

Greening Our Hospitals: Water

Case study

Adaptation of a disused water harvesting system

Overview

During construction of the residential aged care unit Ellery House in 2007, Castlemaine Health installed a large-scale water harvesting and treatment plant. The plant was commissioned but never used due to the risk of contaminated water entering the system from the central collection pit. By 2009 Castlemaine was still in drought, and with stage 4 water restrictions the need to reduce water consumption was critical to both the community and the hospital. With funding from the Greening Our Hospitals: Water program, the water collection points were relocated and the system modified to provide water for toilet flushing in Ellery House.

Summary

Water is collected from the roof of South Block and gravity-fed to the existing tank farm. A fourth tank was installed and the water treatment plant was modified. The Ellery House water reticulation was modified and a new purple pipe supply loop was installed in the roof space to feed half the building's toilet cisterns, saving around 460 kilolitres of water per year. With the system capacity proven to supply adequate volumes of water, Castlemaine Health is now looking to connect the rest of the building to the tanks.

How it works

The water collection point was disconnected from Ellery House and modified to collect water from the roof of the South Block building and gravity-feed into the holding tanks. The tank piping system was altered and a fourth tank was installed with the existing purification and pumping system redesigned to be used as part of the grey-water supply system. A pressure tank was added to maintain constant line pressure and ensure correct pump operation. The mains water was disconnected from the toilets and a new separate grey water reticulation system was installed. The new piping loop currently only serves 17 toilet cisterns but will be expanded to include all cisterns in Ellery House. The redesign of the tank farm has removed the previous risk of contamination to the potable water supply. The new system has been operating reliably since July 2010, with no mains make-up water required to supplement the grey water system.

Health service

Castlemaine Health Service

Total investment

\$50,000

Date of completion

November 2010

Initial water saving estimate

1,320 kL per annum

Actual water savings

460 kL per annum

Estimated annual cost saving

\$1,125

Simple payback

44 years

Project design and installation

Castlemaine Health
Castlemaine Health and contractors

Water cost

2.0371 \$/kL in 2011

1.1271 \$/kL in 2009

Sewage disposal cost

0.6260 \$/kL in 2011 (metered)

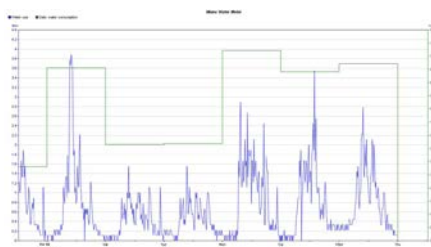
0.4971 \$/kL in 2009 (metered)



Web-based monitored water meter



Tank farm



Graph of water consumption



Water treatment plant

What worked well:

- increased awareness of water issues within the organisation
- installation of a remote-monitored web-based water meter on the main supply
- the storage system provided an excellent backup during a four-hour mains water interruption while repairs were undertaken.

What did not work well:

- The mains water piping was not installed in a loop with droppers, as shown on the as-built hydraulics drawings, but connected in series. The additional works required to establish a ring main loop meant we could only retrofit half the building.

Health service profile

Castlemaine Health provides medical, surgical, midwifery, rehabilitation, hostel, nursing home, allied health and a range of outreach services to a population of 17,000 in the Shire of Mount Alexander. Assessment and rehabilitation services are also provided to the neighbouring Shires of Central Goldfields and Macedon Ranges, reaching a combined population of over 60,000. Castlemaine Health is accredited with the Australian Council on Healthcare Standards and the Commonwealth Aged Care Residential Standards Agency. Castlemaine Health continues to work towards reducing its carbon footprint and has implemented energy saving, recycling and waste management improvements.

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