Edition August 2007

rewater

water recycling in Australia

Western corridor indirect potable reuse scheme

Stephen Smolenaars, Arris Pty Ltd
www.westerncorridor.com.au/home.aspx?docID=1
www.westerncorridor.qld.gov.au

The Western Corridor Recycled Water (WCRW) Project (SE Queensland) is Australia's largest recycled water project, and is the third largest advanced water treatment project in the world. It will deliver more than 200 km of pipeline and three advanced water treatment plants.

The pipeline will start at Luggage Point in Brisbane and continue through Brisbane and Ipswich to Caboonbah, in Esk Shire. It will connect six wastewater treatment plants in Brisbane and Ipswich (Luggage Point, Gibson Island, Oxley Creek, Wacol, Goodna and Bundamba) to new advanced water treatment plants co-located at Luggage Point, Gibson Island and Bundamba.

Purified recycled water produced at the advanced water treatment plants will be transported through the pipeline to power stations, industrial and agricultural customers, as well as the Wivenhoe system to supplement drinking supplies. The Project will also substantially reduce the nutrient discharges to the Brisbane and Bremer Rivers and Moreton Bay, helping improve the health of these important waterways.

The two stages of the project will involve:

Stage 1A: An advanced water treatment plant at Bundamba will treat water from existing wastewater treatment plants, at Bundamba and Goodna, to supply Swanbank power station by the end of August 2007.

Stage 1B: The advanced water treatment plant at Bundamba will be expanded to incorporate additional volumes of water from existing wastewater treatment plants at Oxley and Wacol. A pipeline will then link to Caboonbah for offtake to Tarong power station. This stage is scheduled for completion in June 2008.

Stage 2: Two new advanced water treatment plants will be constructed alongside existing wastewater treatment plants at Luggage Point and Gibson Island to provide larger volumes of purified recycled water for delivery to Wivenhoe Dam (drinking water reservoir) by the end of 2008.

HAL

Know-how for Horticulture™

A product of the National Coordinator for Recycled Water Development in Horticulture project. Funded by Horticulture Australia Limited.

contents

features

◀p.1

Advanced water treatment	Capacity	Delivery date
Stage One		
Bundamba 1A	20 ML/day	August 2007
Combined 1A and 1B	66 ML/day	June 2008
Stage Two		
Luggage Point	66 ML/day	October 2008
Gibson Island	50 ML/day	October 2008
Further upgrade	50 ML/day	December 2008

The recycling process

The process of recycling water from the existing treatment plants will involve a multiple - barrier filtration process including a technology called Reverse Osmosis. This is a specialised filter that purifies the water.

The treatment process involves a series of steps to remove materials such as suspended solids, dissolved salts, organic chemicals and microbiological parameters (i.e. viruses, bacteria and parasites). More than 95% of dissolved salts will be removed by this process, with a similar rejection of dissolved organic contaminants providing the most important barrier in the treatment process.

1. Wastewater treatment plant
2. Treatment with microfiltration/ultrafiltration
3. Reverse osmosis
4. Advanced oxidation
5. Stabilisation and disinfection
6. Waste stream discharge

See www.westerncorridor.com.au/media/fact_sheets/water_recycling_fact_sheet.pdf for details on **The Advanced Water Treatment Plants.**

Construction progress to date

(current as at Friday 27 July 2007)

To date, 1.5 million man hours have been worked on the Western Corridor Recycled Water Project, with 54.9 km of pipeline laid.

▶p.3

From the editor

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

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

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

If you have articles, ideas or would like to raise issues in the letters to the editor, submit them to the Australian Coordinator for Recycled Water Use in Horticulture (ACRWH).

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◀p.2

Objectives of the Western Corridor Recycled Water Project

The Western Corridor Recycled Water Project aims to enhance the security of water supply in South East Queensland through:

- increasing available water supplies that are not dependant on climate trends;
- enabling water supply substitution at Swanbank and Tarong Power Stations;
- establishing a sustainable commercial basis for the ongoing operation of the infrastructure developed as part of the project;
- identifying all potential customers and providing them with the best supply terms and conditions that are possible, given commercial and operational constraints; and
- delivering supply in accordance with the community's expected best practice.

To build the Western Corridor Recycled Water Project, Western Corridor Recycled Water Pty Ltd has drawn together the world leaders in the fields of engineering, construction and water and wastewater services.

Five project alliances will build the pipelines and advanced water treatment plants for the Western Corridor Recycled Water Project. During the project phase, Veolia Water Australia will develop project assets and infrastructure and, once construction is complete, it will operate the Project.

Project delivery

The Western Corridor Recycled Water Project will be delivered in two stages and is expected to be complete by the end of 2008; delivering up to 232 ML of water a day to the Water Grid, with the capacity to increase up to 310 ML per day when more wastewater becomes available.

The first stage of the WCRW Project is expected to be complete by June 2008 and provide up to 66 ML of water per day to Swanbank and Tarong power stations.

The second stage will deliver up to a further 116 ML per day by October 2008, and then up to another 50 ML per day by December 2008, to the Wivenhoe system.

Class-A recycled water, drought - proofing the Werribee horticultural industry

Dr Robert Faggian - Department of Primary Industries Victoria
Phone: 03 8341 2414 email: robert.faggian@dpi.vic.gov.au

DPI scientists have shown that vegetable crops irrigated with Class A recycled water meet food safety standards.

Recycled water is a valuable new water resource that can help drought-proof vegetable growers, particularly as the threats of climate change and on-going water shortages loom. The use of recycled water for horticulture has been increasing in Victoria, and consumer and public perceptions have, at times, fluctuated, which is a major concern for recycled water users, such as horticultural growers.

The Trial

The Department of Primary Industries (DPI) established a field-based research project to investigate the food safety and environmental impacts of vegetable crops irrigated with Class A recycled water. The impetus for the project was the drought of 2002/2003 and the subsequent commissioning of a water reclamation facility at the Western Treatment Plant in Werribee (approximately 30 km west of Melbourne). The scheme provided growers in this area with the option of using recycled water to irrigate vegetable crops, but also exposed them to the potential risks associated with negative consumer perceptions of recycled water.

The major objective of the project was to investigate whether the use of recycled water could impact on the credence values associated with Victorian vegetables. This was achieved by establishing a specialised recycled water field trial site where crops, water and soil could be monitored and analysed after repeated irrigations with recycled water, river water, or a mix of the two. Samples were assessed for a range of contaminants, including human pathogens, heavy metals and organic contaminants.

Results

A total of five separate vegetable crops were grown at the trial site (broccoli and lettuce). Results from intensive monitoring of soil, water and produce have shown that vegetables irrigated with recycled water meet microbiological (with respect to thermotolerant coliforms) food safety standards. In fact, recycled water was microbiologically cleaner than the traditional irrigation source of river water. Recycled water did not affect the quality of vegetables during post-harvest storage, nor did it affect the rate of broccoli infection with white blister (a plant disease).

The most significant impact appears to be the high concentration of salts in the water (~1.8 dS/m). DPI's research has shown significant impacts on lettuce yield, particularly during dry summer conditions. Unexpectedly, rising soil salinity was also recorded, even where high volumes (theoretical required leaching fraction) of water were applied in an attempt to leach salt out of the soil. This shows the importance of validating theoretical leaching fractions with field data on a site-by-site basis.

Recommendations

These results have highlighted the need for further research to evaluate the agronomic and environmental impacts of recycled water, and poor-quality irrigation water in general, relating to specific soil types and irrigation practices. Management strategies also need to be developed to assist growers to maximise crop yields when using irrigation water that exceeds the salinity threshold for a particular crop.

H2O Today: FREE new program covering water recycling and more

A Smart Water funded project, managed by Arris Pty Ltd.
www.h2otoday.com.au

A free online radio program is highlighting the importance of water, sustainability and the environment – including some articles on recycled water. H2O Today is a weekly program featuring the latest developments for water professionals, practitioners and those with an interest in a more sustainable approach to water management.

Supported by water industry recruitment company Axis Direct, it is Australia's only online radio program featuring news and developments in the water and sustainability sector.

H2O Today introduces new and exciting facets of the water and sustainability industry with an entertaining, yet informative approach. In only its seventh month of operation, the program already has a large number of visitors. Mike Ryan expects this to more than double in coming months.

And then there's an online video network. H2O Today TV has interviews and news for the water, sustainability and environmental sector. We cover a variety of topics on H2O Today TV including research & development, consultancy, engineering, technology, manufacturing, education, operations and commercial know-how.

"With organisations such as the Australian Water Association, Murray Darling Association, Green Plumbers, and the Water Industry Alliance on board, word is spreading quickly about the good value information we have to offer," he said.

"By listening to the radio show or watching H2O Today TV, water practitioners can pick up key tips for improving processes in their sector or even offer advice to other listeners about innovative programs their business is running.

"Listeners can also contact H2OToday to receive further information on featured stories."

The program can be downloaded each week from the H2O website at www.h2otoday.com.au

For further information on H2OToday, or to contribute story ideas, contact Mike Ryan on (03) 9866 7480.

Bowling greens alive at Seaford due to volunteers initiative and recycled water

By Stephen Smolenaars Arris Pty Ltd.

Despite current water restrictions allowing bowling greens to be watered only twice a week, the Seaford Bowling Club, south east of Melbourne Victoria, has been able to drought-proof its playing surface, and surrounding gardens, with two million litres (ML) of recycled water. The water has been delivered via a pipeline from South East Waters recycling plant, at Carrum, and from storm water captured on-site.

Seaford Bowling Club Green's Director, Barry Charles said "…if it hadn't connected to recycled water three years ago, they may have had to restrict watering by approximately 50% of required levels."

Using recycled water had other benefits, including reducing the amount of fertiliser used, because of the nutrients in the water, and maintaining the greens with an unlimited water supply. Money is also saved on the water bill and in the first year the club saved approximately $2,000.

The recycled water comes from the South Eastern Outfall. It is stored in a 45,000 litre tank which is used to irrigate the greens each evening. An underground drainage system captures seepage and runoff, and pipes into a wet well before it enters a 9,000 litre tank. This water is used to water trees and garden beds, so no water is wasted or leaves the site.

Through voluntary labour and expertise within the bowling community, cost savings on the initial installation were made. Some of the club's members are retired tradesmen from the building and plumbing industry and they gave their time to design and install irrigation systems, tanks and pumps.

Under Stage 3a water restrictions drinking water can only be used on the bowling greens two days a week, for two hours in the morning, unless clubs have access to alternative water supplies like recycled water or storm water.

Stage 4 water restrictions, which may be introduced soon if there isn't significant rainfall, this would prevent any mains (drinking) water from being used on bowling greens.

Seaford Bowling Club has also opened up its bowling greens to other clubs who cannot play on their own dry and parched greens.

This has not only promoted goodwill amongst the clubs, it has also raised awareness about the benefits of recycled water, with several clubs contacting South East Water about connecting to the valuable resource.

Australia

Australian Guidelines for Water Recycling Phase 2

Source:AWA News - 30 July 2007
www.ephc.gov.au/ephc/water_recycling.html

Phase 2 of the Australian Guidelines for Water Recycling, which focuses on storm water reuse, managed aquifer recharge and recycled water for drinking, is underway. 'Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 2): Augmentation of Drinking Water Supplies' DRAFT is now available for public comment. Download from the website above. Written submissions are to Haemish Middleton (hmiddleton@ephc.gov.au), by Friday 21 September 2007.

Water for a healthy country

Source: CSIRO
www.csiro.au/org/HealthyCountry.html

CSIRO's Water for a Healthy Country Flagship is working with governments, industries and communities to develop the knowledge needed to substantially improve the way we use and manage water.

South Australia

Virginia pipeline scheme extension

Source: AWA News – 30 July 2007
www.nwc.gov.au/agwf/wsa/project.cfm?projectID=36&ref=2

The Australian Government has reached an agreement with Angle Vale irrigators that will enable the Virginia Pipeling Scheme Extension to proceed. The construction of more than 18 km of pipeline will supply more than 3000 ML of treated water to irrigators, to assist with productivity and the recovery of overdrawn groundwater resources in the area.

$20 million Federal Government commitment to upgrade wastewater systems throughout South Australia

Source: Adelaide Advertiser, Matt Williams – 27 June 2007
www.news.com.au/adelaidenow/story/0,22606,21974655-2682,00.html

Nearly 70 community wastewater systems across the State will be upgraded in a $20 million Federal Government commitment. The core of the project will enable the reuse of recycled water in the Onkaparinga region to be doubled from 4.4GL per year to 8.8GL by 2011.

McLaren Vale groundwater use declines as recycled water volumes used increases

Source: ABC Online – July 16, 2007.
http://abc.net.au/news/stories/2007/07/16/1979927.htm

Ground water use is lower in the McLaren Vale region, as vines mature and land use changes and more recycled water is used. A report says the use of groundwater in the McLaren Vale area, south of Adelaide, has declined by more than two-thirds in just over a decade, mainly due to the introduction of recycled water.

Victoria

Bracks' $4.9bn water plan

Source: The Age, Melbourne - 21 June 2007
www.theage.com.au/news/national/water-bills-set-to-double/2007/06/19/1182019116320.html

The Victorian Premier yesterday revealed a $2 billion planned investment into Victoria for water infrastructure. It includes money for a desalination plant near Wonthaggi, in the State's south-east, and piping water to the city and suburbs from the Goulburn Valley.

''Sensational" reaction to sewage fish project

Source: Australian Star, Pakenham - 21 June 2007
www.senews.com.au/story/44238

Plans for a 100 hectare fish farm, using recycled water on the Bellarine Peninsula have won cautious early support from council.

Geelong has been promised a $64 million water recycling plant with Shell Australia confirming its future in the city.

Source: Geelong Advertiser - 23 June 2007
www.geelongadvertiser.com.au/article/2007/06/23/4875_news.html

A recycled water plant funded four ways between the State and Federal governments, Barwon Water and Shell, will lead to savings of at least 2000 ML of drinking water per year, or about 5 per cent of Geelong's annual water use. The project, the first of its kind for Australia, will mean 1000 ML less of waste water discharge to both the Black Rock ocean outfall and to Corio Bay from the Shell refinery.

Tasmania

Sewerage Taskforce - Second Round of one-on-one meetings

Source:Treasurer's media release - 6 July 2007
www.media.tas.gov.au/release.php?id=21404

Treasurer Michael Aird has advised Tasmanian councils that the Water and Sewerage Taskforce project team is to begin a second round of one-on-one meetings regarding water and sewerage reform. "The Project Team will also consult with councils on regulatory change and will examine the regulatory objectives and high-level principles relating to pricing and customer service standards", Mr Aird said.

New South Wales

Recycled water has to beat the 'yuck' factor

Source: Sydney Morning Herald - 20 June 2007
www.smh.com.au/news/environment/recycled-water-has-to-beat-the-yuck-factor/2007/06/19/1182019118085.html

ADDING recycled water to drinking water would be a good way for major cities to augment their water supplies however, communities need to get over the 'yuck' factor.

Food industry urged to reduce water and power usage

Source: Food Week - 21 June 2007
www.foodweek.com.au/main-features-page.aspx?articleType=ArticleView&articleId=361

Scientists cited the CUB Yatala plant, where water is recycled to non-beer contact areas of the brewery, as an example of what can be done with regards to recycling.

Queensland

SE Qld dam levels fall below 17%

Source: ABC Regional Online – 10 August 2007
www.abc.net.au/news/stories/2007/08/10/2001615.htm

Brisbane's dam levels have reached the lowest point since Wivenhoe was built in 1987, reports ABC News. SEQWater's operations manager Rob Drury reportedly confirmed that "the collective storage of the three main dams in south-east Queensland is below 17%", warning that level six restrictions would be imposed if the level reached 15%.

Bundaberg council puts recycled water back on agenda

Source: ABC Regional Online – 26 June 2007
www.abc.net.au/news/stories/2007/06/26/1962405.htm?site=widebay

Bundaberg City Council, in south-east Queensland, says it has revived plans for a recycled water system because of demand from farmers in the area.

Recycled water grid projects fast-tracked

Source: AWA water news – 23 July 2007
http://statements.cabinet.qld.gov.au/MMS/StatementDisplaySingle.aspx?id=52985

Parts of the Eastern and Northern Pipelines to form the south-east Queensland water grid have been declared Critical Infrastructure Projects under the State Development and Public Works Organisation Act. This declaration will fast-track access to easements by cutting red tape between the different government agencies which control them.

Western Australia

Western Australia plans to Recycle 30% of Water by 2030

Source: Water Reuse Association (news) – 16 May 2007
www.watereuse.org/news/wrnews_051607.html
www.smh.com.au/news/environment/new-desalination-plant-for-western-australia/2007/05/15/1178995141808.html

The Western Australia State Water Plan 2007 set a goal of recycling 30% of wastewater by 2030, according to WA Business News. "We are investigating new source options, but we must also pay particular attention to recycling as an environmentally sound, cost effective option, Water Resources Minister John Kobelke said while the community has cut back its consumption, population growth is expected to increase 40% by 2030. The state had previously set a goal of recycling 20% of wastewater by 2012. A second desalination plant is planned to be built by 2011, which is expected to provide at least 45 gigaliters of water each year.

Australian Capital Territory

Community to prepare for Stage 4 Water Restrictions

Source: AWA water news - 15 May 2007
www.actew.com.au/News/ArticleDetail.aspx?id=725

ACTEW has announced it is preparing to introduce Stage 4 Water Restrictions - the highest level of our current water restrictions scheme. Managing Director, Michael Costello, said the ACT's water situation is becoming critical, with dam levels currently at 31.2%

Overseas

Federal Bill could expand Recycled Water use in Southern California

Source: Water Reuse Association (news) – 16 May 2007
www.watereuse.org/news/wrnews_051607.html
http://issa.house.gov/index.cfm?FuseAction=PressOffice.View&ContentRecord_id=445&CFID=390790&CFTOKEN=30997203

The U.S. House of Representatives passed legislation on May 7 to authorize $12 million in federal funding to help construct a water pressurization system to help expand the use of recycled water in Riverside County, CA. “The area that the Eastern Municipal Water District provides water for is one of the fastest growing in the country,” said Rep. Darrell Issa (R-CA), who introduced the legislation

Recycled Water to Recharge California Lake

Source: Water Reuse Association (news) – 16 May 2007
www.watereuse.org/news/wrnews_051607.html
www.pe.com/localnews/inland/stories/PE_News_Local_D_recycle04.3ee3be1.html
www.evmwd.com/news/displaynews.asp?NewsID=96&targetid=1

Recycled water will begin flowing into Southern California’s Lake Elsinore in early June to stabilize the lake’s water levels, according to the Press-Enterprise. The Elsinore Valley Municipal Water District spent $4.5 million to build a pipeline that will carry about 4.5 million gallons of recycled water to the lake each day. The popular recreational lake is used for fishing, sailing, and water skiing, but water levels are dropping by about 4.5 feet per year due to evaporation.

The first brief concentrator system for RO and ZLD facility plan

Source: Water Reuse Association (news) – 16 May 2007
www.watereuse.org/news/wrnews_051607.html
www.hpdsystems.com/en/press/?news=6440

The Deuel Vocational Institute in Tracy, CA, will be the site of the world’s first brine concentrator as a key component of a reverse osmosis (RO) drinking water plant at a zero liquid discharge facility, according to a news release. The new system, to be supplied by HPD, will use evaporation technology to treat 250 gpm of reject from the groundwater RO system, which is designed to deliver drinking water. The brine concentrator will reduce the subsequent effluent stream volume by 97% and recycle high-quality drinking water back to the facility. The remaining 3% of the stream is composed of highly concentrated brine that will be sent to a small, onsite evaporation pond to achieve zero liquid discharge.

Arizona Golf Courses benefit from UV Technology

Source: Water Reuse Association (news) – 16 May 2007
www.watereuse.org/news/wrnews_051607.html
www.aquionics.com/news.php?id=16&PHPSESSID=afa0a7ce40b2537d8d5741e8358e44bc

Two golf courses in Anthem, AZ, are benefiting from irrigation by UV treated recycled water. Anthem, a town just north of Phoenix has a population of over 40,000. As part of its rapid expansion, the town recently installed UV disinfection technology to ensure that its water and recycled water is as clean as possible. The two golf courses are using a combination of UV treated recycled water and fresh river water for irrigation. With the increase in population, it is expected that the courses will soon be using recycled water exclusively.

Plan to conserve even more water in future

Source: Mercury News Editorial - 15 June 2007
www.mercurynews.com/opinion/ci_6147062?nclick_check=1

Will recycled water - not good enough to drink but good enough for irrigation - replace the use of drinking water for irrigation? The recycling process is much more efficient, thanks to improved technology, but recycled water’s potential hasn’t been tapped fully. Will new construction be designed to funnel “grey water” from showers, washing machines and sinks to the garden?

Recycled water keeps counties green

Source: Sarasota Herald-Tribune, Sarasota, USA - 16 June 2006.
www.heraldtribune.com/article/20070617/NEWS/706170572

Charlotte will increase its efforts to conserve drinking water with a $17 million, 14-mile pipeline to supply recycled water to a shopping district for garden watering and toilet flushing. This comes as state officials put more pressure on counties to conserve drinking water supplies.

Paint and coating industry conserving water through recycled water use

Source: WebWire, USA - 22 July 2007
www.webwire.com/ViewPressRel.asp?aId=42899

The Californian government has proposed the use of recycled water to replace the potable water supply in the paint and coating industry.

Coming events

Australia

Worry Wastewaters II

November 7 – 8, 2007. Parramatta, NSW
www.awa.asn.au/AM/Template.cfm?Section=_b_Nov_07_b_Worry_Wastewaters_II1&Template=/CM/HTMLDisplay.cfm&ContentID=7007

Worry Wastewaters II is designed to showcase some of the various treatment methods and technologies developed specifically to address difficulties faced when used wastewater contains high levels of nutrients and/or salt. This wastewater usually exceeds discharge limits imposed by regulatory authorities. Disposal would also represent wasting water, which has been a cost of the product process, yet with some clever technology and re-processing could be reused either within the plant, or in the facility itself.

'What's in Our Water: The significance of trace organic compounds' 2nd Australian Symposium on Ecological Risk Assessment and Management EDCs, PPCPs in the Australasian Environment

November 21-22, 2007, CSIRO Discovery Centre, Black Mountain, Canberra ACT.
www.clw.csiro.au/conferences/ourwater/

Jointly organised by CSIRO and the Australasian Society for Ecotoxicology (Special Interest Group on EDCs). There are 3 international keynote speakers including Shane Snyder.

Water Down Under 2008

April 15 – 17 2008, Adelaide convention center, SA
www.waterdownunder2008.com/welcome.htm

A three day scientific program, pre-conference workshops and field trips with a trade exhibition, a comprehensive partner program and opportunities for all delegates to enjoy pre and post conference tours to some of South Australia's major attractions. Conference themes include: Water management and sustainability, National and International water issues and case studies, Groundwater systems, Climate rainfall and surface water variability and Hydrological modeling data and forecasting.

Enviro 08: Promoting sustainable practices

May 5 – 7 2008, Melbourne exibition and convention center, VIC
www.enviroconvention.com.au/temp/cfp.html

Presentations and discussion will include these key topic areas:

Climate change, Building sustainable cities, New priorities for energy, water and waste recovery, Financing clean technologies and responsible investment, Developing sustainable infrastructure, Encouraging stronger corporate social responsibility and Promoting action for change.

International

22nd Annual WateReuse Symposium

September 9 – 12, 2007, Tampa, Florida
www.watereuse.org/2007Symposium/Index.html

Each year, the Annual WateReuse Symposium provides attendees with the key learning opportunities needed to stay current on key issues related to water reuse and desalination. Technical sessions are devoted to stimulating and diverse topics such as micro-pollutants, desalination, indirect potable reuse, operational issues, and global water reuse.

2008 California Section Annual Conference – Recycled water: sailing into the future

March 24 – 26, 2008, California, USA
www.watereuse.org/ca/2008conf/Index.html

The California Section of the WateReuse Association invites you to attend and participate in the 2008 Annual Conference to be held March 24-26, 2008 at the Marriott Newport Beach Hotel & Spa in Newport Beach, CA. The theme is "California's Recycled Water: Sailing into the Future."

Conference Attendees include water recycling leaders, public agency representatives, elected officials, customers, developers, consultants, teachers, operators, environmental groups, and other individuals interested in engaging in the dialog about water recycling.

Good reads

Where does water recycling fit?

Dr John Radcliff - National Water Commissioner
Location and demand, community "ownership" and a triple-bottom line approach should drive water supply choices, with the overriding requirement that water be "fit for purpose", according to Dr John Radcliffe, a National Water Commissioner writing in Focus, the quarterly issues magazine of the Academy of Technological Sciences and Engineering (ATSE).

www.atse.org.au/index.php?sectionid=1003

Guide to the workplace use of non-potable water including recycled waters

Queensland Government
A guide to the safe use, handling, storage and transport of non-potable water for manufacturers, suppliers and users.

www.deir.qld.gov.au/workplace/subjects/non-potablewater/guides/index

Human Pharmaceuticals, Hormones and Fragrances- The challenge of micro-pollutants in urban water management

Edited by Thomas A.Ternes and Adriano Joss
Pharmaceuticals, hormones and fragrances are a challenge for urban water management. Since municipal wastewater treatment facilities often fail to remove these pollutants, the aquatic environment is ubiquitously contaminated. As a consequence, certain substances have been detected in drinking water provided by waterworks adopting inappropriate elimination procedures. Currently, it is difficult to assess the risk of these organic compounds for biota and drinking water consumers; this is due to their low concentration levels, the missing effect data for individual compounds and especially the presence of complex mixtures.

Water Reuse: issues, technologies and applications

By Takashi Asano, 2007
Published by McGraw-Hill
ISBN 0071459278
An integrated approach to all aspects of water reuse: public health, water quality criteria, current and advanced treatment technologies, process reliability, and implementation issues.

Water Reuse and Recycling 2007, Conference Proceedings

Edited by SJ Khan, RM Stuetz, JM Anderson
Published in 2007 by UNSW Publishing & Printing Services

www.awa.asn.au//AM/Template.cfm?Section=Home1&WebsiteKey=2afdcba7-9faa-4ce8-98f3-584320286b49

New Websites

University of Guelph Wastewater Reclamation and Reuse Information Centre

www.uoguelph.ca/~rgrech/uses.htm

The Water Reclamation and Reuse Information Center (WRRIC) has been designed to allow access to upto date information into water reclaimation and reuse. It gives links to other sources of information also providing its own explanations on topics of public perception, Epidemiology, regulations, technology, uses, impacts and projects in Canada.

Naiad

www.naiad.net.au

Naiad is a new web-based knowledge repository, the purpose of which is to facilitate the sharing of lessons learned from innovative urban water schemes among planners, local governments, and practitioners. Developed at the University of Queensland, its growing database currently contains information about approximately 40 schemes across Australia. It also includes an illustrated encyclopaedia on everything to do with water and its treatment.

We believe you might be interested in the content of the Naiad knowledge base as well as in the approach it takes to sharing expertise. For more information and to access Naiad, please visit www.naiad.net.au.

H2O Today

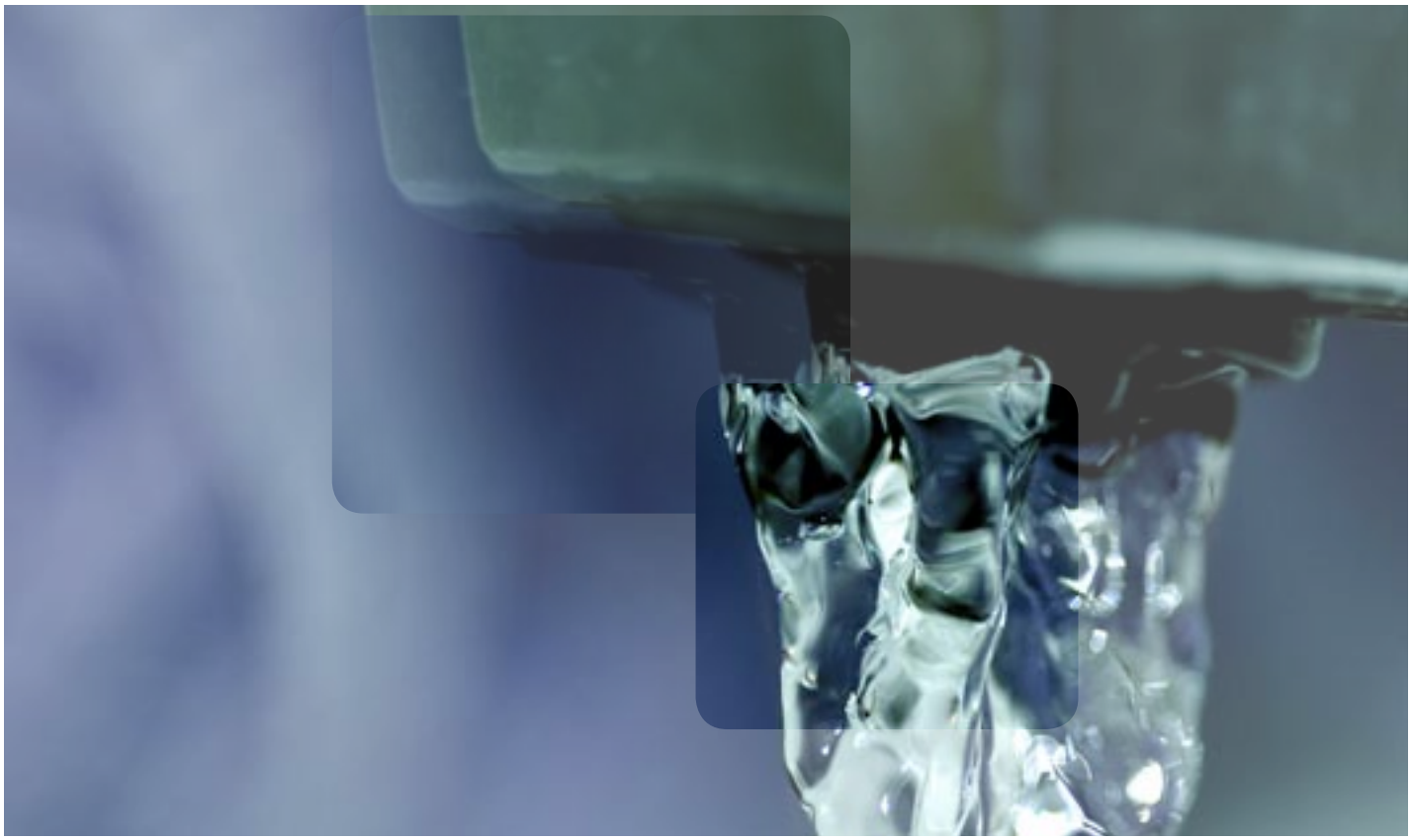
www.h2otoday.com.au

H2O Today is about water, sustainability and the environment. H2O Today will feature the latest developments for water professionals, practitioners and those with an interest in a more sustainable approach to water management. H2O Today is a weekly updated program allowing the listener to hear informative interviews with people and business that impact sustainable industry. It is essential listening for water professionals and natural resource managers.

Help with water restrictions

www.southeastwater.com.au/Pages/SouthEastWater.aspx

South east water has a new website to help business and residential customers cope with water restrictions, alternative water sources, water management for businesses and a 'water heroes' section. The site also outlines SE Water's industrial water saving services, guidelines for efficient use of cooling towers and installation of meter reading technology.



About ReWater

This newsletter, ReWater, has been designed to make information relevant to 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 Australian Coordinator for Recycled Water use in Horticulture (www.recycledwater.com.au), funded through Horticulture Australia.

Back issues and instructions for subscribing to receive ReWater electronically on a quarterly basis 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 03 9421 1701.

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.

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