

Camden Lock Village - Structural Monitoring

CLIENT: SIXENSE

Wireless monitoring played a key role in a challenging urban development scheme in the heart of busy and vibrant Camden, North London



Challenge

The construction of Camden Lock Village – a 50,000 m² mixed-use development incorporating shops, cafes, restaurants, workshops, offices, cinema, primary school, and 195 residential apartments, was an ambitious £120M scheme designed to bring improvements and employment to the canal-side area in North London.

There were a number of challenges to overcome on this project, including the site being intersected by a series of railway viaducts and the restrictions of working adjacent to Regent's Canal. Site conditions below the site included London Underground rail tunnels and a National Grid power line.

The plan was to excavate a 16 metre deep basement in between the two viaducts, without disrupting the frequent passenger and freight trains. Engineers were concerned about the canal ground pressure, the shallow foundations of the nearby rail bridges and the potential risk for the construction to affect the busy railways.

The construction team was permitted to operate causing only minimal levels of movement and settlement to existing structures, so a comprehensive monitoring programme was commissioned throughout the four-year programme.

Key Points:

- Sixense monitoring team needed a comprehensive monitoring programme for busy and challenging construction site
- The FlatMesh™ network was able to self-configure to find alternate routes to the Gateway as the site evolved and new buildings were constructed
- Critical information was provided in near real-time and data was integrated into Sixense's data visualisation platform, Geoscope





Solution

In 2016, after successfully completing noise and vibration monitoring on London's major Crossrail project, Sixense was appointed to implement a complex structural and environmental monitoring scheme for Camden Lock Village project.

They used 6 total stations, 42 inclinometers, 14 vibration monitoring units, as well as 20 Senceive wireless FlatMesh™ tiltmeters.

The tiltmeters were installed on the viaduct arches and a Grade II Listed building – monitoring an area covering 20,000 m2 of the project site. The wireless solution included a FlatMesh™ Gateway with solar panel, enabling secure communication with the sensor nodes and transmission of measurement data back to the cloud-based data management system.

A team of on-call technicians, surveyors, and on-site data managers was able to see all monitoring data – including data from the wireless sensors- on Sixense's information hub – Geoscope. This enabled users to consolidate different types of data for analysis and to present daily automated reports to their end client.



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Outcome

In parallel to regular 3D survey cycles and vibration monitoring, the near real-time data sent from the wireless tilt sensors was vital to ensure every movement of the structures was monitored.

The FlatMesh™ network was able to adapt to the evolving site. As the new buildings were being constructed they gradually obstructed lines of site – making traditional survey methods difficult. This was no problem for Senceive's mesh network which was able to automatically self-configure to find alternative routes to the Gateway, providing continuous reporting without needing site visits by the monitoring team.

Data from the tilt sensors was easily integrated into Sixense's in-house data visualisation software, Geoscope, which allowed users to remotely manage all incoming movement data and to set up alarms to activate in the event of any movements beyond established threshold values.

