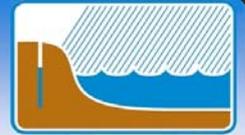


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WATER RESOURCES FOR ADELAIDE - THE NEED TO PUT PUBLIC HEALTH FIRST

Bob Newman, Catchment Management Consulting

"Anything wet can be turned into drinking water if it is filtered through enough money" says Prof. Don Bursill, currently the Chief Scientist for South Australia.

Don addressed the Hydrological Society on water resources management issues for Adelaide. His presentation covered matters such as water recycling, urban storm water and sea water desalination from a personal perspective. The presentation will be made available on the HydSoc website; the following is a synopsis of the presentation.

Prof. Bursill has a long career in water resource management in South Australia and an international reputation in the discipline of water treatment. Don headed up the CRC for Water Quality and Treatment from its inception in 1995 until he left that role (and SA Water) in December 2005.

Since his "retirement" from the water sector in 2005 there have been many challenges and changes in the water resources area. Don has observed these developments from the sidelines and from time to time has been asked to make public comment on various issues – particularly when the issues under discussion relate directly to water quality and public health.

The provision of safe public water supplies is a critical part of our public health system. Climate change and drought – coupled with population and industry demands are placing pressure on our conventional water sources. New technologies are facilitating the consideration of "new" water sources. Suppliers of new technologies use the political environment and community trends to push their products.

Water quality and public health protection are not necessarily front of mind in this debate. Policy development is being driven by economists in many instances with little other professional input. The approach is – what works in telecommunications and power supply must be good for water too (e.g. third party access rules).

A World Health Organisation UNICEF report identified that water management offers the greatest contribution to increased lifespan (+ 12 years), whereas inoculation offers just 18 months and intensive care barely 6 months!

The Australian Drinking Water Guidelines (ADWG) provides a suite of non-mandatory standards which provide the basis for defining safe, high quality, drinking water. The states have different levels of adoption of these guidelines. The latest revision was issued in October 2011. It provides a framework for the holistic management of drinking water quality which takes a whole of system approach risk management approach rather than just 'end of pipe' quantitative parameters. The framework addresses the water supply system, the assessment of water quality and the identification of hazards and risks. In particular, it introduces the 'Multiple Barrier Concept' which deals with catchment management and source water protection; reservoirs and storages; extraction management; water treatment and the distribution systems.

The publication 'Safe Drinking Water - lessons from recent outbreaks in affluent nations' by Steve and Elizabeth Hrudey (2004) is now available in 25 countries. It demonstrates that 80% of failures are due to human error, not technology shortcomings. The majority of failures occurred through contamination of the water supply system. Management complacency, poor maintenance, poor training, cost-cutting, regulatory incompetence and lack of succession planning were often identified. Don's presentation included case studies on water supply public health failures from the publication.

Adelaide, which normally uses about 200 GL/a, has relied on the Mount Lofty Ranges catchments together with the River Murray as its primary source of water. In 2010 during the recent drought consumption reduced to 125 GL/a. A desalinated seawater plant is currently under construction with the planned capacity of 100 GL/a.

No system is perfect, but South Australia has a long record of safe public potable water supply. Nevertheless, there is currently pressure to fragment the water supply system and introduce recycled water from stormwater and effluent sources. This would introduce the likelihood of fewer barriers between the water source and the end user which would involve an increasing reliance on locally managed technology. There is a potential for increased public health risks associated with our potable water supply.

**SCIENCE TO INFORM WATER POLICY - THE GOYDER INSTITUTE FOR WATER RESEARCH
A \$50M RESEARCH INSTITUTE BASED IN SA
Bob Newman, Catchment Management Consulting**

Dr Tony Minns is Director of the Goyder Institute for Water Research which was established in 2010 to support the management of South Australia's water resources, to enhance water security, and to contribute to water reform in Australia.

Dr Minns' appointment follows an international career in water research in the Netherlands and USA.

Dr Minns provided The Hydrological Society SA with a presentation at its annual general meeting in November 2011. The following is a synthesis of the presentation:

The goal of the Goyder Institute is to develop and deliver science to underpin policy development in South Australia. The Institute brings together Australia's leading water research capabilities of the SA State Government, University of Adelaide, Flinders University and the University of South Australia, in collaboration with CSIRO, into a single, comprehensive \$50M five-year collaborative research program.

Following several inaugural projects, the institute has now developed a set of strategic roadmaps for the coming three year period. The program involves urban water, water for industry (e.g. irrigation and mining), environmental water, and climate change adaptation and mitigation.

The new Institute focuses on demand driven research rather than the traditional supply driven approach. This involves intensive consultation across all levels of government, industry and the community. This road mapping approach first identifies the current state of knowledge development; seeks applications of that knowledge through applied research; encapsulates the knowledge in a suite of tools ultimately anticipating the delivery of practical applications during 2013/2014.

In the meantime urgent responses have been given to topical subjects such as South Australia's response to the emerging Murray Darling Basin Plan.

In the longer term, the objective of the Institute will be to support evidence based Water Allocation Plans serving the needs of multiple users. An immediate example is the need for mining water in the arid regions. In response to the need to adapt to the climate change predictions the CSIRO will provide information on downscaling the predictions to provide a consistent set of meaningful boundary conditions to support the work of all South Australian agencies.

It identified research priorities including:

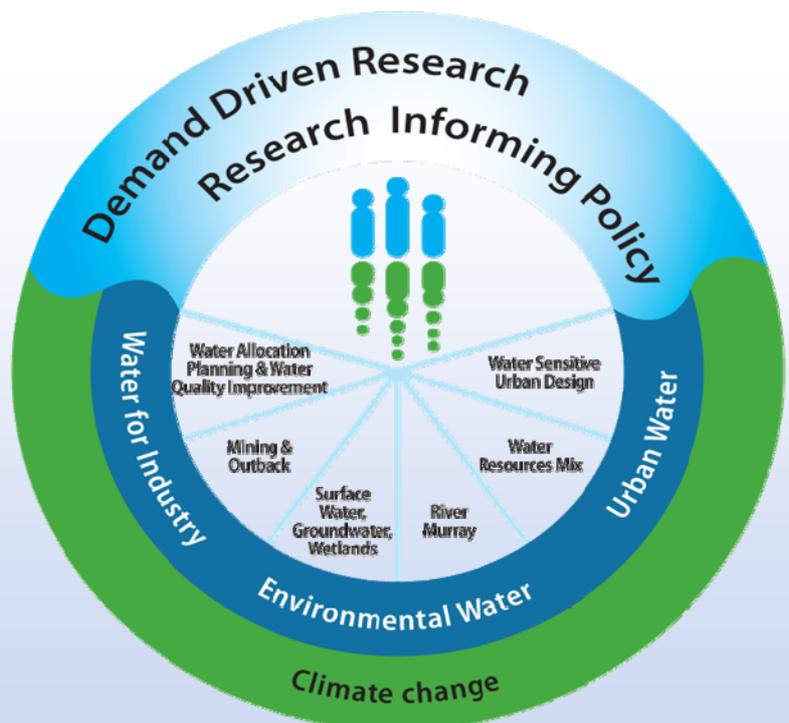
- Urban Water
- Water Sensitive Urban Design
- Water Resources Mix for Adelaide
- Industry Development
- Water Allocation Planning and Water Quality Improvement
- Mining and Outback Water

- Climate Change
- Regional Downscaling
- Environmental Water
- River Murray
- Surface Water, Groundwater, Wetland Relationships

For example, the Institute will draft a report providing scientific advice for the development of interim and future Water Sensitive Urban Design (WSUD) targets in Greater Adelaide. These targets will take into consideration local conditions, including climate, urban runoff quality and receiving water body requirements while maintaining alignment with various State plans, policies and strategies where possible.

Comments have been sought on the draft report from the SA Government Agency WSUD working group following presentations on this project in June and September 2011. To find out more about the Goyder Institute or for more detail on their research projects, please visit: <http://www.goyderinstitute.org>

Below: Overview of the Goyder Institute research themes and their related roadmaps



NEW COASTAL WEBSITE LINKING LOCAL RESEARCH WITH LOCAL COUNCILS

Under an Australian Coastal Ecosystem Facility (ACEF) project under TERN – the Terrestrial Ecosystem Research Network, funded by ACEF and CSIRO, the new Coastal Research Webportal website will enable coastal councils, and other coastal stakeholders, to find current and previous coastal research projects, related publications, and a range of available data and metadata easily at national, regional and local levels.

CSIRO committed to creating the Coastal Research Webportal at last year's Australian Coastal Councils Conference, when it was realised local councils had a low awareness of the range of coastal research available.

Dr Andy Steven, from CSIRO's Wealth from Oceans Flagship said, "By creating a central webportal to access the latest research data, decision makers will be able to better evaluate proposals for their communities."

"The website will also allow scientists and decision makers to investigate possible collaborations, to promote scientific research, and to identify any research gaps," Dr Steven said.

The webportal has short, plain English, acronym-free research summaries and it provides further links to freely available data and research, under the Creative Commons license.

Barry Sammels, the Chairman of the National Sea Change Taskforce said, "There is no doubt this webportal will be of enormous practical benefit for everyone who is involved in coastal planning and management."

The webportal, which uses a Google Maps interface, was developed in cooperation with TERN, which will now manage the website.

TERN is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative.

The webportal can be found at: <http://coastalresearch.csiro.au/>

\$30M ONKAPARINGA STORMWATER PROJECT UNDER WAY

Work on the City of Onkaparinga's Water Proofing the South Stage 2 stormwater scheme is underway with government stakeholders visiting the site of the new Reynella East wetland in February.

Stage 2 of Water Proofing the South aims to capture 2.8 GL of water, reducing reliance on mains water and improving water quality in waterways by capturing, storing, treating and reusing stormwater.

This is done through the development of an integrated system of managed aquifers that store water harvested from ponds and sub-surface wetlands at Happy Valley, Reynella East, Seaford Rise and Aldinga Beach.

The water stored in the aquifers will be used for irrigation of sports grounds, schools and parklands throughout the City of Onkaparinga via a system of interconnecting pipes.

The construction of the new wetlands will also provide local communities with improved recreational facilities including walking tracks and open spaces.

Stage 2 is being delivered by the Australian Government with \$14.9M funding through the Water for the

Future initiative, an initiative that aims to secure Australia's water supply and support healthy waterways, and the State Government contributing \$7.5M jointly with the council's funding of \$7.5M.

The City of Onkaparinga is managing the project with Adelaide based Leed Engineering.

Onkaparinga Mayor Lorraine Rosenberg said the start of Stage 2 marks a significant milestone in Onkaparinga's quest to be less reliant on drinking water for irrigation and to improve environmental flows in local waterways.

"Harvesting stormwater is a very important part of the City of Onkaparinga's overarching plan to be self-sustaining in our water use," Mayor Lorraine Rosenberg said.

Water Proofing the South Stage 2 highlights include:

- New wetland at Byards Road, Reynella East
- Creation of a stormwater harvesting pond at Candy Road, Happy Valley
- Dalkeith Road, Seaford Rise and Hart Road, Aldinga Beach wetland enhancements

- Distribution network connecting stages 1 and 2 of Water Proofing the South

The City of Onkaparinga's 'Water Futures - Water Management Strategy' provides the strategic framework for the management of all water resources—mains water, surface water, groundwater and wastewater including the delivery of the Water-proofing the South initiative.

Other objectives of Water Futures are:

- to conserve water
- to protect water quality (surface and groundwater)
- to reduce reliance on water sourced from the River Murray
- to protect water dependent ecosystems (including coast and marine)
- to promote economic development opportunities.

Water Proofing the South will also help achieve targets set out in Water for Good, the South Australian Government's plan to ensure regional water future to 2050.

For more information regarding Water Proofing the South visit www.onkaparingacity.com/wps

UPCOMING EVENTS



WATER AND CLIMATE: POLICY IMPLEMENTATION CHALLENGES

PRACTICAL RESPONSES TO CLIMATE CHANGE
NATIONAL CONFERENCE 2012

1-3 May 2012: National Convention Centre, Canberra

<http://www.climatechange2012.org/index.asp?atId=14>



Water and Climate: Policy Implementation Challenges will be an opportunity for policy makers, engineers, scientists, planners and academics to present, hear and debate the latest research and practice on water and climate policy implementation challenges in urban, catchment and coastal environments. High profile national and international speakers will be brought together with delegates from around Australia and the world for a series of plenary lectures and contributed papers that will ensure a vibrant and

interesting program. Workshops will be included to allow a forum for debate of key issues and also presentation and discussion of the most recent thinking.

Themes presented will include:

1. Climate extremes
2. Basin management
3. Urban and coastal planning
4. Economics, finance and social systems
5. Policy implementation, governance and complexity



<http://www.nccarf.edu.au/conference2012/>

Climate Adaptation in Action 2012

Sharing knowledge to adapt



NCCARF
National
Climate Change Adaptation
Research Facility



2012 NATIONAL ADAPTATION CONFERENCE
26-28 June 2012 Sebel Hotel Albert Park, Melbourne

9th IWA Leading-Edge Conference on Water and Wastewater Technologies

<http://www.let2012.org/>



Brisbane Convention and Exhibition Centre (BCEC)
South Bank, Brisbane, Australia
3 - 7 June 2012

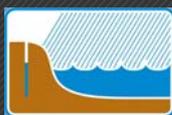
The International Water Association's Leading - Edge Conference seeks to establish a platform for dialogue and to promote developments in water and wastewater technologies.

The annual Leading - Edge Conference on Water and Wastewater technologies is focused specifically on advances and developments in water and wastewater technologies. To keep the programme targeted and discussions meaningful the conference consists of a single plenary of invited speakers on the first day, followed by two parallel sessions (one for drinking water and the one for wastewater) on days two and three the programme will consist of invited speakers.

Topics covered will include:

- Resilient technologies for disaster recovery
- Integrated and new technologies for Cities of the Future
- Disinfection by-product in drinking water
- From resource recovery to wastewater based biorefineries
- Clean, green and sustainable water technologies - minimising waste and maximising resource utilisation
- Innovative water technologies in resource industries (oil, gas and mining etc.)
- Control and mitigation of direct green house gas emissions
- Energy recovery and energy efficiency of wastewater systems

CONTACT HYDSOC



www.hydsoc.org

PO Box 6163, Halifax Street
ADELAIDE SA 5001

Executive Committee

Chairperson

Annette Barton
P: 8366 2669
E: a.barton@bom.gov.au

Vice Chair

Bob Newman
P: 8382 2312
E: bobnewman@ozemail.com.au

Treasurer & Membership Officer

Bill Lipp
P: 8343 2508
E: bill.lipp@sa.gov.au

Secretary

David Kon
P: 8172 1088
E: david@southfront.com.au

Committee

Sebastien Lamontagne
P: 8303 8713
E: sebastien.lamontagne@csiro.au

Guna Hewa

P: 8302 3094
E: guna.hewa@unisa.edu.au

Gabor Bekesi

P: 8378 8000
E: gaborbekesi@austwaterenv.com.au

Konrad Miotlinski

P: 8303 8742
E: konrad.miotlinski@csiro.au

Brett Ibbotson

P: 8270 3066
E: brett@ecomagementservices.com.au

Editor

Renae Eden
Phone: 8308 9226
Email: renae.eden@yahoo.com.au

MEDIA WATCH

National water planning resource goes online

An interactive web resource to help people easily access information on the status of water planning across Australia has today been launched by the National Water Commission.

<http://www.nwc.gov.au/media/commission/2012/national-water-planning-resource-goes-online>

Annual Climate Summary 2011: Australia's second wettest year on record

The Bureau of Meteorology has released its Annual Climate Summary 2011 today (21 Feb), providing a comprehensive record of Australia's weather and climate for the previous year. The Summary confirms last year was Australia's second wettest year on record, with widespread and severe flooding across northern and eastern Australia.

http://www.bom.gov.au/announcements/media_releases/ho/20120221.shtml

Warming in the Tasman Sea a global warming hot spot

Oceanographers have identified a series of ocean hotspots around the world generated by strengthening wind systems that have driven oceanic currents, including the East Australian Current, polewards beyond their known boundaries.

<http://www.csiro.au/en/Portals/Media/Warming-in-the-Tasman-Sea-a-global-warming-hot-spot.aspx>

Groundwater responses to the 2010-11 floods

Scott Lawson from GHD recently presented to Commission staff on the key outcomes of the Raising National Water Standards program project Groundwater responses to the 2010-11 floods.

<http://www.nwc.gov.au/media/events/commission-sponsored-water-seminar-series/2012/groundwater-responses-to-the-2010-11-floods/summary>

From Bass Strait to the Indian Ocean - tracking a current

Scientists have seen, for the first time, a 200-metre tall, 40 kilometre wide disc formed from water that originated in Bass Strait and continues undiluted as it travels hundreds of kilometres towards the Indian Ocean.

<http://www.csiro.au/en/Portals/Media/Bass-Strait-Indian-Ocean.aspx>

Global recognition for groundwater centre
Flinders University's National Centre for Groundwater Research and Training has established itself as a world leader in groundwater research, according to a panel of international experts in the field.

<http://blogs.flinders.edu.au/flinders-news/2012/02/29/global-recognition-for-groundwater-centre/>

No plain sailing for marine life as climate warms

Direct effects of climate warming on biodiversity pose a serious conservation challenge for marine life, according to new research published today in Science.

<http://www.csiro.au/en/Portals/Media/No-plain-sailing-for-marine-life-as-climate-warms.aspx>

Policy Paper to Help Shape New Water Allocation Plan

The State Government has approved a key policy document that will help shape the Lower Limestone Coast's Water Allocation Plan.

http://www.ministers.sa.gov.au/images/news_releases/12_02Feb/Lower_Limestone_Coast.pdf

Assessment of GRACE satellites for groundwater estimation in Australia

Waterlines report No 71 - February 2012
This report assessed the suitability of a new approach to monitoring groundwater levels based on GRACE (Gravity Recovery and Climate Experiment) satellite data. Potential use of this technology could complement traditional direct observations, at a lower cost.

<http://www.nwc.gov.au/publications/waterlines/71>

Big picture for the Great Barrier Reef in sight

The Great Barrier Reef is set to be seen in a whole new way through an innovative project that will provide for the Reef the kinds of products that the Bureau of Meteorology provides for weather. This new project, called eReefs, will allow everyone to see what is happening today on the Reef and what is likely to happen in future. It will span the entire Reef from catchment to ocean, aid decision making and improve communication and reporting using pictures and maps

http://www.bom.gov.au/announcements/media_releases/ho/20120229.shtml