



Office of  
Environment  
& Heritage

# **Murrumbidgee Water Resource Plan Area**

**Statement of annual environmental watering  
priorities 2016–17**

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## Purpose of this statement

This statement meets the New South Wales Government's obligations to outline the annual environmental watering priorities for the Murrumbidgee Water Resource Plan Area (WRP area) as set out in Part 4, Division 4 of Chapter 8: Environmental watering plan of the Murray–Darling *Basin Plan 2012* (MDBA 2012a).

Guidelines for how to determine priorities for applying environmental water (MDBA 2012b) have been used to identify the environmental watering priorities for 2016–17 for the Murrumbidgee WRP area.

## Murrumbidgee Water Resource Plan Area description

The Murrumbidgee WRP area covers about 84,000 square kilometres, bounded by the Great Dividing Range to the east, the Lachlan WRP area to the north, and the Murray and Lower Darling WRP area to the south, and extending to the South West Slopes and Riverine Plains in the west.

The areas of interest for environmental watering are located downstream of Burrinjuck and Blowering dams. Major environmental water targets within the Murrumbidgee WRP area include the Lowbidgee Wetlands, the mid-Murrumbidgee Wetlands, the Junction Wetlands, North Redbank floodplain, Western Lakes and the Murrumbidgee River channel (Map 1).

Other wetland targets include the Fivebough and Tuckerbil wetlands, located in the Murrumbidgee Irrigation Area. These wetlands are listed under the [Convention on Wetlands of International Importance](#) (the 'Ramsar' Convention).

## Consultation

In NSW, environmental water advisory groups are the primary vehicles for stakeholder consultation on environmental water planning for a particular WRP area. The Murrumbidgee Environmental Water Allowance Reference Group (EWAG) provides advice on the development of the Murrumbidgee Annual Environmental Watering Plan.

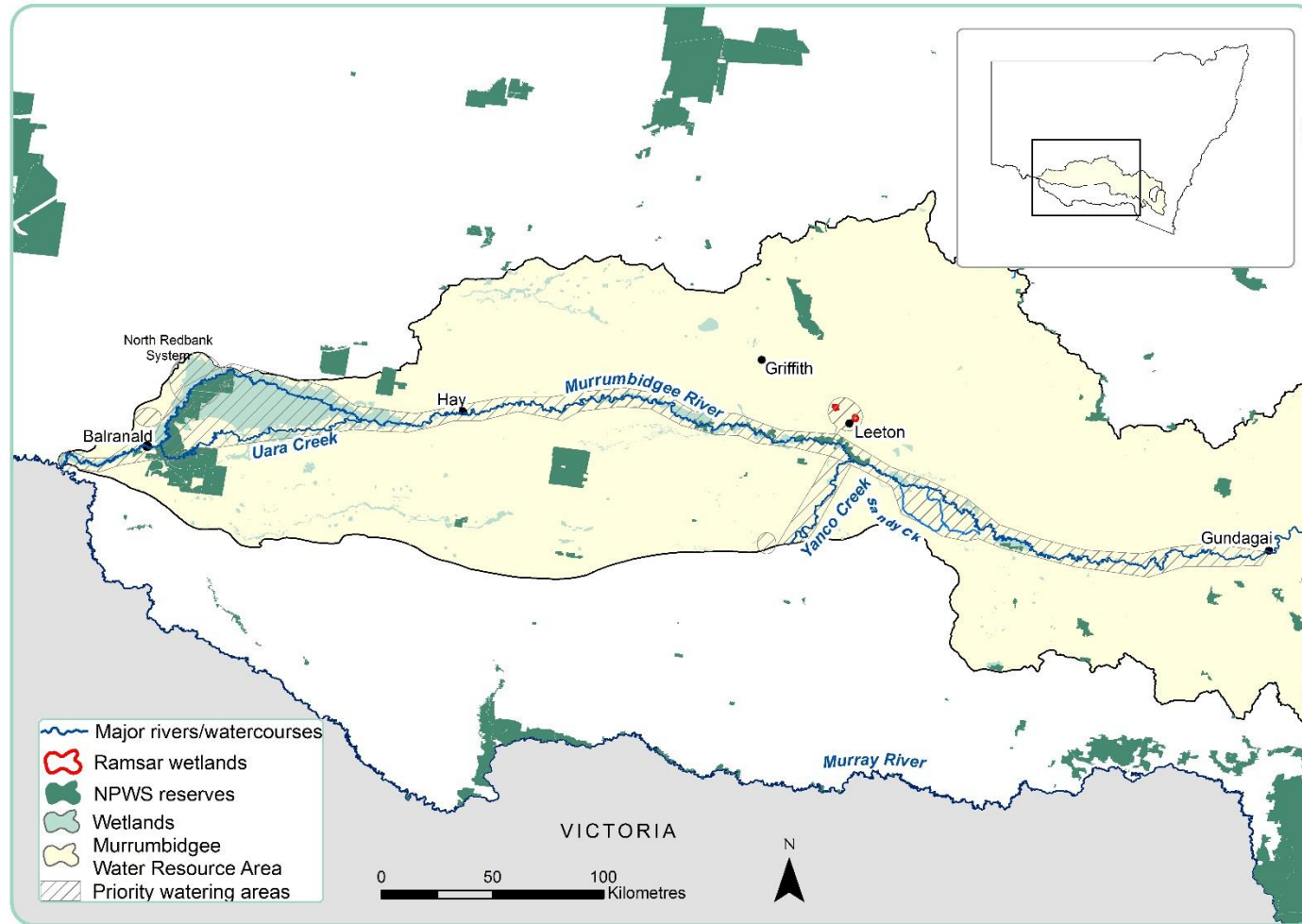
The Murrumbidgee EWAG has reviewed and endorsed the annual environmental watering priorities for the Murrumbidgee WRP Area. The Office of Environment and Heritage (OEH) website has details of the [objectives and membership of the Murrumbidgee EWAG](#).

Preparation of this statement has also involved consultation with the Commonwealth Environmental Water Office.

## Antecedent conditions: previous watering and condition of assets

A combination of 60% average available general security allocations (as at 15 March 2015), 153 gigalitres of available environmental water allowances and dry/neutral climate conditions meant that 2015–16 was best described as a 'moderate' year.

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Map 1: Annual environmental watering priority areas, Murrumbidgee WRP area, 2016–17

Under these moderate conditions, OEH worked with the Commonwealth Environmental Water Office to deliver environmental water to the Nimmie–Caira, North Redbank and Yanga National Park wetlands, all located on the Lower Murrumbidgee Floodplain (Table 1). Smaller watering events focused on the Yanco Creek system and wetlands located in the mid-Murrumbidgee, including both of the Ramsar wetlands.

**Table 1: Murrumbidgee environmental water releases, 2015–16**

<b>Asset</b>	<b>Total volume<sup>1</sup></b>	<b>Outcomes</b>	<b>Current condition</b>
Tombullen Release – Murrumbidgee River wetlands	11,933ML	Low-level wetland connection from Darlington Point to Murray Junction.	Poor; recovery phase halted by limited inundation since 2012 floods (OEH personal observation 2015)
North Redbank (whole of system)	60,000ML	Frog habitat, woodland and aquatic vegetation maintained. Provided return flows to Murrumbidgee River.	Good: improving with appropriate wetting–drying cycle
Nimmie–Caira Wetlands	68,000ML	Water provided to a number of wetlands, including Uara Creek, Yanga Lake, Waugorah Lagoon, Eulimbah and Telephone Bank swamps, to support small breeding events by waterbirds (including ibis, egrets, spoonbills, cormorants and bitterns) and provide southern bell frog habitat.	Moderate: improving as a result of frequent inundation since 2010
Yanga National Park – Tarwillie	11,600ML	Successful egret, cormorant and darter rookery maintenance: >250 egret nests documented, with chicks fledged in late March.	Good: improving with appropriate wetting–drying cycle
Yanco Creek wetland fresh	22,829ML	Low-level wetland connections and anabranch flows. Improved fringing vegetation condition.	Moderate to good
Murrumbidgee Irrigation Area wetlands (includes Ramsar sites – Fivebough and Tuckerbil swamps)	4164ML	Supported migratory wading birds and broilgas. Highest-ever Australian bittern numbers recorded. Improved wetland vegetation, provision of waterbird, native fish and turtle habitat.	Moderate to good
Yarradda Lagoon	1394ML	Improved aquatic vegetation cover and diversity. More than 150 cormorant and darter	Moderate: improving

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<b>Asset</b>	<b>Total volume<sup>1</sup></b>	<b>Outcomes</b>	<b>Current condition</b>
		nests documented, along with southern bell frog population.	
Yanco Creek native fish flow	8075ML	Stable hydrograph provided during trout cod spawning seasons.	Good: fish surveys indicate good native assemblages.
Hobblers Lake and Penarie Creek	7000ML	Improved fringing red gum condition.	Poor: improving with increased watering frequency since 2012
Lake Marimley	1000ML	Maintained drought refuge and potential bittern habitat.	Good
Colleambally Irrigation Area wetlands	4527ML	Improved aquatic vegetation cover and diversity. Created dispersal habitat for Australasian bitterns as well as southern bell frog habitat.	Poor to moderate
Junction wetlands (Waldaira)	2000ML	Halted decline in condition of fringing river red gums and replenished aquatic plant seedbank.	Poor
Waugorah Lake	966ML	Created foraging and dispersal habitat for juvenile egrets and other species fledged at Tarwillie.	Good: improving with appropriate wetting–drying cycle.
Gooragool Lagoon	4615ML	Improved aquatic vegetation cover and diversity. About 200 cormorants and darters successfully nested at the site.	Moderate: improving
Toogimbie Indigenous Protection Area	1000ML	Improved condition of vegetation and provided habitat for frogs and waterbirds.	Moderate
Sandy Creek	270ML	Maintained and improved vegetation condition. Provided habitat for waterbirds and frogs.	Poor to moderate

<sup>1</sup> These figures are interim until indicated otherwise.



## Forecast available water

The 2016–17 water year will see a moderate to high volume of environmental water available for use early in the season (Table 2). The current outlook from the Bureau of Meteorology reflects the combination of a developing negative Indian Ocean Dipole, a continued cooling of tropical Pacific Ocean sea surface temperatures, and very warm sea surface temperatures surrounding northern and eastern Australia. Climate models indicate that there is a 50% likelihood that La Niña may develop in the second half of 2016. The climate outlook can be viewed at the [Bureau of Meteorology website](#).

NSW Department of Primary Industries – Water (DPI Water) have set starting allocations in the Murrumbidgee WRP area at 95% for high security and 20% for general security. Conveyance allocation will be commensurate to the announced allocations, in accordance with the [Water Sharing Plan for the Murrumbidgee Regulated River Water Source](#). Carryover for general security accounts is estimated to be ~19%.

Overall, the surface water availability for 2016–17 can be summarised as high.

**Table 2: Anticipated environmental water availability for the Murrumbidgee WRP area, 2016–17**

Source	Maximum volume	Volume expected to be available at 1 July 2016 <sup>1</sup>
<i>Planned environmental water allowance</i>		
1	50,000ML <sup>2</sup>	50,000ML <sup>3</sup>
2	Related to inflows	15,400ML
3	Related to inflows	–
<i>NSW licensed adaptive environmental water holdings</i>		
General security	28,508ML <sup>2</sup>	14,254ML <sup>3</sup>
Supplementary	5679ML	Availability is event-based.
NPWS general security	2916ML	Generally not available.
NPWS (South Redbank/Yanga) Lowbidgee supplementary access licence	155,000ML	Availability is event-based.
<i>Commonwealth licensed adaptive environmental water holdings</i>		
High security	4246ML	4033ML
General security	200,145ML <sup>2</sup>	116,000ML <sup>3</sup>
Supplementary	20,820ML	Available 1 July 2016
Lowbidgee supplementary	381,000ML	Availability is event-based.
Conveyance	7656ML	–

<sup>1</sup> 20% available water determination by DPI Water

<sup>2</sup> Environmental water allowance 1 and general security volumes are linked to announced allocation levels.

<sup>3</sup> Includes carryover of holdings from 2015–16.

The figures given in Table 2 have not been adjusted for possible future trade. OEH periodically trades water allocations to cover a proportion of water-use charges associated with NSW environmental water holdings. The volume of environmental water traded in a WRP area is determined by the price on the local market and the targeted level of cost recovery. OEH manages the trade of NSW environmental water on the basis of environmental water demand and trading opportunities across the Murray–Darling Basin, taking into consideration equity among WRP areas over time.

## Resource availability scenario and management outcomes

The resource availability scenario is based on the surface water availability and antecedent conditions (Appendix A: Table A1). The surface water availability is forecast as medium to high and the antecedent conditions were wet, so the resource availability scenario for 2016–17 is wet. However, with possible wetter conditions, a very wet resource availability scenario may also need to be considered.

Following consideration of the condition of assets, as well as water availability and climate forecasts, the Murrumbidgee EWAG has recommended that, under a wet resource availability scenario, the management outcomes for this environmental watering year are to improve the health and resilience of water-dependent ecosystems (Appendix A: Table A2) by:

- enabling growth, reproduction and large-scale recruitment of a diverse range of flora and fauna
- supporting high-flow river and floodplain functions.

## Annual environmental watering priorities

Under wetter conditions, the primary management outcome for the Murrumbidgee WRP area is to improve the health and resilience of water-dependent ecosystems. To achieve this, NSW has identified five priority environmental watering actions for the 2016–17 water year (Table 3). The list in the table is not exhaustive, and other sites may be targeted during the water year as the need arises.

The current conditions of moderate dam levels, a wet catchment and forecast high allocations mean that, although a reasonable volume of environmental water is available, some caution is needed to ensure that enough volume will be left for the following watering year, if needed, to maintain critical habitats.

If 2016–17 becomes very dry (against current predictions), environmental water managers will consider carrying over substantial volumes of environmental water allowances and NSW environmental water holdings into the 2017–18 water year. This decision will be made later in the water year and does not preclude watering in 2016–17. Ongoing discussion with the Murrumbidgee EWAG will be necessary under dry conditions so as to advise on water-use objectives and the balance between use and carryover.

In 2016–17, OEH will work with the Commonwealth Environmental Water Office to deliver water to low-lying mid-Murrumbidgee wetlands from July to November 2016 by delivering a within-channel high flow of relatively long duration. It is also intended to use these ‘stand-alone’ flows to deliver environmental water to the Yanco Creek system wetlands, and possibly the Junction Wetlands, if suitable high-flow conditions occur simultaneously in the Murray River downstream of the Wakool junction.

**Table 3: Murrumbidgee watering site priorities under a high resource availability scenario, 2016–17**

Target area	Location/size	Estimated volume	Rationale, timing and duration
Murrumbidgee wetlands, including Yanco Creek and Junction	Gundagai to Junction Wetlands (variable)	Up to 240,000ML	Includes DIWA <sup>1</sup> sites in recovery phase following an average 10-year dry spell. Standalone event (not requiring tributary flows to piggyback environmental water). Likely between July and October 2016.
Yanco Creek wetlands (separate to above)	Narrandera (Yanco Creek) (1000ha)	Up to 25,000ML	In good condition: requires rewetting to maintain wetland vegetation. Timing: July to November 2016; linked to mid-Murrumbidgee event, but can be achieved independently to an extent.
Murrumbidgee and Coleambally Irrigation Areas wetlands: Infrastructure-assisted deliveries	Variable	Up to 10,000ML	DIWA <sup>1</sup> sites in recovery phase following an average 10-year dry spell. Timing of water delivery will depend on wetland needs.
Lowbidgee – Yanga National Park	Variable	Up to 120,000ML	Support vegetation recovery and provide foraging and nesting habitat for colonial waterbirds and southern bell frogs. Water to be delivered in winter/spring. Some watering will rely on the availability of supplementary events.
Lowbidgee/ Nimmie-Caira Wetlands	Variable	Up to 100,000ML	Support vegetation recovery and provide foraging and nesting habitat for colonial waterbirds, southern bell frogs and bitterns. Water to be delivered in winter/spring. Some watering will rely on the availability of supplementary events.
North Redbank (including Western lakes complex)	Variable	Up to 120,000ML	Support vegetation recovery and provide foraging and nesting habitat for colonial waterbirds and recolonisation by southern bell frogs. Water to be delivered in winter/spring. Some watering will rely on the availability of supplementary events.

<sup>1</sup> Directory of Important Wetlands Australia

A successful standalone event involves the release of environmental water from upper storages during very low rainfall (i.e. during a low river base flow period). This event aims to simulate, to some extent, a natural high-flow event or fresh that inundates hundreds of lagoons, creeks and swamps as it makes its way down the river. In an average year, many high-flow events are captured in the dams, substantially reducing the frequency of filling of wetlands. This type of flow is 'low risk' from the perspective of WaterNSW and also means that supplementary access licence extraction of the base flow is not possible. The long duration of the flow (up to 7 days) counters the proposed lower flow peak height (4.0 to 4.2 metres). The peak irrigation season (November to April) would be avoided as a result of channel and resource constraints.

If natural high-river events or floods fill the Murrumbidgee River wetlands, water set aside for wetland reconnection flows may be redirected to maximise return flows to the river. This provides appropriate flows to support native fish or other actions where an ecological need – such as a bird-breeding event, drought refuge requirements or continued wetland vegetation recovery – arises. It may also be necessary to deliver environmental water via existing infrastructure to other mid-Murrumbidgee wetlands that cannot be inundated by the standalone flow.

The Nimmie-Caira will be a focus for environmental water in the Lowbidgee. Environmental water will also be used to maintain and improve vegetation health, waterbird habitat, and southern bell frog and bittern populations in the Nimmie-Caira.

The ability to deliver environmental water is limited by system constraints, including channel capacity, the use of irrigation infrastructure, and potential third-party impacts such as the restriction of access to land or stock by landholders. Flows will be adaptively managed to integrate with other demands in the system to avoid inconvenience for landholders where possible. Where inconvenience is a risk, potentially affected landholders will be consulted and agreements sought on acceptable management of events.

## Cooperative arrangements for water delivery

OEH is the leading environmental manager for NSW and coordinates environmental watering with advice from the relevant environmental water advisory group in each WRP area. OEH has negotiated cooperative arrangements with the Commonwealth Environmental Water Office and WaterNSW to maximise the benefits of environmental water use in NSW.

OEH has also developed strong partnerships with private landholders, Local Land Services, independent research organisations and not-for-profit organisations to ensure the efficient and effective delivery of environmental water. In some circumstances, this may include the use of private infrastructure to water wetland targets, as well as cooperative changes to land management to ensure that the desired ecological responses to watering are achieved.

In the Murrumbidgee WRP area, OEH also receives water-delivery help from private irrigation companies, such as Murrumbidgee Irrigation, Sandy Creek Water Users Association, Coleambally Irrigation and Lowbidgee landholders.

## Further documentation

Reporting on water used throughout the 2016–17 watering season will be included in OEH's *Environmental Water Use in NSW: Outcomes 2016–17*, which will be available in late 2017. A number of [environmental water ecological response monitoring reports](#) funded by the Commonwealth are also available.

## References

MDBA 2012a, *Basin Plan*, Murray–Darling Basin Authority, Canberra, <http://www.mdba.gov.au/basin-plan>

MDBA 2012b, *Guidelines for the method to determine priorities for applying environmental water*. Murray–Darling Basin Authority, Canberra, <http://www.mdba.gov.au/sites/default/files/archived/altered-PBP/APBP-Ch7-Guideline.pdf>

## Appendix A

**Table A1: Determining the resource availability scenario**

Surface water availability	Antecedent conditions				
	Very dry	Dry	Medium	Wet	Very wet
Very low	Very dry	Very dry	Dry	Dry	n/a
Low	Very dry	Dry	Dry	Moderate	Wet
Medium	Dry	Dry	Moderate	Wet	Wet
High	Dry	Moderate	Wet	Wet	Very wet
Very high	n/a	Moderate	Wet	Very wet	Very wet

Source: Modification of table in 'Guidelines for the method to determine priorities for applying environmental water' in the Murray–Darling *Basin Plan* (MDBA 2012b), using ranges for water availability and antecedent conditions rather than the percentile ranges (15 points in each band) used in the plan

**Table A2: Management outcomes for each resource availability scenario**

	Resource availability scenario				
	Very dry	Dry	Moderate	Wet	Very wet
Management outcome	<b>Avoid irretrievable loss of, or damage to, environmental assets</b>	<b>Ensure environmental assets maintain their basic functions and resilience</b>	<b>Maintain ecological health and resilience</b>	<b>Improve the health and resilience of water-dependent ecosystems</b>	<b>Improve the health and resilience of water-dependent ecosystems</b>
	Avoid critical loss of species, communities and ecosystems. Maintain critical refuges. Avoid irretrievable damage or catastrophic events. Allow drying to occur, where appropriate, but relieve severe, unnaturally prolonged dry periods.	Support the survival and viability of threatened species and communities. Maintain environmental assets and ecosystem functions, including allowing drying to occur, consistent with natural wetting-drying cycles. Maintain refuges.	Enable growth, reproduction and small-scale recruitment for a diverse range of flora and fauna. Promote connectivity of low-lying floodplains and rivers. Support medium-flow river and floodplain functions.	Enable growth, reproduction and large-scale recruitment of a diverse range of flora and fauna. Support high-flow river and floodplain functions. Promote higher floodplain–river connectivity.	Enable growth, reproduction and large-scale recruitment of a diverse range of flora and fauna. Support high-flow river and floodplain functions. Promote higher floodplain–river connectivity.

Source: Modification of table in 'Guidelines for the method to determine priorities for applying environmental water' in the Murray–Darling *Basin Plan* (MDBA 2012b)