

# Pratten Park Stormwater Harvesting and Irrigation Project

## SUPPLEMENTARY INFORMATION

The case study for this project is found at [www.parramattariver.com.au](http://www.parramattariver.com.au)

This is additional technical information to supplement the case study.

The harvested stormwater is from a catchment area upstream of Pratten Park, approximately 30 hectares in size.

Water from the stormwater pipe is diverted via a 300mm pipe to a collection transfer pit with a large convex mesh screen at the pipe inlet to prevent large debris entering the system, and a debris collection basket at the pipe outlet. Stormwater from this transfer pit is pumped, using a submersible pump, into a settlement chamber unit to filter out more debris and sediment particles. The water is then stored inside three 120kL underground concrete storage tanks, located in an embankment adjacent to the oval.

A submersible pump located inside the underground storage Irrigation Tank No. 1 then pumps water to the automated sprinkler system. Prior to irrigation, the water passes through a self cleaning Filtomat filter (principally to protect the UV unit and the sprinkler heads from fine sediment that may cause them to block). The flow then passes through a UV disinfection treatment to remove microorganisms to a level required by health standards.

Water transfer within the system is automated. The submersible pump inside the transfer pit operates by signals from float switches located inside the pit and inside Irrigation Tank No.1. When the water level rises in the transfer pit, the float switch signals to the control panel that there is stormwater available to transfer. The float switch located within Irrigation Tank no.1 signals to the control panel when there is available storage space, which activates the submersible pump in the transfer pit.

Once the system started working, blockages from excess litter were observed at a few points. Some modifications were made to the system to prevent blockages:

- It was necessary to incorporate a suitable screening device to accommodate the potential volume of debris that might be carried in the 300mm stormwater pipe. A large concave mesh screen was originally installed. However, observations indicated that leaves carried in the constant low base flow were getting stuck over this concave inlet screen and quickly blocked the inlet to the system, inhibiting filling of the storage tanks. Council retrofitted this screen to a larger diameter convex screen.
- During construction it was decided to replace the debris collection grate in the transfer pit with a debris collection basket (or strainer basket) in order to facilitate the removal of debris from the pit during maintenance.

Observations to date have indicated:

- Litter and debris still catch on the upstream section of the system at the 300mm pipe inlet. However the convex shaped screen appears to facilitate better drainage of water flow.
- The location of the existing drainage pipe from which the stormwater was collected, and its constant base flow, were key factors contributing to the success of the design.
- The large open space around the oval also provided ample room in which to locate the storage tanks and allows for future expansion of the system and addition of further storage tanks if required.

A water balance calculation was undertaken during the design stage to determine the requirements of the system in reducing demand on potable water. The calculation was based on an average annual usage demand of 9ML/year for irrigation.

- The modeling estimated an annual reduction in potable water of 7.2 ML/year which is an approximately 80% reduction in potable water usage. Since then, monitoring was done over a 57 day period between November 2009 and January 2010. The stormwater usage for irrigation was 992kL, which suggests that the system is exceeding the design estimate, indicating approximately an 89% reduction in potable water usage.
- In terms of pollutant removal, the system also performs well in preventing pollutants from entering the waterways and Parramatta River. There is no harvested or treated water returning to the stormwater system. Irrigation requirements of the field are based on moisture and wind indicators, providing efficient water usage and avoiding wastage or runoff of water back into the stormwater system through over-watering.

Council is implementing a maintenance plan for the various components of the system:

- **Weekly:** leaves are removed from the diversion screen
- **Monthly:** leaves are removed from the collection basket, as well as after storm events.
- **Every 2 months:** the settlement chamber is back flushed
- **Every quarter:** removal (via suction) of sediment from the transfer pit and cleaning of the filter, sterilisation unit and sprinkler heads.
- **Every 6 months:** pumps are serviced
- **Annually:** flow switching equipment is serviced.