



### M6, Junction 10, UK



#### PROJECT SUMMARY

PROJECT NAME: M6 Junction 10 - Wireless Groundwater Monitoring

PROJECT DATE: November 2017

CLIENT: Walsall Council

CONTRACTOR : Kier Highways

INSTRUMENTATION SPECIALIST: Geotechnical Engineering Limited



#### OVERVIEW

Walsall Council is working in partnership with Highways England to improve Junction 10 of the M6.

As a busy route between Walsall and Wolverhampton, the junction is often heavily congested. This impacts on local residents and businesses, and has reduced the attractiveness of the local area for investment, including the nearby Black Country Enterprise Zone.

Plans include the widening and redevelopment of two bridges and improvement of the junction.

Traffic management was required to access the locations and potential weather effects on the slopes could have made in-situ data reading difficult. As the piezometer installation was split across both sides of the carriageway, data download could also have been very time-consuming.

Selection of a wireless system avoided any impact from these site-specific problems. The client was impressed with the range of the system even when the nodes were housed inside locked upright security covers.

#### MONITORING

Four boreholes were drilled on steep embankments using a specialist slope drilling rig. A VW piezometer was installed in each borehole.

Due to the angle of the embankments, access to the piezometers and dataloggers was impractical and could have been dangerous and so each piezometer was connected to a single channel VW Wi-SOS 480 Node, housed in an upright cover to provide protection.

Each node was connected to a solar-powered Wi-SOS 480 Gateway. The nodes were located up to 300m from the gateway through thick foliage and a beside a busy motorway. Some nodes were obscured by the bridge.

Data was sent remotely to the Wi-SOS 480 web portal via the GPRS connected gateway. Data was accessed remotely by both the client and customer.

The client was happy with the stability and ease of set up of the wireless system. Data was sent reliably.

#### PRODUCTS USED

##### VWP-3000 Standard piezometer

Used to monitor pore water pressures.

##### Wi-SOS 480 Gateway (solar powered with sim card)

Central data acquisition logger fitted with SIM card to provide GPRS connection for remote access via the internet. It can be configured over air via an Android device and includes sampling intervals and sensor configuration. Data can be either downloaded directly or forwarded to any FTP address.

##### Single channel VW Wi-SOS 480 Node

Long-range 800MHz wireless battery-powered multi-channel (1-5) node/ logger for connecting the vibrating wire piezometers to the Gateway. Easily configured using Android phone or tablet via G-LOG APP.

##### WI-SOS WebCentre

Website where the connectivity, health of the Gateways and Nodes can be monitored in real time. Data can be viewed, visualised and downloaded.