

CASE STUDY

Rapid structural relining secures Rio Tinto mining infrastructure

SUMMARY

Client

Rio Tinto

Location

Pilbara, Western Australia

Challenge

A corrugated steel pipe culvert required urgent structural rehabilitation to take the entire live load from the failing host pipe.

Sector

Transport

Solution

GeoCast (Geopolymer Mortar) structural relining.

Outcome

The urgent repair was successfully completed without any disruption to the asset's operation.

Products

GeoCast Geopolymer Mortar

In a time-critical operation, Hychem delivered a high-performance structural relining solution for a key culvert asset for Rio Tinto in the Pilbara region.

Using the advanced GeoCast Geopolymer Mortar, the project was designed and executed on time and within budget, completely restoring the culvert's structural capacity while the asset remained fully operational.

The challenge

Ironstone Civil, on behalf of Rio Tinto, identified an urgent requirement to rehabilitate a failing corrugated steel pipe (CSP) culvert in a remote and operationally critical location. The solution needed to be more than just a repair; it required an engineered system capable of fully replacing the structural function of the host pipe and carrying all live loads. The project demanded rapid mobilisation and a proven system that could be installed efficiently without disrupting the asset's vital operations.



The engineered solution

Hychem's GeoCast, a high-performance, fibre-reinforced geopolymer mortar, was specified for the structural relining. A material thickness was precisely engineer-designed to ensure the new liner could independently carry all structural loads, effectively creating a new, high-strength pipe within the old one. After thorough cleaning and preparation of the host pipe, including the installation of mesh to reinforce damaged sections, the GeoCast material was applied using advanced spin-casting equipment to create a seamless, monolithic, and structurally independent new culvert.

The outcome

The project was a clear success, delivering a rapid and robust structural solution under challenging and time-sensitive conditions. The GeoCast system completely restored the culvert's strength and extended its service life, all while the asset remained open and operational. The successful completion, on time and within budget, reinforced Hychem's capability to deliver high-stakes, engineered solutions for Australia's leading resource companies.

