Project – Trenchless Technology

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Eaton WWPS No 4 to South Bunbury WWTP and PM - Preston River Crossing

Client:
Water Corporation

Location:
Bunbury WA

Construction Period:
Jun 15 – Aug 15

Project overview

An 18 kilometre pipeline was to be constructed to redirect flows from the Monash Boulevard wastewater pumping station (WWPS) and the Kemerton wastewater treatment plant (WWTP) to the South Bunbury WWTP. DM Civil was awarded the contract for the trenchless sections of the works. In addition, DM Civil was awarded a contract by Construction Branch to install a 310 metre section of pipe under the Preston River, Picton.

To install the 310 metres of DN450 PE pipe under the river, horizontal directional drilling (HDD) was the preferred methodology as it allowed for the installation to be completed in a single pipe length. The scope of works included the design documentation and preparation of the drill shot profile and pull back calculations.

The pullback designer's recommendations highlighted the need to partially fill the main with water during the pullback operation. This was to counteract the effects of buoyancy of the pipe given that the apex of the curvature in the pipe string was approximately 9 metres below the river bed. This was an emerging technique used in the industry to minimise pullback stresses in wet ground conditions and to significantly reduce the force required to install the pipe.

This 310 metre crossing of DN450 PE pipe is one of many large scale HDD crossings that DM Civil has successfully completed for the Water Corporation in recent years.

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Significant achievements and benefits

The river reserve area at the crossing of Preston River had been identified as a significant site for Aboriginal heritage. DM Civil is committed to the recognition of traditional land owners and their culture. The crew appreciated the participation in the aboriginal welcoming ceremony conducted to alert the spirits of our presence in the area.

Ground conditions on site varied between wet clays and wet sands. DM Civil's experience in drilling through varied ground types and conditions enabled the correct equipment to be deployed to allow recycling of drill muds. The fines present in clays create an additional challenge for drilling as the small particles can be difficult to remove from drilling fluids. The use of a centrifuge separation unit allowed the recycling of muds to be carried out without the need for large settlement ponds.

As the alignment of the drill shot was beneath the river reserve and along a drainage easement, the use of HDD to complete long drill shots under non-trafficable areas in softer ground conditions was well suited. This allowed for installation of the pipework without the need to monitor live loading conditions.

The alignment traversed an area identified as potential acid sulphate soil (PASS). Utilising trenchless technology through this section kept spoil and excavation volumes to a minimum. This translated to significant savings on ASS treatment and management when compared to standard open cut techniques which require larger scale lime mixing on limestone treatment pads.

The 310 metre alignment was navigated utilising HDD technology with minimal impact to the surrounding environment and river. This saved the established vegetation and minimised disturbance of a significant Aboriginal heritage site as well as acid sulphate soil treatment.

Contact DM Civil to discuss your trenchless technology projects.

GUARANTEED PERFORMANCE

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