

stormwater

“ Although stormwater is a significant potential supplementary water resource, which is usually of much higher quality than industrial discharge, we have been very slow to capture and use it in our modern cities ... ”

Till taught by pain

Men really know not

What good water's worth

Lord Byron, *Don Juan*, 1810

Community engagement for water recycling should be based on two premises: the community has good capability to reach sound conclusions if given the correct information from a trusted source; and, in general, the community has poor information and often doesn't trust the sources.

Prime minister's Science, Technology and Innovation Council, 2003

While the size of Australian cities has steadily increased, the use of stormwater has been essentially overlooked. Yet the volume of urban stormwater runoff from our cities in an average year is only slightly less than the total volume of water consumed by households.

Our cities cover a lot of ground! Brisbane, for example, has a total metropolitan area of 98.9 km², while Melbourne covers 36.5 km² and Sydney 27.8 km². These three capital cities on the east coast have extensive areas of impervious surfaces. This results in large volumes of stormwater running off into nearby waterways and/or into sewerage systems. The total annual estimated volume of stormwater for these cities is 1285 GL.^{1,2}

LITTLE URBAN STORMWATER CAPTURE

Harvesting stormwater into rainwater tanks was a common practice among our forebears, but the concentration of ever-growing numbers of people in our modern cities changed all that.

We built our cities either in proximity to the coast or alongside major rivers, so that we could access adequate freshwater supplies and discharge our household and industrial wastes. We developed reticulated water-supply systems that could be connected to every building.

We constructed sealed roads and pathways, acres of roofed houses and city buildings, car parks, airports and wharves, so that enormous surface areas were sealed and waterproofed. To prevent these areas from flooding during periods of high or extended rainfall, they were drained so that stormwater now gravity-feeds through the drainage system and eventually flows into local rivers or estuaries or directly into the sea.

In this modern urban landscape there was no place for the household rainwater tank. Indeed, for several decades householders were discouraged, and even prevented, from using water tanks by public health legislation and council regulations.

And so, stormwater disappeared from public recognition as a significant source of fresh water to complement surface-water reserves.

RENEWING INTEREST IN STORMWATER

The increased pressure on our water resources, particularly the supply to cities and the predicted impacts of climate change on rainfall, are now forcing various authorities and professional organisations to rethink the potential for supplementing water supplies by capturing, treating and distributing urban stormwater.

In 2004 a major review by the Australian Academy of Technological Sciences and Engineering reported on water-recycling practices, policy, regulation and legislation and considered all potential water sources, including stormwater. According to this review, the potential benefits of stormwater recycling include:³



- reduced demand for potable water supplied from water storages
- reduced volumes at peak flows of stormwater, and therefore reduced risks of storm damage
- reduced pollution from stormwater runoff
- reduced need for water-supply infrastructure
- provision of acceptable-quality water in situations where alternate sources of water are limited.

There has yet to be any demonstrable metropolis-scale response by governments to this report. While some larger-scale stormwater recycling schemes have been built, these tend to be showcase projects, carried out opportunistically rather than from strategic considerations on the part of the water retailer or sewerage authority.

More recently, in direct response to the prolonged drought, state governments have begun providing financial incentives for people to purchase and install rainwater tanks. In most cases, this harvested rainwater is used for external purposes only.

On its own, this level of stormwater harvesting does not fully exploit the opportunities available. To produce a serious addition to potable water supplies, governments and their water authorities will need to assist the move to the metropolis-wide harvesting and use of stormwater. This will require large-scale harvesting, treatment and distribution of stormwater from locations close to major population centres.



► REFERENCES

1. G Mitchell, R Mein, & T McMahon, *The reuse potential of urban stormwater and wastewater*, Cooperative Research Centre for Catchment Hydrology, Melbourne, 1999, <www.crccatchmenthydrology.com.au/publications>.
2. Stormwater figures supplied by Brisbane City Council.
3. Australian Academy of Technological Sciences and Engineering., *Water recycling in Australia*, special report, ATSE, Melbourne, 2004, <<http://www.atse.org.au/index.php>>.

Some other useful sources

- Department of Environment and Conservation (NSW), *Managing urban stormwater: harvesting and reuse*, DEC, May 2006.