

# Urban Drought Buster

## The Situation

Australia has been in the grip of a devastating drought for more than three years. Lack of rainfall and overuse of our precious water reserves has placed a multitude of demands on society. These demands, in the form of **economic, environmental and social issues** have all been contributed to by a lack of understanding of the average *city dweller* about the **effective and responsible use of water**. Government agencies and to some extent a small group of manufacturers have been making attempts to address the issue of *overuse* of water. Sydney Water has developed and implemented a *recycled water program* that is currently being installed in new urban developments. Kellyville in Sydney's north-west is one example of where the *recycled water program* has been successfully implemented.



However Sydney Water's *recycled water program* is not suitable for installation into established residential areas as the water management infrastructure must be installed during the early stages of land development.

An opportunity and need exists for established residences to collect and utilise the large volume of *grey water* produced by every house every day.

The Brief:

**Design and construct a *grey water*\* collection and management system for use in an established residential environment.**

\*Grey water is the component of sewerage, which does not come from a toilet or urinal. Grey water is the wastewater, which is generated from the use of shower, bath-tub, hand basin and laundry tub, washing machine and dishwasher. (ref: Sydney Water)

\*Grey Water(sullage) – domestic wastewater excluding toilet waste and may include water arising from hand basin, kitchen, shower and laundry. (ref: EPA – Environmental Protection Authority)

\*Grey water is the name used for water that is discharged from household appliances and water usage fittings such as showers, washing machines and dishwashers. It excludes discharge from toilets and bidets. (<http://savewater.com.au>)

Explanation of the brief:

This aim of this system is to provide a point of collection for grey water, a vessel for storing and controlling grey water, and providing an outlet for the distribution of grey water.

## Project proposal and project management:

### Identification and exploration of the need:

With Australia being one of the driest continents on earth, Australians all too often take for granted the clean fresh water we are supplied with. We use this water to drink, wash, clean, cook, and swim. With our high usage rate of water in Australia, combined with minimal, and in some areas, no significant rain, in recent years, Australia has slipped into the clutches of a drought. The long-term drought in Australia is effecting everyone, in all areas around Australia. A lot of what we hear about the drought is the stranglehold the drought has over farmers in Western NSW. During the summer months we all like to keep our gardens looking fresh and green, but due to the fast falling water level in Warragamba Dam, the NSW state government has imposed voluntary water restrictions. These restrictions 'request' residents to minimise water usage, and limit watering of gardens and lawns to between 8pm and 8am. The [graph shown on the opposite page](#) taken from the Sydney Catchment Authority website, clearly indicates the trend of water storage in Warragamba Dam.

Once Warragamba Dam reaches 55 percent operating storage the NSW state government will impose compulsory water restrictions. Compulsory water restrictions will require residents to comply with water usage guidelines and have the provision for authorities to fine persons who fail to comply.

During summer at my home we felt the disposal of laundry water down the drain was a waste. Through the use of a siphon we drained all the washing machine water from the laundry tub out onto the gardens and lawns. ([see photograph on opposite page](#)) The large amounts of water that was put out onto the lawns was otherwise going to go down the drain, and fresh drinking water was to be used. The grey water served its purpose for the summer months, keeping plants and the lawn happy, and we didn't use one drop of clean water.

A simple calculation very quickly revealed just how much grey water was produced in a typical weekend for a family of four.

Using the laundry tubs capacity of 45 litres and a plastic laundry bucket for the rinse cycle, I calculated the water usage for a 'medium sized' load comprising:

1 wash cycle – 62 litres

1 spray rinse – 10 litres

1 deep rinse – 62 litres

1 spin/spray rinse – 8 litres

total usage for 1 wash = 142 litres

(approx)

Over a couple of weekends I counted 23 full wash cycles. This usage has the potential to generate an average of about 1600 litres per week in grey water from the washing machine only.