

Managed Aquifer Recharge and Urban Stormwater Harvesting

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Australia's growing and increasingly urbanised population and changing climate are putting increased pressure on urban water security and waterway health. Urban stormwater is a relatively untapped resource that could help meet future water supply demands by providing another source option for integrated water management. Harvesting stormwater could also reduce impacts on the waterways into which it is currently discharged.

However, after capturing stormwater, somewhere is needed to store it, which may be difficult above ground in urban areas due to limited space. If natural aquifers are present beneath the city these may be very convenient for storage and additional treatment of urban stormwater, and enable urban supplies to be diversified. Managed aquifer recharge (MAR) is the purposeful recharge of water to aquifers for subsequent recovery or environmental benefit. There is a range of methods used to recharge aquifers, including via infiltration systems and via injection wells. The choice of method depends on the type of aquifer, land area available and intended uses of the recovered water.

In urban areas, MAR can provide effective storage for water from a variety of sources, including stormwater, helping to reduce transportation costs and water loss through evaporation. Natural treatment processes in the aquifer can improve the quality of the water. Using MAR to manage harvested stormwater could help diversify urban supplies for increased flexibility and security in the face of Australia's variable climatic conditions and growing population. However, further research is needed to improve our understanding of the public health risks, public acceptance, economics and environmental impacts of different options for stormwater use involving MAR in Australia.