



Auckland – Wharf Building Structural Monitoring

CLIENT: AUCKLAND TRANSPORT / CKL SURVEYS / POSITION PARTNERS

How remote monitoring safeguarded historic building during seawall repairs

Challenge

Auckland’s Ferry Terminal is an historic landmark on the city’s waterfront. Over the 100 years since it was built, the sea wall supporting the building has been gradually eroded by wave action and wash from ferries using the busy port. Divers had identified a three metre breach in the wall caused by the erosion. Auckland Transport commissioned the engineering company CKL to carry out structural monitoring during a programme of stabilisation and remedial works.

CKL selected Senceive’s technology – a wireless remote condition monitoring solution, introduced to them by Senceive’s local distributor Position Partners. The wireless system showed how the building was behaving in near real-time. Thresholds were set such that any excessive movement would trigger automated alerts to stakeholders in order to protect the integrity of the structure and the wellbeing of the people working in it.

A Sokkia total station was also deployed to back up the wireless system.

Solution

Position Partners installed a total of six high precision triaxial tilt sensors along the sea wall under the wharf. The mesh network formed by these wireless sensors relayed data to a secure cloud server via a solar-powered cellular gateway. Registered users of Senceive’s WebMonitor visualisation software could view and interact with the data.

Alert levels defined by Auckland Transport were assessed on an ongoing basis. These could be adjusted remotely so that any movement could be prioritised. The system provided the client with up-to-the minute data and the ability to change reporting rates and text alert trigger levels remotely - and the reassurance of knowing how the structure was behaving without leaving the office.



Outcome

CLK and Auckland Transport were highly satisfied with the results.

The robust IP66/68 rated enclosure with protective antenna cap made it ideal for the harsh saline environment, with the nodes appearing as good as new 18 months after installation. The long battery life (potentially 12-15 years) allowed for the monitoring programme to be extended without intervention or maintenance. This reduced risk to personnel and provided cost and labour savings to CKL compared to a methodology based on manual/optical monitoring.

The seawall was successfully repaired and the Ferry Terminal continues to serve the Auckland community. Position Partners continue to offer local support in New Zealand, as Senceive’s Oceania distributor, and offer full customer support and technical assistance.