

## Practice Notes

### *This Water Sensitive Practice Note relates to Rainwater Tanks*

#### Harvesting roof water

Each time it rains water runs into roof gutters then enters the Council's stormwater system and ultimately, flows into the River Derwent.

The water sensitive development can utilise a considerable amount of this water through the use of rainwater storage tanks. This has the dual benefit of reducing the amount of treated water being used for purposes other than drinking and reducing the volume of pollutant-carrying stormwater entering the Derwent.

Water tanks come in a variety of shapes and sizes including standard exterior tanks made from galvanised steel (or similar), plastic or fibreglass and wall-cavity tanks, subsurface tanks, special rainwater storage guttering and under floor water storage pillows.

#### Uses for roof water

It is often mistakenly assumed that using rainwater solely for outdoor uses (such as garden watering) will produce substantial mains water savings. Variations in seasonal rainfall and outdoor water use patterns can result in poor utilisation of rainwater, resulting in long periods during which tanks are full (In Hobart, usually throughout winter).

This problem can be remedied by using rainwater to supply interior uses such as toilet flushing. Not only does this ensure that stored rainwater is utilised at a relatively constant rate, but it allows rainwater to refill the storage more often. Using rainwater for various uses (such as toilet flushing and garden watering), each with different usage patterns, can result in optimum mains water savings and large reductions in stormwater discharges.

#### Water tank sizing

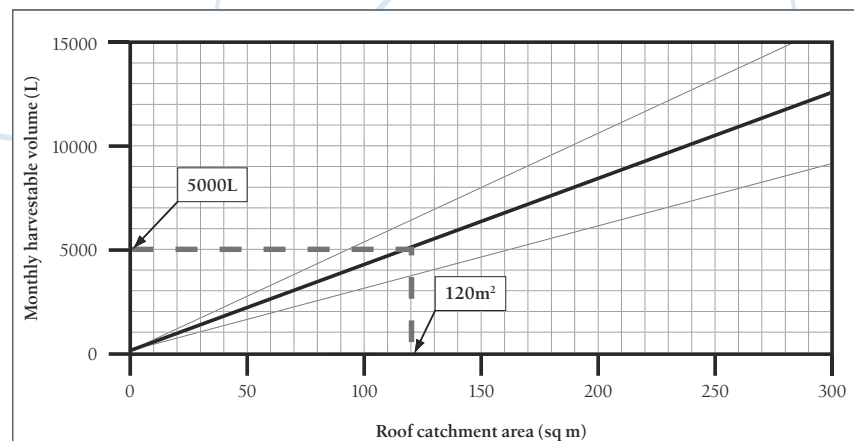
Some important considerations when selecting a water tank size are budgetary constraints, available space, uses of the tank water, roof catchment area and local rainfall. However, in an urban environment where the reticulated supply is always present as a back up, all collected water use is beneficial so any size tank is preferable to none!

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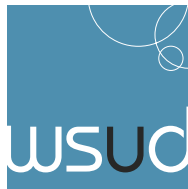


The approximate volume of water harvestable from a roof in Hobart can be determined from the graph below. Simply measure the roof catchment area to the dark line then across to see the approximate harvestable volume from your roof.

To provide some indication of seasonal variation in the volume of water a tank in Hobart will collect, the light grey graphs on either side of the dark line represent median harvestable volumes in the driest month (February) and the rainiest month (October).



*Harvestable volume graph with example of how to estimate harvestable volume from a roof catchment area of 120m<sup>2</sup>.*



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It is also worthy of note that harvestable volume is likely to increase with elevation due to climate variability across Hobart.

This graph utilises data from the Bureau of Meteorology's Battery Point climate station.

Estimating the volume of water required for different uses is more difficult because it is highly dependant on household practices. To supply water for toilet flushing requires approximately 500L per person per month. Water for gardening varies enormously depending on the nature of the vegetation and soils as well as the eagerness of the gardener. Water demanding gardens (and gardeners) may use greater than 15,000L of water per month.

### Considerations for design and maintenance

- Water collected on private property is considered a private water supply and is the responsibility of the property owner. Any water to be used for drinking is required to meet the National Health & Medical Research Council's guidelines. Care should be taken to avoid contamination;
- Remove any foliage overhanging the roof to decrease leaf litter, bird and possum droppings and other animal contamination.
- Cover all guttering with a screen to prevent leaves entering or accumulating in gutters.

- Install a first-flush trap to collect the initial roof runoff from each rainfall, which may contain a build-up of dust.
- Install a suitable trap or filter prior to the tank inlet to prevent contaminants entering the tank.
- IMPORTANT! Ensure all traps and filters are regularly operated and maintained.
- Do not drink tank water if you have unpainted lead flashings on your roof, unsealed lead screw washers on a steel roof, lead-based solders, or if lead-based seal paints have been used on the roof.
- Any materials in contact with water to be used for drinking must comply with AS/NZS4020 (Australian/New Zealand Standard: Testing of products for use in contact with drinking water).
- Avoid corrosion caused by dissimilar metals, eg. don't use stainless steel screws on steel or on aluminium pre-painted roofing materials.
- Do not use copper roofing or guttering materials upstream of aluminium or galvanised or Zinalume® steel products.
- A concrete or soldered galvanised tank should be lined with an approved tank liner/coating if the water is for drinking (compliant with AS/NZ4020).
- Do not use galvanised gutters in combination with materials such as Zinalume® or Colourbond® steel

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or terracotta tiles, as this can lead to accelerated corrosion of guttering.

- Any chemically treated wood (eg. treated pine) in contact with water to be used for drinking should be painted to prevent chemicals leaching into the water.
- All water storage will require a Council Plumbing Permit application.
- A storage system should have an inlet above the top water level, a visible air gap complying with plumbing regulations, a means to scour and clean out accumulated sediment and an outlet positioned above the maximum level of sediment.
- Where the tank or storage gutter is topped up from mains water, back-flow prevention must be installed to protect Council's public water supply to AS/NZ 3500 (National plumbing and drainage set).
- The overflow from the tank must be fed to Council's stormwater system or an alternative Council-approved system as approved by Council's design engineer.
- All planning and plumbing regulations must be complied with. Property owners should consult Council's Planning Information Officer on 6238 2155 to discuss individual requirements.
- Any installation on properties in the Battery Point or Sullivan's Cove planning scheme areas will require a planning permit application.



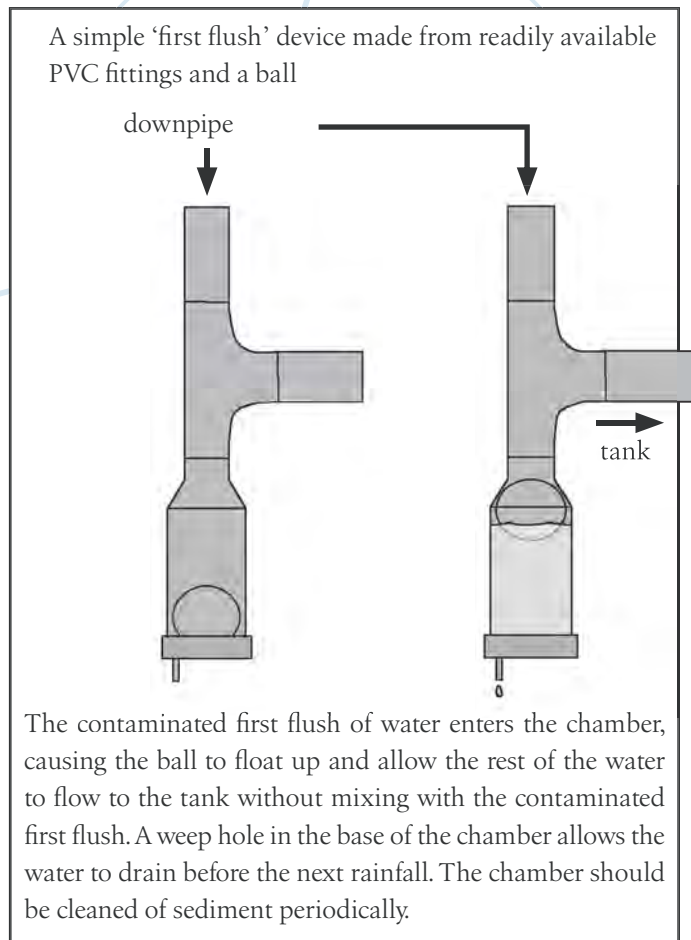
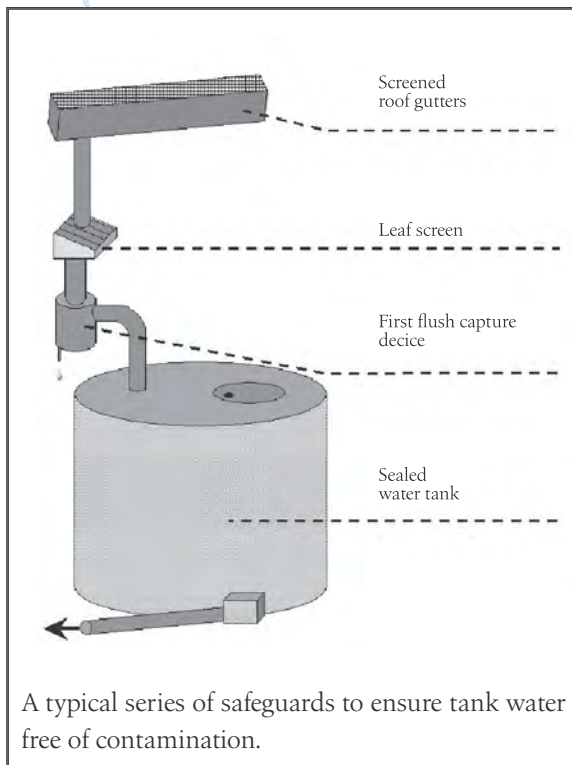
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- If a building is classified as heritage or lies within a heritage zone, Council must receive a Heritage Application in conjunction with the application for a Plumbing Permit.
- Tanks with a capacity greater than 35,000L will require a Building Permit. A tank stand exceeding 1.2m in height from the natural ground level will also require a Building Permit application.
- All pipe materials conveying water from a storage system must be labelled 'Rainwater' where above ground. Where below ground they should be covered with ID tape, as required by AS/NZ 1345 (Identification of the contents of pipes, conduits and ducts).
- The plumber must place a sign above the outlet stating 'Rainwater'.
- The plumber must install a flow restrictor on any potable supply line to a tank.
- Ensure a suitably qualified person (registered plumber) installs the tank or storage gutter and associated plumbing.
- Check to see if you qualify for a rebate from Hobart City Council for installing your tank.
- If material has accumulated in the tank or if contamination is suspected, the tank can be dosed with chlorine tablets (in accordance with manufacturer's instructions) and

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the tank can be cleaned out. Water samples may also be taken to a laboratory for testing if any uncertainties remain. It is a good idea to test samples after contamination has occurred and the problem has been fixed to ensure the water is of an acceptable quality. Samples should be tested for total plate count, total coliforms and E Coli. If materials contamination is suspected, samples should also be tested for metals, e.g. lead, zinc, copper.

## Common setups

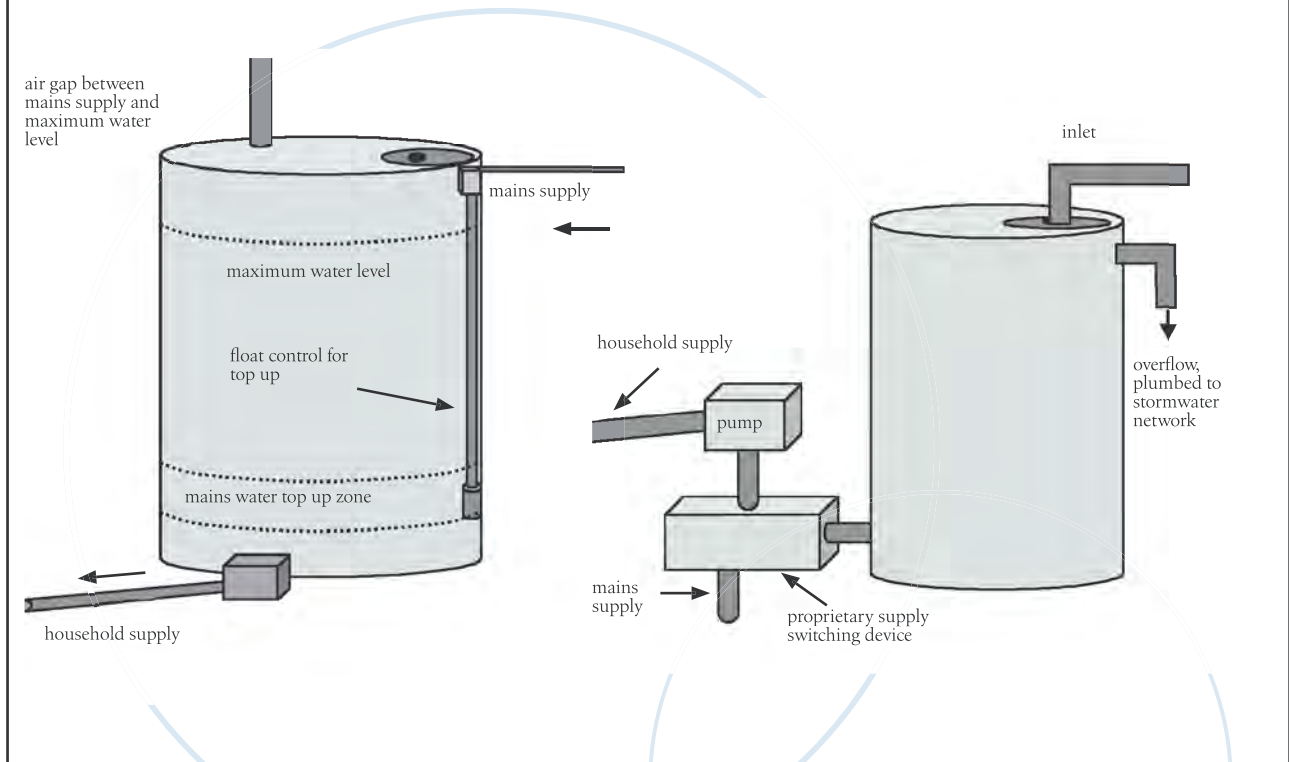


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### Tanks to supply toilet cisterns

Using tank water to supply a toilet cistern is usually the best way to maximise use of the tank supply and ensure greatest water savings. However, for public health reasons, the set up must be failsafe so that an internal toilet is never without water and there is no risk of cross-contaminating town water.



### References

Deeks, B. & Milne, T., 2005, 'WSUD Engineering Procedures for Stormwater Management in Southern Tasmania 2005', Derwent Estuary Program, Department of Primary Industries Water and Environment, Hobart. Useful

### Websites

Atlantis: [www.atlantiscorp.com.au](http://www.atlantiscorp.com.au)  
 Rocla Pipes: [www.rocla.com.au](http://www.rocla.com.au)  
 James Hardie Industries: [www.jameshardie.com.au](http://www.jameshardie.com.au)  
 University of South Australia: [www.unisa.edu.au](http://www.unisa.edu.au)  
 University of Newcastle: [www.eng.newcastle.edu.au/~cegak/Coombes](http://www.eng.newcastle.edu.au/~cegak/Coombes)

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