Project Summary

W11 Real-Time Control: Application of real-time-control technology to the management of stormwater

Objective(s)

To test and develop applications of real-time control (RTC) technology to the management of urban stormwater, enhancing Melbourne Water's ability to protect waterways and deliver more sustainable and liveable urban landscapes.

Why this research is important

The advent of real-time control technology has been well-documented over the last few years, along with its potential to improve the management of urban stormwater. This potentially covers everything from improving the performance of individual stormwater control measures, through to creation of new smart networks, allowing a whole range of 'new actors' to participate in the management of the urban water cycle.

However, simply 'imagining' such a future will not deliver it. There is q need to undertake rigorous testing of the performance of RTC to deliver improved performance of assets. Even more ambitiously, there is need to create and test (in the real-world), new business models and approaches that exploit the capability of RTC to facilitate contributions to individuals.

Contribution to Melb. Water research priorities

- MWRPP-3 (H10, H11, SW5, SW6, SW14, SW15): Real-time monitoring and control of Water Sensitive Urban Design (WSUD) assets for multiple benefits
- MWRPP-11 (H5, H6): Better understanding of relationship between hydrology and key environmental values to help set environmental flow objectives
- MWRPP-18 (S4): Effective engagement with the general public in 'catchment thinking' to inform waterway management activities (though Monbulk Ck and Smart Rainwater Grid components)
- MWRPP-14 (SW2, SW8, SW16): Understanding and managing the threat of urban stormwater to waterway health under a changing climate.

Approach

The project is made up of three components, each funded through existing Australian Research Council (ARC) projects for which Melbourne Water is an industry partner:

- *Activating lazy stormwater wetlands through real time monitoring & control*. Aiming to activate stormwater wetlands using real time monitoring and control strategies, delivering improved hydrological and treatment performance to deliver improved ecological outcomes.
- *Can real-time control deliver environmental flows to protect urban streams?* Exploring the potential of real-time control technology to deliver environmental flows to protect urban streams from climate change and stormwater
- *Making optimal use of stormwater in cities: a market-driven smart-grid.* Exploring how a smart-grid network could enable consumers to reduce their water demand as well as incentivising the release of water to drought-affected streams, and mitigating flood-risk by drawing down water storages prior to large storms.

Key Outputs

- Foundational knowledge, delivered through a series of reports, journal publications, fact sheets and seminars, on the potential for RTC to support the management of stormwater in urban catchments.
- Expert input to Melbourne Water where there are opportunities to improve waterway and stormwater management through use of RTC

Expected benefits

- Understanding of how a real-time controlled network of rainwater tanks and large online storages can be used to optimize the flow regime.
- Knowledge on how to improve wetland quality treatment performance, by optimizing their maintenance and operation.
- Knowledge of the potential of a Smart Rainwater Grid – where rainwater tank owners would be financially rewarded for their contributions to alleviation of flood risk and supply of environmental flows.

Project teams

Stakeholders for this project include: University Of Melbourne, Melbourne Water, Service Programs, Service Enablement, South East Water, Yarra Ranges Council, Monash University / QUT & DEECA.,

For more information, contact Tim Fletcher (timf@unimelb.edu.au) or see the full project proposal in the prospectus supporting document.