



Stormwater Industry Association of Queensland Inc

ABN 49 031 103 834 / IA 173 66

Technical Event - Thursday, 23rd February 2012

Stormwater Harvesting in SEQ - The South Bank Rain Bank Project

Damien Stiler, Engineer WATER AND ENVIRONMENT, Bligh Tanner Consulting Engineers

The Urban Hotel

345 Wickham Terrace,
Brisbane - Panorama
Room (Level 10)

**Complimentary Canapés
and Cash Bar
5.30 pm - 6.30 pm**

**Technical Event
Presentation
6.30 pm - 7.30 pm**

Presentation Overview

Introduction

South Bank Corporation (SBC) is responsible for the 42 ha South Bank Parklands precinct on the banks of the Brisbane River. Since their inception in the 1990's, the Parklands have become a key part of the city's urban fabric, combining business, residential, dining, entertainment and recreational facilities in the heart of the city and providing a focus for many of signature city celebrations, such as Riverfire and New Year's Eve.

Operation and maintenance of the sub-tropical Parklands requires a significant amount of water, the availability of which has been seriously limited since 2004 and the introduction of water restrictions in response to drought in South East Queensland.

Since 2004 SBC has implemented a broad range of initiatives to reduce water use with a particular focus on reducing water used for irrigation and other non-potable uses. In 2006 SBC was required to stop drawing water from the water supply network for irrigation and has since relied solely on non-potable water sources for irrigation, specifically the backwash water from the swimming pools and carted recycled water, neither of which have been able to meet the full requirements of the site. In 2007 SBC began planning a stormwater harvesting project to reduce the Parklands' dependency on mains water supply, improve drought security and to demonstrate urban stormwater harvesting.

Now known as Rain Bank the project was developed with funding from the Queensland Government and the Australian Government through its National Urban Water and Desalination Plan: Stormwater Harvesting and Reuse Grants Program.

Process

During 2007 and 2008 investigations were undertaken to identify alternative water supply options with the aim of making South Bank more self-sufficient with respect to water and improve drought security. These investigations have included sewer mining, river water reverse osmosis, roofwater harvesting and stormwater harvesting, eventually resulting in the development of Rain Bank. Construction of Rain Bank began in March 2010 and was completed in April 2011. The system is expected to be fully operational and validated by December 2011.

The development phase of Rain Bank involved a number of key stages including extensive water balance modelling to assess the expected system yield and viability of the project and detailed stormwater modelling to identify potential impacts on local catchment flooding. Water quality and stormwater discharge monitoring was undertaken to provide baseline data for system design. A Hazard Analysis and Critical Control Point (HACCP) study was also undertaken in consultation with Queensland Health and other stakeholders to identify key water quality risks and define appropriate mitigation measures and target water quality objectives.

A significant challenge for the project was identifying the most appropriate location for key infrastructure given the highly developed nature of the site and competing development pressures. In addition, the construction phase was complex, dealing with a congested site, high public and traffic movement, very poor ground conditions, tidal movement in the river and the effects of the January 2011 flood.



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Presentation Overview (*continued*)

Outcome

Rain Bank diverts stormwater runoff from a 30 hectare catchment to a 2ML underground storage tank located next to the Wheel of Brisbane. An estimated 77 megalitres of stormwater per annum will be harvested, stored, treated and reused within the Parklands. It is estimated that Rain Bank will provide up to 85 per cent of the Parklands' irrigation demand as well as progressively supplementing water features and toilet flushing when surplus is available.

Rain Bank incorporates a Stormwater Harvesting and Interception Pit (SHIP), constructed over an existing large diameter stormwater pipe. A weir within the SHIP allows stormwater to be intercepted and pumped to the main storage tank. The weir also works to keep salty river water out of the system as the stormwater system is affected by tidal inundation. At the heart of Rain Bank is the stormwater treatment plant which uses coagulation, media filtration, activated carbon, UV disinfection and chemical dosing to produce treated stormwater that is suitable for use within the Parklands. Rain Bank also incorporates a state-of-the-art animation display and viewing deck area allowing visitors to look into the treatment plant and access year-round educational features to learn about stormwater harvesting and water conservation.

Conclusion

We believe that Rain Bank is unique in Australia being perhaps the first that harvests stormwater runoff from a highly urbanised catchment in the centre of one of Australia's major cities, retrofitted into a fully developed mixed use precinct and treated to a very high standard for reuse in a high profile, high visitation public space. We believe that Rain Bank is one of the largest urban stormwater harvesting and reuse projects in Queensland.

Rain Bank demonstrates that it is possible to achieve a real reduction in potable water demand and serves as an exemplar for other similar projects.

Rain Bank's innovative design enables stormwater harvesting to be applied to a highly urbanised catchment, greatly reduces water consumption, contributes to cleaner, healthier waterways and most importantly actively demonstrates stormwater harvesting and water conservation.

About the Presenter

Damien Stiler has 7 years' experience as an Environmental Engineer during which time he has focused on the conceptual design, planning and detailed design for water, stormwater and wastewater management projects, environmental and public health risk assessment, infrastructure planning and assessment, site coordination and project management. Damien has successfully managed a variety of projects in the both private and public sectors and is committed to delivering high quality, sustainable and innovative engineering solutions.

Key projects include Priority Infrastructure Plans (PIPs) for Mareeba and Cook Shire, a review of Local Government Infrastructure Charges for the Queensland Competition Authority, Keswick Island Residential Development and the South Bank SHARC (Rain Bank) stormwater harvesting project. Damien was recently responsible for the completion of an Emergency Response Plan for Origin Energy, including an assessment of the Talinga Coal Seam Gas water discharge to the Condamine River, and a Water Management Capability Report for Origin Energy's Darling Downs Power Station looking at the long term strategic management options for water supply and process wastewater.

