CASE STUDY:

Tugun Bypass, Tugun

Work Performed
Reline of three x 2m Patches to stop water from infiltrating in a 600mm diameter steel reinforced concrete storm water pipe – for ABI Group

Benefits
The reline saved over 3 months delay in the opening of the Tugun Bypass. The cost savings was in the $100,000's compared to conventional excavation options.

During the construction of the Tugun Bypass, water monitoring stations observed an increase in the flow of water through the storm water system even during times of minimal rain fall.

With only two weeks until the official opening and pressure to complete the project on time, the contractors were looking for a way to stop the large amount of groundwater infiltrating through joins in the large bore pipes underneath the newly finished motorway. There had been a number of attempts to fix the problem from other contractors using putty, expanding foam, injection or grouting. None were successful due to the water pressure pushing through the gaps back into the pipe. Access to the pipe was gained by entering the line via a 15m deep pump out sump, about 50m upstream of the problem.

The Reline
The timing of access had to be coordinated with the ocean tides, as the amount of infiltration greatly increased during high tide. Using specially designed skids to deliver the liner to the exact position in the pipe, we inflated a custom made 600mm diameter x 7mm thick liner, immediately the water ceased flowing from this join. We had pumps upstream to control the water coming in from the other joins, and divert it away from our liner. This process was repeated two more times on the worst of the infiltrating joins.

Alternatives
Every alternative technique that was explored had failed as the incoming water pressure was too much. The only other alternative would be to excavate the pipe, but this was unrealistic as there was so much groundwater; and it would have held up the already delayed opening of the new bypass. The downtime on this pipe repair was kept to the minimum by utilising a pump to remove the storm water from the pits up stream of the repair and discharging it into the downstream pit, below the repair. Each reline took effectively 24 hours to complete.

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