



ROOF WATER HARVESTING

tapping the *urban catchment*

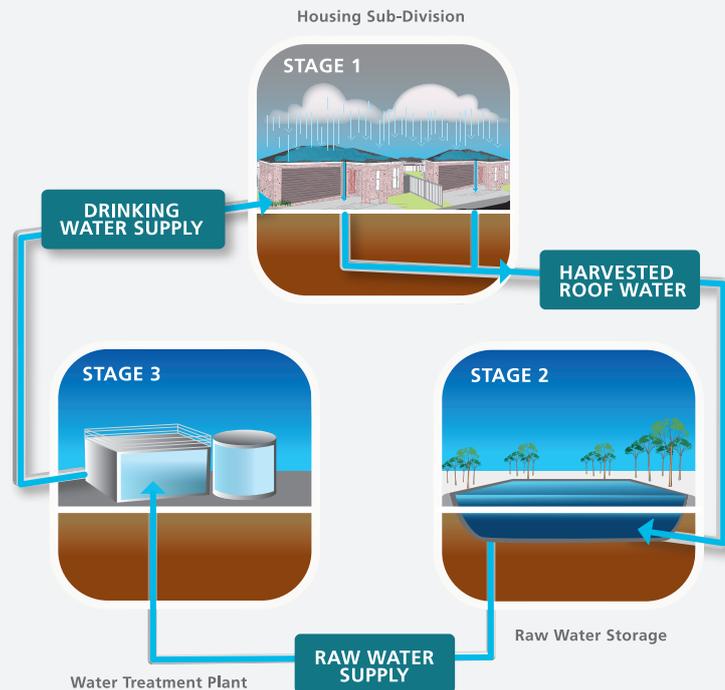
Many townships and cities around Australia are experiencing dwindling water resources and as a result are looking at challenging and expensive augmentation options.

Harvesting water from household roofs in growth areas is a viable means of supplementing existing water supplies - from an economic, environmental and social perspective.

This principle is very simple and adaptable to any scale of township or area that is growing.

Whether the growth is in terms of hundreds of houses or tens of thousands of houses, the opportunity exists to install the necessary infrastructure as the subdivision proceeds to 'tap' the new catchment.

Funding has been provided through the Australian Federal Government "Water for the Future" program and from the Victorian State Government "Stormwater and Urban Recycling Fund" allowing the demonstration site to be established and the regional harvesting principle to be explored in other areas of Australia.



Collaborative initiative

The project delivers across a wide range of specific actions listed within the Victorian Government White Paper "Securing Our Water Future Together", as outlined below.

• Action 5.13.

The Government will set an aspiration target for new development to achieve at least 25% savings in water use. The project will see each new dwelling generate 145kl per annum (74% of current average consumption).

• Action 5.16.

The Government will require urban water authorities to plan for new growth areas in the development of their Water Supply Demand Strategies. The area under consideration is the single largest green field residential growth area in the region. Wannon Water, via this project, is providing water for this growth area. Further, the project will contribute to a more successful Water Demand Supply Strategy by providing a beneficial lift in the supply curve.

• Action 5.25.

...all urban water authorities to assess opportunities for the use of ...other alternative supplies ...inclusive of rainwater.

Wannon Water is an urban water supply corporation serving the south west of Victoria, including the provincial centre of Warrnambool, a fast growing city facing increasing water demand.

This project provides a new innovative approach to roof water harvesting through the construction of a large scale roof water harvesting system that collects roof water from a large residential development and delivers it to a nearby water storage facility (through dedicated pipe work) to contribute to the available water resources.

The vast majority of rainfall in the larger township and city areas is currently lost as stormwater. The majority of land within these areas is sealed with concrete, bitumen or roofing. These surfaces shed water quickly requiring large diameter pipes to divert and dispose of stormwater, removing it from the area as quickly as possible.

Such development has in turn led to a dramatic increase in runoff volume and intensity during rainfall events when compared to the pre-development environment. There is very little infiltration, and very few obstacles to slow the rate of drainage.

The harvesting of roof water in urban environments has the combined effect of contributing to the city's water resources, plus reducing the severity of rainfall events on the natural creeks and waterways in the catchment.

The project provides a working demonstration of an innovative approach to sustainable water management for population growth areas derived directly from the constructed "catchment" of roof areas created by such growth.

Numerous direct and indirect economic, environmental, and social benefits to the local area have been identified, making this project a "showcase" of sustainability.

It is an example of a hybrid model, utilising a new source of water derived from a decentralised catchment but linked to existing centralised storage, treatment and distribution.

This innovative approach ensures the water supply meets the *Australian Drinking Water Guidelines 2004*, and provides for coordination of the water supply demand cycle for regional towns and cities.



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Australian Government
Water for the Future



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Aims and Objectives

The Roof Water Harvesting Project (RWH) aims to develop and communicate an innovative working model of the utilisation of the roof area in new subdivisions as a dispersed catchment supplying centralised storage, treatment and reticulated water supply systems.

The project is a water supply augmentation project which combines the strengths of Wannon Water's water management capabilities with a "new take" on rainwater collection through a devolved collection system which will maintain high standards with cost effective delivery.

Primary objectives are:

- Construction of the necessary infrastructure to capture and transfer rain water collected on new household roofs to existing centralised storage and treatment facilities, avoiding the need to transport this water from a river system over 100 km away.
- Identifying other cities or towns with high potential for adoption (primarily in coastal eastern Australia) and the provision of a tool-kit for locality-specific identification of application.
- Identification of any other regulatory or other barriers to the widespread adoption and uptake of this "alternative source of supply".
- Reporting of yield, quality and cost information to support adoption under HACCP-based risk systems for water supply.

Warrnambool's continued expansion will require an increased water resource to meet the increasing demand. The 50 year supply strategy to satisfy the increased demand requires increased extraction of Gellibrand River water up to the Bulk Entitlement limit and utilisation of two groundwater resources located 50 and 90 km from Warrnambool.

Pumping water these distances requires significant energy inputs and will ultimately require the construction of millions of dollars of works. Climate change predictions also suggest that there will be increasing pressure on the availability of the current supply source.

Benefits of the Roof Water Harvesting project include:

<p>Economic:</p> <ul style="list-style-type: none"> • RWH is a more consolidated and effective manner to harvest and use rainwater than the approach of individual landowners installing individual tanks, pumps and pipework on their land • RWH is able to be implemented progressively as development and consequential demand proceeds in the growth corridor • Reduces operational costs of transporting water long distances • Defers the need to augment the existing raw water delivery system and the need to develop and harvest water from new groundwater resources. If this principle were adopted in other growth corridors with new development being close to "water demand neutral", the time period of deferring augmentation would be very long • Reduces the works required for stormwater management for Council and developers e.g. size of stormwater detention basins and treatment systems 	<p>Environmental:</p> <ul style="list-style-type: none"> • Reduces the energy use and associated greenhouse emissions for transporting water for use in Warrnambool • Diverts water to a beneficial use instead of running to waste and causing a downstream flooding and negative impact on local estuarine stream systems • Improves the environmental flows in the Gellibrand River
<p>Social:</p> <ul style="list-style-type: none"> • Ensures the meeting of the <i>Australian Drinking Water Guidelines 2004</i> and public health standards for drinking water • Landowners will not be responsible with ongoing maintenance of an on-site harvesting and reuse system • Is innovative in approach to sustainable use of water resources, and promotes community consciousness of innovative outcomes that can be achieved in the water cycle 	<p>Indirect:</p> <p>The design and construction of a working example of how such a rain water harvesting system would work will provide the following indirect benefits:</p> <ul style="list-style-type: none"> • Demonstrate to developers that such a system is workable and does not impose unreasonable requirements on their development • Demonstrates to developers of new urban estates, Water Authorities, Councils, Catchment Management Authorities and the community that roof water harvesting is a sustainable, cost effective, environmentally friendly solution to reduce the reliance on other sources of water

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