



# rainwater

## PLUMBING GUIDE



Government  
of South Australia



**SA Water**

# Introduction

SA Water is committed to the wise use of water and supporting the community to become more water efficient. Mandating rainwater tanks to be plumbed into new housing developments is one of a number of initiatives of the South Australian Government to encourage more sustainable water use. The initiative will assist South Australia in *Attaining Sustainability*, which is a key objective of South Australia's Strategic Plan.

The strategy is also one of a number of initiatives announced by the State Government as part of Water Proofing Adelaide to encourage responsible household water use:

*Commencing in July 2006, most new homes in South Australia will be required to have a rainwater tank plumbed into the house for some domestic uses.*

This strategy will lead to significantly greater use of rainwater, reducing demand on the mains water supply in the Adelaide region by an estimated 4000 megalitres a year by 2025, with further savings in many other South Australian communities.

This handbook has been created as a useful guide for plumbers, builders and homeowners for the correct installation and plumbing of rainwater tanks and associated pipework.



# Background

South Australia has more rainwater tanks in backyards than any other State. Rainwater tanks can provide additional water by harnessing the rain collected off property roofs and are widely used in areas where there is limited access to reticulated water.

Rainwater tanks need regular maintenance and the water inside the tank may not always be of a good quality. The quality of rainwater can be influenced by a number of different factors including: roof and gutter maintenance, vehicle emissions and heavy industry emissions.

Generally, rainwater may be safely used as a supply source for hot water systems, laundering, toilet flushing or irrigation.

## Regulatory requirements

There are a number of issues that you may need to be aware of when a rainwater tank is to be installed and the water supplied to plumbing outlets within a property. These include planning, plumbing and public health requirements. If you are unsure of the requirements for the local area in which you are installing a rainwater system, the following websites provide some information and general agency contact numbers for advice:

- (a) Planning/local government authorities regarding the legislative requirements for new residential buildings and alterations. [www.planning.sa.gov.au](http://www.planning.sa.gov.au)  
To find your local council go to [www.lga.sa.gov.au/site/page.cfm](http://www.lga.sa.gov.au/site/page.cfm)
- (b) SA Water regarding the conditions to be met to allow the seamless transition between the supplies, eg appropriate backflow prevention requirements. [www.sawater.com.au](http://www.sawater.com.au)
- (c) Department of Health for a determination on the management of water quality, mosquito control and guidelines on the appropriate use of rainwater. [www.health.sa.gov.au](http://www.health.sa.gov.au)

## Plumbing requirements

Where rainwater is required by legislation to service an outlet (ie toilet cistern, laundry outlet, or hot water service), there must be a continuity of supply between the rainwater and the reticulated supply (seamless automatic switching).

Seamless automatic switching may be achieved by the following methods:

- The rainwater tank may be supplied by a specially designed ball float control valve connected to SA Water's supply and installed so it introduces only a small quantity of backup water when the tank is near empty to maintain a supply of water to the outlet eg toilet cistern (gravity supply).
- A certified 'WaterMark' switching valve or device which automatically switches between the rainwater and the SA Water supply to ensure continuity of supply to the fixture/outlet when the rainwater supply is depleted (pressurised or pumped supply).

Listed below are the minimum requirements for water plumbing installations associated with rainwater tanks.

Installations must comply with AS/NZS 3500 and the SA Variations.

1. All piping systems delivering rainwater to taps, fixtures or appliances in the building must be installed by a **licensed plumber**.
2. Only approved materials shall be used for the plumbing associated with rainwater supply systems. (WaterMark Certification).
3. The water supply system from a rainwater tank must be clearly marked at intervals not exceeding 500mm with contrasting coloured wording "RAINWATER". Water outlets shall be identified as "RAINWATER" with a label or a rainwater tap identified by a green coloured indicator with the letters "RW".
4. Where a water outlet is supplied with rainwater backed up by a mains water supply for seamless transition, the outlet must be identified "RAINWATER".
5. Where a hot water service is supplied with rainwater, the cold water inlet pipe to the heater must be identified "RAINWATER". Outlets supplied by the hot water service need not be identified.

## Pipe markings



Typical sign  
for rainwater  
outlets



## Backflow prevention requirements

Where a water supply system from a rainwater tank is to be interconnected to the mains water supply, the following requirements apply under AS/NZS 3500 and the SA Variations:

- (a) As a minimum, a backflow prevention device must be installed to protect the mains water supply from the rainwater supply, eg a 'dual check valve' located at the property boundary (this device may vary depending on the level of hazard).
- (b) In addition to containment protection (Part a), where the rainwater is only supplying a toilet cistern, either a backflow prevention device such as a dual check valve or an air gap within the cistern is required.
- (c) A device such as a single-check non-return valve must be installed on the pipeline from the rainwater tank to prevent uncontrolled mains water from the reticulated supply flowing into the rainwater tank (this check valve may be incorporated within the automatic switching device).

## Backflow prevention – minimum requirements

Rainwater tank location	Protection on supply line prior to tank for provision for top up	Protection on the main supply line prior to connection to tank outlet line	No top up or connection
Buried	Testable device*	Testable device*	No backflow prevention device required
Partly buried	Non-testable device	Testable device*	No backflow prevention device required
Above ground	Non-testable device	Non-testable device	No backflow prevention device required

\* Testable devices require registration with SA Water and annual testing to ensure the effectiveness of the valve. This test must be undertaken by an appropriately licensed plumber. A reduction of the hazard ratings listed in the table may be permitted following risk assessment of the design and installation of the rainwater tank and other environmental factors in accordance with the SA Variations.

## Hazard reduction assessment Buried and partly buried rainwater tanks

The following risk assessment may be undertaken and the level of backflow hazard reduced depending on the following criteria:

- (a) The risk to tank rainwater quality from air pollution is low.
- (b) The risk to tank rainwater quality from groundwater and/or surface water contamination is low. In assessing this risk the permeability of the tank and piping materials and joints to groundwater contaminants should be addressed.
- (c) Precautions in the design and installation of the rainwater collection system have been taken to reduce impacts to tank rainwater quality from the roof collection and delivery system. Such measures include, but are not restricted to, appropriate materials, gutter guards, filters, first flush devices, dry inlets, guards to exclude vermin and mosquitoes, and the quality of tank maintenance programs.

- (d) Precautions in the design and installation of the rainwater tank have been taken to reduce impacts to tank rainwater quality from groundwater and surface water pollution.

Such measures include, but are not limited to:

- Location and topography.
- Structural integrity of the tank including installation factors such as bedding, embedment, compaction and geotechnical specifications.

- Watertightness of the tank including all penetrations, connections, access covers and joints.
- Prevention of the ingress of vermin through the overflow eg by provision of a reflux valve, self sealing valve, trap check valve.

If you wish to install a non-testable device where a testable device would otherwise be required then the risk assessment should be undertaken and the details submitted to SA Water for acceptance.

## Certificates of Compliance

A Certificate of Compliance\* must be provided to SA Water and the home owner within seven (7) days of completion of the work.

\* A Certificate of Compliance is a form that must be completed by a licensed plumber and lodged with SA Water certifying that the installation has been installed in accordance with AS/NZS 3500 and the SA Variations. A copy must also be provided to the home owner. SA Water conducts regular audits to ensure these requirements are met.

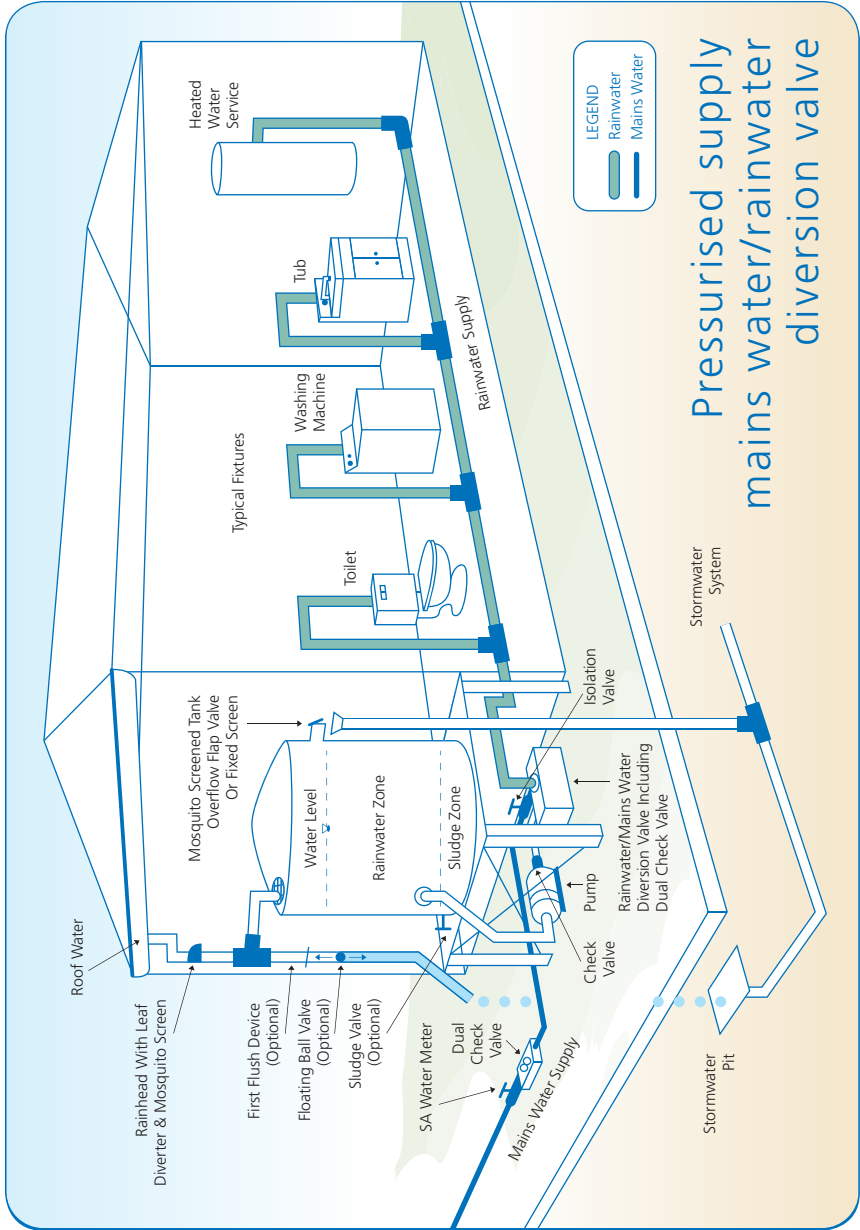
## Important Note

SA Water provides this information to you as a general guide to some of the key requirements of AS/NZS 3500 and SA Variations that are applicable to installation and connections to rainwater tanks. SA Water is responsible for issuing of plumbing directions for work connecting to its systems and this publication is designed to summarise some of those requirements. In issuing this guide, SA Water should not be regarded as an expert on the planning, health or building requirements applicable to a property and

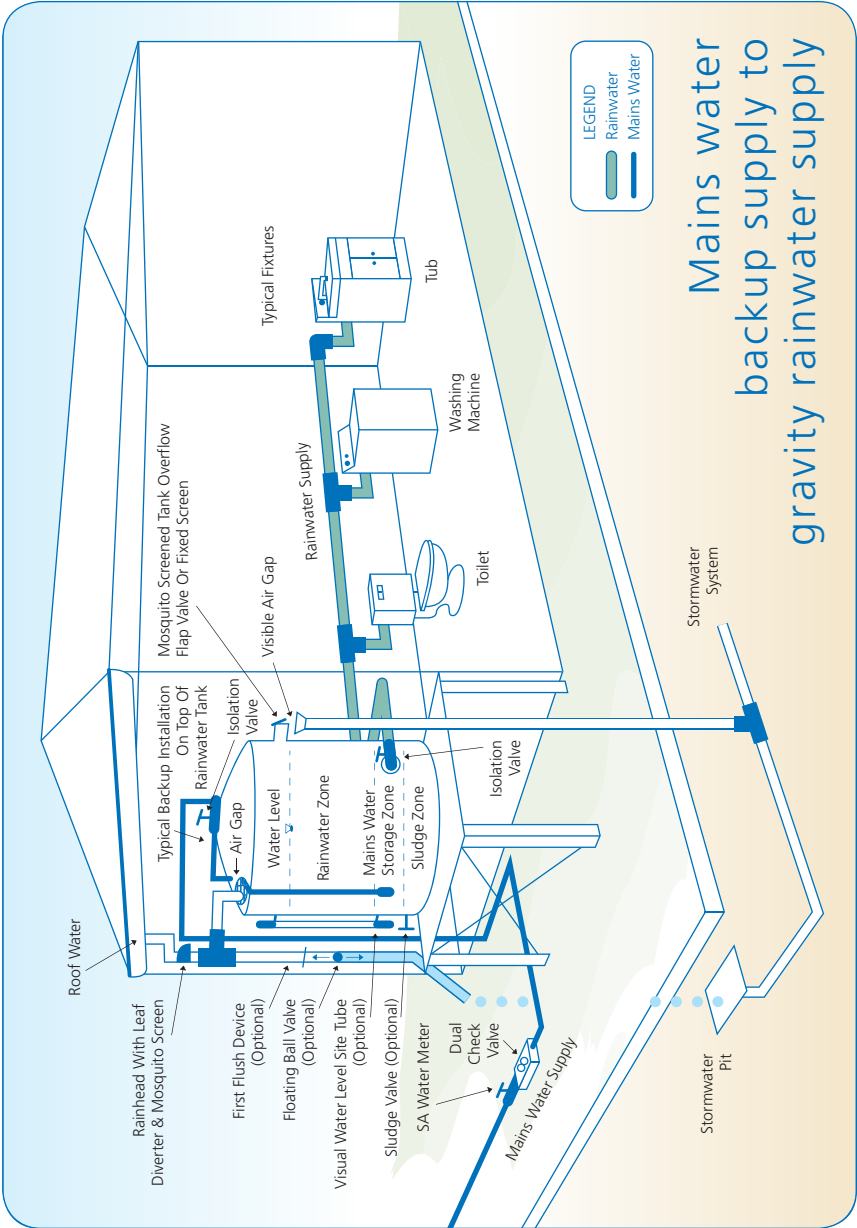
you should not rely on any statements of SA Water concerning these matters.

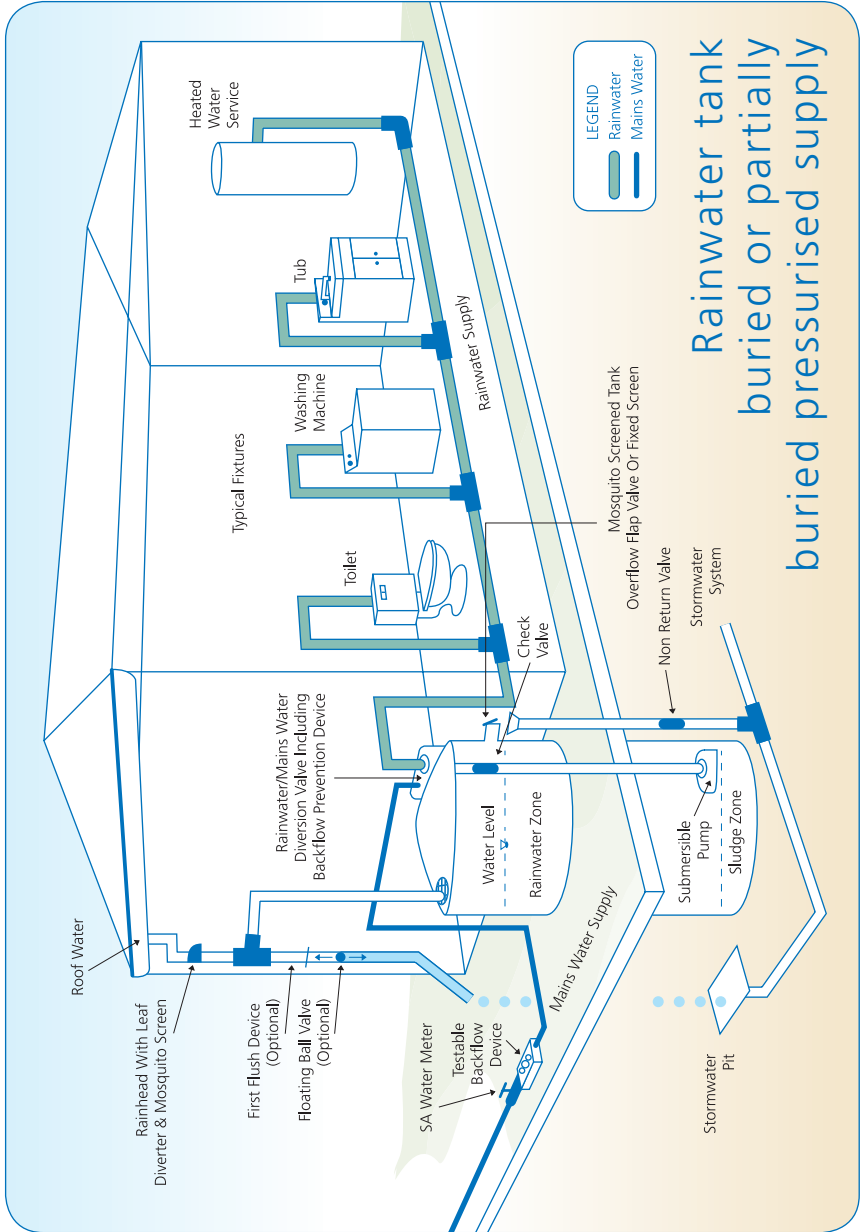
Homeowners should seek further expert advice and help with the installation and connection of your rainwater tank to ensure that connections and plumbing work undertaken on your property meet the required standards.

Advice regarding planning or health aspects should be sought from the appropriate experts (see page 2).









# Glossary

**AS/NZS 3500** – The Australian and New Zealand Plumbing and Drainage Standard.

**Approved materials** – Plumbing materials that have undergone testing to obtain WaterMark certification.

**Appliance** – A piece of equipment designed to connect to a plumbing system to perform a specific task.

**Backflow** – The unintended flow of water from a potentially polluted source into a drinking water supply.

**Check/Non return valve** – A valve that prevents the flow of water in the opposite direction of the intended flow.

**Drinking water** – Water that is suitable for human consumption, food preparation, utensil washing and oral hygiene.

**Dual check valve** – A low hazard backflow prevention device.

**Fixture** – A piece of equipment specifically designed so that its use results in discharge to the sanitary plumbing system.

**Non testable backflow device** – A low hazard valve that does not require annual testing.

**Rainwater tank** – a storage vessel that is purpose-designed to collect rainfall runoff from roofs. A variety of rainwater storage vessels are available including traditional stand-alone tanks, modular tanks and some other proprietary products including some that capture and store water at roof gutter level. Provided they meet all relevant regulatory requirements that may apply, all such storages are considered as legitimate forms of rainwater tank.

**SA Variations** – South Australian variations and/or additional provisions to the National Plumbing and Drainage Standard AS/NZS 3500.

**Seamless automatic switching** – a device which switches automatically from rainwater to mains water or visa-versa without any manual operation.

**Testable device** – A medium or high hazard device that is required to be tested annually.

**WaterMark** – The minimum certification mark required under the National Plumbing Products Certification Scheme for plumbing products.



Government  
of South Australia



SA Water gratefully acknowledges  
the Plumbing Industry Association  
(PIA) for its contribution  
to this handbook.

Queries

(08) 8463 6055

(08) 8207 1400

[www.sawater.com.au](http://www.sawater.com.au)



Printed on 100% recycled, Australian made paper using vegetable based inks.

April 2006