

Greening Our Hospitals: Water

Case study

Large-scale water harvesting

Overview

Water collection, storage and distribution by water authorities require large capital investments and are at the mercy of our constantly changing climate. The ability to harvest and store large volumes of water onsite has multiple benefits such as reducing the load on the town water supply, drought proofing for the grounds and significantly improved business continuity in the event of water supply failure. With funding provided by the Greening Our Hospitals: Water program, Latrobe Hospital installed large-scale tank capacity to substantially reduce demand on the town water supply and provide a buffer during droughts.

Summary

This project set out to harvest rainwater and process water for onsite storage in large tanks. This involved the installation of five tanks consisting of three large-capacity above-ground pre-coated steel tanks with liners, one smaller site-built steel tank and one underground concrete tank. The above-ground tanks collect rainwater from the roofs and have a total capacity of over 320,000 litres. The rainwater from two tanks is pumped into a central flusher system and the other two tanks provide grounds irrigation. The in-ground concrete tank has a capacity of 22,500 litres and stores reject water reclaimed from the dialysis reverse-osmosis unit that currently goes to drain.

How it works

Large-scale water harvesting requires considerable ground area to locate the tanks. Choosing the correct location for the tanks is vital, as they cannot be economically relocated at a later time. Latrobe Hospital was undergoing master planning at the time the project was funded therefore the architects included the tanks in the master plan. This enabled the hospital to have confidence that the tank locations would not impact on future development plans and provided an opportunity to install very large tanks in strategic locations.

The result was that a 150,000-litre steel tank was erected at the rear of the hospital to collect water from the roof of the rehabilitation building. A 92,000-litre steel tank was erected adjacent to the front of the building to collect water from the roof of the GEM building and a 62,100-litre steel tank was erected on the west side of the hospital to collect water from the cancer care bunker roof. Of note was the innovative use of a small site-erected steel tank located in one of the internal courtyards. The pre-rolled steel sections were shipped to the site, transported through the hospital building to the courtyard where the tank was assembled.

Health service

Latrobe Regional Hospital

Total investment

\$169,980

Date of completion

March 2011

Initial water saving estimate

10,450 kL per annum

Estimated annual cost saving

\$42,950

Simple payback

3.96 years

Project design

Latrobe Health /
local plumbing contractor

Water cost

1.6754 \$/kL in 2011

Sewage disposal cost

3.2467 \$/kL in 2011 (75%)

Initial projected dollars per kL saved

\$16.26



Figure 1: Installation of site built tank in internal courtyard

What worked well:

- the scope of work provided by the consultant gave good basis for the overall design of the project
- consultation with master planners to determine tank location
- careful tank selection
- use of site-assembled tanks.

What did not work well:

- lack of materials held up the delivery of the tanks
- hold up due to master planning requirements
- not installing remote monitored sub-meters.



Figure 2: 95,000-litre site-erected tank

Health service profile

Latrobe Regional Hospital (LRH) provides a regional public health service for the whole of Gippsland. The purpose-built 257-bed, fully integrated health service is located at Traralgon West. A comprehensive suite of health services is provided to more than 240,000 residents across Gippsland, including acute health, aged care, integrated cancer care, mental health and rehabilitation. The Latrobe Regional Hospital Community Residential Care Unit provides residential rehabilitation for people with prolonged severe mental illness and associated disability. LRH is a teaching hospital affiliated with the Monash University School of Rural Health, which is located on the hospital's main campus in Traralgon.

LRH has a long-standing environmental management plan that addresses environmental areas within LRH and recognises water as being a major utility both in usage and cost. The WaterMap system, as required by Gippsland Water, addresses water sustainability initiatives and has been used by LRH to develop water management strategies and processes.

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