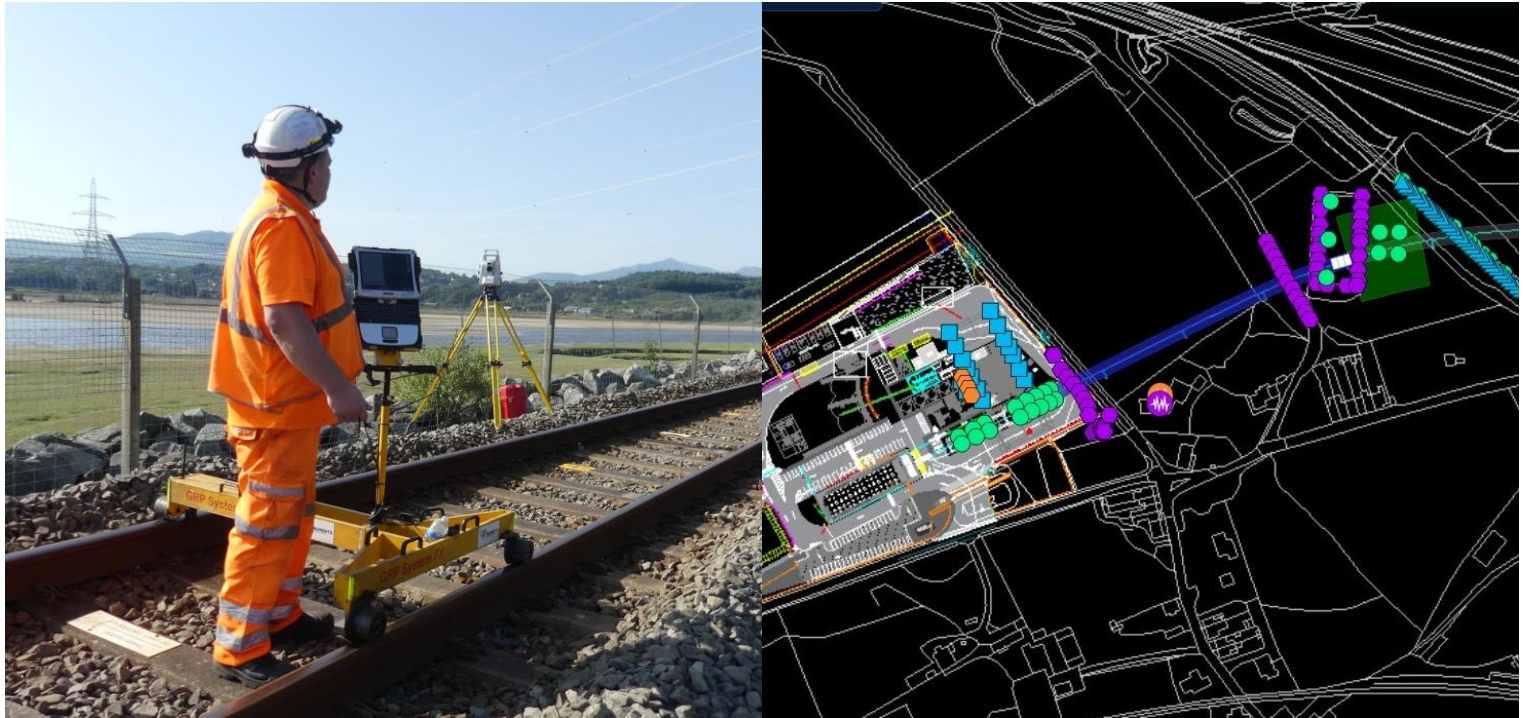




Key achievements

- Combined solution including automated monitoring, specialist surveying, and real-time data visualisation
- Comprehensive monitoring scheme for critical railway infrastructure during major tunnelling scheme

The Project

The Visual Impact Provision (VIP) is a large-scale infrastructure improvement scheme designed to reduce the number of overhead electricity lines at Eryri National Park in Wales. The project involves the construction of a new tunnel to replace 3km of National Grid overhead power lines and pylons.

The Challenge

The tunnel route passes underneath Network Rail tracks at three locations as well as the Ffestiniog heritage railway. Monitoring these crossings presented several technical challenges, requiring different approaches to capture movement and assess any potential impact on the tracks.

The Solution

GEO-Instruments has implemented tailored monitoring schemes at each crossing, helping the project team assess any movement and protect the railway infrastructure during tunnelling.

At one of the crossings, a network of more than 30 automated wireless tiltmeters was installed on the railway sleepers. The sensors provided accurate, high-frequency tilt data 24 hours a day.

At another crossing, a combination of three ShapeArrays were used to monitor 110 metres of track. Installed onto the running rails, the combined array monitored for vertical movement of the track during and after TBM passage.

Track Geometry surveys were also carried out on night shifts to record the cant, twist and gauge of the rails using a specialised track trolley. This survey is undertaken before and after tunnelling works to identify and compare any changes.

During tunnelling, GEO-Instruments' QuickView monitoring platform tracked and displayed the current position and Zone of Influence of the TBM in relation to the surface monitoring points.

Application

Rail Monitoring

Technique

Track Surveying
Automated Monitoring
QuickView Monitoring Software

Market

Infrastructure

Project Duration

2+ years

Instrumentation

3D Survey
Tiltmeters
ShapeArray

Keller companies

GEO-Instruments

