confirm behaviour and design model predictions.
- ◆ Recording for the operations manual and project archive purposes.
- ◆ Statutory duties to be performed.
- ◆ Preparation of safety cases.
- ◆ Safeguarding of existing buildings and other adjacent facilities.
- ◆ Assurance to relevant stakeholders.
- ◆ Value for money while delivering added value.

### Scope of monitoring

When considering the scope of monitoring, the client and monitoring specialist should ask:

- ◆ What are the site extents and the zone of influence (ZOI)?
- ◆ What is the rate of predicted change and movement?
- ◆ What accuracy is required and at what intervals or frequency are measurements and readings required?
- ◆ What is the expected duration of the monitoring activity?
- ◆ How long does the baseline monitoring period need to be before activities start?
- ◆ Is there a long term monitoring plan accounting for residual movement?
- ◆ Is there a monitoring and risk mitigation plan for during and after activities?
- ◆ What measurement techniques and equipment will be used?
- ◆ Is there an absolute or relative monitoring requirement?
- ◆ What are the trigger thresholds? Keep in mind that a factor of safety may be required to protect against instrument error.
- ◆ What reporting systems and actions need to be in place?
- ◆ What software and data formats will be used?
- ◆ What kind of interface will display the report? Will it need to be available on a web portal?

For further consideration of geospatial monitoring, see the full Client Guide to Instrumentation and Monitoring v1.0.

The Survey Liaison Group comprises the Chartered Institution of Civil Engineering Surveyors, Institution of Civil Engineers, Royal Institution of Chartered Surveyors and The Survey Association.

