

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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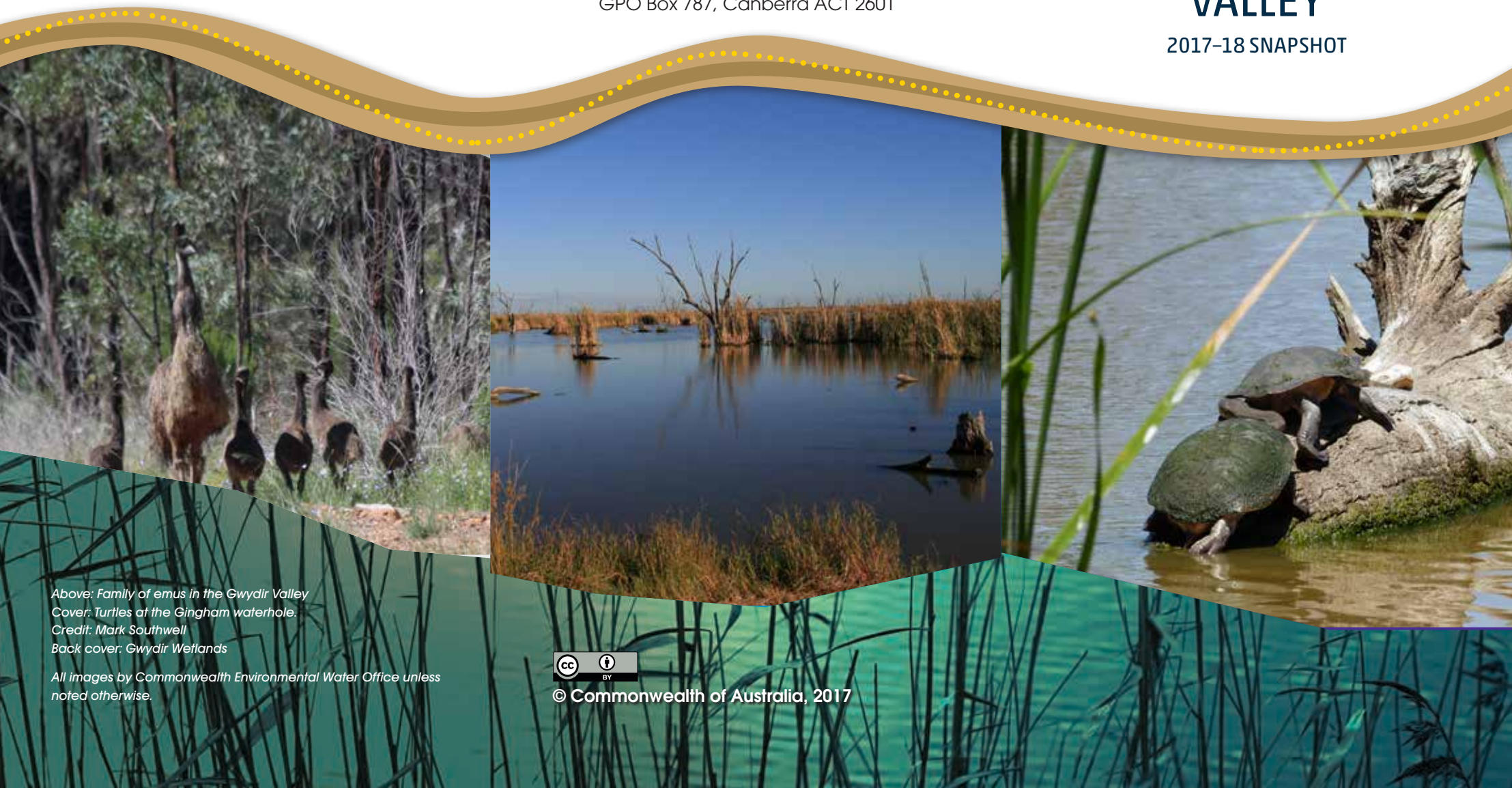
Australian Government

Commonwealth Environmental Water Office

RESTORING AND PROTECTING THE

# GWYDIR RIVER VALLEY

2017-18 SNAPSHOT



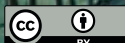
*Above: Family of emus in the Gwydir Valley*

*Cover: Turtles at the Gingham waterhole.*

*Credit: Mark Southwell*

*Back cover: Gwydir Wetlands*

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



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# We use environmental water to improve the health of our rivers, floodplains and wetlands

Throughout the Murray–Darling Basin, we deliver water to important locations to support the health of waterways and the many unique native plants, birds, fish and other animals that depend on them to survive and thrive.

The diverse and rich natural environments of the Gwydir River Valley supply water for domestic use, extensive agriculture and irrigated production, and support the cultural values and practices of Aboriginal traditional owners, as well as tourism and recreational activities.

The area's 60,000 hectares of wetland vegetation, including internationally and nationally significant sites, provides habitat for rare, endangered and vulnerable species including Australian bittern, silver perch and painted snipe. The Gwydir Wetlands, on the floodplain of the lower Gwydir River, are among the most extensive and significant semi-permanent wetlands in New South Wales. The Gingham and Lower Gwydir (Big Leather) watercourses form an inland terminal wetland delta system which contains the state's largest stand of critically endangered marsh club-rush.

Commonwealth environmental water is managed in partnership with state and local delivery partners to improve connections between rivers, floodplains and wetlands, particularly to sites that support nationally threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* and state legislation, and wetlands of international and national significance. This water contributes to achieving 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 and increase the number of bank-full and 'fresh' events. A fresh event is an increase in a river's water levels beyond the base flow. It does not fill the river or go over the bank.



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



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



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 and streams and on low-lying floodplains, particularly marsh club-rush and water couch in the Gwydir Wetlands.



Maintain the current extent of river red gum and black box communities, along with improving their condition and increasing the survival rate of young trees. These communities provide essential food and habitat for many native animals across the Basin, and are culturally significant to local Aboriginal people.



Swamp Wallaby Gwydir. Credit: Dan McKenzie Ecological

# Water for the Gwydir River Valley environment to date

The environmental need for water is a reflection of the health of rivers, wetlands and floodplains, and the plants and animals they support. Ecological health is influenced by flows and conditions in the past. In some cases this can date back many years.

The millennium drought, coupled with river regulation, significantly affected the environmental condition of the Gwydir River Valley. Watering from 2010 to 2013 was targeted first to restore and then to 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 enabled the strong recovery of vegetation and supported native fish and frog 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 gave way to widespread inundation of wetland vegetation in 2014–15. Following this, the Gwydir Environmental Contingency Allowance Operations Advisory Committee, which advises the New South Wales Government on managing water for the environment in the Gwydir, suggested following natural cues to manage the 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. In 2016–17 natural floods in spring provided a good opportunity to inundate large areas of wetlands during summer in order to benefit wetland vegetation, birds and fish.

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 delivering smaller amounts of environmental water in dry years, in line with low rainfall and river flows, and larger environmental watering events in wet years, in line with high rainfall and river flows. This approach recognises the wetting and drying cycles that wetlands will naturally go through.

In 2017–18, environmental water will be used to support the Gwydir's unique native plants, birds, fish and other animals by responding to natural flow events.

# Supplying water for the environment

The water acquired by the Australian Government through investment in more efficient irrigation infrastructure and other measures enables the Commonwealth Environmental Water Holder to provide river flows needed to restore and protect the river and wetland systems throughout the Basin's irrigation districts.

We often use this water to supplement natural river flows and rainfall events, and environmental water provided by the New South Wales Office of Environment and Heritage.

Depending on river operating rules, flow constraints and climatic conditions, the Commonwealth Environmental Water Holder can decide 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 benefits.





# Our partners

**The best approaches to managing water for the environment involve local knowledge and the latest science.**

Commonwealth environmental watering is planned, delivered and managed in partnership with individuals and groups in the Gwydir Valley. Partners include:

- the New South Wales Office of Environment and Heritage
- the New South Wales Department of Primary Industries
- WaterNSW
- the Gwydir Environmental Contingency Allowance Operational Advisory Committee
- Eco Logical Australia
- the Murray-Darling Basin Authority.

The Commonwealth Environmental Water Office regularly attends community forums, events and committees within the catchments. We continue to forge local partnerships to ensure that community groups, including Aboriginal traditional owners, have the opportunity to help shape the regional planning and management of our delivery of environmental water over the long term.

To learn more about our work or offer suggestions for the use of environmental water please contact your local engagement officer on M: 0437 141 495 or E: [ewater@environment.gov.au](mailto:ewater@environment.gov.au)



*Sharp-tailed Sandpiper at Gwydir. Credit: Peter Knock Ecological*





# GWYDIR VALLEY REGION



Australian Government  
Commonwealth Environmental Water Office

The Gwydir Valley is in north-eastern New South Wales. The Gwydir 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 in 2017–18

The following plans for 2017–18 are based on careful consideration of the urgency of water needs from year to year and over multiple years, and what we believe can be achieved, depending on water availability.

Each year we assess environmental demands 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 and support survival and

reproduction opportunities for a range of waterbirds and native aquatic fish, frogs, turtles and invertebrates.

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. If there is more water available, inundation can extend further to flood-dependent woodland and shrubland areas.

**Mallowa Creek wetland:** The 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 maintaining this healthy state. However, as the wetland needs a drying phase, we may provide only a small volume of environmental water during natural flow conditions.

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

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

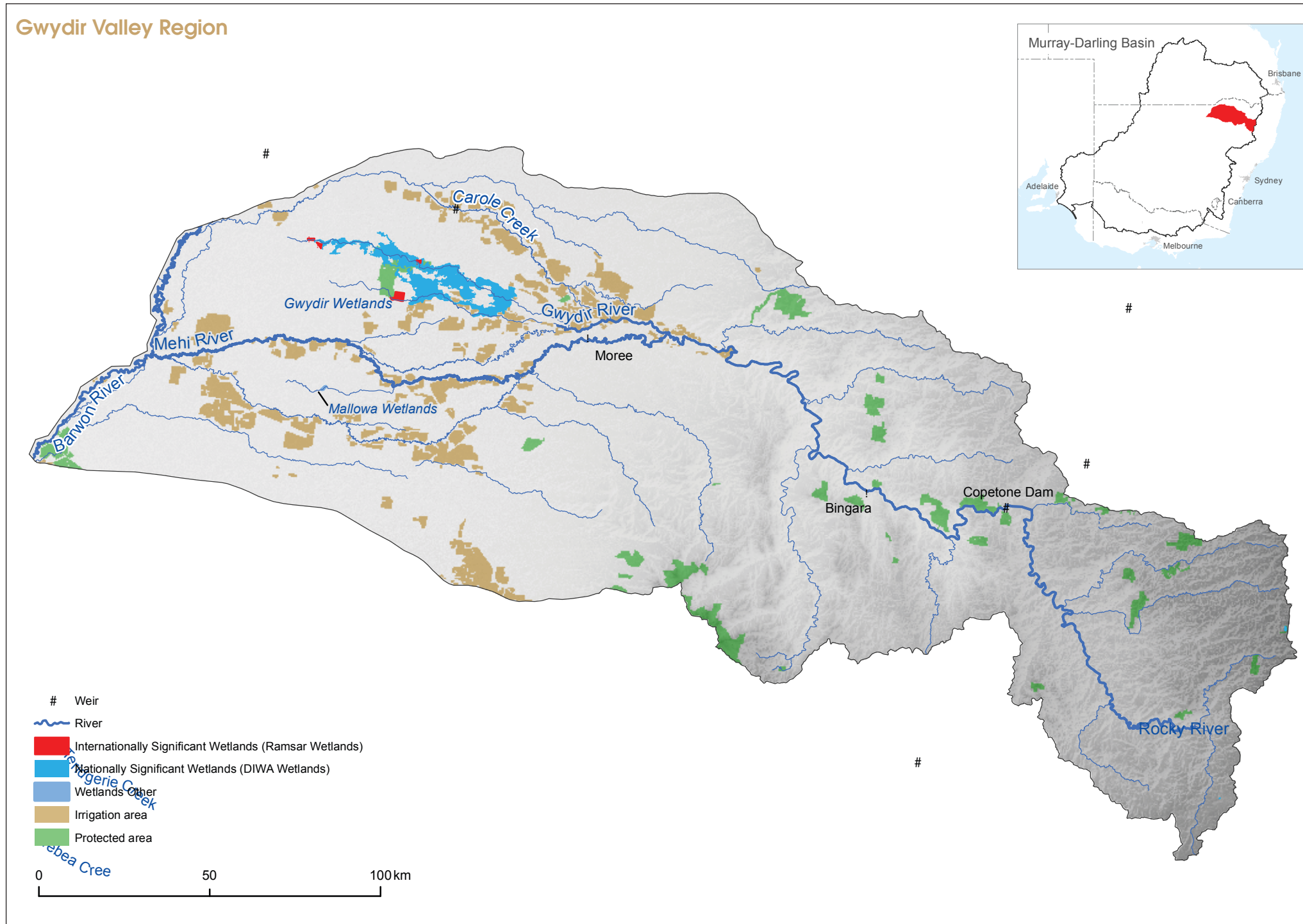
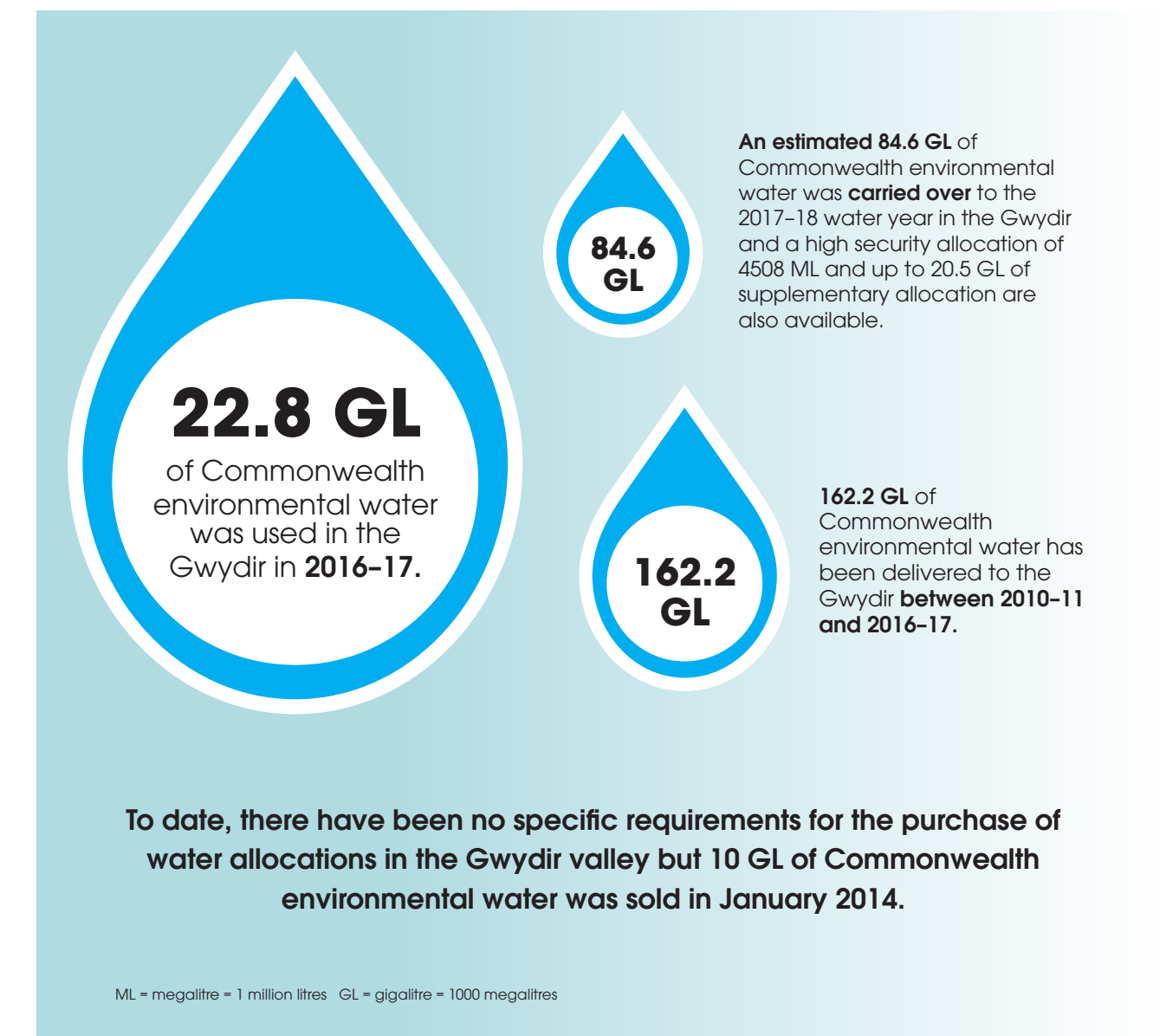
### Gwydir River downstream of Copeton Dam:

There is moderate demand for water to improve the natural character of flows downstream of the dam. If water availability is low, it is likely that demand will be met by tributary flows and watering of other assets. However, if a moderate amount of water is available, watering could contribute to restoring the river's natural flow character.

### Dry river flows or bird-breeding support

**contingency flows:** During dry conditions, when the river stops flowing for an extended period and reverts to waterholes that are drying out, there is high demand for environmental water to contribute to small base flows to reconnect refuge pools and maintain water quality. In wetter times, we may provide environmental water to support waterbird breeding.

**For more information on our planning process, see the 2017–18 Portfolio Management Plan for the Gwydir Valley at [www.environment.gov.au/water/cewo](http://www.environment.gov.au/water/cewo)**



## 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 on our website: [www.environment.gov.au/cewo/catchment/gwydir/monitoring](http://www.environment.gov.au/cewo/catchment/gwydir/monitoring)**

### 2016–17

- Commonwealth environmental water provided to wetlands supported semi-permanent vegetation communities and connectivity and further recovery of vegetation in the Mallowa Creek wetland.
- During large spring flows, Commonwealth environmental water supported in-stream functions in Carole Creek and the Mehi River during a period of access to supplementary water.

### 2015–16

- River channels:** Environmental water increased longitudinal connectivity in Carole Creek and the Gwydir, lower Gwydir, Gingham and Mehi river channels during 2015–16. Water released down these channels in April 2016 provided critical connection between isolated refuge pools, sustaining native fish, invertebrates and other aquatic animal communities. Environmental water improved water quality, stimulated primary productivity and helped to maintain aquatic invertebrate diversity in the region.
- Wetlands:** Environmental water maintained waterholes in the Gingham Watercourse and Gwydir Wetlands that contain several threatened species of native fish. Residual inundation in the Gingham and Gwydir wetlands from environmental water delivered in 2014–15 helped maintain native vegetation communities and provided habitat for waterbirds and frogs early in 2015–16. In the Mallowa system, 204 ha of wetlands were inundated with environmental water during 2015–16, promoting the growth of native vegetation communities.

### 2014–15

- Environmental water inundated 6342 ha 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 and connecting fish communities. This helped to maintain water quality and facilitated the movement of nutrients, organic matter, aquatic plants and micro-organisms between sites.
- Diverse vegetation communities were inundated with environmental water, resulting in increased coverage of native species such as water couch and decreased cover of weed species like lippia.
- Increases in waterbird species diversity and total numbers were observed at sites that received environmental water. This included seven species listed under international agreements, including Latham's snipe, sharp-tailed sandpiper, brolgas and magpie geese. Breeding by plumed whistling-duck and Australasian darter was also recorded.

### 2013–14

- Environmental water in the Mehi River and Carole Creek allowed full connection to the Barwon River. This resulted in increased levels of dissolved oxygen and carbon, 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. This enabled breeding of spangled perch and bony bream in the Mehi River and Carole Creek.
  - Environmental water benefited the Mallowa Creek wetland, particularly lignum, river cooba, and coolibah woodlands. There was also greater coverage of flat spike-sedge, common nardoo and other native plants. Increased plant abundance strengthens the resilience of these communities to survive dry times and bounce back when conditions improve.
- Breeding of four native frog species—salmon-striped frog, long-thumbed frog, broad-palmed frog and eastern sign-bearing froglet—was observed in the Mallowa Creek wetland.