

The Future for Stormwater Harvesting.....and its Operation & Maintenance

As the number of storm water assets maintained by Australian Local Government increases – so does the need to have a well defined O&M strategy, clear understanding of expected performance, reliable estimate of all costs and a competent team to support it.

A lack of technical capacity both internally and externally to design, construct and maintain IWCM assets is a well known issue and a constant challenge for Local Government. Although many Australian councils have developed considerable in-house IWCM technical capacity in recent years, particularly in the design and construction of their WSUD projects there is an ever increasing need to obtain practical and reliable advice on managing operation and maintenance for its newly commissioned SWH and WSUD projects.

A particular challenge has been, and will be, accurately estimating (and funding!) SWH project's asset lifecycle costs.

While there are some guidelines available on the maintenance requirements for WSUD assets designed for stormwater treatment prior to discharge (e.g. WSUD maintenance guidelines – a guide for asset managers, MWC 2013; Maintaining Vegetated Stormwater Assets, Water by Design, 2012) there are generally very few, if any, publications and guidelines on operation and maintenance of SWH assets.

In the absence of the established guidelines for stormwater harvesting – designers and operators of these schemes frequently resort to the approaches borrowed from the more traditional disciplines such as municipal drainage and WSUD without clearly understanding the limitations and pitfalls of this approach.

The differences between WSUD – treatment prior to discharge (TPD) and SWH (capture, treatment and use) are neither well defined nor clearly understood by the industry.

These current knowledge gaps and lack of established guidelines and data are recognized by the Industry and a number of Industry initiatives have taken place in the recent years such as the:

- Stormwater Harvesting and Reuse Technical Tour, Adelaide 2011 organized by the SIA and NRM Board
- Regional Stormwater Projects Tour – Geelong (as part of Stormwater 12 conference)
- Development of a standardized approach to design, operation and maintenance of diversion structures as part of stormwater harvesting schemes, Melbourne Water Corporation, 2011
- Industry Testing and Validation Program - Gross Pollutant Traps (GPT) CSIRO on behalf of SIA, 2012
- Independent Verification Scheme for Stormwater Treatment Devices, Melbourne Water Corporation, 2013
- Publication of Maintaining Vegetated Stormwater Assets, Water by Design, 2012
- Publication of WSUD maintenance guidelines – a guide for asset managers, Melbourne Water Corporation, 2013
- Development of WSUD Lifecycle costing, Melbourne Water Corporation, 2013
- Operation and Maintenance of WSUD Infrastructure - Interactive seminar, IPWEA VIC, 2014

These initiatives will be continued by SIA, IPWEA and other industry bodies with support from Local Government, Water Authorities, Catchment management boards and other storm water stakeholders.

As part of the Industry Knowledge Sharing Initiative and following up on the success of Stormwater Harvesting and Reuse Technical Tour, SA organized by SIA and NRM Board in 2011 – we would like to ask the managers of currently operational storm water harvesting schemes to fill the attached questionnaire tables with any available data that they have.

This data will then be collated, analyzed and presented in a brief report format to the industry. A Draft report will be send to all the contributors for their comments prior to release. The valuable information you provide will remain confidential, with no references to the individual sources of information released to the industry. All contributors will be duly acknowledged in the resultant report.

THANK YOU!

Questionnaire

(take as much room or as little room as you like when answering these questions, don't worry about the formatting, and if you would like to add anything else, there is room at the back.)

Name of the project	
Annual Volume of harvested water - design (ML)	
Annual Volume of water - produced (ML)	[Year 1] [Y 2] [Y 3] [Y 4] [Y 5]
Is an aquifer used for treatment and/or storage of the water (Y/N)	
Brief description of the project	
Contributing catchment size (ha)	
Capital costs [\$]	Planning & Investigations Design Construction....
Catchment run off flow rates diverted (L/s)	
Storage volume (ML)	
Intended use of product water	
Product water quality targets (e.g. TSS, EC, TDS etc.)	
Water quality monitoring regime/frequency	
Who is operating the scheme	
Is maintenance (all or in part) contracted out/ outsourced	
Annual maintenance costs [\$]	
Scheduled maintenance	[Year 1] [Y 2] [Y 3] [Y 4] [Y 5]
Emergency/reactive maintenance	[Year 1] [Y 2] [Y 3] [Y 4] [Y 5]
Rectification of assets	[Year 1] [Y 2] [Y 3] [Y 4] [Y 5]
Does your project have a developed Asset Management Plan (or similar) and at what time horizons (e.g. 4 years, 10 year, 20 years)	
What was your biggest challenge in implementing this project	
What has been your biggest challenge in operating and maintaining the system	
Lessons learnt and advice to the future proponents of SWH projects	

Any other information you feel would be of relevance that you would like to share (pitfalls, product failures, difficulties technically, difficulties administratively, difficulties financially, etc)

Table 1 Project information

Component	Component description, type, material & key data	First year operation		Second year operation		Third year operation		Fourth year operation		Fifth year of operation	
		\$	Detail of maintenance	\$	Detail of maintenance	\$	Detail of maintenance	\$	Detail of maintenance	\$	Detail of maintenance
Diversion structure											
Screen or GPT											
Gravity pipework or pumpwells											
In ground pits											
Sedimentation basin											
Wetland											
Rain garden											
Underground storage											
Above ground storage											
Pump station supply											
Media filtration											
UV disinfection											
Pumps & distribution											
Rising mains											
Valves											
Controls											
SCADA & Telemetry											
Electrical & switchboard											
Building/Shed											
Other equipment											
Water quality sampling and analysis											

Table 2 Annual maintenance tasks and costs of operating a SWH project