

ReWater

Water recycling in Australia

SPRING 2010

The future of integrated water supply solutions

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About ReWater

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

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

Your Feedback and Contributions

We would appreciate your feedback and are always looking for suggestions and contributions. Please email rewater@arris.com.au or contact us on 03 9640 0221.

www.recycledwater.com.au



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

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Grocon's Pixel building

Greywater reuse incorporated into sustainable building design

Greywater reuse has become increasingly popular in Australian households, with the market in greywater diversion and treatment systems growing substantially in recent years.

However, integrated greywater treatment and reuse is also becoming a matter of practice for large scale buildings, enhancing the 'sustainability' of urban design and city living and reducing both carbon and water footprints of commercial areas. Melbourne is home to an increasing number of buildings that demonstrate greywater reuse can dramatically reduce the volume of potable water consumed in urban spaces whilst also improving aesthetic and amenity value.

World first in carbon neutral building

RMIT's new College of Business building on Swanston St in Melbourne is in the early stages of construction and set to be completed in 2012. Not only will it treat and reuse its own greywater, but will also use the greywater captured by 4 other nearby university buildings for toilet flushing and cooling towers.

Grocon's Pixel building, nearby on Queensberry St in Carlton claims to be a world first in carbon neutral building, achieving the

maximum 100 points available in the Green Building Council of Australia's Green Star rating system and earning itself 6 stars. Rain water harvesting augments a grey water supply which is recycled through reed beds of native grasses that also serve as shade and temperature control with the openable windows. Greywater treatment and reuse in the building will help the building achieve self sufficiency in water use.

Home to the University of Melbourne's Faculty of Economics and Commerce, The Spot building in Berkeley St is another highly water efficient building. Greywater is recycled via an onsite black water treatment plant, and the building façade has been designed to enhance rainwater collection. According to the university, the building uses 90% less water than other educational buildings of a similar size. •



The Spot building in Berkeley Street



Tour group in Adelaide Parklands

IWA Study Tour 2010: Adelaide, Perth, Darwin and Singapore



Overview

The Institute of Water Administration (IWA) is a Victorian not-for-profit water industry organisation with a member base of individuals, water corporations and other contractors and consultants servicing the state's water corporations. The primary objectives of the IWA are to advance the standards of management and administration within the Victorian water industry. These objectives are achieved through shared networking, training and development opportunities that make active contributions to the future directions of the industry. IWA members contribute and share learnings in the form of conferences, Special Interest Groups, networking functions, development and other awards and study tours. IWA commissioned Atura Pty Ltd to organise and lead a study tour exploring the variety of approaches to integrated water supply management; with the aim of ensuring IWA members are aware of opportunities and the most innovative solutions to these complex challenges.

Ten delegates recently stepped outside of their state to discover how similar challenges are being faced by their counterparts in South Australia, Western Australia, Northern Territory and Singapore. All aspects of managing the integration of a variety of water sources, including desalination, stormwater, groundwater, surface water and recycled water were studied. Innovation and integration of diverse water resources were explored in both large and small scale projects. Topics

ranged from strategy to action planning, operations to administration, corporate culture to customer communication, technology to risk management; as well as legal and financial considerations.

Delegates were amazed by the variety of methods utilised to manage integrated water supply systems

Challenges for tomorrow explored

As a nation we are facing one of the biggest challenges of our time; to maintain and sustain water supplies for tomorrow's Australia. Urban water resources are becoming scarce and will not meet future demands, especially if the quality of life expected by the increasing population is to be met. Forecast population growth and the expansion of current metropolitan areas are compounding the impacts of climate change. To combat and manage these changes and ensure our quality of life will be improved and maintained by easy access to fresh water supplies in the future, the study tour explored several emerging challenges:

- The variety of water supply modes available and their impact on communities, catchment management and infrastructure planning (including managed aquifer recharge, stormwater harvesting, desalination, greywater, rainwater, recycled water).

- Strategies for the provision of water security in the face of climate change and uncertainty; cost effectiveness and sustainable management.
- Seawater desalination – is it an insurance policy only? If so, what is the premium for this insurance?
- Incorporation of water sensitive urban design principles, addressing the environmental impacts of integrating water supplies and developing appropriate alternative energy solutions.
- Understanding urbanised landscapes as water catchment areas, and harnessing the diversity of water supplies in light of competing demands for water of varying quality and volumes.
- Managing impacts of modified water signatures (a consequence of desalinated water) in a water grid on infrastructure and water quality.
- Water quality challenges associated with capacity management and the blending of a variety of scarce water sources.
- Communication and customer service challenges, issues and opportunities relating to public relations, community engagement, customer perceptions, education and uptake.

Melbourne highlights

The tour started with a welcome dinner which set the scene for the journey to follow. Delegates had the opportunity to gain an Australian perspective on integrated water supply and use over dinner and a round table discussion with special guest, CEO of WSAA, Ross Young. Ross shared some of his views on future water trading opportunities and limitations, the connected Water-Energy challenges, and potential industry impacts of any future emissions trading scheme.

Adelaide highlights

SA Water and the State Government has placed significant focus on planning and the development of infrastructure, systems and schemes to support the significant population growth projections and the associated demand for quality water supplies anticipated.

Delegates learnt about and spoke frankly with people in charge of programs such as the:

- Network Water Security Program which provides infrastructure planning for the next 20 years to address limited connectivity issues and on optimising the use of existing infrastructure. The development of the North South Interconnection System Project is a significant part of this program and aims to connect Adelaide's northern and southern water supply networks to allow:
 - Enhanced security of supply
 - Optimal use of assets
 - Flexible long term management of current and future water resources

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- Water for Good is a comprehensive, robust plan for South Australian water security to 2050. Released in June 2009, the plan incorporates:
 - future supply demand scenarios
 - diversity of supply
 - adaptability in planning
 - legislative, regulatory, and pricing reform
 - education and community awareness
 - innovation and increasing opportunities for competition.
- 30 year plan for Greater Adelaide – This vision for Adelaide's development for the next three decades is the biggest project of its type undertaken since the 1962 metropolitan plan. The plan looks at a wide range of initiatives including mandating water sensitive urban design and sustainability.

Delegates visited a number of sites where they could see the results and implications of this extensive planning including:

- The construction site of the Adelaide Desalination plant which will serve over 1.5 million South Australians with a capacity to provide up to 50% of Adelaide's drinking water in future.
- Aldinga Managed Aquifer Recharge Scheme – storing recycled water for use by irrigators in summer months. A leading technology and research site which may enable this technology to be used in other remote SA locations in future.
- SA Water house – New 6 star Green Building. Utilising the opportunity to align with sustainability values and address cultural and operational issues. Achieved significant cultural change goals along with water, energy and operational efficiencies; if you are ever in Adelaide you have to go and see this building!
- Lochiel Park – leading example of water sensitive urban design integrating stormwater, water sensitive urban design and water recycling.
- Mawsons Lakes – understanding use of recycled water and stormwater for public open space irrigation and third pipe supply to houses for toilet flushing and garden watering.
- City of Salisbury – stormwater reuse using wetland treatment and aquifer storage and recovery (ASR) storage.
- Glenelg to Adelaide Parkland Scheme – recycled water used from Glenelg STP to provide water for Adelaide Parklands and other CBD water recycling initiatives replacing water from the Murray, Hills and River Torrens catchments and groundwater.
- Bolivar STP & Virginia Pipeline – Bolivar STP provides high quality 'Class A' recycled water (Fit for irrigation of fresh vegetables) for use in The Virginia Pipeline for irrigation. The water from Bolivar

By the end of the 11 days on tour delegates were exhausted from the pace of the tour



Guided tour of Glenelg STP near Adelaide

is also used at Mawsons Lake and Parafield Wetland. The Virginia Pipeline Scheme is the first and largest recycled water scheme of its type in Australia and now has more than 240 contracts using more than 15,000 megalitres of recycled water for irrigation each year.

Perth & Rottnest Island highlights

Tour delegates took a boat trip to Rottnest Island, where they experienced first-hand the challenges of managing water and energy supplies in a small reasonably inaccessible community. Ingenuity, a focus on sustainability and a direct relationship between wind power and seawater desalination resulted in 40% efficiency due to the reliable nature of the wind on Rottnest (power is supplemented with diesel generators).

Delegates also visited Perth's operational seawater desalination plant – the first of its kind to provide desalinated water for large scale public consumption

and also the nearby Kwinana Water Reclamation plant which provides recycled water for industry use, saving 6 GL per year of potable water supply.

Gaining insight into strategies used by the Water Corporation to provide water security in the face of climate uncertainty the delegates were provided with a number of presentations:

- Water Forever – 50 yr plan aiming to make Perth and surrounding areas more climate resilient to ensure sufficient and sustainable water supplies for Western Australia. It incorporates 3 key strategies. By 2030, they plan to:
 - Reduce water use by 15%
 - Recycle 30% of all water
 - Develop 70 – 100 GL of new water sources.
- The Integrated Water Supply System (IWSS)
 - Delivering water to 1.6 million people across Perth, the South West, Kalgoorlie-Boulder and the Wheatbelt and Goldfields Agricultural regions.
- Groundwater replenishment
 - A future water source for WA where water from a wastewater treatment plant undergoes further treatment and is then recharged to groundwater.

- Land applications of biosolids
 - insight into the success and challenges associated with one of the most successful schemes in Australia.

Darwin and Bathurst Island highlights

Significantly different issues are faced in NT. Delegates had the opportunity to explore issues associated with wet vs. dry seasons and the impact on wastewater treatment and reuse as evidenced by the Alice Springs Recycled Water Scheme. They were also faced with the issues and complexities associated with culture, water quality, management and supply options to outstations and remote communities when they visited the community of Nguiu, Bathurst Island.

The tour also joined the NT AWA Branch for a seminar on the supply of water to remote communities in NT meeting many representative of the Water industry in NT, and sharing with the NT Branch some Victorian perspectives on recycled water pricing.

Singapore highlights

The delegates explored world leading water resource management in Singapore with visits to:

- PUB (Public Utilities Board) which has 1.2 million customers and manages their 4 national taps which include: local catchment, imported water (from Malaysia), 'NEWater' and desalinated water. NEWater is treated used water that has undergone stringent purification and treatment process using advanced dual-membrane (microfiltration and reverse osmosis) and ultra-violet technologies. NEWater could be mixed and blended with reservoir water and then undergo conventional water treatment to produce drinking water (a procedure known as Planned Indirect Potable Use or Planned IPU). There are currently 4 NEWater plants in Singapore and significant education and public relations campaigns are conducted within the community to ensure support for this 'tap'. Delegates visited their impressive visitor centre.
- The Marina Barrage (Singapore's 15th reservoir and the first in the heart of the city) has a catchment area of 10,000 hectares it offers 3 benefits, water supply, flood control and a lifestyle amenity.

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The tour visits Adelaide's desalination plant

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- ABC Waters Program (Active Beautiful Clean Waters). These sites are transforming Singapore's drains, canals and reservoirs into vibrant, clean and aesthetically-pleasing streams, rivers and lakes. This is part of PUB's strategic objective to bring Singaporeans closer to water so that they can better appreciate and cherish this precious resource and help improve their quality of life.
- Chestnut Avenue Water Works is a protected jungle catchment - the last remaining jungle catchment in Singapore. It is one of the largest immersed membrane plants in the world producing drinking water. Fish bio-monitoring is undertaken here to enable quick response to pollution or contamination.

After the study tour several participants stayed on to attend Singapore's International Water Week, 'Exploring Sustainable Water Solutions for Cities'.

By the end of the 11 days on tour delegates were exhausted from the pace of the tour, yet amazed by the variety of methods utilised to manage integrated water supply systems and the enormous amount of innovative solutions they had studied. Appreciation for the time, enthusiasm and willingness to share information with the delegates is extended to all representatives at each of the sites and companies visited. Their openness, question answering and time given to help educate and share their experiences with delegates was astounding! A number of the delegates agreed that what was learnt on tour, along with the contacts and friendships made will provide a solid foundation for improving how work is done in the future. The benefits to the water industry will be experienced for years to come.

Key messages

Some key take home messages in relation to integrating water source management from participants were:

Community and Culture

- Respect the environment, culture, community and history.
- Seek to understand social considerations when investing in water projects - Community consultation is critical; collaboration between water corporations and the local community is crucial.

- SA Building of Life is a Conduit of Culture (enhancing cultural change within an organisation) illustrating that improved productivity and cultural benefits can co-exist.
- Education for all ages is the key.
- The right work culture is critical - You must embrace a can do attitude.

Industry Collaboration

- A collaborative approach is required enabling water projects to be developed that support a coordinated 50 year plan.
- The need to communicate and share industry knowledge is paramount.
- Encouragement of Innovation is required. We need to "Go for it".

Future Drivers

- Stormwater integration is part of the solution.
- Optimisation of system quality, quantity and energy use.
- Need to diversify water supply risk re:
 - Climate change impacts
 - Opportunities to manage stormwater.
- With money and the right drivers anything is possible, however, you need to bring the community along.
- Appropriate Water pricing is essential to encourage investment and innovation in water projects.
- Energy is "the next big thing" and there needs to be a cooperative industry effort.
- Strong project management.

IWA is holding its next conference on Friday 19 November 2010 at the RACV Club in Melbourne. Speakers on the program will include delegates from the Study Tour. Non-members are also welcome to attend. For more information on the Study Tour, or conference details including brochure, please contact IWA Secretary, Sarah Johnston at Sarah.johnston@vicwater.org.au.

IWA wishes to acknowledge the contributions of Daryl Stevens and Jodie Hannaford from Atura Pty Ltd www.atura.com.au for their work in organising a memorable study tour for all delegates. •

Source: Les McLean, IWA Executive Board Member
[Click here for more information on study tours conducted by Atura.](#)

Green dream for Darwin

Environmentalists want to dust off a 15-year-old government proposal to recycle sewage in Darwin.

Darwin Lord Mayor Graeme Sawyer has jumped on the idea and wants to use recycled waste to water council parks. Environment Centre NT co-ordinator Stuart Blanch said the Territory Government's solution to the poo shooter was not acceptable.

"I don't think this story is over," he said. "They still just pump sewage deeper into the sea and make it cleaner. But it is still a problem." Mr Blanch said the Environment Department had prepared a Darwin Sewerage Strategy in 1996 - which planned for the city's future growth in residential, commercial and industrial needs.

The plan saw waste from Larrakeyah diverted to Ludmilla for treatment - and some of this waste would then be reused in Darwin.

Darwin Mayor Graeme Sawyer said he had advocated the use of recycled water for many years.

"If Cairns can get away with zero discharge, why can't we?" he asked. Mr Sawyer said he would ask the council to conduct a survey into sewage mining - where a filter is placed over pipes to prevent solid waste from getting through. The water from this could be used at East Point, the Esplanade, or Mindil Beach.

"It is a cheaper and easier process than treating the sea water," he said.

Mr Sawyer said it was common place in cities around the world to use recycled water. "It shows how out of touch they are and that is how we get into these problems," he said. The NT News recently revealed yesterday that the Larrakeyah outfall - also known as the poo shooter - will be closed by September or October 2011.

The poo shooter dumps 1.5 gigalitres of sewage into Darwin Harbour every year. But when an e.coli outbreak recently closed Darwin's beaches, authorities denied it was to blame and suggested it was caused by a dirty nappy. •

Source: NT News 22/7/2010
www.ntnews.com.au



GreySmart – a better standard for greywater

When it comes to using greywater safely on your garden, the most practical and logical way to ensure this is by using household detergents with the least detrimental impact to the environment.



We can do this through source control; minimising the hazards posed to plants and soils by choosing products that are the most 'garden friendly' on the market and by encouraging manufacturers to improve standards for detergents likely to end up in greywater. The problem now is that there are so many products on the market that claim to be safe for greywater, so how can we be sure that this isn't a load of 'greenwash'?

The Smart Water Funded 'GreySmart' project is aiming for a new standard when it comes to labeling household detergents and cleaning products, based on a risk assessment of known hazards for plants and soils and good science.

GreySmart makes available a website that will provide product information based on the concept that informed product selection (or source control as defined in the Australian Guidelines for Water Recycling) is the best control measure if long-term greywater irrigation is practiced. If source control is to be practiced, identification of the true garden friendliness of household products relative to the potential impact of these hazards on plants, soils and nearby waterbodies based on the best science available is critical.

Through the recent drought approximately 67% of Melbourne households have used greywater to some extent. An assessment of current household cleaning and personal care products indicates that this is not sus-



tainable in the long term (>20 years), and may in some cases be detrimental to plant and soil health in the short-term (1-19 years) as harmful levels of some pollutants will build up and change the soil conditions in backyards, inevitably affecting plant health.

A detailed environmental risk assessment underpins GreySmart and has enabled the development of a definition for 'garden friendliness' of household products for urban irrigation in Victoria. The resulting definition extends beyond nitrogen, phosphorus and sodium concentration to include boron, sodium adsorption ratios, pH, salinity, residual sodium carbonate, cadmium, biodegradability and other parameters. In turn, this enables assessment of household products for their garden friendliness based on typical usages and concentration of resulting hazards in greywater. It also identifies additional control measures that can be used in the garden.

GreySmart's approach allows providers, installers and users of greywater systems to access this information in an easy to understand practical format. The research undertaken as part of this ongoing project has been combined with climatic data from across Victoria (funding is being sought to make this Australia wide) and synthesised into a user friendly website hosted by Save-water! Alliance. The website, to be launched at the end of October, will also incorporate an interactive web calculator (H2OmeCalc) for integrating alternative household water supplies (grey and rain water) and act as a focused knowledge bank for greywater use in Victoria and across Australia (www.greysmart.com.au).



This project has been lead and developed by Atura and funded by the Smart Water Fund. •

For more information visit www.savewater.com.au

Perth survey: half would pay for recycled water

In an online survey seeking information on Perth people's preference for expanding the drinking water supply through a second desalination scheme or a recycled water scheme, a natural resource economist postgraduate student at The University of Western Australia found that Perth's population was split into two camps.

Fiona Gibson, who divides her time between UWA and a farm in Mingenew, said 50 per cent of the sample population would be willing to pay for a recycled water scheme rather than a second desalination scheme while 20 per cent would be willing to accept recycled water providing there was a discount applied to their annual water service fee. Thirty per cent of the total sample would not, however, accept recycled

water even with a discount of \$130 to their annual water service fee. For this group of consumers economic incentives are clearly not the only consideration.

Before enrolling for her PhD, Ms Gibson worked as an environmental planner in the Department of Planning.

"In the survey, fairness and psychological repugnance were the drivers of both accept-

ance and rejection of recycled water," Ms Gibson said.

"The 50 per cent of respondents who said they would prefer recycled water to desalination said they believed recycled water was fairer to Perth households, the environment, and future generations. The economic incentive was not the only major driver of the respondents' decisions.

"Perth's water shortage has impacted growth in several sectors, particularly intensive agriculture to the north. Replenishment of Perth's groundwater aquifers using recycled water may provide an opportunity to alleviate shortages."

Ms Gibson presented the findings from the survey at the recent Institute of Agriculture UWA postgraduate showcase. •

Source: UWA Media release 21/6/2010. For more information contact Sally-Ann Jones at UWA Public Affairs (08) 6488 7975

Lower Hunter recycled water initiative tees off

In early July the Vintage Golf Club became the first industry player to sign up for part of a massive \$48 million recycled water scheme. The scheme is to deliver up to one billion litres of recycled water a year as part of the Lower Hunter Recycled Water Initiative in NSW.

Mr. Costa and Member for Cessnock, Kerry Hickey were at The Vintage for announcement of the scheme which will deliver 3.7 billion litres recycled each year by 2014. The Vintage Golf Club will use more than 300 million litres of recycled water a year on its greens and fairways.

"This project is the start of a \$48 million investment in new recycled water infrastructure in the Hunter region under the Lower Hunter Recycled Water Initiative," Mr. Costa said.

"I'd like to congratulate The Vintage Golf Club for being the first industry player to sign up to the scheme - by using recycled water on their greens, they will save 300 million litres of precious drinking water each year.

A win-win solution that will provide a secure and cost effective water supply

"As more industrial water users sign up and the area grows, this \$48 million scheme has the potential to produce more than one billion litres of recycled water a year.



VINTAGE FIRST: Pictured are, L to R, Hunter Water Managing Director Kevin Young, Member for Cessnock Kerry Hickey, Minister for Water Phillip Costa and The Vintage Director of Golf Steve Wylie.

"We're committed to attracting and securing private investment in water recycling - this project is evidence of government and the private sector working together to reduce water use."

Mr. Hickey said the NSW Government would share the cost of an \$8 million, 12 kilometre recycled water pipeline from the Branxton Wastewater Treatment Plant, to be built as part of a \$48 million upgrade to the plant.

"Work has begun on the \$48 million upgrade at Branxton Wastewater Treatment Plant and once complete it will be one of the most technologically advanced facilities in the region," Mr. Hickey said.

"As the local member I'm proud to see a local business be the first to sign up to the scheme to save water.

"This project is a substantial investment in local infrastructure that will significantly increase water recycling in the area and secure the supply of irrigation water for local businesses, which have previously lost supply during drought.

"This project is a win-win solution that will provide The Vintage with a secure and cost effective water supply and will also benefit the local environment by reducing the level of nutrients in waterways surrounding the plant.

"The plant upgrade and recycled water pipeline are expected to be complete by mid 2011."

The Vintage recycled water scheme consists of a new recycled water plant at Branxton. This new plant will treat sewage using advanced membrane bioreactor technology to produce high quality water suitable for irrigation use in urban areas like golf courses.

A recycled water pipeline will be constructed from the Branxton treatment plant to Vintage.

The Branxton Wastewater Treatment Plant will be extremely efficient, turning close to 100% of the wastewater treated by the plant into recycled water for irrigation use. •

Source: Cessnock Advertiser 7/7/2010
www.cessnockadvertiser.com.au

Water recycling helps Dalby, Qld manage growth

Flicking the switch in Dalby on the new \$3.62 million water recycling treatment plant that is putting the town on the front foot when it comes to growth management.

The plant has been delivering one million litres of high quality industrial grade water to Dalby Bio-Refinery every day since February," Ms Boyle said. "The Bio-Refinery had previously used potable water so this translates into a 365 million litre-a-year saving of Dalby's potable water.

"Water is one of our most valuable resources and preserving drinking water means the town will have the capacity to effectively manage growth. Down the track if Council chooses to increase capacity then recycled water could be used to help keep local sport fields and parks in tip-top shape."

"The plant is also a boon for local industry who can be assured of a high quality alternative source of water.

"The Bligh Government is serious about building for the future of Queensland and this project will help ensure the town has the infrastructure to manage growth.

"This is why we have supplied more than \$1 million in subsidies for the project with the remainder being funded by Western Downs Regional Council and Dalby Bio-Refinery Ltd."

Spokesperson for Utilities - Water, Wastewater and Gas Councillor Bill McCutcheon said the project reflected Council's commitment to invest in urban water infrastructure to provide long-term water security for major centres in the region.

"Since it was commissioned the plant has already had a significant impact on the volume of the Dalby town water supply," Cr McCutcheon said.

"At present the sole purpose of the plant is to serve the Bio-Refinery, however, Council will look at further opportunities to expand the supply of recycled water in the future when we decide it is feasible to do so.

"The plant and its treatment process was designed as a tertiary treatment facility at the end of existing processes and, as such, it does not alter existing infrastructure.

"A dedicated recycled water pipeline delivers this water from the Dalby water recycling plant to the Bio-Refinery."

The new water recycling plant was designed and built by Australian company Water Infrastructure Group. Construction was overseen by project superintendent Parsons Brinckerhoff, while contractors from across the region assisted with the construction of the plant. •

Source: Press release by Hon. Desley Boyle 3/6/2010
<http://statements.cabinet.qld.gov.au>

Investment in brine management

Wannon Water will receive a funding grant of \$1,897,525 from the State Government Water for Industry Initiative for construction of a Brine Management Project in Warrnambool.

Wannon Water Managing Director Grant Green said, "This grant will enable the \$12 million Warrnambool Brine Management project to proceed. The project aligns with Wannon Water's vision of delivering sustainable water services for regional prosperity."

"A transfer station will be established at the Warrnambool industrial estate to receive brine transported from regional industries as a by-product of the treatment of recycled

water by reverse osmosis. A dedicated pipeline will convey the brine to a new treatment facility, which will be constructed at the Warrnambool Water Reclamation Plant.

"The project provides an innovative and sustainable solution for the receipt and treatment of brine and other salty trade wastes received from current and future large industrial customers supplied with recycled water or that generate salty trade waste as a by-product of dairy manufacturing," Mr Green said.

"The project will facilitate further economic growth in the region and enhance water recycling opportunities as the quality of the recycled water produced at the Warrnambool Water Reclamation Plant will be enhanced by the separate treatment of brine and salty trade wastes," Mr Green added.

The project will be funded by Wannon Water, the industry customers who will use the facility and the government grant.

"Wannon Water will explore further water recycling options once this project is completed," Mr Green said. •

Source: Wannon Water 3/6/2010
www.wannonwater.com.au
For more information on the Brine Management Project, contact Wannon Water on 1300 926 666.

GOOD READS and website links

Assessment of rainwater use and greywater reuse in high-rise buildings in a brownfield site

Water Science & Technology—WST Vol 60 No 3 pp 575–581



This study describes the use of rainwater and greywater (originated from bathroom only) for provision of non-contact indoor and outdoor use in high-rise buildings. A brownfield development site in Box Hill suburb of Melbourne was selected as case study site for this investigation. The performance of alternative servicing options was compared with conventional water supply, stormwater and wastewater servicing.

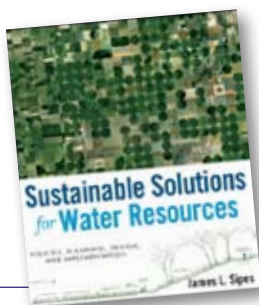
Available from IWA Publishing Online
www.iwaponline.com

Resources and nutrients oriented greywater treatment for non-potable reuses

Water Science & Technology—WST Vol 57 No 12 pp 1901–1907

This paper evaluated the performance and suitability of a resources and nutrients oriented decentralized greywater treatment system which uses a submerged spiral wound module. This greywater treatment system is aimed at treating and recovering the resources present in the wastewater.

Available from IWA Publishing Online
www.iwaponline.com



Reuse potential of laundry greywater for irrigation based on growth, water and nutrient use of tomato

Journal of Hydrology Vol 386 No1-4 pp 95–102

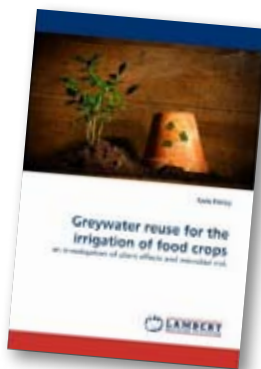
Faculty of Engineering and Surveying, Australian Centre for Sustainable Catchments and CRC for Irrigation Futures, University of Southern Queensland
Available from Science Direct
www.sciencedirect.com

Greywater Reuse for the Irrigation of Food Crops

By Sara Finley

This study is a preliminary investigation of the potential effects of reusing domestic greywater for the irrigation of vegetable crops at the household level. It focuses on plant health and productivity effects, and explores the potential for microbial contamination of edible crops by bacteria-rich greywater.

From www.fishpond.com.au



Sustainable Solutions for Water Resources: Policies, Planning, Design, and Implementation

By James L Sipes,

This enlightening guide, which covers over twenty case studies offering insights into real-world projects, uses a holistic, integrated approach to illustrate ways to preserve vital water supplies -- from green design remedies to encouraging greater personal responsibility.

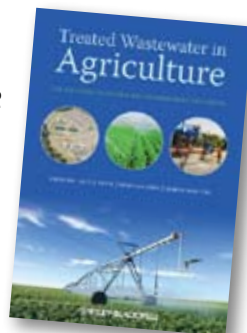
Available from
<http://au.wiley.com>

Wastewater Use in Agriculture

Edited by Guy Levy, P. Fine, A. Bart-Tal

This important new book addresses in detail the use of treated wastewater in agricultural situations, its impact on crops and the soil environment. Coverage includes the composition and treatment of wastewater, health considerations, regulations and economic aspects. Major sections of the book also concentrate on crop management and the soil environment. This book is an essential purchase for all those working in irrigation, water management and crop production worldwide.

From www.fishpond.com.au



Water Centric Sustainable Urbanism in the Cities of the Future

By Vladimir Novotny, John Ahearn, Paul Brown

Considered from the perspective of sustainability, however, water in the urban environment must be approached as a single resource that can be continuously reused and recycled. This book will be the first to capture all of the current work on this idea in a single, integrated, plan for designing the water-centric cities of the future. From new construction to the retrofitting of existing systems, this book presents the case for a new urban relationship to water, one with a more sustainable connection to the environment and the hydrological cycle.

From www.fishpond.com.au





EVENTS diary dates

Australia



Odours Speciality Conference

24-25 August 2010, Sydney

It is a long time since AWA convened a specialist Conference on Odours but the subject gets more difficult to ignore by the day. "It smells" is the most frequent complaint that water industry professionals hear from the public and even their own colleagues.

This Conference will be of special interest to Wastewater treatment engineers, olfactory specialists and scientists, chemical and industrial engineers, food, feed lot and petrochemical industry managers.

For more information: www.awa.asn.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 quantity, in the most sustainable manner.

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



EcoForum

9-11 March 2011, Sydney

Each year, EcoForum brings Australian environment industry practitioners and their clients from across Australia

together for three days in Sydney to solve environmental problems and act on potential business opportunities. EcoForum is a multi-disciplinary environment industry event that encourages participation, provides real solutions

and business leads and facilitates discussion and knowledge sharing on issues of concern. EcoForum has conference streams in climate change imperatives, water cycle sustainability, waste and resource recovery, land and groundwater remediation and communication and engagement.

For more information: www.ecoforum.net.au



OzWater'11

9-11 May 2011. Adelaide SA

Call for papers closes 2 September!

Ozwater is an event like no other, organised by the industry for the industry where the issues that drive the industry are discussed and future directions decided. Ozwater '11 will address the wide ranging issues that face the water industry today. These include major national water reforms, climate change and its impacts, technological advances and the challenges of human resources to name a few.



The IDA World Congress 2011 on Desalination and Water Reuse

4-9 September 2011. Perth, Western Australia

Call for papers now open.

The International Desalination Association is pleased to present the Call for Papers for the IDA World Congress 2011 on Desalination and Water Reuse. This biennial event will be held from 4 - 9 September at the Perth Convention and Exhibition Centre, Perth Australia. Themed, "Desalination: Sustainable Solutions for a Thirsty Planet" the Congress is the premier global event on desalination and water reuse. Printed copies of the Call for Papers are being mailed to all current IDA members. Extended abstracts will be accepted online beginning July 15 and ending October 1, 2010.

For more information: www.idadesal.org

International

Water Reuse and Desalination: Experience and Opportunity

28-29 September 2010 Damascus, Syria

The conference, which will focus on Water Reuse and Desalination: Experience and Opportunity is the first in a series of events addressing desalination and water reuse that will be produced by the LDA in the region. This first conference will be structured with expert presentations and an open forum to encourage lively interaction with all who attend. All presentations will be available in proceedings.

For more information <http://levantdesal.org>

The international water conference

24-28 October 2010, San Antonio Texas USA

The Engineer's Society of Western Pennsylvania presents The International Water Conference®. The IWC has always been a strong educational conference. Attendees come to learn about the latest applications available in the industrial water treatment industry, educate themselves in current technology and applications through attendance in IWC workshops, and network heavily with their peers active in water treatment.

For more information: www.eswp.com



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 Association's 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/

Nutrient Recovery and Management 2011: Inside and Outside the Fence

9-12 January 2011. Miami, Florida USA

The Water Environment Federation and the International Water Association, in cooperation with the Florida Water Environment Association and the Water Environment Research Federation, are pleased to announce a Conference covering the latest research and experience in all the management aspects of nutrient removal.

For more information: www.iwahq.org

Western Australia

Imported recycled water ruled out

The WA State Government says it is exploring ways to secure future water supplies in the Pilbara following reports recycled water from Tokyo could be used for industry purposes.

Japanese researchers are proposing recycled water from Tokyo be shipped to the Pilbara on empty iron ore carriers and used to dampen iron ore dust.

Currently, potable water is being used to dampen down dust on mining projects.

The government has confirmed it has received presentations from the Japanese Government but says it will not consider the water for potable use.

It says it is welcoming input from industry on how to better manage water supplies for dust suppression.

Source: ABC News Online 13/7/2010
www.abc.net.au

WA Greens push for more recycling

The WA Greens says the Water Corporation's admission that it may need to access more groundwater from the Gnangara mound proves water supplies are being mishandled. The Corporation revealed yesterday that it may apply to have its extraction limit increased if Perth's dry spell continues.

The Greens' Alison Xamon says the mound is already overstressed and not enough is being done to improve water efficiency. The WA Greens say there needs to be more focus on water recycling and efficiency before additional groundwater is accessed from the Gnangara mound.

Source: ABC News Online 6/7/2010
www.abc.net.au

Victoria

Plan to save Melbourne Lake

A \$3 million plan has been launched to help preserve a much-loved Melbourne lake.

The ornamental lake in Melbourne's Royal Botanic Gardens has dried out in recent Summers because of drought.

The Gardens' chief executive Philip Moors says a new stormwater collection project will ensure the lake is full all-year-round. He says there will also be benefits for the Yarra River.

"By capturing stormwater and using it in the lake here we're stopping nutrients and pollutants getting into the river," he said.

"We're also ensuring that the lake and the other water bodies in the royal Botanic Gardens will be much healthier in the future".

Source: ABC News Online 2/7/2010
www.abc.net.au

Recycled water for Horsham's creek

The Environmental Protection Agency (EPA) has given permission for treated effluent to begin flowing into the St Arnaud Creek, east of Horsham, from today.

The EPA is allowing Grampians Wimmera Mallee water to discharge 60 megalitres of treated effluent from the St Arnaud Wastewater Treatment Plant for three months.

Increased rain in the past few months has meant reclaimed water users have not needed the treated water and storages are now almost full.

Grampian Wimmera Mallee water spokeswoman Helen Friend says the water quality will be tested regularly.

"We've put a water testing regime in place," she said.

"It's been agreed by the EPA, just to ensure levels in the creek are staying at a suitable level."

Source: ABC News Online 12/7/2010
www.abc.net.au

Water security for Torquay region

Barwon Water has welcomed a \$10 million federal government commitment toward a new recycled water network for the Torquay growth corridor.

The funding would provide high quality Class A recycled water for up to 5500 homes and recreational areas and ultimately save 850 millions litres of drinking water a year. The first water sensitive residential development to utilise the new plant will be Armstrong Creek, where 22,000 homes will have access to the quality water for gardens and toilet flushing. Class A water will also be available for recreational reserves, car washing and fire fighting.

Construction of the plant will begin later this year.

Source: Barwon Water media release 3/8/2010

www.barwonwater.vic.gov.au



New South Wales

Bundy sewerage completed

NSW Minister for Water Phil Costa joined Wingecarribee Mayor Duncan Gair to announce the completion of the \$18.5 million Bundanoon Sewerage Scheme upgrade on Wednesday.

"The upgraded sewage treatment unit will produce up to 125 million litres of recycled water a year, which will be used to irrigate local grazing land and sporting fields – meaning our drinking water supplies will go further," Mr Costa said.

Source: Southern Highland News 2/7/2010
<http://bowral.yourguide.com.au>

Bombala Shire Council considers its options

Bombala Shire Council is also exploring water recycling options to support the expansion of a timber mill, and similar initiatives are being implemented in the Cooma-Monaro and Snowy River Shires.

The Parliamentary Secretary for Water and Eden-Monaro MP, Mike Kelly, says he is proud of the region's achievements, but there is more work to do.

"We do have to get to a better future in that respect to prepare for the worst case scenarios," he said.

Source: ABC News Online 1/7/2010
www.abc.net.au

Byron Council wins national award

Byron Shire Council has won a top national Local Government award for its Brunswick Area Sewerage Augmentation scheme.

Due for completion in late 2010, the new plant will divert treated effluent from Simpsons Creek at Brunswick Heads towards beneficial reuse on farms as part of the Main Arm effluent reuse scheme.

Executive manager of water and recycling Phil Warner said the innovative project had multi-purpose delivery goals.

Source: Byron Shire News 1/7/2010
www.byronnews.com.au

Decentralised water plan for inner Sydney

The City of Sydney council has announced plans to recycle rainwater and wastewater for irrigation in order to preserve the high-quality water for drinking and washing. The council has called for tenders for a "decentralised water master plan" that aims to produce more than 10 per cent of the inner city's water supply from local sources. The infrastructure required to capture and treat the recycled water would piggyback the council's plans to install trigeneration power plants in buildings in the city.

Source: SMH 21/7/2010
www.smh.com.au

Queensland

Recycled water for cane farms

Local Government Minister Desley Boyle congratulated Fraser Coast Regional Council on their suite of innovative wastewater projects.

"A pipeline will connect it to the new pump station at the wastewater treatment plant and the treated water will then irrigate an existing 80-hectare hardwood plantation which, in turn, helps offset the Plant's carbon emissions.

"Income from the plantation will help cover the running costs of the plant as well as minimising wastewater discharge into our oceans and waterways.

"This is about being smart about the infrastructure we are building and ensuring our communities are sustainable."

Source: Minister for Local Government and Aboriginal and Torres Strait Islander Partnerships

The Honourable Desley Boyle Media Release 29/7/2010

<http://statements.cabinet.qld.gov.au>

Tasmania

Federal funding for Stormwater recycling

A southern Tasmanian council has received \$9 million in federal funding for a new stormwater recycling system.

The Glenorchy City Council will use the money to build a four metre-deep catchment tank under a new oval at Moonah Primary School.

The recycled water will then be used for irrigation. The project will recycle 470 million litres of harvested water, reducing pollution in the Derwent River.

Source: ABC News 21/7/2010

www.abc.net.au



International News

Singapore plans to triple reclaimed water capacity

Singapore plans to triple its current capacity to produce reclaimed water, dubbed "NE-Water" in this city state, in order to meet 50 per cent of demand by 2060. Singapore also plans to ramp up its desalination capacity by almost 10 times so that desalinated water will meet at least 30 per cent of its water demand in the long term, according to the national water utility PUB.

The PUB expects Singapore's water demand to double in the next 50 years, with about 70 per cent of the demand coming from the non-domestic sector, and domestic consumption making up the other 30 per cent.

The city-state currently sources its water from local catchment, imported water; high grade reclaimed water (NEWater) and desalinated water.

Singapore, with a population of more than four million, aimed to expand its water catchment area to 90 per cent of its land eventually.

Today, each Singaporean uses 155 litres of water daily on average.

Source: Hindustan Times 29/6/2010

www.hindustantimes.com

Water recycling mandate for Mumbai high-rises

Mumbai, India: The Law committee of the Brihanmumbai Municipal Corporation (BMC), approved by-laws that make recycling of grey water mandatory for all high-rises with sufficient space to create a wastewater collection and recycling plant. According to the by-laws, housing premises with an area of more than 2,000 square metre, or premises that have more than 60 dwellings will be required to recycle wastewater. The rule will also be applicable for all those buildings, societies and townships where the daily municipal water consumption is above 60,000 litres.

Source: DNA India 24/6/2010

www.dnaindia.com

Old mines for rainwater harvesting

Jamaica: The Government of Jamaica is to introduce measures to guarantee the availability of water for agricultural purposes, including an initiative to introduce a rainwater harvesting programme. The agriculture minister, Dr Christopher Tufton, made the announcement in his contribution to the sectoral debate yesterday.

Dr Tufton says the Government will also be moving to transform mined-out bauxite pits into water catchment areas. He says in the few past months the island-wide water shortage has affected agricultural output.

Source: Go Jamaica 30/6/2010

<http://go-jamaica.com>

Recycled water to pass the Flea Test

Korea: Starting next year water recycling centers here in Korea will have just one more step before they can discharge purified water into the river an ecological toxicity test. A recent study has proven that water fleas commonly found in rivers and streams can be quite effective when it comes to determining how toxic water is.

If the water flea's survival rate measures over 50 percent in a 24 hours period, this shows that the river's ecosystem is safe therefore the purified water can be released into the river.

Source: Arirang TV Korea 15/7/2010

www.arirang.co.kr

Village Farms International making the most of its water

Texas, USA: Reusing the nutrient-rich water that plants are grown in isn't new to hydroponic greenhouses, but Village Farms has taken water recycling a step further. Once water is no longer optimal for growing tomatoes, it goes to lined holding ponds outside the greenhouses. Rather than simply letting the waste water evaporate, it is sent to centre pivot sprinklers to irrigate 116 acres of ranch land adjacent to the Fort Davis greenhouse and 246 acres adjacent to the Marfa facility.

Village Farms also collects condensation in the greenhouses. Aquino said the company's greenhouses use 86% less water than field-grown tomatoes on a pound-for-pound basis. Though going to such lengths to conserve land and water comes at a cost, Aquino said buyers are taking note.

"Sustainability is more than a buzz word in fresh produce," she said. "We are seeing more and more of our retail customers inquiring about our growing methods because they are concerned with natural resource usage and are looking to partner with growers who are maximizing efficiencies across the board."

Source: The Packer 13/7/2010

<http://thepacker.com>