



Australian Government

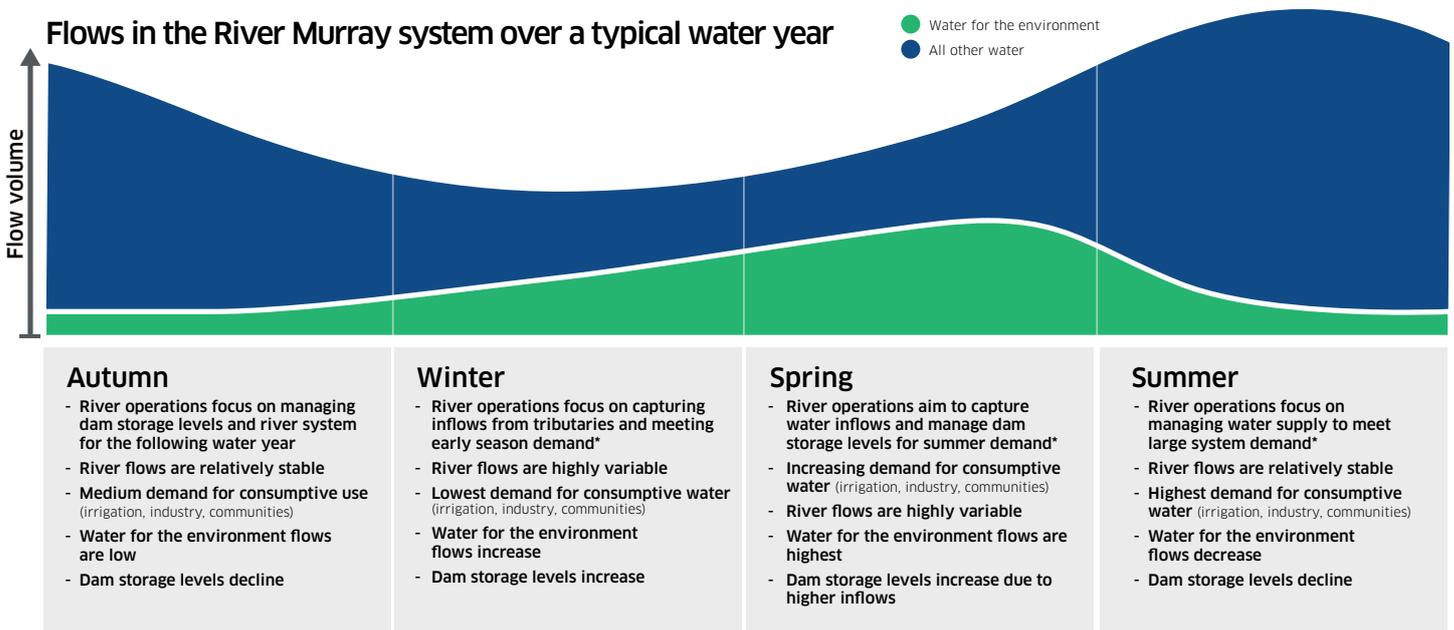


# Flows in the River Murray System – November 2021

Flows in the River Murray System vary widely depending on a range of factors, including rainfall, inflows, evaporation, and demand for water for human use.

At any given time, water flowing through the river is destined for various uses, including irrigation, industry, communities, the environment, and meeting South Australia’s flow entitlement. The exact mix of these flow components is determined by demand and water availability, amongst other factors.

The graphic below is indicative of how water flow is managed throughout the seasons across a typical year.



- |   |   |   |  |
|---|---|---|--|
| <p><b>Autumn</b></p> <ul style="list-style-type: none"> <li>- River operations focus on managing dam storage levels and river system for the following water year</li> <li>- River flows are relatively stable</li> <li>- Medium demand for consumptive use (irrigation, industry, communities)</li> <li>- Water for the environment flows are low</li> <li>- Dam storage levels decline</li> </ul> | <p><b>Winter</b></p> <ul style="list-style-type: none"> <li>- River operations focus on capturing inflows from tributaries and meeting early season demand*</li> <li>- River flows are highly variable</li> <li>- Lowest demand for consumptive water (irrigation, industry, communities)</li> <li>- Water for the environment flows increase</li> <li>- Dam storage levels increase</li> </ul> | <p><b>Spring</b></p> <ul style="list-style-type: none"> <li>- River operations aim to capture water inflows and manage dam storage levels for summer demand*</li> <li>- Increasing demand for consumptive water (irrigation, industry, communities)</li> <li>- River flows are highly variable</li> <li>- Water for the environment flows are highest</li> <li>- Dam storage levels increase due to higher inflows</li> </ul> | <p><b>Summer</b></p> <ul style="list-style-type: none"> <li>- River operations focus on managing water supply to meet large system demand*</li> <li>- River flows are relatively stable</li> <li>- Highest demand for consumptive water (irrigation, industry, communities)</li> <li>- Water for the environment flows decrease</li> <li>- Dam storage levels decline</li> </ul> |
|---|---|---|--|

\* including meeting South Australia’s flow entitlement

## Water for the environment

Overall, water for the environment is a small percentage of the total water used in the Murray-Darling Basin.

The volume of water for the environment used under water entitlements has increased slightly over the past five years, as more water became available. The average use over this period was 20.4 per cent of the total water used in the Basin.

Importantly, water held for the environment uses the same entitlement framework as consumptive users. In any given year the amount of water available for delivery to key environmental sites is determined based on the same rules that apply to all other consumptive water uses.

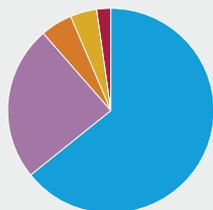
## Types of water for the environment

Water for the environment can be categorised as:

- **‘Planned’ environmental water** – water that flows through the river system that is typically managed through rules outlined in state water resource plans and is used to improve the health of the environment.
- **‘Held’ environmental water** – is water that is held by government agencies and is delivered where and when it is needed in the river system. It is water that is allocated to relevant government agencies through water licenses for environmental use.

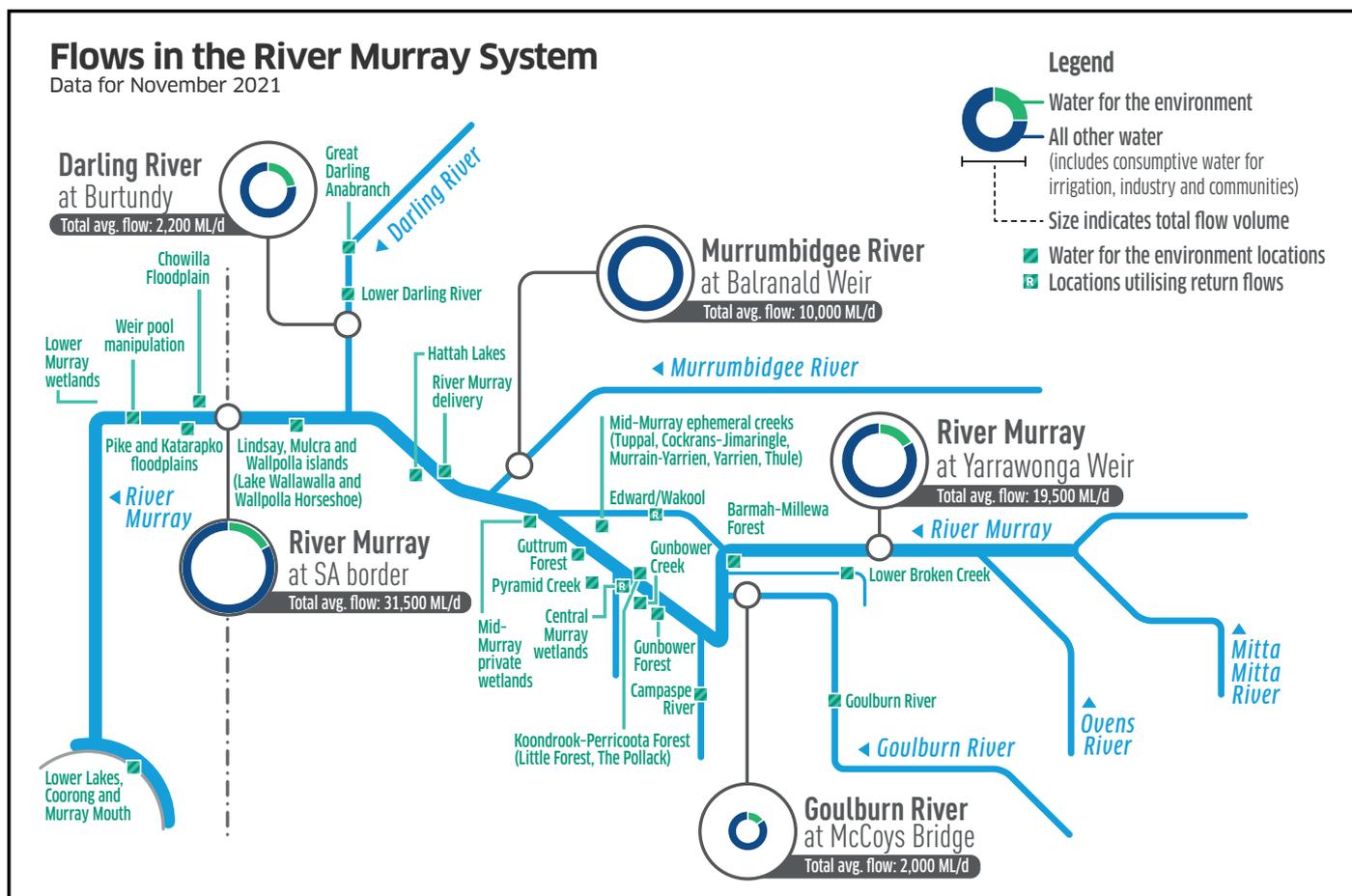
## Who holds and manages water for the environment

(based on the long term average diversion limit for entitlements held for the environment at June 2020)



Water manager	% of total
Commonwealth Environmental Water Holder	66%
Jointly held	23%
Victoria	5%
New South Wales	4%
South Australia	2%

Source: Southern Connected Basin Environmental Watering Committee Annual Report



Information in the figure above is for the month of November 2021 and may not include recent rainfall or delivery of water for the environment in the River Murray system. Information in this figure is an average estimate over the past month and formal accounts from Basin state governments may vary. Water for the environment in the figure above represents water that is held by environmental water holders, through entitlements. Other water that flows through the river can also achieve environmental outcomes.

## River flow information

The November flow to South Australia comprised of water for South Australia's entitlement, traded volumes and water for the environment, and unregulated flows that represent the flow through the river that cannot be captured into upstream storages or diverted before reaching South Australia. Water for the environment consisted of water delivered from Hume Dam, the Goulburn, Broken, Campaspe, Loddon and lower Darling Rivers and Lake Victoria. Water delivered also included use at Hattah Lakes and other environmental sites.

For the latest information on water for the environment see the [River Murray weekly report](#).

## Intended environmental outcomes

Water for the environment takes time to move through the system. Water from past watering events is still moving through the River Murray as return flows. Environmental water holders can also use water for the environment by extracting allocations directly from the river. These allocations are often used for small-scale watering events rather than having water delivered from a storage.

Location	Return flows used	Intended environmental outcome(s)
River Murray delivery	n/a	<ul style="list-style-type: none"> <li>maintain connections between the River Murray and its lower floodplain forests, wetlands and creeks for vegetation, native fish movement</li> <li>support breeding waterbirds to finish their nesting</li> </ul>
Millewa Forest	n/a	<ul style="list-style-type: none"> <li>provide flows through Gulpa Creek to support Australasian bitterns, colonial nesting waterbird breeding and large bodied native fish habitat and movement</li> </ul>
Barmah Forest	n/a	<ul style="list-style-type: none"> <li>replenish refuge pools to maintain water quality, fish and turtle populations</li> <li>maintain connectivity between the forest and the river</li> <li>remove accumulated organic matter and cycle carbon in the river system to minimise the risk of hypoxic blackwater</li> <li>support colonial nesting waterbird breeding</li> </ul>
Edward/Kolety-Wakool River system	Yes	<ul style="list-style-type: none"> <li>support native fish breeding and recruitment</li> <li>protect native fish through providing localised refuges of better water quality for native fish to move to (just in case any low oxygen events associated with flooding happen)</li> </ul>
Lower Broken Creek	n/a	<ul style="list-style-type: none"> <li>protect and increase native fish populations and avoid excessive build-up of azolla fern</li> </ul>
Goulburn River	n/a	<ul style="list-style-type: none"> <li>protect and boost populations of native fish and turtles</li> <li>maintain abundant and diverse waterbugs</li> <li>increase water dependent plants in the river channel and banks</li> </ul>
Campaspe River	n/a	<ul style="list-style-type: none"> <li>provide habitat to help protect and boost native fish</li> <li>maintain resident platypus numbers</li> </ul>
Pyramid Creek	n/a	<ul style="list-style-type: none"> <li>maintain connectivity between pools</li> <li>provide habitats for native fish and waterbugs</li> </ul>
Gunbower Forest	No	<ul style="list-style-type: none"> <li>fill key wetlands and surrounding forest, supporting the growth and recruitment of wetland and river red gum vegetation</li> <li>increase water depth and quality to support native small-bodied fish, turtles and frogs</li> </ul>
Gunbower Creek	No	<ul style="list-style-type: none"> <li>maintain breeding habitat and food resources for native fish such as Murray cod</li> </ul>
Central Murray Wetlands	Yes	<ul style="list-style-type: none"> <li>create habitat for native waterbirds, frogs and turtles</li> <li>stimulate the germination of aquatic vegetation</li> </ul>
Guttrum Forest	No	<ul style="list-style-type: none"> <li>support the growth of adult river redgums and river red gum saplings</li> <li>promote the growth and re-establishment of aquatic vegetation and tall marsh vegetation</li> <li>maintain the depth of the wetland to support frogs and waterbird feeding and breeding</li> </ul>
Mid-Murray private wetlands	No	<ul style="list-style-type: none"> <li>provide habitat for southern bellfrogs and waterbirds</li> <li>maintain wetland vegetation condition</li> </ul>
Mid-Murray ephemeral creeks (Tuppal, Cockrans-Jimaringle, Murrain-Yarrien, Yarrien, Thule)	No	<ul style="list-style-type: none"> <li>provide habitat for southern bellfrogs and waterbirds</li> <li>maintain fringing river redgum health</li> </ul>

Location	Return flows used	Intended environmental outcome(s)
The Pollack (Koondrook-Perricoota)	No	<ul style="list-style-type: none"> <li>provide habitat for small bodied native fish and waterbirds</li> <li>maintain wetland vegetation condition</li> </ul>
Little Forest (Koondrook-Perricoota)	No	<ul style="list-style-type: none"> <li>provide habitat for waterbirds</li> <li>maintain wetland vegetation condition</li> </ul>
Lindsay, Mulcra and Wallpolla islands (Lake Wallawalla and Wallpolla Horseshoe)	No	<ul style="list-style-type: none"> <li>provide shallow-water, open-water and shoreline habitat</li> <li>provide foraging habitat and breeding opportunities for frogs, yabbies, waterbirds and turtles</li> </ul>
Hattah lakes	No	<ul style="list-style-type: none"> <li>support the growth and recruitment of wetland and river red gum vegetation</li> <li>inundate dry wetlands to release nutrients to increase food web productivity</li> <li>provide waterbird breeding habitat and support small-bodied fish</li> </ul>
Lower Darling River (Baaka)	n/a	<ul style="list-style-type: none"> <li>improve connectivity between the northern and southern Basin through the Lower Darling (Baaka) River</li> <li>assist native fish population recovery by shaping flows to provide breeding opportunities for Murray cod (and potentially golden perch and silver perch)</li> </ul>
Great Darling Anabranch	No	<ul style="list-style-type: none"> <li>reconnection event allowing a “Golden Highway” for a good number of juvenile golden perch to travel from the Menindee Lakes system and into the Murray River</li> </ul>
Lower Murray wetlands	No	<ul style="list-style-type: none"> <li>wet fringing vegetation communities to improve their condition</li> <li>provide a range of open water, shallow water and inundated lignum habitats for waterbird feeding and breeding</li> </ul>
Chowilla floodplain	No	<ul style="list-style-type: none"> <li>operate environmental regulators and weir 6 to inundate floodplain areas</li> <li>support the health and resilience of native vegetation, wetlands and anabranch habitats</li> </ul>
Pike and Katarapko floodplains	No	<ul style="list-style-type: none"> <li>operate environmental regulators and River Murray Weirs 5 and 4 to inundate floodplain areas</li> <li>support the health and resilience of native vegetation, wetlands and anabranch habitats</li> </ul>
Weir pool manipulation	No	<ul style="list-style-type: none"> <li>raising of the weir pool level to support floodplain vegetation</li> <li>promote connectivity and improve productivity</li> </ul>
Lower Lakes, Coorong and Murray Mouth	No	<ul style="list-style-type: none"> <li>maintain barrage releases to support the upstream migration of native fish such as young-of-year congolli and common galaxias through the barrage fishways</li> <li>reduce salinity in the Coorong, supporting the Coorong food web including ruppia, estuarine fish and invertebrates</li> </ul>

## More information on river flows and water for the environment

### Live River Data

[riverdata.mdba.gov.au](http://riverdata.mdba.gov.au)

### River Murray Weekly Report

[mdba.gov.au/river-information/weekly-reports](http://mdba.gov.au/river-information/weekly-reports)

### Water sharing in the River Murray

[www.mdba.gov.au/river-information/water-sharing](http://www.mdba.gov.au/river-information/water-sharing)

### Water use in catchments

[www.environment.gov.au/water/cewo/catchment](http://www.environment.gov.au/water/cewo/catchment)

### FLOW Monitoring, Evaluation and Research

[flow-mer.org.au](http://flow-mer.org.au)

### Delivering water for the environment

[mdba.gov.au/managing-water/water-for-environment/water-over-time](http://mdba.gov.au/managing-water/water-for-environment/water-over-time)