

PROJECT NAME

Clarks Point Water Harvesting Project

RESPONSIBLE COUNCIL: Hunters Hill

CONSTRUCTION DATE: 2008

LOCATION: Clarks Point Reserve is located in Clarke Road, Woolwich.

SUB-CATCHMENT: Franki-Clarke

Overview

Clarks Point is part of a peninsula of parklands and heritage sites managed by Hunters Hill Council and the Sydney Harbour Federation Trust. The Hunters Hill Sailing Club car park needed an upgrade to provide better community access to the area. This project installed a system to collect (harvest) the stormwater runoff from the upgraded car park. The runoff is captured, treated and then used by the sailing club for boat wash and toilet flushing.

Objectives

The driver for this project was the need to upgrade the car park facilities. Runoff from the car park flowed directly into the Parramatta River (given the close proximity of the site to the River). The car park upgrade project was already scheduled. Additional funding from the NSW Environmental Trust grant provided an opportunity to modify the design of the car park upgrade and build in some principles of Water Sensitive Urban Design, stormwater harvesting and treatment.

By capturing and treating the stormwater, the objectives were to:

- Reduce the consumption of potable (drinking) water for toilet flushing and boat wash down
- Reduce the volume and frequency of stormwater runoff entering the Parramatta River
- Contribute to water quality improvements (by removing stormwater that would have otherwise carried pollutants into the Parramatta River).

Approach

The stormwater runoff from the car park flows into three inlet pits. Above the pits is a rock lined channel and garden bed that captures and treats some of the water (before it enters the pits). The water in the pits is directed towards a treatment unit that removes gross pollutants such as litter and large sediments.

The water flows to a distribution pit where, during times of heavy rainfall, excess water is able to overflow into the existing pipe which discharges directly into the Parramatta River, having undergone primary treatment.



Rock lined channel through the garden bed, and into one of the three inlet pits (bottom right)



Litter and debris captured inside the treatment unit



Stormwater overflow pipe which discharges directly in the Parramatta River



10kL rainwater storage tanks located at the back of the Sailing Club (connector pipes from the roof shown in the background)



The system blends in with the newly upgraded car park

For supplementary technical information about this project go to www.parramattariver.org.au

This project is supported by the Parramatta River Catchment Group, through funding from the NSW Environmental Trust's Urban Sustainability Program.

Photos supplied by Cardno Pty Ltd & Hunters Hill Council 2010.
Printed April 2011.



From the distribution pit, the water is directed to a filter that removes finer sediments, heavy metals, nutrients (phosphorus) and grease (oils), in a two-stage treatment process. The filtered water is delivered to a 60kL (60,000 litres) underground storage tank and then pumped to two 10kL rainwater tanks adjacent to the sailing club. The water undergoes ultraviolet (UV) and carbon filtration before being used by the sailing club.

Rainwater is also collected from the roof of the Hunters Hill Sailing Club building and is directed to the rainwater tanks before disinfection by the UV filtration unit.

Lessons learnt

- The initial treatment unit quickly fills up with leaf material and needs to be cleaned out regularly. Sediment control barriers around the stormwater drains could help reduce this problem. Regular and more frequent cleaning would need to be added to the council's maintenance costs.
- Water sampling results indicated that the UV filtering process for the harvested water performed much lower than the optimum because of the tannins created from decomposing leaves in the water. A carbon filter unit was installed to ensure the UV filter operates properly and treats the discolouring of the water.

Results & outcomes

- This system successfully captures stormwater that was previously draining from the car park directly into the Parramatta River.
- Water quality testing after completion of the system predicted that it is capable of significantly reducing water pollutants flowing into the River: a 69% reduction of Nitrogen, a 74% reduction of Phosphorus and a 60% reduction of Total Suspended Solids (inorganic particles suspended in the water). Since then, the quality of the filtered water for boat washing and toilets has been tested. The test results showed the reduction in Nitrogen being achieved is higher than predicted, with Phosphorus and Total Suspended Solids reaching the predicted levels of reduction.
- The whole system aims to reduce the potable water usage of the sailing club by 67%. It is estimated the system will save 153,000 litres of drinking water each year.