

Teretek® Injects New Life Into National Park Heritage Buildings

PROJECT PROFILE

N20AR042

mainmark



INDUSTRY

Heritage

STRUCTURE

Fishing lodge

PROBLEM

Weak ground resulting in subsidence

LOCATION

NSW, Australia

DURATION / YEAR

1 Day / May 2020

TECHNOLOGY

Teretek®

BUSINESS UNIT

Mainmark Australia

Summary

An old heritage-listed fishing lodge located in a picturesque NSW national park required ground remediation work as part of the property's conservation management plan. The site consisted of five separate rendered concrete block structures including the main accommodation building, constructed in 1934. The additional buildings were later added to the site including a kitchen block, built in 1938, a garage and stable wing constructed in 1947, and an outdoor toilet.

Over the years, the buildings had fallen into disrepair due to the location's harsh sub-alpine climate and weather conditions. The lodge is situated approximately 15m from the edge of a river above a high water table and the ground conditions, which are very soft and moist, had caused soil movement beneath the buildings' foundations. The 750mm deep footings had subsequently subsided up to 100mm, with the kitchen block being the worst affected structure. The concrete slab floors were cracked and un-level, and there were significant cracks, up to 5mm wide, in the walls. There were also ground voids underneath the toilet block's floor slab and the chimney stack on the south wall of the main accommodation block was in danger of collapse.

The client was planning to preserve the heritage buildings for cultural tourism and youth education purposes, however, before work could commence, the foundation ground beneath the buildings' footings needed to be strengthened and the structures raised and re-levelled to provide long-term structural stability.

Objectives

Mainmark was engaged to provide a ground improvement solution to consolidate the weak soil underneath the buildings and lift the structures back towards their original position. The scope of work also included filling voids beneath the toilet block.

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Solution

Mainmark's proprietary Teretek® resin injection solution was identified as the most suitable technology to remediate all five buildings. Teretek is an expanding polyurethane resin mix that is injected into the ground using a non-invasive process likened to keyhole surgery. Upon injection, the components mix together and expand by chemical reaction, consolidating and strengthening the underlying ground, filling any voids and helping to lift the structures back to level.

Mainmark treated each of the buildings individually across approximately 40 linear metres, specifically targeting areas that had either dropped or where the concrete floors had cracked. While strengthening the very soft ground conditions was challenging, Mainmark was able to consolidate the moist soil and lift the structures back towards level despite the prevailing high-water table. Mainmark achieved 1-5 mm of lift across all the affected buildings, successfully consolidating the ground beneath the footings without adding unnecessary strain and causing further damage.

Access to the site was also problematic as Mainmark's self-contained product delivery rig needed to manoeuvre along a narrow track and negotiate a rack-rail train track that traverses the site. The project also required completion before the winter snow season commenced. Despite these challenges, the project was successfully completed in a single day to the client's complete satisfaction.

