



## Mersey Gateway Project



### PROJECT SUMMARY

NAME: Mersey Gateway Project

DATE: 2015

CLIENT: Halton Borough Council

MAIN CONTRACTOR: Mersey Link Consortium

INSTRUMENTATION: Stuart Well Services

CONSULTANT: Geosense



### OVERVIEW

The Mersey Gateway will bring about much-needed traffic relief for the existing Silver Jubilee Bridge and will lead the infrastructure investments required to deliver regeneration of Halton and the North West.

More than 80,000 vehicles use the Silver Jubilee Bridge every weekday – ten times the number it was originally designed for. This extra traffic puts the congested and ageing Silver Jubilee Bridge and the resilience of the regional road network under severe pressure. The new bridge will be designed to carry up to six traffic lanes forming part of a new and improved high standard road (9.5km long) connecting north Widnes and Merseyside with Runcorn and the national motorway network in north Cheshire.

The design of the new Mersey Gateway Bridge is based on a cable-stay structure similar to the second Severn Crossing, but with three towers. It will be 2.3km long with a river span of 1km. The main bridge deck will be made from reinforced concrete and the spans will be supported by steel cable stay.

### MONITORING

Construction of the three main bridge pylons piers involves forming three circular cofferdams at the north and south banks and the centre of the river. The distance from the north to the south bank cofferdams is approximately 400 metres.

Within these cofferdams the ground will be excavated to form the foundation of each pylon. In order to maintain stability of the cofferdams, measurement of the groundwater level is used to demonstrate the effectiveness of the dewatering system.

Multi-level vibrating wire piezometers were installed to monitor groundwater profiles during construction. They were connected to multi-channel Wi-SOS 480 wireless nodes, all of which connect by 800MHz wireless to the Wi-SOS 480 Gateway. Data is sent via GPRS to the Wi-SOS 480 web portal. Base-line readings were taken using an MP12 portable readout.

The Wi-SOS 480 is a star network which can read nodes over distances up to 10km.

### PRODUCTS USED

#### **VWP-3000 VW piezometers**

Used to measure the water level changes in the cofferdam during dewatering.

#### **Wi-SOS 480 VW 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 480 Gateway**

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.

#### **MP 12 readout**

Used to take manual readings of the VW piezometers for zero pressure and initial readings