

# ReWater

Water recycling in Australia

WINTER 2011

## Recycled water treatment plant for Melbourne

Page 3

**ReWater funding to finish, your feedback required**

Page 2

**New NSW water recycling Education Centre**

Page 4

**US buildings unplug from water grid**

Page 6

**The costs of water restrictions**

Page 9

# ReWater

## CONTENTS

### FEATURES

- New recycled water treatment plant** for Melbourne 3
- New NSW water recycling** Education Centre 4
- Golf courses that reuse water** irrigate too much 5
- US urban buildings unplug** from water grid 6
- Multiple benefits of recycling** at Escondido 8
- Productivity Commission report** highlights the costs of water restrictions 9
- Australian Water Recycling** Centre of Excellence 10
- Review of urban water** quality regulation 11

### REGULARS

- Good Reads** and website links 7
- Events** diary dates 11
- News** innovations & information 13

### On the Cover:

Degasification towers to remove CO<sub>2</sub> to adjust pH at the Altona Wastewater Treatment Plant.

## About ReWater

ReWater is a newsletter designed to make information relevant to recycled water use in horticulture more accessible to horticulturalists (growers/farmers/landscapers), primary producers, members of the water industry and other interested people. It is part of the service provided by the Australian Coordinator for Recycled Water Use in Horticulture, funded by Horticulture Australia Limited.

Back issues and instructions for subscribing to receive ReWater electronically on a quarterly basis can be accessed here: [www.recycledwater.com.au/rewater](http://www.recycledwater.com.au/rewater)

### Your Feedback and Contributions

We would appreciate your feedback and are always looking for suggestions and contributions. Please email [rewater@recycledwater.com.au](mailto:rewater@recycledwater.com.au) or contact us on 03 9602 4001.

[www.recycledwater.com.au](http://www.recycledwater.com.au)



The delivery of research and development outcomes from this project to the horticultural industry is made possible by the Commonwealth Government's 50% investment in all Horticulture Australia's research and development initiatives.

Know-how for Horticulture™

**DISCLAIMER:** Every attempt is made to ensure the accuracy of all statements and claims made in ReWater. However, due to the nature of the industry it is impossible for us to know your precise circumstances. Therefore we disclaim any responsibility for any action you take as a result of reading ReWater. issn1449-9800



Edited & compiled by  
Atura Pty Ltd.  
Ph: (03) 9602 4001  
[www.atura.com.au](http://www.atura.com.au)

Designed by Arris Pty Ltd  
Ph: (08) 8303 6706  
[www.arris.com.au](http://www.arris.com.au)



## ReWater funding to finish September 2011. Can you help?

By September 2011 ReWater will have published 30 editions of ReWater over 7 and half years.

This quarterly publication enables the sharing of knowledge about reclamation and reuse of recycled waters in Australian amenity and production horticulture as well as other alternative water sources used for both industrial, commercial and residential/domestic applications.

To-date ReWater has been funded as part of a bigger project funded by Horticulture Australia Limited (Project HG09030, Securing recycled water for the Australian Horticultural Industry: Managing climate change). This project has run for the last 8 years providing support for many horticultural industries (rural and urban) to locate, develop and commission recycled water schemes across Australia.

ReWater was designed as one component of the HAL project to make it easier for many growers/farmers/horticulturists to experience how recycled water was being used across Australia and the world and provide confidence in the use of recycled water should the right opportunity arise to use it. The [www.recycledwater.com.au](http://www.recycledwater.com.au) website is also part of this project.

ReWater has now grown to provide horticulturalists (growers/farmers/landscapers), primary producers, members of the water industry and other interested people with a quarterly snap-shot of recycled water uses and innovations in Australia and around the world.

### To continue ReWater we need your feedback

We are keen to continue ReWater post August 2011, as we have received some very encouraging feedback over the last 7 years from subscribers. To determine current readership interest in continuing ReWater **WE NEED YOUR FEEDBACK.**

**Please take 3 minutes to complete our survey to help us decide if and how we should continue ReWater. Click [here](#) for web survey.**

We would also like to hear from you if you have any recommendations or ideas for continued funding.

Thank you for your support and contributions to this valuable industry and publication over the last 7 years.

Warmest regards on behalf of the ReWater team at Atura and Arris.

We appreciate your feedback and are always looking for suggestions and contributions. Please email [rewater@recycledwater.com.au](mailto:rewater@recycledwater.com.au) or contact us on 03 9602 4001.

Back issues and instructions for subscribing to receive ReWater electronically on a quarterly basis can be accessed here. [www.recycledwater.com.au](http://www.recycledwater.com.au)

**Contact:** Daryl Stevens, [daryl@atura.com.au](mailto:daryl@atura.com.au), +61 3 96024001.





# New recycled water treatment plant for Melbourne

**Melbourne's recycled water treatment plant to save more than 2500 ML water per year.**

A new recycled water plant in Altona in Melbourne's West is set to save more than 2.5 billion litres of drinking water each year, reducing demand on Melbourne's potable water supplies. The Aus\$ 48 million (US\$ 52.6 million) recycled water plant in Altona, Australia, was commissioned on 19 April 2011 by Victoria's State minister for water, Peter Walsh. Mr Walsh said that up to 9,000 m<sup>3</sup>/d of Class A recycled water would be available for manufacturing and irrigation use saving more than 2.5 million m<sup>3</sup> of drinking water each year, reducing demand on Melbourne's potable water supplies. The project comprises the planning and construction of an ultrafiltration and reverse osmosis plant to produce two grades of recycled water from the secondary treated wastewater produced at the Altona Treatment Plant, which services just over 20,000 residential and commercial properties.

"The water will be used by a neighbouring chemical manufacturer, two golf courses and public parks in Melbourne's west," Mr Walsh said. "In addition to providing security for these customers, water from the City West Water plant is replacing the use of potable water and easing the pressure on Melbourne's dams."

## Two qualities of water are required making the projects more complex than other recycled water schemes

The use of recycled water can be a win for both local communities and the environment. The plant uses both single-pass and double-pass reverse osmosis to treat effluent from the plant, removing salt and other contaminants. The recycled water is then pumped via a purpose-built pipeline to plastics manufacturer Qenos for cooling tower and boiler operation, and to two golf courses and council-owned public space for irrigation. In addition to providing security for these customers, water from the City West Water plant will replace the use of potable water, ease the pressure on Melbourne's dams and reuse millions of litres of treated effluent which would otherwise be pumped out to Port Phillip Bay each day.

Mariano Sola, Project Manager at TEDRA, the Spanish contractor that constructed the recycled water treatment plant, said the production of two grades of recycled water has provided an extra layer of complexity.

"The Altona Recycled Water Project is complex because of the two qualities of water required – it is not common practice to have to produce multiple qualities of recycled water out of the one plant," Mr Sola said. The recycled water treatment plant utilises ultrafiltration and reverse osmosis, to remove excess salt from the treated wastewater.

Production of recycled water for irrigation (the golf clubs and Council open spaces) requires demineralisation through a single pass reverse osmosis system, while production of industrial grade recycled water (for Qenos) requires treatment through a two pass reverse osmosis system.

The project will deliver:

- about 2 billion litres annually to plastics manufacturer Qenos for use in its boilers and cooling towers;
- 300 million litres to Sanctuary Lakes Golf Club to irrigate its golf course;
- 200 million litres to Kooringal Golf Club to irrigate its golf course; and
- 5 million litres to Hobsons Bay City Council to irrigate Altona Green Park and 6 million litres for HD Graham Reserve.

The project involved the construction of the following infrastructure:

- 9ML a day recycled water plant including Ultrafiltration Reverse Osmosis technology;
- two 3ML storage tanks at the Altona Sewage Treatment Plant, one for irrigation customers and another for Qenos;
- pump station at the Altona Sewage Treatment Plant;
- 3.7km pipeline to Qenos' Altona Plant;
- 5km pipeline from the Altona Sewage Treatment Plant to a storage pond within Sanctuary Lakes Golf Club;
- 0.38km pipeline to Altona Green (Council open space) from the Sanctuary Lakes Golf Club primary distribution main; and
- 0.74km primary distribution main from the Altona Sewage Treatment Plant to a storage pond within the Kooringal Golf Club.

*continued page 4*



St Marys Education Centre launch\_MD & Chairman.

# New NSW water recycling Education Centre

**Sydney Water's new Water Recycling Education Centre was officially opened by (former) Water Minister Phillip Costa, boosting the already extensive community education resources of Sydney Water.**

Mr Costa said the Water Recycling Education Centre uses state of the art education and training technologies to explain the role of water recycling in securing Sydney's water supply. "This includes showing how water is recycled and then used, and how the latest technology and techniques in sustainable environmental management are delivering benefits for Sydney Water users," Mr Costa said.

"The centre is designed for universities, TAFE colleges and high schools, professional and trade groups, and key community groups. Sydney Water is working with secondary and tertiary teachers to ensure that the material at the centre targets and complements existing courses."



Reverse osmosis modules at Sydney Water's largest water recycling project and one of the biggest in Australia.

**The plant is Sydney Water's largest water recycling project and one of the biggest in Australia**

The Water Recycling Education Centre is part of the \$209 million St Marys Water Recycling Plant. Visitors to the centre will be able to observe the operations of the St Marys Water Recycling Plant as well as participate in a tour of the plant itself. The plant is Sydney Water's largest water recycling project and one of the biggest in Australia, providing about 18 billion litres of recycled water each year which will improve the quality of water in the Nepean River.

This latest education centre joins other Sydney Water education resources including:

- Tours of wastewater treatment plants, water recycling plants and water filtration plants.
- Online virtual tours of a wastewater treatment plant and the desalination plant (due for completion mid 2011).
- Museum in a Box® partnership with the Australian Museum for primary aged students. The Freshwater box contains dioramas, replicas, specimens, information panels, fact sheets and books.
- Sponsorship of the Powerhouse Museum's Ecologic exhibition to include a section on water management. •

**Source: Phil Costa Minister for Water, Media release, 20 February 2011**

from page 3

During the project monitoring period, it was observed that the quality of the sewage into the Altona Recycled Water Project could vary significantly in some parameters over short periods of time. This phenomenon was discovered to be the result of discharges into the sewerage system upstream of the Altona Treatment Plant that pass through the wastewater treatment process and into the plant wastewater.

One outcome from these observations was that there would be times during the plant's operations when the feedwater would be outside normal specification for quality and/or quantity. This essential information was factored into the system and operational design of the plant to ensure recycled water output was of the required quality at all times during the operation of the plant.

Heavier than normal spring and summer rainfall has resulted in the two golf club customers not yet requiring recycled water for irrigation. Supply to Qenos, which will take the bulk of the recycled water produced from the plant, has been delayed by a maintenance upgrade of the site.

Ms Barker, MD of City West Water, said the Altona Recycled Water Project will provide tangible benefits to its customers. "The recycled water being produced at Altona presents an exciting opportunity for City West Water to replace precious drinking water in applications such as cooling and irrigation. With the climatic variability forecast to impact traditional water supplies across the country, alternative water will continue to emerge as a vital component of the provision of water to the community." The Victorian Government contributed \$5 million towards the project. •

**Source:** Stephanie Ryan 03 9658 4052  
[www.pacetoday.com.au](http://www.pacetoday.com.au)  
<http://vic.nationals.org.au>  
[www.desalination.biz](http://www.desalination.biz)  
<http://hobsons-bay-leader.whereilive.com.au>



City West Water MD Anne Barker (L) and Chairman Alan Seale (R) with Peter Walsh, Victoria State Minister for water.



# Golf courses that reuse water irrigate too much

**Irrigation is one of the most controversial aspects in the sustainable management of golf courses. Researchers from the Canary Islands have spent 25 years analysing the practices relating to recycled water at one of the oldest golf courses in Spain. The results show that plants on the course receive 83% more water than they need.**

“Excessive amounts of water are used, and this cannot be justified from any perspective”, María del Pino Palacios Díaz, lead author of the study and a researcher at the Department of Animal Pathology, Animal Production and Food Science and Technology at the University of Las Palmas de Gran Canaria. Despite the high cost of water (around \$0.54 AUD per cubic meter), the amount of water used on golf courses in the Canary Islands continues to be “excessive”. On the golf course studied, plants receive over 83% more water than they need, which reduces the risk of substances accumulating in the soil, but increases the risk of contaminating the aquifer.

The researchers have confirmed this on the basis of a “detailed” analysis of the nutrients and other substances contained in the recycled water, and by studying how this is absorbed by the soil and plants, how it travels through the unsaturated area, and the likelihood of it reaching the aquifer. The research, which has been published in the Spanish Journal of Agricultural Research, also looked at the effect of re-using water recycled from desalinated urban water on soil fertility and the health of the greens between 1982 and 2007 at the Royal Golf Club of Las Palmas, one of the oldest courses in Spain and a “model” club in terms of how it is managed.

According to Palacios Díaz, although the study focused on a single golf course, the results could be extrapolated “to others in semi-arid or arid areas that are irrigated using water from urban or marine sources, and with similar soil characteristics”.

The Royal Golf Club of Las Palmas is irrigated with water that has been desalinated, consumed by the public, treated and once again desalinated before being recycled for reuse. However, “the combination of water with low salinity and a high proportion of exchangeable sodium (which is common in desalinated regenerated water) can have a negative impact on the structural stability of soil, which loses fertility over the medium term because of losing its capacity to drain away water”, the researcher says.

In addition there may be the possible long-term effects of using it for cultivated plants, the irrigation system and the water of the aquifer. The scientists say it is not only the



Golf courses in Spain have been found to over irrigate with recycled water.

quality of the water used that could harm the condition of the soil and the aquifer, but “the frequency and amount of the recycled water used in irrigation”.

“It is assumed that the consequences only depend on the quality of the water, when in fact the other factors normally have a greater influence”, says Palacios Díaz in this study, which is part of the TRAGUA project on Water Treatment and Recycling for sustainable management.

In relation to the negative long-term impacts of the excessive use of desalinated recycled water, the researchers propose “adapting the species and varieties watered, instead choosing types that are more tolerant to salinity and thereby reducing the cleaning requirements. Paradoxically, this adaptation has been implemented at the golf course studied, but the amount of water used has not been reduced”, explains the scientist.

The study also calls for the amount and frequency of watering to be adjusted to the needs of the plants irrigated in the area in question, and for consumption amounts to be calculated using internationally-accepted experimental equations (evapotranspiration equations). “This is the only way of ensuring sustainable use of recycled water”, concludes Palacios Díaz. However, Spanish legislation does not address the sustainability criteria for reusing water. “Such criteria are poorly understood and, as a result, are generally not fulfilled”, warns the researcher. •

Source: [www.eurekalert.org](http://www.eurekalert.org)

References: Estévez, E.; Cabrera, M.C.; Fernández-Vera, J.R.; Hernández-Moreno, J.M.; Mendoza-Grimón, V.; Palacios-Díaz, M.P. “Twenty-five years using reclaimed water to irrigate a golf course in Gran Canaria” Spanish Journal of Agricultural Research 8, edición especial 2(95-101), 2010.

# US urban buildings unplug from water grid

**Our students are empowered to make a difference by learning, synthesizing, and sharing their newfound knowledge with our local and global community.**

What better way to combine water and biosolids recycling and water education than in a school, where pupils can live and learn the links and connections between our water use and the environment. That's exactly what a school in one of Seattle's most urban neighbourhoods has done. The Bertschi School is a small elementary school that is aiming to disconnect from the municipal water and sewer system to collect, recycle and reuse water and wastewater on site, a concept often referred to as net zero water in the United States.

The school was presented with an exceptional opportunity in July 2009 - to be part of a regional team responding to the Living Building Challenge. The purpose of the Living Building Challenge is straightforward - to define the highest measure of sustainability possible in the built environment based on the best current thinking - recognizing that "true sustainability" is not yet possible. The Living Building Challenge is a philosophy, advocacy

**A place where students can literally see, feel and be part of sustainable practice**

tool and certification program that addresses development at all scales, comprising of seven performance areas: Site, Water, Energy, Health, Materials, Equity and Beauty. The Bertschi School board was in the process of finalising plans for a new science wing. When they were approached by KMD Architects and The Restorative Design Collective (RDC), a group of design professionals on the leading edge of the sustainable building movement, and asked to join them as partners in creating what could be the first Living Building in the state of Washington, the timing was perfect. The new science wing could be created as a place where students can literally see, feel and be part of sustainable practices. As part of this collaboration with RDC, all design services, from the initial concept phase through construction administration documents, were provided at no cost.

Designed to be self-sustaining in the energy, water and waste use, the school's new science building is made up of a classroom, the ecohouse and toilet facilities. The new



The greenwall gets established in the ecohouse.

building features an ethnobotanical garden to grow food; tanks for rainwater harvesting; a green moss-mat roof; a composting toilet; natural ventilation and radiant floor heating; a living wall of tropical plants to treat grey water; and solar panels, which will produce all of the building's energy. All of these aspects

will provide students with an active learning environment where they're encouraged to harvest native vegetation in order to gain an understanding of urban agriculture, as

well as interact with the building's water and energy-saving features.

Rainfall is collected from the roof and flows via a visible runnel in the classroom floor to a collection tank. The runnel overflows to a raingarden and the water in the tanks is used in classroom sinks. The water from the sinks is delivered to a four metre high wall filled with plants by a drip irrigation system. The classroom toilet composts and treats waste on site rather than flushing it into city sewer pipes.

Plenty of "green" buildings strive to generate as much energy as they use, but Bertschi School's new science building is one of dozens nationwide taking it a step further. "Water is a looming issue after energy," said James Englehardt, a professor of environmental engineering at the University of Miami who is spearheading the project. "Energy and water are intimately linked. We have plenty of water, but it takes a lot of energy to purify it."

Despite Seattle's image as the land of plenty of rain, water conservation is a concern because summer months can typically be dry. Proponents say the Seattle school project and others like it recognize water as a precious resource. Treating waste and runoff onsite also means reducing the land, infrastructure, energy and chemicals needed to convey water to taps and later to treat what flows down toilets and bathtubs.



Classroom runnel with students

*continued page 7*



## Ecological Water Flow

### Water System (Greywater)

1. Sinks use water from potable cistern
2. Greywater drains from sinks to greywater tank
3. Greywater delivered to living wall by drip irrigation system
4. Greywater transpired by living wall plant material
5. Remaining Greywater recycled back through system



THE RESTORATIVE DESIGN COLLECTIVE

The greywater flows in the Living Science Building.

from page 6

"People are recognizing the limitations of the planet and what's available," said Eden Brukman, vice president of the International Living Building Institute, which runs the "Living Building Challenge". In the U.S., two projects in Eureka, Mo., and Rhinebeck, N.Y., have been certified as living buildings. The

Bertschi School, which opened in February could be next and is aiming for living building status.

"With the integration of sustainable practices into our curriculum, our students are empowered to make a difference by learning, synthesizing, and sharing their newfound knowledge with our local and global com-

munity. Our students are counting down the days and hours until they can explore and investigate science in new and innovative ways with the opening of our Science Wing," says Brigitte Bertschi, Head of Bertschi School.

Stan Richardson, a school representative, said composting waste may not work for everyone but it's a good tool to teach students that there are different ways of doing things. "For us to do that in the city when you have a perfectly good sewer system, I can't imagine everybody in the city connecting to the composting toilet, we are doing it as a demonstration. It can be done," he said.

"We were inspired to bring together this creative team to design a Living Building in Seattle after attending the Cascadia Green Building Council's Living Future conference," says Stacy Smedley of KMD Architects. "We're excited to return to Living Future this year to share with others the knowledge and experience of what it takes to construct a Living Building," adds Chris Hellstern of KMD. "We hope the Science Wing will pave the way for more green building and net-zero projects, as well as make sustainability inherent for generations of students".

Source: [www.dailyastorian.com](http://www.dailyastorian.com)  
[www.bertschi.org](http://www.bertschi.org)  
 Photographs: Benjamin Benschneider

## GOOD READS and website links

### Urban water in Australia: Future directions

This final report of the National Water Commissions' Developing Future Directions for the Australian Urban Water Sector project, considers whether the sector's underlying institutional and policy settings need reshaping to improve performance now and in the future, and sets out the Commission's findings and recommendations.

More information: [www.nwc.gov.au](http://www.nwc.gov.au)

### State of the Water Sector preliminary report

The Survey identifies the priority issues for the water sector and gauges its level of preparedness to confront these issues. The national findings in this 'preliminary' report will be followed by state perspectives and other 'cuts' through the data to provide additional insight in a final report to be released at AWA's annual national water conference being held in Adelaide in May 2011.

More information: [www.deloitte.com](http://www.deloitte.com)

### Water by Design Guidelines

Various guidelines are available to assist in the planning, design and construction of Water Sensitive Urban Design elements  
 Source: <http://waterbydesign.com.au>



### Water Footprint Assessment Manual: Setting the Global Standard

The "Water Footprint Assessment Manual: Setting the Global Standard" is the definitive book on the global standard on water footprint assessment as developed by the Water Footprint Network. The book provides a comprehensive set of methods for water footprint assessment and shows how water footprints can be calculated for individual processes and products, as well as for consumers, nations and businesses. It also contains detailed worked examples of how to calculate green, blue and grey water footprints, and how to assess the sustainability of the aggregated water footprint within a river basin or the water footprint of a specific product. The book includes an extensive library of possible measures that can contribute to water footprint reduction.

More information:  
[www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)

### Review of pricing reform in the Australian water sector

The National Water Commission's Review of pricing reform in the Australian water sector report examines the pricing and institutional reforms of the National Water Initiative. It explains that prices need to reflect the full costs of water services (including environmental costs) so there are efficient signals for new investment.

More information: [www.nwc.gov.au](http://www.nwc.gov.au)

### National performance reports for urban water utilities and rural water service providers

Two National Water Commission reports on the performance of Australia's urban water utilities and rural water service providers have been released. The National Performance Report 2009-2010: urban water utilities report includes information from 79 utilities that supply approximately 18.3 million Australians with their urban water. This report was prepared by the National Water Commission, all state and territory governments, and the Water Services Association of Australia. The National Performance Report 2009-10: rural water service providers, which was prepared by the Commission in conjunction with state governments, covers thirteen rural water service providers representing 90% of Australia's rural network water supply.

More information: [www.nwc.gov.au](http://www.nwc.gov.au)

# Multiple benefits of recycling at Escondido

**The City of Escondido in southern California, USA, could be about to follow neighbour San Diego in setting up an indirect potable water-reuse (IPR) scheme as part of a wastewater facility upgrade costing about US\$ 200 million.**

The city is facing increased scarcity of water and dwindling sewer capacity and these two drivers have led Escondido officials to launch a roughly \$200 million, multipronged effort that could irrigate much of the city with recycled water and potentially provide an indirect potable recycling scheme. The request to develop a conceptual plan to address wastewater capacity and water reliability was approved by council in February 2011.

Recycling wastewater eliminates the need to spend about \$400 million widening the sewer pipes connecting Escondido to the ocean, Utilities Director Lori Vereker said last week. The cost is high, partly because the new pipes would be laid in some environmentally sensitive areas that the city doesn't control.

And even if the pipes are widened, the city



would be facing potential state fines for discharging more sewage into the ocean. "It's like building a bigger trash can," said Vereker, noting that her plan would be much better for the environment. If the city did nothing, the state would eventually prohibit any further residential or commercial development until the sewer capacity was increased, she said. In addition, if old water and sewer infrastructure in downtown Escondido isn't upgraded for roughly \$10 million, the city will not be able to achieve its dreams of high-rise condominiums and office buildings in that part of town.

Faced with approaching capacity at the city's Hale Avenue Resource Recovery Facility (HARRF), the city, which is 30 miles (48 km) north-east of San Diego, voted to use the plant's upgrade to increase the use of recycled water for industrial/irrigation purposes and reduce ocean discharge. The scheme

would ensure Escondido a reliable water supply that would be less susceptible to drought and increasing prices for imported water. That reliable supply might also help preserve the city's large agricultural community, which has been facing extinction because of rapidly rising water rates. An agreement with Goal Line Energy (Iceoplex) is already close for recycled water use at the company's energy production plant. Upgrade the HARRF's ocean outfall pipelines would cost around US\$ 400 million and provide no positive benefit to the city.

The city's goal will be to work towards 100% reuse of wastewater from HARRF, with additional users likely to be parks, schools and the Wild Animal Park. Referring to setting up IPR, the conceptual plan report to the council describes some of the challenges of the site, including: no groundwater basins to recharge; small drinking-water reservoirs with limited retention time; and public perception about recycled water as a drinking-water source. The city's 26,000 sewer and water customers would potentially face higher rates for many years in order to pay for the upgrades, which would take as many as 10 years to implement.

The project might additionally generate revenue by using the existing outfall pipelines to the coast as regional brine lines. The city's next step will be to implement recommendations from a reverse-osmosis/ultrafiltration pilot study which showed that more nutrient removal was required to meet the conditions for a wet-weather discharge permit and to prove a higher quality recycled water product.

Vereker said a public education campaign would be required on the safety of drinking recycled water, which she said was actually cleaner and more pure than today's tap water. Vereker said the \$200 million price tag for her plan is just a guess, and that the city would have a better idea late this year when a consultant finishes a utilities master plan for the city. She also said about half the cost could be covered by grants. •

**Source:** [www.desalination.biz](http://www.desalination.biz)  
David Garrick phone 760-740-5468.  
[www.nctimes.com](http://www.nctimes.com)



## Gisborne GRoWS with recycled water project

**Water security in Gisborne South and surrounds continues to improve with a \$4.27 million recycled water project announced which will pump out 250 million litres of class B recycled water annually.**

Announced by Water Minister Peter Walsh at the Pitruzzello Estate in Sunbury, the Gisborne Recycled Water scheme project (Gisborne GRoWS) will be a boost for irrigators such as grape, olive and cherry producers. The State Government will contribute \$1.27 million with another \$2.72 million from Western Water and a local industry and community contribution of \$278,000. Mr Walsh said the funding boost would pay for the design and construction of a pipeline, upgrades to existing pipelines, a new booster pump station and an increase to an existing pump station to cater for higher water flows.

"After a prolonged period of low rainfall, businesses in Gisborne South resorted to expensive measures such as sourcing water from saline groundwater bores and trucking recycled water," Mr Walsh said. The minister said extra water security in the region would boost it as a regional food bowl, which would lead to employment and business opportunities such as tourism and encourage business growth and diversification. The project is due to be complete next year. •

**Source:** <http://macedon-ranges-leader.whereilive.com.au>  
and Western Water Recycled water news  
[www.westernwater.com.au](http://www.westernwater.com.au)



# Productivity Commission report highlights the costs of water restrictions

**Australia's urban water sector needs major changes to meet the challenges of providing services that minimise costs and maximise benefits to the community, according to a draft report released by the Productivity Commission.**

The draft report - Australia's Urban Water Sector - reports that Government responses to the recent water shortages have resulted in large costs to water consumers and the community generally. Nationally, water restrictions are estimated to have cost in excess of \$1 billion per annum from the lost value of consumption alone, and some large supply augmentations could cost the community up to \$5 billion or more over the next decade or two.

Presiding Commissioner, Dr Wendy Craik said "There is a strong case for reforming the sector. There are some fundamental weaknesses, with conflicting objectives, unclear roles and responsibilities, and deficient governance arrangements, across policy making, regulatory and service delivery institutions."

The Commission affirmed that it is the role of State and Territory Governments to create the incentives and frameworks for institutions undertaking policy making, regulatory and service delivery functions to operate efficiently. Its proposed reform package includes: clarifying the overarching objectives for policy in the sector; ensuring that supply augmentation, pricing and regulation are aligned with it and assigned to the appropriate organisation; putting in place best practice governance arrangements for institutions; and monitoring the performance of utilities and reviewing progress on implementing reform.

The report acknowledges that the circumstances of urban regions vary and there is not a 'one-size-fits-all' solution with respect to industry structure. The Commission has identified a number of different options for structural reforms that could be beneficial in large cities and smaller regional urban areas.

Dr Craik said "The reform package would provide benefits to the community. Water consumers would get more choice about price, reliability and security of supply while holding water utilities responsible and accountable for delivering their services efficiently. It's also timely to undertake reform, with security of supply unlikely to be an issue in most jurisdictions in the near future."

The Productivity Commission report details the costs to the community of mandatory restrictions, including:

- loss of amenity from the deterioration of lawns and gardens
- purchasing and installing new watering systems as changes occur in allowed methods of watering, such as installing 'greywater' systems and rainwater tanks
- the need to adopt labour-intensive methods of watering when watering is permitted, a tax in kind on watering
- carrying 'greywater' in buckets from showers to outdoor plants
- loss of sleep and/or leisure as a result of setting alarms to arise and water gardens in permitted time periods
- having to water in the dark
- cancelling or rearranging other activities in order to water gardens at permitted times
- inability of children to play under garden sprinklers and to use water toys
- the need to drive cars to a car wash and paying to clean them

**"Mandatory restrictions should be used only in the very worst water shortage emergencies"**

- increased damage to buildings, other structures and pipes through cracking.

Because of the social and economic costs, mandatory restrictions should be used only in the very worst water shortage emergencies, the report suggests, adding that restrictions can in fact result in "perverse incentives" for deliberate excessive use. It suggests a desire to generate extra grey water for lawns and gardens might lead to the over-use of drinking-quality water in showers, baths and tanks.

The report also comments that there is sufficient evidence available to conclude that much recent investment in supply augmentation using desalination could have been smaller in scale and from a source other than desalination, e.g. recycled water, while maintaining security of supply. Lower cost sources of water supply, such as urban-rural trade and aquifers, have been available in several jurisdictions, but large investments in desalination have been preferred.

Another component of the urban water sector discussed in the report is that of planned indirect potable use of recycled water. This has

so far been ruled out by governments in response to opposition by communities, even though the National Water Commission has stated there are no public health barriers. In such circumstances, it is important that the community and decision makers are properly informed about the costs, benefits and risks to water consumers, so that the best choices can be made. Community consultation needs to be a component of any decisions on supply augmentation.

The Commission is seeking public feedback on its draft proposals through submissions and attendance at its public hearings in May/June. The final report will be delivered to the Government at the end of August 2011. •

**Source:** Australian Government Productivity Commission media release. For a draft copy of report see: [www.pc.gov.au](http://www.pc.gov.au)



Photo: Daryl Stevens

The Productivity Commission report details the costs to the community of mandatory water restrictions.

# Australian Water Recycling Centre of Excellence

**The Australian Water Recycling Centre of Excellence aims to enhance the management and use of water recycling by investing in research into practical solutions for securing Australia's future water supply, while at the same time building awareness and understanding in the community about this precious resource.**

Australian Water Recycling  
Centre of Excellence



Launched in March 2010 by then Federal Climate Change Minister, Penny Wong, the Centre has undertaken extensive consultation with industry, researchers and regulators across the country to develop its Strategic Research Plan, which sets out its goals and investment priorities. The plan identifies four industry-relevant goals which will guide the Centre's research and investment priorities for the next few years:

- The social/economic/environmental value of water recycling is demonstrated and enhanced
- A national validation framework for water recycling is established
- Recycled water is seen as an acceptable 'alternative water' for augmenting drinking water supplies
- A national knowledge, training and education program for water recycling is established.

The Centre has already released three rounds of funding calls, with the first project funded in March this year – the development of a National Validation Framework for water recycling.

Centre of Excellence CEO Dr Mark O'Donohue said that during the initial engagement period it was clear that having a national framework was a high priority for the water industry.

"Developing a National Validation Framework is a key component of the Centre's research agenda, which is why it was the first project to be funded," Dr O'Donohue said. "Australia has national guidelines that set water quality requirements. However, each State and Territory has its own validation approach, often with different criteria and testing requirements."

The framework will provide a consistent and efficient approach to validation which does not compromise the safety of the water recycling process. The first stage of the project, which began in April, will result in a Roadmap Report that identifies priority investment required to fill gaps in knowledge about validation, sets out mechanisms for industry, regulators and researchers to jointly deliver a framework, and identifies any additional resources required. Once this report is accepted, the Centre will allocate up to \$3 million in further funding for establishment of the National Validation Framework.

Led by Water Quality Research Australia, the project is being undertaken by a consortium of more than 20 organisations including the CSIRO, leading universities, state regulators, utilities and manufacturers involved in water recycling across the country.

The second round of funding, expected to be awarded in the coming months, focuses on the goal of reclaimed water being seen as an acceptable alternative water source for augmenting drinking water supplies.

## **A more cooperative and efficient national approach to urban water research investment and management**

Funding in this round will be awarded to projects covering three streams:

- Demonstration of water production performance and operational reliability
- Evaluation of social, economic and governance challenges
- Design and implementation of a national demonstration and engagement program.



Full proposals for the Centre's third funding round were submitted in late April and are focused on demonstrating and enhancing the social, economic and environmental value of water recycling. The Centre expects to run at least two more funding rounds over the next 12 months.

In addition to rolling out its own research program, the Centre is also beginning to work with other Urban Water research and development Brokers to better coordinate research investment in Australia. The R&D Broker forum was initiated following Ozwater 2010 and is a group of organisations who are

typically not R&D providers themselves but engage industry and researchers to identify and negotiate research priorities, and then commission and manage R&D project investments to achieve a set of objectives. The forum is exploring the opportunity to design and implement a more cooperative and efficient national approach to urban water research investment and management. It provides a mechanism for the CEOs and directors of these entities to understand and share information on their

respective business models, discuss and agree core areas of interest, and discuss opportunities for alignment of effort and joint funding initiatives.

The broader urban water community had the opportunity to hear more about the R&D Brokers Forum at OzWater 2011, where forum participants organised a workshop to discuss the concept of Urban Water Brokers and explore the broader communities' views on a range of initiatives. Workshop participants strongly supported the initiative, and the R&D Brokers agreed to continue to work towards a more effective delivery of their collective \$150 million investment over the next 5 years. The Australian Government has committed \$20 million in funding over five years to the Australian Water Recycling Centre of Excellence, through the Water for the Future initiative.

**For more information** on the Australian Water Recycling Centre of Excellence or the Urban Water R&D Broker Forum, visit [www.australianwaterrecycling.com.au](http://www.australianwaterrecycling.com.au) or contact CEO Mark O'Donohue at [mark.o'donohue@australianwaterrecycling.com.au](mailto:mark.o'donohue@australianwaterrecycling.com.au)



# Review of urban water quality regulation

## Waterlines report 47 - May 2011

The Review of urban water quality regulation in Australia report is part of a suite of work undertaken by the Commission to support its keystone project, Urban water in Australia: future directions.

It sets out three reform options to ensure Australia's water sector maintains its strong record in delivering safe drinking water to our towns and cities.

The report finds that Australia's urban water sector is changing and must continue to do so to meet the supply challenges posed by climate variability and population growth.

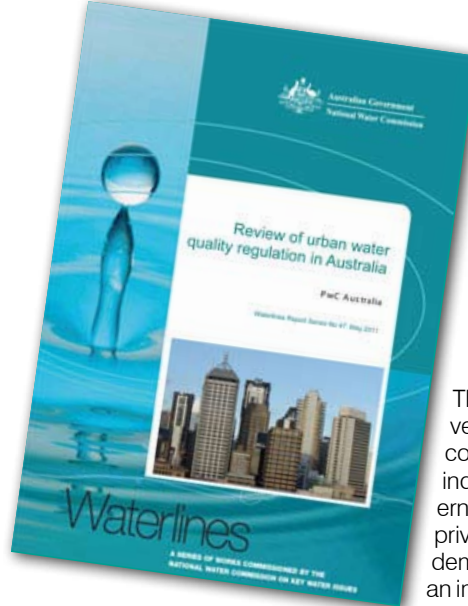
Water managers are facing a broader range of water quality risks as a result of new scientific and technological developments and the

use of more diverse water sources.

These developments demand more adaptive and collaborative water quality management and regulatory approaches.

This review examines the institutional and governance arrangements for urban water quality in Australia. It outlines options for improving regulation, focusing on institutional and regulatory settings.

The Commission supports the second of the options set out in the report, to establish greater cross-jurisdictional coordination, as a starting point for the urban water sector to consider.



The report was developed following consultation with peak industry groups, government agencies, the private sector and academic experts. It offers an important contribution to improving Australia's

regulatory systems for water quality.

This report is supported by three technical reports: A national approach to the risk assessment, risk communication and management of chemicals in recycled water, Identifying data gaps and refining estimates of pathogen health risks for alternate water sources and Talking about water. •

For more information: [www.nwc.gov.au](http://www.nwc.gov.au)

## EVENTS diary dates

### Australia

#### 36th Annual Queensland Water Industry Operation Workshop and Exhibition

June 1-2, Clive Berghofer Recreation Centre, University of Southern Queensland, Baker St, Darling heights (Toowoomba),

A trade exhibition and conference showcasing advances, case studies and reviews of projects, technologies and training opportunities from the Queensland Water Industry.

More information: <http://wioa.org.au>

#### IWES Gold Coast



18-22 July, Surfers Paradise, QLD

Now in its 32nd year, IWES is the largest and most successful continuing education program in Australia for professionals responsible for industry environmental performance. IWES courses are designed to keep busy professionals abreast of the latest environmental management trends. The Gold Coast training week is an extensive program of 19 courses in water, wastewater, environmental management and air quality.

More information: [www.iwes.com.au](http://www.iwes.com.au)



#### 9th IWA Specialist Conference on Waste Stabilisation Ponds

August 1-3, Stamford Grand Adelaide, Glenelg Adelaide,

The aim of this conference on waste water management in rural and urban areas is to provide a forum for the exchange of the most recent ideas, techniques and experience in all areas of system management that could contribute to more efficient and sustainable use of waste water. This conference will focus on techniques for the delivery of the maximum volumes of clean, environmentally safe, treated waste water for amenity and agricultural purposes, using minimal energy inputs and having low maintenance requirements.

For more information: [www.iwawsp11.com](http://www.iwawsp11.com)



#### Irrigation Australia 2011 Regional Conference & Exhibition

August 22-25, Hotel Grand Chancellor, Launceston, Tasmania

Registrations are now open for Irrigation Australia's 2011 Regional Conference & Exhibition. Come and experience the latest irrigation and water management industry information and analysis whilst at the same time enjoying a number of exciting social and networking activities. Up to date information on the program and speakers is available on the conference website. Early bird registration closes midnight Thursday 4 July 2011.

More information: [www.irrigation.org.au](http://www.irrigation.org.au)

#### The IDA World Congress 2011 on Desalination and Water Reuse

September 4-9, Perth Convention and Exhibition Centre, Western Australia

Call for papers now open!

The International Desalination Association is pleased to present the Call for Papers for the IDA World Congress 2011 on Desalination and Water Reuse. This biennial event themed, "Desalination: Sustainable Solutions for a Thirsty Planet" is the premier global event on desalination and water reuse. Extended abstracts will be accepted online beginning July 15 and ending October 1, 2010.

More information: [www.idadesal.org](http://www.idadesal.org)

#### 74th Annual WIOA Victorian Water Industry Engineers and Operators Conference and Exhibitions

September 7-8, Bendigo Exhibition Centre, Bendigo

Water industry operations staff, professionals and consultants, along with representatives from any companies supplying goods or services to the water industry are invited to meet at the Bendigo Exhibition Centre to discuss the latest in water industry developments and see state-of-the-art technology on display. Papers are invited on a variety of subjects including: new or innovative technology, water resource management, trade or industrial waste, biosolids or reclaimed water re-use practices, control of algae in water or wastewater and process management or monitoring.

More information: <http://wioa.org.au>

# 16 EVENTS diary dates

## 4th International Urban Design Conference - Resilience in Urban Design

September 22-23, Gold Coast

The theme for the 4th International Urban Design Conference is Resilience in Urban Design through measures such as supported interconnectivity, appropriate densification within urban footprints, multiple transit modes and walkability, socially inclusive design, economic resilience, and adaptive built environments. Resilience in Urban Design is a chance to reinforce and highlight these resilient solutions for our citywide planning, design and infrastructure - to be able to successfully address emerging challenges brought about by climate change, peak oil crisis, population growth, social disengagement, technological disparity, rising pollution and waste, demands on food production, rising carbon emissions, and diminishing habitat and biodiversity.

More information: [www.urbandesignaustralia.com.au](http://www.urbandesignaustralia.com.au)



## 14th International Riversymposium

September 26-29, Brisbane

The International Riversymposium is the preeminent international river management conference. Attended by leading scientists, community groups, government agencies and corporate leaders from over 25 nations, the Riversymposium is the ultimate river and water management conference where the latest thinking and proven solutions are explored and debated.

The 14th International Riversymposium will explore the multiple reasons that rivers are valuable, ranging from economics through to cultural and spiritual values. There will be a prominent focus throughout the conference on natural disasters and their value to rivers and waterways, due to the recent events that are being felt across the globe and specifically in Queensland.

More information: [www.riversymposium.com](http://www.riversymposium.com)

## International

### 15th Annual Water Reuse & Desalination Research Conference

May 16-17, Las Vegas, Nevada

The WaterReuse Research Foundation's Research Conference provides an opportunity for the water reuse and desalination communities to hear and see presentations by researchers on the latest results of ongoing research. The conference provides a forum for water reuse and desalination research professionals to interact, network, and discuss current and future research needs and trends. This is the conference you need to attend to learn about technologies that will become mainstream in 5-10 years.

More information: [www.watereuse.org](http://www.watereuse.org)



International  
Water Association

### 8th IWA Leading-Edge Conference on Water and Wastewater Technologies

June 6-10, Amsterdam, The Netherlands

The annual leading-edge conference on water and wastewater technologies is focused specifically on advances and development in water and wastewater technologies. To keep the programme targeted and discussions meaningful, the conference consists of a single plenary session of invited speakers on the first day, followed by two parallel sessions (one for drinking water and the other for wastewater) on days two and three. This year's drinking water track focuses on technology developments that relate to water scarcity and improved efficiency. The wastewater track will focus on the primary drivers for technology development: better economy and performance of systems, and adaptation or mitigation of climate change effects.

More information: [www.let2011.org](http://www.let2011.org)

### Risk Assessment Study of PPCPs in Recycled Water to Support Public Acceptance (WRF-09-07)

June 23, Webcast.

What chemicals remain in recycled water after treatment? Can they harm landscapers, golfers, agricultural workers or children that come into contact with turf, crops or landscaping irrigated with recycled or reclaimed water? How do we effectively communicate the risk? What can this level of risk be compared to that can be easily understood by members of a community contemplating using recycled water? These questions and more will be addressed on this webcast.

More information: [www.watereuse.org](http://www.watereuse.org)

## IWA Water Convention 2011 – Sustainable water solutions for a changing urban environment

July 4-8, Singapore

The Water Convention is a platform for industry experts, regulators, academics to interact and share ideas on a wide range of water challenges. The 2011 Water Convention focuses on a wide range of topics along four main themes of:

1. Solutions for Water Systems Efficiency & Effectiveness
2. Planning for Sustainable Water Solutions
3. Water Quality & Health
4. Governance & Finance

The Water Convention will explore practical applications of technological solutions, management strategies and planning and financial models to solve water problems specifically in the Asia-Pacific and the Middle East regions.

More information: [www.siww.com.sg](http://www.siww.com.sg)

## 12th International Conference on Urban Drainage

September 11-15, Porto Alegre, Brazil

The 12th International Conference on Urban Drainage will bring together academics, industry and regulators to discuss the most recent advances in urban hydrologic and hydraulic processes and technological, institutional, managerial and legal issues relating to urban drainage.

More information: [www.acquacon.com](http://www.acquacon.com)

## The 26th Annual WaterReuse Symposium

September 11-14, 2011 at the Sheraton Wild Horse Pass Resort in Phoenix, AZ.

Presented by the WaterReuse Association and cosponsored by the American Water Works Association and the Water Environment Federation, the Symposium will feature more than 100 technical presentations, technical tours, a national legislative and water policy outlook session, receptions, an awards luncheon, and the ever-popular exhibition component.

We invite you to join us for the world's premier conference devoted to water reuse and desalination.

To view the digital brochure for the Symposium, click here.

To register for the Symposium: [www.watereuse.org](http://www.watereuse.org)





## EVENTS

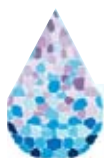
## diary dates

### Cities of the Future 2011

September 15-18, Xi'an, China

Sustainable water and wastewater management is a hot topic for urban water environment improvement nowadays and toward the future development. In China, as well as other developed and developing regions in the world, there has been increasing demand of water supply for domestic, municipal, industrial and environmental uses in the expanded and/or newly developed urban areas. Many efforts have to be made to overcome water shortage and environmental deterioration. In China, a series of national projects are underway for this purpose. The IWA conference "Cities of the Future Xi'an: Technologies for Integrated Urban Water Management", will provide a good opportunity for Chinese scientists, engineers, and environmental decision makers to seat together with professionals from all over the world to exchange their opinions and experiences in the related fields.

More information: [www.cof-xian2011.com](http://www.cof-xian2011.com)



**WATER REUSE**  
BARCELONA 2011

### 8th International Conference on Water Reclamation & Reuse: "a dependable water resource under the uncertainties of climate change"

September 26-29, Barcelona, Spain

For the last 20 years Spain has made a major effort in developing water and wastewater infrastructure. About 90% of Spanish municipal wastewater is treated to European Directive's standards; this has stimulated the gradual emergence of numerous water reclamation and reuse projects that account for about the 13% of treated effluent flows. From the regulatory standpoint, Spain has led development and implementation of water reclamation and reuse regulations at regional and national level. The Conference will be chaired by Prof. Rafael Mujeriego and Mr. Lluís Sala as Vice

Chair. Prof. Rafael Mujeriego and Mr. Lluís Sala have been involved in the IWA Specialist Group on Water Reuse for many years, and have an internationally recognized experience in water reclamation and reuse practice.

More information: [www.waterbcn2011.org](http://www.waterbcn2011.org)



### Potable Reuse Conference: A Reliable Source for our Future

November 13-15, Florida, USA

The Water Reuse Association will be holding its second specialty conference on Potable Reuse, a specialty conference bringing leading experts in the field together to discuss critical factors in the success of potable reuse projects, including addressing regulatory issues, demonstrating environmental and economic viability, and enhancing public understanding and acceptance.

More information: [www.watereuse.org](http://www.watereuse.org)



## NEWS

## innovations & information

### Queensland

#### Total water cycle management planning tools and resources

A range of resources are available to assist in undertaking total water cycle management (TWCM) planning, as required in Queensland under the Environmental Protection (Water) Policy 2009. This includes Total Water Cycle Management Planning Guideline for South East Queensland –Version 1, prepared by Water by Design and just released by the Department of Environment and Resource Management. Local governments in South East Queensland are to use this guideline when preparing their TWCM plans. Version 1 supersedes the Consultation Draft.

In addition, the National Water Commission has been working on a collaborative project to develop tools and resources for integrated supply-demand planning. The range includes resource papers, case studies, a Guide to Demand Management and Integrated Resource Planning and a web-based water supply-demand model. These tools may be relevant when undertaking detailed TWCM planning.

Source: [www.urbanwaterirp.net.au](http://www.urbanwaterirp.net.au)



#### New Ecosciences Precinct launched in Brisbane

The \$270 million Ecosciences Precinct at the Boggo Road Urban Village, Dutton Park, Brisbane, is dedicated to solving some of Australia's biggest environmental problems. Climate change, water issues and balancing the needs of our environment with the growth of our industries are the priority research areas.

The Ecosciences Precinct will enable world-class collaboration between Queensland and Australian Government researchers and provide future opportunities for working with researchers from universities and industry. The precinct will bring together over 1,000 researchers and staff from the following leading research organisations:

- Department of Employment, Economic Development and Innovation
- Department of Environment and Resource Management
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Source: [www.science.qld.gov.au](http://www.science.qld.gov.au)

### Victoria

#### A popular drop for Wonga Park

Yarra Valley Water is considering piping recycled water to houses and businesses in Wonga Park. The scheme, which has strong community support, would be the first in Victoria to hook up recycled water into a developed area. It would use excess water from the nearby Brushy Creek Treatment Plant. The water authority has been quoted \$9.5 million to install the system while it connects houses in the area to reticulated sewerage.

A survey of residents showed 85 per cent would use the recycled water, estimated to equate to a demand of about 70 million litres each year. Yarra Valley Water's general manager of infrastructure services, Sam Austin, said the project's viability depended on how many irrigators expressed interest. He said the project also needed external funding and \$500,000 had been requested from Manningham Council.

For more information please visit

Source: <http://manningham-leader.wherelive.com.au>

## Stormwater reuse in Fitzroy gardens, Melbourne

The City of Melbourne has outlined a new stormwater plan in its draft 2011-12 Budget that aims to save and reuse almost 120 million litres of water annually. A stormwater tank to be installed at the Fitzroy Gardens will be one of the city's largest underground tanks with a storage capacity of five million litres. The tank will provide 69 million litres of recycled water every year, which is 59 per cent of the annual irrigation demand in Fitzroy gardens. The water harvesting projects seek to preserve Melbourne's heritage-listed parks, gardens and trees.

**Source:** City of Melbourne [www.melbourne.vic.gov.au](http://www.melbourne.vic.gov.au)

## South Australia

### Council wins award for halving water use

Tea Tree Gully Council in Adelaide has won a Federal Government award for halving its total water use over the past six years. The scheme includes eight wetlands, 10 aquifers and installed 33 kilometres of pipes to distribute recycled water. Council manager of environmental sustainability Brenton Curtis is keen to work with other councils on similar measures.

"We're looking at adjoining councils as well as other users within the City of Tea Tree Gully. All the initiatives that we've put in place are easily transferable to other sites," he said. "It's an integrated approach so people could take small activities and then gradually implement them in stages."

**Source:** [www.abc.net.au](http://www.abc.net.au)  
Wetlands, aquifers and recycling water win Tea Tree Gully an award (file photo)



## New South Wales

### New recycling system helps to double water outflow

More recycled water is now available for use on Wyong shire's sporting grounds and golf courses, easing the pressure on the town water supply. The council has doubled the capacity of its Toukley recycled water plant

enabling it to produce 7.2 million litres of recycled water a day. The upgrade involves the installation of a new dissolved air flotation and filtration system that was designed and constructed by Water Treatment Australia Pty Ltd. The recycled water scheme at Toukley services Toukley golf course, Magenta Shores golf course and its associated development, and a number of open space areas including sports fields and schools.

This is the council's first application of a dissolved air flotation and filtration system for treated effluent for irrigation purposes, and it will assist with meeting increased demand for recycled water in the area. There are five sewage treatment plants - Toukley, Wyong, Charmhaven, Gwandalan and Mannering Park - that feed the recycled water plant with effluent for treatment. The new plant will comply with the new Australian guidelines for recycled water, and includes advanced treatment combined with disinfection using UV light to ensure the treated water meets strict health requirements. The guidelines also impose limits on various nutrients and metals in the treated water to protect the environment and soils that are irrigated with the recycled water.

For more information please visit

**Source:** <http://express-advocate-gosford.wherelive.com.au>

## Western Australia

### Recycled water tees off for golf club

STAGE Two of Margaret River Golf Club's recycled water project has been officially opened. The project pipes recycled water from Gloucester Park to the golf club and South West MLC. Golf club president Ray Mann said: "The golf club can now be assured of an adequate water supply for the summer months without needing to deplete underground aquifers. It is a win-win result for the club, the community and the environment."

The club's existing bore water supply was inadequate in volume to irrigate fairways throughout summer and the water quality was very acidic and high in iron salts. In summer the grass on the fairways was usually extremely dry and brown. The new reliable water source will guarantee that the course can be kept in prime condition over summer when many visitors use the course. It will also allow the club to reconsider holding open events over the summer months when the weather is more conducive to playing golf.

"To recycle water means an easing of the load on the river and stream systems and also that underground aquifers that can be left untapped. Fertiliser application will also be reduced thanks to the nutrient supply in

the recycled water." Mr Mann said. "The club looks forward to the challenge of managing a different set of problems such as increased growth rates and a different range of pests and diseases in the turf."

**Source:** [www.margaretrivermail.com.au](http://www.margaretrivermail.com.au)

### Mining industry wastewater reuse

Some mining by-products that are currently unused can be effective in preventing nutrients from entering river systems, thereby reducing the potential for algal blooms. A joint project between CSIRO and the WA Department of Water investigated a range of mining industry by-product materials to determine their ability to filter nutrients from natural waters or to treat wastewater.

**Source:** WME Volume 22 No.3 April 2011 [www.emn.net.au](http://www.emn.net.au)

## International

### Napa to design pipeline to deliver recycled water for land irrigation use

After many years of discussion and negotiation, Napa County and the Napa Sanitation District (NSD) partnered recently to extend NSD's recycled water pipeline to the Milliken-Sarco-Tulocay area. This project will be completed in two phases. NSD has begun Phase 1, which will extend its recycled water pipeline. Phase 2, which would further extend the pipeline is in the survey and design phase, and is expected to be completed by October 2011.

The county's water-short Milliken-Sarco-Tulocay area gets no water or wastewater services. The proposed pipeline would deliver recycled water for irrigation use by large-volume water users who have voluntarily agreed to participate. Past U.S. Geological Society groundwater resources studies in the area showed groundwater levels have declined over the past 60 years, rendering some wells less productive or unusable and causing some landowners to dig deeper wells. Recycled water is already used locally to irrigate vineyards, golf courses, pastureland, parks and landscaping.

**Source:** Times-Herald online [www.timesheraldonline.com](http://www.timesheraldonline.com)

**Also:** <http://napavalleyregister.com>

### Free, recycled water a hit in Port Elizabeth as drought won't let up ??

The Fishwater Flats sewage treatment works, in Port Elizabeth, South Africa, has been offering residents recycled water since late last year and the facility has proven so popular that management has had to do an upgrade



to cope with the demand. Mike Clinghan, the superintendent at the facility, said the idea to offer recycled water was never planned. "The idea to offer water was very sudden. When the water restrictions were first put into effect, people wanted to know where they were going to get water and the idea of offering recycled water came about." The facility has been upgraded and bigger pumps have been put in so that more trucks can be handled and the facility still runs smoothly.

Picture: BRIAN WITBOOI

**Source:** Sonwabile Antonie, *The Herald (South Africa)*, Copyright 2011 AVUSA Media LTD All Rights Reserved [www.waste-management-world.com](http://www.waste-management-world.com)

### Societies with over 80 flats may have to set up STPs

A proposal has been sent to the General Body meeting of the Pune Municipal Corporation (PMC), India which suggests, housing societies which have 80 or more flats should have their own sewage treatment plants (STPs) and use of recycled water should be made compulsory. This applies to both industrial and business establishments. The existing housing societies which have no room to set up STPs will be given exemption, however, those with room will have to submit a detailed plan to the PMC for approval. The PMC will give tax concessions to the societies having STPs. The societies will have a right to make use of recycled water for non drinking purposes and could also sell recycled water and sludge.

**Source:** TNN, Mar 18, 2011, 12.06am IST

### New Water supply source for Californian water district

Helix Water District in California is pursuing a new, permanent water supply source by augmenting the water in the El Monte Valley underground basin with highly purified, recycled water, which will supply about 15 percent of the district's total demand. The El Monte Valley Mining, Reclamation, and Groundwater Recharge Project will use recycled water that has gone through standard tertiary treatment, plus additional microfiltration, reverse osmosis, hydrogen peroxide, and ultraviolet treatment. Additionally, this new water source will support habitat restoration along two miles of the San Diego riverbed.

**Source:** [www.elmontevalley.com](http://www.elmontevalley.com)

### Civic chief pushes for wastewater recycling plant

The municipal commissioner of Surat, Gujarat province, India has revived a plan for a water recycling plant as the city's water requirement is likely to double in the next 15 years. It is proposed that industries in the city use recycled sewage water, freeing 50 million

litre per day (MLD) of potable water supply for its residents, an increase of 7 per cent. Presently, Surat's average water supply is 700-750 MLD and the demand is projected to rise to 1,300 MLD by 2026. Nearly 50 MLD of this potable water is supplied to industries which could be using recycled water.

**Source:** <http://articles.timesofindia.indiatimes.com>

### City adopts policy to reduce salt in recycled water

At Palo Alto's recommendation, the Los Altos City Council adopted a salinity reduction policy for recycled water to keep within acceptable standards. According to a report by Los Altos Associate Civil Engineer Aida Fairman, Palo Alto operates the Regional Water Quality Control Plant, which treats wastewater from nearby partner cities, including Los Altos, Mountain View, Los Altos Hills and Stanford, and the East Palo Alto Sanitary District.

With a goal of lowering the Total Dissolved Solids (TDS) in the recycled water to less than 600 mg/L, Palo Alto city officials recommend that cities take steps to prevent the unnecessary addition of salts to the sewer system. During testing, Los Altos' source water TDS before use measured 326 mg/L, the highest among the partner cities. Such a level could be the result of blending well water with Santa Clara Valley Water District water in the city's water supply, Fairman said. Los Altos' wastewater TDS following use by residents measured 655 mg/L, according to a water analysis study conducted last year.

**Source:** Written by Jana Seshadri - Staff Writer  
Email: [janas@latc.com](mailto:janas@latc.com)  
[www.losaltosonline.com](http://www.losaltosonline.com)

### 'Recycled Water Advocate of the Year' in California announced

Robb Whitaker, General Manager for the Water Replenishment District (WRD) of Southern California, has been tapped as this year's recipient of the 'Recycled Water Advocate of the Year' award from the California Section of the WaterReuse Association. The award recognizes an individual who has made "significant contributions to the advancement of water reuse through active support and promotion of recycled water." Whitaker conceived the District's signature Water Independence Now (WIN) program. The WIN program is a nationally recognized model of local water supply development that includes the Leo J. Vander Lans Advanced Water Treatment Plant in Long Beach, California and the Groundwater Reliability Improvement Program (GRIP) in conjunction with the County Sanitation Districts of Los Angeles County. These efforts replace imported water with highly purified wastewater for the protection and replenishment of the groundwater basins.

**Source:** [www.prnewswire.com](http://www.prnewswire.com)

### Taiwanese industries prepared for water rationing

Faced with the growing likelihood of a second-stage water rationing to be implemented in Hsinchu, two electronic industry wafer foundries, Taiwan United Microelectronics Corp. (UMC) and Taiwan Semiconductor Manufacturing Co. (TSMC), said they are prepared for the upcoming water supply shortage. According to UMC, the company has standard procedure to cope with the water shortage and will buy water from external suppliers. TSMC said the company will use recycled water to cover the shortfall. According to the manufacturer, it started to reduce water consumption in early April and 85 percent of water consumed since then has been recycled for further use. AU Optronics Corp and Chimei Innolux Corp, the nation's two largest flat-panel makers, are also using recycled wastewater. They said they already recycle an average of 85 percent of the wastewater they generate, and Chimei Innolux said the recycling rate was as high as 91 percent at some of its factories.

AUO said its Water Inter-use System, a water saving system connecting different pieces of equipment, enables it to save 335,000 tonnes of water a year, enough to fill 160 standard swimming pools.

A second-stage of water rationing was announced by Minister of Economic Affairs Shih Yen-shiang in May and the supply of water to industrial users will be cut by 5 percent and fountains and other non-essential users will have their supplies cut off. The areas affected by the measure are Hsinchu, Taoyuan, Miaoli and Changhua counties, Greater Taichung, and Banciao and Sinhuang districts in New Taipei City.

**Source:** [www.chinapost.com.tw](http://www.chinapost.com.tw)  
and Taipei Times [www.taipeitimes.com](http://www.taipeitimes.com)