



Issue 8
January 2010

Irrigation in Australia – Investing for a drier future

Broken Hill Managed Aquifer Recharge project

Minister releases Tasmania Sustainable Yields report

Summer rains provide environmental flows for the Lower Lakes

Raising the stakes in stakeholder engagement

Communities actively working to secure their water - Strengthening Basin Communities

Wetlands Australia Update 2010

Subscriptions

Water Matters is published every two months. You can subscribe at www.environment.gov.au/water.

For subscription queries or questions about this mailing list, contact Public Affairs, Department of the Environment, Water, Heritage and the Arts on 02 6274 1378

Irrigation in Australia – Investing for a drier future

- Gross value of irrigated agriculture in 2006-07 equalled more than \$12.3 billion
- On average the Murray-Darling Basin receives 6 per cent of Australia's annual rainfall
- December 2009 - the first approved transfer of water entitlement to the Australian Government as a result of infrastructure investment.

Irrigation delivers substantial benefits to Australian communities and the national economy, providing food and fibre for the nation and for export. The gross value of irrigated agriculture production was more than \$12.3 billion in 2006-07 (ABS 2008).

The Murray-Darling Basin accounts for around 70 per cent of all water used for agricultural purposes and around 40 per cent of gross agricultural production. It is one of Australia's most important social, economic and environmental resources, covering an area 1000km wide and 1450km long. More than three million Australians living within and outside the Basin including the capital cities of Adelaide and Canberra, are directly dependent on its water (ABS 2008, ABARE 2009).

Though it receives on average only 6 per cent of Australia's annual rainfall, the Basin makes up around 65 per cent of the total agricultural land under irrigation in Australia (ABS 2008, ABARE 2009).

The volume of water that leaks out of irrigation systems or is lost to evaporation is about the same as all our major capital cities consume. Climate change is forecast to reduce water availability, making it imperative that we do more with the water that is available.

Through its *Water for the Future* initiative the Australian Government is investing \$5.8 billion to help irrigators upgrade and modernise their water infrastructure to improve the efficiency of water use. This will benefit irrigators and provide additional water to restore and protect the ecological health of the Basin.



Bore stock water points at a property near Boomi in northern NSW have replaced open bore water channels, reducing evaporative losses. (A Mostead & DEWHA)

Water for the Future irrigation programs

Overarching program - Sustainable Rural Water Use and Infrastructure Program: \$5.8 billion
Current funding: delivered through a number of programs - see details below.

Private Irrigation Infrastructure Program for South Australia: \$110 million.
Current funding: closes 4.30pm EST Thursday 8 April 2010.

Irrigation Modernisation Planning Assistance: \$6 million
Current funding: closes 29 October 2012, unless all available funds are committed earlier.

Private Irrigation Infrastructure Operators Program in NSW: \$650 million
Current funding: closed.

On-Farm Irrigation Efficiency Program: \$300 million
Current funding: closed.

You can also call the Water Information Line on 1800 218 478 for more details about these programs or visit www.environment.gov.au/water

Irrigated water most commonly comes from surface water drawn from rivers, lakes, dams and weirs. Other sources include groundwater, most commonly used in South Australia and the Northern Territory, mains supply, and recycled and treated water (ABS 2008).

Surface irrigation has traditionally been the most popular method of irrigating, but in recent years producers have begun turning towards new methods to reduce water loss occurring through leakage and evaporation.

Conversion to more modern and efficient irrigation infrastructure can require significant financial investments, and so the Australian Government is providing funding incentives to accelerate the uptake of water efficient technologies. For its investment in the Murray-Darling Basin, the Australian Government will acquire water savings to return to the environment to improve the health of river systems over the long-term.

Tailored specifically to South Australia, the *Private Irrigation Infrastructure Program - South Australia (PIIP-SA)* recognises that approximately half of River Murray system irrigation water in that state, is extracted by direct diverters. To account for this, funding is open to three categories of applicants: Irrigation Infrastructure Operators; Delivery Partners on behalf of an individual irrigator or groups of individual irrigators; and individual irrigators who hold permanent entitlements of 500 megalitres or more.

Applications for funding under this program can be made until 8 April. (See page one for details of where to find more information.)

The *Private Irrigation Infrastructure Operators Program (PIIOP)* for New South Wales is funding projects that will generate savings allowing private irrigation infrastructure operators and their customers to minimise water losses and manage water allocations more efficiently. The Australian Government will acquire entitlement to at least half of the water savings these projects generate, to add to the Commonwealth's environmental water holdings.

The Australian Government is also investing in the assessment of 'hotspots' which use a consistent and science-based approach to identify the nature, location and amount of water losses in existing channel and piped irrigation delivery systems. The hotspots assessment technical manual, an approach developed by the CSIRO, helps irrigation infrastructure operators to understand the worst losses in their delivery system and thus supports planning the modernising of their water delivery infrastructure.

The *On-Farm Irrigation Efficiency Program* aims to help irrigators, through program delivery partners, in the Lachlan and southern-connected system of the Murray-Darling Basin, to modernise their infrastructure, generating water savings for irrigators and entitlements for the Commonwealth's environmental water holdings.



Irrigating cornfields in Dubbo. Irrigators are moving towards better irrigation methods that reduce water loss occurring through leakage and evaporation. (M McAulay & DEWHA)

Another component of the drive to improve irrigation efficiency is the *Irrigation Modernisation Planning Assistance (IMPA)* program. This program, which commenced in advance of the funding incentives for infrastructure investment, was a key step to assist irrigation water providers assess options to adapt to a future with less water and consult with their customers in developing comprehensive plans for improving irrigation efficiency.

Thirteen projects in NSW, QLD, SA and Vic valued at more than \$4 million commenced under IMPA Round 1 in mid-2008. An additional four projects valued at \$560,000 were approved in Round 2 in mid-2009. A third round of funding worth \$2 million was announced last October and is open until 2012, or until funding is fully committed.

On 3 July 2008, the Australian and state governments finalised the Intergovernmental Agreement on Murray-Darling Basin Reform to secure a sustainable future for the Murray-Darling Basin. The Australian Government has agreed in principle to provide close to \$3.7 billion for significant state-based water infrastructure and reform projects in South Australia, New South Wales, Victoria, Queensland and the ACT. These State Priority Projects are subject to a Commonwealth due diligence assessment of the social, economic, environmental, financial and technical aspects of the projects.

Several State Priority Projects, administered by a state or territory and supported by Commonwealth funding, have commenced.

A commitment, subject to due diligence, of up to \$300 million has been provided to the NSW Government for irrigation efficiency works through a farm modernisation project, \$221 million to install more accurate meters across the NSW Murray-Darling Basin, up to \$137 million for improved efficiency of stock and domestic water delivery

through pipelines and \$50 million to improve the management of water on the floodplains through modifications to floodplain structures and extractions.

Other State Priority Projects include:

- The Northern Victoria Irrigation Renewal Project (NVIRP): The Victorian Government is finalising the business case for \$1 billion in Commonwealth funding for Stage 2 of this project to address water use efficiency in both the delivery system and user connections in the major irrigation areas serviced by Goulburn-Murray Water.
- The Sunraysia Modernisation Project: The Commonwealth has made a funding commitment, subject to due diligence, of \$103 million towards the renewal of the main pumping stations in each district, refurbishment of the main delivery arteries and modernisation of water metering across the Merbein, Red Cliffs and Mildura Districts.
- Queensland State Priority Project: Allocation of \$160 million for irrigation planning and infrastructure investment in Queensland and \$350 million for water purchasing in the QLD Murray-Darling Basin.

More information about the Australian Government's investment in irrigation can be found at www.environment.gov.au/water/programs

*References can be found at the end of this document.

Broken Hill Managed Aquifer Recharge project

- Geoscience Australia is investigating managed aquifer recharge in Broken Hill
- Risk assessment and on-ground investigations are complete
- Phase two has commenced, involving air-borne electro-magnetic surveying among other activities

An airborne electro-magnetic survey, borehole drilling and hydrogeochemical tests are all part of a day's work in identifying a potentially new sustainable water supply for Broken Hill.

Geoscience Australia is using these science methods in an innovative way to study groundwater resources and aquifer storage options to meet the town's water needs. It also has the potential to allow water lost to evaporation from Menindee Lakes to be returned to the environment.

It's the first time anyone has investigated managed aquifer recharge in such detail for the region. These investigations will help the Australian Government determine a way forward to deliver its \$400 million commitment for Menindee Lakes.

Using aquifers for water storage involves using surface waters to replenish naturally occurring underground aquifers. Injection bores and infiltration basins also help with replenishment.



A helicopter trailing the electromagnetic survey receiver over Broken Hill. Data from the survey will be used to help identify available aquifers and possible sites where managed aquifer recharge may be implemented. (DEWHA)

Storing large quantities of water in aquifers has an advantage over traditional surface water reservoirs because it largely eliminates evaporation.

The first stage of the project, which involved a risk assessment and on-ground investigations, delivered positive findings and showed good potential for combining groundwater extraction and managed aquifer recharge at Menindee Lakes.

The next phase currently underway involves an airborne electro-magnetic survey, drilling and pump testing, water sampling, and a light detection and ranging survey (also known as LiDAR). This data will be used to identify the available aquifers and possible sites where managed aquifer recharge may be implemented.

If the findings show sustainable groundwater resources and a practicable aquifer storage system, a more detailed geological and engineering assessment will fully test this new approach.

A video of the airborne electro-magnetic survey can be viewed at: www.environment.gov.au/water/publications/action/video-broken-hill-aquifer-recharge.html

More information on the project is available at: www.environment.gov.au/water/policy-programs/srwui/menindee-lakes/index.html

Minister releases Tasmania Sustainable Yields report

- Reduced rainfall projected to be 3 per cent under a median future climate
- Report provides critical information to underpin statutory water management planning
- Climate impacts on 24 proposed irrigation schemes examined
- Key findings from this report can be found at the end of this article

A major CSIRO report into future water availability in Tasmania has found the island state is likely to experience reduced rainfall and runoff as a result of climate change but the impacts will be less severe than in other parts of south-eastern Australia.

Minister for Climate Change and Water, Senator Penny Wong released the report in Hobart in early January.

The report of the Tasmania Sustainable Yields Project is the culmination of 18 months' work undertaken in cooperation with State government agencies and provides the most comprehensive assessment of water availability ever undertaken for Tasmania.

The project, which received \$4.2 million from the Australian Government through its *Water for the Future* initiative, looked at water availability across almost 50,000sq km of northern, eastern and central Tasmania.

Climate change is expected to reduce rainfall and runoff in Tasmania by 2030, the report found. The projected impact on rainfall will be a 3 per cent reduction under a median future climate, ranging from a one per cent increase to a 7 per cent decrease under wet and dry extremes.

Lower rainfall will reduce runoff by 5 per cent under a median climate, ranging from a 1 per cent increase to a 10 per cent decrease under wet and dry extremes. (For report highlights, see **key findings**.)

Senator Wong released the report at the CSIRO Marine and Atmospheric Research Laboratories in Hobart on 18 January 2010 with Tasmanian Primary Industries and Water Minister Mr David Llewellyn.

Project leader, Dr David Post of the CSIRO, explained the findings at a presentation for about 90 people from government agencies, industry, universities and other members of the community with an interest in water management in Tasmania.

Senator Wong said the Australian Government was working with all States and Territories to prepare for the future impacts of climate change, including reduced water availability.



Dasher River, near Sheffield, Tasmania. Results of the Tasmania Sustainable Yields project will be used in planning new irrigation projects. (Rob Blakers & DEWHA)

“The project findings will provide critical information needed to underpin statutory water management planning in Tasmania and to assist in developing proposals for a sustainable irrigation industry,” Senator Wong said.

The report is the third in a series of CSIRO studies commissioned by the Australian Government to provide the best available science to underpin policy decisions about future management.

The project examined the projected impacts of catchment development, changing groundwater extraction, climate variability and expected climate change on the availability and use of water resources at a whole-of-region scale, considering both groundwater and surface water systems.

As surface water and groundwater extractions are not metered in a consistent way in Tasmania, the project used a comprehensive suite of river models to assess water movement and use in the project area. Three models covering key groundwater areas were also used, along with flow stress rankings to determine the potential ecological impacts of changes in stream flow on sub-catchments and 150 key ecological sites.

The findings provide critical information for water managers and will help in developing sustainable irrigation proposals for Tasmania.

“It is the first time that there has been this type of investigation into whether there is enough water to meet the demands of irrigation proposals in Tasmania to help meet Australia’s growing demand for food,” Dr Post said.

“This is an opportunity to avoid development mistakes by starting with sound knowledge of water availability to underpin any future development decisions.”

Key findings from the Tasmania Sustainable Yields Project

The CSIRO Tasmania Sustainable Yields Project provides a snapshot of the expected impacts of climate change on Tasmania's water availability into the future.

The research considered surface water and groundwater across northern, eastern and central Tasmania, covering almost 50,000 square kilometres in five reporting regions (approximately 70 per cent of Tasmania). Western Tasmania, including the Tasmanian Wilderness World Heritage Area, was not part of the study.

As with other sustainable yields projects that the Australian Government has commissioned from the CSIRO, four climate scenarios are used: the historical climate (1924-2007); recent climate (1997-2007); future climate (a spectrum of possible climates to 2030); and the future climate with anticipated development. In Tasmania this projected development is comprised of 24 irrigation schemes, new commercial plantation forestry and increased groundwater extractions.

The following are key findings from the 18-month project:

- The projected impact of climate change on rainfall by 2030 is a 3 per cent reduction under a median future climate, ranging from a 1 per cent increase to a 7 per cent decrease in rainfall under wet and dry extremes. This is projected to lead to a 5 per cent reduction in runoff under a median climate, with a 1 per cent increase in runoff under the wet extreme and a 10 per cent decrease under the dry extreme.
- Changes in runoff due to climate change by 2030 are projected to lead to reduction of 10 GL/year (1.6 per cent) in extractions under a median climate, while non-extracted water is projected to reduce by 1043 GL/year (5 per cent) under a median climate.
- Historical stream flow is 21,815 GL/year, of which 636 GL/year (3 per cent) is currently extracted for use.
- Historical groundwater extraction is 38 GL/year (around 3 per cent of recharge). Eighty-eight per cent of this extraction occurs in the Mersey-Forth and Arthur-Inglis-Cam regions.
- An expected increase in commercial forest area of 5 per cent would lead to a decrease in runoff of less than 1 per cent and therefore a reduction of 16 GL/year (3 per cent) in currently licensed extractions.
- Of the 24 proposed irrigation schemes examined, 10 can be supplied with 100 per cent reliability, a further five schemes can be supplied with their full demand for water in more than 80 per cent of years, four in 50 to 80 per cent of years, and another five in less than 50 per cent of years.



Minister for Climate Change and Water Senator Penny Wong, Tasmanian Minister for Primary Industries and Water Minister Mr David Llewellyn and CSIRO project leader Dr David Post at the launch of the Tasmania Sustainable Yields report in Hobart. (CSIRO)

- The combined impact of increased commercial plantation forest area and additional irrigation extractions decreases non-extracted water by between 230 and 355 GL/year, a median reduction of 283 GL/year, which equates to a 1 per cent reduction.
- If groundwater extractions were increased to 25 per cent of recharge in the Mella-Togari, Wesley Vale and Scottsdale groundwater assessment areas, only localised impacts on groundwater levels and surface-groundwater interactions are likely.
- Under future climate, 2 per cent of the project area's sub catchments are likely to be impacted by changes in the flow regime, an increase of 1 per cent relative to historical conditions. This could increase to 4 per cent under future development.
- Of 150 key ecological sites identified in this project, 71 are potentially impacted by changes in the flow regime due to the recent climate and its significant drought conditions. Under historical climate, 13 sites are potentially impacted and may increase to 15 under future climate. Future development would not increase this number further.

For more information about the Sustainable Yields reports visit: <http://www.environment.gov.au/water/policy-programs/sustainable-yields/index.html#tas>



The before and after photos of environmental watering at Hattah Lakes in north-west Victoria. Environmental watering helps to preserve and maintain the ecological health of these important wetlands as well as encouraging birds and other wildlife to return. (DEWHA)

Summer rains provide environmental flows for the Lower Lakes

- Lakes Alexandrina and Albert will receive almost 340GL over the next 6 months
- The Commonwealth is allocating 26.2GL to five other sites in South Australia and Victoria
- Long-term planning for the Coorong and Lower Lakes in process

The risk of the internationally significant Lower Lakes acidifying has eased after heavy summer rains in northern NSW provided enough water for significant environmental flows to the parched South Australian wetlands.

The Australian Government and southern Basin States agreed earlier this month to allow 148 billion litres (148 gigalitres) of water from the flooding to make its way to the Ramsar-listed Lakes Alexandrina and Albert Wetland Complex near the mouth of the Murray River. This includes 48 billion litres from allocations to the *The Living Murray* initiative.

The Commonwealth Environmental Water Holder (CEWH) also decided to provide an additional 20 GL from holdings obtained through the Australian Government's \$3.1 billion water purchasing program.

When added to South Australia's commitment of 170 GL, it brings the total environmental water for the Lower Lakes to almost 340 GL.

This water is expected to be delivered over six months, providing habitat for waterbirds and fish. The volume is sufficient to ease the risk of acidification of the Lower Lakes.

Other benefits of the environmental watering, which should commence as early as March, are improved water quality and reducing the threat of further riverbank slumping.

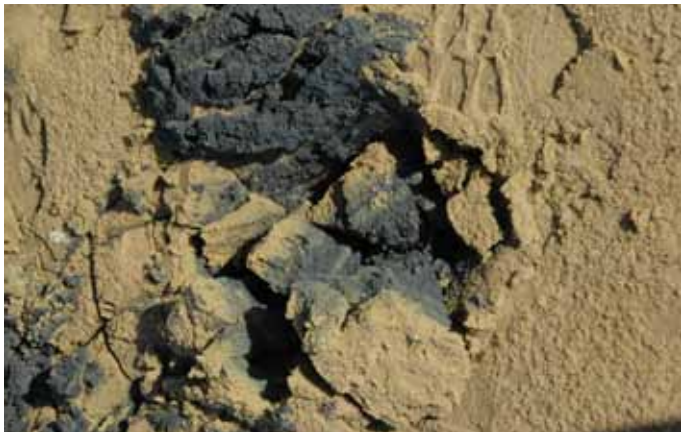
The CEWH has also agreed to allocate a further 26.2 GL of environmental water to three sites in South Australia and two sites in Victoria.

Two wetlands on Chowilla Floodplain, SA, will receive 8.2 GL, while Katarapko Wetlands, SA, will receive 20 ML. Both Chowilla and Katarapko received Commonwealth environmental water in autumn last year and this further watering will provide additional critical drought refuges and habitats for a variety of species, including the nationally threatened southern bell frog (also known as the growling grass frog) and regent parrot. This watering also aims to avoid further loss of mature river red gums and other floodplain vegetation, including black box woodlands and lignum.

Hattah Lakes in Victoria will receive 6 GL. These lakes received Commonwealth water on two occasions last year, once in autumn, the other in spring. This water will be supplemented by the addition of 5 GL from *The Living Murray* program.

Lake Wallawalla, 85 km west of Mildura in Victoria will receive 12 GL of Commonwealth environmental water, a first for this particular site. Watering is aimed at restoring a diverse habitat which in turn provides drought refuge to a range of waterbirds and other water-dependant species. In addition, the white-bellied sea eagle, identified as rare in Victoria as well as being listed on the China–Australia Migratory Bird Agreement (CAMBA) has used the area for seasonal breeding. Conservation of severely stressed river red gums, which provide critical habitat for the regent parrot, and black box woodlands that fringe the lake are also identified as potentially receiving benefit from this watering.

More information about the Australian Government's environmental watering program can be found at: www.environment.gov.au/water/policy-programs/environment/index



Acid sulfate soils such as this at Lake Alexandrina are being targeted through actions such as grass seeding which helps to manage the acidification risk by stabilising the soil and providing organic material, returning carbon to the sediment. (N Sloane & DEWHA)

Coorong and Lakes Albert and Alexandrina (SA) – Long-Term Plan

- The Australian Government has committed \$200 million to develop and implement an enduring solution to the environmental problems facing the Lower Lakes and Coorong.
- \$10 million of this is for a feasibility study to investigate management options and develop a Plan for the Coorong, Lower Lakes and Murray Mouth.
- A draft of the Plan was released by the South Australian Government for public comment in December 2009. A final version of the Plan will be prepared using input from the public consultation.

Information about the draft Plan can be found at:
<http://www.environment.sa.gov.au/cllmm/murray-futures.html>

Lower Lakes Update - \$10 million Bioremediation and Revegetation project

Towards the end of 2009, several actions took place under the Australian Government's \$10 million Lower Lakes Bioremediation and Revegetation Project.

- Seeding commenced along the exposed lake bed of the Meningie foreshore with grasses commonly used in agricultural areas around Lake Albert.
- Up to \$220,000 was provided to the Milang Progress Association to establish the regional Lakes Hub, which opened in December 2009, to help coordinate the on-ground implementation of the project and play a role in keeping the community informed about the progress of the bioremediation works.

The Australian Government's \$10 million project is administered by the South Australian Government. For more information or to get involved in the project, contact the South Australian Department for Environment and Heritage's Coorong, Lower Lakes and Murray Mouth Projects Team on 1800 226 709, email: cllmm@deh.sa.gov.au or visit www.environment.sa.gov.au/cllmm

Raising the stakes in stakeholder engagement

- Stakeholder engagement is an important focus in 2009-10
- More than 550 people have attended information sessions so far
- Over 90 per cent of participants have said the sessions improved their understanding of Australian Government water reform
- Additional sessions will be held in 2010

The Department of the Environment, Water, Heritage and the Arts held 11 community information sessions throughout the Murray-Darling Basin from October to December 2009 aimed at improving community understanding of the *Water for the Future* initiatives.

All sessions were attended by senior managers in the Water Group able to talk with authority on programs and policies they directly manage. The events were also supported by the Murray-Darling Basin Authority, the Australian Government Department of Agriculture, Fisheries and Forestry, Centrelink, and State Government agencies involved with water.

The sessions appear to have been of value to attendees with most indicating they had improved their understanding of water reform policies and programs, would attend other sessions in the future, and they would recommend the sessions to friends and contacts.

Attendees indicated they appreciated the chance to speak directly with senior managers about issues of concern and felt they had an opportunity to raise any questions.

A total of 559 people attended the events, most were farmers involved in irrigated and non-irrigated agriculture.

Information about these "town-hall" meetings was disseminated through a number of means including ads in local and major rural newspapers and invitations to major stakeholder groups such as catchment management authorities, peak industry grower groups, as well as community organisations such as Lions and Rotary.



A farmer's boots at the door of the community information session at St George. (A Bagley & DEWHA)

People were also encouraged to invite their friends or contacts.

The events all followed a similar format - a short presentation followed by an open question and answer session and then a series of concurrent break-out topical discussion groups.

This format proved to be very successful as it allowed participants to interact with presenters to get more in-depth information on topics they were most interested in.

Break-out discussion sessions covered water purchasing, infrastructure upgrades, and the Murray-Darling Basin Plan.

All participants were requested to complete a feedback form at the end of the sessions for evaluation purposes. Ninety-two per cent of respondents said the sessions had improved their understanding "somewhat" or "a lot" about Australian Government water reform.

The department also benefited from being able to engage community members directly and to get first hand feedback about how people felt about *Water for the Future* policies and programs.

Additional Community Information Sessions - Watch this space

As a result of the success of the 2009 community information sessions, additional sessions will be held in the Basin this year. Details are being finalised, and will be available soon at <http://www.environment.gov.au/water/australia/community-input/information-sessions>

Communities actively working to secure their water - Strengthening Basin Communities

- Councils in the Murray-Darling Basin are preparing for a future with less water
- Change management planning for climate variability
- A conceptual model for groundwater

More than two million people live within the Murray-Darling Basin, accounting for around 10 per cent of Australia's population according to the ABS 2006 Census of Population and Housing. The Murray-Darling Basin's 11 largest urban centres hold a combined population of more than 830,000 people (ABS 2008).

Throughout the Murray-Darling Basin communities are facing a future with less water. To help communities address this challenge, the Australian Government has committed \$200 million to the *Strengthening Basin Communities* program, which supports projects that improve urban water security and reduce demand on potable supplies.

The planning component of the program aims to help communities in the Murray-Darling Basin develop a plan for a future with less water. In November 2009, 37 successful projects were announced under the planning component.

Two of the projects receiving funding are 'Change Management Planning for Climate Variability in the Namoi Catchment' and 'A Conceptual Model of Groundwater in the Mansfield Shire'.

Change Management Planning for Climate Variability in the Namoi Catchment

The Namoi Region of Councils in NSW has received \$760,000 to undertake change management planning for climate variability in the Namoi Catchment. The project involves:

- updating and/or creating new strategic plans to account for and manage future risks and scenarios related to water use and climate change;
- quantifying the value of water for all water users and planners (industrial, agricultural and domestic), as well as environmental and social indicators for the entire catchment;
- improving understanding by community stakeholders and local government councillors and staff of climate change science and possible future scenarios for water management;
- summarising forecast impacts of climate change for the region and ongoing monitoring of future scientific knowledge;
- establishing a social economic resilience model; and
- improving cross-sector engagement and communication on water planning for the entire catchment and its stakeholders.

A Conceptual Model of Groundwater in the Mansfield Shire

Mansfield Shire Council has received \$135,000 in funding to undertake a study into the interaction between the groundwater and surface water within the Shire. This will be done by investigating and assessing the current groundwater resources and preparing a conceptual model to ensure the long-term conservation, management and sustainable use of this resource.

The second component under the *Strengthening Basin Communities* program supports local government bodies and urban water service providers to implement water saving initiatives that improve urban water security by reducing demand on potable water supplies.

There are two funding rounds for the water savings initiatives component. The first round closed on Friday 6 November 2009 and applications are being assessed. A second round will be conducted in 2010-11 to enable local governments to apply for funding for water saving measures developed through the planning component.

For more information about the *Strengthening Basin Communities* program, phone 1800 218 478 (toll free) or email SBC@environment.gov.au.

*References can be found at the end of this document.



A water bird and its nest on Back Lake in the Gwydir Wetland System. World Wetlands Day 2010 acknowledges the current challenges the world's wetlands are dealing with in the face of climate change. (D Markovic & DEWHA)

Wetlands Australia Update 2010

Wetlands Australia Update 2010 brings together information and resources from across Australia relating to wetlands conservation, management and education.

To order your own copy or download the magazine, visit; <http://www.environment.gov.au/water/publications/environmental/wetlands/index.html>

The following extracts are from this year's publication.

Understanding aquatic biodiversity in the Lower Gwydir and the flow patterns necessary for its survival

Dr Glenn Wilson, School of Environmental and Rural Science, University of New England

The Lower Gwydir Wetlands in north-west New South Wales are one of the Murray-Darling Basin's key wetland areas.

Its conservation value is recognised by the number of privately-managed Ramsar sites at the end of the Gingham Watercourse and Lower Gwydir River. With the development of agriculture on the Lower Gwydir floodplain, and pressures from ongoing drought, it is critical to understand the distribution of aquatic biodiversity in this ecosystem, and the flow patterns necessary to maintain such species and populations.

NSW farmers enhance wetlands and production for the long-term

Libby McIntyre and Rodney Price, Aquatic Habitat Rehabilitation Unit, Industry and Investment NSW

A massive 96 per cent of New South Wales wetlands are located inland, west of the Great Dividing Range, and most are on privately-owned farming land. Since 2007, the Wetlands on Farms project, funded by the Australian and NSW governments, has formulated management plans for 84,680 hectares of the state's wetlands, collaborating with 52 separate landholders across eight inland catchments.

Each plan contains information about the catchment, regional and local hydrology, flora and fauna found on the property, property infrastructure and tenure, threats to the wetland and finally, actions and goal setting.

Vineyard on the River Murray cares for its Ramsar site

Kate Thorn, Banrock Station Conservation and Wetland Manager

Banrock Station is a former grazing property situated on the banks of the River Murray, about three hours' drive northeast of Adelaide, South Australia. It was purchased in 1995 at a time when it was suffering from significant overgrazing... It also includes a wetland that for 70 years had been permanently flooded with a largely stable water level due to the adjacent Lock and Weir 3 on the River Murray.

When the region was hit with severe drought, the site managers decided to reinstate a more natural ephemeral hydrological regime and voluntarily dried the wetland and instigated an ongoing wet and dry regime to rehabilitate the area.



On the 21 October 2002 Banrock Station Wetland Complex became Australia's 63rd Ramsar site. The Banrock Station Wetland Complex comprises of floodplain wetlands and the adjoining open mallee-box woodland community. (P Wainwright & DEWHA)

Inviting you to...

WetlandCare Australia National Art and Photography Competition 2010 Exhibition

When: Tuesday 2 February to Friday 12 February

Where: The CSIRO Discovery Centre, Clunies Ross Street, Acton, ACT.

CSIRO Discovery opening hours

Monday to Friday 9:00am to 5:00pm

Sunday 11:00am to 3:00pm (closed Saturdays)

There is a cost associated with CSIRO Discovery but the WetlandCare Australia exhibition is **free**.

The exhibition will then be touring around NSW. For venues

or more information please see www.wetlandcare.com.au

or contact WetlandCare Australia on (02) 6681 6169.

Water: H2O=Life

When: 3 December 2009 to 16 May 2010

Where: National Museum of Australia, Lawson Crescent, Acton Peninsula, Canberra, ACT.

Temporary Exhibition Gallery

Experience water like never before in this thought-provoking, entertaining and inspiring exhibition, Water: H2O=Life.

This exhibition takes a vivid and in-depth look at:

- the many ways water shapes life on Earth
- cultural and spiritual aspects of water
- pressing environmental issues
- actions we can take

Exhibition features:

- interactive displays
- live animals
- global perspectives
- Australia's water story

Admission fees apply

References for *Irrigation in Australia* article

Australian Bureau of Statistics, 2008, Year Book Australia 2008, *Feature article: Murray-Darling Basin, 2004-2005*, Cat. no. 1301.0, viewed 8 January 2010

<http://www.abs.gov.au/ausstats/abs@.nsf/7d12b0f6763c78caca257061001cc588/d53408834d6c846fca2573d2001066f3!OpenDocument>

Australian Bureau of Statistics, 2008, Year Book Australia 2008, *Feature article: Irrigation of Australian Farms*, Cat. no. 1301.0, viewed 8 January 2010

<http://www.abs.gov.au/ausstats/abs@.nsf/7d12b0f6763c78caca257061001cc588/a1372142a0cca480ca2573d200111005!OpenDocument>

Australian Bureau of Statistics, 2008, Year Book Australia 2008, *Water*, Cat. no. 1301.0, viewed 8 January 2010

<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/C125801E8E8254DECA2573D200106637?opendocument>

Australian Bureau of Statistics 2009, Experimental Estimates of the Gross Value of Irrigated Agricultural Production, 2000–01 to 2006–07, 'Table 9: *Australia - Gross Value of Irrigated Agricultural Production, 2000–01 to 2006–07*', data cube: Excel spreadsheet, Cat. no. 4610.0.55.008

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4610.0.55.0082000-01%20to%202006-07?OpenDocument>

Ashton, D, Hooper, S, Oliver, M 2009, '*An economic survey of irrigation farms in the Murray-Darling Basin: Industry overview and region profiles 2007-08*', ABARE Research report 09.21, pp. i – 14, ABARE, Canberra.

Reference for *Communities actively working to secure their water* article

Australian Bureau of Statistics, 2008, Water in the Murray-Darling Basin - A statistical profile 2000-01 to 2005-06: *Chapter two - people in the Murray-Darling Basin*, Cat. no. 4610.0.55.007, viewed 15 January 2010

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4610.0.55.0072000-01%20to%202005-06?OpenDocument>