

Pipeline Re-supported and Re-levelled

INDUSTRY

Infrastructure

STRUCTURE

Pipeline

PROBLEM

Earthquake remediation

LOCATION

Christchurch, New Zealand

DURATION / YEAR

14 days / 2011

TECHNOLOGY

Uretek Slab Lifting &
Uretek Deep Injection

BUSINESS UNIT

Mainmark New Zealand



Summary

This new sewerage pipeline was under construction and was damaged by the earthquakes of 2010-2011 prior to commissioning. The pipeline was raised back to its design levels over two weeks.

Objectives

The 1350mm diameter sewer pipeline suffered movement due to liquefaction of the saturated soils during the earthquake. The pipeline had suffered up to 60mm of settlement.

Solution

We re-confirmed support, provided void fill, raised the pipeline sections back to design levels and improved the bearing capacity of the supporting, saturated silty soils to minimise the potential for further settlement.

First, an on-grade laser level was established as a base line to monitor levels. Second, injection penetrations were drilled and engineered structural resins were injected to fill voids and confirm uniform support.

The laser equipment was used to precisely monitor movement, confirm the ground support from Uretek

material, and to accurately control releveling results. Finally, the team stitched the joints around the circumference of the pipes to void fill, support and minimise any ingress of surrounding soils.

The pipeline was raised back to original design levels, and because Uretek could be pumped to the site of injection, there was no disruption of traffic in the city during the two weeks of rectification.

Above: Injecting to achieve leak-mitigation and re-support and re-level the pipeline. The ground around the pipeline had turned into sticky, liquid mud.