GEO INSTRUMENTS

HOTEL DEVELOPMENT, LONDON
LONDON UNDERGROUND TUNNEL MONITORING

Key achievements

- **Manual and Automated monitoring of London Underground tunnel assets**
- **Detailed 3D Line and Level surveys to confirm tunnel positions**

• The Project

The proposed development includes the construction of a new hotel building along with a single-storey basement.
The basement substructure will be directly adjacent to London Underground tunnels running under the nearby street..

• The Challenge

The hotel basement and foundation construction meant that the London Underground tunnels and Thames Water assets running adjacent to the site could be susceptible to movement caused by the piling, excavation and construction works.
GEO-Instruments were responsible for monitoring the 3D movement of three Northern Line Tunnels in the zone of influence.

• The Solution

GEO-instruments provided a comprehensive monitoring package including line and level, track geometry and condition surveys.

More than 100 3D retro survey targets were installed in the LU tunnels. These were surveyed on a weekly basis during LU engineering hours.
Alongside the manual monitoring, 10 wireless biaxial tiltmeters were installed to the tunnel crown to provide 24-hour, real-time monitoring of tunnel movement.

Line and Level surveys were required to accurately determine the position of the London Underground tunnels before the commencement of piling works.

Monitoring survey data was collected and presented with GEO-Instruments' QuickView online platform.
Alert triggers were set at limits defined by the specification and automated alerts were configured so the site team could receive alarm notifications if thresholds were breached.

Application
Tunnel Monitoring

Technique
Manual 3D Surveys
Automated Tilt Monitoring
Track Geometry Surveys

Market
Buildings
Rail
Infrastructure

Project Duration
2 years

Instrumentation
3D Retro Survey Targets
Wireless Tiltmeters
GRP 3000 Track Trolley

Keller companies
GEO-Instruments

GEO
INSTRUMENTS
Geotechnical & Structural Monitoring Solutions

KELLER