

NSW Sustainable Water Challenge 2005

Highly Commended Award

Winner - Manly Council

Project Entry Report

Project Title: Tania Park Storm Water Improvement Project

Project Summary:

An emergent theme from community consultation regarding Tania Park's future management was the need to improve ecosystem health in Crater Cove National Park. This evolved into the development of the Tania Park Plan of Management and the project described herein.

The project draws upon at-source to end-of-pipe water quality improvement tools to improve drainage and stormwater quality running off Tania Park. The project required retrofitting of the treatment train underground due to the limited space available in the target catchment. Automated storm event and macro invertebrate monitoring, over time and space, qualitatively and quantitatively will ensure the project is capable of treating the 1:20 ARI without recourse to environmental harm in Crater Cove National Park.

Project Objectives:

- Improve stormwater quality and quantity (environmental flows) from Tania to Crater Cove,
- Contribute to the reduction of weed growth in Crater Cove by achieving the above,
- Improve the accessibility of Tania Park during wet periods by improving subsurface drainage,
- Improve ecosystem health of Crater Cove National Park,

Project Outcomes:

Environmental

The 3 storm events monitored to date suggest between 60% and 81% of the nutrient loading has been removed from the stormwater running off Tania Park. Over 85% of suspended solids have been removed. Approximately 64% of the nutrients are sediment bound (attached to sediments under 200 microns) and not readily available to the ecosystem. Between 59% and 86% of heavy metals (Pb, Cu, Cd, Zn) have been removed by the system.

Infiltration monitoring and in creek flow measurements suggest a reduced peak discharge and greater base-flows in dry weather. Macro invertebrate studies will be undertaken at regular intervals to assess change in aquatic health, though too early to make a valid judgement on. Results are expected to improve as the site stabilizes post construction.

Technical

The system was designed in-house to treat a 1:20 ARI before bypassing so to avoid the captured load being re-suspension. Stormwater is first filtered through a 200micron filter bag before discharging into Hydrocon permeable pipes with a screen aperture of less than 500microns. The stormwater exfiltrates outwards through the permeable pipes and into the treatment media further filtration takes place. Flows are regulated at the exit by a ball valve to manipulate residual time for greatest pollutant load attachment to the treatment media.

The system has inbuilt monitoring wells at upstream / downstream locations to allow for adaptive management and devise appropriate maintenance schedule.

Transferable

This system illustrates the removal of dissolved and micro – sized pollutants can be removed in urbanized areas where little space is available. The use of permeable stormwater pipes and underground filtration is a viable option for treating stormwater to a high quality appropriate for discharge to sensitive waterways or non-drinking consumption such as irrigation. The system cost under \$16,000 to install and monitor.

Difficulties encountered

Maintenance frequency of the system is yet to be accurately ascertained through the monitoring. It is anticipated the system will require periodic back flushing and manual sediment removal though anticipated and designed for. Construction was

longer than anticipated due to the sandstone rock and manual excavation requirements.

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Photos of Stormwater System and Surrounds

Photo1. Tania Park



Photo 2. Crater Cove National Park – Receiving Waterways



Photo 3. Pit insert (200micron)



Photo 4. Hydrocon Permeable pipe and sand filter installation



Photo 5. Permeable pipe installation



Photo 6. Monitoring point - Outflow



Photo 7. Monitoring point - Upstream

