



Bolin Bolin stormwater harvesting - the complications of integrated water management with multiple stakeholders

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The Bolin Bolin Stormwater Harvesting and Reuse project aims to manage water in a smart integrated way. It incorporates the harvesting of stormwater and river water extraction from the Yarra River to primarily meet the irrigation supply demands of the parklands, sports fields and golf course.

The project has a long history which highlights the sites complexity in both function, site constraints, budgets and conflicting stakeholder requirements. A design was originally prepared by GHD however there was insufficient funding to construct the proposed solution. This project applied value management to the original design to significantly reduce the capital cost. Major components had to be eliminated to make the project viable. Other compatible components from the original design were maintained to reduce design costs and meet the tight deadlines required to secure the project funding.

The overall system comprises two storages linked by approximately 1.5km of reticulated pipe; the Bolin Bolin storage which is located within the Parks Victoria Site south of the Bolin Bolin Billabong, and the Golf Course Storage which is located within the Freeway Golf Course grounds.

The Bolin Bolin storage is supplied by an event flow offtake from the existing 1050 mm pipe which is located within the site. The first 350 L/s is diverted from the pipe, treated by a Gross Pollutant Trap (GPT) and stored in a 1.5 ML storage pond. Water is pumped from this pond to the Bulleen Park storage and the Golf Course storage.

The irrigation water is preferentially supplied from the Bolin Bolin storage to maximise the use of harvested stormwater. However this only meets a relatively small part of the golf course irrigation demand. To ensure the demand is met, the Golf Course storage is topped up by an existing submersible pump within the Yarra River. This river extraction pump is capable of pumping 25 L/s and currently supplies the existing golf course irrigation pumps. The Freeway Golf Course recently upgraded the irrigation system creating a 35 L/s pumping demand which rendered the river extraction pump inadequate. The irrigation pumps are already capable of pumping the new 35 L/s irrigation rate. To meet the demand, a 35 L/s submersible pump within the Golf Course storage supplies the new irrigation pump. An additional 10 L/s submersible pump within the Golf Course storage will supply water back to the Bulleen Park storage when the Bolin Bolin storage is empty.

The overall project is complex due to the site and budget constraints as well as varying stakeholder requirements and sophisticated functionality. However the system is capable of supplying the majority of the demands relatively efficiently. The project is a great example of an integrated approach to water management and will not only provide an alternate source to potable water but also an alternate source to river water. The system has comprehensive controls which allows simple and effective management of the system by adjustment of activation

triggers. This allows for targeted optimisations including, increasing supply reliability or reduction of stormwater pollution to the Yarra River according to the various season targets. The ability to have flexibility in the targeted outcomes is of great benefit to the various stakeholders.