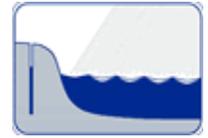


MAY 2010

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Aqua Australis



NEWSLETTER OF THE HYDROLOGICAL SOCIETY OF SOUTH AUSTRALIA

EFFICIENT WATER MONITORING PROGRAMS – THROUGH A TIERED APPROACH

Karla Billington, **naturallogic** Pty Ltd & Sam Gaylard, EPA

Monitoring all parameters that could exceed State or Commonwealth water quality criteria would be extremely expensive and is likely to be considered impractical and unnecessary. As water quality management moves towards risk based principles our water quality monitoring programs also need to change accordingly.

The South Australian Environment Protection Authority (EPA), is redesigning its Ambient Water Quality Monitoring Program based on a tiered assessment approach. The first tier is a desktop analysis of risk and understanding the key processes.

The second tier involves field sampling utilising a multiple lines of evidence approach at a broad spatial and temporal scale. This sampling will indicate whether there are anomalous results as compared with expected water quality conditions assessed in tier 1.

A third tier of sampling can then be initiated if deemed appropriate, using higher spatial and temporal replication to investigate the extent and longevity and possible cause of any impact. The EPA is applying the first two tiers to consider

regional scale water quality conditions (e.g.: whole of Gulf) where third tier monitoring would be at a very localised scale (e.g.: a small bay) if an anomalous risk was evident. The subsequent sampling is designed specifically to answer particular questions in order to gain risk management knowledge.

The tiered monitoring approach has also been recommended to Adelaide Airport Limited within the redesign of their Stormwater Monitoring Program. Sample sites have been reduced and sample number increased to better represent the seasonal and hydrological variations which drive stormwater quality. The first tier sample sites have been converted to flow based composite samplers, while second tier sites have been located within the airport on the basis of a tenant activity risk assessment.

The application of tiered monitoring methods is complementary to risk management approaches, where a key principle is to gain knowledge of the system, through investigations, rather than arbitrarily collect data to compare with water quality standards which may or may not be relevant in a local context.

MURRAY HARDYHEAD FIGHTS BACK

Minister for Environment & Conservation Paul Caica recently announced that a critically endangered species of fish found in the Coorong, Lower Lakes and Murray Mouth region is making a come-back.

After declining water levels and water quality threatened to decimate its numbers, the Murray hardyhead is fighting back with some help from the South Australian government, Mr Caica says.

Considered vulnerable nationally, and extinct in New South Wales, the Murray hardyhead is a small native freshwater fish which has continued to survive in a few isolated populations in Victoria and South Australia – including Boggy Creek on Hindmarsh Island.

However, scientists discovered in early 2009 that conditions in Boggy Creek had declined to such an extent that the population of Murray hardyhead was close to being lost to the site.

Mr Caica says action was immediately taken to ensure the fish's survival in the Coorong, Lower Lakes and Murray Mouth (CLMM) region of South Australia.

"Several of the remaining Murray hardyhead in Boggy Creek were captured and sent to the Murray-Darling Freshwater Research Centre (MDFRC) in Mildura, which has a successful program of breeding and rearing the fish in captivity," he says.

"Enough Murray hardyhead have now been bred at MDFRC to enable a large number to be released – for the first time in South Australia – into a suitable permanent freshwater refuge on a private property in the Adelaide Hills.

"Our aim is to eventually return them to their habitat on Hindmarsh Island once conditions in the region recover."

(Continued on page 2)

MURRAY HARDYHEAD FIGHTS BACK

(Continued from page 1)

Mr Caica says the project to save the Murray hardyhead has been a successful collaboration between government, private agencies and a community group comprising:

- Department for Environment and Heritage (DEH)
- South Australian Research and Development Institute
- Murray–Darling Basin Authority
- South Australian Murray–Darling Basin NRM Board
- Aquasave
- University of Adelaide
- Tungkillo Landcare Group and
- Murray–Darling Freshwater Research Centre.

"These groups are working together to make sure this endangered species has a chance of surviving," Mr Caica says. "The owners of the property near Tungkillo where the fish will be released have also been

very supportive of the program.

"It is further evidence that a collaborative approach can deliver significant benefits for the CLLMM region and the species that depend on its ecology for survival."

The Murray hardyhead is one of five species identified as a high priority for protection in DEH's Drought Action Plan for Threatened Small-bodied Native Freshwater Fish in the South Australian Murray–Darling Basin.

Mr Caica says the Drought Action Plan is increasing the chances of threatened native freshwater fish in the South Australian Murray–Darling Basin recovering when the drought ends.

"Since 2006 the majority of sites in the South Australian Murray–Darling Basin that were providing

refuge for native freshwater fish have been either severely compromised or completely diminished, due to the local effects of drought as well as reduced flows down the River Murray," he says.

"Five species – the Murray hardyhead, southern pygmy perch, Yarra pygmy perch, river blackfish and southern purple-spotted gudgeon – were identified as having undergone the most dramatic declines.

"Work to monitor, conserve and eventually re-establish each of these species is now well under way. The recent increase in environmental flows down the River Murray is providing water to some of the critical sites, but significantly more water is required before we can consider returning the captive-bred fish populations to their original habitats."

MURRAY-DARLING WATER TO FLOW WHERE IT IS NEEDED MOST

A new CSIRO report released recently will help ensure the delivery of maximum ecological benefits from water allocations in the Murray-Darling Basin (MDB).

Funded by the National Water Commission, the report; Ecological Outcomes of Flow Regimes in the Murray-Darling Basin, provides information that will assist water managers to improve and justify delivery of environmental water to 'icon sites', including wetlands of international significance such as the Macquarie Marshes, Gwydir Wetlands and Narran Lakes.

"It's no secret that the health of the Murray-Darling Basin is in decline," said CSIRO environmental scientist, Ian Overton.

"The Australian Government is investing billions of dollars to turn this around and our research is helping ensure that this is put to best use."

Launching the report at the Ecosystem Response Modelling in the Murray-Darling Basin Conference in Sydney, the Commission's CEO, Ken Matthews, said the problem has been that, as water plans have been drawn up, how much water is needed to provide a given level of environmental protection was not known.

To shed light on this issue, researchers pulled together 577 sets of data to investigate the relationships between watering strategies and the health of vegetation, fish and other biota.

"The Australian Government is investing billions of dollars to turn this around and our research is helping ensure that this is put to best use" said Overton.

A major outcome from the project was the Murray-Darling Basin Floodplain Inundation Model, which for the first time provides a tool to assess and predict changes in

floodplain habitat, wetland connectivity and ecosystem health in response to flooding regimes.

"Initial model outputs show that only 25 per cent of the Basin floodplain has been inundated to some extent in the past nine years," Mr Overton said.

"This highlights that the recent period of dry conditions has had serious implications across a significant portion of the floodplain."

Water managers can use the information to improve the planning and delivery of watering regimes and flow management strategies, ensuring water flows can be tailored to maximise environmental outcomes.

The research was part of a National Water Commission initiative funded through the Raising National Water Standards Program.

NEW STUDY ANSWERS THE CRITICS OF WATER PURCHASE

A new assessment of the impact of the Federal Government's water purchase program by the Australian Bureau of Agricultural and Resource Economics (ABARE) has answered critics of the water buyback.

The Minister for Water, Senator Penny Wong, recently released the study which models the impact of the first \$1.5 billion of the Rudd Government's \$3.1 billion Restoring the Balance in the Murray Darling Basin water purchase program.

The study found that:

- The water purchase program is helping ease financial pressures on irrigators;
- Lost production as a result of water purchase is very small, especially when compared with other factors, such as drought and in any case may be offset by the Government's investment in infrastructure, and;
- The water purchase program is helping irrigators prepare for the new, lower limits on water use that are expected under the Basin Plan.

Senator Wong said that critics of the water buyback have repeatedly claimed that purchasing water to restore river health has hurt agricultural production and is bad for regional economies.

"Yet today's report shows that purchasing water is not only helping the environment, by returning much needed water to the Basin's rivers and wetlands— it also helps irrigators," Senator Wong said.

"Water purchase is providing irrigators with an extra option for managing their way through drought, retiring debt, investing in farm upgrades, diversifying their operations or exiting irrigation altogether."

It is clear from this study that the overwhelming source of lost production in the Murray Darling Basin is drought, which caused the gross value of irrigated cotton production to fall by 47 per cent, compared with a projected reduction of 1.9 per cent under the buyback.

The study also found that:

The Rudd Government's \$5.8 billion investment in improving rural water use and efficiency is expected to reduce the volume of water required by irrigators to produce a given level of output;

Any decline in Gross Value of Irrigated Agricultural Production across the Basin is expected to be modest, and is predicted to be fully offset by productivity growth, and;

Gross Regional Product can be expected to decline by less than 0.5 per cent in each of the seven regions considered in the ABARE study.

"Today's study confirms that the Rudd Government's long-term Water for the Future plan is supporting the future viability of our Basin communities and returning the rivers to health," Senator Wong said.

To download a copy of the study visit www.environment.gov.au/water.

ADELAIDE'S STORMWATER ISSUE DEEPENS

Environmental Management News, www.emn.net.au

A plan to boost Adelaide's collection of stormwater to 60GL is pointless if more customers are not encouraged to use the supply, the SA Government conceded recently, with new Water Minister Paul Caica stating that the "access to [water] and the distribution of it are stumbling blocks".

Caica will now work with local governments to identify more storage areas for stormwater, reform the pricing system to make stormwater a more attractive, cost-effective option and improve drainage systems to cope with heavy loads of stormwater.

The SA Government's Water for Good plan sets a target to collect and recycle 20 GL of stormwater for "non-drinking purposes" by 2013, rising to 60 GL by 2050.

However, the Opposition and a

Salisbury Council stormwater expert caution even current storages are not being used as it cannot be pumped through existing pipelines used for drinking water.

Opposition water spokesman Mitch Williams said watering "every public space in Adelaide, every playing field, every public garden, every park" would only use about 15 GL of harvested stormwater."

He added the best way to increase assistance was the Liberals' pre-election plan to purify stormwater to drinkable standards.

"Unless you re-pipe Adelaide at a cost of many billions of dollars you cannot use that stormwater without bringing it to drinkable quality," he said.

Meanwhile, Salisbury Council's city projects director, Colin Pitman, said

the council could only sell about 2GL of the 8GL of stormwater it captures each year.

Pitman said barriers to increasing stormwater consumption included customer "complacency", the cost of connecting new pipes and a lack of awareness about the cheaper price of recycled stormwater.

Liberal leader Isobel Redmond had previously announced the party wanted to recycle stormwater for drinking from the council's Parafield Airport harvesting scheme, committing to spend \$3 million installing filters to make the water safe for drinking.

Under the Liberal's plan, wetlands treatment plants across the city would bring captured water to drinkable standard, including one at Wynn Vale Dam.

UPCOMING EVENTS

SOUTH AUSTRALIAN Major Projects Conference 2010

Delivering South Australia's Major Projects - Its all part of the Plan

27 - 28 July 2010

Adelaide Convention Centre

Adelaide - South Australia <http://www.saconference.com.au/>

Supported By



Government of South Australia
Department for Transport,
Energy and Infrastructure



Government of South Australia
Department of Planning
and Local Government

The State Government's vision for the next three decades as outlined in the *30-year Plan for Greater Adelaide* is to position Adelaide as a city that is recognised worldwide as liveable, competitive and resilient to climate change.

Supporting the 30-year Plan is the Strategic Infrastructure Plan for SA (SIPSA) released in April 2005, which sets out South Australia's priorities for the development of key infrastructure across the State.

This plan has facilitated a boom in infrastructure investment, with more than 80 per cent of the projects listed in 2005 either completed or underway.

The value of major developments in South Australia now stands at a record \$71.5 billion which in turn means greater investment, more jobs and growing prosperity for South Australia.

With so much happening in South Australia, this conference will provide you with an opportunity to explore the design, planning, construction and implementation of major projects currently underway or in the pipeline.

This will be a 2 day event which will focus on the significant investments being made by the government into major projects that are currently being worked upon as well as projects that are in the pipeline. It will cover areas of Transport, Water, Energy, Defence, Urban Planning, Sustainability, and the overall State Development, including projects such as the \$1.8 desalination plant.

The South Australian Major Projects Conference '10 conference will showcase a number of major projects and provide an insight to a very exciting future.



AUSTRALIAN IRRIGATION Conference & Exhibition 2010

Irrigation Australia and the CRC for Irrigation Futures invite you to *One Water Many Futures* Australia's Irrigation Conference and exhibition at the:

**Sydney Convention & Exhibition Centre
8 -10 June 2010.**

This major conference and exhibition brings the entire irrigation industry (urban and rural) together at the largest event of its kind held in the southern hemisphere. Both the exhibition and conference will be a major focal point for an industry gearing up to an estimated \$30 billion in investment over the coming decade. With over 100 companies from Australia and around the world displaying the latest in irrigation equipment, technology and knowledge, this will be the place to develop and reorient irrigation and water management to meet its future significant challenges.

Australian Desalination Summit 15th - 16th July 2010

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[http://www.ibrc.com.au/product_details.php?
product=australian_desalination_summit_2010](http://www.ibrc.com.au/product_details.php?product=australian_desalination_summit_2010)



<http://www.hydsoc.org>

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MEDIA WATCH

Wetlands life shrinks from lack of rainfall

THE state's biggest inland bird-breeding sanctuary is nearing collapse due to lack of water, and the bird population is undergoing "dramatic upheavals" as some species are pushed out, a new report has found.

<http://www.smh.com.au/environment/conservation/wetlands-life-shrinks-from-lack-of-rainfall-20100503-u3rw.html>

Further funding for councils

Local governments in the Murray Darling Basin will benefit from planning grants that help them prepare their local communities for a future with less water.

<http://www.climatechange.gov.au/~media/Files/minister/wong/2010/media-releases/april/mr20100426a.ashx>

Kakadu National Park Ramsar site expansion and merger

Kakadu National Park will become a single, internationally recognised Ramsar wetland, with the expansion and merger of its two separate Ramsar sites.

<http://www.environment.gov.au/water/topics/wetlands/about/hot-topics.html#kakadu>

Third water purchasing round for southern Murray Darling Basin

Irrigators in the southern Murray Darling Basin have been invited to submit offers under a new \$120 million water purchasing tender, opening in early May.

<http://www.climatechange.gov.au/~media/Files/minister/wong/2010/media-releases/april/mr20100426a.ashx>

One million seedlings for Lower Lakes

More than one million native seedlings are to be hand-planted into exposed lake beds across the Lower Lakes

<http://www.climatechange.gov.au/~media/Files/minister/wong/2010/media-releases/May/mr20100504.ashx>

Marine scientists inspect Reef damage

A team of marine scientists are now on site and preparing for an inspection of the environmental damage caused by the grounding of the Shen Neng 1 on Douglas Shoal.

<http://www.environment.gov.au/minister/garrett/2010/pubs/mr20100412b.pdf>

Thousand-Plus Litre Daily Desal

Early indications of the water desalination equipment currently being tested by Primary Water in association with technology developers Voltea indicate that a small prototype unit, approximately the dimensions of a large orange crate, will generate up to 5,000 litres of water per day.

<http://www.primarywater.com.au/thousand-plus-litre-daily-desal>

Discovery offers clues to source of Earth's water

Ice has been found on the surface of an asteroid for the first time, making it more likely that these chunks of rock in space were the source of the water we drink.

<http://www.smh.com.au/environment/water-issues/fancy-a-glass-of-asteroid-ice-discovery-offers-clues-to-source-of-earths-water-20100429-tssm.html>

Measuring the performance of Australia's water utilities

The Parliamentary Secretary for Water, Dr Mike Kelly, today launched two national 'report cards' that tell Australians how well their urban water utilities and rural water providers are performing.

<http://www.environment.gov.au/minister/kelly/2010/pubs/mr20100428.pdf>

Strengthening Basin Communities program

The Australian Government has committed \$200 million from Water for the Future to establish the Strengthening Basin Communities program. This program is implemented through two separate components: the Planning component and the Water Saving Initiatives component.

<http://www.environment.gov.au/water/programs/basin-communities/index.htm>

National Water Market System

The first stage of the National Water Market System website is now available. The National Water Market System will strengthen Australia's water market through efficient management of improved state and territory water registers, water transactions and availability of market information.

www.nationalwatermarket.gov.au