

rewater

farming with recycled water



Toowoomba seeks to turn waste into water

*From Qld NR&M News – 8th September, 2005
By Bryan Mulligan, Communications Officer,
Public Affairs*

The Toowoomba City Council (TCC) is looking to become the first council in Australia to implement planned indirect potable reuse to supplement drinking water supplies.

As radical as the idea sounds, Queensland Department of Natural Resources & Mines water reuse expert Ted Gardner predicts it will become the norm, as growing towns and cities battling climate change succumb to an “avalanche of common sense”.

Comparing the council’s proposal to other innovations, Ted says: “Remember, someone had to be the first to replace clay sewer pipes with PVC ones-what was seen as a risky venture has become an industry standard.”

If the current drought persists, Toowoomba will run out of water in two years. The city’s residents are currently subject to level four water restrictions; allowed to use only buckets to water gardens and wash cars.

Although they help, restrictions alone are unlikely to stave off potential water shortages in Toowoomba.

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Know-how for Horticulture™

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Moreover, additional supplies from Wivenhoe Dam and a new dam at Emu Creek have been ruled out as they would negatively impact on other areas of South-East Queensland.

Accordingly, TCC has been developing an integrated water management plan, including a \$35 million upgrade of the Wetalla Water Reclamation Plant, due for commissioning in September 2006.

The council proposes to treat 6500 megalitres (6.5 billion litres) of sewage at the upgraded plant, using ultra-filtration, reverse osmosis, and ultraviolet disinfection and oxidation.

At the end of the process, the recycled water will have a six-star rating - purer than drinking water and suitable for kidney dialysis machines and pharmaceutical manufacturing.

The purified water would then be mixed with water in Cooby Dam, north of the city, before being sent for further treatment at the city's main water treatment plant at Mt Kynoch.

Ted says, "mixing the water in the dam is a psychological treatment: it removes the 'yuk' factor as the treated water mixes with its mates and becomes part of the natural water".

It will make up 25 per cent of Toowoomba's total supply. In addition, it is proposed that lower-grade recycled water be used for industry and agriculture, and that the brine by-product from the reverse osmosis be used to wash coal in the Ackland area.

As clean as the drinking water would be, the council will still have its work cut out convincing the sceptics.

"The make-or-break issue is: how are you going to win over the CADS (citizens against drinking sewage), also known as the toilets-to-tappers, who don't believe in recycled water for potable purposes?"

"T-R-U-S-T is absolutely paramount-trust in the council to look after the interests of their ratepayers, trust in the regulatory agencies of government [including NR&M] to ensure that nothing will happen to the water supply that could hurt the residents of Toowoomba.

"You also need clear political leadership-that's certainly what Di Thorley (Toowoomba Mayor) is giving-and, if possible, an example of where it's worked elsewhere, eg Singapore and Orange County, California.

"If you've been to Disneyland and had a drink from one of their water fountains, you've probably consumed a little bit of recycled water from the Orange County aquifers," Ted says.

Toowoomba City Council has applied for funding for its proposed recycling project from the Australian Government's Water Smart Australia Program.

If the funding comes through and the council can win over its ratepayers and clear the regulatory hurdles, recycled water is expected to start flowing out of Toowoomba's taps by the end of 2009.

"I think Toowoomba's being incredibly innovative and we should be exceptionally proud that a Queensland provincial city is leading Australia in developing this new supply of water," Ted says.

For more information, telephone Ted Gardner on 07 3896 9488 or visit the Water Futures Toowoomba website at: www.toowoombawater.com.au
www.toowoombawater.com.au/media-releases.html

From the editor

ReWater has been developed in recognition of the growing interest in the use of reclaimed water in agriculture.

We would like ReWater to become a forum for you to communicate your thoughts about the beneficial use of reclaimed water.

If you would like to receive a copy of ReWater electronically, email us at rewater@reclaimedwater.com.au

If you have articles, ideas or would like to raise issues in the letters to the editor, submit them to the National Coordinator for Reclaimed Water Development in Horticulture.

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Council recycles water for sports oval using drip irrigation

As a result of continued drought conditions and critically low water storage levels, Western Water, Macedon Ranges Shire Council, Gisborne Junior Soccer Club and the Victorian State Government (via the Smart Water Fund) installed a highly innovative sub-surface irrigation system to connect Dixon Field to recycled water.

Dixon Field, which receives water for irrigation from Western Water, is a multi-purpose sporting ground maintained by the Macedon Ranges Shire Council. Dixon Field is home to the Gisborne Junior Soccer Club and Gisborne Little Athletics Club, among other sporting groups.

The sub-surface irrigation system

The innovative sub-surface irrigation system is believed to be the first of its kind in Victoria, and was installed on one oval. Installation of 20,140 metres of drip tube was completed in a matter of days and did not interrupt local sporting events on the site.

The system prides itself on:

- Increasing water efficiency by up to 40%, by eliminating soil surface evaporation;
- Maintaining soil moisture, thus promoting turf growth;
- Providing uniform irrigation distribution; and
- Reducing risks of vandalism, over-spray and runoff.

Key features of the sub-surface irrigation system include:

- Soil moisture sensors that take the guess work out of "when to water". The irrigation system is automatically programmed to irrigate according to turf requirements;
- Flow rates within the system are monitored on a regular basis, enabling leakages to be readily identified. All field valves are pressure and flow regulated to allow emitters to release a consistent volume of water;
- The system incorporates a fertiliser injector in the filter backflow prevention device assembly for an even application of fertiliser direct to the turf root zone; and
- All monitoring features are transmitted to a central control point allowing the system to be controlled remotely, with water application rates based on monitoring results and historical and actual evaporation and rainfall data. In fact, whilst Dixon Field is located in Gisborne in central Victoria, it is monitored from Cavan in South Australia!

Fully commissioned in March 2005, the system now requires only a simple maintenance schedule that is undertaken by the Macedon Ranges Shire Council in consultation with the users and installation company Greene Eden.

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Recycled water use

Western Water delivers a guaranteed supply of Class C (Victorian EPA) Recycled Water to Dixon Field.

The main advantage of utilising sub-surface irrigation systems on open space sites, such as Dixon Field, is that many public health and safety risks associated with the use of recycled water are eliminated. Recycled water can be used at any time, even while games are in progress! In addition, there are no sprinkler heads on the playing surface, and no recycled water contact concerns due to pooled water from broken sprinklers, or public access issues whilst irrigation is occurring.

Recycled water delivered to Dixon Field has a very limited sediment component. However, to protect the irrigation system a primary filter is used to ensure impurities and sediments are removed from the recycled water. This filter incorporates a self-cleaning screen filter with electric and hydraulic control that requires minimal checks and maintenance. A secondary filter is infused with herbicide to protect against underground root intrusion and ensure the longevity of the system.

Benefits

The sub-surface irrigation system combined with the use of recycled water provides many benefits over a typical irrigation system. Benefits include up to a 40% reduction in water consumption in comparison with traditional overhead or pop-up sprinklers, saving an estimated 2-3 ML of drinking water per year.

The project received funding from the Victorian Government's Smart Water Fund and Western Water. The Fund is set up to encourage and support innovative water uses. Gisborne Junior Soccer Club prepared their Smart Water Fund proposal with support from the local community including Western Water, Macedon Ranges Shire Council, and the club's co-tenants at Dixon Field. By using recycled water in conjunction with sub-surface irrigation, an innovative and sustainable solution has been achieved for Dixon Field, Western Water and the Gisborne community.

Links

Western Water

www.westernwater.vic.gov.au

www.westernwater.vic.gov.au/content.asp?data=0D08030B4D4C4F494849

New national guidelines for water recycling

http://www.ephc.gov.au/ephc/water_recycling.html

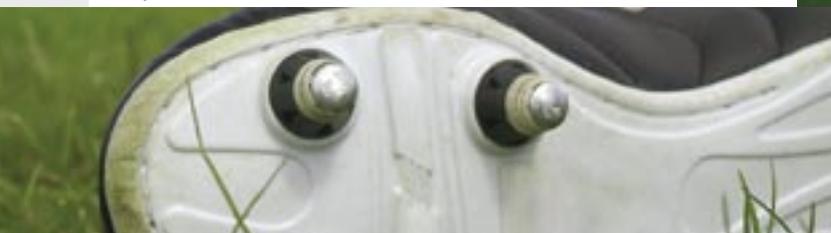
The closing date for Public Comment is Friday 13 January 2006.

There is considerable pressure to increase water recycling to cope with ongoing drought and increasing demand for water. Water recycling programs are being developed by all jurisdictions as key elements of integrated water cycle management. Recycling, particularly substitution for non-drinking water uses of potable water, is seen as critical to effectively managing demand and deferring expensive new infrastructure.

Consequently, the Environment Protection and Heritage Council and the Natural Resource Management Ministerial Council initiated the development of national guidelines for water recycling. The guidelines comprise a risk management framework and specific guidance on managing the health and environmental risks associated with the use of recycled water.

The guidelines initially focus on:

- large-scale treated sewage and greywater to be used for:
 - residential garden watering, car washing, toilet flushing and clothes washing;
 - irrigation for urban recreational and open space, and agriculture and horticulture;
 - fire protection and fire fighting systems; and
 - industrial uses, including cooling water.
- greywater treated onsite (including in high rise apartments and office blocks) for use for garden watering, car washing, toilet flushing and clothes



Australia

Federal report accuses cities of water wastage

From Lawlex Water Newsfeed, 22/9/05

According to The Australian, a new Federal Government report has "slammed the states over water wastage, singling out NSW for its 'hubris' over the failure to recycle 400 billion litres of water a year". The capital cities, with the exception of Adelaide, were accused of lagging behind rural Australia in recycling water.

Victoria

Water Factory testing yields promising results: Gippsland Water

From Lawlex Water Newsfeed, 28/10/05
www.gippswater.com.au/media/new.asp?new_id=144

Gippsland Water has announced that work has begun on the Gippsland Water Factory with wastewater treatment testing commencing at the pilot plant. Gippsland Water's Chief Executive Officer, John Mitchell said, "we have moved through our first phase of treatment testing with extremely promising results". The water recycling plant will provide an "odour-free, Class A recycled water product" for industrial use.

Latrobe Valley recycled water scheme holds up Eastern Treatment Plant works approval

From Lawlex Water Newsfeed, 9/9/05
<http://epanote2.epa.vic.gov.au/EPA/media.nsf/7957c9b407150e5f4a256695000c4970/0b2549b3a3575a3aca25706800211137?OpenDocument>

EPA Victoria has announced a two-year extension for Melbourne Water's Eastern Treatment Plant works approval, while the Eastern Water Recycling Proposal to take recycled water to the Latrobe Valley is investigated.

South Australia

Port Augusta Water Reuse Program increases river flows

From Lawlex Water Newsfeed, 28/10/05
www.environment.sa.gov.au/data/press/water_reuse.pdf???

Premier Mike Rann has announced \$300,000 in funding for Port Augusta City Council's Water Reuse Program, which he says would save almost 90 million litres of River Murray water. Under the program, water will be taken from an existing sewerage main and treated for urban irrigation.

New South Wales

Recycled water proves a fine drop

Sydney Morning Herald 26/10/05
www.smh.com.au/news/environment/recycled-water-proves-a-fine-drop/2005/10/25/1130239521793.html

"Sydney-siders would not drink recycled water but plenty accepted a challenge yesterday to see if they could taste the difference between bottled, tap and recycled water."

Newspoll survey shows Sydney-siders are open to water reuse

Clean Up Australia's media release 15/8/05
www.cleanup.com.au/main.asp?RequestType=MediaReleaseIn&SubRequestType=Detail&MediaRelID=271

Clean Up Australia has conducted a new survey showing that "the people of Sydney are ready and willing to accept recycled water, negating the need for a costly desalination plant". 71% of the Sydney-siders surveyed said they were prepared to use quality treated water in their homes; and 67.4% said "it's acceptable to use treated water from sewage plants to supplement our future water needs".

Western Australia

Managed aquifer recharge using treated wastewater

From Lawlex Water Newsfeed, 21/10/05
www.epa.wa.gov.au/article.asp?ID=2127&area=News&CID=18&Category=Media+Statements

The Environment Protection Authority (EPA) has released its Section 16 advice (October 2005) on managed aquifer recharge (MAR) using treated wastewater on the Swan Coastal Plain. EPA Chairman Wally Cox said that MAR using treated wastewater could "play an important role in the sustainable management of Western Australia's water resources". Dr Cox said, "while there are potential environmental, health and social issues associated with MAR, in a number of situations the risks can be managed to negligible or low levels". The EPA advised that "trials, conducted outside of public drinking water source areas, will be necessary prior to the implementation of any large scale MAR scheme".

Queensland

New recycled water outlets in Caboolture

From Lawlex Water Newsfeed, 14/10/05

Caboolture Shire Council has announced five new recycled water standpipes in the Shire for use by land developers and various contractors. Following level two water restrictions, Council has determined that "development sites within five kilometres of a recycled water outlet must use recycled water for these purposes".

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State funding to help industry swap to wastewater

Ms Boyle's media release 15/9/05

<http://statements.cabinet.qld.gov.au/cgi-bin/display-statement.pl?id=8570&db=media>

Environment Minister Desley Boyle has announced that the State Government will "commit up to \$7 million to Brisbane City Council projects that slash fresh water use by providing treated wastewater to industry". Brisbane City Council is negotiating with large industrial water users in the Australia TradeCoast precinct about using treated wastewater instead of drinking water. Council will receive the funds if negotiations are successful.

Funding boost for Hervey Bay recycling scheme

Ms Boyle's media release 18/8/05

<http://statements.cabinet.qld.gov.au/cgi-bin/display-statement.pl?id=8119&db=media>

Environment Minister Desley Boyle has announced State funding of \$1.6 million towards Hervey Bay City Council's \$3.2 million water recycling program. Ms Boyle says the funding will be used to buy a bunya farm. "Pipes will be laid from the city's wastewater treatment plant to the farm and the recycled water will be used for irrigation" according to Ms Boyle. It is also expected that farmers will be able to connect to the system.

Tasmania

New irrigation system for golf course

From Lawlex Water Newsfeed, 22/9/05

Premier's media release 14/9/05

Premier Paul Lennon has opened a new irrigation system at Claremont Golf Club. The effluent water reuse system uses treated greywater from the Cameron Bay Wastewater Treatment Plant. The total cost of the project was around \$400,000, to which the State Government contributed \$100,000.

Northern Territory

Water reuse project gets funding boost

From Lawlex Water Newsfeed, 22/9/05

http://www.powerwater.com.au/powerwater/news/media_releases/2005/1609_additional_funding_ends_dry_weather_overflows_to_ilparpa_swamp.htm

The Power and Water Corporation has committed \$3.1 million to works to construct a Dissolved Air Flotation plant and infiltration beds at the Arid Zone Research Institute. The treatment plant will enable water that overflows from the Alice Springs Waste Stabilisation ponds to be treated and pumped to the Arid Zone Research Institute "where it will be soaked into the ground using a process called soil aquifer treatment, then stored underground for reuse".

Overseas

Florida DEP publishes reuse inventory

Reuse News 29/7/05, www.watereuse.org/news/wrnews_072905.htm
www.dep.state.fl.us/water/reuse/inventory.htm

The Florida Department of Environmental Protection has released its Annual Reuse Inventory Report. The report includes summary data on reuse facilities, reuse activities, capacity and flow ratios, and more. The report shows that Florida has had a steady increase in water reuse over the past 18 years. For example, from 2003 to 2004, there was a 13.6% increase in the number of residences irrigated, a 3.7% increase in the number of golf courses irrigated, a 4.5% increase in the number of parks irrigated, and a 5.6% increase in the number of schools irrigated.

Study: reclaimed water safe for crops

Reuse News 16/9/05, www.watereuse.org/news/wrnews_091505.htm
<http://twri.tamu.edu/newsarticles.php?view=2005-08-09>

A recent study conducted at the Texas Water Resources Institute concluded that the use of reclaimed water can be a safe and effective way to irrigate crops.

"Managing reclaimed water by pretreating before using it to irrigate, monitoring for viruses, choosing correct crops and periodically leaching the soils should be successful and safe," said Dr George Di Giovanni, Texas Agricultural Experiment Station Environmental Microbiologist.

Dr Di Giovanni and his colleagues studied the movement of viruses carried in water through sandy and clay soils on which spinach was planted. They were interested in how long viruses in the water remain in the soil, how they move through the soil and whether they could harm humans or livestock. There was nothing harmful found in the spinach leaves.

New Delhi, India studies recycled water

Reuse News 16/9/05, www.watereuse.org/news/wrnews_091505.htm
<http://www.newkerala.com/news.php?action=fullnews&id=16623>

Officials in New Delhi, India have begun testing recycled wastewater in an effort to conserve precious potable water, according to a report at NewKarala.com. A recycled water treatment system has been installed at the city's main treatment plant and plans are underway for a dual-pipe system to bring recycled water to homes and businesses for non-potable use.

Purple-pipe systems being embraced

Sacramento Business Journal 9/9/05

<http://sacramento.bizjournals.com/sacramento/stories/2005/09/12/focus1.html>

To stretch supplies, more projects are embracing purple-pipe systems that recycle wastewater for irrigation, industry and even recharging aquifers. There are big costs upfront, but savings down the road.



AWA Seminar – Worry wastes in water: Organics and Salts

December 7-8, 2005

http://www.awa.asn.au/Content/NavigationMenu/NewsEvents/WorryWastes/Worry_Wastes_in_Wat.htm

Speak to any producer and manufacturer in the food and beverage industry and you will hear concerns voiced about difficulties in dealing with high organic wastes and/or high levels of salts in their wastewater, and the pressures to reduce discharges to streams, waterways and the environment. Pressure to reduce discharges to meet regulatory requirements is driving the search by industry for newer, better and more cost-effective ways to treat wastewater. Equally important is the need to increase recycling and reuse of water, primarily to reduce costs associated with buying treated water as much as higher goals of securing the water resource into the future.

California Conference: advanced wastewater treatment and disposal issues related to water recycling

March 12-14, 2006. San Francisco.

www.watereuse.org/news/wrnews_091505.htm

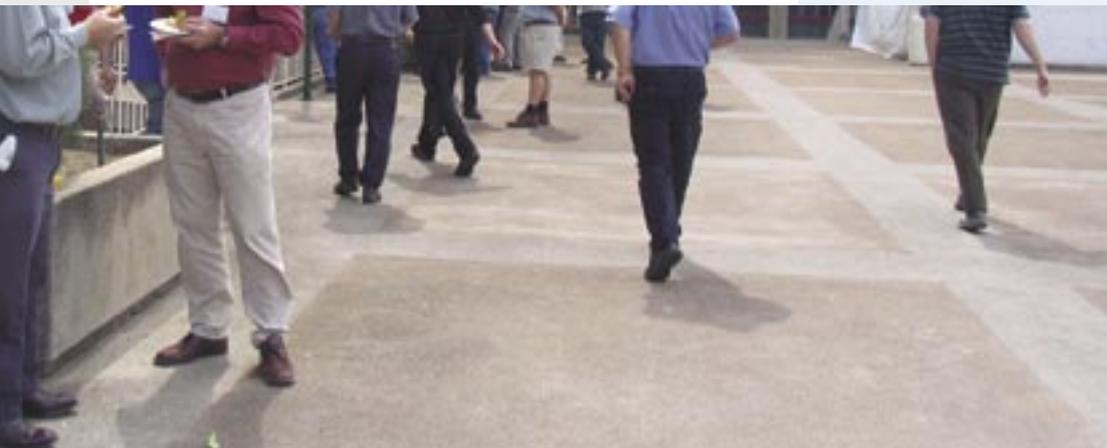
The California Section of the WaterReuse Association has issued a call for papers for their 2006 Annual Conference to be held at the Hyatt Regency San Francisco on March 12-14, 2006. The theme of the conference is Bridging the Gap with Recycled Water. The conference presentations will include panel discussions, individual sessions and workshops covering advanced wastewater treatment and disposal issues related to water recycling.

Enviro 06 Conference and Exhibition

May 9-11, 2006

www.enviroaust.net/e6/what_is_enviro_2006.html

The Enviro Conference & Exhibition is a platform for showcasing the Australian environment industry. To be held in Melbourne from Tuesday 9 May to Thursday 11 May 2006. The Enviro 06 Conference & Exhibition will be presented by Enviroaust Convention and the Australian Water Association and the Waste Management Association of Australia, in partnership with the Victorian Government.



International Conference on Water Resources Issues

December 26-28, 2005. Alexandria, Egypt.

www.ewra.com/pages/2005/contents.htm

The Egyptian Water Resources Association (EWRA) has issued a call for papers for the First International Conference on Water Resources in the 21st Century. The conference topics include water reuse, water supply and demands, river basin management, and more. The conference will present the more recent technological and scientific developments associated with the management of surface and subsurface water resources.

The meeting will be held December 26-28 in Alexandria, Egypt, in partnership with Bibliotheca Alexandrina, Egypt; Wessex Institute of Technology, UK; Desert Research Institute, USA; Disaster Control Research Centre, Japan; and the Water Research Centre, Egypt.

Since it began in Sydney (2000), Enviro has grown from strength to strength, drawing 6,000 people to Melbourne in 2002 and more than 5,000 to Sydney in 2004. The organisers are expecting another 6,000 to attend the Melbourne event in 2006, which will comprise 24 streams and an exhibition arranged around the theme of Building Sustainable Cities.

AWA Biosolids Specialty Conference III

June 7-8, 2006

http://www.awa.asn.au/Content/NavigationMenu/NewsEvents/BSCIII/Biosolids_Specialty.htm

Call for papers for AWA Biosolids Specialty Conference III, Melbourne, June 2006. Papers invited on technologies, projects, case studies and research on viruses, health risks, stabilisation, land and other applications.

Websites

Water Environment Research Foundation (WERF) report on Endocrine Disrupting Compounds (EDCs)

Water Environment Research Foundation has created a four-page Fact Sheet on EDCs from a recent technical brief. Composed in Q&A format, this quick guide answers common questions concerning EDCs. Treatment facilities should find it useful in educating staff members, as well as concerned members of the community. The technical brief supports the conclusions of, and provides references for, the Fact Sheet. Both documents were prepared in response to concerns over the potential for EDCs to enter the environment in treated wastewater discharges and from the land application of biosolids. A PDF version of the technical brief can be downloaded from: www.werf.org/downloads/pdfs/04WEM6.pdf and is free to WERF subscribers.

A PDF version of the Fact Sheet is available at: www.werf.org/pdf/04WEM6a.pdf



Other good reads

Water Reuse News

Water Reuse News: The latest news on water reuse and desalination

www.watereuse.org/news/wrnews_072905.htm
www.watereuse.org/news/wrnews_062205.htm

Report: access to Recycled Water and impediments to Recycled Water investment

www.aciltasman.com.au/images/pdf/AT_water_recycling.pdf

A commissioned report, Access to Recycled Water and Impediments to Recycled Water Investment, has been prepared for the Australian Government's Department of Agriculture, Fisheries and Forestry (DAFF) on behalf of the Natural Resource Policy and Programs Committee.

About ReWater

This newsletter, ReWater, has been designed to make information relevant to reclaimed/recycled water use in horticulture more accessible to horticulturalist (growers/farmers), the water industry and other interested people. It is part of the service provided by the National Coordinator for Recycled Water Development in Horticulture (www.recycledwater.com.au), funded through Horticulture Australia.

Back issues and instructions for subscribing to receive ReWater electronically quarterly can be accessed at www.recycledwater.com.au/newsletter.php

We would appreciate your feedback and suggestions for contributions. Please email to rewater@arris.com.au or contact us on 08 8303 6706.

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