



Water Recycling and Harvesting

WATER EFFICIENCY: RECYCLING, REUSE AND COLLECTION

Australia uses more water per person than most other countries in the world.

Conserving our water has many benefits, including reducing the need to build new water supply resources, protecting river health by reducing water extraction, and reducing the impacts of treating and disposing of wastewater. Managing surface runoff and stormwater pollution helps to prevent the degradation of our rivers, wetlands and oceans.

Permeable paving has been installed, allowing stormwater to pass through and infiltrate into the ground below, reducing surface runoff and helping to recharge groundwater.

Greywater Ready

The Catalina Sustainable Home has been designed to divert greywater (from showers, baths, laundry, and hand basins) from the sewer for use in the garden via a drip-irrigation system.

Kitchen wastewater is excluded because it often contains food scraps, fats and oils which can cause clogging of greywater system filters and drippers, as well as harsh detergents which can impact soil and plant health.



The WA Department of Health advises that the average person produces around 100 litres of greywater per day. This amounts to 146,000L per year for a family of four. The average swimming pool in Australia takes 62,000L to fill.

Rainwater Harvesting

Catalina Sustainable Home uses a wet rainwater harvesting system (also known as charged). Rainwater is collected from multiple downpipes and moved to three 2000L rainwater tanks in the back garden. Water flows through the pipe as the outlet into the tank is lower than the inlet height—just like in a siphon. The pipe continually holds water up to the level of the outlet, which is why the downpipes must be sealed.

A wet system allows a much larger catchment area and is much more cost-effective. At Catalina Sustainable Home all downpipes are connected.

This rainwater is for ‘non-potable’ use only (toilets, washing machine and garden taps). However, no regulation prohibits the use of rainwater for other purposes within the home. Water does not require to be filtered or sterilised for non-potable use, which makes for a simpler installation. Rainwater passes through a 500 micron (0.5mm) mesh filter as it flows into the tank to prevent leaves or debris from entering – a major source of sediment over time. A strainer between the pump and the changeover valve protects any debris from clogging the valve.

One unavoidable issue with a wet system is that water remains in the feed pipe all the time. If there’s no rain flushing this water through the pipe into the tank then sediment in the water will settle out onto the base of the pipe, and will build up over time, which can result in smelly, sludgy water entering the tank after a long dry summer. A drain valve at the lowest point in the underground pipe allows the pipe to be flushed out for maintenance.

Rainwater Harvesting Supplies

Rainwater tanks

Corrugated slimline tanks from [Rainfill Tanks in Gnangara](#).

Tanks are handmade from Aquaplate™ steel (corrugated galvanised steel with a thin food-grade polymer film to AS/NZS 4020 laminated onto the inside to prevent corrosion).

Water filtration

Single-storey homes with eaves that aren't much higher than the tank inlet, there is insufficient room for leaf filters to be attached to each downpipe. Therefore, a filter was fitted at the tank inlet.

Pump

[Bianco Autosub submersible pump](#) from White International.

A mid-range, fully automatic multistage pump is installed inside the tank. Starts automatically when a tap is turned on and stops once the flow of water finishes.

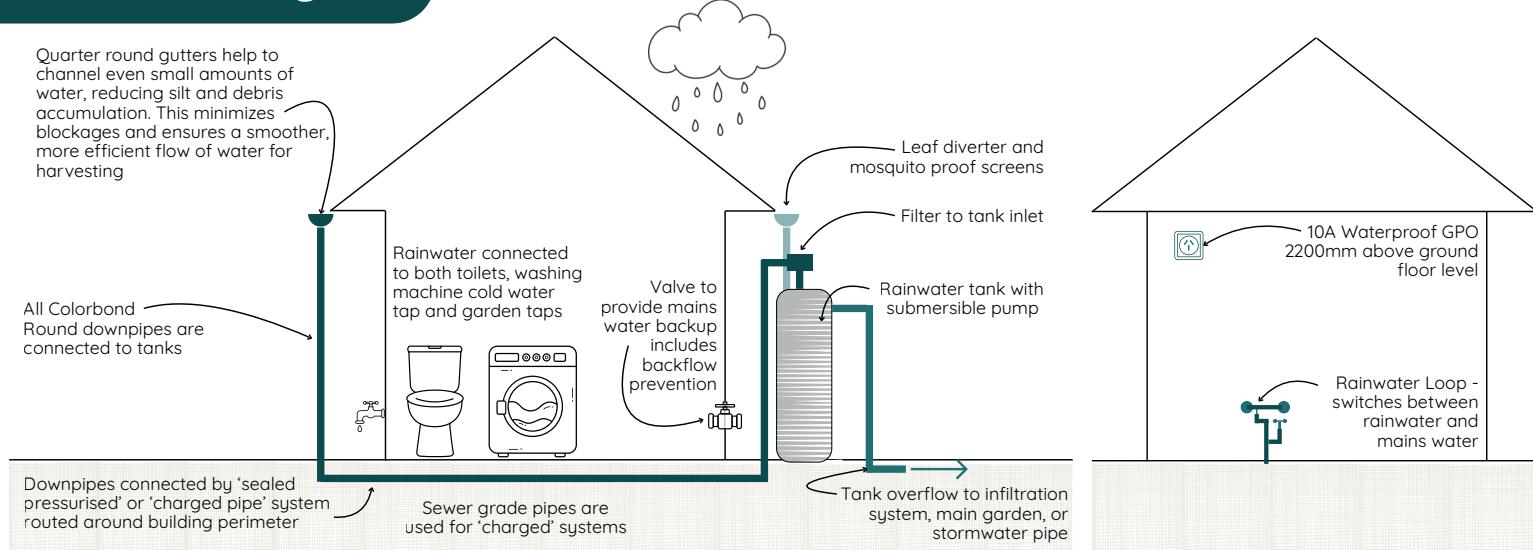
Submersible pumps take up no space outside the tank, are quieter and more efficient

Changeover Valve

[Acquasaver](#) from Beltrami

The water pump feeds into the house supply through a tee on the outside wall. Conventionally, this feed utilises an automatic valve that will feed in rainwater when available, otherwise mains water will be used. This way the homeowner doesn't need to manually open and close supply valves with the associated risk of supply being interrupted or rainwater use not being optimised. The Aquasaver $\frac{3}{4}$ " is good for flows up to 50lpm. It is triggered only by water pressure and has no electrical components. The Acquasaver valve has proved to be the most reliable system for use in the Perth area.

Rainwater diagram



The diagram depicts the Rainwater setup for Catalina Sustainable Home. This may vary depending on location and the type of tanks.

GPO & rainwater loop to be installed on the external wall for the future rainwater system.

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