

Sandstone Rail Tunnel Remediated

INDUSTRY

Infrastructure

STRUCTURE

Railway

PROBLEM

Sinking bridge & track

LOCATION

NSW, Australia

DURATION / YEAR

2 nights / 1997

TECHNOLOGY

Uretek Slab Lifting

BUSINESS UNIT

Mainmark Australia



Summary

The original tunnel had been carved out of Sydney sandstone in the 1930's, and sandstone shavings were laid as a base in the tunnel above which a concrete track slab was laid, to which the rails had been attached. The tunnel was sloping downhill and the base of the tunnel was eroded, forming a drainage route over the half-century of use.

The water running down had dissolved and washed away the fine sandstone aggregate. This caused the tracks to spring up and down as the trains travelled over the tracks, causing both safety concerns and reduced operating speeds.

The asset managers drilled 1 cm holes to investigate the problem, and observed that water gushed up as the trains approached and travelled over the tracks.

Objectives

The objective was to raise, re-level and re-support the rail tracks so that the trains could pass safely and quickly.

This was to be achieved with minimal interruption to the passenger train service on this principal city circuit.

Solution

Our Operations Crew and Rig were transported into the tunnel on a high rail truck, and supplied with 3-phase power, as our diesel generator could not be used in the confined space.

The team injected engineered structural resin, working over 2 nights when it was convenient to shut down the train service during the work.

The rail line was lifted up to +5mm of the original level and the sub-base was significantly strengthened.

The State Rail Authority was very satisfied with the results of the work and contracted more work on other rail projects with sandstone tunnels.