



Arthur Creek Dam, Kununurra - Outlet Works

Client:
TFS Corporation Ltd

Location:
Kununurra WA

Construction Period:
Aug 14 – Nov 14

Project overview

Arthur Creek Dam, located approximately 68km south west of Kununurra in the East Kimberley region was constructed in 1971 for Goddard of Australia Pty Ltd, which at the time, was one of the largest private irrigation schemes in the state. Since its construction the original DN900 bitumen lined pipework had been subject to heavy corrosion in certain areas which required a solution to be ensure the water security for the irrigation scheme currently being utilised by TFS.

Based on DM Civil's past experience and performance on water retaining structures, GHD approached DM Civil with the proposal to reline the existing dam outlet pipework and subsequently introduced their client TFS who were seeking a contractor with the ability to complete an out of the ordinary project.

From the initial discussions, the scope of works was developed to include the relining of the existing outlet pipework whilst retaining water levels of the 62 GL dam and existing irrigation requirements of up to 2,000L/s to ensure ongoing operation of the plantation downstream.

As the detail of the construction had yet to be finalised it was only through collaboration between the Design Engineer and DM Civil that the final methodology was developed.

Significant achievements and benefits

The plan was to bypass the dam outlet, stop water flow into the pipework utilising a dive team to install the bulk head gate; then remove the existing valve work, install the new DN750 MSCl pipe and grout the annulus against an inflatable Kevlar packer installed on the leading edge of the pipe before reinstating the work site.



As the access to the dam was through an existing gorge along a winding 3m wide access track, the 12m lengths of pipe were required to be transported to the dam one at a time on a customised trailer. Pipes were then installed on DM Civil designed pipe roller brackets to ensure the pipe would remain centralised to allow for full encasement with grout. However, due to a lack of access to the upstream end of the pipe, the inflatable packer was unable to seal the end of the pipework and alternatives needed to be sought.

With the problem solving ability of DM Civil and their in-house fabrication capabilities, the decision was made to fabricate a mechanical packer based on a template that the dive team developed onsite. This was then trialled and tested in DM Civil's yard prior to being transported and installed on site. Annular grouting was then able to be carried out with a grout designed in collaboration between GHD and DM Civil.

Overall, this project needed a number of solutions developed on site to be adapted to suit unforeseeable challenges as they arose. With the wet season closing in on the end of the project, the works were completed and the outlet structure commissioned prior to access to the dam being cut off.

This project won the 2015 Civil Contractors Federation (CCF) WA Earth Award Category 2 and was a finalist in the National CCF Earth Awards for the same category.

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The resourcefulness of DM Civil's site personnel coupled with an in-house engineering capacity resulted in the delivery of a project that began as a concept and was converted into award winning excellence.

Contact DM Civil to discuss your water infrastructure projects.

GUARANTEED PERFORMANCE

T: (08) 9492 1800
dmc@dmcivil.com.au