

Rail Track Void-filled and Re-levelled

INDUSTRY

Infrastructure

STRUCTURE

Railway

PROBLEM

Sinking rail

LOCATION

Kaimai, New Zealand

DURATION / YEAR

1 day / 2013

TECHNOLOGY

Uretek Slab Lifting &
Uretek Deep Injection

BUSINESS UNIT

Mainmark New Zealand



Summary

In the Kaimai tunnel in New Zealand a section of rail slab base had subsided up to 50mm overall, where the underlying rock beneath the rail slab base had been crushed by the overburden weight of the trains running over (40 ton minimum weight).

Subsequently natural water ingress, with drains on either side of the track, had eroded away the rail base over time, leaving a large void, around 300mm deep, beneath the track.

The speed limit of trains on this rail had to be reduced from 80kph to 30kph to accommodate the deviation in the rail track to prevent potential derailment.

This had a very significant impact on transport timing and cost. So rapid rectification was imperative.

Objectives

The objectives were to fill the void beneath the track slabs and lift the track back to its original level.

Solution

Deep-Injection of engineered structural resin was applied to fill the voids. That displaced the water; and then Uretek resin was injected in an exactly controlled

manner until each line was raised back to its original level. In order to achieve the required degree of precision the process was constantly monitored by laser leveller.

The rail was lifted up to +5mm of the original level. The one day job was completed at 5.15pm and the first freight train ran across the rail at 6.30pm. Kiwi Rail had movement monitoring devices set up alongside the treated section, and there was no movement at all.

With the monitoring equipment still in place, a follow up six months later again revealed no movement in the rail. The job is considered a major success.