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

BORDER RIVERS

2017–18 SNAPSHOT

Above: Booberanna Creek
Cover: Upper Dumaresq River
Back cover: Royal Spoonbills nesting in an inundated anabranch in the Border Rivers

All images by Commonwealth Environmental Water Office unless noted otherwise.

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

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

The Border Rivers region contains diverse and rich natural environments that support domestic water use, extensive agriculture and irrigated production, and the cultural values and practices of Aboriginal traditional owners, as well as tourism and recreational activities.

Water is delivered to key environmental locations to support the region's many unique native animals, plants, birds and fish that rely on healthy waterways, creeks and wetlands, including nationally significant wetlands.

The Border Rivers region is abundant with native fish, supporting at least 16 species including the threatened Murray cod, silver perch, purple-spotted gudgeon, olive perchlet and eel-tailed catfish. After large floods, the region's many billabongs, lagoons and wetlands support waterbirds that are nationally and internationally significant, including great egrets, brolgas, Australian painted snipe, black-necked storks, magpie geese and royal spoonbills.

The Morella Watercourse, Boobera Lagoon and Pungbougal Lagoon complex is a nationally significant wetland. Boobera Lagoon—considered one of the most important Aboriginal places in eastern Australia—is one of the few permanent waterbodies in the northern Basin, providing important drought refuges.

The lower reaches of the Severn River in Queensland and the Severn River in New South Wales are also significant areas, supporting a large range of native fish and providing refuge pools for these species in times of drought.

Commonwealth environmental water is managed in partnership with state and local delivery partners to improve connectivity across the catchment. In particular, delivery of environmental water may target 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 contribute to increased flows in the Barwon–Darling system.
- Prevent loss of native fish species by supporting regular recruitment (for short-, medium- and long-lived species) and increased movement and distribution. Recruitment means the survival of a species through all life stages and into the next generation. Successful recruitment means that, over the long term, the population of the species spans all age groups. This is particularly important in the Macintyre River from Mungindi to the junction of the Severn River (New South Wales), the floodplain lagoons between Goondiwindi and Boomi, and the Severn River (Queensland) in Sundown National Park.
- Maintain the current species diversity and increase abundance of waterbirds by supporting breeding opportunities. In the Border Rivers Valley, Commonwealth environmental water could be used to improve habitat and foraging opportunities for waterbirds but is unlikely to significantly contribute to large-scale breeding events.
- Maintain the current extent of river red gum, black box and coolibah communities, along with improvements to condition and greater likelihood of young tree survival. These communities provide essential food and habitat for many native animals across the Basin and are culturally significant to local Aboriginal people.
- Maintain the extent of non-woody vegetation communities near or in wetlands and streams and on low-lying floodplains, and improve the condition of lignum shrubland communities of the lower Border Rivers.

Water for the Border Rivers environment to date

Environmental demand and water availability influence the use and management of environmental water. This water can be used for reasons ranging from avoiding environmental damage to improving ecological health, depending on how much water is available and the environmental need of the system.

In 2016 and 2017 the Border Rivers region experienced the largest flow events since January 2013. These included a series of medium to high flows in August to October 2016, with additional high flows in March and April 2017 following ex-cyclone Debbie. High flows comprised both in-channel pulses and overbank flows. An in-channel pulse is an increase in river levels beyond the base flow, filling the river channel and benefiting near-channel habitats.

These flow events occurred when they were required by fish and waterbirds for breeding, and achieved multiple environmental outcomes across the catchment. In the Dumaresq River there was evidence of large-scale breeding of Murray cod, while in the Severn River (New South Wales) a good number of small- to large-bodied fish were recorded. Flow connectivity between the wetlands and floodplains in the lower catchment helped maintain native vegetation communities, which waterbirds used for nesting. Connectivity between the main channel and wetlands is likely to have assisted fish recruitment by providing more areas for breeding and increasing food availability.

During 2013–2016, conditions were generally dry in the Border Rivers. In 2013–14, catchment conditions were characterised by well below average rainfall and higher temperatures. During this period, water for the environment (NSW and Commonwealth water) was delivered as a stimulus flow for a second successive year. In 2014–15 and 2015–16, conditions remained dry but small local rainfall events provided a series of small freshes throughout the system.

In 2010–11 the Border Rivers catchment experienced very wet conditions, including flooding as a result of significant rainfall. This assisted ecological recovery of the system following the millennium drought. Moderate to wet conditions continued in 2011–12 and 2012–13 in the lower Border Rivers.

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 river systems throughout the Basin's irrigation districts.

This water is often used to supplement large rainfall events and water provided to the environment 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 benefit.

Planned environmental water is water that has been set aside for environmental purposes once the cap (maximum limit) on the extraction amount for consumptive use has been reached. This ensures that water remains in the river to support a healthy river system.

An unregulated flow event is when river flow does not come from a controlled release of water from a dam or weir (government owned or operated water storages). Rather, the river flow reflects rainfall and run-off from unregulated catchment areas flowing unimpeded through the system.

Regulated flow is a river flow released from a dam or storage that has been 'ordered' by a customer who holds a water entitlement.

Our partners

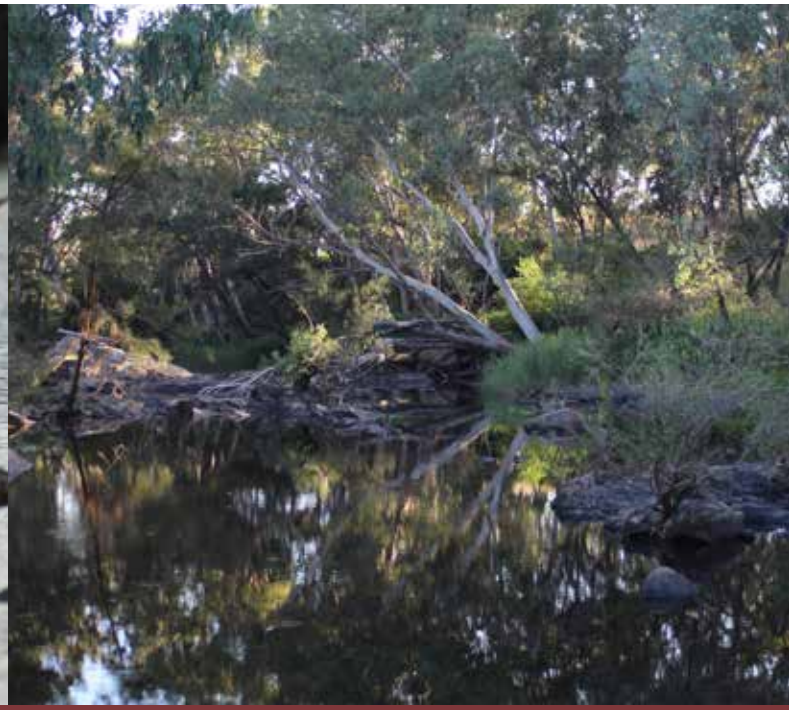
The best approaches to managing water for the environment involve local knowledge and the latest science.

Commonwealth environmental watering is planned, delivered and managed in partnership with people and organisations in the Border Rivers region in Queensland and New South Wales. Partner organisations include:

- the Queensland Department of Natural Resources and Mines
- the Queensland Department of Science, Information Technology and Innovation
- the Queensland Department of Agriculture and Fisheries
- the New South Wales Office of Environment and Heritage
- the New South Wales Department of Primary Industries
- Local Land Services—Northern Tablelands
- the Queensland Murray–Darling Committee Inc
- WaterNSW
- the Border Rivers Environmental Water Network
- Border Rivers Food and Fibre
- the Murray–Darling Basin Authority

The Commonwealth Environmental Water Office regularly engages with the local community. We attend community forums, events and committees in the catchment and 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 locally, please contact your local engagement officer on M: 0437 141 495 or email ewater@environment.gov.au



BORDER RIVERS

The Border Rivers region is spread across both New South Wales and Queensland, with a roughly equal area in each state.

The Border Rivers system is based around the Macintyre and Dumaresq rivers, which merge upstream of Boggabilla and continue as the Macintyre River. The Weir River is a significant tributary downstream of Boggabilla. The Dumaresq River, Macintyre River and Barwon River (downstream of the junction of the Weir River to Mungindi—the end of the Border Rivers system) forms the border between New South Wales and Queensland for approximately 470 km. The Macintyre River's main tributary is the Severn River (New South Wales).

Planning for the best use of environmental water to achieve healthy river systems and species must take into account the water that is currently available and the climate conditions (such as whether it is a dry year or a wet year), how urgently some parts of the system require water to maintain ecological health, and different environmental watering scenarios based on those considerations. Environmental watering has a focus on supporting threatened species and communities under the *Environment Protection and Biodiversity Conservation Act 1999*, such as Murray cod, silver perch, Australian painted snipe and great egret.

In 2017–18 the overall focus for use of environmental water in the main channel of the Border Rivers (Dumaresq and Macintyre rivers) is to add water to the system when required to meet essential environmental demands of important wetlands, floodplains and river reaches. The main objective of this use will be to improve the overall ecological health and support fish and waterbird habitat. To maintain the health of floodplain areas such as off-channel lagoons that could be isolated from river flows or anabranches and off-channel wetlands requiring overbank flows for inundation, small volumes may be delivered to specific habitats in the lower Macintyre floodplain using public and private irrigation infrastructure.

If the river dries significantly and system connectivity is lost, the focus will shift to supporting basic river health, through a watering action to replenish refuge pools and improve water quality to the end of the system.

Responding to environmental demands in 2017–18

In 2017–18, water for the environment is most likely to be used to provide flows to improve in-stream habitat and support breeding of threatened fish species in the Dumaresq and Macintyre rivers. If there is enough rainfall, additional water could contribute to flows that improve wetland connectivity and breeding of threatened fish species in the lower Macintyre River. If conditions become very dry again, environmental water may be used to help maintain refuge pool habitat.

River channels: Across the Border Rivers region there is moderate to high demand for environmental watering to improve water quality, in-stream habitat and connectivity (between river and floodplain) to support native fish movement and breeding.

In the lower Macintyre River there is moderate to high demand for a large fresh of water to improve habitat for native fish and connect the channel to low-level wetlands. There is moderate demand for flows from late winter to early summer months in the Dumaresq River to encourage movement and breeding of native fish and to provide access to breeding habitat for significant species.

Meeting any of these environmental demands will require additional flows in the system, such as a rainfall event or a large irrigation delivery, to which we would add environmental water to improve outcomes and extend the period of flow. Environmental water on its own cannot meet all the demands.

If there is a prolonged dry period in 2017–18, watering may be required to provide a flow to the end of the Border Rivers system at Mungindi, to support drought refuges and improve water quality.

There may be other opportunities to provide water to the Border Rivers region if water availability is high.

Anabranches and creeks: There is moderate to high environmental demand to connect anabranches and the river channel. This would support floodplain vegetation and wetland health and bring nutrients and carbon into the main river.

The anabranches of the lower Macintyre River have had limited connection to the main river channel since 2013 due to low flows. However, rainfall in late 2016 and early 2017 has improved river flows into a number of anabranches. We are still learning how best to use environmental water in this region and need a better understanding of the frequency and duration of in-channel flows needed to support the anabranches. Watering of specific anabranches may occur in 2017–18, following an assessment to determine environmental needs (for example, supporting native fish and maintaining wetland vegetation).

Wetlands, lagoons and billabongs: The watering demands of off-channel habitats (wetlands, lagoons and billabongs) in the Border Rivers region range from low to high. Some of these off-channel habitats along the Macintyre are now permanently cut off from natural flows, mostly between Goondiwindi and Boomi. Filling these habitats would enable reconnection with the main river to improve water and soil quality, support movement of native fish, and build the health and resilience of vegetation across the lagoons. Water could be delivered to these areas using private infrastructure like pumps.

In other off-channel wetlands along the Macintyre there is low to moderate demand for water, due to a prolonged period with no major flood events of the level experienced in 2011.

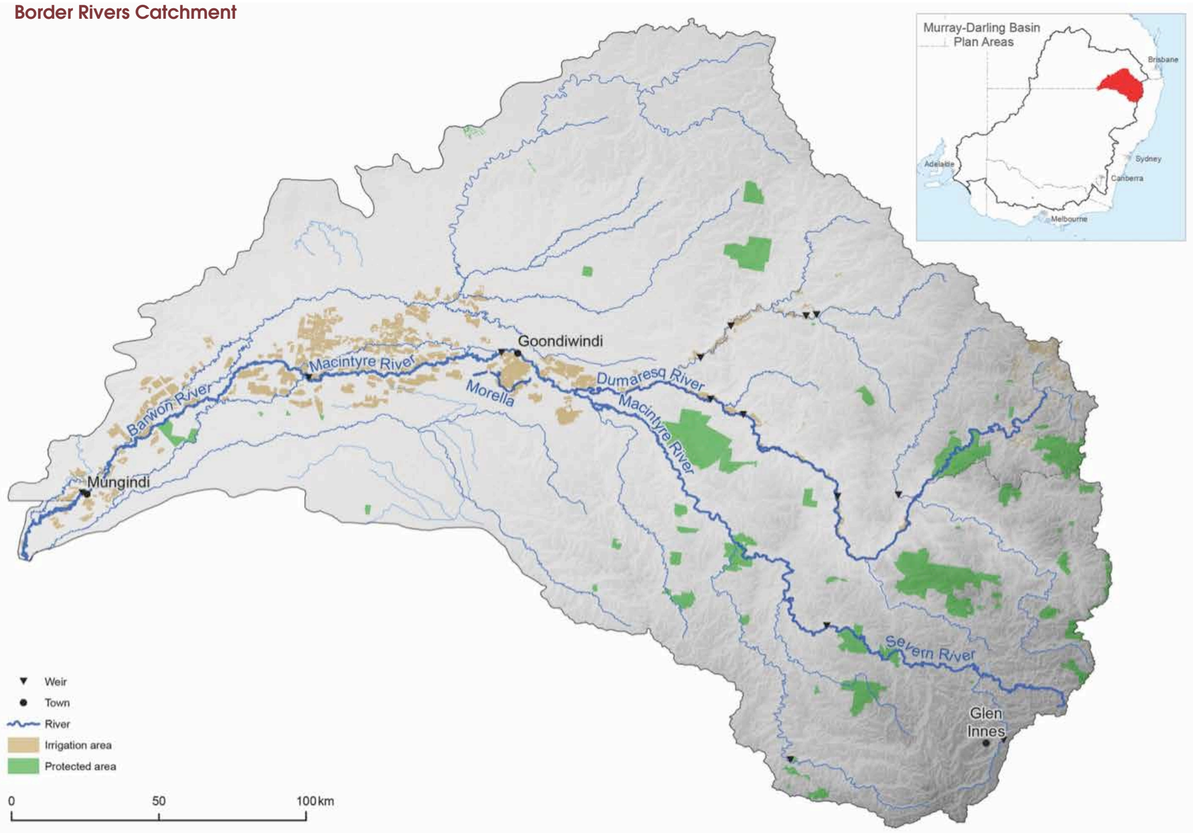
In the near-channel wetlands in the lower Dumaresq River there is low to moderate demand for water, following recent flows.

It is unlikely that enough environmental water will be available to meet the demands of the wetlands along the lower Dumaresq River. Contributing to the wetlands in the lower Macintyre River is likely to involve environmental water supplementing natural flows from rainfall.

Wetlands in the New South Wales Severn River have low demand for water, as they have been watered for the last five years through unregulated flows, irrigation deliveries and the New South Wales stimulus flows.

Stimulus flows are used to tumble rocks, scour and disturb algae and stimulate in-stream production. They can also allow water-based species to access a wider range of habitats for feed and shelter.

Border Rivers Catchment



34 GL
have been delivered to the Border Rivers **between 2011–12** and **2016–17**.

34 GL have been delivered to the Border Rivers in the past five years, including unregulated flows. In 2016-17, unregulated water entitlements from Queensland contributed 23.5 GL of increased flow during unregulated events in the Macintyre, Dumaresq and Severn (Qld) rivers, which provided cues for fish movement and breeding. In some years, Commonwealth environmental water from regulated entitlements (water held in dams) has also been used in the Border Rivers to inundate important instream habitats and improve the connectivity from flow events into the Macintyre River. These enhanced flows were achieved in 2012 and 2013, and are likely to be achieved again in 2017 in both the Severn and Dumaresq rivers.

ML = megalitre = 1 million litres GL = gigalitre = 1000 megalitres

13.40 GL

13.40 GL was carried over by the Commonwealth Environmental Water Holder for the 2017–18 water year in the Border Rivers region. Up to 30 GL can be used in-stream from Commonwealth unregulated entitlements in the Border Rivers in 2017–18, although this is subject to suitable unregulated flow events occuring.

23.50 GL

23.50 GL of unregulated flows contributed to the system, helping to improve end of system flows in 2016–17.