

MAY 2011

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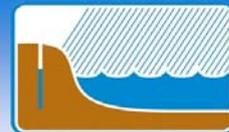
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Aqua Australis



Newsletter of the Hydrological Society of South Australia Inc.

FURTHER REFORM NEEDED IN THE URBAN WATER SECTOR

Australia's urban water sector needs major changes to meet the challenges of providing services that minimise costs and maximise benefits to the community, according to a draft report released by the Productivity Commission.

The draft report - Australia's Urban Water Sector - reports that Government responses to the recent water shortages have resulted in large costs to water consumers and the community generally.

Nationally, water restrictions are estimated to have cost in excess of \$1 billion per annum from the lost value of consumption alone, and some large supply augmentations could cost the community up to 5 billion dollars or more over the next decade or two.

Presiding Commission, Dr Wendy Craik said 'There is a strong case for reforming the sector. There are some fundamental weaknesses, with conflicting objectives, unclear roles and responsibilities, and deficient governance arrangements, across policy making, regulatory and service delivery institutions.'

The Commission affirmed that it is the role of State and Territory Governments to create the incentives and frameworks for institutions undertaking policy making, regulatory and service delivery functions to operate efficiently.

Its proposed reform package includes: clarifying the overarching objectives for policy in the sector; ensuring that supply augmentation,

pricing and regulation are aligned with it and assigned to the appropriate organisation; putting in place best practice governance arrangements for institutions; and monitoring the performance of utilities and reviewing progress on implementing reform.

The report acknowledges that the circumstances of urban regions vary and there is not a 'one-size-fits-all' solution with respect to industry structure.

The Commission has identified a number of different options for structural reforms that could be beneficial in large cities and smaller regional urban areas.

Dr Craik said 'The reform package would provide benefits to the community. Water consumers would get more choice about price, reliability and security of supply while holding water utilities responsible and accountable for delivering their services efficiently. It's also timely to undertake reform, with security of supply unlikely to be an issue in most jurisdictions in the near future.'

The Commission is seeking public feedback on its draft proposals through submissions and attendance at its public hearings in May/June. The final report will be delivered to the Government at the end of August 2011.

A copy of the report can be downloaded at www.pc.gov.au/projects/inquiry/urban-water/draft, while the key points are summarised at <http://www.pc.gov.au/projects/inquiry/urban-water/draft/key-points>

MEET A NEW COMMITTEE MEMBER...



Please join us in welcoming Dr Guna Hewa to the committee. Guna Hewa is a lecturer at School of Natural and Built Environments, University of South Australia. Guna was originally from Sri Lanka and completed her PhD studies at the University of Melbourne in 2001. She has been teaching into both undergraduates and postgraduate programs of the school since 2003 and she is also the current program director for civil engineering masters programs at the School of Natural and Built Environments.

She supervises a number of PhD projects and her research interests extends, but not limited to flood, environmental and low flow studies, hydrological losses, urbanization impacts on stream flow patterns/regimes and how WSUD can help in restoring them.

Guna is a mother of two young children and an active member of the Adelaide-Sri Lanka Buddhist community.

PARAFIELD VERNAL POOLS

Renaë Eden, Adelaide Airport Ltd



Panorama of a Parafield vernal pool with *Amphibromus nervosus*

Vernal pools are a type of ephemeral (temporary and recurring) wetland that appears at the end of the wet season, lasting into the early months of spring. This type of wetland usually form in regions with Mediterranean climates, such as Adelaide experiences, and soil conditions on the Adelaide Plains are similarly ideal for their development. While vernal pools were once common in the Two Wells area and probably across the Adelaide plains, agricultural expansion and other developments have resulted in a severe decline in their extent; however, a handful of these uncommon ecosystems remain in a small pocket of Parafield Airport.

Classically, vernal pools are seasonally flooded depressions found on soils with an impermeable subsurface layer; a hardpan, clay pan, or volcanic basalt is a defining characteristic of this wetland type. The impermeable layer, or duripan, is a diagnostic soil horizon cemented by silicates percolated down through the soil horizon by the action of rainwater seepage. The duripan enables the pools to retain water, however, their wide and shallow dimensions cause the pools to dry and refill several times over the wet season. Activities such as ploughing and tilling break up this duripan, and often bring about

a complete change in its vegetative characteristics, usually making it more susceptible to invasive weeds.

The vernal pools are replenished by rainfall runoff from their mini catchments and, as such, are adapted to receive oligotrophic, clear water with a poor buffering capacity. The conditions within the pools result in daily DO and pH fluctuations – in fact, pH swings can be in the order of 2-3 units within a few hours. EC also varies depending on the rate of evaporation; salinity increases during the drying phase or during warmer weeks. A healthy vernal pool experiencing these fluctuations enables vernal pool specialist species to out-compete invasive weeds. A broken duripan, an influx of nutrients or suspended solids entering the pool upsets this balance, particularly if such disturbances are recurring over successive years.

Organisms which are vernal pool specialists often have a high level of endemism. The gene pool of these specialists is restricted as it is not subject to dispersal via the horizontal movement of water as with other wetlands. There are several flora species of state and regional conservation significance in and around the Parafield vernal pools. Classically, vernal pools vegetation exists in distinct banding, creating colourful rings that change somewhat in composition over the pool's season.

The pools are also home to a num-

ber of unusual crustaceans. Their encysted eggs are resistant to desiccation during the summer months and persevere in the inoculum – the vernal pool soil carrying seeds, tubers and bacteria/fungi – for triggering rain to instigate hatching.



Lepidurus apus viridis, a shield shrimp (recorded Oct 2010)

In addition to several previously catalogued crustaceans (including ostracods, daphnids and copepods), shield shrimp have more recently been discovered in the vernal pools. Their status and range in the Adelaide region is poorly understood, but of the 15 species found worldwide, 2 genera occur in South Australia. Archaic in appearance, the design of the shield shrimp has changed little in almost 300 million years. They evolved before freshwater fish and occupy different ecological niches to them, negating the need to adapt to avoid predation.

At Parafield airport, an ongoing monitoring program has been under way for five years, enabling us to build a profile of these pools and gain a better understanding of the specific conditions and characteristics of this unique and regionally rare wetland type. To find out more, please visit www.deltaenvironmental.com.au/archives/vernal/index.htm



Simocephalus acutirostratus, a large daphniid (recorded 2003)

UPCOMING EVENTS

The aim of the 9th international conference on waste water management in rural and urban areas is to provide a forum for the exchange of the most recent ideas, techniques and experience in all areas of system management that could contribute to more efficient and sustainable use of waste water. Professionals from around the world (water managers, regulators, consultants, scientists, environmentalists, researchers and providers of equipment and solutions) should attend the conference as it is one of the key international events in waste water management and re-use efficiency. The technical, institutional, legal, environmental, economic and service quality perspectives will be comprehensively examined in order to identify the main driving factors, problems and solutions to the efficient re-use and management of waste water in rural and urban areas.



International
Water Association



Stabilisation Ponds 2011

9th IWA Specialist Group on
Waste Stabilisation Ponds

Stamford Grand Adelaide, Glenelg
Adelaide, Australia
1-3 August, 2011

www.iwawsp11.com/

14th International Riversymposium

Brisbane - Australia
26 - 29 September 2011

The Value of Rivers

<http://www.riversymposium.com/>

Attended by leading scientists, community groups, government agencies and corporate leaders from over 25 nations, the International Riversymposium is the ultimate river and water management conference where the latest thinking and proven solutions are explored and debated.

The 14th International Riversymposium, 26-29 September 2011 in Brisbane, QLD will explore the multiple reasons that rivers are valuable ranging from economics through to cultural and spiritual values. There will be a prominent focus throughout the conference on natural disasters and their value to rivers and waterways, due to the recent events that are being felt across the globe and specifically in Queensland.

This year's program will have a strong focus on the management and recovery of our rivers and waterways, in accordance with the overall theme, The Value of Rivers.

Concurrent sessions, keynote speakers and study tours will allow delegates to participate in discussions on the economic, social and competing values of rivers as well showcase case studies and practical examples.

This year a new program format is being trialed that will encourage interaction among delegates to maximise knowledge sharing and networking opportunities. With concurrent sessions, feature sessions, workshop and networking events you'll experience the best that South East Queensland and its water infrastructure has to offer. Another new feature within the program will be presented posters which will allow some poster authors further opportunity to showcase their work. Program focus areas include:

- The value of building resilience of rivers for extreme events
- The socio-economic value of rivers
- The intrinsic ecological values of rivers
- Collaborative approaches in research
- The competing values of rivers
- The science-policy interface of river management
- The science-community interface of managing rivers

EDUCATION & TRAINING



International Centre of Excellence in
Water Resources Management



SHORT COURSES

Hydraulics and Hydrology for Non-Engineers

Adelaide 21-22 July 2011; cost \$1200

Venue: Adelaide CBD—to be confirmed

The International Centre of Excellence in Water Resources Management (ICE WaRM) is an Australian government-sponsored initiative that provides a national focus and international gateway to Australia's education, training and research expertise in water resources management.

Hydraulics and Hydrology for Non-Engineers (HHNE)
Hydraulics and hydrology are the cornerstones of modern water engineering and many projects rely on an understanding of the occurrence and distribution of water (hydrology) and the movement of water through our pipe and open channel systems (hydraulics).

This two-day course introduces the basic principles of

hydraulics and hydrology to practitioners who have no formal training in water engineering nor is any mathematical knowledge assumed. Participants receive a full set of notes and resources in hard-copy and CD form and calculators are provided.

Course presenter: Dr Guna Hewa, Program Director (Civil Engineering Masters Programs) & Lecturer (Civil and Water Engineering), School of Natural and Built Environments, University of South Australia.

For further information about ICE WaRM and the short course programme, <http://www.icewarm.com.au/index.php>; telephone: 08 8236 5213; email: training@icewarm.com.au

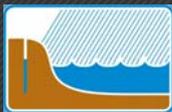
EU-AU STUDENT EXCHANGE PROGRAMME

The International Centre of Excellence in Water Resources Management (ICE WaRM) is encouraging both honours and post graduate students studying in water-related disciplines to consider an Exchange program with the EU.

The exchange programme gives students the opportunity to further their water-related studies overseas. Up to 45 students from ICE WaRM's partner universities - the University of Adelaide, Deakin University, the University of South Australia, Flinders University and CQUniversity - can apply to study for five months or ten months at one of three leading European universities - the University of Dundee in Scotland, the Technical University of Delft in The Netherlands and the Technical University of Dresden in Germany.



Students receive generous assistance with living expenses as well as assistance towards travel to study at one of 3 European locations. For further information and eligibility requirements visit www.icewarm.com.au
>Programmes > EU-AU Student Exchange Programme or contact an ICE WaRM Staff Member.



www.hydsoc.org

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MEDIA WATCH

Australia's Urban Water Sector: Draft report released

The Commission released its draft report on Australia's Urban Water Sector on 13 April 2011. Two technical supplements were released on 4 May 2011. The final report will be prepared after submissions have been received and public hearings held. The final report will be forwarded to the Government by 31 August 2011.

<http://www.pc.gov.au/projects/inquiry/urban-water/draft>

Research focus on Australia's rivers and wetlands

CSIRO has joined forces with other leading Australian research organisations to develop science which will underpin improved management and assessment of the health of Australia's river and wetland ecosystems.

<http://www.csiro.au/news/Australian-rivers-and-wetlands-research.html>

2010-11 Southern Basin water entitlement purchase

A new \$60 million water purchase tender in the southern connected Murray-Darling Basin has been announced.

<http://www.environment.gov.au/water/programs/entitlement-purchasing/2010-11-southern.html>

Murray-Darling Basin Ministerial Forum

Ministers from across the Murray-Darling Basin met in Sydney on 1 April 2011 to progress a collaborative and inclusive approach for governments and communities to develop and implement a plan for the Basin in which a healthy river system underpins strong and viable communities.

<http://www.environment.gov.au/minister/burke/2011/communique-20110401.html>

Draft South-West marine reserves released for community consultation

The Gillard Government recently released a draft marine bioregional plan and proposed marine reserves network to protect Australia's unique south-west marine environment.

<http://www.environment.gov.au/minister/burke/2011/mr20110505.html>

Ocean warming detrimental to inshore fish species

Australian scientists have reported the first known detrimental impact of southern hemisphere ocean warming on a fish species.

<http://www.csiro.au/news/Ocean-warming-and-inshore-fish-species.html>

Great Artesian Basin Water Resource Assessment

CSIRO is reappraising the water resources of the Great Artesian Basin, which underlies about one-fifth of the Australian continent. The aim of the Great Artesian Basin Water Resource Assessment is to assess the hydrological status and condition of the Great Artesian Basin. The final report is due to be completed by the end of 2012.

<http://www.csiro.au/science/Great-Artesian-Basin-Assessment.html>

Adelaide to Host Major Youth Water Conference

SA to host a major international youth water conference to educate students on the sustainable use of river, land and coastal environments.

<http://www.premier.sa.gov.au/images/stories/mediareleasesMAY11/kids%20teaching%20kids.pdf>

La Niña decays

The La Niña event continues to decline in the Pacific Ocean, although atmospheric indicators remain strong. All available climate models suggest further weakening of the La Niña over the coming months, with neutral conditions forecast throughout the southern hemisphere winter.

<http://www.bom.gov.au/climate/enso/>

National guidance for the management of acid sulfate soils in inland aquatic ecosystems - 2011

A guidance document for the management of acid sulfate soils (ASS) in inland aquatic ecosystems has been recently released and is designed to guide the identification and management of inland ASS to reduce or eliminate the risks they pose to the Australian environment and its economy.

<http://www.environment.gov.au/water/publications/quality/guidance-for-management-of-acid-sulfate-soils.html>

The Management of Natural Coastal Carbon Sinks

The evidence and new analysis presented in this report is the globally significant role these coastal marine ecosystems (but not coral reefs – for reasons described in the main report) play in carbon fixation, complementing the already widely recognised terrestrial carbon sinks. Individual chapters set out the contribution each selected coastal marine habitat makes.

www.iucn.org/dbtw-wpd/edocs/2009-038.pdf