Project Profile

Bunyip Water Pump Station 3 and 4 Construction

Client	Hydroplan
Location	Adelaide, SA
Duration	July 2016 - August 2016
Contract	Lump Sum Design and Construct
Cost	$0.4 million

Project Overview

Bunyip Water was formed to build and operate the Gawler Water Reuse Scheme. The water infrastructure will substitute at least 800ML / annum of River Murray water in the Barossa with urban stormwater harvested from the Gawler River. The scheme will improve primary production for viticulture in the Barossa region and provide water for urban use in parks and schools in and around Hewett.

Two functional and secure reinforced concrete pump stations, Pump Station 3 and Pump Station 4, were required on public road reserves to complete the overall Scheme. Hydroplan, design managers and project superintendents for the Scheme, engaged McMahon Services to review the design and construction works on the pump stations in an accelerated timeframe, with consideration of pump noise to neighbouring properties.

Scope of Work

Works on Pump Station 3 located on the east end of Edwards Road adjacent the Horrocks Highway included footing excavation, reinforcement, installation of conduits both below and cast-in slab, pouring ground slab, precast wall and roof panel installation with roofing joint flashings, gutter and downpipes and installation of in-ground stormwater. Other works included supply and

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installation of two double doors each 3000mm x 1350mm in size and solid core large hinged doors for plant access and general access doors, installation of overhead block and tackle, and painting of the pump stations with anti-graffiti paint.

Works at Pump Station 4 located on the end of Ahrens Road adjacent of the Sturt Highway included of conduits under slab, excavation of footings and installation reinforcing, pouring of ground slab, installation of precast panels and roof, installation of gutters, downpipes and stormwater pipes, installation of oversized roller / swing door and personnel access door, installation of overhead block and tackle, and painting of pump station with graffiti proof paint.

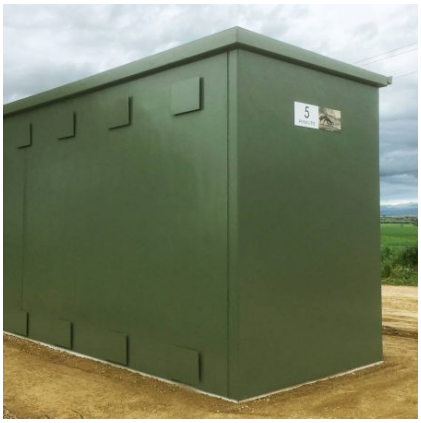
Oversized solid core doors were preferred to roller doors due to fire resistance and acoustic improvements and to allow for the later installation of plant and equipment inside the buildings. The concrete roof panels had Xypex added to the concrete mix for weather proofing. Other works at both buildings were roofing weather sealing and guttering, and second fix plumbing and electrical works. Total floor area was 134m^2 using 90m^3 of precast concrete elements and 26t of structural steel.

Project Challenges

A major challenge facing the project was a trench collapse due to unprecedented rising water during construction works. Project personnel quickly addressed the issue by using our hydro vac truck to pump water out of the trench to prevent the need for further mechanical excavation and formwork. This insured no delays or extension to the overall project program occurred.

Other challenges included ensuring works achieved the tight delivery frame. An innovation to reduce the overall program was to increase concrete strength to reduce cure times. The buildings' locations required that the design of precast panel and their sizes, crane positioning, local traffic, existing power lines and new in-ground high voltage electrical services had to be considered in the construction scheduling for the erection of the precast wall and roofing. The majority the structural works comprised of precast elements. This improved overall program delivery as these elements could be construct off site and minimised erection time on site.

Works occurred adjacent to both rural residences and farms. To ensure minimal impact on property owners, the design of the pump stations ensured they were configured to minimise noise disruptions from ongoing motor operations. Pump station locations were also constructed away from neighbouring overhead power lines to mitigate the risk of crane work coming into contact with electrical cables.



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