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STORMWATER HARVESTING AND REUSE

The NSW Government supports stormwater harvesting and reuse schemes that effectively manage health and environmental risks. The purpose of this Circular is to highlight the benefits of stormwater harvesting and the importance of managing health and environmental risks from stormwater harvesting schemes.

Councils have a range of roles in the planning, approval and operation of stormwater harvesting schemes. This Circular briefly outlines the main considerations for managing health and environmental risks during the planning, design and operation of a scheme. The Circular has been prepared with the Department of Environment and Climate Change (DECC), the Department of Water and Energy (DWE) and NSW Health.

1. Benefits of Stormwater Harvesting and Reuse

Stormwater harvesting and reuse has many benefits to councils and the community including:

- **Reducing potable water usage** – more than 50% of potable water is used for low quality uses in urban areas, where stormwater reuse could offset potable use
- **Increasing certainty of supply** – enabling the maintenance of parks, gardens, open space and the benefits associated with these assets during water restrictions
- **Reducing stormwater volumes, flows and runoff frequencies** to more natural levels which reduces stream erosion, improves in-stream aquatic ecosystem health, and reduces the potential for minor flooding events
- **Reducing stormwater pollutant loads** in waterways which improves catchment water quality and reduces potential for algal or weed growth
- **Meeting community expectations** - the NSW DEC triannual *Who Cares About the Environment* surveys in 2006 show that 57% of the community nominated water conservation as one of their two most important environmental issues.

Councils are encouraged to take these broader benefits into account when considering council owned and privately proposed stormwater harvesting and reuse schemes.

Importantly, stormwater harvesting schemes are not appropriate where:

- the waterway or catchment is already hydrologically stressed due to high levels of water extraction. Contact DWE on such matters in your local government area.
- where the source water is, or is likely to be, of such a low quality that suitable treatment processes are not cost-effective.

2. Council Roles in Stormwater Harvesting and Reuse Schemes

Councils have four potential roles in stormwater harvesting and reuse schemes, namely as:

- a consent and approval authority for private schemes;
- as a regulator of on-going operations and performance of private schemes;
- as a proponent and operator of schemes; and
- as stormwater system owners which third parties may seek to access for private water harvesting schemes.

In undertaking any of these roles councils should ensure health and environmental risks are identified and addressed, and be certain there are adequate funds and appropriate procedures for on-going effective management of any environmental and health risks during the operation and maintenance of the scheme. Where Council is not certain that these risks can be properly managed throughout the life of the scheme, including by adequate funding for operation and maintenance, then it is often best not to build the scheme in the first instance.

3. Managing Health and Environmental Risks of Stormwater Harvesting and Reuse Schemes

Health and environmental risks from stormwater harvesting and reuse are usually lower than wastewater reuse or sewer mining schemes. However a poorly managed stormwater reuse scheme may present higher risks than a well managed wastewater reuse scheme. Health and environmental risks should be identified during the planning and design phase and managed during the operation phase. Health risks can be managed by stormwater treatment and by managing public exposure to reused stormwater. The capture of urban rainwater runoff has the potential to impact further on the health of those rivers that are already hydrologically stressed due to high levels of water extraction. Therefore, stormwater harvesting should be limited to the extent that current annual river flows exceed natural river flows.

While health and environmental risks need to be considered during the planning and design phase, experience to date has indicated the operation and maintenance of many schemes is relatively poor, resulting in potential health risks existing after the commissioning of the scheme. It is important that the scheme's proponent ensures that an adequate operating budget and suitably qualified staff are available to effectively operate a stormwater harvesting scheme. Annual operating expenditure for stormwater reuse is considerably

higher than stormwater drainage management and can be up to 10%-20% of the capital costs.

The health and environmental risks of roofwater use are lower than for stormwater reuse, as the quality of roofwater is generally better than stormwater. If there are concerns about the ability to manage health and environmental risks from stormwater harvesting, then roofwater reuse, including from municipal and commercial buildings, could be considered as an alternative.

Councils contemplating a stormwater harvesting and reuse scheme or that receive applications for development that includes stormwater harvesting are encouraged during the planning stage of a scheme to contact:

- the Department of Water and Energy for requirements relating to the *Water Management Act 2000*. For example the current harvestable rights orders made under that Act allow the capture of up to 10% of average regional runoff multiplied by the individual landholdings without the need for a licence. The capture of water above this limit may require a licence.
- the local NSW Health Public Health Unit for advice on health risk management.

4. Considerations for Councils as a Consent/Approval and Regulatory Authority

Specific issues that councils may require to be addressed in a development application are:

- environmental impacts during construction and operation phases, including the impacts of extraction on the local water balance
- compatibility of the proposed scheme with Council strategic water management plans or stormwater strategies
- clear identification of public health and safety risks and how each risk is addressed
- ongoing management arrangements for the scheme
- the environmental and health risks and/or financial obligations that would be transferred to Council if the proponent intends for Council to operate the scheme after construction (e.g. operation, maintenance, monitoring and reporting costs), and legal agreements to formalise arrangements for risk apportionment and recourse in these circumstances of transfer of responsibility
- an operation and maintenance plan, including demonstration there is adequate on-going funding for operation and maintenance.

Development consent or approval for a stormwater harvesting and reuse scheme may include conditions requiring:

- appropriate management arrangements to be in place
- implementation of an Environmental Management Plan to manage construction impacts on the environment
- an operation and maintenance plan to be implemented, including a process for periodic review and resubmission to Council
- reporting of monitoring results and implementation of any corrective

actions.

In addition to development consent, council approval is required in certain areas under **section 68** of the *Local Government Act 1993* for any person to carry out stormwater drainage work. This provides councils with an instrument for managing third party access to its stormwater systems, and also provides an additional instrument for regulating the management of health and environmental risks of stormwater harvesting schemes where third party access to Council's stormwater system is required.

Note that section 68 of the *Local Government Act 1993* does not apply in Sydney and Hunter Water's operational area, within the area of operations of a water supply authority constituted under the *Water Management Act 2000* or where prescribed by regulation.

5. Considerations for Councils as a Proponent/Operator

Stormwater harvesting schemes are often not cost-effective when compared solely with potable water costs. Consequently, the capital costs of many schemes are funded or subsidised by grants from external bodies (e.g. state and federal governments). However, when contemplating the financial aspects of developing and operating a scheme, councils should ensure that adequate recurring funds are also secured, and that Council is able to make such funds available for the on-going operation and maintenance costs of the schemes. Councils should consider the availability of operational expenditure and qualified operational staff before applying for a grant for a stormwater harvesting scheme.

6. Further Guidance

Further detail on all of these matters can be found in *Managing Urban Stormwater: Harvesting and Reuse* (Department of Environment and Conservation, 2006), available on the DECC website at www.environment.nsw.gov.au. National stormwater reuse guidelines are also being prepared and should be released by the end of this year. Refer to the guidelines *Use of Rainwater Tanks Where a Public Water Supply is Available* (NSW Health 2007) for roofwater reuse. These guidelines are available on the NSW Health website at www.health.nsw.gov.au.



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