Victoria The Place To Be Melbourne Water

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Recycling water for a greener future

Stormwater, greywater and recycled water are all alternative water supplies that, when treated as required, are suitable for a range of purposes, including irrigating grazing land and crops, in horticulture, industrial processing, in residential dual pipe schemes, and to keep our public and recreational spaces green.

Water recycling is a key part of maintaining a sustainable water supply for Melbourne and Melbourne Water believes recycled water is an important and valuable resource.

Water recycling contributes to conservation of drinking quality water, improves the reliability of our water supplies, frees up water for the environment or growth, and reduces the amount of treated effluent discharged into our bays and oceans.

Melbourne Water's role

Melbourne Water operates Melbourne's two major sewage treatment plants – the Western Treatment Plant at Werribee and the Eastern Treatment Plant at Bangholme. Between them, they treat about 855 million litres of sewage a day. About 11.3%, or 36,000 million litres, of this is currently recycled, for use either on-site at the treatment plants or for use by customers including the irrigation of agricultural crops, golf courses and open space.

Melbourne Water is committed to providing high quality recycled water that is suitable for use, and is working towards achieving the Victorian Government's target of 20% water recycling by 2010.

We have made a significant investment in upgrading our sewage treatment plants, which has improved the quality of recycled water to make it suitable for a wider range of uses. We are developing schemes with the water industry and Government to enable greater use of recycled water by farmers, industry, local councils and householders.

Melbourne Water provides recycled water for our retail partners, which supply recycled water and customer service directly to users. Our retail partners include Southern Rural Water, TopAq and the metropolitan retail water companies.

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How can recycled water be used?

Melburnians use almost 500,000 million litres of drinking water a year for a number of purposes, some of which do not require drinking water quality.

Recycled water can be used for agricultural/horticultural irrigation, watering parks and recreational areas, some industrial processes, toilet flushing and garden watering, and in new suburbs as part of water-sensitive urban design.

Recycled water is also used across Victoria and some areas with much lower volumes of sewage than Melbourne have high rates of water recycling. For example, in East Gippsland and the Grampians regions more than 93% of treated effluent is recycled.

Environmental issues such as salinity, nutrient loads, waterway and land management are important considerations in water recycling programs.

Setting the standards

Recycled water is fully treated and can be safely used for a variety of purposes appropriate to the level of treatment it has undergone, in accordance with EPA Victoria's *Guidelines for Environmental Management: Use of Reclaimed Water.*

The Department of Human Services has classified Class A recycled water as safe for use on irrigation for food crops - including those eaten raw. The Department of Human Services requires an extensive verification process to ensure Class A water can be guaranteed. EPA Victoria also supports its use.

EPA Victoria has also recently released Guidelines for Environmental Management: Dual Pipe Water Recycling Schemes – Health and Environmental Risk Management, which is available at www.epa.vic.gov.au.

Water recycling initiatives – eastern region

Melbourne Water's Eastern Treatment Plant treats about 40% of Melbourne's sewage, or about 370 million litres a day. Recycled water from the plant is used in operations both onsite and offsite.

In 2004/05 15,034 million litres of water was recycled from Eastern Treatment Plant, 13,408 million litres of this was used onsite.

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The Eastern Treatment Plant began selling recycled water in the 1970s. In 2004/05, some 35 customers along the plant's 56-kilometre outfall pipeline were transferred to South East Water for retail water services where they bought more than 1,389 million litres of recycled water for use in agriculture, horticulture and vineyards, or to irrigate golf courses and sporting fields.

Recycled water to Gippsland

In June 2004, the Victorian Government announced an investigation into the Eastern Water Recycling Proposal as part of its action plan, *Our Water Our Future*.

A study is now being undertaken to determine the feasibility of transferring recycled water from the Eastern Treatment Plant to the Latrobe Valley. The study will take about 18 months to complete. If approved, the project could potentially use up to 80% of the plant's treated effluent.

Eastern Irrigation Scheme

The Eastern Irrigation Scheme is operated by a private company (TopAq), which sources Class C recycled water from the Eastern Treatment Plant, further treating it to Class A standard. The scheme will ultimately deliver about 5000 million litres of recycled water each year to the Cranbourne-Five Ways area for the irrigation of market gardens, golf courses and a racetrack.

The Sandhurst Club two 18-hole golf courses in Carrum Downs was the first recycled water customer to be connected under this scheme. Ultimately, 1850 homes in the Sandhurst development will be connected to the scheme for garden watering and toilet flushing. South East Water will provide the retail services to residential customers.

A recreational asset

More than 20 golf courses are situated within the area of south-east Melbourne often referred to as the Sandbelt region, which broadly covers the Bayside and Kingston council zones as well as parts ofMonash, Casey and Greater Dandenong.

The proliferation of golf courses and council reserves presents a significant opportunity for recycled water to replace other water sources for irrigation, with horticultural businesses, residential developments and even industrial areas also potentially contributing to future demand.

Melbourne Water and South East Water are investigating the potential for a major water recycling scheme to the region.

Frankston and Mornington Peninsula

Recycled water could replace about 200 million litres a year of drinking water and 8000 million litres a year of groundwater in projects near the pipeline between the Eastern Treatment Plant and the South East Outfall at Boags Rocks on the Mornington Peninsula. Target sites include recreational reserves, golf courses, orchards and vineyards in the Moorooduc area, and high-value vegetable crops in the Boneo irrigation area.

We are working with South East Water, EPA Victoria and other key stakeholders to investigate the potential for new recycled water schemes, especially where the use of recycled water displaces the use of other water resources.

Water recycling initiatives – western region

The Western Treatment Plant treats about 52% of Melbourne's sewage, or about 485 million litres a day. Low rainfall and numerous potential customers close to the plant present opportunities for significant water recycling schemes to Melbourne's west. The plant has the potential to produce enough recycled water to replace about one-quarter of Melbourne's drinking water that is used for non-drinking purposes. Melbourne Water has completed a major $160 million upgrade of the plant which has increased the availability of recycled water.

As part of this upgrade, Melbourne Water constructed a water recycling disinfection plant to treat Class C recycled water to Class A standard for distribution to a number of water recycling schemes in the nearby Werribee region. Melbourne Water is also currently involved in a Salt Reduction Program with City West Water and other stakeholders, investigating options to reduce salt in recycled water, including a possible Salt Reduction Plant.

Werribee Agriculture (Western Treatment Plant onsite)

In 2004/05 a total of 32,033 million litres was recycled from the Western Treatment Plant, of this, 20,676 million litres of Class C recycled water was used to irrigate pasture within the boundaries of the treatment plant.

Werribee Tourist Precinct

Supply of recycled water to the Werribee Tourist Precinct began in 2003 after the completion of a six kilometre pipeline from the Western Treatment Plant.

The new pipeline has sufficient capacity to meet future demand for recycled water in the precinct. The Werribee Park Golf Club and the National Equestrian Centre are the first recycled water customers to the west of Melbourne. The Werribee Tourist Precinct also includes the historic Werribee Mansion, State Rose Garden, Shadowfax Winery and Victoria's Open Range Zoo.

Werribee Irrigation District

In January 2005 the Western Treatment Plant began supplying recycled water to the Werribee Irrigation District Project.

Initially around 3000 million litres of Class A recycled water will be delivered to Southern Rural Water to supply to over 100 farmers in the Werribee South area each year by 2006/07. This has the potential to expand to 8,500 million litres of recycled water after 2009.

Supplying recycled water will take pressure off the Werribee River and underground aquifers, which were the previous main sources of irrigation water in the region.

Residential developments

We are working with stakeholders, such as City West Water and other neighbouring water authorities and Government departments, to implement projects that would transport recycled water to neighbouring suburbs in the City of Wyndham for new residential developments, such as West Werribee Dual Reticulation Scheme. This scheme includes residential developments to the west of Werribee, such as Werribee Fields, Manor Lakes and Bluestone Green.

A masterplan for Werribee Fields, a new 2000-home 'green' suburb showcasing market-leading sustainable water and energy use, is currently being developed. The suburb will incorporate environmentally-friendly features including 'dual pipe' recycled water systems and energy-efficient housing, creating a new green and sustainable urban community.

Werribee Technology Precinct

We are currently working with City West Water to supply recycled water from the Western Treatment Plant to the Werribee Technology Precinct. Recycled water will replace up to 100 million litres per year of drinking quality water used for cooling at the Hoppers Crossing Pumping Station and up to 165 million litres per year for watering industrial green spaces. In the future this project will potentially use about 1000 million litres per year in a variety of industrial processes. This project has strong support from Wyndham City Council and is expected to begin in mid 2006. These initiatives are part of the Victorian Government's Werribee Plains – *A Vision for Sustainable Growth* program, which aims to transform the Werribee Plains into a region internationally renowned for its sustainable development.

Other water recycling initiatives

We are working with Government, industry and community partners to develop a range of future opportunities for water recycling schemes in greater Melbourne.

Onsite water recycling

Onsite water recycling involves the removal and treatment of effluent from sewer mains to produce high quality recycled water, while returning waste to the sewerage system.

Melbourne Water has trialled onsite water recycling plants in parks around Melbourne, demonstrating that water from sewers can be successfully recycled and used to keep parks and gardens green. This technology could eventually be used to irrigate significant parkland and community recreation areas.

It is envisaged that up to 2500 million litres or 1% of the flows that would otherwise go to our treatment plants could be used to irrigate Melbourne's parks and gardens. Melbourne Water is working with City West Water and the City of Melbourne on key projects. These include the Melbourne Zoo, Royal Park, Princes Park, Melbourne University open space and the Fitzroy Gardens.

Technologies used in onsite water recycling include conventional filtration, activated carbon treatment and membrane systems/micro-filtration processes.

Aquifer storage and recharge

Aquifer recharge involves storing water underground that can be drawn out at a later time. It can also be used to restore natural underground water reservoirs that may have declining yields and water quality, with recycled water.

The combined impact of drawing water at a faster rate than the aquifer can recharge and increasing salinity has degraded some Victorian groundwater reserves. Recycled water can be used to replenish overdrawn aquifers, and improve groundwater availability and water quality. Recharging aquifers is also an alternative when surface storage is impractical because of limited space, high evaporation rates or the presence of algae.

Melbourne Water is investigating opportunities for aquifer storage and recovery and, if appropriate, will use the findings to develop strategies to store recycled water underground to benefit the environment and/or for future use.

Domestic water recycling

Domestic water recycling, such as the recycling of greywater from baths, showers, basins or washing machines, can help save precious drinking water. The retail water companies – City West Water, South East Water and Yarra Valley Water – are responsible for domestic water recycling. Information about greywater uses can be found on EPA Victoria's website www.epa.vic.gov.au

Education and communication

Melbourne Water is working with the Government and other stakeholders in developing greater understanding and awareness of the value of recycled water. In June 2004, the Victorian Government released *Our Water Our Future*, a plan that outlines the Government's approach to water resources in Victoria, including recycled water. It is available at www.dse.vic.gov.au

As the use of recycled water becomes more widespread, we will introduce broader education and communication programs through our website, publications and education programs. Our recycled water educational resources can be viewed at education.melbournewater.com.au

Further information

If you would like further information on any aspect of Melbourne Water's role as Melbourne's water resource manager, please call 131 722 or visit melbournewater.com.au