

# MURRAY-DARLING BASIN

## ENVIRONMENTAL WATER HOLDERS REPORT 2013

### Introduction

The purpose of this annual report is to provide information to members of the Ministerial Council and the public on the achievements, cooperative arrangements, key issues and other developments in the active management of environmental water in the Murray–Darling Basin.

The report is a joint collaboration of the state and Commonwealth agencies that hold and manage water entitlements for environmental benefit within the Basin. This includes the NSW Office of Environment and Heritage, the Victorian Environmental Water Holder, the South Australian Department of Environment, Water and Natural Resources, the Commonwealth Environmental Water Holder and the Murray–Darling Basin Authority—which manages entitlements held by the Commonwealth, NSW, Victoria, South Australian and ACT governments on behalf of The Living Murray program.

### Why is environmental water important?

Environmental water has been committed by state and Commonwealth governments to help reverse the decline in health of rivers, wetlands and floodplains in the Murray–Darling Basin. The Basin river systems are highly regulated and about 40 per cent of the natural river flow is diverted for consumptive use in an average non-drought year.

Water entitlements are used by environmental water managers to improve water quality, increase native fish and bird populations and promote the growth of native vegetation, among other benefits. By protecting and restoring rivers, wetlands and floodplains within the Basin, environmental water holders and managers also help maintain strong communities and a productive economy.

While the majority of environmental water in the Basin is 'rules-based' water committed through state water management plans, this report focuses on the smaller subset of 'held' and 'discretionary' environmental water that can be actively managed to meet environmental objectives in a flexible and responsive way.

Significant environmental benefits have also been achieved for rivers, wetlands and floodplains in Queensland, NSW, Victoria and South Australia by ensuring environmental water is left in-stream, rather than extracted for consumptive use.

### Focus of watering in 2012-13

In 2011–12, environmental water use was focussed on supporting the recovery of the Basin following the long-term drought conditions prior to 2010. In 2012–13, environmental water holders and managers have sought to build on the Basin's positive ecological response to wet conditions over the past two years. It is important to capitalise on good storage volumes and environmental water availability in wetter years in order to build ecological resilience—the ability of river, wetland and floodplain ecosystems to withstand and recover from the impact of future droughts.

As shown in Figure 1 on the following page, the amount of held and discretionary environmental water delivered in the Basin by environmental water holders since 2005–06 has continued to increase over the past few years. Environmental water use in 2012–13 has targeted the breeding, recruitment and migration of native fish, colonial bird breeding, vegetation health, water quality, the provision of refuge habitat, increasing connectivity between the river channels and their floodplains, and keeping the Murray Mouth open.

Scientific monitoring programs of environmental water use across the Basin are in varying stages of development and long-term trends will take



**Endangered fairy terns nesting at the Coorong in 2012 for the first time since 2006 due to improved conditions.**

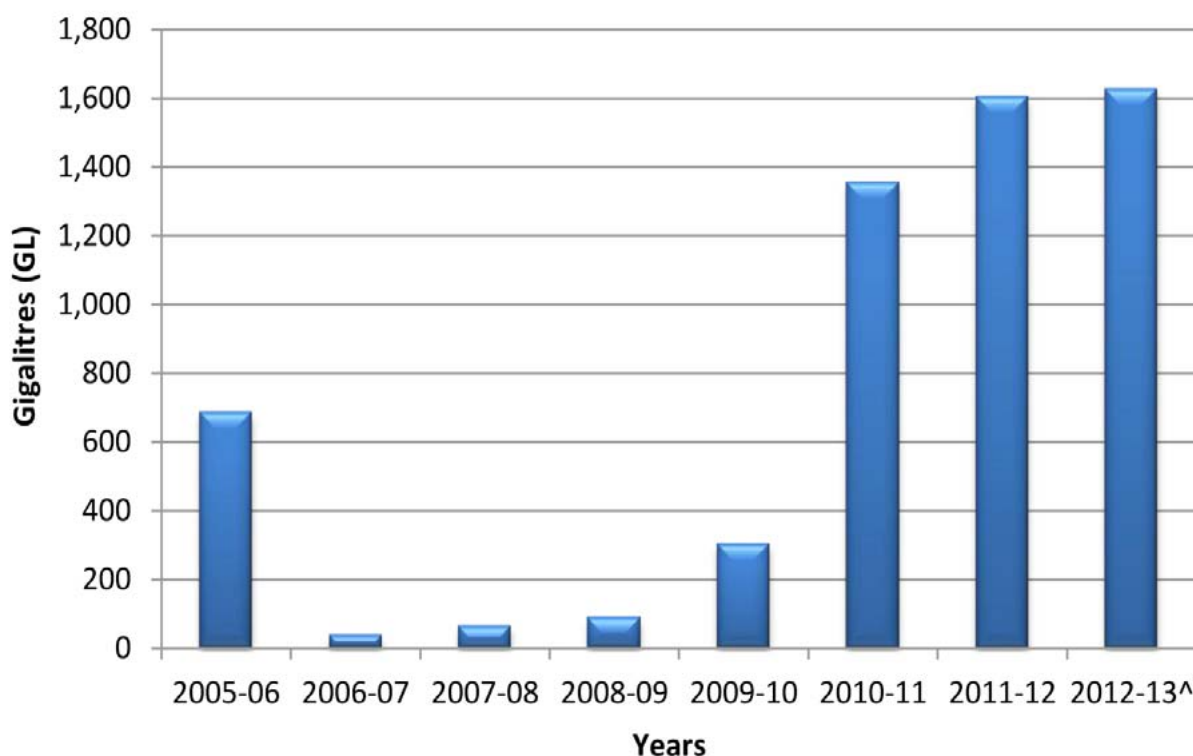
Photo by Pamela Gillen

time to emerge. However, results from studies undertaken in 2011–12 and 2012–13 provide further evidence of positive results achieved through the active use of environmental water.

For example, in 2011–12 the Commonwealth Environmental Water Holder and the NSW Office of Environment and Heritage provided over 60 gegalitres (GL) to a number of waterways within the Edward–Wakool system. Monitoring by Charles Sturt University showed that the environmental water promoted the reproduction of native carp gudgeon (a food source for large bodied native fish), as well as increasing the diversity of zooplankton and providing refuge habitat for fish and macroinvertebrates during a natural blackwater event.

Monitoring by the South Australian Research and Development Institute and others found that the delivery of 463 GL of environmental water to the Lower Murray by the Commonwealth Environmental Water Holder and The Living Murray program in the summer of 2011–12—in addition to flows from the mid-Murray and Murrumbidgee—helped to increase the exportation of salt from the Basin and prevented seawater intrusion at the Murray Mouth. The delivery of environmental water also assisted the spawning of golden perch and silver perch, while lower salinities facilitated a marked increase in species such as the smallmouthed hardyhead in the Coorong South Lagoon. In comparison to previous years, increased recruitment of diadromous fish (which migrate between fresh and salt water) was recorded at the barrage fishways.

**Figure 1: Water used by environmental water holders since 2005-06~**



~ Includes water used by the signatories to this report. The figures include 'held' environmental water as well as 'discretionary' planned environmental water (e.g. the Gwydir Environmental Contingency Allowance and the Macquarie, Murrumbidgee and Barmah-Millewa Environmental Water Allowances). Note that these figures do not show Wimmera releases and that The Living Murray also has 363 GL of NSW entitlements that do not receive an allocation, but are designed to increase flows within the River Murray system.

^ 2012-13 figure is a use estimate up to 31 March 2013, which is subject to change.

## Local engagement in environmental watering

Cooperation is key to the ability of environmental water managers to deliver the significantly higher volumes of water that will be returned to the environment as a result of the water recovery initiatives that support implementation of the Basin Plan. Environmental water managers engage with local community groups and landholders to ensure environmental watering actions realise their full potential. The benefits of local engagement include increased knowledge of on-ground conditions, improved understanding of regional priorities and local issues, and the opportunity to develop new delivery and/or monitoring arrangements.

To strengthen and build on the collaborative arrangements already in place, the environmental management framework set out in the Basin Plan's environmental watering plan is intended to:

- coordinate the planning, prioritisation and use of environmental water
- enable adaptive management
- facilitate consultation, co-ordination and cooperation between the Commonwealth and the states.

Environmental water holders and managers will continue to draw on local knowledge—including through existing bodies established by Basin states—to ensure the successful delivery of environmental water under the Basin Plan.

This may involve:

- tapping local knowledge and skills to inform decision-making on the size, timing and/or nature of river flows
- establishing processes to show how local input has influenced decision-making
- building local capacity to assist with environmental water management
- being transparent in managing environmental water
- working collaboratively and adaptively to achieve local goals as well as regional and Basin-scale objectives.

Local groups will continue to have the opportunity to influence environmental water management by participating in state processes contributing to implementation of the Basin Plan. For example, the Murray–Darling Basin Authority and Basin states will be seeking local input on the identification of state and Basin-scale annual priorities, as well as on the development of the Basin-wide environmental watering strategy and long-term environmental watering plans.

The Basin Plan's environmental watering plan has been deliberately designed to support adaptive management by allowing flexibility in its implementation. This will enable environmental water holders and managers to respond to new knowledge gained through local input as well as new scientific research and other sources of information.

## Community involvement delivers results

In spring 2012, consultation with landholders and representative community groups by the NSW Office of Environment and Heritage, Murray Catchment Management Authority and Commonwealth Environmental Water Holder led to the delivery of over 4 GL to Tuppall Creek, near Deniliquin. The Tuppall Creek landholders greatly assisted NSW environmental water managers to develop the watering objectives, delivery timing and flow release rates for the event and were directly involved in the monitoring program.

Environmental flows helped improve vegetation condition and water quality, as well as supporting the breeding of frogs such as the spotted marsh, barking marsh and Peron's tree frog. Monitoring results have shown that river red gum and black box trees surrounding the creek system have increased canopy cover and fresh growth, while water plants including rushes and sedges are also growing in abundance. The flows also have assisted the wetland vegetation to withstand the hot weather over summer.



**Landholder Jim Macdonald with daughter Grace during the environmental watering of Tuppall Creek in November 2012.**

Photo by Vince Bucello

The Tuppall Creek community is enthusiastic about future watering opportunities and the region has been identified as a potential site for environmental water delivery in 2013. To view a YouTube video about this watering event visit [www.youtube.com/watch?v=8A9evEHtfz8](http://www.youtube.com/watch?v=8A9evEHtfz8)



## Integrating land and water management

Environmental water holders are supporting the integration of land and water management to improve environmental outcomes for both terrestrial and aquatic ecosystems. One example involves the delivery of 0.85 GL of environmental water by the Victorian Environmental Water Holder to a wetland adjacent to the Murray Sunset National Park in 2013, filling it for the first time since 1993. Bird species have shown a terrific response to the environmental watering, with dozens of species including ducks and wedge-tailed eagles coming to inhabit the site.



**Waterbirds enjoying Ivan Robertson's wetland during environmental watering in early 2013.**

Photo by the Mallee Catchment Management Authority

This action complements conservation efforts by Ivan Robertson, whose grazing and cropping property adjoins the Murray Sunset National Park. With the support of the Commonwealth's Biodiversity Fund, Ivan is putting in place new conservation covenants and agreements, removing stock from 400 hectares, and restricting stock access to a further 1,600 hectares. Ivan has also ceased grazing stock on the nearby Wallpolla Creek frontage, protecting over 25 km of creek line, and has extended nearby native vegetation protection measures to include part of his property. Over the next five years, he will be working with nearby landholders to deliver a coordinated approach to controlling invasive pest species, particularly rabbits and pigs.

By reducing threats to native flora and fauna, land management actions such as these increase the likelihood that environmental watering will achieve its intended outcomes. This is one of the reasons why environmental water holders welcome opportunities to further improve the integration of land and water management activities.

## **The Murray Mouth during environmental water delivery (January 2013).**

Photo by SA Water

## The role of trade and carryover

To ensure maximum benefit for the environment, environmental water holders continually re-assess whether water should be used within the current year, carried over or traded (bought or sold). Carryover of water is provided for in regulated parts of the Murray–Darling Basin and allows entitlement holders to keep water in storages so that it can be used in subsequent years when it may be of greatest value to them.

Though it will vary from year to year, over the longer term it is expected that the percentage of environmental water carried over will be similar to that of other water users. To date, the largest environmental water holder in the Basin (the Commonwealth) has used a higher proportion of the water available to it over its four years of operations than the average of other water users. This means that more airspace has been created for further inflows and allocations to all users than would have otherwise been the case if Commonwealth use had been the same as average.

Environmental water holders also use trade to improve environmental outcomes. For example, by purchasing water at a different time or in a different system, or by using the proceeds to fund small structural works to improve water use or to fund the fees and costs associated with holding and delivering environmental water. While trade is likely to remain a relatively small component in the management of environmental water portfolios, it has the potential to benefit agricultural users because of differences in the demand for water between consumptive users and the environment.

Both NSW (through the NSW Riverbank program) and the Victorian Environmental Water Holder have traded allocations in the past. The Commonwealth Environmental Water Holder, The Living Murray program and South Australia are yet to trade, although the Commonwealth has released a discussion paper and consulted with interested stakeholders on the potential for trade of Commonwealth environmental water.



## The largest ever delivery of environmental water in the Lower River Murray

The River Murray system is a key focus of efforts to improve environmental outcomes through the collaborative management of environmental water at federal, state and local levels. Between July 2012 and June 2013, over 1000 GL held by the Commonwealth Environmental Water Holder (770 GL) and The Living Murray program (289 GL)—including return flows from the Victorian rivers—is expected to have been delivered.

The environmental water is being managed in a way that improves the connectivity of rivers of the southern Murray–Darling Basin, including those in the Goulburn, lower Darling, Campaspe, Murrumbidgee and Murray systems. The local and downstream environmental benefits of watering throughout the system and down into the Lower Lakes and Coorong include assisting native fish spawning and movement, improving the health of native vegetation, supporting waterbirds and increasing food sources for native species. The environmental water delivery will also increase the export of salt and nutrients out to sea through the Murray Mouth.

## New partnerships for environmental water delivery

In its first such arrangement with a non-government organisation, the Commonwealth Environmental Water Holder has signed an agreement with Nature Foundation SA Inc. to manage up to 50 GL of Commonwealth environmental water over five years to support wetland and floodplain rehabilitation in the lower River Murray.

Nature Foundation SA began delivering Commonwealth environmental water to its first site under this agreement in February 2013. The action at Clark's Floodplain in South Australia's Riverland region aims to support the recruitment of native vegetation within black box communities, subsequently providing habitat for native bird species.

Nature Foundation SA works in partnership with private landholders, irrigators, the community, private sector and government departments including the South Australian Department for Environment, Water and Natural Resources to achieve environmental benefits. The recent watering action was developed through partnership with an enthusiastic landholder and complements a range of land management activities such as weed and pest animal control and salt interception. To view a YouTube video about this watering event visit [www.youtube.com/watch?v=he\\_vW40HTRI](http://www.youtube.com/watch?v=he_vW40HTRI)



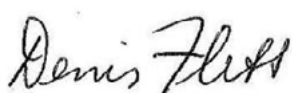
**The Clark's Floodplain project used sandbags and an aquadam (inflatable dam, pictured above) to retain water in the target areas.**

Photo courtesy of the Nature Foundation SA

## New directions for environmental water management

The Basin Plan is intended to facilitate an ongoing shift from largely local- and state-scale water management to a coordinated, basin-scale approach with strong local engagement. Active management of environmental water can be traced back to the 1990s in some states. However, the development over the past decade of programs such as The Living Murray and NSW Riverbank, along with the creation of the Victorian and Commonwealth environmental water holders, has increased opportunities for coordinated multi-site watering actions that seek to achieve

whole-of-system benefits from actively managed environmental water. While the need for smaller watering actions will remain, the growing focus on larger-scale actions is helping to improve the efficiency and effectiveness of environmental water delivery as well as the ability to achieve larger-scale environmental outcomes. Given the ecology of our rivers, this will not mean the same watering patterns each year, but rather that large assets may be watered every few years, building on the prevailing climatic and flow conditions in different parts of the Basin. This underscores the importance of cooperation between environmental water holders, river managers and the community.



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Victorian Environmental Water Holder



David Papps  
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Commonwealth Environmental Water Office



Jody Swirepik  
Executive Director  
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Tim Goodes  
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Derek Rutherford  
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**Government of South Australia**  
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**Australian Government**  
Commonwealth Environmental Water Office



**Australian Government**

