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

LACHLAN RIVER VALLEY

2017–18 SNAPSHOT

Above: Aerial shot – Birds nesting in the Lachlan
Cover: Whealbah Billabong. Credit: Fiona Dyer
Back cover: Night heron chick, Moon Moon Swamp. Credit: Erin Lenon

All images by Commonwealth Environmental Water Office unless noted otherwise.

Delivering water for healthy rivers, floodplains and wetlands

The Lachlan Valley contains diverse and rich natural environments. Its waterways provide for domestic water use, diverse agriculture, tourism and recreational activities and Aboriginal cultural values and practices.

The Australian and state governments own water that is used to protect and restore the environment in the Lachlan Valley. This water is delivered to key locations to support the region's unique native plants, fish, frogs and birds that rely on healthy waterways to feed, breed and survive.

The region's rivers, floodplains, swamps and wetlands provide habitat for birds including straw-necked ibis, glossy ibis, egrets, Australian painted snipe, osprey and blue-billed duck, and a range of native fish including Murray cod and golden perch and an endangered population of olive perchlet. These wetlands also feature areas of valuable river red gum forest and woodland, blackbox woodland and lignum.

The Commonwealth Environmental Water Office works in partnership with state government agencies and local organisations to plan and manage flows for the environment.

We are working to achieve the environmental outcomes as outlined in the Basin-wide Environmental Watering Strategy and the Murray-Darling Basin Plan.

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

Maintain base river flows, with the region experiencing more bank-full and 'fresh' events. A fresh is an increase in levels of the river beyond the base flow, but does not go over the river bank.

Maintain the current area of river red gum and blackbox communities, improve their condition and increase the number of young trees.

Maintain and improve the condition of lignum communities particularly focusing on the shrublands in the Lower Lachlan region, which provide important habitat for waterbirds.

Maintain and prevent any further decline of non-woody plant communities in, or near, the Lachlan River and Willandra Creek. It is also important to maintain the common reed and cumbungi (a semi-aquatic plant) in the Great Cumbung Swamp.

Maintain the current waterbird species diversity and increase their populations by supporting breeding opportunities.

Create the right conditions to improve native fish health, spawning and movement, with the aim of improving the overall fish populations.

Great egret chick. Moon Moon swamp. Credit: Erin Lenon

The environmental need for water in the Lachlan

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.

In recent years, high natural flows and large-scale environmental water delivery have improved the conditions in the lower Lachlan catchment. For example, the second half of 2016 was very wet across the region, with record breaking spring rains leading to widespread flooding. The flooding filled wetlands, swamps and depressions across the catchment and the water level peaked in the Great Cumbung Swamp at the end of the system in December 2016. A number of waterbird breeding events occurred, with a large colony of over 100,000 nests of straw-necked ibis breeding in the Booligal Wetlands. Environmental water was used to support water levels during critical stages of the bird breeding. Surveys on Merrowie Creek also recorded breeding by glossy ibis, cormorant, darter, white-necked heron, nankeen night-heron, great egret and royal spoonbill.

The flooding increased the amount of organic matter in the rivers and wetlands, resulting in a hypoxic blackwater event where the oxygen levels fell below critical levels for native fish. Water with higher oxygen levels was used to dilute the blackwater and provide refuge to native fish.

The key environmental aims over the coming years will be to maintain river-side and wetland plants in good health, improve native fish populations and support waterbird habitat and breeding.

Supplying water for the environment

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 natural system downstream of the Basin's water storages and irrigation districts.

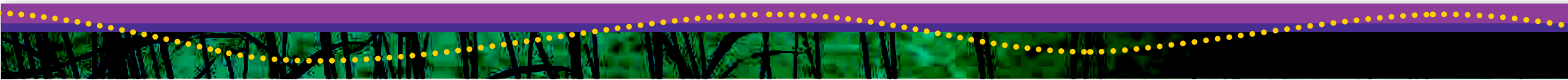
This water often complements natural events, water provided for the environment (such as translucent flows) under the water sharing plan, water provided by New South Wales Office of Environment and Heritage, as well as water used for irrigation and domestic purposes.

What is a translucent flow?

Under the state Water Sharing plan rules that govern management of water in the regulated Lachlan river, if a certain amount of water (250,000 ML since 1 January of each year) flows into the Wyangala Dam over the period 15 May to 15 November, additional water from tributaries is allowed to flow the length of the river, or a volume is released down the river from storage (up to a maximum of 350,000 ML). This is called a translucent flow and is a type of planned watering event that is intended to restore some natural medium to high flows, seasonality, and flow variability. Translucent flows are an important contributor to the health of the Lachlan catchment because water from tributary inflows is generally richer in nutrients than water released from the dams.

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 (sell water or buy in another catchment) for equal or greater environmental benefit.



Our partners

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

Flows are planned, delivered and managed in partnership with a number of people in the Lachlan Valley, including:

- New South Wales Office of Environment and Heritage
- WaterNSW
- New South Wales Department of Primary Industries - Water
- Central Tablelands Local Land Services
- New South Wales Department of Primary Industries - Fisheries
- Lachlan Environmental Water Advisory Group, which includes local landholders, irrigation industry and community members
- University of Canberra
- Charles Sturt University
- University of New South Wales
- Murray-Darling Basin Authority.

Staff from the Commonwealth Environmental Water Office regularly attend community forums, events and committees within the catchment. We will continue to forge local partnerships that allow community groups, including Aboriginal Traditional Owners, to help shape the regional planning and management of water delivery over the long term.

To learn more about our work or offer suggestions for the use of water locally, please contact your local engagement officer on M: 0427 682 309 or E: ewater@environment.gov.au

Blue-billed duck. Credit: NCCMA

royal spoonbill and straw-necked ibis chicks. Booligal wetlands. Credit: Erin Lenon

Centre for Ecosystem Science, UNSW. Credit: Just McGann

LACHLAN RIVER VALLEY

Australian Government
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The Lachlan River travels about 1400 kilometres to its junction with the Murrumbidgee River. It is part of a terminal system that ends at the Great Cumbung Swamp – a wetland of national significance.

The Lachlan is only connected to the Murrumbidgee River when both rivers are in flood. The rivers once connected more frequently, prior to the building of dams and the extraction of water for human use.

Tributaries to the Lachlan downstream of the largest dam, Wyangala Reservoir, include the Belubula and Boorowa Rivers and Mandagery Creek.

Nearly 1300 kilometres of the Lachlan's total length is regulated, with major dams and storages located in Carcoar, Wyangala, Lake Brewster and Lake Cargelligo. This infrastructure impacts natural river flow patterns. A greater percentage of river flows now stay in channel in the mid-Lachlan, whereas the effect of irrigation diversion is to reduce flows in the lower Lachlan.

Responding to environmental demands

Like all water users, Commonwealth and state water holders and managers must consider variable seasonal conditions when deciding the best way to restore our rivers, floodplains and wetlands.

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

In the Lachlan, many of the swamps, wetlands and creeks are in good condition, with river-side and wetlands trees, shrubs, grasses and other native plants having been watered a number of times of the past few years. As a result, decisions on whether to provide water to these wetlands and creeks will be guided by natural triggers, such as local rainfall and inflows. If it is dry and triggers are small, we may not provide water and let the wetlands enter a natural drying phase.

If conditions are wetter, then water will be provided to consolidate on the positive response to flows over the last couple of years and keep the plants in good health. Sites where this approach will be adopted in 2017–18 include the **Great Cumbung Swamp, Lower Lachlan Swamps** and **Booligal Wetlands.**

Merrowie Creek: Assets along Merrowie Creek received water during the flooding in 2016, resulting in waterbird breeding and positive vegetation outcomes. Water may be used to capitalise on this inundation.

Willandra Creek: Willandra Creek received water through translucent flows in 2015, and inundation of assets in 2016 resulting in healthy vegetation responses. There is very low demand for water for this system so watering is not required in 2017-18.

Booberoi Creek: This anabranch has not previously received environmental water, and its demand and the feasibility for water is currently being assessed.

Lachlan River (in-channel): Flows to benefit native fish habitat, breeding and movement have been undertaken in the last two watering years and could be undertaken in most years, depending on water availability.

Maintain inundation of key waterbird habitat at critical times: This type of watering is opportunistic. A contingency volume is planned to support the completion of waterbird or other native animal breeding events, if triggered by other flows in the system. Waterbird requirements will be a high priority should unregulated flows stimulate nesting activity.

Water Quality: This type of contingency watering depends on conditions arising at any given time, such as very wet conditions resulting in a hypoxic blackwater event.

For further information on our planning process and for a copy of the Portfolio Management Plan for the Lachlan River Valley 2017-18 visit www.environment.gov.au/water/cewo.

29.50 GL
of Commonwealth environmental water was used in the Lachlan Valley in **2016–17.**

171.78 GL

Approximately **171.78 GL** of Commonwealth environmental water was used in the Lachlan **between 2010–11 and 2016–17.**

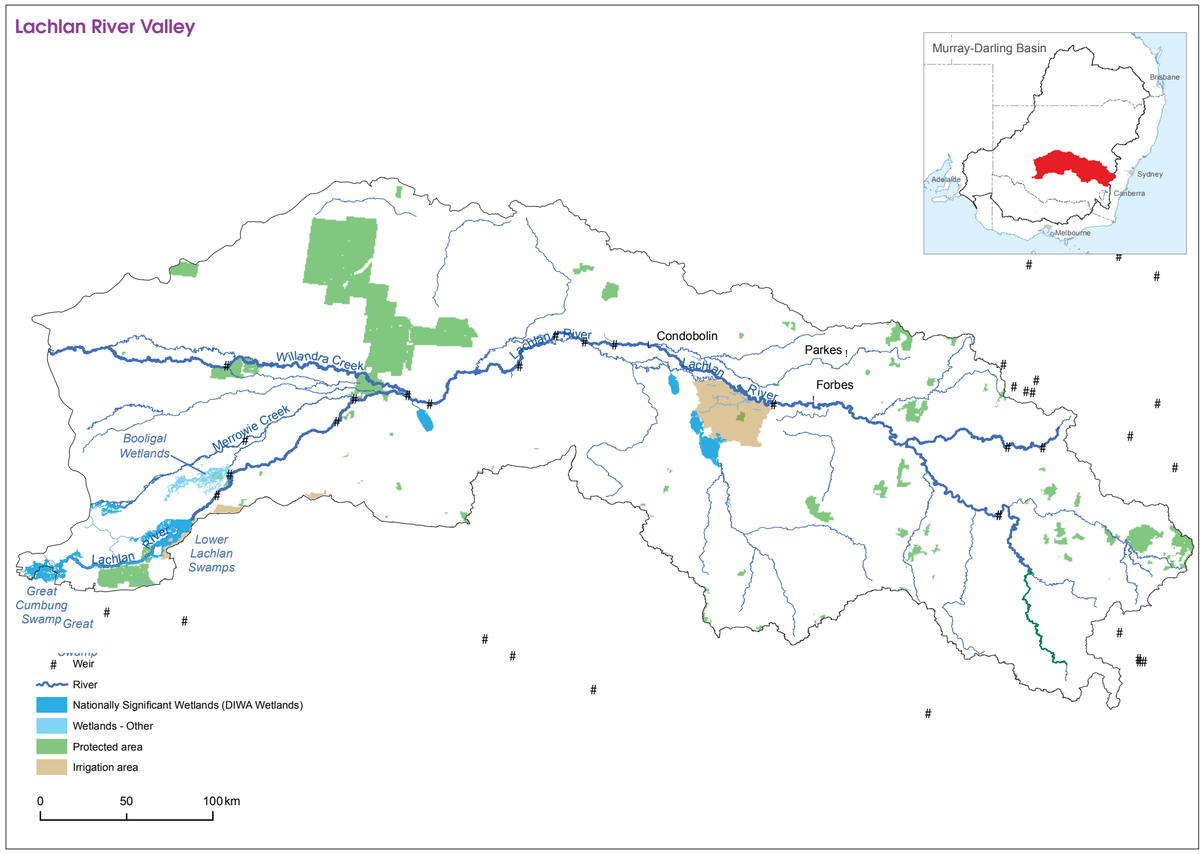
85.30 GL

85.30 GL of Commonwealth environmental water was **carried over** for use in 2017–18.

To date, there have been no specific requirements for sale or purchase of Commonwealth environmental water in the Lachlan Valley.

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

Lachlan River Valley



Outcomes snapshot

Scientific monitoring shows that water delivered to the Lachlan is providing food, habitat and breeding opportunities for many of the region's characteristic wildlife, including native fish, frogs and birds.

Full monitoring reports are available each year on our website: www.environment.gov.au/water/cewo/catchment/lachlan/monitoring

2015–16

The watering action undertaken provided hydrological connectivity to the Great Cumbung Swamp and Murrumbidgil Swamp.

The duration of hydrological connectivity to the Great Cumbung Swamp was extended by around 55 days. The action targeting native fish increased water levels in the main channel by up to 1.5 metres connecting in-channel habitats and providing additional habitat for fish. Water levels would have been relatively stable without the provision of flows. Spawning was observed by a number of native species including Murray cod, Australian smelt, carp gudgeon and flat-headed gudgeon.

The watering actions resulted in persistent aquatic habitat at one of the target refuge sites, the Great Cumbung Swamp at the end of the Lachlan system. Water was retained at this site for the duration of the monitoring surveys (October 2015 until January 2016), providing key frog habitat in an otherwise drying system. The watering actions were timed to suit the breeding and recruitment of four of the seven frog species observed in the region, being eastern sign-bearing froglet, Peron's tree frog, spotted marsh frogs and giant banjo frog.

Long-term Intervention Monitoring of 2016–17 outcomes will be published in late 2017.

2014–15

Approximately 80 percent of the fresh delivered to the Lachlan River during early September 2014 was water for the environment. It caused water levels to rise by up to 1.5 metres between Willandra Weir and Booligal wetlands, providing flow variability and changes in hydraulic character for the benefit of native fish.

Spawning of native fish including Murray cod, flat-headed gudgeon, eel-tailed catfish, Australian smelt and carp gudgeon occurred after the delivery of environmental water between August and September. With the exception of eel-tailed catfish, these species were also recorded as small individuals, indicating that conditions supported recruitment. Water delivered in spring reached the central reed beds of the Great Cumbung Swamp, a wetland of national importance.