The UB63 is a single-span underbridge on the Dodder River, south of Landsdowne Road in Dublin 4. The Landsdowne Bridge is located in an area prone to high water levels and had suffered recent flood damage. Close and accurate monitoring of the structure was required to maintain its continued stability and safety.

Equipment to monitor the rail bridge was installed during stabilisation and remedial works following flood damage to the bridge structure after heavy rains in October 2011.

Following stabilisation works the remote monitoring commenced to provide continuous real-time monitoring of the bridge and to provide back-up data on how the bridge was performing following the completion of remedial and stabilisation works.

No movement was noted on any of the tell-tale crack meters and the settlement monitors were moving within tolerance of +/- 0.20 mm.

From all data sampled from the various instruments, it was evident that the bridge was stable and not being affected by the trains using this bridge.

Following initial emergency works, the daily running of trains recommenced.

MEMS biaxial Tilt Meters and Tilt Beams were installed to monitor the South and North piers of the UB63 rail bridge.

Tilt Meters, which measure point rotation, were fixed to the bridge piers and Tilt Beams were installed in a string along the abutment on the south pier to measure the settlement profile.

They were fixed to the structure using mechanical and epoxy bonding and once in place, they were zeroed and connected to the data logger.

All the tilt sensors were connected to an automatic data acquisition system and readings were taken at two-second intervals to provide real-time monitoring during stabilisation work. The information was downloaded daily and graphed to see if any movement of the bridge had occurred.

As each Tilt Sensor is individually calibrated, data values can be converted into engineering units such as degrees, sine of the angle or mm/m.