Case Study GrouTech—saving time & money

In November 2011 QR National identified major structural defects to a rail culvert. The culvert is located on a major transport line connecting numerous coal mines with port facilities on the coast. Approximately 60 million tonne of coal pass over this culvert each year. Upon geotechnical investigation, 3.5 metres of saturated clay was identified below the structure. The sub base material, effectively mud, had lost its bearing capacity and large amounts of sub-base had been washed out from under the slabs.

When trains went over the culvert, one end was deflecting up to 150mm. The base slabs had subsided – dragging the culvert walls down. The risks of losing a load and having a derailment was considered high enough for speed restrictions to be put in place until rectification and support of the culvert took place.






GrouTech met with QR National to discuss potential rectification options. Two days after the first meeting GrouTech had established on site. The structure was braced and grout was injected below the structure to stabilise against movement. Strength of the grout was 40MPa, pumping pressures around 1500KPa.



The project was completed with no track closure and no disruption to the line.

*400 mm of compaction grout pumped beneath the structure to compress the clay by 10-12%.
*Water was squeezed out of the pores in the clay.
*Project completed without removal of the ballast or the rail.
*40mm of lift achieved as well.
*Line has been monitored for 12 months – there is a recorded deflection of 0mm during traffic.
*Initially hoping for a 3-5 year solution before replacing the structure.
*Based on the outcome achieved the culvert is not going to be replaced.

GROUTECH (Aust) Pty Ltd