

The Commonwealth Environmental Water Holder acknowledges Australia's traditional owners and respects their continued connection to water, land and community. We pay our respects to them and their cultures and to their elders both past and present.



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Australian Government

Commonwealth Environmental Water Office

RESTORING AND PROTECTING THE

MACQUARIE RIVER VALLEY

2016-17

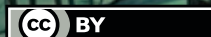


Above: Remains of an Aboriginal fire hearth mound in the Macquarie Marshes.

Cover: Halls Block wetland 2016

Back cover: Egret chicks. Photo: Debbie Love, NSW Office of Environment and Heritage.

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Environmental water is dedicated to improving the health of our rivers, floodplains and wetlands

The Macquarie River Valley contains diverse and rich natural environments that support domestic water use, agriculture, agribusiness, tourism and recreation, mining, viticulture, and the cultural values and practices of local Aboriginal Traditional Owners.

Environmental water is delivered to key locations to support the region's many unique native animals, plants, birds and fish that rely on healthy waterways including the internationally important sites situated within the Macquarie Marshes (which includes the Northern and Southern Nature Reserves and privately owned wetlands on the properties of Wilgara and U-Block).

The Valley contains a wide range of vegetation types including river red gum woodland, water couch grasslands, coolibah and black box woodlands, lignum swamps, reed swamps, cumbungi and river cooba. This diverse vegetation provides valuable habitat for 211 bird species, eight native mammals, 15 frog species, 56 native reptiles and 24 native fish.

The Aboriginal people of the upper and middle Macquarie catchment are the Wiradjuri, whose nation is the largest of Aboriginal Nations in New South Wales. On the plains, the Bogan River formed the boundary between the Ngemba and Ngiyampaa Nations to the west and the Wailwan Nation in the east. The country of the Wailwan people takes in most of the Castlereagh catchment. The north-east corner of the Castlereagh catchment, around the Wurrumbungles is the traditional land of the Gamilaroi.

Commonwealth environmental water is managed in partnership with state and local delivery partners to support rivers, floodplains and wetlands particularly those sites that support nationally threatened species under the *Environmental Protection and Biodiversity Conservation Act 1999* and are of international importance. We are also working toward the achievement of environmental outcomes as outlined in the Basin-wide Environmental Watering Strategy (part of the implementation of the Murray-Darling Basin Plan).

Summary of longer-term outcomes under the Basin-wide Environmental Water Strategy



Maintain base river flows.



Maintain current extent of river red gum and blackbox communities, along with improvements to condition and increased numbers of young trees. These communities are culturally significant to local Aboriginal people and provide food and habitat for many native animals.



Maintain the extent and improve the condition of lignum shrubland communities, which provide important waterbird habitat within the Macquarie Marshes.



Increase the period of growth of common reed, cumbungi and water couch communities in the Macquarie Marshes and maintain the extent of (and prevent decline) of non-woody vegetation communities near, or in, wetlands, streams and on low-lying floodplains within, or next to, the Bogan, Castlereagh, Macquarie and Talbragar Rivers.

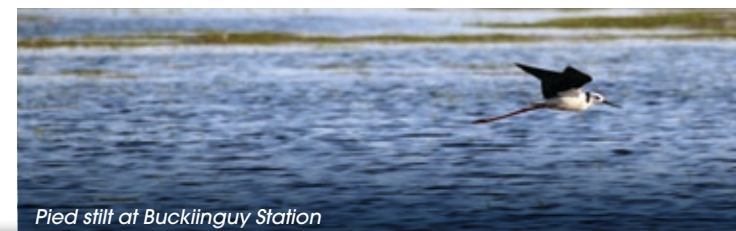


Maintain the current species diversity and increase abundance of waterbirds by supporting breeding opportunities.

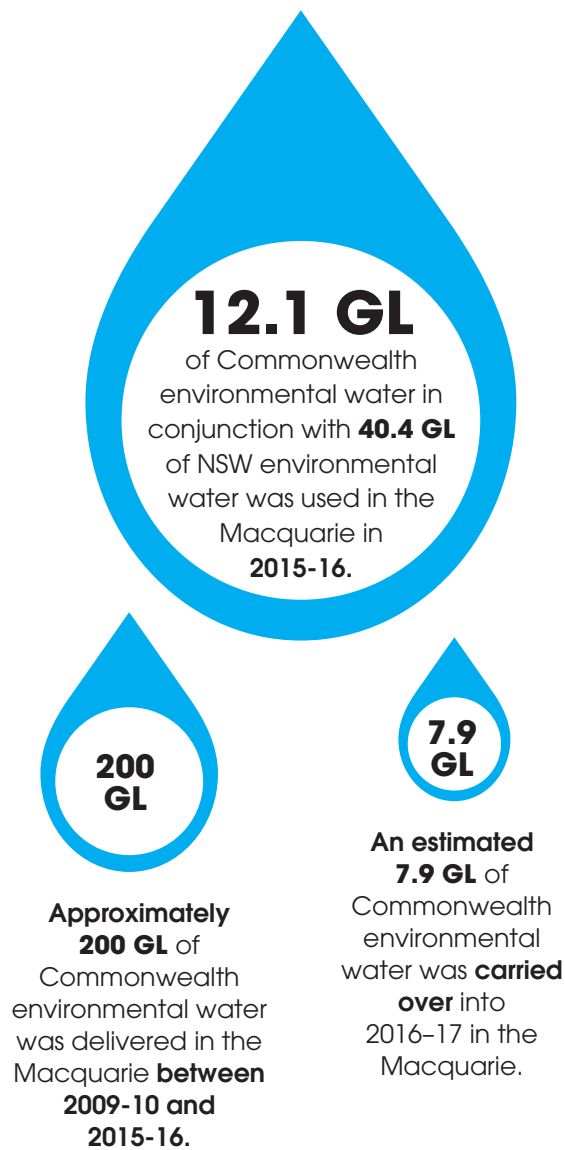


Prevent loss of native fish species by supporting regular recruitment (for short, medium and long-lived species) and increased movement and distribution.

Recruitment describes a species' (like native fish, frogs and turtles) survival through all life stages. Supported recruitment means that over the long-term a species' population features a range of ages.



Pied stilt at Buckleinguy Station



To date, no water allocations have been sold or purchased in the Macquarie River Valley.

Environmental water use in the Macquarie to date

Delivery of environmental water in this region is planned and managed by the Commonwealth Environmental Water Holder and New South Wales Office of Environment and Heritage in consultation with local communities, as part of the Murray-Darling Basin Plan implementation.

A combination of Commonwealth and NSW environmental water has been delivered to the Macquarie River and Macquarie Marshes since 2009-10, which has helped to support the inundation of core wetland areas and supported vegetation, fish and waterbirds.

Reduced water availability due to persistent hot and dry conditions prior to July 2016 slowed the recovery of wetland vegetation. Environmental demands for water are still high, despite good rainfall in June and July 2016. This rainfall has increased flows and additional environmental water provided will help to fill the river, wetlands and groundwater systems, supporting recovery of these areas following a series of dry years.

Commonwealth environmental water supply

The water acquired by the Australian Government, including through investment in more efficient irrigation infrastructure, and other measures, enables the Commonwealth Environmental Water Holder to help bring back some of the river flows needed to restore and protect the riverine and wetlands systems throughout the Basin's irrigation districts.

Commonwealth environmental water often supplements river flows, rainfall events and environmental water provided by the New South Wales Office of Environment and Heritage, as well as water used for irrigation and domestic purposes.

Depending on river operating rules, flow constraints and climatic conditions, the Commonwealth Environmental Water Holder can agree to:

- use water to meet identified environmental demands
- hold on to the water and carry it over for use in the next water year ('carryover')
- trade (buy or sell water) for equal or greater environmental benefit.

Our partners

The best approaches to environmental water management involve local knowledge and the latest science.

Commonwealth environmental water is planned, delivered and managed in partnership with a number of people and organisations in the Macquarie River Valley, including:

- New South Wales Office of Environment and Heritage
- Macquarie-Cudgegong Environmental Flows Reference Group
- New South Wales Department of Primary Industries – Fisheries
- WaterNSW
- New South Wales Department of Primary Industries – Water
- Macquarie-Cudgegong Customer Service Committee which includes local landholders and community members
- Murray-Darling Basin Authority

The Commonwealth Environmental Water Office regularly attends community forums, events and committees within the catchments and we are continuing to forge local partnerships that allow community groups, including Aboriginal Traditional Owners, to help shape the regional planning and management of environmental water delivery over the long term.

Please contact your local engagement officer Adrian Clements to learn more about our work or offer suggestions for the use of environmental water locally.

Adrian Clements

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Inundation in the Macquarie Marshes 2016



Bucklinguy Swamp



*Launching a fishing boat at Chifely Dam near Bathurst
Photo: Murray-Darling Basin Authority*

MACQUARIE RIVER VALLEY



Australian Government
Commonwealth Environmental Water Office

Water in the Macquarie River flows into the Barwon River and is regulated by two major storages in the upper catchment, Burrendong and Windamere dams.

Burrendong Dam supplies water for irrigation, stock and domestic needs along the Macquarie River and the lower Bogan River as well as providing significant flood mitigation capability. It also stores water for environmental

requirements in the Macquarie River and Marshes. Windamere Dam, on the Cudgong River upstream of Burrendong Dam, provides water for the towns of Mudgee and Gulgong and water user requirements along the Cudgong River.

The Macquarie Marshes is one of the largest and most important wetlands in the Murray-Darling Basin. Approximately 200,000 hectares of the Marshes has been listed as nationally important, with approximately 19,000 hectares also been listed as internationally significant under the Ramsar Convention. The Marshes are made up of freshwater channels and streams, with semi-permanent and ephemeral swamps and floodplains. The Marshes are an important breeding site for colonial waterbirds.

Like all water users, Commonwealth and state water holders and managers must consider variable seasonal conditions to manage the Basin's rivers, floodplains and wetlands.

Environmental water management involves careful consideration of the urgency of environmental demands each year (and over multiple years) and what can be achieved depending on water availability.

Water availability and conditions have been improving as the year progresses and as such, environmental watering planned for 2016–17 can be adapted in response to better water availability. Good rainfall and tributary flows during June and July 2016 have resulted in an increase in the volume of environmental water available for use in the Macquarie River and Marshes. Considering the improvements in water availability, currently we could:

- Deliver water with NSW to contribute flows that provide opportunities for the movement and spawning of native fish, such as golden, silver and spangled perch in the mid-Macquarie River, and maintain and improve permanent and semi-permanent wetland vegetation and ecosystem processes in the Macquarie Marshes. Environmental water will also help to build resilience in the system after several dry years in the catchment, and will increase connectivity and access to feeding and breeding habitat which will provide benefits for waterbirds, fish and frogs.

A fresh event describes an increase in levels of the river beyond the base flow, but does not fill the river or go over the bank.

Our assessment of environmental demands

The following reflects our consideration of the environmental conditions and has identified watering requirements, assessed as part of annual planning at the end of the 2015-16 water year.

Mid-Macquarie River (Burrendong-Marebone Weir): There is a high demand for a fresh event to support the movement and breeding of native fish, particularly golden and silver perch.

Lower Macquarie River (Marshes-Barwon River): There is a high demand for water to connect the Macquarie Marshes and the lower Macquarie River and the Barwon-Darling system, which has been reduced with increasingly dry conditions and low water availability over the past three years.

Macquarie Marshes (reed beds, lagoons, mixed marsh, water couch): There is a high demand for water for these vegetation communities as they require annual watering. Watering of the reed beds in the Northern Macquarie Marshes would support their recovery following fire in March 2016.

Macquarie Marshes (reeds, water couch, mixed marsh, river red gum forest, river cooba): There is a high demand for water as some areas have not been adequately watered since 2012-13.

Macquarie Marshes (river red gum woodland, river cooba, inner coolibah woodland): There is a high demand for water to support species such as river red gum woodlands particularly in the Southern and Northern Marshes, as they are not recovering well from the millennium drought and dry conditions over the past three years. Some species will require watering in the next year or two, to maintain their condition.



Magpie Geese at Gibson's Way

White-necked heron

Macquarie Marshes (outer river red gum, woodland, coolibah and black box): There is a low to moderate demand for water as some areas have not received sufficient inundation since 2010-11. There has been a decline in the condition of river red gums further away from watercourses.

Distributary creeks: Dry conditions and low water availability has made it difficult to provide environmental water to these areas. Demands in unregulated distributary creeks have only been partially met by stock and domestic water flows in recent years (for example, Marra Creek and Lower Crooked Creek).

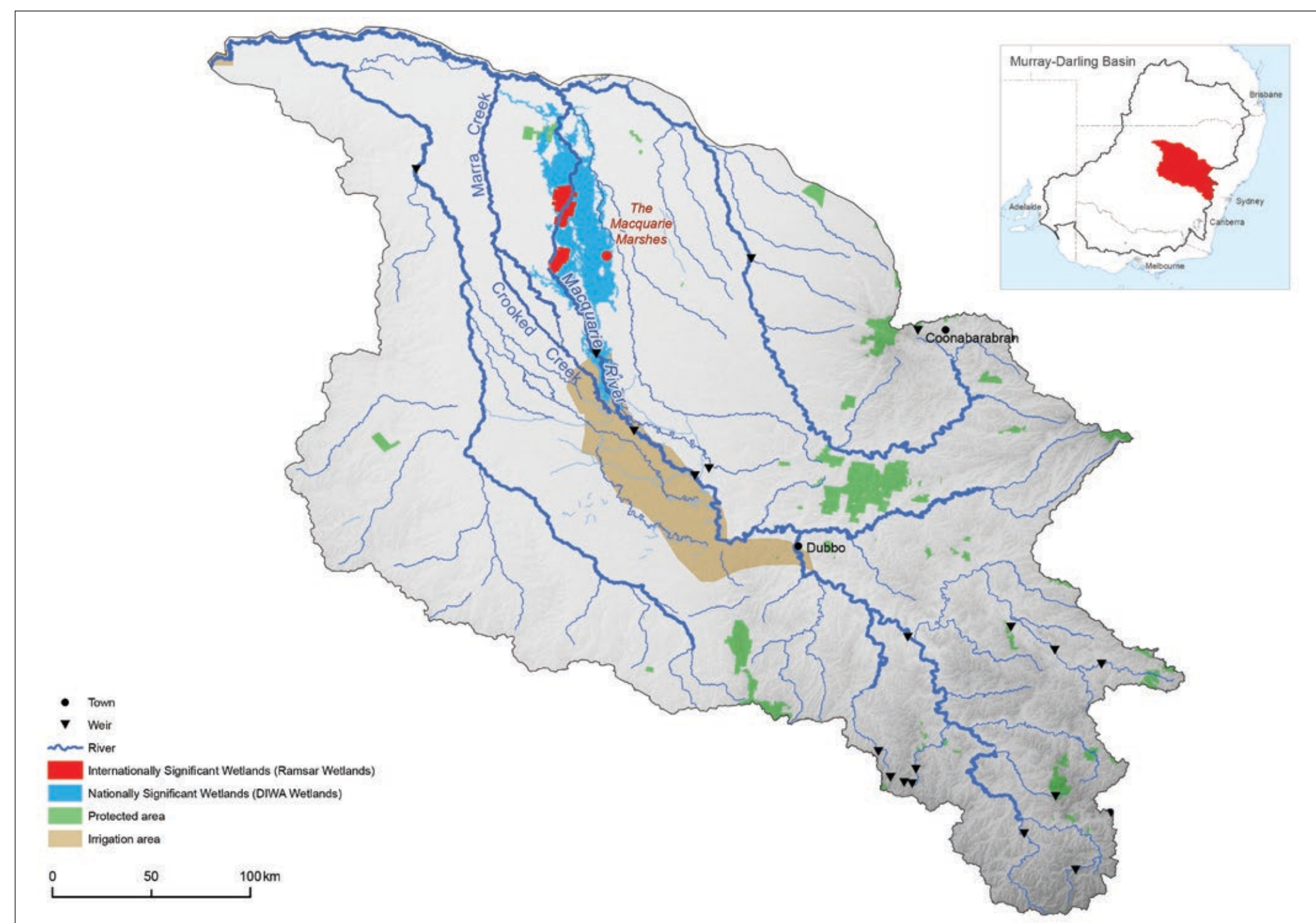
For further information on our planning process and for a copy of the Portfolio Management Plan for the Macquarie River Valley 2016-17 visit www.environment.gov.au/water/cewo.



Macquarie River



The view from Burrendong Dam in August 2015



Outcomes snapshot

Monitoring and evaluation activities are helping to identify what is working and what is not, with the results considered as part of the planning and decision-making process undertaken by the Commonwealth Environmental Water Office and our state and local delivery partners.

A short term monitoring project was undertaken in the Macquarie catchment in 2014-15 to assess the response of native fish to environmental watering. The Macquarie Marshes has also been selected as a priority research site for the Murray-Darling Basin Environmental Water Knowledge and Research Project. Details of these monitoring projects are available on our website: www.environment.gov.au/water/cewo/catchment/macquarie/monitoring.

Environmental flow monitoring undertaken in the Macquarie catchment is predominantly undertaken by the New South Wales Government. The results from monitoring since 2008 provide information on the responses to environmental watering actions, and changes (both positive and negative) of the Macquarie Marshes over time.

2014-15

The flow helped to maintain an estimated 7,683 ha of semi-permanent wetland vegetation (reedbeds, water couch, mixed marsh communities) and river red gum woodlands of the Northern and Southern Macquarie Marshes, with a positive groundcover response in core wetland areas that were appropriately inundated.

The watering provided access to breeding and refuge habitat for a variety of waterbirds, including four international migratory shorebird species—the sharp-tailed sandpiper, marsh sandpiper, common greenshank, and Latham's (Japanese) snipe.

The environmental flows increased the longitudinal connectivity, and in combination with appropriate water temperatures (as a result of the timing of the flow and the cold water pollution mitigation curtain at Burrendong Dam), supported recruitment of a number of native fish species including the nationally-listed Murray cod and the NSW-listed eel-tailed catfish. These species are also listed as key species in the Strategy.

2013-14

Environmental watering increased the longitudinal hydrological connectivity in the Macquarie River channel and Macquarie Marshes.

Environmental watering contributed to inundating an estimated 15,483 ha of semi-permanent vegetation communities including reedbeds, mixed marsh, water couch meadows and river red gum woodlands. This resulted in some positive responses in winter growing vegetation, and helped maintain healthy communities of water couch and mixed marsh.

The watering provided access to waterbird breeding and refuge habitat for a wide variety of bird species. A moderate diversity of waterbird species were observed in the Marshes during the event. There were limited numbers of international migratory shorebird species observed including marsh sandpipers, sharp-tailed sandpipers and Latham's (Japanese) snipe. Several threatened species were also observed in the Marshes including the Australian painted snipe, Australasian bittern, and superb parrots.