



CASE STUDY

Remote, Real-Time Monitoring for an Australian Road Upgrade Project



PROJECT TYPE: Soil consolidation monitoring

COUNTRY: Australia

INDUSTRY: Road construction

MAIN PRODUCTS:

- 1 Ackcio Gateway (BEAM-GW)
- 2 Ackcio Vibrating Wire Nodes (BEAM-VW-S8)

CHALLENGE



A section of state road in New South Wales, Australia, used to flood regularly, cutting off the most direct route between the towns of Kurri Kurri and Maitland.

In 2021, work began to raise the roadway to maintain access during flood events. Before construction could begin, the underlying soft, swampy soil had to be consolidated to ensure the safety and stability of the new road.

[Tetra Tech Coffey](#), part of Tetra Tech, a leading provider of consulting and engineering services worldwide with expertise in engineering, geotechnical, testing, environmental, and project management, was hired to monitor soil consolidation before construction.

As the project was in a different Australian state from reporting staff, Tetra Tech Coffey wanted a remote monitoring solution to save engineers' time by eliminating manual collections and providing reliable, real-time readings at a set frequency.

SOLUTION



Tetra Tech Coffey chose the Ackcio Beam wireless data acquisition solution to monitor a preload over a soil section, where subsurface materials included up to 9 metres of soft, compressible estuarine sediments. The constructed embankment was approximately 700 metres long and up to 8 metres high.

An Ackcio Gateway (BEAM-GW) was installed close to the site offices and configured to receive sensor readings from Ackcio Vibrating Wire Nodes (BEAM-VW-S8) approximately 300m away. These were connected to six grouted vibrating wire piezometers measuring pore water pressure dissipation.

Monitoring took place between January and November 2021. The project's non-telemetry-enabled instruments included inclinometers, extensometers, settlement plates and settlement pins.

During and after the placement of embankment fill, compressible soils were surcharged and monitored until primary consolidation was achieved. Once pore water pressures reached suitable levels, approximately 3 metres of surcharged materials were removed, and the road was constructed at the finished level.

During the project, Tetra Tech provided its client and the principal client with regular instrumentation data reports to validate their model.



Benefits

-  Reliable readings from a remote site
-  Eliminated manual data collection
-  Automated data transfer
-  Super-responsive customer service

RESULTS

- ✓ Remote, real-time data access
- ✓ Decreased workforce costs
- ✓ Smooth on-site deployment
- ✓ Shorter project timeline

Ackcio's automated solution saved engineer time by eliminating manual data collection and providing reliable readings at the set frequency. Automated data transfer populated a Tetra Tech templated report, reducing data processing time.

Reliable data allowed the client to proceed confidently to construction as soon as possible, avoiding the additional construction costs and project delays.

The Tetra Tech Coffey team appreciated Ackcio's prompt, helpful service that was available at a moment's notice. This was especially helpful when deploying equipment on-site under tight deadlines.



TESTIMONIAL

Ackcio's service was excellent. Any technical queries relating to the product were addressed promptly, and direct communication was established between our site engineers and the technical development team. Fantastic customer service.

— **Luke Young**

Geotechnical Instrumentation Lead East Coast



ABOUT TETRA TECH COFFEY Tetra Tech Coffey is part of Tetra Tech, a leading provider of consulting and engineering services worldwide. Our experts are at the forefront of their specialisation in engineering, geotechnical, testing, environmental, and project management services. We are part of the Asia Pacific operations of Tetra Tech, a leading provider of consulting and engineering services with 21,000 employees working across the entire project lifecycle worldwide. Across Australia and New Zealand, our operations include over 650 employees throughout the Pacific. Our local, national, and international operations work alongside clients to develop strategies and provide the necessary services to advance their plans. From single projects to large-scale programs of work, we deliver against objectives and are adept at working in complicated or highly regulated environments.



ABOUT ACKCIO Ackcio builds reliable wireless data acquisition systems for industrial monitoring applications. The company automates monitoring processes and provides remote, intelligent data to enable increased safety and efficient risk management in mission-critical industries, including construction, infrastructure, mining, and rail. Ackcio's flagship solution, Ackcio Beam, is an industrial data acquisition platform that uses a patented long-range wireless mesh network to monitor sensors accurately and reliably in both above-ground and underground environments. Ackcio is headquartered in Singapore and supports clients across the world. In 2021, the company was included in Forbes Asia's inaugural '100 to Watch', a list comprising small companies and startups on the rise across Asia Pacific.

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