

Greening Our Hospitals: Water

Case study

Mixed-source water harvesting

Overview

In the past few years Western Health has embarked on a water conservation program that has significantly reduced water consumption across all campuses. Major teaching hospitals such as Sunshine Hospital consume large quantities of water providing patient services. Due to the continual growth in patient numbers water savings are not readily seen in the raw consumption data. During the period 2007–08 to 2010–11 Sunshine Hospital increased its floor area by 15 per cent to 54,259 square metres and the number of patients treated increased from 285,294 to 325,878. Over the same period the total volume of water used has only increased by 1.5 per cent to 91,800 kilolitres and water use per patient has decreased by 12.5 per cent. With the assistance of funding from the Greening Our Hospitals: Water program 7,840 kilolitres per year of water has been saved, contributing to an already impressive reduction in water use. With Sunshine Hospital currently undertaking building works that will add an additional 12,000 square metres of floor space to the campus, water and energy consumption will again increase, adding to the pressure to conserve resources.

Summary

Water is reclaimed from the dialysis reverse-osmosis plant and cooling towers, and together with rainwater collected from a plant room roof, is piped into holding tanks. The water is then treated according to the *Guidelines for water reuse and recycling in Victorian healthcare facilities* before being pumped to the flusher tanks. The amount of water collected exceeded initial estimates and additional collection points were installed.

How it works

In 2008 a WaterMAP audit identified water savings of 7.6 kilolitres a day by reclaiming reject and filter water from the reverse-osmosis plant and 7.6 kilolitres a day during summer by reclaiming bleed water from the adiabatic coolers. Both water streams are high in dissolved solids, so the water is diluted with rainwater before use to avoid excessive scaling of tanks and pipes. A simple piping system was installed from each collection point to a single 20-kilolitre tank on the ground allowing gravity feed.

The volume of water collected exceeded expectations to the point that two additional 20-kilolitre collection tanks were installed, bringing the total holding capacity to 60 kilolitres. The mains make-up water was isolated at the flusher tanks and connected to the collection tanks to ensure water supply to the flushers.

A water treatment plant adds potable-grade sodium hypochlorite to sanitise the reclaimed water as it is pumped to the flusher tanks on the roof of Building B.

Water meters were installed on the main's make-up line and the collection tank discharge to the flusher tanks.

Health service

Western Health Sunshine Hospital

Total investment

\$59,120

Date of completion

November 2010

Initial water saving estimate

6,000 kL per annum

Actual water savings

7,840 kL per annum

Estimated annual cost saving

\$18,500

Simple payback

2.3 years

Project design and installation

Western Health and
AquaKlar Plumbing contractor

Water cost

1.7125 \$/kL in 2011

1.3031 \$/kL in 2009

Sewage disposal cost

1.5435 \$/kL in 2011 (41.9%)

0.4971 \$/kL in 2009 (41.9%)



Figure 1: Rainwater harvesting



Figure 2: Adiabatic cooler



Figure 3: Flusher header tanks

The project was simple to install and proved water could be easily harvested for use in areas such as toilets and grounds maintenance and was one of the catalysts to increase the number of water efficiency projects. The Greening Our Hospitals: Water program also funded projects replacing showerheads, installing flow restrictors and replacement of pan flushers with low-flow models. Western Health engineering staff managed the project, placing strong emphasis on consultation with Infection Control to ensure all health and safety issues were addressed.

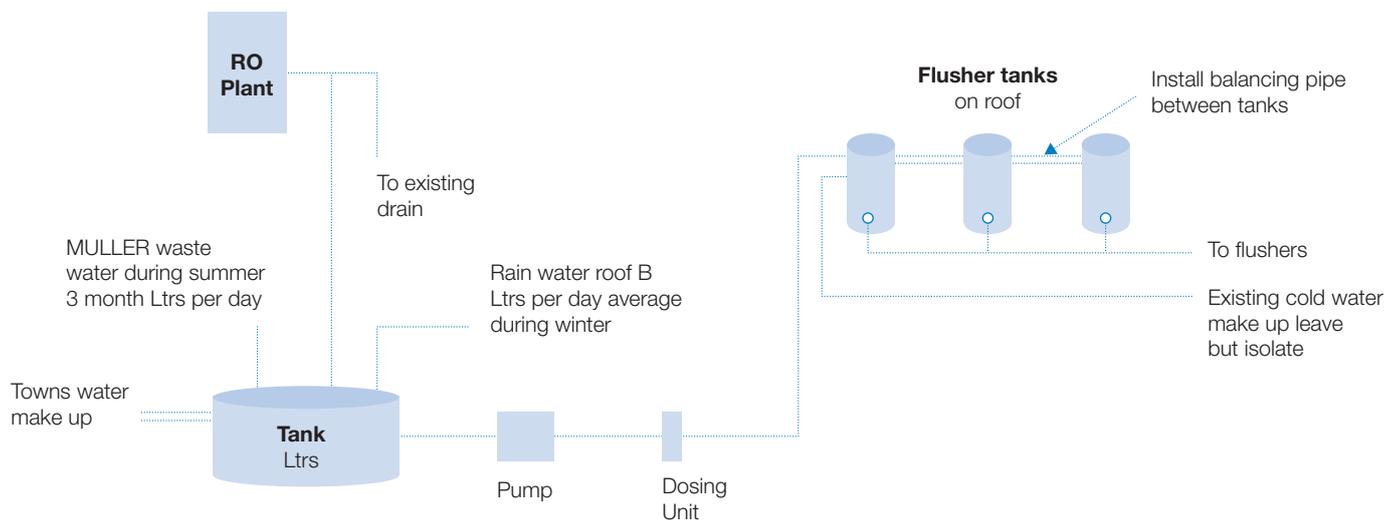
What worked well:

- ongoing projects have resulted in an increased awareness of environmental issues within the organisation
- the project worked very well and exceeded the expectation of the amount of water conserved.

What did not work well?

- no problems were encountered.

Sunshine Hospital dialysis reverse osmosis water re-use diagram



Health service profile

Western Health was formed in July 2000 as part of the restructure of Victoria's healthcare networks. We offer a wide range of patient care services from the public hospitals within our region that include Western Hospital, Sunshine Hospital and Williamstown Hospital. A drug and alcohol program is offered at our Das West service, while Hazeldene Nursing Home, Williamstown and Reg Geary House at Melton offer residential aged care. The organisation consists of more than 4,800 staff who work each day to improve the overall health of people across Melbourne's West. Western Health's catchment extends from Footscray and out to the growth corridors of Caroline Springs and Melton, up to Sunbury and down to Werribee. It numbers approximately 650,000 people and is growing at four per cent per annum.

Western Health has pioneered research and recycling programs in conjunction with local industry and continues to demonstrate opportunities to push for innovative new solutions via research in practice. Last year Western Health launched their Environmental Management Strategy (EMS) 2010–2013 that committed to reduction targets on energy, water, waste, greenhouse, transport and procurement impacts.

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