

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.



T: 1800 803 772  
E: [ewater@environment.gov.au](mailto:ewater@environment.gov.au)  
W: [www.environment.gov.au/water/cewo](http://www.environment.gov.au/water/cewo)

 @theCEWH

Postal address:  
GPO Box 787, Canberra ACT 2601



Australian Government

Commonwealth Environmental Water Office

RESTORING AND PROTECTING THE  
**GWYDIR RIVER  
VALLEY**  
2016-17



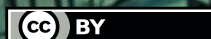
*Above: Traditional local Elder Jacko Woodbridge in the Gwydir Wetlands telling the Armidale Clontarf Academy boys tradition (emu) knowledge.*

*Photo by James Russell, Armidale Clontarf Academy*

*Cover: Gwydir Wetlands*

*Back cover: Mallowa area inundated by Commonwealth environmental water*

*All images by Commonwealth Environmental Water Office unless noted otherwise.*



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

The Gwydir River Valley contains diverse and rich environments. Its waterways are a source of water supply for domestic water use, extensive agriculture and irrigated production, the cultural values and practices of local Aboriginal Traditional Owners and tourism and recreational activities.

Environmental water is delivered to key locations to support the region's unique native animals, plants, birds and fish that rely on healthy waterways including internationally and nationally important wetlands.

The Gwydir River Valley is home to 60,000 hectares of wetland vegetation, including internationally and nationally significant sites, which provide habitat for rare, endangered and vulnerable species including the Australian bittern, silver perch and the painted snipe. The Gingham and Lower Gwydir (Big Leather) watercourses form an inland terminal wetland delta system which contains the largest stand of the critically endangered marsh club-rush in New South Wales. The nationally significant Gwydir Wetlands, on the

floodplain of the lower Gwydir River, are among the most extensive and significant semi-permanent wetlands in north-west New South Wales.

Commonwealth environmental water is managed in partnership with state and local delivery partners to improve connections between rivers, floodplains and wetlands, particularly, to those sites that support nationally threatened species under the *Environmental Protection and Biodiversity Conservation Act 1999* and state-based legislation and wetlands of international or national significance. 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 Watering Strategy



Maintain base river flows, with the rivers experiencing more bank-full and 'fresh' events.

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.



Maintain current extent of river red gum and blackbox communities, along with improvements to condition and greater likelihood of young tree survival. These communities are essential for providing food and habitat for many native animals

across the Basin, and are culturally significant to local Aboriginal people.



Maintain the current extent of lignum shrublands and improve their condition in the Lower Gwydir.



Maintain the extent of non-woody vegetation communities near or in wetlands, streams and on low-lying floodplains, particularly maintaining marsh club-rush and water couch within the Gwydir Wetlands.



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



Create the right conditions to improve native fish spawning, movement between areas, and improve the age ranges and health of their communities.



Gwydir Wetlands. Photo: Murray-Darling Basin Authority



# 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.

# Environmental water use in the Gwydir River Valley to date

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

The millennium drought, coupled with river regulation, significantly affected the environmental condition of the Gwydir River Valley. Watering from 2010 to 2013 was targeted to restore, and then maintain the good condition of wetland vegetation, particularly key plant species such as water couch-spike rush and lignum shrubland. Three successive years of extended inundation saw the strong recovery of vegetation and supported native fish and frogs species at all stages in their lifecycles. Large numbers of colonial nesting waterbirds (predominantly ibis and egrets) also bred in the wetlands in response to widespread flooding across the lower Gwydir floodplains in 2011-12.

A drying sequence in 2013-14 was followed by widespread inundation of wetland vegetation in 2014-15. The committee that advises the New South Wales Government on managing

environmental water in the Gwydir, the Gwydir Environmental Contingency Allowance Operations Advisory Committee, agreed to follow natural cues to manage the Gwydir wetlands. As part of this strategy, a small amount of Commonwealth environmental water was used during the hotter months of last summer to top up the Gwydir and Mallowa wetlands. During 2015-16 the Commonwealth also contributed small amounts of water to support in-stream ecology and refresh refuge waterholes in the Gwydir River, Gingham Watercourse, Mehi River and Carole Creek.

A natural cues approach to environmental watering means that decisions on how and when water is delivered are guided by a range of environmental factors such as the weather and river flows. This means in dry years, low rainfall and river flows will see smaller environmental watering events than wet years, where high rainfall and river flows trigger a larger environmental watering event.

This year, proposed Commonwealth environmental watering will continue to support the region's unique native animals, plants, birds and fish.



Gwydir River

# Our partners

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

Commonwealth environmental water use is planned, delivered and managed in partnership with a number of individuals and organisations in the Gwydir Valley including:

- New South Wales Office of Environment and Heritage
- New South Wales Department of Primary Industries – Water
- WaterNSW
- New South Wales Department of Primary Industries – Fisheries
- Gwydir Environmental Contingency Allowance Operational Advisory Committee
- Northern Tablelands Local Land Services
- Eco Logical Australia
- 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 Rosemary Millward to learn more about our work or offer suggestions for the use of environmental water locally.

### **Rosemary Millward**

Local engagement officer –

Goondiwindi, QLD

M: 0418 210 389

E: [rosemary.millward@environment.gov.au](mailto:rosemary.millward@environment.gov.au)



*Wetlands on Old Dromana Station.  
Photo: Murray-Darling Basin Authority*



*Capeton Dam. Photo: Murray-Darling Basin Authority*



# GWYDIR VALLEY



Australian Government  
Commonwealth Environmental Water Office

The Gwydir Valley is in north-eastern New South Wales and is based around the Gwydir River. The River flows westerly from the Great Dividing Range near Armidale, towards the Barwon River.

The Gwydir River is regulated by the Copeton Dam which stores water for towns, stock, domestic use and irrigation. There are also many farm dams and ring tanks in the region.

The main tributary of the Gwydir River is the Horton River. Downstream of the region's largest town, Moree, the Gwydir River breaks into two major streams, the Gingham Watercourse and the Lower Gwydir or Big Leather Watercourse.

## Responding to environmental demands

**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.**

This involves careful consideration of the urgency of environmental demands each year (and from year to year and over multiple years) and what we believe can be achieved depending on water availability due to conditions.

The following scenarios for the use of Commonwealth environmental water in 2016-17 are based on our assessment of environmental demands during annual planning (in the context of targeted outcomes and watering requirements, watering history, asset condition and the available supply according to different scenarios).

**Gwydir wetlands (including Gingham Watercourse):** Environmental watering in the Gwydir Wetlands will continue to promote the recovery of wetland vegetation, provide habitat for threatened species as well as survival and reproduction opportunities for a range of waterbird and native aquatic species, such as fish, frogs, turtles and invertebrates.

Environmental watering will follow natural cycles of drying and wetting. If there is little water available, watering will normally focus on protecting semi-permanent wetland vegetation by delivering additional flows in response to naturally occurring river flows (supplementary flow events). If there is more water available, inundation can extend further to include flood dependant woodland and shrubland areas.

**Mallowa Wetlands:** Environmental watering has occurred in the last four of five years. Wetland vegetation is in a healthy, dynamic and resilient condition and is providing an important refuge from drought for foraging waterbirds.

Watering may contribute to the maintenance of the healthy state of wetland vegetation. However, as a drying phase is within requirements, a small volume of environmental water may only be provided during natural flow conditions.

**Mehi River:** Watering may contribute to supporting native fish; the extent of support is scalable according to the amount of water available. If there is a moderate amount of water available, there is high potential for a maintenance flow which can enhance the survival rates of juvenile fish.

**Carole Creek:** Similar to the Mehi River, watering in the Carole Creek may contribute to supporting native fish and other in-stream aquatic fauna like frogs and turtles.

**Gwydir River downstream of Copeton Dam:** There is moderate demand for water to improve the natural character of flows downstream of the dam. Under low water

availability it is likely that the demands of the Gwydir River downstream of Copeton Dam will be met by tributary flows and watering of other assets. However if there is a moderate amount of water available, watering could contribute to the restoration of the River's natural flow character.

**Dry river flows or bird breeding support contingency flows:** During dry conditions, when the river ceases to flow for an extended period and becomes impenetrable, there can be a high demand for environmental water to contribute to small baseflows to reconnect refuge pools and maintain water quality. In wetter times environmental water may be provided to contribute to support the successful completion of waterbird breeding events.

**Further information on our planning process and for a copy of the Portfolio Management Plan for the Gwydir Valley 2016-17, visit [www.environment.gov.au/water/cewo](http://www.environment.gov.au/water/cewo).**



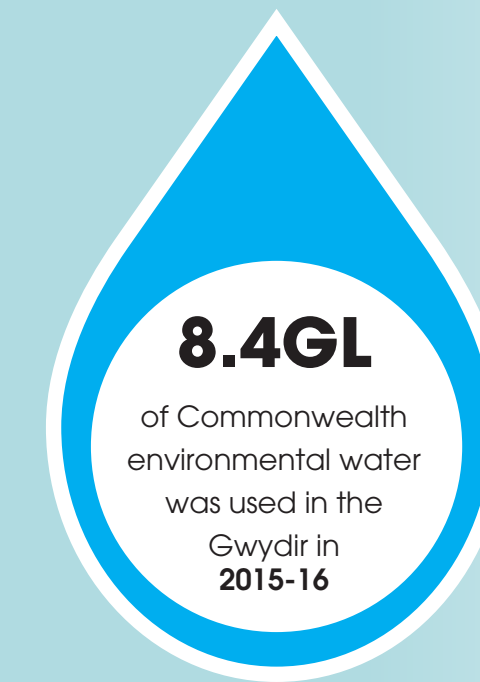
Moomin Creek. Photo: Mark Southwell



Combado Weir.



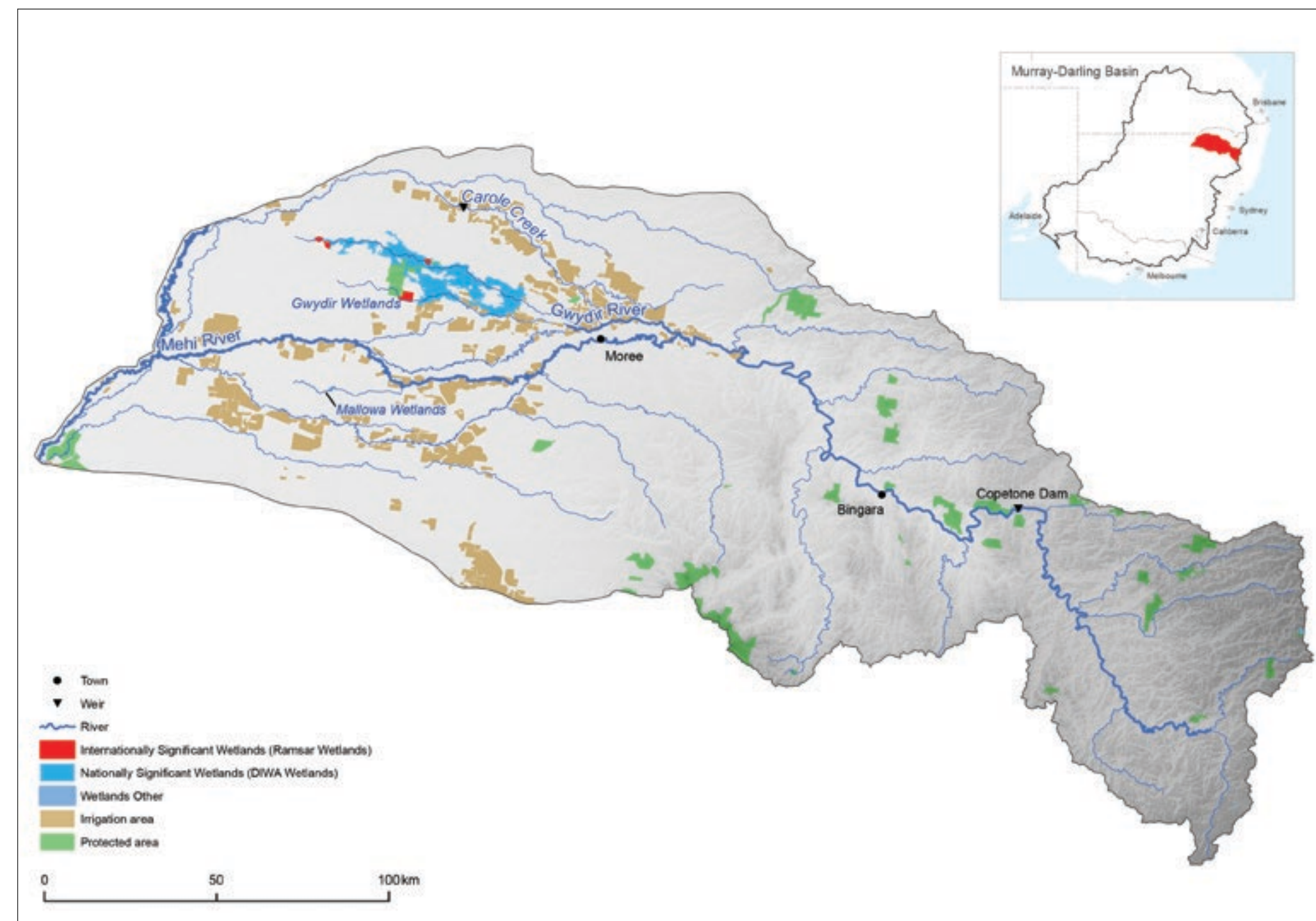
Turtles at Gingham Waterhole. Photo: Mark Southwell



An estimated 25.6GL of Commonwealth environmental water was being **carried over** to the 2016-17 water year in the Gwydir and a high security allocation of 4508 ML and up to 20.5 GL of supplementary allocation and are also available.

140GL of Commonwealth environmental water has been delivered to the Gwydir **between 2010-11 and 2015-16**

To date, there has been no specific requirements for the purchase of water allocations in the Gwydir Valley but 10 GL of Commonwealth environmental water was sold in January 2014.



## Outcomes snapshot

Scientific monitoring shows that water delivered to the Gwydir is providing food, habitat and breeding opportunities for many of the region's unique native fish, waterbirds, plants and wildlife.

Full monitoring reports are available each year on our website: [www.environment.gov.au/cewo/catchment/gwydir/monitoring](http://www.environment.gov.au/cewo/catchment/gwydir/monitoring).

### 2014-15

Environmental water inundated 6,342 hectares of the Gingham and Gwydir wetlands. Water delivered to the Mehi River and Carole Creek produced a flow pulse that reached the Barwon River, influencing river levels as far downstream as Bourke. This helped to maintain water quality and facilitated the transport of nutrients, organic matter, aquatic plants and micro-organisms between sites.

A diverse range of vegetation communities were inundated with environmental water and resulted with increased coverage of native species, such as water couch and a decreased cover of weed species like lippia.

An increase in waterbird species diversity and total abundance was observed at sites that received environmental water. This included seven species listed under international agreements such as Latham's snipe, sharp-tailed sandpiper, brolgas and magpie geese. Breeding was also recorded at a number of sites by species including the plumed whistling-duck and Australasian darter.

### 2013-14

Environmental watering in the Mehi River and Carole Creek allowed full connection to the Barwon River. This resulted in increased levels of dissolved oxygen and carbon throughout the Mehi River and Carole Creek, stimulating the food chain for aquatic species including yabbies and Murray cod. The connection with the Barwon-Darling also improved water quality in refuges and allowed fish passage between river systems.

Environmental water enabled breeding of spangled perch and bony bream in the Mehi River and Carole Creek.

Environmental water benefited the Mallowa Creek wetland, particularly River Cooba Lignum and Coolibah woodlands. There was also greater coverage of flat spike-sedge, common nardoo and other native plant species. This increased plant abundance strengthens the resilience of these communities to survive dry times and bounce back quickly when conditions improve.

Frog breeding was observed for four native species, the salmon-striped frog, long thumb frog, broad palmed frog and eastern sign-bearing froglet in the Mallowa Wetland.