

RAINWATER TANKS IN CENTRAL AUSTRALIA

Rainwater tanks can provide a renewable source of high quality water for Central Australian households and businesses. Even in low rainfall areas like Alice Springs, rainwater tanks can supply a significant proportion (10% in a water efficient household) of annual water demand for a range of uses, helping to conserve our groundwater resources. Rainwater tanks can provide a valuable source of water for a range of uses including hot water systems, air conditioners, toilets, laundry, gardens and drinking.

Health and rainwater

The Northern Territory Department of Health and Community Services advises that “the risk of illness arising from consumption is low, providing it is visually clear, has little taste or smell and, importantly, the storage and collection of rainwater is via a well maintained tank and roof catchment system”. Rainwater has a higher microbial content than chlorinated mains water and while most microbes are benign, immuno-compromised or infirm people should consider boiling rainwater to disinfect it before drinking. Rainwater supplied to a hot water storage system set to 60°C is heat-treated inactivating most microbes. Filtration and disinfection systems are also available that remove viruses and bacteria.

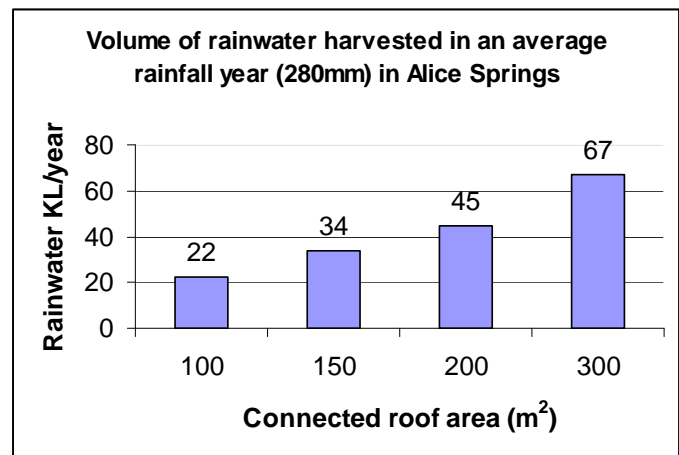
How much rain can you expect to catch?

You can estimate how many litres of rainwater you can collect each year using the following formula:

$$\text{Quantity} = \text{roof area (m}^2\text{)} \times 280 \text{ (mm)} \times 0.8$$

Doubling the roof catchment area doubles the quantity of water that can be harvested (see adjacent graph).

Depending on your rainwater use and the size of your tank you may not be able to capture 100% of the rain that falls on your roof. For instance a small tank or tank that is only used for drinking is more likely to overflow when it rains.



How much water can you expect to save?

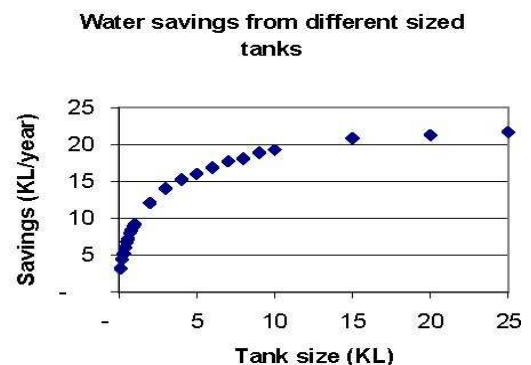
Maximum savings are derived from a rainwater tank when it is connected to high demands, generally internal uses such as a toilet, laundry or hot water system. High demands draw water from the tank regularly, reducing the likelihood of overflow during rains and meaning you can catch (and save) more water. Good water savings are possible from most uses with the exception of drinking, which is only a small demand.

What use the rainwater is applied too may influence the rainwater tank system required. Toilets and air-conditioners, for instance, require a constant supply of water meaning a system for ‘topping-up’ the rainwater tank with reticulated water, or switching to mains water via an inter-connect system, may be needed. Hot water systems can be designed to suit water of varying hardness and may require adjusting for rainwater that is soft and contains few dissolved minerals.

What size tank do you need?

The adjacent graph demonstrates how much water can be saved from different sized tanks connected to 150m² of roof area and diverted to a high demand (e.g. toilet or hot water system). Water savings increase with tank size up to around 9 kilolitres. Given the low average rainfall in Alice Springs, a tank larger than 9 kilolitres won’t save significantly more water unless connected to a greater roof area.

For a typical Alice Springs home a 9 kilolitre rainwater tank connected to a high demand will save a good volume of water and if space is limited, even a 5 kilolitre tank will yield good water savings.

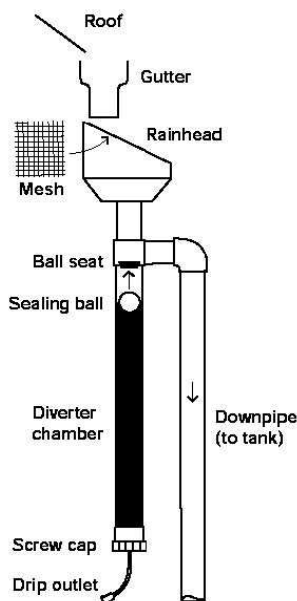


Purchasing and installing a rainwater tank

Tanks are available in a variety of colours and designs and are generally constructed from metal (iron or stainless steel), concrete or plastic, with some being suitable for underground placement. Choose a tank that is appropriate for the available space, roof harvesting area and desired end water use.

Rainwater tanks should be carefully placed to maximise their use and appearance. In placing a tank take into consideration proximity to existing downpipes, height, shade, proximity to mains water supply if the tank requires topping-up and regulations concerning easements and boundaries. Sufficient tank height may allow for gravity feeding, reducing the need for a pump. Locating a tank in the shade will reduce water temperatures and evaporation rates, and also protect the tank from sun damage.

Rainwater tank maintenance



Various products can be installed along with a rainwater tank to help ensure good water quality, including gutter mesh, first flush diverters, a rainhead, tank screen and filters. Gutter mesh helps to keep gutters free of leaves and debris. First flush diverters are generally considered an integral part of a rainwater tank system. They work by collecting the first 5 to 25L of water flow in a rainfall event that often has a higher concentration of debris and animal droppings. The water is captured in a diverter chamber containing a plastic ball that floats to the top of the chamber, creating a seal and allowing clean water to flow into the tank. Contaminated chamber water is slowly released into the stormwater system.

A rainhead is a plastic box fitted to your downpipe, with a screen mounted at 45° to deflect leaves and twigs onto the ground rather than into your tank. A screen fitted to tank openings provides good protection from mosquitos and other pests. A filter can be fitted after the pump to further enhance cleanliness. Treatment options for rainwater used for drinking can include filtration, ultra violet disinfection or boiling. However, filtration should not be needed to maintain water quality (Australian Government, 2004) and these treatments should not replace good tank maintenance.

Maintenance checks several times a year should include ensuring that devices are in order and that the roof and gutters are free of debris.

Relevant regulations on rainwater tank installation

Rainwater can be used as a private water supply; however, if connected to the mains water supply, a backflow prevention device should be installed at the water meter. Contact Power and Water for more information (www.powerwater.com.au). In accordance with the Building Advisory Services branch of the Dept of Planning and Infrastructure, a building permit is not required if the rainwater tank is placed on a tank pad or on the ground. A building permit is required where a tank stand is 600mm or more above ground level. Rainwater tanks are not subject to setback requirements. For further information call Building Advisory Services on 08 89519235 or visit www.dpi.nt.gov.au. For general guidance on rainwater tanks refer to 'Guidance on use of Rainwater Tanks' http://enhealth.nphp.gov.au/council/pubs/documents/rainwater_tanks.pdf (Australian Government, 2004).

NT Waterwise Central Australia Rebate Scheme

The Northern Territory Government is offering a Plumbing Rebate of up to \$500 (incl. GST) to households in Alice Springs and Tennant Creek for eligible services associated with connecting a rainwater tank to a household hot water system, toilet, washing machine, air conditioner or to supplement household drinking water supplies. Refer to the Waterwise website www.nt.gov.au/waterwise for more information.

For assistance, contact the Water Management Branch:

Palmerston

3rd Floor Goyder Building, PO Box 496, Palmerston NT 0831

Ph: 8999 3678

Katherine

32 Giles St, Katherine NT 0852, PMB 123 Katherine NT 0852

Ph: 8973 8831

Alice Springs

1st Floor Alice Plaza, Todd Mall, PO Box 1120, Alice Springs NT 0871

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Internet www.nt.gov.au/waterwise