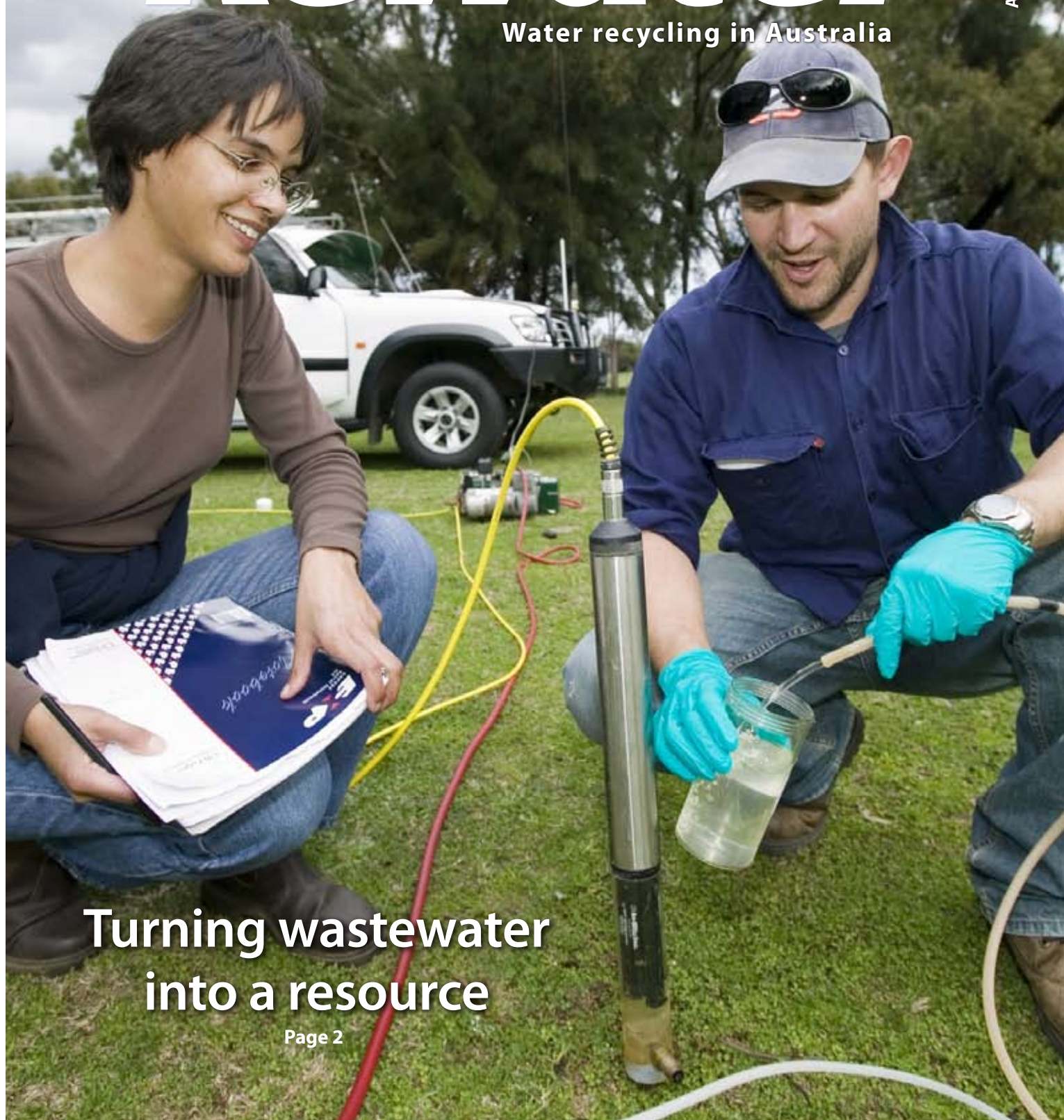


ReWater

Water recycling in Australia

AUTUMN 2010



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On the cover:

Simon Higginson and Dr Elise Bekele
sample groundwater from the Floreat
Infiltration Galleries – Managed Aquifer
Recharge (MAR) trial site, Floreat,
Western Australia. Photographer: David
McClenaghan © 2007 CSIRO.

About ReWater

This newsletter, ReWater, has been designed to make information relevant to recycled/recycled water use in horticulture more accessible to horticulturalists (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, funded by Horticulture Australia.

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

Your Feedback and Contributions

We would appreciate your feedback and suggestions for contributions. Please email rewater@arris.com.au or contact us on 03 9421 1701.

www.recycledwater.com.au



Know-how for Horticulture™

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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Arris Pty Ltd
ACN: 9109 2739 574
Phone: (08) 8303 6706
www.arris.com.au



Construction of infiltration galleries using the Atlantis Leach System® at the Floreat site in Western Australia. Photographer: Simon Toze © 2005 CSIRO

Managed aquifer recharge: turning wastewater into a resource

As the nation grapples with the need for greater water security, Australia is looking for alternative options to boost its water supply.

One of these options is recycling water via Managed Aquifer Recharge (MAR). CSIRO has conducted a three-year pilot research project in South-West Western Australia to investigate the potential of managing aquifers, as a prospective supply and management option to recover water of higher quality for a range of non-potable uses.

MAR involves adding a water source such as recycled water to underground aquifers under controlled conditions for subsequent recovery and use or environmental benefit.

"The technique has great potential for assisting the uptake of water recycling in urban environments in general and specifically around the greater Perth area," CSIRO Microbiologist Dr Simon Toze says.

The research project investigated using urban aquifers across the Swan Coastal Plain in Western Australia for MAR to recycle non-potable water. It was funded through the Western Australian Water Foundation, CSIRO's Water for a Healthy Country Flagship, and the Water Corporation WA to investigate MAR requirements for the area.

**Research outcomes
demonstrated that treated
wastewater can be efficiently
and sustainably recharged to the
superficial aquifer.**

Research focused on the issues relating to setting up and operating a MAR scheme, the persistence of trace organics in groundwater, the social attitudes to water recycling, in particular via MAR, and the exposure risks from pathogens and trace organics in water recovered from such schemes.

continued page 3

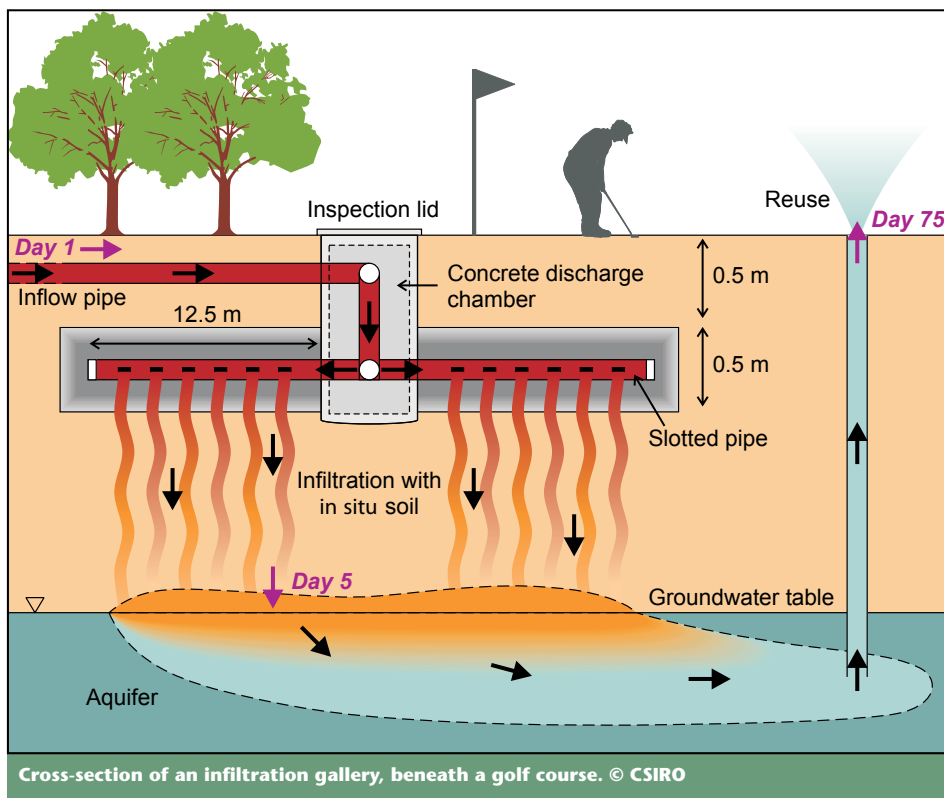
Field investigations

During the three-year research project CSIRO researchers trialled the infiltration of treated wastewater to the Superficial Aquifer in Perth, based at CSIRO's Floreat headquarters. The wastewater was supplied from the Water Corporation's Subiaco Wastewater Treatment Plant. The research team used infiltration galleries to study the movement of the recharged water through the aquifer, changes in the quality of the recharged water during its residence underground and to identify any management and operational issues that might be encountered in operating a scheme.

There are a range of MAR methods and types of source water that could be tested. For this project it was decided that infiltration galleries using secondary treated wastewater was the most appropriate method to test (see diagram).

"Infiltration Galleries have the advantage of being cheaper and less sophisticated to operate than well injection systems and potentially less prone to clogging than injection wells," Dr Toze explained. "Infiltration galleries also have potential advantages over MAR systems that use ponds or soil aquifer treatment methods because they are located below ground and do not take up valuable ground area as pond systems would."

Other advantages are that there is significantly less potential for unsupervised access to the recharging water by the community, domestic animals or wildlife. In addition, the lack of exposed water also means that there is no chance for mosquito breeding in the ponded water prior to recharge.



The research outcomes demonstrated that treated wastewater can be efficiently and sustainably recharged to the superficial aquifer in urban areas on the Swan Coastal Plain using infiltration galleries. A comprehensive investigation of water quality during recharge and movement through the aquifer indicated that changes occurred for most of the tested analytes in the recharge water. The project also identified a number of issues for consideration, such as: issues related to factors such as the initial design and set up of the MAR schemes; understanding the reliability of the supply; and the influence this may have on the day to day operation of the MAR scheme.

Social acceptance

At the start of the project very little was known about the social acceptability of recycling water via MAR. To advance this knowledge, CSIRO researches explored community perceptions, attitudes and intended behaviours towards MAR for a range of fit-for-purpose uses.

"Government regulators need to plan a potential introduction of MAR in urban environments such as Perth very well," Dr Toze says. "Research outcomes show that the public values open and transparent communication and information on water recycling via MAR. Regulators also need to ensure that communities are involved in the decision making processes."

Reliable alternative

Research outcomes have demonstrated that MAR could be successfully used in an urban environment such as Perth. Infiltration galleries proved to be a method that can successfully combine the advantages of surface infiltration along with the benefits of being below ground and preventing uncontrolled access.

"If we use appropriate materials to construct the infiltration galleries, we can achieve sustainable recharge of recycled water," Dr Toze concludes. "But further research is needed to test the robustness of the concept so it can achieve the maximum sustainability and optimum water quality improvements appropriate for different types of use."

According to Dr Toze the project has helped define the appropriateness of aquifer recharge and pre-treatment requirements for infiltration. It will assist Western Australian government regulators in applying guidelines and it will advance non-potable water recycling as a reliable alternative for safe new supplies of water. •

For further information please contact:
Sonja Mennen, Water for a Healthy Country Flagship, Land and Water Division 0428 149 151.



Rossdale Golf Club champions aquifer storage and recovery in Victoria

Rossdale Golf Club in bayside Aspendale becomes home to Victoria's first aquifer storage and recovery site.

Aquifer Storage and Recovery (ASR) enables the Club to harness and store recycled stormwater, increasing the Club's water storage capacity and long term viability during dry periods. The project was funded by the Victorian Government's Smart Water Fund in conjunction with the CSIRO and Sinclair Knight Mertz as a demonstration site to illustrate the water saving potential of aquifers.

Perfect technology for urban environments when surface storage is limited and demand is seasonal.

Trevor Wood, President of the Club comments, "Being selected as Victoria's first test site for ASR has been exciting and an educational journey for all of us involved. Since late 2008, overflow water from our storage dam has been pumped underground to the aquifer. We are looking forward to being able to access this extra water to ensure a premium green course for our members and visitors."

One advantage of ASR is that it can store large volumes of water from wet periods with very little evaporation for reuse at other times of the year when water is scarce – perfect technology for urban environments when surface storage is limited and demand is seasonal. Proactive about managing their water supply, when the drought started the Club began diverting stormwater from the adjacent Edithvale drain to a purpose built 15 million litre storage dam for reuse.

However, when it did rain they had too much water to use, and were unable to store it for the drier times of the year when needed. The Club has already dramatically cut its mains water use by around 56 per cent over the past two years, by upgrading existing fixtures and equipment, and recycling stormwater. With the addition of ASR, the Club's reliance on mains water will drop even further. Trevor notes that "members are very proud of their achievements in making the Club more self-sufficient".

An upgrade of equipment not only improved the grass quality, but also minimised water loss. In 2007 the Club purchased a hollow Tyne machine. The machine allows hollow fine fingers to penetrate and remove cores up to 75 mm, allowing oxygen, direct feeding and water into the grass root systems thus improving their health and resilience. Soil wetting agents are also applied regularly to increase water retention. With the wide range of water savings initiatives in place Rossdale Golf Club has ensured it has made the cut for many years to come. ●

Source: AquaBiz Issue 6 2009, p.20.

Other water saving initiatives include:

- Installation of dual flush toilets and pre-rinse spray valves in the clubhouse
- Installation of two 11,000 litre rainwater tanks that capture runoff from the Greenkeeper's shed for reuse in the clubhouse gardens, toilets and wash down bay
- Weekly meter readings have also enabled the Club to keep a close eye on water consumption, and target areas for improvement
- The construction of two more holding dams bringing above ground storage capacity to 33 million litres



Stormwater harvest to triple by 2013

A \$150 million investment in stormwater is surging ahead across Adelaide, following South Australia's successful bid for Commonwealth funding.

The new projects, along with other committed schemes, will assist South Australia to more than triple the annual stormwater harvest from our current six billion litres to over 20 billion litres.

South Australian stormwater projects will receive more than \$65 million in Australian Government funding from the Water for the Future package. The State Government has committed \$45 million and local councils and other partners will fund the balance.

Federal Minister for Climate Change and Water, Senator Penny Wong, joined South Australian Premier Mike Rann to announce the funding during a visit to the Cheltenham Park site of one of the projects in early November.

"In this era of extended drought and the emerging effects of climate change, we need to invest in alternative water supplies and make better use of the water we have available for our cities and towns," Senator Wong said.

"The response from South Australian communities to the special call for stormwater projects was stronger than in any other State, with nearly half the total number of applications coming from South Australia."

Premier Mike Rann says South Australia's State-wide water security plan, Water for Good, supported by stormwater research and sound business cases have been key to securing funding for eight stormwater projects across the metropolitan area.

"Successful stormwater harvesting is also about partnerships between Local Government, State Government, Commonwealth Government and the private sector," Mr Rann said.

"The State Government has committed about \$45 million to these projects and the cities of Charles Sturt, Onkaparinga, Salisbury and Playford, along with other partners have also committed substantial funding."

The City of Unley was also successful in winning \$2.558 million in funding for its 98 million litre Stormwater Harvesting and Reuse project, which was submitted



to the Commonwealth separately from the State Government's bid.

Minister for Water Security Karlene Maywald says the successful bid for Commonwealth funding further confirms the significant contribution stormwater will make to South Australia's future water security.

"Through Water for Good, the Government has set clear strategic priorities and ambitious targets for future water security. Work on these schemes supports our determination to become a 'water sensitive' State, but in a way that is economically responsible and environmentally sustainable," Minister Maywald said.

President of the Local Government Association Mayor Felicity-Ann Lewis believes these kinds of partnerships are why South Australia leads the nation in stormwater harvesting.

"We are delighted to see the success of bids from four local councils," Mayor Lewis said.

"The way all levels of government have worked together means we'll be reducing the draw on mains water supplies and providing an alternative source for non-drinking uses." •

Source: Water for Good Summer 2009, e-news from the office of Water Security, SA. P.9

Water, food security proposal for Bunyip, Vic

Cardinia Shire Council is pushing for the creation of a Bunyip food belt, a proposal that would secure water – and the future – for the district's farmers.

Investigations are underway to see whether the Bunyip Basin area, which is bordered by Moorabbin, Portsea, Poowong and Bunyip, could become Melbourne's next major food bowl. The project would utilise excess A-grade recycled water from the Eastern Treatment Plant to come on stream in 2012.

Cardinia Shire chief executive Garry McQuillan said the project, if given the green light, could provide farming in Cardinia with a whole new frontier. Mayor Bill Pearson said a lack of water in the Murray region had put the focus back on the Bunyip Basin. Cr Pearson said the area, particularly in Cardinia-Casey, had the benefit of good farming soil.

"Now the government is saying there is a lot of A-grade water available (fit for irrigating food crops), which isn't fit for drinking but is fine for other things," he said. "That could be made available to the Bunyip food belt area and give water security to farmers in the area. It will put some real teeth into preserving our best farmlands." The proposal focuses on food security, using the best soils for food rather than houses, utilising Class A recycled water and job creation.

Ian Anderson, president of the Victorian Farmers Federation's Cardinia branch, said it was an exciting prospect that farmers would watch with interest. "We look favourably upon any project that strengthens agriculture in the area," he said. "We'll wait and see how it progresses... we applaud that at least there's some thought going into it."

Staff from Cardinia, Casey and Mornington Peninsula councils have been meeting water authorities to study the proposal. Mr McQuillan said the project could potentially re-use up to 26 gigalitres of recycled water a year, the equivalent to 7 per cent of Melbourne's yearly water consumption. Under the proposal irrigation pipes would be built from the Eastern Treatment Plant at Carrum Downs supplying recycled water fit for irrigating food crops to Cardinia and Casey, he said.

Baw Baw, Bass Coast, Dandenong, Frankston, South Gippsland and Yarra Ranges councils have also supported the proposal in principle. Drafting of documentation for the pre-feasibility study is underway. •

Source: Star News Group 14.10.2009

Wastewater use increases in the Willunga Basin

Increased use of wastewater from the Christies Beach Wastewater Treatment Plant is in the pipeline to provide McLaren Vale vignerons and orchardists with increased surety of water for their vines and crops when they need it the most – during the summer months from December to March.

In a partnership called Water Proofing the South between the Onkaparinga District Council, SA Water and the Willunga Basin Water Company, new infrastructure to provide an additional 1.8 gigalitres of reclaimed water to growers is underway and has delivered an additional 416 ML of water to growers over the current summer irrigation season. Total contracted demand is now over 5 gigalitres per year.

The expansion adds to the outstanding success of the Willunga Basin Water Company's initiative that began more 10 years ago when local growers formed the company to take advantage of the reclaimed water produced by the Christies Beach Wastewater Treatment Plant.

"Groundwater sources were under stress at the time, and using the treated wastewater was determined to be a safe and low-cost alternative to mains water, which while available, was expensive and, regardless, was not the best use of potable water anyway," said Tony Sims, the General Manager of the Willunga Basin Water Company.



"Today there are more than 123 irrigators accessing the wastewater re-use scheme – but as its popularity has risen, so too has been the demand for more water."

The Christies Beach Wastewater Treatment Plant outputs about 10 gigalitres of treated wastewater each year, only about half of which has been used by the scheme in any year so far.

The problem has been what to do with the treated wastewater during the

months of low demand – water until now discharged to the ocean.

"The answer clearly was to build storage," Mr Sims said.

"With our partners, what we're now developing is a 'water bank', to be filled when the water doesn't need to be used, and to be drawn on during periods of high demand," he said.

The expansion of the project includes the construction of two dams by the City of Onkaparinga – one of a 100 megalitres and another of 65 megalitres – to supplement the existing storage dam of 130 megalitres.

An additional new dam of 700 megalitres is under construction by SA Water.

The new storage capacity will dramatically reduce the currently wasted discharge and provide significant additional benefits to the growers.

"This is great for the growers and the environment."

"As well, the wastewater contains nutrients which are actually valuable in

the growing cycle, so that's an added bonus."

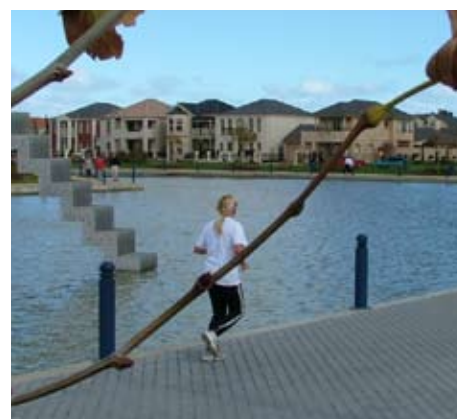
"By using more of the wastewater, growers not only benefit because they have more water surety, we are also substantially reducing the wastewater which would otherwise flow out to sea.

"This is a win-win' for everyone and is an outstanding example of how partnerships between local government, utilities like SA Water and a private, grower-led enterprise like ours can harness 'second use' water and turn it to productive use for the benefit of everyone," Mr Sims said.

"The Willunga Basin Water Company has led the way in the use of reclaimed water technology and is regarded as the Australian leader amongst wholly privately funded and owned water utilities."

"Our model for delivery of reclaimed water for reuse is being examined by other communities around Australia and we are happy to share our experience," Mr Sims said. ●

For further information please contact:
the Willunga Basin Water Company: tsims@wbwc.com.au





Novel, green and clean approaches to wastewater recycling

Resembling something like a tropical forest, John Todd's attractive solution to waste-water management uses plants to clean up water.

Consisting of a series of ecosystems that work together to break down water contaminants, Todd's approach offers a natural and eco-friendly alternative to costly traditional water treatment plants.

The concept was recently awarded a Buckminster Fuller Award for its elegant application in cleaning up Appalachia's water supply in the United States, and has been adopted and adapted by many eco-minded individuals around the country.

Converting sewer sludge to fresh water is no easy job; traditional treatment plants consume massive amounts of money, energy, and resources. John Todd's innovative solutions for waste-water management re-envision the process as an eco-conscious endeavour, conserving water and reducing overall treatment costs with minimal sludge disposal, water purchases, sewer surcharges, and chemical use.

Part natural and part man-made, John Todd and his firm re-organize natural

resources to transform water from dirty to clean. In their most basic design, waste-water pulses through a minimum of three different ecological systems that process and filter it in different ways.

Each ecological system is isolated from the others so that it can treat waste-water based on its own unique needs, after

continued page 9



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which the water cycles on to the next community.

Since the technology uses “helpful bacteria, fungi, plants, snails, clams and fish that thrive by breaking down and digesting pollutants”, selecting and then cultivating diverse communities is key in order for all compounds to be treated. The magic lies in understanding how the organisms interact and combining them just right so that they can soak up the nutrients they love, helping them grow while providing us with clean – if not drinkable – water.

Is there a role for this process in decentralised systems?

Since their inception, these eco-friendly contraptions have seen a variety of applications. Their rather remarkable use of living organisms makes them a shoe-in for use as an educational tool, as they are at Oberlin College, and they have also popped up at resorts, lake restoration sites, and even at chocolate maker Ethel M's factory in Nevada.

This innovative process looks visually attractive, but is it scaleable, robust and cost-effective? Is there a role for this process in decentralised systems? We are waiting to see if there are more working examples... stay tuned. ●

Source: Olivia Chen at Habitat 08.06.2008
www.inhabitat.com



A pelican in the Laratinga wetlands, Mt Barker

Image: Stephen Barnett on Flickr

Mount Barker effluent wetland to double

Australia's biggest liquid effluent treatment plant and wetland is about to double in size.

For the past decade, Mt Barker Council has been operating Australia's largest liquid effluent treatment plant and wetland, generating up to 7 million litres of clear water a day. It is now about to double its 10 hectare wetland to create a massive dam, with the water to be piped to a copper mine at nearby Kanmantoo.

"In other areas of the state they harvest stormwater but we actually recycle water from effluent," Mayor Ann Ferguson said yesterday. "It's growing vegetables and watering our parks and region, and going to be piped to the Kanmantoo mine."

The liquid effluent is taken from the septic tanks of Mt Barker, Littlehampton and Nairn.

It then undergoes extensive treatment (making it fit for the intended uses) before

the final natural cleansing in the ponds of the Laratinga Wetlands. The wetlands, which were old farmland, have become a natural conservation area attracting rare birdlife, frogs, long-necked turtles and fish.

Atis Berzins, Mt Barker Council engineering manager, said people did not realise it was a man-made. "Bird watchers love it here," he said. "There's quite a range of exotic birds like the Latham's Snipe and the Australian Bittern."

Farmers are also enthusiastic about the scheme, as the water crisis takes its toll. Mt Barker brussels sprouts grower Kent Samwell has been using the recycled water for more than six years.

"It's very good water, the only thing is it's a bit salty but it's a real privilege to get this water," he said. "We use this recycled water, so we don't have to use our bores which is a great thing for the area." ●

Source: Adelaide Now 25.01.2010
www.news.com.au



The Mount Barker Community Waste Water Management System Effluent Treatment Plant treats septic tank effluent from Mount Barker, Littlehampton and Nairn.

Image: Mount Barker Council

Toowoomba closer to recycled drinking water

Four years after Toowoomba residents won a battle over the introduction of recycled water in their water supply, today a pipeline which will pump purified wastewater into the town's system was opened.

The pipeline will connect the regional centre to Brisbane's water supply to guard its water security, but means the purified wastewater will be used in times of severe drought.

Regardless, opponents are adamant they have not lost the battle. For some years debate in the Darling Downs town was dominated by recycled water and 62 per cent of residents voted against the introduction of recycled treated sewage in 2006.

Premier Anna Bligh today officially launched the pipeline. "The water grid has not only provided security for the people of south-east Queensland but it has meant we now have that little bit extra to help out a great city like Toowoomba," she said.

It is part of a \$9 billion water grid designed to shore up supply for south-east Queensland. Toowoomba has been nervous about running out of water, with its

dam levels at only 8 per cent capacity. "This city was looking at a very grim outlook without this water pipeline," said Ms Bligh.

"It's a \$187 million commitment between the State Government and the Toowoomba City Council and it's delivering long-term water security way into the future for the people of Toowoomba."

And that security includes a State Government commitment to pump purified recycled effluent into the system when south-east Queensland's combined dam levels fall below 40 per cent.

Toowoomba resident Rosemary Morley founded the group Citizens Against Drinking Sewage, leading the 'No' campaign in the 2006 vote. "Despite the Queensland Government's position, she is adamant Toowoomba will never have recycled treated sewage. "We are firmly opposed to water from a recycle plant," she said. "We have enough of a committee and a

fighting machine up here to reject that again and we would." She refuses to accept that in times of desperate water shortages, her campaign may have lost the fight against recycled water.

The Government went to the last election spelling out its promise to introduce recycled treated water if the combined dam levels fall below 40 per cent.

The Traveston Crossing dam north of the Sunshine Coast was recently spectacularly rejected by the Federal Government and the alternative for more desalination plants is causing angst elsewhere in the electorate.

Meanwhile, for Toowoomba's local leaders, today's pipeline launch couldn't come soon enough.

The Mayor is Peter Taylor. "It does secure our water future, not just for today, short-term, long-term, for the growth that's coming with the mining and growth in other industries in our region," he said. "It secures our future for up to 50 years for water supply for the biggest inland city in Queensland, the second largest inland city in Australia is Toowoomba."

Another potential political headache is the cost of water. A deal has been struck to limit Toowoomba resident's water costs in the near future, but prices are expected to rise after that. ●

Source: ABC News 28.01.2010
www.abc.net.au

City building \$17.5 million line for recycled water to University of Texas

The City of Austin is planning a pipeline that will send millions of gallons of recycled water annually to the University of Texas, as part of a wider conservation effort that could lead to significant water savings and eventually lower bills for many customers.

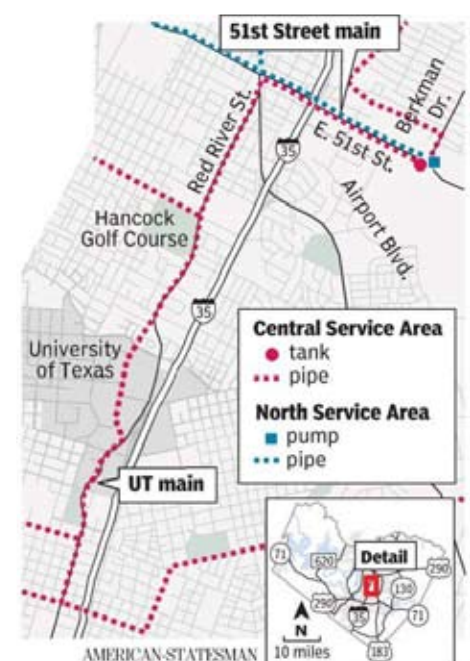
Construction is set to begin on an underground pipeline down 51st and Red River streets, completing a system that will cost the city US\$17.5 million and send recycled, or partially treated, water to UT, one of the city's biggest consumers. The pipeline will also serve some neighbourhoods around the university. On campus, the recycled water is to be used for cooling systems, irrigation and other uses.

Instead of being discharged into Lady Bird Lake, wastewater will be partially treated at an East Austin plant and piped to UT, which plans to use it at first for water-intensive cooling systems and later for irrigation and other purposes. Treated water will continue to be used for drinking and bathing. In Austin, drinking water is usually used for irrigation and

cooling, which don't require that level of treatment. By using recycled water, city officials say that by 2034, they can free up as much as 10 percent of the city's supply of drinking water to meet the demand of a growing population.

The "UT line" is the biggest example of a push by the city to use recycled water. Some lines are already in place, and the city is planning to spend US\$180 million on such projects over the next three decades or so. "It's a major water conservation effort," said Daryl Slusher, conservation director for the Austin Water Utility. "Long term, it's an environmentally sensitive way to conserve a finite, precious, essential resource." ●

For further information please contact:
the author Marty Toohey
mtoohey@statesman.com



Source: The Statesman 29.12.2009
www.statesman.com

China set for huge increase in recycled water production

Recent news from China suggests a massive increase in the production and use of recycled water as a number of treatment plant upgrades are set to provide recycled water for infrastructure, industry and environmental allocations over the coming years.

Recycled water will be used for public infrastructures when the facilities of the Taipa (Macau, China) sewage treatment plant have been upgraded in the first quarter of 2011, head of the Environment Infrastructures Management Centre of the Environment Protection Bureau (DSPA) announced.

Currently there are five sewage treatment plants in Macau. However, only the quality of the effluents produced by the plant in Ilha Verde meets the national A class standard. In an effort to implement the policies of the Water Conservation Committee of the Maritime Administration, the bureau decided to upgrade the

This recycled water would be used for public infrastructures, the industrial sector and for household toilets.

facilities of the sewage treatment plant in Taipa to produce recycled water. The quality of the recycled water produced by the plant in Taipa would be even higher than the quality of the national A class standard, and aims to pump 4,800 cubic metres per day.

The recycled water will be used for public infrastructures, such as street cleaning and watering plants. According to plans by the Water Conservation Committee, in 2014 around 4,000 cubic metres of recycled water would be produced each day by all the sewage treatment plants in Macau, while in 2020 some 10,000 cubic metres of recycled water would be produced daily.

This recycled water would be used for public infrastructures, the industrial sector and for household toilets.

In February this year, construction will also begin for a recycled water plant in the west of Yongding River near Beijing. The plant will provide water for the nearby thermal power plants.

When the first phase, which includes the reclaimed water plant and supporting pipes, is completed, the plant will be able to treat 50,000 cubic meters of water per day, and in the future, the capacity will be increased to 190,000 cubic meters of water per day. The reclaimed water plant



extends as far as the Yongding River and the dividing line between south and north Beijing in the north, Daning Reservoir and Xiaoqing River in the east, the main water transfer line of the South-to-North Water Diversion Project in the south, and the western Sixth Ring Road in the west. When it is completed, the reclaimed water plant will be able to treat the five rivers in the West of Yongding River including Yaba River, Jiuzi River, Mangniu River, Dianqi River, and the Mangniu River, which will be purified and become a tourist site in the west of Yongding River after the treatment.

There are three thermal power plants in Yungang in the west of the Yongding River. Upon its completion, the plant will produce treated water to help the three thermal power plants with production in order to conserve water resources. In 2010, the reclaimed water plant will retain and treat the polluted water in Daning Reservoir to ensure that the reservoir can continue to be used normally as the storage reservoir for the South-to-North Water Diversion Project. Liu Quan, an official from the Fengtai Water Authority, said that the government will invest 1.9 billion yuan to build the recycled water plant. ●

Sources: Adapted from MacauNews 04.01.2010 and CCTV News 25.01.2010
www.macaunews.com.mo



Building green and grand by recycling greywater

Building green is becoming “trendy”, according to William Wong, associate director at the Hong Kong office of Arup

A global firm of independent designers, engineers and consultants, Arup helped build the Bird's Nest, the Water Cube, Beijing International Airport's Terminal Three and the new CCTV tower. “All levels of government, designers, and even the general public are becoming more aware of environmental issues and how bad the consequences could be due to ignorance of sustainable design,” Wong says.

To prove their buildings are environmentally friendly, design professionals particularly in China are beginning to adopt standards from the United States for “green” buildings, such as Leadership in Energy and Environmental Design (LEED) certification, an internationally recognised rating system designed by the US Green Building Council. Several similar green buildings have already been designed and built in Europe.

Its eight-tower structure, attached by floating walkways, received last year's award by the International Council on Tall Buildings and Urban Habitat for the best new tall building in “Asia and Australasia” and was also designed to qualify for a LEED Gold certification, the second-highest LEED rating obtainable.

The buildings recycle all of their “grey” water by filtering used water from sinks

Design professionals are beginning to adopt standards from the United States for green” buildings.



and bathtubs and reusing it to flush toilets, irrigate roof gardens and fill the structure's outdoor ponds. This reduces water use by more than 40%. ●

Source: By Marcus Schulz, The Star Online 03.01.2010
<http://thestar.com.my>

Lab develops contaminant detector for recycled water

A new method for identifying contamination of water was announced on 29 January by MWH Laboratories, a division of MWH, the global wet infrastructure consultant.

Municipalities are currently addressing new evidence of contamination in water supplies, including bacteria often found in sewage.

The method detects rare earth elements that are a proven and reliable indicator of sewage contamination, offering a new cost-effective tool that will assist water treatment plants to identify contamination.

Dr Andrew Eaton, technical director for MWH Laboratories, said “Plants can add an extra level of certainty to their work, using the same samples that they are already testing and with minimal added expense.”

MWH Laboratories now can analyze at ultra-low levels for gadolinium (Gd), a rare earth element typically injected into patients undergoing MRI scans to improve the imaging quality of the medical test. Once it passes through the body, gadolinium enters sewer systems. In samples of reclaimed water, a high level of gadolinium relative to other earth elements is one indicator of wastewater contamination.

MWH Laboratories experts can now identify a “gadolinium anomaly,” or excess levels of Gd, at parts per trillion (ppt) levels to determine the presence of wastewater despite extremely low concentrations or significant dilution.

The new method has been used by the US Geological Survey and researchers at the University of Queensland and will be used by MWH Labs for a major study of reclaimed water in Florida set to begin this spring, sponsored by the Florida Department of Environmental Protection. ●

Source: Desalination & Water Reuse 02.02.2010
www.desalination.biz



GE to boost spending in \$5 Billion water-reuse market

General Electric Co., the world's biggest provider of energy equipment and services, will boost research spending to grab more of an estimated \$5 billion market to filter and recondition water for utilities and governments.

“We think it's going to be a great business not only in the U.S. but in China,” where much of the country has limited access to water, Chief Executive Jeffrey Immelt told about 100 global customers last night at GE's management-training center in Crotonville, New York. “The entire Middle East is constrained. So this is a problem that's shared broadly.”

GE plans to bolster research and technology development at the water unit by 50 percent in the next two or three years and considers wastewater and reuse as the “biggest opportunities” for growth, Steve Bolze, who oversees the water and power equipment units for the GE Energy business, said in an interview at the event. GE doesn't disclose the unit's spending target.

Part of the spending includes new research centers in Singapore and Saudi Arabia as the company sells its water treatment

products to utilities and municipalities. GE is shrinking its GE Capital finance division and boosting investments in what Immelt has labeled infrastructure units that sell products to countries and companies. GE's equipment helps produce one-third of the world's electricity.

GE, based in Fairfield, Connecticut, is building a \$150 million (\$108 million) research center for water in Singapore.

Singapore Center

“One of the things we are trying to accomplish in Singapore is to make Singapore a hub for water solutions, so we've encouraged companies like GE and other multinationals,” Khoo Teng Chye, the chief executive for Singapore's Public Utilities Board, said in an interview at the event.

Singapore expects to double the 15 percent of drinking water it reconditions annually within a year, he said.

Pennsylvania Governor Edward Rendell, who also spoke to the group, said while his state doesn't have a water shortage problem yet, most states expect to encounter a shortfall in less than 10 years.

“Like the rest of the world, even in Pennsylvania, our days are numbered,” said Rendell, a Democrat who has led the state since 2003.

GE Energy Infrastructure, which includes the water division, provided \$38.6 billion of the parent company's \$182.5 billion in sales last year. The company, which has built through acquisition GE Water Process & Technologies under Immelt's more than eight years as CEO, doesn't break out the division's finances. ●

Source: Bloomberg Online 13.11.2009
www.bloomberg.com

Greywater treatment system for commercial laundries

H2O Industries' High Turbidity GreyWater Treatment System has been able to successfully treat greywater collected from commercial laundries, residential and office buildings to Class A+ quality.

Since early 2008, it has provided Princes Fabricare (Burleigh Heads) with a recycling system that is treating approximately 15,000 litres per hour of laundry raw water. Permeate recovery for this site has been in the vicinity of 9000–12,000 litres per hour. As the re-used water is returned hot through each washing machine by reticulating the water within seconds, energy consumption is also minimised.

A rigorous testing regime conducted by the Queensland state government for accreditation purposes, and to meet commercial laundry usage, has ensured the reticulated

water produced by H2O's technologies is suitable for washing purposes without degradation of linen cleaning quality.

The greywater laundry industry is just one of the many industries that consume large amounts of water. Government regulations are now forcing all large commercial water users, including new high-rise buildings (Class 3 to Class 10), to conform with new legislation. ●

Source: Sustainability Matters 29.05.2009
www.sustainabilitymatters.net.au



Recycling water in your backyard

Unit blocks, gated communities and other strata-titled properties could collect, manage and recycle water on site to take pressure off mains water, a Griffith University report commissioned by the National Water Commission has found.

The report also found that strata-titled property schemes have significant potential to develop and manage water collection and wastewater recycling plants. This report highlights how individual unit owners can communally own their water and wastewater supply infrastructure in order to service their water needs and sell oversupply to neighbouring properties.

"Water shortages during the recent drought have renewed concerns about the sustainability of urban water management, but with local systems owned communally, it would take the pressure off the government-owned systems and save considerable power that is currently consumed pumping water over large distances," report co-author Professor Chris Guilding said.

"Such decentralisation of water management could signify that 'local water' is sufficient to service the occupants of the scheme and provide irrigation for the grounds of a development.

"It could also allow for on-selling any excess water to third parties to help pay for a system's operational costs."

The report, 'Exploring the regulatory framework and governance of decentralised water management systems: a strata and community title perspective', was prepared by Jan Warnken, Nicole

Johnston and Chris Guilding from the Centre for Tourism, Sport and Service Innovation.

The report provides an overview of the existing regulatory framework and governance issues associated with decentralised water management systems (DWMSs) within strata and community titled (S&CT) complexes.

"Re-developments of 'brownfield' (inner city) sites in areas with high rainfall are strong candidates for the systems, so there can be an increase in housing, without putting pressure on existing water infrastructure," Professor Guilding said.

"This can be done by installing communal rainwater

tanks and greywater or blackwater treatment and recycling systems.

"In this environment, wastewater treatment plants can be connected to sewer mains to guarantee the safe discharge of untreated water."

The researchers conducted in-depth interviews with developers, S&CT managers as well as water industry experts. Delegates at the National Community Titles Institute 2008 conference were also surveyed.

"Generally, those interviewed and surveyed believed that DWMSs have a future in the marketplace," Professor Guilding said.



Primary concerns held by S&CT managers related to the management, headworks charges and water service fees.

The key findings of the study were that body corporates should retain ownership of all infrastructure and employ a resident or facility manager to monitor and maintain the system.

Properties with 50-250 or more units should have a water technology company operate their facility and the lots should be individually metered to provide water-saving incentives.

Liability insurance, long-term financial costs and recommendations on legislative changes are also covered in the report. The report recommends certification and licensing requirements for effluent recycling schemes, qualified professionals to manage the schemes and extensive consultation with stakeholders in the planning stages. ●

Source: Sustainability Matters: 09.11.2009
www.sustainabilitymatters.net.au

GOOD READS and website links

Reports and papers

Stiffler, L and de Place, E. (2010) *Curb-ing Stormwater Pollution: Cleaning up Washington's toxic runoff*
www.sightline.org

Hurliman, A. "Recycled Water: Perceptions of colour and odour" *Water Journal*, AWA November 2009 pp 60-66.

Total Food: Sustainability of the Agri-Food Chain (Special Publication)

Edited by By Keith Waldron, Graham Moates, and Craig Faulds. Published by the Royal Society of Chemistry, UK. 2009

This Proceedings Volume provides an overview of current research and development presented at the Total Food 2009



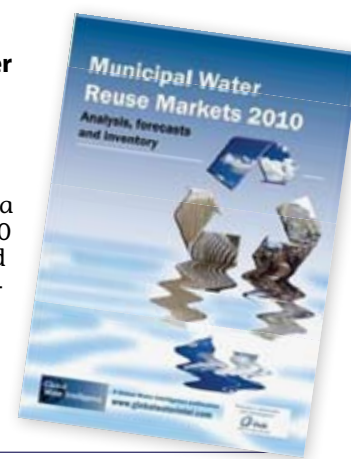
International Conference in Norwich, April 2009. Areas covered include the minimisation of waste through water recycling and energy recovery, value added products from plants and food chain wastes, and the ex-

ploitation of low value residues for the production of biofuels. The increasing global population in conjunction with the use of crops for biofuel

production mean that the more efficient exploitation of biomass will be required.

Municipal Water Reuse Markets 2010 Analysis, Forecasts and Inventory

Mixed media product, 500 pages. Published by Media Analytics. 2009.





GOOD READS and website links

The Whole Building Handbook: How to Design Healthy, Efficient and Sustainable Buildings

By Varis Bokalders, Maria Block. Published by EarthScan Ltd. 2009

"The Whole Building Handbook" is a compendium of all the issues and strategies that architects need to understand to design and construct sustainable buildings for a sustainable society. The authors move beyond the current definition of sustainability in architecture, which tends to focus on energy-efficiency, to include guidance for architecture that promotes social cohesion, personal health, renewable energy sources, water and waste recycling systems, permaculture, energy conservation - and crucially, buildings in relation to their place. The authors offer a holistic approach to sustainable architecture and authoritative technical advice including how water-saving technologies and garbage recycling technologies are used; and, how to 'close' organic waste, sewage, heat and energy cycles. For example, how to design a sewage system that recycles nutrients.

www.fishpond.com.au

Sustainable Water for the Future Water Recycling Versus Desalination (Sustainability Science and Engineering)

By Isabel C. Escobar (Edited by), Andrea Schafer (Edited by). Published by Elsevier 2009.

This book is part of a series on sustainability. Specifically, it deals with the issue of sustainable water use. Fresh sources of potable water are being depleted across the world. Pure water is the goal of water utilities as well as several industries. Well past the experimental stage, membrane processes are

now a proven and reliable method of providing high-quality, cost-effective water. Membrane technologies have immediate applications to treat-

ment of fresh, brackish and sea waters, as well as wastewater reclamation.

Membrane bioreactors are being developed for municipal and industrial water recycling. Various membrane processes are also used to remove contaminants from industrial wastewaters. This book covers the fundamental and practical concepts and issues regarding the application of membrane technologies for sustainable water treatment. It describes and compares the effectiveness of desalination versus water recycling for long-term sustainable water use. It describes the global water situation with respect to sustainability - Emphasizes the role of membrane technologies. It compares the strategies of water recycling and desalination.

www.fishpond.com.au

Environmental technologies to treat nitrogen pollution. Principles and engineering.

Applications for water and wastewater treatment with additional coverage of leachates and off-gases. This book brings together an up-to-date compilation of the main physical, chemical and biological processes demanded for the removal of nitrogenous contaminants. Hardcover. Member price \$198 plus p&h. (Email) From AWA Bookshop

www.fishpond.com.au

Characterizing Microbial Water Quality in Reclaimed Water Distribution Systems (AwwaRF Report) (Paperback)

By Ramesh Narasimhan and John Brereton. Published by AwwaRF 2009

Historically, reclaimed water systems met water quality and public health related standards at the end of the treatment facility prior to entering the distribution system. However, water quality within the reclaimed water distribution system can significantly change and affect end uses due to changes in levels of color, odor, and biofilm growth. Disinfectant residual criteria for reclaimed water systems are presented to assist system operators.

www.iwaponline.com

Ozonation of Water and Waste Water: A Practical Guide to Understanding Ozone and its Applications (Hardcover)

By Christiane Gottschalk, Judy Ann Libra, Adrian Saupe. Published by Wiley-VCH Verlag GmbH, 2009

The leading resource on ozone technology, this book contains everything from chemical basics to technical and economic concerns. The text has been updated to include the latest developments in water treatment and industrial processes. Following an introduction, the first part looks at toxicology, reaction mechanisms and full-scale applications, while Part B covers experimental design, equipment and analytical methods, mass transfer, reaction kinetics and the application of ozone in combined processes.

www.fishpond.com.au

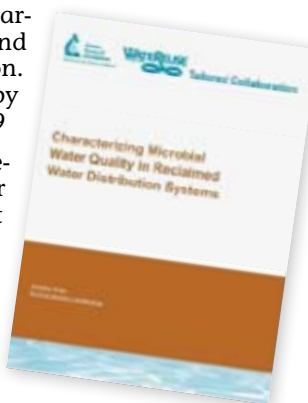
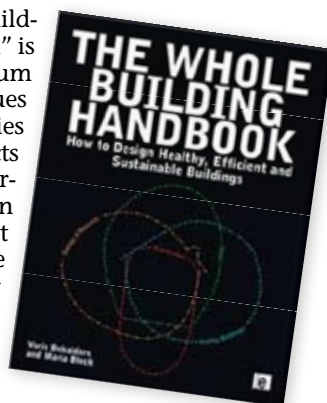
Greywater Use in the Middle East: Technical, Social, Economic and Policy Issues

By Stephen McIlwaine, Mark Redwood. Published by Practical Action Publishing, 2010.

In water-scarce areas of the Middle East, greywater (household wastewater excluding toilet waste) is commonly used by poor communities to irrigate home gardens.

This book draws together material presented at a conference in Jordan in 2007, and examines the technical approaches to treating and using greywater for irrigation, including its associated risks to health and the environment. It discusses many of the non-technical issues that influence effectiveness and sustainability of greywater use. The book concludes by offering suggestions for where donor efforts and research could best be focused in the near future. "Greywater Use in the Middle East" is important reading for researchers, donors, implementing agencies, and policymakers, in the fields of water supply, water reuse, livelihoods and agriculture.

www.fishpond.com.au



16 EVENTS diary dates

Australia

EcoForum

23-24 February 2010, Sydney

EcoForum is for people who want to expand their knowledge. These are the session titles in the four conference streams, including water and wastewater technologies, waste and resource recovery; contaminated site remediation; a sustaining water workshop and climate change strategies. Registration is open up until the event.

For more information visit www.ecoforum.net.au

ozwater'10
08 - 10 march 2010 • brisbane

OzWater'10 Achieving Water Security

8-10 March 2010, Brisbane Queensland

Delegates will have the opportunity to see for themselves or participate in discussion on: the South East Queensland Water Supply Grid; operation of a significant desalination plant; the largest recycled water scheme in the country designed for Indirect Potable Reuse of water and third largest in the world; new regulatory systems for Indirect Potable Reuse of water; implementation of one of Australia's most successful demand management campaigns; innovative approaches to water management in the urban environment; outputs from a significant water security research agenda; new approaches to water utility and regulatory institutional arrangements; leading edge approaches to water resource planning and provisions for environmental flows; successful examples of improving the health of waterways and estuaries, and more.

For more information
www.ozwater10.com.au



Sustainability Implementation: Actions and Tools for Change National Workshop Series

24-25 March 2010, Perth

AWA, in collaboration with EcoSTEPS, is pleased to announce a unique and first time program designed to help participants discover leading edge skills, tools and actions that can be used to improve

organisational sustainability, enhance project performance and uncover new business opportunities. Five modules presented over two days, will cover:

- Sustainability Theory
- Sustainability in Practice
- Effective Engagement Strategies
- Implementing Sustainability, and
- Sustainability Reporting

Designed with even the most experienced sustainability professional in mind, this action orientated program is set up to facilitate cross-learning and networking among participants. With a limit of only 30 participants per workshop, it will be a unique opportunity to extend your sustainability network.

Download the shortcourse flyer
www.awa.asn.au



Irrigation Australia Expo and Conference

June 2010, Sydney

The only conference event that involves the entire value chain of the irrigation industry, it is a unique opportunity for all sectors of the industry to interact, exchange information and hear about the latest developments in the industry. From irrigators to water supply authorities, from system designers to suppliers, from manufacturers to researchers, they will all be there. There is a full program with concurrent streams to ensure all interests are fully covered.

If you are involved in the irrigation industry, you should be there.

For more information
www.irrigationaustralia.com.au



Integrated Water Supply Solutions – Desalinated, recycled, storm, ground and reservoir water

June 2010, Melbourne, Adelaide, Perth, Darwin and Singapore

IWA commissioned this tour to look at all aspects of managing the integration of a variety of water sources from operations to administration; customer communication to technology; recruitment to risk management.

For more information see
www.recycledwater.com.au

IWES Short courses in 2010

19-23 July, 2010, Gold Coast

IWES now has registration open for its short courses in water, wastewater treatment and environmental management at the Gold Coast 2010. From principals in wastewater treatment and membrane plant design, recycling water and much more, IWES has many different courses on offer suitable for a variety of industries and professionals.

Visit IWES website for further information
www.iwes.com.au



Water Reuse and Desalination: Water Scarcity Solutions for the 21st Century

15-17 November 2010, Dockside, Sydney NSW

Call for abstracts for this conference are now open. This specialty conference will focus on practical aspects of water reuse and desalination as well as relevant research being conducted in the U.S. and Australia. The conference theme is Water Reuse and Desalination: Water Scarcity Solutions for the 21st Century. The conference will feature a blue ribbon assemblage of world class experts on these two vital components of the water supply equation.

For more information
www.watereuse.org

International Conference on Integrated Water Management

2 - 5 February 2011, Environmental Technology Centre Murdoch University, Perth WA

The conference will discuss and explore new and innovative methods of treatment, better understanding and assessment of resources and their supporting ecosystems, proper management for conservation and approaches to achieve the dual aim of economic development and ecological sustainability. The focus is the necessary infrastructure to provide good quality water, in sufficient quality, in the most sustainable manner.

For more information
www.etc.murdoch.edu.au

16 EVENTS diary dates

International

15th Water Conservation / Xeriscape Conference and Expo – The land use water use connection

25-26 February 2010, Albuquerque New Mexico United States

The aim of the conference is to challenge and inspire the water and environmental community by sharing knowledge and best practice, which is at the heart of meeting key global challenges. The 2010 Conference will focus on Land Use – Water Use Connections, from the urban core/surburban with New Urbanist Doug Farr and UCLA's Environmental Health Professor Dr Richard Jackson to the rural/natural. Three of this country's most renowned water experts Peter Gleick, Sandra Postel and Robert Glennon will also participate. Dr Isobel Heathcote, Environmental Scientist and Environmental Engineer from the University of Guelph – Toronto, will address watershed management.

For more info
www.xeriscapenm.com

Sustainable water management conference and exposition

11-14 April 2010, Albuquerque New Mexico, United States

Hosted by the American Water Works Association, themes include: Impacts of water conservation on alternative water supplies; Distribution efficiency solutions to stretch existing water supplies; Technology Solutions to lower customer demands; Managing water distribution systems to conserve water supplies; Demand management solutions in response

to the Obama Administration's agenda and a changing water supply paradigm. For more information
<https://apps.awwa.org>

Water & Environment 2010 CIWEM'S annual conference

28-29 April 2010, Olympia Conference Centre London, United Kingdom

In April 2010 CIWEM will hold a two-day Annual Conference that will address multidisciplinary issues across all areas of the global water and environment sector. There will be a mix of keynote speakers, offered papers, exhibitions and networking opportunities that will make this the key event for water and environment professionals.

For more information
www.ciwem.org

2010 International Symposium on Waterborne Pathogens

2-4 May 2010, Manhattan Beach California, United States

The fifth in a series of symposia addressing waterborne pathogens, this event will provide a comprehensive forum for the exchange of up-to-the-minute information and cutting edge ideas relating to this critical public health issue. Special areas of concern includes sources of pathogens, detection methods, outbreak investigations, new water and wastewater treatment technologies, and public health effects, treatment, and communications.

For more information
www.awwa.org



IWA World Water Congress and Exhibition: Water - the lifeblood of the world

19-24 September 2010, Montreal, Canada

The IWA World Water Congress & Exhibition, the Associations main biennial event, is a valuable and unique opportunity for the community of world-leading water professionals to meet, exchange ideas, explore the state of the art and debate the key issues underlying the science and practice of water. It is also where the entire water community congregates and in particular IWA specialist groups showcase their work and plan for future activities.

For more information
www.iwa2010montreal.org

Singapore International Water Week 2010

28 June to 2 July 2010, Singapore

Singapore International Water Week 2010, aptly themed Sustainable Cities: Clean and Affordable Water, the water week 2010 will focus on the need for efficiency in our water solutions to address water problems in the region amidst a constantly changing environment. More than half of the earth's population already live in cities, and the trend towards urbanisation is accelerating. This is especially true for the emerging countries in the Asian region. As urbanisation continues to gain its momentum, there is an urgency to address the water shortage issues before the situation deteriorates further and hampers economic growth.

For more information
www.siww.com.sg

NEWS innovations & information

South Australia

New flows to Adelaide Parklands

Recycled water is now flowing to the Adelaide Park Lands due to the early completion of the Commonwealth and State funded \$76.25 million Glenelg to Adelaide pipeline project. Recycled water from the pipeline will replace billions of litres of drinking water previously used to irrigate the city's parks and gardens and reduce pressure on Adelaide's reservoirs and the River Murray.

Premier Rann says the scheme further enhances Adelaide's reputation as the nation's leading capital city in wastewater recycling. "Adelaide is Australia's leading capital city in water recycling with SA Water recycling about 31% of wastewater, compared to the national average of about 13%," Mr Rann says.

"A key target in the State Government's Water for Good plan is to have the capability to recycle 45% of wastewater from urban areas across the State by 2013 – a target we are well on the way to achieving with the completion of this project. "SA Water is finalising agreements with more than 40 potential customers along the pipeline route including councils, schools, businesses and government departments. "While Adelaide City Council is the pipeline's first customer to receive recycled water, we anticipate water will be available to new customers in the coming months."

Source: Joint Press release from Senator Penny Wong, SA Premier Mike Rann and Hon Karlene Maywald 11.01.2010
www.climatechange.gov.au

Victoria

Wodonga Stormwater reuse project finished

Wodonga Council has launched its stormwater reuse project at the Wodonga Racecourse. Stormwater from the new White Box Rise Estate is collected through the drainage system and treated through a wetland system and then stored in the retention basin within the centre of the racecourse. Wodonga Council will be able to use this water for the irrigation of council and other facilities.

"Sites that currently utilise the water include the sports ovals within the racecourse, the Wodonga Athletics Oval as well as streets and public reserve areas within the White Box Rise Estate," Wodonga Council's sustainability director

Johan Louw said. "This has also enabled new cricket wickets and grounds to be established within the racecourse for use by local cricket clubs," he said. In addition the Wodonga Turf Club can also use the stormwater for the watering of the racetrack.

"By reusing the stormwater this will enable around 80 megalitres of potable water to be saved every year. Any runoff from the irrigation use will also be recycled through the drainage pipe system back into the wetlands for further use."

Source: City of Wodonga News 12.12.2009
www.wodonga.vic.gov.au

New South Wales

\$32 Million Project to Pave Way for Water

The \$100 million Rosehill Camellia Recycled Water Scheme project will deliver 4 billion litres of recycled water to Sydney's biggest industrial users. AquaNet Sydney and Veolia Water Australia, the private operators of the Scheme, will extract treated effluent from the pipeline, treat it at the recycled water plant, and transfer it through a network of pipes to industrial customers to be used in cooling towers, for irrigation, and as boiler feed, making the scheme the first in Australia to deliver to an industrial network.

Sydney's disused gas pipes will have a second life distributing recycled water across the system to industrial users. Minister Costa said up to 300 jobs in total will be created during the construction of the Rosehill Camellia Recycled Water Scheme, which when up and running will save more than 1,700 Olympic sized swimming pools of water each year. The recycled water will be used in cooling towers, for irrigation and as boiler feed by seven customers including Shell, Visy Paper, Marubeni Australia Power Services and Rosehill Gardens.

Both Sydney Water and the private sector are investigating the potential to further expand the use of treated effluent from the Liverpool Ashfield Pipeline for recycling. Supplying treated effluent for recycling not only reduces demand for drinking water, but it will also help reduce the risk of sewage overflows to the Georges River during wet weather."

Source: Street Corner, 30.10.2009
www.streetcorner.com.au

Water savings for Hunter Plant

In 2004-05 Vales Point Power Station used 833 million litres of drinking water to produce steam for its two 660MW turbo generators; last year it more than halved its fresh water use to 360 million litres. The

savings are the result of what Vales Point operator Delta Electricity says is a move to more sustainable water use and what environmentalists say is a long-overdue embrace of recycling. In effect the power station is turning effluent into energy.

Vales Point's \$7 million water reclamation plant opened last March. It purifies effluent from the Mannering Park sewage treatment works and turns it into water clean enough to use in the power station's boilers. The water reclaimed from treating effluent was replacing drinking water bought from the Central Coast water supplies overseen by Gosford and Wyong councils.

"Delta has effectively halved its use of fresh water since 2004-2005 by using salt water where possible, recycled water and a number of small water-saving projects," Mr Davies said. "Installing the reclamation plant and using recycled water to feed the boilers saves 230 million litres of water each year."



The power station's recycling efforts have been applauded by Total Environment Centre water campaigner Leigh Martin, who described the measures as long overdue but positive. "We need to see more effort from water utilities to encourage industry in the Hunter and Central Coast to switch from drinking water to recycled water," Mr Martin said. Mr Martin said Eraring Power Station, in west Lake Macquarie, had been using recycled water in its boilers since the 1990s.

Source: The Herald 25.01.2010
www.theherald.com.au

Queensland

Biloela Sewage Treatment Plant Upgrade

Local Government Minister Desley Boyle has congratulated Banana Shire Council for the recently completed upgrade of the Biloela Sewage Treatment Plant, stating that the new recycled water scheme will produce 290,000 litres of Class A+ recycled water to be used for things like truck wash down bays, construction work, dust suppression and external household cleaning.

Source: SAI Global Newsfeed 19/12/2009
 Media Release
<http://statements.cabinet.qld.gov.au>

State provides over \$56 million for water recycling in Mackay

The Bligh Government has bumped up funding for the Mackay Water Recycling Project to a total of more than \$56 million – underlining its commitment to protecting the Great Barrier Reef, Local Government Minister Desley Boyle said today. "This innovative \$151 million project is the largest regional water reuse scheme of its kind in Queensland and one of the biggest in the country," Ms Boyle said. "The project protects the Great Barrier Reef from more than 250 tonnes of nutrients every year and removes the discharge of more than 7,000 mega litres per annum of effluent from the Bassett Basin Fish Habitat Area."

Member for Mackay and Minister for Primary Industries and Fisheries Tim Mulherin said the project was a huge boost for the entire region. "By recycling waste water Mackay Regional Council is not only protecting reef and fish habitats as well as the groundwater system it is also supporting local businesses," Mr Mulherin said.

"The project recycles around 90 per cent of Mackay's waste water ensuring the productivity of this precious resource is maximised – irrigating sugar cane crops and supporting the abattoir. The \$130 million Mackay scheme received \$43.34 million in Bligh Government funding with Commonwealth and council contributing the remainder.

Source: Media Release from Minister for Local Government and Aboriginal and Torres Strait Islander Partnerships, The Honourable Desley Boyle. 16.11.2009
<http://statements.cabinet.qld.gov.au>

Recycled water plan for new housing estates

New housing estates in southeast Queensland could be supplied with purified recycled water for their gardens and other non-drinking uses under plans being investigated by the Queensland Water Commission. The commission is looking at promoting the idea to developers of new estates, which must meet mandatory water-savings targets under new government regulations.

If the plan goes ahead, it would mean the Government has found a new use for an expensive water supply it had been struggling to sell. QWC acting executive director Dan Spiller confirmed the commission was looking at "a range of potential customers" for recycled water among industrial and residential users.

The recycled water would be delivered to new estates through a "third pipe" system, which would let it be used for

gardens, washing machines and toilets, but not for drinking. The recycled water produced by the advanced wastewater treatment plant at Bundamba meets Australian drinking water quality guidelines, but the Bligh Government has previously ruled out pumping it directly into southeast Queensland's reticulated drinking water system.

Source: Craig Johnstone for the Courier Mail, 10.12.2009
www.news.com.au

More water for Cunnamulla

Local Government Minister Desley Boyle said public parks and recreation areas in Cunnamulla were set to benefit from the next stage of a recycled water project. Ms Boyle said stage 3 of Paroo Shire Council's new irrigation system would be installed in February 2010, giving parks and community facilities a new lease of life. "Council's contractor is well on track to have this work completed so local parks and facilities will be even more useable and more often," Ms Boyle said. "Once installed, the centrally automated irrigation system will provide the Cunnamulla Cemetery, Apex Park and Bushland Park with a new source of nourishment. "The pipelines will allow river water and, in the future, treated recycled non-potable water to be used in these areas as well as other community facilities. "These sorts of council programs are an ideal solution to help keep parks and recreational areas at their best, whilst saving valuable drinking water. The total State Government funding for all three stages of the project was \$616,870.

Ms Boyle commended the council for the work, saying the project was an example of council planning and consulting with residents to develop a "community vision" by investing in improved, sustainable facilities. "This was really important for the local community and I congratulate the council on its commitment to delivering this public infrastructure," she said.

Source: Press Release from Minister for Local Government and Aboriginal and Torres Strait Islander Partnerships
 The Honourable Desley Boyle
<http://statements.cabinet.qld.gov.au>

International News

Bangalore, India: Use of recycled water to be mandatory

The Government of Bangalore, will slash the selling price of recycled water and establish 20 supply points to promote its use for non-potable purposes.

Recycled water is presently manufactured at only two places in the City – the Vrishabhavati Valley and Yelahanka and sold at areas in the vicinity. "The recycled water is being sold at Rs 16 (US\$ 0.34) per cubic metre. This will be brought down to US\$ 0.11 per cubic metre in future. Twenty filling points and equal number of storage tanks will be set up," disclosed Bangalore Water Supply and Sewerage Board minister Katta Subramanya Naidu, in October 2009.

The minister said that tenders will be called for production of recycled water in three months and water would be made available within 18 months. The equivalent of US\$ 213 million has been set aside for implementation of the project, the Minister said. "When the project is completed, it would be made mandatory to use recycled water for purposes other than cooking and drinking," he declared.

Source: Deccan Herald, 22.10.2009
<http://washasia.wordpress.com>

Hawaii: Task force Forms to Find Viable Ways to Reuse Maui Wastewater

An eclectic group of community stakeholders have accepted the challenge of finding innovative ways for Maui to reuse its wastewater, joining the new Community Working Group (CWG) task force. CWG will include significant input from various groups, including education specialists, developers, company heads, environmentalists and community leaders.

"When wastewater is used for such things as irrigation, it helps to conserve drinkable water for our homes and businesses," Mayor Charmaine Tavares said in public release. "This task force will explore options that can help our county increase the use of treated wastewater." Maui County's residents, businesses and visitors send an average of 15 million gallons of wastewater through the sewer systems each day—a substantial amount for our infrastructure to manage.

According to the county's Website, an excess of approximately 11.4 million gallons per day of reclaimed water is produced at treatment facilities. But, without "sufficient storage and distribu-

tion capability" to make use of all of it, the excess is sent down injection wells. Many residents are concerned about injection wells—including a group called DIRE (Don't Inject, Redirect). Last May, the mayor announced that "our goal is to use all of the water that's produced by our treatment plants and not put it down any injection wells." "I want to help to try to preserve what natural resources we have for future generations," said Roland Asakura, environmental health specialist from the State Department of Health.

Source: By Trisha Smith for the Maui Weekly, 5.11.2009
www.mauiweekly.com

US disinfection guidelines for RW

The WaterReuse Foundation has awarded a research grant to American Water Works Company Inc for examination of disinfection guidelines for water recycling. In a US\$ 634,394 joint project with MWH, American Water will examine disinfection requirements for satellite water recycling facilities against California standards, recognized as one of the most comprehensive sets of high effluent water treatment process requirements.

"The outcome of this research could reduce the size and cost of chlorine contact basins, and allow the water industry to implement more environmentally friendly technologies," said Dr Mark LeChevallier, director of innovation and environmental stewardship.

Source: Desalination and Water Reuse Online 02.02.2010
www.desalination.biz

China: Norit in Chinese wastewater reuse success

A Norit & GreenTech Engineering consortium has been officially awarded the contract for the design, procurement, installation and start-up of the 180,000 m³/d Qinghe Municipal Wastewater Reuse Project in Beijing, China, Norit announced on 18 December 2009

The project, which is the single largest water reuse project in China, is part of the Qinghe wastewater reuse plan developed by the Beijing Drainage Group (BDG). The Qinghe reuse project is the world's largest water-reuse plan and is part of the Beijing Government's overall strategy to reuse all wastewater produced in the city.

Source: The International Desalination & Water Reuse Quarterly industry website 20.12.2009
www.desalination.biz