WATER RESEARCH Cluster Newsletter

THE UNIVERSITY OF ADELAIDE AUSTRALIA

December 2008

What's happening in water research at the University of Adelaide

In this issue:

Information on Water Organisation Links, Water Information Links and the Water Research Cluster structure and members have been moved to the updated website www.water.adelaide.edu.au

Faced with an uncertain future climate, the city of Adelaide is thinking big when it comes to water security issues. The December Water Research Cluster Postgraduate Forum involved discussion of the Glenelg to Adelaide Park Lands Recycled Water Project (GAP). When GAP is completed, it will allow Adelaide to become less reliant on water from the ailing Murray River. With regard to water management, research is increasingly addressing the challenge of making Adelaide 'Water Proof'. Meanwhile, the Water Research Cluster continues to develop partnerships for research projects in water-related fields and to promote knowledge of current water issues. This Newsletter provides a summary of current activities by the Water Research Cluster, water-related news features and other items in the context of water research.

Map of the Glenelg to Adelaide Park Lands Recycled Water Project (GAP) pipeline route.

Map produced by: CityGreen Alliance

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Water Research Cluster News & Activities by Eric Nicholson, Newsletter Editor

New Environment Institute

The University of Adelaide will launch a new research institute in 2009 to tackle some of the most serious environmental challenges facing Australia and the world.

The new Environment Institute will be headed by Professor Mike Young, one of the country's leading water policy experts and recent winner of the South Australian of the Year Environment Award. Professor Young said Australia faced diabolical policy problems in relation to climate change and water resources. "While climate change is the issue of greatest national importance, it is arguable that water is the issue of most interest to South Australia. Establishment of the Environmental Institute will make it easier for all to access the University's expertise and for the University to help to resolve system wide issues in a timely manner", said Professor Young.

The Institute will bring together expertise in water, climate change, economics, marine research, energy technology, natural resource management and ancient DNA. The Institute will also involve Professor Barry Brook, Professor Alan Cooper, Professor Gus Nathan and Associate Professor David Paton.

Postgraduate Achievements

There have been a number of achievements for Water Research Cluster postgraduates in recent months. Following are details of the successful researchers, their particular achievements and their water-related research projects.

Australian Water Association South Australian Water Awards

PhD graduate Dr Matt Gibbs, from the School of Civil, Environmental and Mining Engineering, was awarded the Postgraduate Research Award at the annual Australian Water Association South Australian Water Awards night. The Postgraduate Research Award is open to any post-graduate research in a water-related field. Matt won the award for his work for his work in applying Genetic Algorithms to the optimisation of Water Distribution Systems, specifically looking at methods to assist in the calibration of the algorithm. With a great deal of water-related research currently underway, the field was very competitive, including fellow postgraduate students in the School of Civil, Environmental and Mining Engineering, Robert May and Darren Broad.

In addition, Liam Harnett, Jason Nicolson and Rebecca Tennant from the School of Civil, Environmental and Mining Engineering were awarded the Australian Water Association's Hodgson Medal on Wednesday night. These awards are open to final year undergraduates (including Honours students) enrolled at South Australian universities who have completed projects or investigations in water-related subjects.

Some of the other finalists (out of eleven entrants) were also from the Water Research Cluster; one student from Marine Biology and the others from the School of Civil, Environmental and Mining Engineering, including John Baulis, Lisa Lloyd, Fiona Paton and Ben Staniford. Both groups from this School focused on the optimisation of the sustainability of urban water supply systems, with Liam, Jason and Rebecca concentrating on the cluster scale and John, Lisa, Fiona and Ben on the regional scale.

Zooplankton Researcher Awarded Grant

Mr. Pranay R. Sharma has recently been awarded the 2008 ANZ- Holsworth Wildlife Research Endowment Grant. The grant will provide Pranay with an extra $6,000 per year for the next two years to use toward his project. The title of his project is "Integrating Morphological and Genetic Techniques for a Systematic Inventory of Zooplankton Communities in South Australian Drinking Water Reservoirs. Steps toward open access taxonomic keys of Australian aquatic invertebrates". The research team includes Assoc Prof Friedrich Recknagel, Dr Scott Mills and Dr Russel Shiel from the discipline of Ecology and Evolutionary Biology in the School of Earth and Environmental Sciences.

The Holsworth Wildlife Research Endowment invites applications for post-graduate student research support in ecology, wildlife management and natural history studies. Preference is given to students at an early stage of a Masters or Doctoral program. Grants of up to $7,500 are awarded for the purchase of equipment, supplies, travel to study areas and conferences. These grants may be renewable for a period of up to 2-3 years depending on project progress.

Pranay's project is designed to document Australia's biodiversity by improving the taxonomic inventory of zooplankton in South Australian drinking water reservoirs, namely Myponga and South Para, through integrating morphological and genetic approaches. This research will improve understanding of the zooplankton community structure and functioning in reservoirs, and contribute to the conservation of aquatic biodiversity in South Australia. In order to share outcomes of the project with the scientific community, a web-based zooplankton database will be developed incorporating the latest techniques in image capture, using syncroscopy, and genetic bar-coding, using the Cytochrome oxidase sub unit I (CO I) gene. This work is a necessary steppingstone toward future studies on ecological genomics and population dynamics of zooplankton in freshwater bodies of South Australia. This is of great importance as zooplankton plays a crucial role in controlling algal populations like Anabaena circinalis, which is common in South Australian drinking water reservoirs producing the odour compound geosmin and the neurotoxin saxitoxin that affects the public health. Taxonomic studies are vitally important because they provide the foundation for an understanding of community structures and functioning of zooplankton.

Mr. Pranay Sharma, School of Earth and Environmental Sciences

Student Prize Awarded to Saline Water Researcher

Abigail Goodman, a PhD student associated with the School of Earth and Environmental Sciences and the School of Civil, Environmental and Mining Engineering, received the Student Prize (best presentation by a PhD or Masters student) at the Australian Society of Limnology conference held in Madurah, Western Australia, from 29 September to 3 October 2008. The title of Abby's presentation was "Investigating the impact of a pulsed salinity regime on four aquatic macrophytes".

Abby's research involves exploring ways to optimise the use of saline water from the deep ground water drains in the Upper South East of SA. These drains have been constructed to combat dry land salinity effects and to achieve the best ecological outcomes for the wetlands in the region. To achieve these outcomes requires obtaining knowledge about how aquatic plants respond to salt exposure. The title of Abby's project is "Impacts of an altered water and salinity regime on the condition of wetlands in the Upper South East of South Australia". Abby is supervised by Associate Professor George Ganf, Professor Holger Maier and Professor Graeme Dandy.

Red Gum PhD Journey Completed

Congratulations to Water Research Cluster postgraduate Anne Jensen, who has delivered her final PhD thesis on "The role of seed bank and soil moisture in recruitment of semi-arid floodplain plants the River Murray, Australia", following relatively minor amendments required by her reviewers. Anne's investigation has developed guidelines for timing and application of scarce environmental flows, to support recruitment of river red gums, black box and lignum on the Murray floodplain

One of Anne's key findings is that soil moisture from flooding or rainfall events is the key to successful recruitment rather than flooding itself. Maintenance of soil moisture is therefore critical to the timing of environmental watering events. A common assumption is that flooding stimulates germination of red gum seeds held in the soil, but Anne's data show that it is aerial seed rain falling on moist soil or pooled water that is the initial step in recruitment. Anne also found that red gums appear to have different mechanisms for optimising recruitment in both flood and non-flood years. Individual trees produce larger yields in some years which maximises the chance of seed being available when flood events or good rainfall occur.

Anne's results indicate that river red gum may produce flower biennially, subject to climatic conditions, while black box appears to have an annual cycle, with individual trees flowering either in winter or in summer. However, a longer sampling period will be required to confirm these suggested patterns. The perennial bush tangled lignum also relies on soil moisture for growth and reproduction, but Anne's results indicate that flooding plays an important role in triggering root growth for vegetation reproduction, and triggering germination in floating seeds for seedling development.

In the course of her project, Anne and her counting assistants have processed close to a million seeds which were sieved, sorted and counted, 0.2 grams at a time. Other ecology students worked as counting assistants and were funded with grants from various sources, including:

- SARDI Women's Suffrage Centenary Bursary 2006
- Renmark to Border Local Action Planning grant
- SA Murray-Darling Basin Integrated Natural Resources Management Board Community Grant
- Nature Foundation SA Inc grant
- Department of Water, Land and Biodiversity Conservation grant.

For life after her PhD, Anne will be continuing her environmental consulting business, working with various clients on projects relating to river red gum die-back and wetland repair, as well as working on better communication of environmental knowledge for more sustainable management of precious natural resources, especially water.

Water Distribution Systems Researcher Receives Multiple Awards

PhD student Ms. Wenyan Wu, from the School of Civil, Environmental and Mining Engineering, has been awarded both the Research Abroad Scholarship and the D.R. Stranks Travelling Fellowship for a visit to the Technical University of Eindhoven, The Netherlands next year from April to July. The Research Abroad Scholarship is for supporting research travel overseas by enrolled research students. The D.R. Stranks Travelling Fellowship provides assistance for meritorious students enrolled in a research higher degree at the University of Adelaide to travel outside South Australia. Wenyan was also the recipient of the second best paper award at the Water Distribution Systems conference in South Africa, along with co-authors Angus Simpson and Holger Maier.

Wenyan is currently working on multi-objective optimisation of water distribution systems (WDSs) accounting for sustainability. Wenyan's supervisors are Professor Angus Simpson and Professor Holger Maier. In her research, a new paradigm for the design of WDSs, which takes into account sustainability objectives from three aspects of sustainability (economic, environmental and engineering or technical), is being developed. During her visit to the TU Eindhoven, Ms. Wu will be working with Dr Arris Tijsseling, Professor Wil Schilders and Dr Jan ter Marten. Professor Wil Schilders and Dr Arris Tijsseling both have extensive experience in mathematical modeling and numerical methods development for solving non-linear equations for determining flows and pressures in WDSs. Dr Jan ter Marten has experience in multi-objective optimisation framework development. Both Professor Wil Schilders and Dr Jan ter Marten hold joint positions at the TU Eindhoven, as well as NXP (the mobile phone chip manufacturing unit that was spun-off in 2006 from Phillips Electronics whose world headquarters is in Eindhoven), where the performance of electronic chips is optimised accounting for multiple criteria. Ms. Wu's visit to the TU Eindhoven will promote the exchange of ideas from different multi-objective research areas and increase the prestige and involvement of University of Adelaide at an international level.

Special Water Research Cluster Events

If you cast your memory back to October this year, you may recall that the Water Research Cluster hosted two water events as part of National Water Week: Water Wednesday and Water Pitchfest. The following event summaries (not able to be included in the October Newsletter) are intended to demonstrate how the University of Adelaide's Water Research Cluster strives to publicise prominent water issues and works toward fostering innovative water research collaborations.

Water Wednesday – 15 October 2008

"How do we use innovation and science to find clever options for future water management?"

Professor Richard Russell, Pro Vice-Chancellor Research Operations at the University of Adelaide, commenced Water Wednesday with a brief address, essentially summarising the reason for discussing the theme of the evening. That is, we are currently experiencing a long drought, perhaps never before experienced, with the lowest average inflows into the Murray Darling Basin ever recorded.

Exploring all options for smarter water use

The Honourable Karlene Maywald, Minister for the River Murray and Water Security in the South Australian State Government, began her presentation with some history about the highly regulated Murray River and previous drought periods that had been recorded. Minister Maywald then highlighted the severity of the current drought and the urgency with which South Australia must achieve water security in the face of unpredictable weather forecasts. The rest of her presentation focused on the future and what governments were doing or considering. This part of the talk included mention of the $12.9 billion national funding for reform initiative as well as elements of South Australia's own longer term water security strategy. Specifically, Minister Maywald outlined the Murray Futures program which includes three major elements; securing water supplies, industry and community renewal and securing river health outcomes. Finally, Minister Maywald quickly went through the Four Ways to Water Security; recycling 'almost half our wastewater re-used', desalination 'drinkable water from the sea', managing use 'everyone contributes through wise water use' and catchments 'improved catchment health and efficiency'.

Impediments to sustainable water use

Mr Peter Cosier, Director of the Wentworth Group of Concerned Scientists, made it very clear from the beginning of his short address that the impediment to sustainable water use is not science (we know how to fix the river system), it is not institutional (we've even agreed to the model), it is not even financial (we have more than enough money committed that can fix the problem). It is political.

Mr Cosier then provided some background about himself, the Wentworth Group and nearly two decades of reform in the Murray Darling Basin. However, Mr Cosier then went on to say that "… these reforms will not deliver the water savings that the science says is needed, nor will they deliver them quickly enough to avert an economic and environmental crisis." Based on the current scientific literature, the Wentworth Group believes, "If we are to maintain healthy rivers and provide high quality water to produce food, our analysis suggests that we must return over 4,000 GL of water to the rivers as environmental flows. As a consequence, the consumptive use of water across the Murray Darling Basin is likely to be cut by between 42 and 53 percent. This has profound implications for the future of water resource management and the towns and cities and rural communities that have relied on the rivers."

In conclusion, Mr Cosier emphasised the urgency with which governments, particularly the federal government, must accelerate the recovery of water for the environment by fast-tracking reforms. "… if we spend the money that has already been appropriated, wisely and quickly, there is a high probability we will restore the rivers and floodplains to sustainable levels and in doing so it will also put us in a far better position to confront the new challenges, such as climate change, that are rapidly bearing down on us."

Full copies of the presentations and podcasts for each of the three presentations are available at the Water Research Cluster website: www.water.adelaide.edu.au/events/

Finding innovative ways to reduce water use by 30 to 50%

Professor Wayne Meyer, from the School of Earth and Environmental Science at the University of Adelaide, gave the final presentation of the evening. His talk focused on the need for improved efficiency in water use. Prof Meyer provided background on current water uses and why there is a need to reduce water usage. In particular, there was a heavy focus on urban water use and how water use is broken down in typical urban households. Prof Meyer highlighted the fact that, "Adelaide's water requirement is small relative to the Murray Darling Basin resource and other current uses. Water restrictions in Adelaide will not "save the Murray". In fact, it was made quite clear that Adelaide could even be "cool and green" through efficient water use. With regard to the future of irrigated communities, Prof Meyer suggested that to achieve long term viability, highly reliable irrigation allocations, significant improvement in delivery and application systems, and regionally diverse and highly productive commodities (vibrancy), we will need to consolidate irrigated areas in the right places, redesign irrigation delivery and application systems, and skill up operators and service agents. Especially, those regions and systems that have a better chance of being both financially and environmentally viable should be preferentially supported. In conclusion, Prof Meyer had the following points to make:

- Without significant reduction in extraction we will lose the essence of the Murray
- The innovation needed is focus on large water use where significant improvement is possible (shouting "water crisis" and reducing small uses will not do it!)
- Urban – "cool and green" is possible (and economically and socially sensible) with improved urban irrigation
- Regional - without more direction, the current "buyback and update" has only a limited chance of delivering long term viability
- Regional – "viable and vibrant" is imperative and possible with targeted rehabilitation, area consolidation, improved distribution and diversity of production

Water Pitchfest – 16 October 2008

A pitch is a short, high energy presentation that introduces a technology or service, specifying a vision and its benefits while outlining what support is needed in order for the innovation to progress. Water Pitchfest is thereby an opportunity for innovative researchers, who have identified a gap in water knowledge and discovered a way of filling that gap, to make their visions reality. With the theme of "Linking water innovators and investors", the Water Research Cluster of the University of Adelaide hosted ten, very short, presentations on 16 October, 2008. Below is a table listing the speakers who presented on the night, the institutions they represented and the titles of their pitches.

Presenter	Institution	Presentation Title
Prof Alan Cooper	University of Adelaide (ACAD)	Rapid biodiversity assessment
Dr Heike Ebendorff-Heidepriem	University of Adelaide (COEP)	Cheap in-situ fibre optic sensors
Assoc Prof Martin Lambert	University of Adelaide, School of Civil Environmental and Mining Engineering	The use of water hammer transients as water sensors
Mr Adrian Hunter	University of Adelaide (WEBEL)	Turning waste water into fungal biomass and clean water
Mr Jamie Miller	Somnium Innovations Pty Ltd	Algal based removal of heavy metals and acids from mining industry waste water
Mr Mark Lobban	Reclaim Water Pty Ltd	Reflow rapid oxidation technology
Mr Meng Chong	University of Adelaide (WEBEL)	Nanoparticles integrated with a photocatalytic reactor
Mr Rob Thomas	University of Adelaide / SARDI	Biodiesel from algae
Assoc Prof Jose Facelli	University of Adelaide, School of Earth and Environmental Sciences	Use of a native parasitic plant to control Broom and Gorse
Mr Dennis Hensman	Building Industry Network Pty Ltd	Bringing the green revolution to the building industry

Podcasts for each of these presentations are available at the Water Research Cluster website as are limited vodcasts: www.water.adelaide.edu.au/events/

Water Droplet Series

Prof Mike Young and Jim McColl continue to produce their series of Droplets, which are short discussion papers on water management issues. These Droplets explore ideas and propositions which, if developed further, might improve water use. Ideas are explored from a fundamental perspective. That is, they consider the building blocks and concepts that one might begin using if no constraints are assumed.

Droplet No 14 considers the issue of wastewater and sewage pricing:

Yucky business: Paying for what we put down the drain
"A penny saved is a penny earned."
Benjamin Franklin 1706 - 1790

In this Droplet, the following questions have been addressed:

- What is the best way to charge households for the sewage they generate?
- Are human needs and functions such that no matter how we charge for sewage disposal, the same load will be generated?
- Is there a role for price and other incentives?

Earlier Droplets on the development of a Sustainable Cap, new legislative arrangements, urban water trading, water governance, water interception, water accounting, water trading and stormwater management can be read at www.myoung.net.au.

Comments are welcome. The aim is to encourage people to think differently about water management.

If you would like to subscribe to the Droplet list, send an email to droplets@adelaide.edu.au or go to the website at www.myoung.net.au

Mike Young is Professor of Water Economics and Management, School of Earth & Environmental Sciences, University of Adelaide and CSIRO Water for a Healthy Country Flagship

National Water Commission News

The National Water Commission is an independent statutory body whose role is to drive water reform.

The October 2008 edition of Distilled is now available at: http://www.nwc.gov.au/www/html/911-edition-33---october-2008.asp

The November 2008 edition of Distilled is now available at: http://www.nwc.gov.au/www/html/912-edition-34-distilled---november-2008.asp

A special edition of Distilled is now available, to inform about the release of the inaugural Australian Water Markets Report 2007/08. This edition of Distilled is available at: http://www.nwc.gov.au/www/html/955-edition-special---december-2008.asp

Further information on National Water Commission news is available at: http://www.nwc.gov.au/www/html/171-subscribe.asp

ICE WaRM News

The International Centre of Excellence in Water Resources Management (ICE WaRM) provides a national focus and international gateway to Australia's education, training and research expertise in water.

This year has been a busy time for ICE WaRM as it continues to grow and establish relationships, both in Australia and internationally. Together with its partners ICE WaRM continues to develop its programmes and initiatives. ICE WaRM is also a significant contributor to a range of national and international events.

Further information about ICE WaRM can be found at:

http://www.icewarm.com.au

Water Research Cluster Postgraduate Corner

Bulk earthworks for construction of water storage tanks at Glenelg Wastewater Treatment Plant – September 2008

Ring main benched trench – Rymill Park (Park 14) in the Adelaide Park Lands - November 2008

Trunk main pipe lay (750mm) – Watson Avenue, Netley - November 2008

The Water Research Cluster hosts a quarterly forum for postgraduates who are studying water-related topics, to provide opportunities for building networks and contacts, and to experience alternative techniques and fields of research.

The most recent postgraduate forum, held 15 December, dealt with the topic of the Glenelg to Adelaide Park Lands Recycled Water Project (GAP). This 'Water Proofing Adelaide Initiative' is summarised as follows:

"This $75 million State and Federal Government funded project will have the capacity to provide more than 3.8 billion litres of high quality recycled water annually. In addition to supplying existing customers, the project will provide a minimum of 1.3 billion litres each year to irrigate the Adelaide Park Lands.

This landmark project will provide a sustainable long-term solution for watering the Park Lands and can provide opportunities for the development of additional recycled water initiatives.

It is a key project under the Government's 4-way strategy to secure our future water needs. The four strategies cover:

- Water Use
- Desalination
- Recycling
- Catchments

The Glenelg to Adelaide Park Lands Recycled Water Project (GAP) is being delivered by the CityGreen Alliance, which comprises SA Water, United Water, Leed Engineering and Construction, Leighton Services and Guidera O'Connor."

Link to GAP: http://www.sawater.com.au/SAWater/WhatsNew/MajorProjects/Glenelg_parklands.htm

The invited speakers for this forum were Wayne Meyer, Professor of Natural Resource Science in the School of Earth and Environmental Sciences, University of Adelaide and Andrew Steere, Construction Manager, CityGreen Alliance. The forum was organised and facilitated by Eric Nicholson.

Professor Meyer spoke first about irrigation in the Park Lands, providing an introduction to the issue of salinity in irrigated areas. In particular, Professor Meyer discussed a simple salt balance model for irrigated land, describing the relevant mass balance equations and explaining all of the pertinent variables. Professor Meyer left the following salient points to remember:

Glenelg to Adelaide Park Lands Recycled Water Project

A Water Proofing Adelaide Initiative

- All water contains salt – even rain
- More saline irrigation water will add more salt – it does not “disappear” and will move with water or accumulate
- Salt and nutrient balances are quite dynamic – without informed management they can cause problems for soils and vegetation

Andrew Steere then provided forum attendees with a fascinating overview of how GAP has evolved to date: describing its early history, project objectives, expected outcomes and future opportunities. Of particular interest to forum participants were the many challenges associated with a project of this magnitude and how they have been overcome. For example, Andrew described the advantages of alliancing. A key aspect of Andrew’s talk was his insight into successful project management, something pertinent to all postgraduate students.

Following the talks, forum participants were treated with a visit to a Park Lands site currently having pipe laid. Andrew and his colleague Daniel Thorpe, Stakeholder and Community Relations Manager, led an up-close tour of GAP work proceeding in North Adelaide and readily answered a plethora of questions. Participants were able to see first-hand how various challenges have been overcome in facilitating GAP, including trenchless techniques for delivering pipe across major transport routes, to avoid traffic interruptions.

The forum instigated lively discussion throughout the day, so the speakers must be thanked thoroughly for providing the impetus. The forum concluded with lunch at the Adelaide Staff Club and included a few Christmas Drinks. Topics for future forums were briefly discussed and the topic for the next forum is tentatively slated as being the Murray Futures program.

Ring main pipelay – Park 15 of Adelaide Park Lands - September 2008

Trunk main pipe lay in Adelaide Airport Land (750mm pipe) – September 2008

Ring main pipe lay – Park 17 of Adelaide Park Lands - November 2008

Trunk main pipe lay (750mm) – Watson Avenue, Netley - November 2008

Water News Updates

Call for lakes risk assessment

Greens Senator Sarah Hanson-Young says the Federal Government must call for a full risk assessment before giving South Australia permission to flood the lower lakes of the Murray with saltwater. The SA Government recently asked for pre-approval for allowing salt water into the lakes but said the action would only be taken as a last resort. A public consultation period on the move closed today and Environment Minister Peter Garrett now has until December 31 to consider calling for a full risk assessment. - AAP

Source: Indaily 12 December

Artesian Basin health study

The long-term sustainability of the Great Artesian Basin and its ability to provide water to future mining and pastoral developments and rural communities will be the focus of a $17 million study. Adelaide's Flinders University will partner South Australian government agencies and private companies to examine the potential risks to the basin, including threats to the 4000 springs that help preserve rare bird and animal species in the state's north. Chief investigator Andy Love said the broad objective was to develop an understanding of the plumbing of the outback springs and determine the environmental risks posed by groundwater use. -- AAP

Source: Indaily 8 December

Melbourne out of water by 2010: minister

Melbourne could run out of water in 2010 if the Senate blocks construction of a controversial pipeline to carry water from the Murray-Darling Basin to the city, Victorian Water Minister Tim Holding says. The coalition, Greens and Independent senator Nick Xenophon are threatening to use their numbers in the upper house to prevent the $750 million pipeline from being built. The project would allow Melbourne to take up to 75 billion litres of water from the basin system each year. Mr Holding today said the Senate was holding Victoria to ransom and accused the coalition of being reckless. "The Sugarloaf pipeline represents a vital piece of water infrastructure in Victoria," he told reporters in Canberra. "Melbourne would be at very real risk of running out of water in 2010 if this pipeline doesn't proceed."--AAP

Source: Indaily 14 November

SA water safety net

The South Australian Government says it has secured Adelaide's water supply for 2009 by buying water on the open market. Water Security Minister Karlene Maywald told the ABC that through the purchase process and through the shared resource with other states, the Government had secured the necessary 201 gigalitres. She said it paid about $400 a gigalitre on the open market and the purchase meant there was now no need for increased water restrictions. "We're just being prudent, getting into the market and buying it (water) to make sure we've got it," Ms Maywald said.--AAP

Source: Indaily 5 December

Murray-Darling in federal hands

It's official: the commonwealth has taken charge of Australia's largest river system as it battles a crippling drought. The Senate passed laws today allowing a federal takeover of the Murray-Darling Basin. It was the last hurdle in the takeover with the basin states - Victoria, NSW, South Australia and Queensland - and the Australian Capital Territory having already passed laws handing over certain water powers to the commonwealth. Until now, the states were in charge of the basin, the country's largest irrigated food bowl. But a protracted drought, combined with the systematic over-allocation of water to irrigators, prompted federal politicians to instigate the takeover.

The Federal Government can now proceed with a rescue plan that provides $13 billion for preserving dwindling water resources. A new authority will manage the basin and work can begin on setting an overall cap on water extractions. The federal opposition says the takeover is an improvement, but did not go far enough. "There are big improvements, big steps forward, (but) we wanted a truly national system," water spokesman Greg Hunt told reporters. He called on the government to intervene over a controversial Victorian pipeline which will take up to 75 billion litres of water out of the basin each year. "The ball's in Mr Rudd's court". The opposition tried to amend the legislation to block the pipeline, but backed down after the government rejected the amendment in the Senate. -- AAP

Source: Indaily 4 December

Crucial reforms approved for Murray-Darling Basin

The Federal Parliament today passed crucial reforms on the management of the Murray-Darling Basin, in another significant step towards making Basin water use sustainable and rivers and wetlands healthy.

Passage of the Water Amendment Bill 2008 through the Commonwealth Parliament followed the passage of complementary legislation in four State parliaments.

The full media release can be viewed at: http://www.environment.gov.au/minister/wong/2008/mr20081204.html

Source: Penny Wong, Minister for Climate Change and Water, 4 December

Rudd a river robber

Liberal senator Mary Jo Fisher is not happy about an opposition backflip on the commonwealth's plan to take control of the Murray-Darling basin from the states and territories, which is likely to pass parliament this week. The opposition wanted the legislation amended to prevent construction of Victoria's Sugarloaf Pipeline, which is capable of taking up to 75 billion litres of water out of the basin each year. "(Kevin Rudd) is going to rob the river for Melbourne," Fisher told reporters. The pipeline would never be allowed to run dry, which would be at the cost of other water users. The South Australian senator will attempt to have the government produce documents defining the term "critical human water needs".--AAP

Source: Indaily 3 December

Murray-Darling future grim: CSIRO

Water flow at the mouth of the River Murray has reduced by 61 per cent, a bleak report on Australia's biggest river system has found. The call on water resources in the Murray-Darling Basin and the long-running drought has been so great that the river has ceased to flow through the mouth 40 per cent of the time. The report, prepared over 18 months by the CSIRO, warns drought conditions will become increasingly common. Federal Water Minister Penny Wong, who released the report in Canberra on Monday, said the findings made for sobering reading. "It reminds us about the costs of inaction, it reminds us that there are enormous costs to a changing climate, and communities are already feeling that," she told reporters.--AAP

Source: Indaily 24 November

SA seeks OK to let sea water into lakes

South Australia has applied to the federal government for advance approval to let sea water flow into the lower lakes of the Murray. However, River Murray Minister Karlene Maywald said the move did not mean a decision had been made to flood the lakes. "I stress this is not a decision to let seawater into the lower lakes, but is part of the preparations required in case the drought continues," she said. Under the advance approval strategy, the South Australian Government outlined a series of triggers that would lead to releasing sea water through the barrages at the Murray mouth. Those triggers included a fall in the water level of Lake Alexandrina to 1.5 metres below sea level, and to 0.5 metres below sea level in Lake Albert.

"If these triggers are likely to be reached and if there is not enough fresh water to maintain the lower lakes, as a last resort, a minimum quantity of sea water would need to be introduced through the barrages to manage the risk and avoid acidification," Ms Maywald said. "It would be just enough sea water to maintain the water level at a critical threshold to avoid acidification, not flooding and refilling the lower lakes completely." The minister said the State Government was planning for the worst-case scenario, but hoped it would never eventuate. "However, it is essential that all of the legislative requirements have been addressed and the approvals are in place, just in case," she said.--AAP

Source: Indaily 1 December

Greens slam 'stupid' pipeline

The Greens plan to launch action in Federal Parliament to stop a "stupid" pipeline which would divert water from the Murray-Darling Basin to Melbourne. Emotions are running high over the $750 million pipeline as rural and urban communities clash over water. The pipeline would allow Melbourne to take up to 75 billion litres of water from the Murray system each year, a prospect which has sparked protests by farmers and other basin states. Greens water spokeswoman Senator Rachel Siewert said her party would do whatever it could in federal parliament to make sure water never flowed down the Sugarloaf pipeline, which will carry water from the Goulburn River to Melbourne. --AAP

Source: Indaily 13 November

Scientific experts to advise on water use for Murray-Darling Basin rivers and wetlands

A panel of scientific experts has been appointed to advise the Rudd Government on the use of water purchased to restore the rivers and wetlands of the Murray-Darling Basin.

Minister for Climate Change and Water, Senator Penny Wong, said today that the Environmental Water Scientific Advisory Committee would provide advice to the Commonwealth Environmental Water Holder and the Department of the Environment, Water, Heritage and the Arts.

Committee members have been appointed for an initial period of two years. Emeritus Professor Barry Hart of Monash University, who chaired the Great Barrier Reef Water Quality Partnership - Science Advisory Panel, will chair the Environmental Water Scientific Advisory Committee. The other committee members are:

- Professor Angela Arthington, Australian Rivers Institute, Griffith University;
- Dr Ben Gawne, Director of the Murray Darling Freshwater Research Centre;
- Professor Richard Kingsford, School of Biological, Earth and Environmental Sciences, University of NSW;
- Dr Mike Stewardson, Senior Lecturer, Department of Civil and Environmental Engineering, University of Melbourne;
- Associate Professor Keith Walker, School of Earth and Environmental Sciences, University of Adelaide;
- Associate Professor Robyn Watts, School of Environmental Sciences, Charles Sturt University.

The full media release can be viewed at: http://www.environment.gov.au/minister/wong/2008/mr20081118.html

Details about the Commonwealth Environmental Water Holder are available at: www.environment.gov.au/water/environmental/cewh/

Source: Penny Wong, Minister for Climate Change and Water, 18 November

Radical plan to save Lower Lakes

State and federal water ministers have agreed on a worst-case scenario plan of action for the Murray-Darling Basin to save South Australia's Lower Lakes from acidification. The plan includes pumping sea water into the freshwater lakes to stop the spread of acid sulphate soil. But that environmentally-radical action won't be taken before February 2010 and only if the basin encounters another dry winter. Federal Water Minister Penny Wong said data, provided to a meeting of ministers in Canberra, showed inflows to the Murray River were trending down to historic lows.

"The advice provided by the Murray-Darling Basin commission is that on the basis of the weather predictions, the inflow projections are close to the worst-case scenario," she told reporters. "We were advised on current predictions and under a worst-case scenario, the Lower Lakes are now unlikely to reach the acidification threshold by February 2010." The commission had provided ministers with a strategy to avoid acidification of the Lower Lakes, Senator Wong said. "What we have agreed on today is strategy, a real-time management strategy, to address issues that may emerge if a worst-case scenario continues." The commonwealth will provide $10 million for the strategy.--AAP

Source: Indaily 14 November

Wind could end water woes

Fifty wind-powered desalination plants could put an end to South Australia's reliance on River Murray water, says an Adelaide-based entrepreneur. Businessman Barrie Harrop, who holds exclusive Australian rights to the Denmark-developed wind-powered desalination technology for 20 years, said the plants would give coastal residents their own sustainable water and power supplies. "We're seeing incredible interest from coastal communities who know they have to find water or die," he said. "Launching the technology here could also establish the genesis of a new green industry in South Australia, serving the rest of the country and the Asia-Pacific." Pre-feasibility studies of the green technology are under way in conjunction with South Australian government agencies, and the first plant is expected to be installed by the end of 2009, according to a statement from Mr Harrop's company, Windesal Ltd.--AAP

Source: Indaily 10 November

Water News Updates

Study uncovers desal plant shock for Gulf's health

"The method of discharging salt into St Vincent Gulf from Adelaide's $1.3 billion desalination plant will likely cause extensive marine damage, an independent report has found. The findings of a report by Flinders University oceanographer Jochen Kaempf - commissioned by Onkaparinga Council - appear to conflict with modelling undertaken in the environmental impact statement for the proposed plant at Port Stanvac. The EIS was released last month by the State Government. A six-week public consultation ends on Wednesday. The EIS states the plant is unlikely to have any "measurable adverse impacts" on the marine environment. But Onkaparinga Council mayor Lorraine Rosenberg yesterday said Dr Kaempf's report highlighted "potential serious consequences for the marine environment of the proposed design". Save Our Gulf Coalition spokesman Peter Laffan yesterday said there was "now a gaping hole in the Government's claims that the desalination plant… won't harm the Gulf". "He (Dr Kaempf) has concluded there is a high risk that water quality will be affected, with major/severe consequences an almost certain likelihood," Mr Laffan said. Dr Kaempf acknowledged the urgent need for a solution to the state's water crisis, but warned "the construction of desal plants along SA gulfs (with release of brine back into the sea) may not be the most environmentally friendly solution".

The full article can be viewed at:
http://www.news.com.au/adelaidenow/story/0,27574,24821125-2682,00.html

Expert review of Desalination Plant

Onkaparinga Council
http://www.onkaparingacity.com/web/binaries?img=13322&stypen=html

See Onkaparinga Council Minutes for 16th December 2008:
http://www.onkaparingacity.com/web/page?pg=280&stypen=html

Attachment 6.11 – Adelaide Desalination Plant Environmental Impact Statement (PDF):

(Appendix 1 includes Expert Witness Statement by Dr Jochen Kaepf)
http://www.onkaparingacity.com/web/binaries?img=13555&stypen=html

Attachment 6.13 – Desalination Plant – Pipeline Adelaide Desalination Plant Project Transfer Pipeline in relation to a State Heritage Place (PDF)

http://www.onkaparingacity.com/web/binaries?img=13563&stypen=html

Source: Michael Owen The Advertiser 19 December

SA Murray powers handed over

South Australia has passed legislation to hand its powers over the River Murray to the Federal Government. The legislation passed through state parliament last night in what River Murray Minister Karlene Maywald described as an historic advance towards a new era for the Murray-Darling Basin. "The new era of management this legislation will underpin the future security of water supply to all our communities and improve the environment of the Murray-Darling Basin in the longer term," Ms Maywald said. The minister said a basin-wide plan would set new sustainable limits on how much water could be extracted and secure water for critical human needs. Ms Maywald said the new plan would ensure both South Australia and the nation were better prepared to deal with future droughts and the impact of climate change.--AAP

Source: Indaily 31 October

Rare fish species return

Several native fish species, not seen since the construction of man-made barriers early last century, have returned to Adelaide's River Torrens. The installation of a fish ladder - a fibreglass chute - on Breakout Creek at the Torrens Outlet, in Adelaide's western suburbs and subsequent survey have revealed native fish are returning to the river in large numbers. After more than 70 years in exile, Pouched Lamprey, Common Galaxias, Climbing Galaxias, Congoli, Blue-Spot Goby and Yellow-Eyed Mullet are now able to move from the sea to the river to complete their life cycles.--AAP

Source: Indaily 31 October

Stop pools, save trees: Democrats

The Australian Democrats have called for a moratorium on new private swimming pools in Adelaide to save trees across the city at risk from the drought. Democrat MP Sandra Kanck said swimming pools were a luxury the community could not afford. "Trees benefit everyone. They soak up greenhouse gases, cool our city, provide habitats for wildlife and can be enjoyed by every passing pedestrian, cyclist or motorist," Ms Kanck said. "The average pool holds 50,000 litres and 375 new pools, holding 19 million litres of water, were approved in Adelaide's eastern suburbs alone last year." Ms Kanck said that was enough water to give about 1500 significant trees a lifesaving monthly soak. Gardening experts said thousands of trees across Adelaide were at risk of dying this summer after three years of poor rainfall.--AAP

Source: Indaily 23 October

Water allocations up

Water allocations for River Murray irrigators in South Australia have been increased 4 per cent because of recent rains, the SA Government says. Allocations will rise to 15 per cent of entitlements for irrigators from next month, River Murray Minister Karlene Maywald said today. Additional inflows of water to the River Murray from rainfall last month enabled the increase. Experts expected some 270 gigalitres of inflows last month but late rainfall led to a total of 400gl. "While better than expected, this figure is still well below the long term September average of about 1,600gl," Ms Maywald said. "The drought situation in the River Murray system and across the Murray-Darling Basin is still critical.--AAP

Source: Indaily 15 October

Scrap water restrictions: Democrats

The Australian Democrats want the South Australian Government to scrap domestic water restrictions and increase the price of water. State Democrat MLC Sandra Kanck said a price-based system would allow users to choose how they used their water. She said the current system of restrictions was aimed at home gardeners but did not control the use of water inside the home. The number of swimming pools being installed each year also continued to increase, she said. "This system of water restrictions is discriminatory and it makes no sense," Ms Kanck said. "The government should scrap water restrictions, increase the price for water and let South Australians choose whether they want swimming pools or veggie gardens. That would make sense for the Murray, the environment and the family budget."--AAP

Source: Indaily 21 October

Consultation starts on desal plant

South Australia has entered a six-week consultation period after releasing the environmental impact statement for Adelaide's proposed desalination plant. Southern Suburbs Minister John Hill said the process would ensure the highest level of environmental scrutiny for the $1 billion plant. "The government is committed to ensuring water security for Adelaide and the environment and the community will always be at the forefront of this project," Mr Hill said. Planned for Port Stanvac in Adelaide's south, the desalination plant is expected to be up and running in 2010 and will supply Adelaide with about 50 gigalitres of fresh water each year, about 25 per cent of the city's water needs. -- AAP

Adelaide Desalination Project: http://www.sawater.com.au/SAWater/WhatsNew/MajorProjects/ADP.htm

To view the Environmental Impact Statement: http://www.sawater.com.au/SAWater/WhatsNew/MajorProjects/EIS.htm

To find out more about the consultation process: http://www.sawater.com.au/SAWater/WhatsNew/MajorProjects/Desal_Community_Engagement.htm

Source: Indaily 11 November

Farewell to the River Laboratory

The final group of PhD students supervised by Assoc Prof Keith Walker have completed their projects, and the long tradition of the River Laboratory at the University of Adelaide has come to an end. The final four students were Michael Hammer, Anne Jensen, Nadine Kilsby and Scotte Wedderburn. Their projects naturally focused on the River Murray, and looked at very diverse topics in a very diverse and currently very stressed ecosystem.

Michael's thesis, titled 'A Molecular Genetic Appraisal of Biodiversity and Conservation in Freshwater Fishes from Southern Australia' has provided ecological and genetic information regarding several native fish species, including the threatened Yarra pygmy perch, southern pygmy perch and southern purple-spotted gudgeon, which will assist conservation.

Anne's thesis, titled 'The Roles of Seed Banks and Soil Moisture in Recruitment of Semi-Arid Floodplain Plants: The River Murray, Australia' investigated the key processes for recruitment of river red gums, black box and lignum. In particular, Anne sought information on the critical conditions of soil moisture for seedling survival, so that limited environmental watering could be targeted for greatest effect.

Nadine combined engineering and ecology in her thesis, titled 'Reach-scale spatial hydraulic diversity in lowland rivers: characterisation, measurement and significance for fish'. Her work has contributed to better understanding of the relationship between flows and fish movement and distribution in local habitats.

Scotte's thesis, titled 'Ecology and Conservation Biology of the Murray Hardyhead Craterocephalus fluviatilis McCulloch, 1912' has actively contributed to the application of emergency measures to save habitat for this threatened species.

These last four theses have completed a long line of Honours and PhD studies under the guidance of Keith Walker, all contributing to better scientific knowledge of the River Murray ecosystem. Interest in the River Murray will continue through other research groups, and research on water issues is being actively promoted by the Water Research Cluster of the University of Adelaide.

Michael Hammer

Nadine Kilsby

Anne Jensen

Conference & Seminar Diary

International Symposium on Efficient Groundwater Resources Management (IGS-TH 2009)

Bangkok, Thailand 16 – 21 February, 2009

Theme: The Challenge of Quantity and Quality for a Sustainable Future

www.igsth2009.com

International Conference on Implementing Environmental Water Allocations

Port Elizabeth, South Africa 23 - 26 February, 2009

THEME: International conference to promote the sustainable use of rivers, wetlands, estuaries and groundwater - Making it happen! Objective: Identifying and critiquing global trends in the implementation of environmental water allocations.

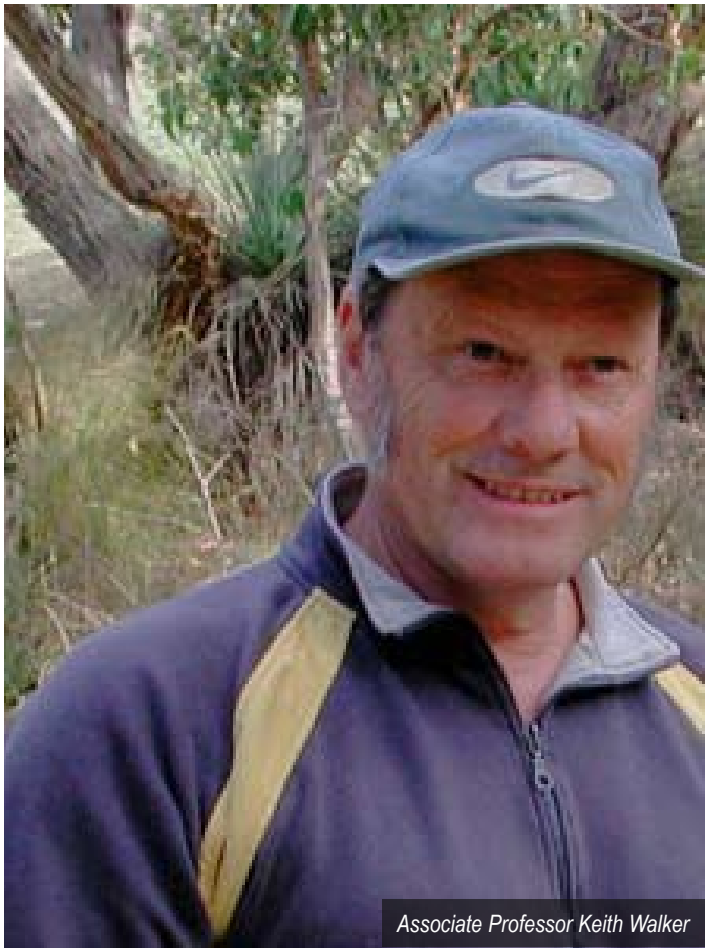
www.wrc.org.za

H2009 – 32nd Hydrology and Water Resources Symposium - 'Adapting to Change'

Newcastle, Australia 30 November – 2 December, 2009

More information about the call for abstracts, paper submission, online registration, etc will be available shortly and will be linked from this web page. Check the "Conference Timeline" link for approximate dates of deadlines in the meantime.

www.h2009.org.au



Associate Professor Keith Walker

Scotte Wedderburn

The Water Research Cluster newsletter is published once every two months.
The latest version is uploaded to the Water Research Cluster website (http://water.adelaide.edu.au).

To receive a copy of the newsletter in printed form, send an email to eric.nicholson@adelaide.edu.au with the words Subscribe Newsletter in the Subject heading.

To receive a notification that the newsletter has been uploaded to the website, write the words Subscribe e-Newsletter in the Subject heading.

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