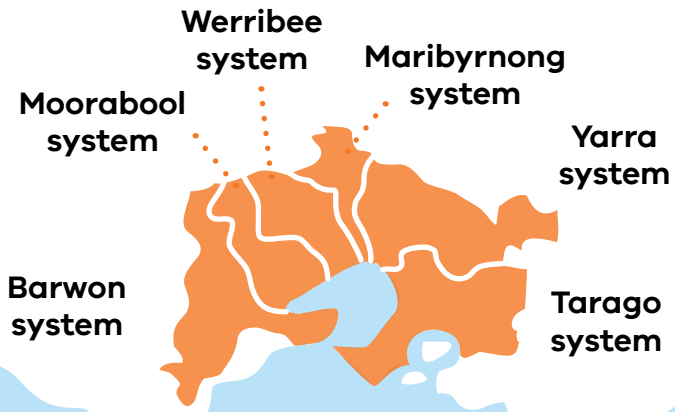
SECTION 3:
Central region



3.1 Central region overview

The systems in the central region that can receive water from the VEWH's environmental entitlements are *Birrarung* (Yarra River) and Tarago River in the east and *Weariby Yallok* (Werribee River), Moorabool River, upper Barwon River and lower Barwon wetlands in the west. The VEWH does not hold an environmental entitlement in the Maribyrnong system, but in some years, the VEWH purchases allocation to allow delivery in selected reaches of the Maribyrnong system.

Environmental values, objectives and planned actions for delivering water for the environment for each system in the central region are presented in the system sections that follow.

Traditional Owners in the central region

Traditional Owners in the central region have a deep connection to Country that has endured for tens of thousands of years. This includes inherent rights and cultural obligations to Country and the community.

The Bunurong Land Council Aboriginal Corporation, Eastern Maar Aboriginal Corporation, Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) and Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation are the Registered Aboriginal Parties (RAPs) under the Victorian *Aboriginal Heritage Act 2006* for the areas incorporating waterways covered by this section of the seasonal watering plan. Water from the Country of the Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC) and the Taungurung Land and Waters Council (TLaWC) can be diverted into the central region. Eastern Maar and Gunaikurnai hold Commonwealth Government Native Title, and GLaWAC and TLaWC have Recognition and Settlement Agreements with the state.

Engagement

Program partners engage extensively with Traditional Owners, stakeholders and local communities to understand community priorities for delivering water for the environment in the coming year and to understand how cultural, social, economic and recreational values, uses and objectives may be supported by delivering an environmental flow, provided it does not compromise environmental outcomes.

Engagement also informs environmental objectives in regional catchment and waterway strategies, environmental flows studies and environmental management plans.

Table 3.1.1 Program partners and stakeholders Corangamite CMA engaged with to develop seasonal watering proposals and key documents informing the proposals for the Moorabool system, upper Barwon River and lower Barwon wetlands (in alphabetical order)

Partner/ stakeholder	Moorabool system	Upper Barwon River	Lower Barwon wetlands
Community groups and environment groups	• Corangamite Waterwatch • Geelong Landcare Network • Moorabool Catchment Landcare Group • People for A Living Moorabool	• Birregurra Landcare Group • Environment Victoria • Friends of the Barwon • Geelong Field Naturalists Club • Land and Water Resources Otway Catchment • Otway Agroforestry Network Ltd • Upper Barwon Landcare Network • Winchelsea Land and Rivercare Group	• Friends of the Barwon • Geelong Field Naturalists Club
Government agencies	• Barwon Water • Central Highlands Water • Department of Energy, Environment and Climate Action • Parks Victoria • Southern Rural Water • Victorian Environmental Water Holder	• Barwon Water • Colac Otway Shire Council • Department of Energy, Environment and Climate Action • Southern Rural Water • Victorian Environmental Water Holder	• Barwon Water • City of Greater Geelong • Department of Energy, Environment and Climate Action • Parks Victoria • Southern Rural Water • Victorian Environmental Water Holder • Victorian Fisheries Authority
Landholders/ farmers	• Landholders on the Moorabool Stakeholder Advisory Committee	• Individual landholders	• Individual landholders
Local businesses	• Adelaide Brighton Cement		• Commercial eel fishers
Recreational users		• Individual users	• Field & Game Australia (Geelong Branch) • Geelong Gun and Rod Association Inc.
Traditional Owners	• Wadawurrung Traditional Owners Aboriginal Corporation	• Eastern Maar Aboriginal Corporation • Wadawurrung Traditional Owners Aboriginal Corporation	• Wadawurrung Traditional Owners Aboriginal Corporation

Table 3.1.2 Program partners and stakeholders Melbourne Water engaged with to develop seasonal watering proposals and key documents informing the proposals for the Yarra, Tarago, Maribyrnong and Werribee systems (in alphabetical order)

Partner/ stakeholder	Yarra system	Tarago system	Maribyrnong system	Werribee system
Community groups and environment groups	• Abbotsford Riverbankers • Collingwood Children's Farm • Environment Victoria • Friends of Yarra Flats Park • Friends of Yarran Dheran Nature Reserve • Independent community members • Native Fish Australia • Warringal Conservation Society • Waterwatch coordinators • Yarra Riverkeeper	• Bunyip Landcare • Cardinia Environment Coalition • Environment Victoria • Friends of Mt Cannibal Flora and Fauna Reserve • Friends of Robin Hood Reserve • Independent community members • Native Fish Australia • Waterwatch coordinators	• Environment Victoria • Friends of Holden Flora Reserve • Friends of the Maribyrnong Valley Inc. • Independent community members • Jacksons Creek EcoNetwork • Friends of Steele Creek • Maribyrnong River and Waterways Association • Native Fish Australia • Waterwatch coordinators	• Bacchus Marsh Platypus Alliance • Ecolinc • Environment Victoria • Friends of Toolern Creek Reserve • Friends of Werribee Gorge & Long Forest Mallee Inc. • Independent community members • Moorabool Environment Group • Native Fish Australia • NatureWest • Pinkerton Landcare and Environment Group • Waterwatch Coordinator • Werribee Riverkeeper • Western Region Environment Centre

Partner/ stakeholder	Yarra system	Tarago system	Maribyrnong system	Werribee system
Government agencies	• Banyule City Council • City of Boroondara • City of Melbourne • City of Whittlesea • Commissioner for Environmental Sustainability Victoria • Department of Energy, Environment and Climate Action • Environment Protection Authority Victoria • First Peoples – State Relations • Manningham City Council • Melbourne Water (Service Delivery) • Nillumbik Shire Council • Parks Victoria • Victorian Fisheries Authority • Victorian Freshwater Fish Habitat & Flows Roundtable • Yarra City Council • Yarra Ranges Shire Council	• Baw Baw Shire Council • Cardinia Shire Council • Commissioner for Environmental Sustainability Victoria • Department of Energy, Environment and Climate Action • Environment Protection Authority Victoria • First Peoples – State Relations • Melbourne Water (Service Delivery) • Parks Victoria • Southern Rural Water • Victorian Fisheries Authority • Victorian Freshwater Fish Habitat & Flows Roundtable	• Commissioner for Environmental Sustainability Victoria • Department of Energy, Environment and Climate Action • Environment Protection Authority Victoria • First Peoples – State Relations • Greater Western Water • Hume City Council • Maribyrnong City Council • Melbourne Water (Service Delivery) • Moonee Valley City Council • Parks Victoria • Southern Rural Water • Victorian Fisheries Authority	• Commissioner for Environmental Sustainability Victoria • Department of Energy, Environment and Climate Action • Environment Protection Authority Victoria • First Peoples – State Relations • Greater Western Water • Melbourne Water (Service Delivery) • Melton City Council • Parks Victoria • Southern Rural Water • Victorian Fisheries Authority • Wyndham City Council
Landholders/ farmers	• Individual landholders • Licensed diverters	• Individual landholders	• Licensed diverters from the Maribyrnong River at Keilor	• Individual landholders • Zoos Victoria

Partner/ stakeholder	Yarra system	Tarago system	Maribyrnong system	Werribee system
Local businesses	• Doon Reserve Caravan Park • East Coast Kayaking • Melbourne Adventure Hub • Sea Kayak Australia • Warburton Holiday Park • Warrior Spirit Adventures	• Glen Cromie Reserve	• Atlas Ecology Pty Ltd • Blackbird Cruises	• Camp Sunnystones
Recreational users	• Kirinari Kayak Club • Paddle Victoria • Patterson Lakes Canoe Club • Victorian Sea Kayak Club • VRFish • Whitehorse Canoe Club Inc.	• VRFish	• VRFish	• VRFish • Werribee & District Anglers Club
Technical experts	• Aquatic Pollution Prevention Partnership • Arthur Rylah Institute • Australian Platypus Conservancy • Cesar Australia • Melbourne Water subject matter experts • Research collaborators at Melbourne University	• Aquatic Pollution Prevention Partnership • Arthur Rylah Institute • Australian Platypus Conservancy • Cesar Australia • Melbourne Water subject matter experts • Research collaborators at Melbourne University	• Aquatic Pollution Prevention Partnership • Arthur Rylah Institute • Australian Platypus Conservancy • Cesar Australia • Melbourne Water subject matter experts • Research collaborators at Melbourne University	• Aquatic Pollution Prevention Partnership • Arthur Rylah Institute • Australian Platypus Conservancy • Cesar Australia • Melbourne Water subject matter experts • Research collaborators at Melbourne University

Partner/ stakeholder	Yarra system	Tarago system	Maribyrnong system	Werribee system
Traditional Owners	• Gunaikurnai Land and Waters Aboriginal Corporation • Taungurung Land and Waters Council Aboriginal Corporation • Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation	• Bunurong Land Council Aboriginal Corporation • Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation	• Bunurong Land Council Aboriginal Corporation • Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation	• Bunurong Land Council Aboriginal Corporation • Wadawurrung Traditional Owners Aboriginal Corporation • Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation

Integrated catchment management

Altered water regimes are one of many threats to the health of Victoria's waterways. Many of the environmental objectives of water for the environment in the central region are complemented by simultaneously addressing issues such as barriers to fish movement, high nutrient loads, loss of streambank vegetation and invasive species.

Examples of complementary programs that support the outcomes of environmental flows in the central region include:

- works to protect and improve streambanks along priority reaches, including willow removal, revegetation and fencing to exclude stock
- urban billabong restoration along the lower Yarra River using Western and Traditional Ecological Knowledge
- an update to the Werribee Diversion Weir (proposed in the ***Central and Gippsland Region Sustainable Water Strategy 2022***) to improve fish passage and delivery of environmental flows.

For more information about integrated catchment management programs in the central region, refer to the Corangamite CMA and Melbourne Water regional catchment strategies, the Melbourne Water ***Healthy Waterways Strategy*** and the ***Corangamite Waterway Strategy 2014-2022***.

Risk management

When developing seasonal watering proposals for the Yarra, Tarago, Maribyrnong, Werribee, Moorabool and Barwon systems, environmental watering program partners assessed risks associated with potential environmental flows for 2026-27 and identified appropriate mitigating strategies. Risks and mitigating actions are continually assessed by program partners throughout the year (see **subsection 1.2.7**).

Seasonal overview

Total rainfall across the central region in the second half of 2025 was overall at, below or very much below the long-term average. During winter, mean maximum temperatures were above average across the catchment, with rainfall and streamflow below average. In November, the Barwon received close-to-average rainfall, while the Moorabool, Werribee and Maribyrnong catchments experienced very much wetter-than-average conditions, and parts of the Yarra and Tarago catchments were the wettest on record. Despite this, rainfall totals in spring were insufficient to overcome underlying rainfall and streamflow deficits experienced throughout most of the season.

In contrast, during January 2026, all central region systems experienced very much below-average rainfall, and parts of the Yarra and Tarago systems were the driest on record. February and March saw a return to average or slightly above-average conditions in all central region catchments, while the remainder of the water year was dry to very dry.

The Bureau of Meteorology has forecast below-median rainfall and above-median temperatures during winter 2026 across the central region. Allocations to environmental entitlements in 2026-27 will depend on prevailing climatic conditions.

Water levels in storages across the central region declined during 2025-26. The share of inflows allocated to many of the central region systems, particularly the Moorabool system during winter/spring 2025, has been very low and will limit the available carryover taken into 2026-27. The VEWH purchased water from licence holders in the Maribyrnong system to deliver environmental flows in Jacksons Creek.

The Yarra system has a very secure environmental entitlement. This annual allocation, combined with carryover from 2025-26, means that most potential watering actions in 2026-27 can take place in every climate scenario. Delivery of all potential watering actions will only be possible in the average or wet planning scenarios in the Tarago. The forecast available supply in the Werribee system is unlikely to be sufficient to deliver all the potential environmental watering actions, regardless of the prevailing planning scenario. As a result, some flows will be delivered at a lesser magnitude or over a shorter duration than recommended.

Options for delivering water for the environment in the Moorabool and Barwon systems in 2026-27 will be heavily influenced by local climatic conditions due to their smaller and more variable environmental allocations. Higher-magnitude flows in the Moorabool and upper Barwon systems rely on significant contributions from local rainfall and are only likely to be achieved in average or wet climatic conditions. Natural inflows will also have a significant bearing on the low flows and freshes in the Moorabool and upper Barwon systems, and summer and autumn flows may need to be delivered at the lower end of their recommended range to conserve available environmental supply if those seasons are dry. Environmental water delivery in the lower Barwon wetlands is not affected by annual allocations of water for the environment, and the proposed fill in winter/spring and partial drawdown in summer/autumn should be possible in all planning scenarios if river levels allow.

3.2 Yarra system

Waterway manager – Melbourne Water

Storage manager – Melbourne Water

Environmental water holder – Victorian Environmental Water Holder

The Yarra system includes *Birrarung* (Yarra River), the Plenty River and *Birrarung* (Yarra) billabongs.

The VEWH acknowledges that Traditional Owners use the name '*Birrarung*', and we have adopted its use wherever possible. As this is a legislated planning document, it is necessary to also maintain consistent and clear references to the language used in the establishing documentation. For that reason, the name 'Yarra River' is used in the system overview and when referring to the system as a whole.

System overview

The Yarra River flows west from the Yarra Ranges above Warburton, through the Yarra Valley and then opens out into a wider plain as it meanders through the suburbs and city of Melbourne before entering Port Phillip Bay (Figure 3.2.1). Over time, the Yarra River below Warrandyte has been straightened, widened and cleared of natural debris as Melbourne has developed.

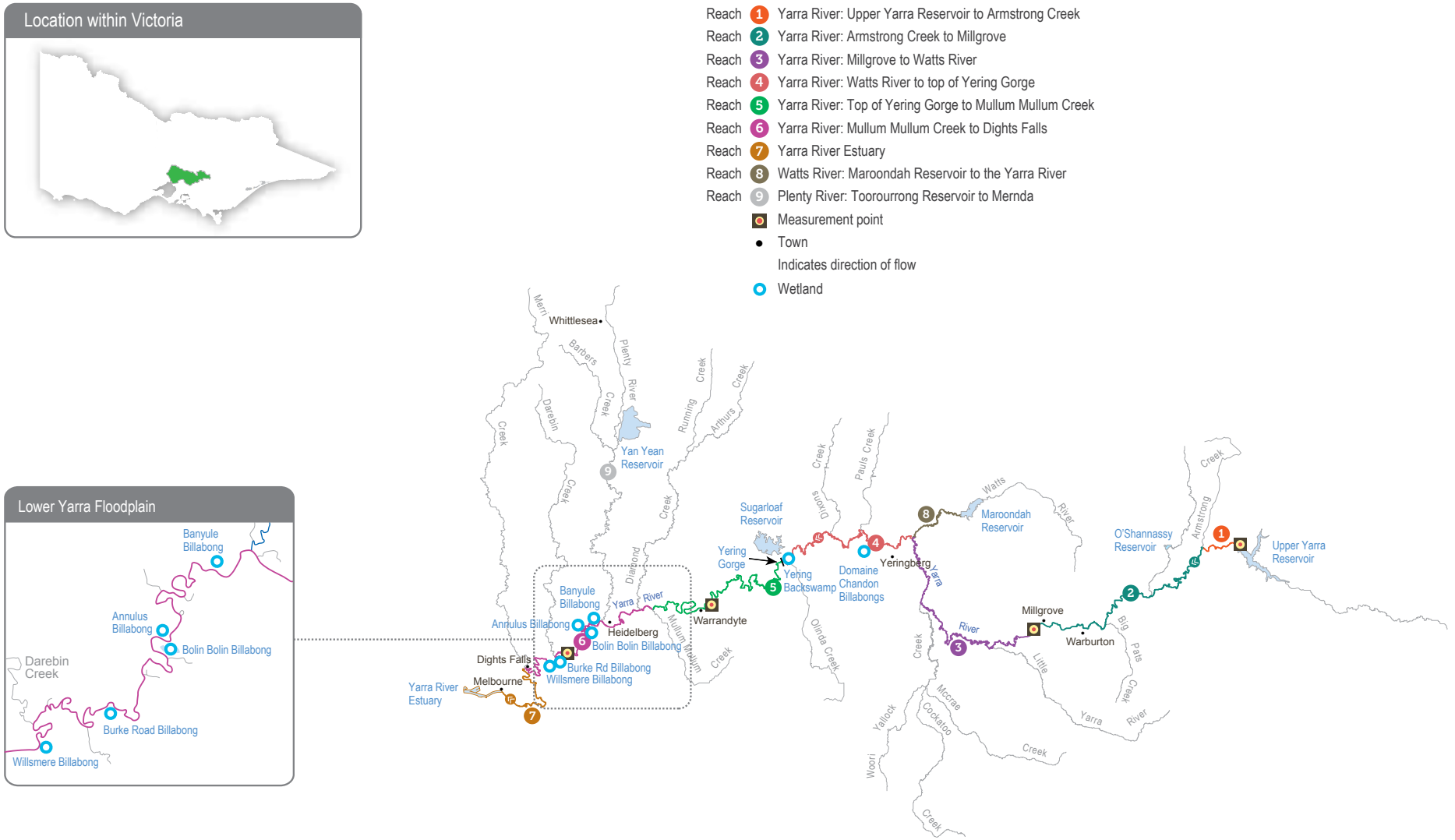
Up to 400,000 ML per year (long-term average diversion limit) can be harvested from the Yarra system for consumptive use in Melbourne and surrounding areas. The Upper Yarra, O'Shannassy and Maroondah reservoirs harvest water from headwater tributaries, and a pump station at Yering Gorge is used to harvest water from the Yarra River to Sugarloaf Reservoir.

Tributaries, including Armstrong Creek, McMahons Creek, Starvation Creek, Woori Yallock Creek and the Watts and Little Yarra rivers, influence the flow in the upper reaches of the Yarra River. Urbanised tributaries (such as Olinda Creek, Mullum Mullum Creek, Diamond Creek, Plenty River and Merri Creek) provide additional water to the middle and lower reaches of the Yarra River. There are many significant billabongs in the middle and lower reaches.

Environmental water can be released from the Upper Yarra, Maroondah (reservoir to Watts River and via the aqueduct) and O'Shannassy reservoirs to support ecological processes and environmental outcomes in downstream river reaches and wetlands. Requests can also be made to cease harvest from the Yarra River at the Yering Gorge Pumping Station, allowing the flow to pass down the whole river system. The priority Yarra River reaches for water for the environment are 2 and 5, shown in **Figure 3.2.1**. Reach 6 is also a priority in summer and autumn to manage poor water quality upstream of Dights Falls, as flow targets in reach 5 may not be sufficient. Water for the environment delivered to reaches 2 and 5 will help meet flow targets in other reaches. Occasionally, watering actions met naturally in reaches 2 and beyond are not achieved in reach 1 due to the lack of unregulated tributary inflows immediately downstream of Upper Yarra Reservoir. If so, water for the environment can also be used to meet flow targets in reach 1.

The Plenty River rises from the slopes of Mount Disappointment in the Great Dividing Range about 50 km north of Melbourne. It flows downstream through rural and semi-rural areas and Plenty Gorge before joining the Yarra River near Viewbank, east of Banyule Flats Reserve. Yan Yean Reservoir is located off the waterway north of Plenty Gorge, and it receives a flow from Toorourrong Reservoir via a channel. The Plenty River has not received managed environmental flows before, but there may be opportunities to deliver water for the environment from Yan Yean Reservoir in the coming years.

Figure 3.2.1 Yarra system



Environmental values

The upper reaches of *Birrarung* (reaches 1-3) have good-quality streamside and aquatic vegetation and provide habitat for native fish species, including river blackfish, mountain galaxias and common galaxias. The middle and lower reaches of *Birrarung* (reaches 4-6) flow through forested gorges, cleared floodplains and some highly-urbanised areas, and they support populations of native fish, including Australian grayling, river blackfish, Macquarie perch and tupong. Macquarie perch were introduced to *Birrarung* last century, and the population is now considered one of Victoria's largest and most important.

The Plenty River (reach 9) provides habitat for waterbugs and native fish species (such as common galaxias). Platypus have been detected in the Plenty River in the past; recent eDNA results suggest they may still be present in the upper Plenty River.

Billabongs are an important feature of the lower *Birrarung* floodplain between Heidelberg and Dights Falls and in the upper reach around Yarra Glen and Woori Yallock. The billabongs support distinct vegetation communities and provide foraging and breeding habitat for waterbirds and frogs. Except in times of high flow, most billabongs are disconnected from *Birrarung*.

Environmental objectives in the Yarra system

A1 – Maintain the population of frogs, particularly on the mid-*Birrarung* floodplain

CN1 – Provide sufficient rates of carbon and nutrient production and processing to support native fish and waterbug communities

F1 – Protect and increase populations of native fish, including threatened species (such as the Australian grayling, Macquarie perch and river blackfish)

G1 – Maintain the form of the river channel

G2 – Scour silt from riffles and clean cobbles

MI1 – Maintain the diversity and increase the abundance of waterbugs to support aquatic food webs

PR1 – Maintain the population of resident platypus

V1 – Maintain native streamside and aquatic vegetation on the riverbank and in the channels

V2 – Increase the growth of threatened wetland plant species to rehabilitate shallow marsh, deep marsh and freshwater meadows on the floodplain and billabongs

WQ1 – Improve water quality in river pools, ensuring adequate dissolved oxygen in the water to support fish, crustaceans and waterbugs

Traditional Owner cultural values and uses

Melbourne Water is working with the Registered Aboriginal Parties (RAPs) within the *Birrarung* system—the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, the Bunurong Land Council Aboriginal Corporation, the Taungurung Land and Waters Council Aboriginal Corporation and the Gunaikurnai Land and Waters Aboriginal Corporation, from whose Country water is diverted to the Yarra system—to develop and strengthen relationships with them and to increase Traditional Owners' involvement in the planning and delivery of water for the environment.

Melbourne Water is in discussions with each of the Traditional Owner corporations to work towards developing overarching partnership agreements. Formal partnership agreements have been signed with the Gunaikurnai Land and Waters Aboriginal Corporation and the Wadawurrung Traditional Owners Aboriginal Corporation. In terms of environmental water management, the intent is for the Traditional Owners of *Birrarung* and its tributaries, including the Plenty River, to be active partners in the planning, delivery and monitoring of all deliveries of water.

The part of the lower *Birrarung* floodplain included in the environmental watering program is on Wurundjeri Woi-wurrung Country upstream of Chandler Highway. The parts of the lower *Birrarung* floodplain on Bunurong Country are not currently in the environmental watering program. Wallaby Creek (on Taungurung Country), which is connected to the Plenty River catchment via Yan Yean Reservoir, is also not currently in the environmental watering program. The Thomson Reservoir, which is on the Thomson River but which can provide water to the Yarra storages, is on Gunaikurnai Country.

In 2021, RAP determinations saw the lower *Birrarung* from just upstream of Moonee Ponds Creek to Port Phillip Bay included in the Bunurong Land Council Aboriginal Corporation's RAP boundaries. The Bunurong Land Council Aboriginal Corporation is working with the Bunurong people to determine the cultural objectives for *Birrarung* on Bunurong Country.

Where possible, Melbourne Water and the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation work together to link water for the environment on the lower *Birrarung* floodplain with cultural outcomes for the Wurundjeri Woi-wurrung people. In general, environmental water management on the lower *Birrarung* floodplain aligns with a landscape-scale approach for billabong watering, developed in consultation with Wurundjeri Woi-wurrung people.

Management of water for the environment (including wetting and drying) at many billabongs in the lower *Birrarung* (such as Annulus, Banyule and Bolin Bolin billabongs) is closely aligned with the aspirations of the Wurundjeri Woi-wurrung people.

There are many places of tangible and intangible cultural significance for the Wurundjeri Woi-wurrung people and the Bunurong people on the lower *Birrarung* floodplain.

In September 2025, Narrap Rangers and fish scientists from the Arthur Rylah Institute tagged eels at Bolin Bolin Billabong, as part of an ongoing investigation into their migration response to billabong watering. Narrap Rangers also continued to collaborate with The University of Melbourne to undertake vegetation, frog and eDNA surveys in the lower Yarra billabongs.

The Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation is leading an Australian Research Council Funded project 'Traditional Owner-led restoration of urban billabongs' with The University of Melbourne and Melbourne Water. The group has been monitoring vegetation, birds, eels, frogs and water quality outcomes from environmental water, and it held on-Country knowledge-sharing days in 2024 and 2025 to discuss learnings. Activities such as these enable the Narrap Unit to build capacity to inform environmental water delivery to Wurundjeri Woi-wurrung Country.

The intent is to further the role and leadership of the Wurundjeri Woi-wurrung people in managing the billabongs, including vegetation management, research and being partners in decision-making processes.

This Indigenous scientist-led project aims to investigate the past and present fire, flooding and vegetation dynamics of urban billabongs through paleoenvironmental assays (sediment cores) and field surveys of vegetation, faunal and water quality responses to cultural burns and floods. Through these investigations, we will better understand billabong ecology and Indigenous peoples' historical land and water management and apply this knowledge to restore and care for Melbourne's billabongs.

The project has been undertaking coring of seven priority billabongs in the lower *Birrarung,* with five cores being taken for processing, among other monitoring. Melbourne Water has also shared information about river levels required to naturally inundate the remaining billabongs (Annulus and Burke Road) and has offered to keep the research team updated on monitoring of unregulated flows so that coring can take place if billabongs fill naturally.

Where Traditional Owners are more deeply involved in the planning and/or delivery of environmental water for a particular site, their contribution is acknowledged in **Table 3.2.1** with an icon. The use of this icon is not intended to indicate that these activities are meeting all the needs of Traditional Owners, but it is used in the spirit of valuing that contribution.

	Watering planned and/or delivered in partnership with Traditional Owners to support cultural values and uses

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.2.1**, Melbourne Water considered how environmental water could support values and uses, including:

- water-based recreation (such as kayaking, canoeing, fishing and swimming)
- riverside recreation and amenity (such as birdwatching, camping, picnicking, cycling, running and walking)
- community events and tourism (such as the Moomba Festival)
- socio-economic benefits (such as for diverters for irrigation, stock needs and domestic use: water quality can be improved by the delivery of water for the environment, particularly in summer).

Environmental water supports these activities indirectly by maintaining healthy river flows, improving water quality, and sustaining diverse aquatic and streamside ecosystems. By enhancing habitat conditions, environmental water helps support fish populations for recreational fishing, provides safer and more enjoyable conditions for water-based activities, and improves the aesthetic and ecological integrity of riverside areas, benefiting tourism, community events, and local economies.

Melbourne Water endeavours to provide sufficient notice of delivery for fresh and high events to engaged recreational paddling groups and businesses. This ensures members can optimise opportunities to enjoy the enhanced flows. The timing of deliveries may also be aligned with paddling events and public holidays, where ecologically appropriate, noting that releases sometimes must be amended or cancelled, based on conditions.

	Environmental watering will also support water sports activities (e.g., canoeing, kayaking, rowing, swimming, water skiing) by communicating with recreation groups and commercial operators and timing freshes to coincide with events where possible
	Environmental watering will also support waterbird-related recreational activities (e.g., twitching, birdwatching) by watering lower *Birrarung* billabongs, which are popular birdwatching sites
	Environmental watering will also support angling activities by providing freshes and a low flow to maintain populations of popular angling species
	Environmental watering will also support peaks in visitation (e.g., camping or other public activities on long weekends or school holidays) by timing freshes to coincide with public holiday weekends, where possible

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.2.1 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

The seasonal watering plan for the Yarra system targets the following reaches for environmental watering in the year ahead:

- reach 2: *Birrarung* from Armstrong Creek to Millgrove
- reach 5: *Birrarung* from the top of Yering Gorge to Mullum Mullum Creek.

Table 3.2.1 Yarra system potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Yarra River – reach 2 and 5 (Millgrove and Warrandyte)		
Winter/spring low flow (June to November) reach 2: 80-350 ML/day; reach 5: 350-750 ML/day	• Physically mix pools to minimise the risk of stratification and low dissolved oxygen • Maintain access to habitats for fish, waterbugs and platypus • Wet bank vegetation to promote growth	F1, MI1, PR1, V1, WQ1
Winter/spring fresh(es) (one to three freshes for three to seven days during June to September) reach 2: 700 ML/day; reach 5: 1,300-2,500 ML/day	• Scour sediment and biofilm from gravel in riffles to improve spawning opportunities for Macquarie perch • Wet native streamside vegetation on the banks of the river to promote growth • Provide cues for upstream migration of juvenile migratory fish (e.g., Australian grayling and tupong) • Entrain organic material to support carbon cycling	CN1, F1, G2, V1
Spring high flow (one high flow for 14 days during September to October) reach 2: 700 ML/day; reach 5: 2,500 ML/day	• Scour sediment and biofilm from gravel in riffles • Provide prolonged wetting to favour flood-tolerant native vegetation in the streamside zone • Provide cues for upstream migration of juvenile migratory fish (e.g., Australian grayling and tupong) • Improve spawning opportunities for Macquarie perch • Entrain organic material to support carbon cycling	CN1, F1, G2, V1

Potential environmental watering action	Expected watering effects	Environmental objectives
Summer/autumn low flow (December to May) reach 2: 80 ML/day; reach 5: 200 ML/day; reach 6: 300-450 ML/day	• Physically mix pools to minimise the risk of stratification and low dissolved oxygen • Maintain access to habitats for fish, waterbugs and platypus	F1, MI1, PR1, WQ1
Summer/autumn freshes (three freshes for two days during December to May) reach 2: 350 ML/day; reach 5: 750 ML/day	• Flush pools to prevent a decline in water quality • Scour sediment and biofilm from gravel in riffles and pools to maintain habitat quality for fish and waterbugs • Provide opportunities for the localised movement of fish and platypus • Wet the banks of the river to maintain flood-tolerant vegetation on the banks	F1, G1, G2, PR1, V1, WQ1
Autumn high flow (one high flow for seven to 14 days during April to May) reach 2: 560 ML/day; reach 5: 1,300 ML/day	• Cue the migration of Australian grayling • Scour sediment and biofilm from gravel in riffles and pools to maintain habitat quality for fish and waterbugs	F1, G1, G2
Yarra billabongs		
Willsmere Billabong (partial fill in spring)[1]	• Fill the wetland to the partial supply level • Allow to draw down to support the growth of threatened wetland plant species and encourage the regeneration of spreading aquatic herbs • Maintain a pool over spring/early summer to provide breeding habitat for frogs and waterbugs	A1, F1, V2
Yering Backswamp (fill monthly in autumn/winter/spring)	• Wet the deepest parts of the wetland to about 80 cm to provide habitat for frogs • Wet remaining areas of the wetland to about 40-60 cm to support the growth of threatened wetland plant species and encourage the regeneration of spreading aquatic herbs	A1, V2
Domaine Chandon billabongs (fill and keep full in autumn/winter/spring)	• Fill the wetlands to full supply level to support the establishment of aquatic and semi-aquatic revegetation	V2

Potential environmental watering action	Expected watering effects	Environmental objectives
Annulus Billabong (partially fill in winter/spring if conditions/resource allow)	• Wet the wetland bed to support the growth of threatened wetland plant species to rehabilitate shallow marsh, deep marsh and freshwater meadows • Provide habitat for frogs, waterbirds, waterbugs and eels	A1 F1 V2
Burke Road Billabong (fill in spring/summer if conditions/ resources allow)	• Wet the wetland bed to support the growth of aquatic and semi-aquatic vegetation • Inundate the wetland to prevent the encroachment of terrestrial vegetation • Provide habitat for frogs and waterbirds	A1 V2

1 Filling time depends on advice from specialists.

Scenario planning

Table 3.2.2 outlines potential environmental watering and expected water use in a range of planning scenarios.

In the Yarra system, dry, average and wet planning scenarios are considered.

The Yarra system has a very secure environmental entitlement, with the first 17,000 ML of inflows being allocated to the environment. This annual allocation, combined with carryover from 2025-26, means that the delivery of many potential watering actions in 2026-27 can take place in all planning scenarios. The availability of environmental water is the same in all three scenarios: about 31 GL.

A drought planning scenario for the Yarra has not been included, as the actions would be almost identical to the dry planning scenario. Melbourne Water estimates there would be enough water available to deliver all of the tier 1 potential watering actions described for a dry planning scenario, even in drought conditions.

The Yarra system was managed under the dry planning scenario in 2025-26. However, several wet years were experienced in a row up to 2024-25, with high achievement of environmental watering actions and substantial carryover. As such, the goal for 2026-27 will be to maintain and enhance the system in all climate scenarios.

Birrarung

In all planning scenarios, the environmental watering priority for *Birrarung* is to deliver the recommended range of low flows in reaches 2, 5 and 6 and small-to-medium freshes in reaches 2 and 5 throughout the year. This will maintain high-quality habitat for native fish, platypus and waterbugs and provide flow variability in the lower parts of the channel to facilitate fish dispersal and water-fringing vegetation. Low-flow supplementation is particularly important in reach 6 during summer and autumn, when water quality can decline. The extent to which these flows are likely to be met by natural tributary inflows varies between the dry, average and wet planning scenarios, and water for the environment will be used to fill the main deficits in each scenario, where possible.

A dry planning scenario will aim for a 'maintain' strategy, given that insufficient environmental water is available to deliver all potential watering actions in 2026-27 while still maintaining sufficient carryover to buffer against ongoing dry times. Operational constraints can also occur in dry years. In the average and wet planning scenarios, the strategy will be to enhance conditions to build resilience and provide favourable conditions for fish, platypus, waterbugs and vegetation through the delivery of potential watering actions in 2026-27.

The spring high flow for reaches 2 and 5 has the same magnitude as the winter/spring fresh in those reaches, but has a longer recommended duration to drown out terrestrial vegetation growing on the banks and encourage the growth of flood-tolerant native plant species. Recent monitoring suggests that the spring high flow is having a negligible effect on streamside vegetation, while still providing benefits (such as sediment scouring and providing a cue for fish migration). It is therefore a lower priority to deliver in 2026-27.

An autumn high flow is recommended in dry years to cue Australian grayling spawning and to scour sediment and biofilm from gravel to maintain habitat quality for fish and waterbugs. Ideally, Australian grayling would have the opportunity to spawn every year, given that they are a short-lived and threatened species, but due to the high volumes required, the flow recommendations are that the autumn high is delivered in at least two of every three years. As an autumn high was achieved every year between 2019 and 2024, an autumn high is not planned for the remainder of 2025-26.

Birrarung billabongs

All of the *Birrarung* billabongs filled naturally between 2021 and 2023, with a number (including Bolin Bolin) again inundated during a rainfall event in July 2024. Aside from Bolin Bolin and Yering Backswamp, all other actively managed billabongs on the *Birrarung* floodplain (Banyule Billabong, Annulus Billabong, Burke Road Billabong and Willsmere Billabong) were allowed to draw down during 2025-26 to support vegetation objectives and to provide foraging habitats for birds and other animals that use wetlands in their drawdown and drying phases.

The objective of Melbourne Water's landscape-scale approach to wetlands is to provide a mosaic of different wetland types across the lower *Birrarung* floodplain landscape. The individual wetting and drying cycles of the wetlands at a site scale complement a broad range of ecological niches at the landscape scale and support a broad range of ecological, social and cultural values, with most wetlands watered every two to three years.

This landscape-scale approach has identified watering Willsmere Billabong as a high priority for 2026-27, on the basis that this will help to secure ecological outcomes (maintain high-quality native vegetation) as well as support proposed paleoecological coring at the site. Other lower *Birrarung* billabongs which may be prioritised for watering in 2026-27 include Annulus Billabong and Burke Road Billabong, which are both now due for a wet phase. Bolin Bolin Billabong and Banyule Billabong have both received good amounts of water since 2021, so they will only be watered if site conditions and resources allow.

The privately owned Domaine Chandon site is new to the environmental watering program and is located in the rural reaches of the Yarra middle subcatchment. Melbourne Water and Domaine Chandon have initiated a co-investment partnership to restore a significant area (31.13ha) of wetland ecosystems on-site via revegetation. The project will establish a mosaic of threatened vegetation communities, including Floodplain Riparian Woodland, Swampy Woodland and Billabong Swamp Complex. For wetland plantings to establish, the ground conditions need to be wet, and supplementary watering may be required to assist plant establishment for a period of five to six years. The Domaine Chandon billabongs will be watered in all planning scenarios to support revegetation. Based on conceptual models developed for the site, the Domaine Chandon billabongs are likely to engage naturally in the wet planning scenario.

Watering Yering Backswamp is a high priority in all planning scenarios in 2026-27. The distinct vegetation community at Yering Backswamp has adapted to frequent or near-permanent inundation, and as such, it is the only managed wetland on the Yarra floodplain that is actively watered every year. Filling Yering Backswamp every year also provides reliable habitat for native frogs and waterbirds, especially when other wetlands are drawing down or in their dry phases. This approach is consistent with the long-term management plan Melbourne Water has recently updated for Yering Backswamp.

Table 3.2.2 Yarra system environmental watering planning scenarios

Planning scenario	Dry	Average	Wet
Expected conditions	• Low streamflow year-round • Lack of unregulated freshes and high flow • Passing flow is not likely to meet the minimum environmental flow recommendations • Potential poor water quality, particularly in summer • Pools may stratify	• Low-flow recommendations are likely to be met by the passing flow • Natural flow may provide some freshes, but its duration and/or magnitude will likely be less than the recommended environmental flow • Potentially poor water quality, particularly in summer • Pools may stratify • Small reservoirs may spill • Overbank flow is not likely, although some billabongs may engage in the lower reaches	• Low-flow recommendations are likely to be met by the passing flow • High, natural flow will occur, most likely in winter/spring • Major spills from reservoirs may occur • Natural wetting of most billabongs is likely
Expected availability of water for the environment	• 31,000 ML	• 31,000 ML	• 31,000 ML
Potential environmental watering – tier 1 (high priorities)	• Winter/spring low flow • Winter/spring fresh (one fresh) • Summer/autumn low flow • Summer/autumn freshes (three freshes) • Priority wetland/billabong watering (Willsmere Billabong, Yering Backswamp and Domaine Chandon billabongs)	• Winter/spring low flow • Winter/spring freshes (two freshes) • Summer/autumn low flow • Summer/autumn freshes (three freshes) • Autumn high (one high flow) • Wetland/billabong watering (Willsmere Billabong, Yering Backswamp and Domaine Chandon billabongs)	• Winter/spring low flow • Winter/spring freshes (two freshes) • Summer/autumn low flow • Summer/autumn freshes (three freshes) • Autumn high (one high flow) • Spring high (one high flow) • Wetland/billabong watering (Willsmere Billabong, Yering Backswamp and Domaine Chandon billabongs)

Planning scenario	Dry	Average	Wet
Potential environmental watering – tier 2 (additional priorities)	• Autumn high (one high flow) • Winter/spring fresh (one fresh) • Additional wetland/ billabong watering (Annulus, Bourke Road, Bolin Bolin and Banyule billabongs)	• Spring high (one high flow) • Additional wetland/ billabong watering (Annulus, Bourke Road, Bolin Bolin and Banyule billabongs)	• Additional wetland/ billabong watering (Annulus, Bourke Road, Bolin Bolin and Banyule billabongs)
Possible volume of water for the environment required to achieve objectives	• 23,500 ML (tier 1) • 19,350 ML (tier 2)	• 27,750 ML (tier 1) • 7,000 ML (tier 2)	• 17,500 ML (tier 1) • 7,000 ML (tier 2)
Priority carryover requirements for 2027-28	• 3,000 ML	• 3,000 ML	• 3,000 ML

3.3 Tarago system

Waterway manager – Melbourne Water

Storage manager – Melbourne Water

Environmental water holder – Victorian Environmental Water Holder

System overview

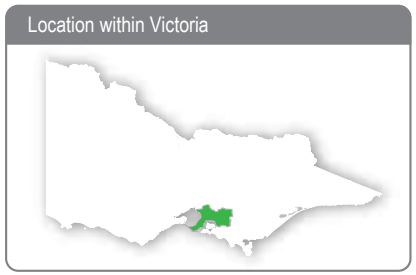
The Tarago River rises in the Tarago State Forest and flows into the Tarago Reservoir at Neerim (Figure 3.3.1). The reservoir harvests inflows from all upstream tributaries to supply towns on the Mornington Peninsula and around the Western Port area. Water is released from the reservoir to supply downstream irrigators. Below the reservoir, the Tarago River flows close to Rokeby before meeting the Bunyip River at Longwarry North. From there, the Bunyip River flows through a modified, straightened channel called Bunyip Main Drain that discharges into Western Port. The Bunyip Main Drain supplies many irrigators in the catchment.

Water available under the *Tarago and Bunyip Rivers Environmental Entitlement 2009* is stored in and released from Tarago Reservoir. This water is primarily used to meet environmental objectives in reach 2, between the reservoir and the confluence of the Tarago and Bunyip rivers, as **Figure 3.3.1** shows. Water for the environment delivered to reach 2 also supports environmental flow recommendations in reach 6 (Bunyip Main Drain).

Year-round passing flows in the Bunyip and Tarago rivers are stipulated under both the environmental entitlement and Melbourne Water's bulk entitlement. These passing flows contribute toward meeting the minimum low-flow requirements in summer/autumn and winter/spring, but they are less than the recommended minimum flows. The passing flows do not provide any of the freshes or greater flows that are needed throughout the year to support environmental outcomes.

Southern Rural Water hold a bulk entitlement in Tarago. Water released to meet irrigation demands creates variable flow patterns in the Tarago and Bunyip rivers throughout the year. The magnitude and timing of these releases can influence environmental outcomes, and Melbourne Water continues to work with Southern Rural Water to optimise the shared value derived from irrigation releases.

Figure 3.3.1 Tarago system



Reach 1 Upper Tarago River: Pederson Weir to Tarago Reservoir
Reach 2 Lower Tarago River: Tarago Reservoir to Bunyip River
Reach 3 Labertouche Creek
Reach 4 Upper Bunyip River: Bunyip State Forest to Tarago River
Reach 5 Cannibal Creek
Reach 6 Bunyip Main Drain
Reach 7 Bunyip Estuary
Water infrastructure
Measurement point
Town
Indicates direction of flow

Grey river reaches have been included for context. The numbered reaches indicate where relevant environmental flow studies have been undertaken. Coloured reaches can receive environmental water.

Environmental values

The Tarago system contains several significant and threatened native animal and plant species, including Australian grayling. The upper catchment (reach 2) has healthy streamside vegetation and diverse in-stream habitat that supports platypus and native fish, including river blackfish, tupong, short-finned eels and mountain galaxias. The lower catchment (reach 6) has been highly modified but still contains patches of remnant vegetation and is a key migration pathway for Australian grayling. It also has healthy platypus populations.

Environmental objectives in the Tarago system	
	F1 – Increase populations of native fish, including threatened species (such as the Australian grayling)
	**G1** – Maintain channel form and structure
	**PR1** – Increase platypus populations
	**V1** – Increase native streamside and aquatic plant communities on the riverbank and in the channel **V2** – Prevent encroachment of terrestrial plants into the channel
	**MI1** – Increase the diversity and biomass of waterbugs to support aquatic foodwebs
	WQ1 – Improve water quality in river pools, ensuring adequate dissolved oxygen in the water to support fish, crustaceans and waterbugs

Traditional Owner cultural values and uses

Melbourne Water is working with the Registered Aboriginal Party within the Tarago system—the Bunurong Land Council Aboriginal Corporation—and other interested Traditional Owner groups to develop and strengthen relationships and increase Traditional Owner involvement in the planning and delivery of water for the environment. The intent is for Traditional Owners to be active partners in the planning, delivering and monitoring water for the environment associated with the Tarago and Bunyip rivers.

There are more opportunities for Melbourne Water and the VEWH to work with Traditional Owner groups to identify and integrate cultural values and their flow requirements into the environmental watering program on an ongoing basis. During the development of the seasonal watering proposal, Melbourne Water offered to meet with staff from Bunurong Land Council Aboriginal Corporation to discuss how environmental watering can support Traditional Owners' cultural objectives and identify opportunities to use environmental water to support these. The Bunurong Land Council Aboriginal Corporation has expressed a desire to be more involved in environmental flows planning and management in the Tarago River.

Melbourne Water and the VEWH will continue to work with the Traditional Owner groups to identify and integrate cultural values and their flow requirements into the environmental watering program on an ongoing basis.

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.3.1**, Melbourne Water considered how environmental flows could support values and uses, including:

- water-based recreation (such as fishing and swimming)
- riverside recreation and amenity (such as cycling, camping, caravanning, short- and long-term visiting and walking)
- community events and tourism (such as visiting and residing in the Glen Cromie Reserve caravan park)
- socio-economic benefits (such as for diverters for irrigation, stock needs and domestic use: water levels and water quality can rely on the delivery of water for the environment, particularly in summer).

Environmental water supports these activities indirectly by maintaining healthy river flows, improving water quality and sustaining diverse aquatic and streamside ecosystems. By enhancing habitat conditions, environmental flows help support fish populations for recreational fishing, provide safer and more enjoyable conditions for water-based activities and improve the aesthetic and ecological integrity of riverside areas, benefiting tourism, community events and local economies.

As well as generally improving the above recreational values, Melbourne Water looks for opportunities to time environmental water releases to support social, economic and recreational values, if they still fit within the optimal ecological timing window.

Melbourne Water may time the release of a summer fresh in the Tarago River to coincide with long weekends in January or March, so visitors and long-term residents of the Glen Cromie Reserve caravan park can enjoy the additional flow in the river, along with the many public areas along the river.

Melbourne Water continues to liaise with Southern Rural Water to ensure environmental releases and irrigation releases are aligned for maximum ecological and social benefit, where possible.

	Environmental watering will also support water sports activities (e.g., canoeing, kayaking, rowing, swimming, water skiing) by delivering freshes during long weekends where possible
	Environmental watering will also support angling activities by delivering freshes and low flows to maintain the population of popular angling species
	Environmental watering will also support peaks in visitation (e.g., camping or other public activities on long weekends or school holidays) by providing freshes during long weekends where possible

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.3.1 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.3.1 Tarago system potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Tarago River – reach 2		
Winter/spring low flow (75 ML/day or natural during June to November)	• Prevent the encroachment of terrestrial vegetation in the channel • Wet the banks to promote streamside vegetation growth • Maintain an adequate depth through riffles to allow access to habitats for fish and platypus • Mix pools to maintain water quality and increase habitat for fish and waterbugs during wetter months	F1, MI1, PR1, V1
Winter/spring fresh(es) (one to two freshes with a peak of 100-200 ML/day for two days during June to September)	• Flush sediment and scour biofilm from stream substrate and large woody debris to maintain habitat for waterbugs and fish, including river blackfish • Create extra depth to allow greater fish movement between pools and reaches • Cue the downstream migration of species, including eel and tupong • Wet the banks and low benches to maintain the fringing aquatic vegetation	F1, G1, MI1, V1
Spring high flow (one high flow with a peak of 200-300 ML/day for two days in a seven to 10 day duration during September to October)	• Form and maintain scour holes around large wood • Wet the higher benches to maintain the fringing aquatic vegetation • Prevent the encroachment of terrestrial vegetation into the channel • Cue the upstream migration of juvenile diadromous fish (e.g., Australian grayling) from the sea or estuary into the river • Encourage female platypus to select a nesting burrow higher up the bank to reduce the risk of greater flow later in the year flooding the burrow when juveniles are present	F1, G1, PR1, V1, V2
Summer/autumn low flow (20 ML/day or natural during December to May)	• Maintain adequate depth through riffles to support waterbugs and allow access to habitats for fish and platypus • Maintain adequate foraging habitat in pools for fish and platypus • Maintain water quality (especially dissolved-oxygen concentration) in pools	F1, MI1, PR1, WQ1
Summer/autumn freshes (three to five freshes of 75 ML/day for two days during December to May)	• Flush fine silt from hard substrates and around large woody debris to maintain habitat for native fish in low-flow periods • Allow the localised movement of native fish • Prevent terrestrial vegetation growth on sandbars • Maintain water quality by aeration in times of low flow	F1, G1, V2, WQ1

Potential environmental watering action	Expected watering effects	Environmental objectives
Autumn high flow (one high flow with a peak of 100 ML/day for two days in a minimum seven-day duration during April to May)	• Cue the downstream migration and spawning of diadromous fish (e.g., Australian grayling) • Assist in the dispersal of juvenile platypus	F1  PR1

Scenario planning

Table 3.3.2 outlines potential environmental watering and expected water use in a range of planning scenarios.

Before 2025-26, there were a number of wet years in a row, with high achievement of environmental watering actions. With the recent drying conditions, the goal for 2026-27 will be to maintain and enhance the system in the dry, average and wet climate scenarios, but it will shift to a 'protect' goal if drought conditions emerge.

In the drought planning scenario, delivery of environmental water is focused on a series of summer/autumn freshes to provide relief from long periods of low streamflow. The aim is to prevent catastrophic events, such as fish deaths, that are most likely in the summer/autumn period. The summer/autumn freshes will protect priority species, such as Australian grayling and platypus, by maintaining water levels and water quality in critical refuge habitat.

In a dry climate scenario, water for the environment will be used to deliver summer/autumn freshes to maintain water quality and adequate habitat for native fish and platypus. Low streamflow conditions are expected in this scenario due to reductions in the passing flow from Tarago Reservoir and reduced tributary inflows. Maintaining water quality through the delivery of summer/autumn freshes will be needed to increase dissolved-oxygen levels, as well as maintain water levels across pools and riffle habitat.

One winter/spring fresh is planned for a dry climate scenario to facilitate fish migration. Fish migration is important because it allows juveniles to re-enter the waterway and join the resident population following spawning, which will help meet the long-term objective of increasing the native fish population. Any remaining water for the environment will be used to contribute to the low flow throughout the year as needed. It is expected that sufficient supply will be available to meet demands in the summer/autumn period, but only partial achievement will be possible in winter/spring. In the case that additional water for the environment is available, it should be used to top up a winter/spring low flow for full achievement of the flow recommendations.

In average and wet conditions, natural inflows will likely provide a greater proportion of the recommended low flow and freshes throughout the year, and water for the environment will be used to deliver more freshes to improve the condition of native fish and platypus populations and provide optimised breeding conditions. Delivering two winter/spring freshes is a priority in the average and wet climate scenarios. This will consolidate recent environmental gains by creating more opportunities for fish movement, boosting biofilm and macroinvertebrate productivity and improving the growth and survival of new fringing vegetation. Delivering an autumn high flow to cue Australian grayling migration and spawning is a high priority in the average and wet climate scenarios, to optimise natural breeding success and make the most of the favourable conditions.

A spring high flow has also been included in the average and wet climate scenarios in 2026-27, when water availability is higher. This will continue the discouragement of terrestrial vegetation from encroaching into the stream channel. This is to maintain the benefits of consistently achieving this flow target over the last three years and set the vegetation communities within the stream channel up for long-term success if dry conditions do eventuate in future years.

It is preferred that the autumn high is delivered every year to provide suitable breeding conditions for Australian grayling, which is a short-lived, threatened species. The risk to the grayling population and wider river ecology from not delivering an autumn high is reduced in 2026-27 because the Tarago system has had multiple, large flow events and favourable breeding conditions for grayling in recent years, and other flows have been prioritised ahead of it in drought and dry conditions. Regardless of this, if a sufficient supply of water for the environment is available, it will be delivered.

Carryover of 600 ML is prioritised in all planning scenarios to allow the delivery of an autumn high flow in 2027-28, based on expected catchment inflows.

Table 3.3.2 Tarago system environmental watering planning scenarios

Planning scenario	Drought	Dry	Average	Wet
Expected conditions	• Very low streamflow • Reduction in passing flow • Increased surface water loss to groundwater • Irrigation releases are likely	• Low streamflow • Some reduction in passing flow • Increased surface water loss to groundwater • Irrigation releases are likely	• Average streamflow • Partial freshes are naturally provided • Some irrigation releases are likely	• Above-average streamflow • Partial or full freshes are naturally provided • Irrigation releases are unlikely • Tarago Reservoir spills
Expected availability of water for the environment	• 3,000 ML	• 3,400 ML	• 4,500 ML	• 4,800 ML
Tarago River – reach 2				
Potential environmental watering – tier 1 (high priorities)	• Summer/ autumn freshes (five freshes)	• Winter/spring low flow (partial) • Winter/spring fresh (one fresh) • Summer/ autumn low flow • Summer/ autumn freshes (three freshes)	• Winter/spring low flow • Winter/spring freshes (two freshes) • Summer/ autumn low flow • Autumn high (one high flow) • Summer/ autumn freshes (five freshes)	• Winter/spring low flow • Winter/spring freshes (two freshes) • Spring high (one high flow) • Summer/ autumn low flow • Autumn high (one high flow) • Summer/ autumn freshes (five freshes)

Planning scenario	Drought	Dry	Average	Wet
Potential environmental watering – tier 2 (additional priorities)	• Winter/spring low flow • Winter/spring fresh (one fresh) • Winter/spring high (one high flow) • Summer/ autumn low flow • Autumn high (one high flow)	• Winter/spring low flow (full demand) • Winter/spring high (one high flow) • Autumn high (one high flow)	• Spring high (one high flow)	
Possible volume of water for the environment required to achieve objectives	• 2,000 ML (tier 1) • 3,100 ML (tier 2)	• 2,400 ML (tier 1) • 1,800 ML (tier 2)	• 3,065 ML (tier 1) • 800 ML (tier 2)	• 1,660 ML (tier 1)
Priority carryover requirements for 2027-28	• 600 ML in all planning scenarios			

3.4 Maribyrnong system

Waterway manager – Melbourne Water

Storage manager – Southern Rural Water

Environmental water holder – No permanent entitlement held

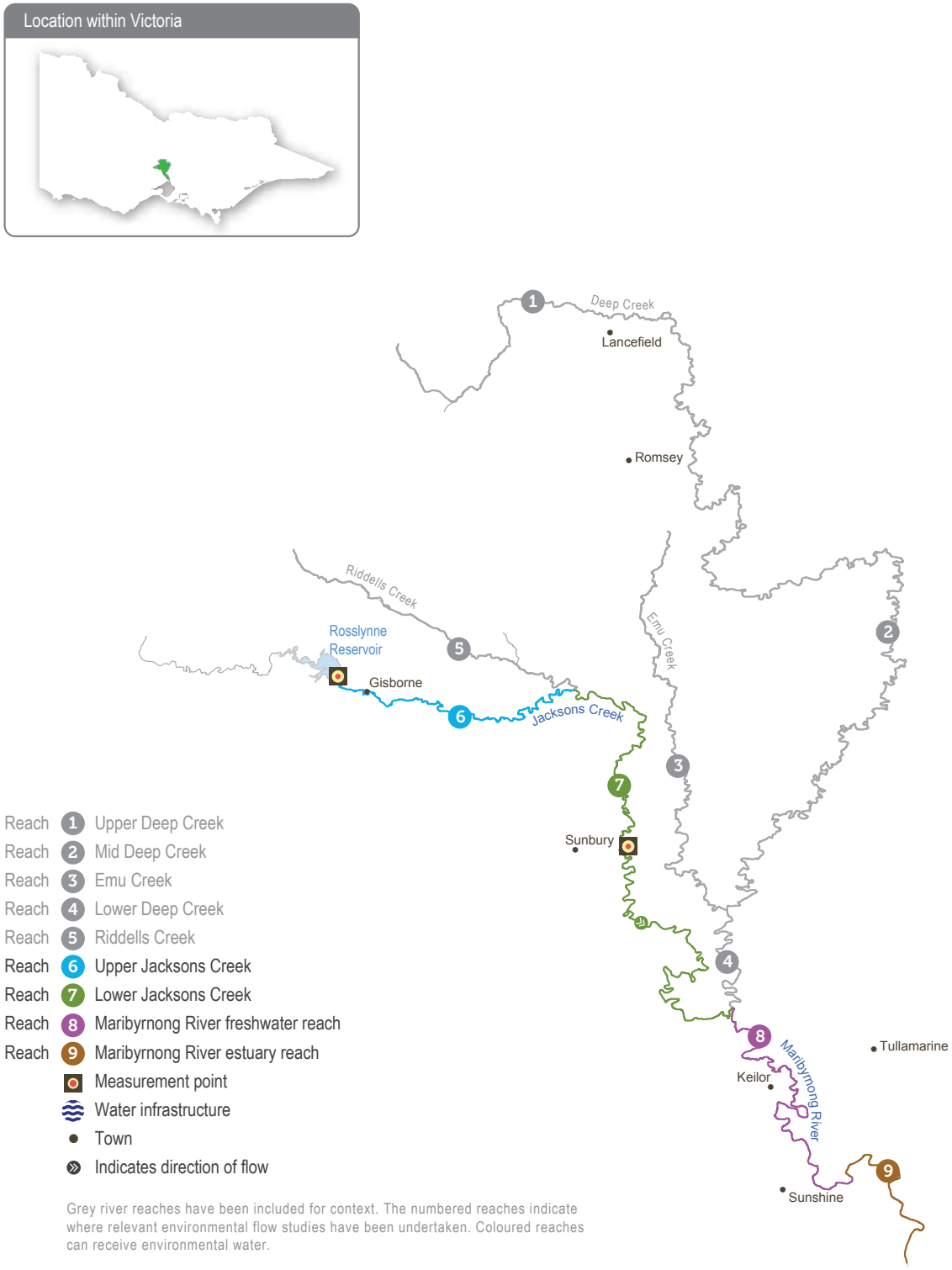
System overview

The Maribyrnong catchment is located to the northwest of Melbourne. The main waterways in the catchment are Jacksons Creek, which flows southeast from Mount Macedon, and Deep Creek, which flows south from Lancefield (Figure 3.4.1). These two tributaries join at Keilor North to form *Mirrangbamurn* (Maribyrnong River), which flows south to join *Birrarung* (Yarra River) at Yarraville before flowing into Port Phillip Bay.

Rosslynne Reservoir is in the upper reaches of Jacksons Creek near Gisborne and is the only major storage in the Maribyrnong catchment. The reservoir has a maximum release capacity of 20 ML per day in ideal conditions, which significantly constrains the environmental outcomes that can be achieved in the Maribyrnong system. Water for the environment is primarily used to support environmental outcomes in Jacksons Creek between Rosslynne Reservoir and the confluence with Riddells Creek: that is, delivery of water for the environment to reach 6, as **Figure 3.4.1** shows. Recent analysis shows that there is likely to also be an impact on lower Jacksons Creek (reach 7). Jacksons Creek is a known groundwater-dependent ecosystem on the national **Groundwater Dependent Ecosystems Atlas** and a priority groundwater-dependent ecosystem in the Melbourne Water groundwater-dependent ecosystem program. This means ecological components in the system rely on groundwater at least some of the time.

The VEWH does not hold an environmental entitlement in the Maribyrnong system and relies on opportunistic, temporary trade to meet demands. Melbourne Water (as diversion manager) and the VEWH work with local diversion licence holders to purchase unused water when it is available to support environmental outcomes. This arrangement is negotiated yearly, is subject to water availability in the bulk entitlement and storage capacity, and only occurs with all parties' agreement.

Figure 3.4.1 Maribyrnong system



Environmental values

The upper Maribyrnong catchment contains areas of intact streamside vegetation, which provide important habitat for native fish, including migratory short-finned eels, common and ornate galaxias, flathead gudgeon, tupong and Australian smelt.

A high level of diversity and abundance of waterbugs provides food for a significant platypus population in several reaches of the Maribyrnong system.

Environmental objectives in the Maribyrnong system

	F1 – Protect populations of native small-bodied fish
	**MI1** – Support a wide range and high biomass of waterbugs to break down dead organic matter and support the river's food chain
	**PR1** – Protect platypus populations
	**V1** – Maintain the condition, abundance, diversity and structure of in-stream and streamside vegetation
	WQ1 – Maintain water quality, particularly dissolved oxygen concentrations

Traditional Owner cultural values and uses

Melbourne Water is working with the Registered Aboriginal Parties within the Maribyrnong system—the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and the Bunurong Land Council Aboriginal Corporation—to strengthen relationships and increase Traditional Owner involvement in the planning and delivery of water for the environment.

There are many opportunities for Melbourne Water and the VEWH to work with Traditional Owner groups to identify and integrate cultural values and their flow requirements into the environmental watering program on an ongoing basis.

During the development of the seasonal watering proposal, Melbourne Water met with staff from the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and offered to meet with Bunurong Land Council Aboriginal Corporation to discuss how environmental watering can support Traditional Owners' cultural objectives and identify opportunities to use environmental water to support these. Due to the uncertainty in the volume of water that will be able to be secured via temporary trade in 2026-27 and the constraints in delivering this from Rosslynne Reservoir, there are unfortunately very limited opportunities to deliver water for the environment to support Traditional Owners to achieve objectives related to water on Country.

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.4.1**, Melbourne Water considered how environmental flows could support social values such as community connection and amenity by planning flows that will maintain healthy habitat and improve water quality.

Unfortunately, opportunities for enhancing shared social, recreational and economic benefits through modification of environmental water deliveries are highly constrained by the volume of environmental water available and the constraint at the outlet of Rosslynne Reservoir. That said, opportunities may be taken to deliver releases coinciding with public holiday long weekends when there are high levels of visitation at parks along Jacksons Creek at Gisborne and Sunbury. In previous years where releases have aligned with public holidays, increased flows may have delivered some shared benefits over these periods in the form of increased amenity values for park users and visitors to the waterway.

Environmental watering may support peaks in visitation (e.g., camping or other public activities on long weekends or school holidays) by delivering releases through Gisborne and Sunbury on public holiday long weekends, where possible

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.4.1 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.4.1 Maribyrnong system potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Jacksons Creek – reach 6		
Winter/spring low flow (15 ML/day during June to November)	• Maintain depth in pools and riffles to provide habitat for small-bodied native fish, platypus and waterbugs • Prevent terrestrial vegetation encroachment	F1, MI1, PR1, V1
Summer/autumn low flow (4-6 ML/day during December to May)	• Maintain pool habitat availability for small-bodied fish and platypus during low-flow periods • Maintain a greater-than 0.1 m median depth over riffles to provide macroinvertebrate habitat and inundate in-stream vegetation • Maintain continuous flow to limit pool stratification and maintain water quality	F1, MI1, PR1, V1, WQ1

Potential environmental watering action	Expected watering effects	Environmental objectives
Summer/autumn freshes (five freshes of 15 ML/day for four days every four to six weeks during December to May)	• Increase depth over riffles to provide local movement of small-bodied native fish and platypus during the low-flow period • Maintain habitat and food resources for waterbugs • Flush pools to maintain water quality	

Scenario planning

Table 3.4.2 outlines potential environmental watering and expected water use in a range of planning scenarios.

There is no permanent environmental entitlement in the Maribyrnong system, so water for the environment can only be delivered in 2026-27 if other entitlement holders are willing to sell some of their annual allocations to the VEWH.

An adequate low flow throughout the year and summer/autumn freshes are a high priority in all planning scenarios to maintain habitat for native fish and platypus and to prevent poor water quality. In the average and wet planning scenarios, local catchment run-off, tributary inflows and groundwater contributions will likely meet and exceed these flow requirements in lower Jacksons Creek (reach 7). However, in all planning scenarios, the mandated passing flow and water for the environment will be needed to achieve these watering actions in upper Jacksons Creek (reach 6). In some years, irrigation water transfers from Melbourne Water's bulk entitlement in Rosslynne Reservoir may contribute toward the achievement of some summer/autumn watering targets. Discharges from wastewater treatment plants and urban stormwater may also contribute to low-flow targets, but their ecological effectiveness is limited by their water quality.

The VEWH is unable to carry over water in the Maribyrnong system to support multi-year planning.

Table 3.4.2 Maribyrnong system environmental watering planning scenarios

Planning scenario	Dry	Average	Wet
Expected conditions	• Low volumes of unregulated flow • Passing flow may meet some low-flow objectives • Some baseflow from groundwater contributions in Jacksons Creek	• Unregulated flow meets some objectives • Passing flow may meet several low-flow objectives • Groundwater contributions provide baseflow in Jacksons Creek	• Unregulated flow meets most objectives • Passing flow may meet most low-flow objectives • Groundwater contributions provide baseflow in Jacksons Creek
Expected availability of water for the environment	• There is no environmental entitlement in the Maribyrnong system; water will need to be traded with willing irrigators to support watering actions		

Planning scenario	Dry	Average	Wet
Jacksons Creek – reach 6			
Potential environmental watering – tier 1 (high priorities)	• N/A	• N/A	• N/A
Potential environmental watering – tier 2 (high priorities)	• Winter/spring low flow • Summer/autumn low flow • Summer/autumn freshes (five freshes)	• Winter/spring low flow • Summer/autumn low flow • Summer/autumn freshes (five freshes)	• Winter/spring low flow • Summer/autumn low flow • Summer/autumn freshes (five freshes)
Possible volume of water for the environment required to achieve objectives	• 2,400 ML (tier 2)	• 2,400 ML (tier 2)	• 2,400 ML (tier 2)

3.5 Werribee system

Waterway manager – Melbourne Water

Storage manager – Southern Rural Water

Environmental water holder – Victorian Environmental Water Holder

System overview

The Werribee River flows southeast from the Wombat State Forest near Ballan, through the Werribee Gorge to Bacchus Marsh and then into Port Phillip Bay at Werribee (Figure 3.5.1). The Lerderderg River is a major tributary that joins the Werribee River at Bacchus Marsh. The main storages in the Werribee system are Pykes Creek Reservoir, Melton Reservoir and Merrimu Reservoir.

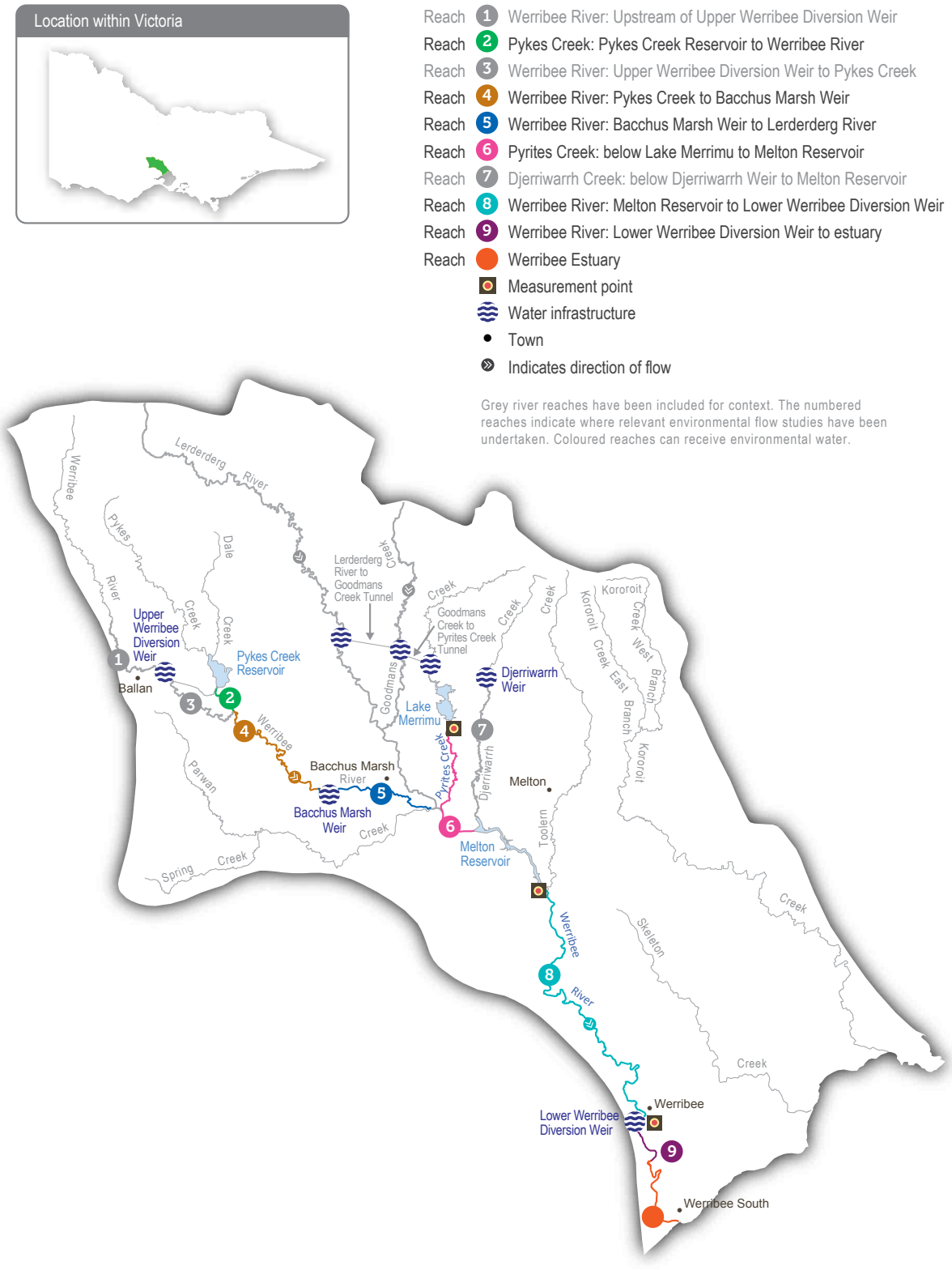
The four reaches in the Werribee system that can receive water for the environment are Pyrites Creek between Merrimu Reservoir and Melton Reservoir (reach 6), the Werribee River between Melton Reservoir and the lower Werribee Diversion Weir (reach 8), the Werribee River between the lower Werribee Diversion Weir and the Werribee Park Tourism Precinct (reach 9) and the Werribee River estuary below the Werribee Park Tourism Precinct.

Environmental water that targets environmental objectives in reach 9 and the estuary is delivered from Melton Reservoir and therefore also benefits reach 8. Water for the environment released from Merrimu Reservoir is re-harvested in Melton Reservoir, where it can be held and released at an appropriate time to achieve environmental objectives in the lower Werribee River.

From 2026-27, a new environmental entitlement may become available in the Werribee system, providing additional flexibility to influence reaches 2, 4 and 5 of the Werribee River as well as an increased volume for the lower Werribee River. Some of the water allocated under this new environmental entitlement will enable the delivery of water for the environment from Pykes Creek Reservoir for the first time. Initially, releases will be made directly from Pykes Creek Reservoir to reach 2, 4 and 5, supporting native fish and platypus populations in the Werribee Gorge.

In the longer term, there may be the potential to deliver this water from the upper Werribee Diversion Weir to reach 3. Both water released from Pykes Creek Reservoir and water delivered from the upper Werribee Diversion Weir will be re-harvested in Melton Reservoir, allowing it to be held and released at appropriate times to meet environmental objectives further downstream.

Figure 3.5.1 Werribee system



Environmental values

The Werribee system supports a range of native fish, including Australian grayling, river blackfish, flathead gudgeon, short-finned eel, tupong, Australian smelt, several species of galaxiids and a large population of black bream in the estuary. Several species of frogs, a diverse waterbug community and platypus live in the upper and lower reaches. The freshwater-saltwater interface of the Werribee River estuary is a regionally significant ecosystem due to the many aquatic plants and animals it supports, and it provides nursery habitat for juvenile freshwater and estuarine fish species (such as black bream).

Environmental objectives in the Werribee system

	A1 – Maintain native frog populations
	F1 – Protect and increase populations of native freshwater fish, including galaxiids, Australian grayling and tupong **F2** – Protect and support populations of black bream in the estuary
	**G1** – Maintain channel beds and pool habitats **G2** – Maintain clean substrate surfaces to support biological processes
	**MI1** – Maintain and enhance the population of waterbugs, to help break down dead organic matter and support the river's food chain
	**PR1** – Maintain the platypus population
	**V1** – Maintain the health and increase the cover of in-stream, streamside and estuary plants **V2** – Limit the spread of terrestrial plants, and promote the recruitment of native water-dependent plant species on the banks and benches of waterways **V3** – Prevent the establishment of terrestrial plants in the stream bed
	WQ1 – Maintain dissolved oxygen and salinity levels in pools

Traditional Owner cultural values and uses

Melbourne Water is working with the Registered Aboriginal Parties (RAPs) within the Werribee system—the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC), the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and the Bunurong Land Council Aboriginal Corporation—to strengthen relationships and increase Traditional Owners' involvement in the planning and delivery of water for the environment.

An overarching partnership agreement was made between Melbourne Water and WTOAC in February 2025 to frame relations and obligations between the organisations. Melbourne Water is also discussing the development of similar partnership agreements with the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and the Bunurong Land Council Aboriginal Corporation. The intent is for Traditional Owners to be active partners in the planning, delivering and monitoring of water for the environment associated with the Werribee River (*Weariby Yallok*).

The Bunurong Land Council Aboriginal Corporation is working with Bunurong people to determine cultural objectives for *Weariby Yallok* on Bunurong Country. There are concerns about the low flow in the river's lower reaches, and that fish of cultural importance to the Bunurong are not supported by the flow and are restricted in movement. This concern may be partially addressed by implementing actions 8-10 in the ***Central and Gippsland Region Sustainable Water Strategy 2022***, which aim to improve fish passage and environmental water delivery to the lower Werribee River on Bunurong Country.

WTOAC has reviewed the environmental values of the *Weariby Yallok* system. It has identified environmental values that also have cultural significance to Wadawurrung Traditional Owners, which **Table 3.5.1** shows. However, further work is required to understand how environmental watering can improve these cultural values. The cultural values in **Table 3.5.1** have been approved by WTOAC for sharing in this seasonal watering plan; there may be others that are confidential.

Table 3.5.1 Wadawurrung cultural values and uses, Werribee system

Reach	Extent	Key environmental values with cultural significance to the Wadawurrung
8	Werribee River	
9	Werribee River between Wyndham Vale and Bluestone Ford	
Estuary	Werribee River downstream of Bluestone Ford	

Increasing the involvement of Traditional Owners in managing environmental flows and progressing opportunities towards self-determination in the environmental watering program is a core commitment of the VEWH and its program partners.

This is reinforced by legislation and policy commitments, including the *Water Act 1989*, the ***Victorian Aboriginal Affairs Framework***, the 2016 ***Water for Victoria***, the 2022 ***Water is Life: Traditional Owner Access to Water Roadmap***, and, in some cases, agreements under the *Traditional Owner Settlement Act 2010*.

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.5.2**, Melbourne Water considered how environmental water could support values and uses, including:

- water-based recreation (such as canoeing, fishing, kayaking and swimming)
- riverside recreation and amenity (such as camping, walking, cycling and picnicking)
- community events and tourism (such as Werribee Zoo)
- timing of environmental releases to avoid blue-green algae being dispersed to the lower Werribee River, which is a valued area for recreation.

As well as generally improving the above recreational values, Melbourne Water looks for opportunities to time environmental water releases to support social, economic and recreational values, if they still fit within the optimal ecological timing window.

Melbourne Water may time the release of a summer fresh in the Werribee River to coincide with long weekends in January or March, when high levels of park visitation and river recreation occur.

	Environmental watering will also support water sports activities (e.g., canoeing, kayaking, rowing, swimming, water skiing) by providing summer freshes during public holidays to improve water quality and raise water levels
	Environmental watering will also support angling activities by maintaining populations of popular angling species in the lower Werribee River (such as estuary perch and black bream)
	Environmental watering will also support peaks in visitation (e.g., camping or other public activities on long weekends or school holidays) by releasing summer freshes on public holidays where possible

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.5.2 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.5.2 Werribee system potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected effects	Environmental objectives
Upper Werribee River (targeting reaches 4 and 5)		
Winter/spring low flow (30-50 ML/ day during June to November)	• Maintain habitat for in-stream and water-dependent streamside vegetation • Maintain access to habitat and improve water quality for native fish, frogs, platypus and waterbugs • Maintain the flow through pool habitats to allow mixing or suppression/dilution of saline groundwater intrusion • Maintain the capacity of the stream to process organic matter • Maintain the inundated stream channel to prevent colonisation by terrestrial vegetation	
Winter/spring freshes (six freshes of 245-500 ML/day for two to 10 days during June to November)	• Scour silt, biofilms and algae from substrates to maintain the quality and quantity of food and habitat for waterbugs • Increase the growth and recruitment of streamside and in-stream vegetation • Provide movement cues and enough flow for fish to move upstream past natural and artificial barriers • At 500 ML/day, the effects above plus: – mobilise and transport organic matter to downstream reaches	
Summer/autumn low flow (10 ML/day during December to May)	• Maintain habitat for in-stream and water-dependent streamside vegetation • Maintain access to habitat and improve water quality for native fish, frogs, platypus and waterbugs • Maintain the flow through pool habitats to allow mixing or suppression/dilution of saline groundwater intrusion • Maintain the capacity of the stream to process organic matter • Maintain the inundated stream channel to prevent colonisation by inundation-tolerant terrestrial vegetation	

Potential environmental watering action	Expected effects	Environmental objectives
Summer/autumn freshes (six to eight freshes of 50 ML/day for two to 10 days during December to May)	• Scour silt, biofilms and algae from substrates to maintain the quality and quantity of food and habitat for waterbugs • Increase the growth and recruitment of streamside and in-stream vegetation • Provide movement cues and enough flow for fish to move upstream past natural and artificial barriers • Mobilise and transport organic matter to downstream reaches	
Pyrites Creek (targeting reach 6)		
Winter/spring/ summer low flow (2 ML/day or natural during June to December)	• Provide sufficient water depth in riffle habitats for waterbugs and native fish • Maintain habitat for frogs at the margin of the stream channel • Provide sufficient water depth to support the growth of flood-tolerant vegetation and limit the growth of terrestrial vegetation within the stream channel • Provide sufficient water depth to allow native fish to move between pools	
Winter/spring/ summer freshes (three to five freshes of 30-40 ML/day for one to two days during June to November)	• Drown terrestrial plants that encroach on the waterway • Increase the growth and recruitment of streamside and in-stream vegetation • Transport carbon to drive aquatic food webs • Scour silt, biofilms and algae from substrates to maintain the quality and quantity of food and habitat for waterbugs • Improve water quality and the quantity of food and habitat for waterbugs, frogs and native fish • Wet depressions adjacent to the stream that frogs can use for breeding	
Spring high flow (one high flow of 70-130 ML/day for one to two days during September to October)	• Maintain access to food and habitat for waterbugs, native fish and frogs • Increase the growth and recruitment of streamside vegetation • At 130 ML/day, the effects above plus: – inundate the full width of the channel and high backwaters to flush accumulated organic matter and promote the growth and recruitment of streamside vegetation	

Potential environmental watering action	Expected effects	Environmental objectives
Lower Werribee River (targeting reaches 8, 9 and the estuary)		
Winter/spring low flow (80 ML/day during June to November)	• Provide sufficient depth to allow fish to move upstream past natural and artificial barriers • Facilitate the downstream movement of diadromous fish to the estuary • Drown terrestrial plant species and support the growth and recruitment of water-dependent streamside vegetation • Maintain permanent pools and increase the extent of habitat for waterbugs, fish, platypus and frogs • Maintain the flow through pool habitats to allow mixing or suppression/dilution of saline groundwater	
Winter/spring freshes (two to four freshes of 350 ML/day for three days during June to October)	• Support the growth and recruitment of water-dependent streamside vegetation • Flush silt and scour biofilms and algae from substrates on the stream bed, and maintain pools and channel dimensions • Provide movement cues and enough flow for fish to move upstream past natural and artificial barriers • Maintain water quality and the quantity of food and habitat for waterbugs and platypus • Wet depressions adjacent to the stream that frogs can use for breeding	
Summer/autumn low flow (10 ML/day during December to May)	• Maintain habitat for in-stream and water-dependent streamside vegetation • Maintain access to habitat and improve water quality for native fish, frogs, platypus and waterbugs • Maintain the flow through pool habitats to allow mixing or suppression/dilution of saline groundwater intrusion	

Potential environmental watering action	Expected effects	Environmental objectives
Summer/autumn freshes (three to five freshes of 135-215 ML/day for one to two days during December to May) 	• Increase the growth and recruitment of water-dependent streamside vegetation • Maintain access to habitat and improve water quality for native fish, frogs and platypus • Provide enough flow for native fish to move downstream past natural or artificial barriers • Maintain the quality of water within pools by dispersing azolla and blue-green algae blooms • At 215 ML/day, the effects above plus: – flush silt and scour biofilms and algae from substrates on the stream bed, and maintain pools and channel dimensions	

Scenario planning

Table 3.5.3 outlines potential environmental watering and expected water use in a range of planning scenarios.

Upper Werribee River (reaches 4 and 5)

As per action 8.4 of the ***Central and Gippsland Region Sustainable Water Strategy 2022***, the Victorian Government committed to return about two gigalitres of additional water for the environment in the Werribee River to improve waterway health by maintaining water quality and providing refuges for fish. This action is nearing completion.

This seasonal watering plan includes potential watering actions for reaches 4 and 5, which Melbourne Water will be authorised to target with environmental water in the event this new entitlement is finalised during the year. If this occurs, the highest-priority potential watering actions for reaches 4 and 5 will be maintaining summer/autumn and winter/spring baseflows to maintain connectivity and support native fish, frogs, platypus and waterbug populations. Depending on water availability and in the expected conditions of the average and wet planning scenarios, increasing the number, duration and magnitude of freshes becomes an option. Freshes would allow for more fish movement and support breeding activities, enhancing streamside and aquatic vegetation.

Pyrites Creek (reach 6)

Pyrites Creek (reach 6) is naturally ephemeral; it stops flowing for several months from late summer in most years and has longer periods without a flow in dry years. The reach has numerous permanent deep pools that support populations of native fish, frogs and some waterbugs during cease-to-flow periods. The Pyrites Creek catchment downstream of Merrimu Reservoir relies on environmental flows to maintain key components of the creek's flow regime, and while the specific volume and duration of flow events may vary from year to year, the recommended type of watering actions does not vary significantly between years or planning scenarios.

Water for the environment will be used to deliver a low flow during winter, spring and early summer to maintain enough pool and riffle habitat to allow existing fish, waterbug and aquatic vegetation populations to persist. A sustained low flow during these periods is also critical to support aquatic and flood-tolerant plants and prevent encroachment by terrestrial plant species, but the timing is linked to seasonal conditions and inflows to maintain the ephemeral nature of the creek. Similarly, winter/spring freshes and a spring high flow may also be delivered to achieve geomorphological objectives, improve the condition of in-stream and streamside vegetation and help grow native fish and frog populations.

The forecasted available supply will not be sufficient to deliver all the required flow in the dry planning scenario, so the winter/spring/summer low flow will be delivered for a shorter duration to conserve water for other deliveries (such as regular freshes needed to top up and maintain permanent pools). The timing and duration of the winter/spring/summer low flow in the dry planning scenario will be based on commence and cease-to-flow triggers in the neighbouring Lerderderg River, which is also naturally short-lived. Similarly, the magnitude of the high flow will depend on the availability of environmental water, and its magnitude is likely to be reduced in a dry scenario.

Lower Werribee River (reaches 8 and 9)

The lower Werribee River (reaches 8 and 9) downstream of Melton Reservoir relies heavily on the passing flow, operational deliveries and environmental flows to achieve many of the requirements for a low flow and freshes. In wet years, unregulated spills from Melton Reservoir, downstream tributary inflows and local run-off, including stormwater from urbanised areas of Werribee, boost the flow and deliver many of the larger flow components that cannot be provided through a managed environmental flow. In all planning scenarios, the passing flow and operational deliveries for irrigators are expected to partially meet low-flow requirements in the lower Werribee River. Water for the environment will be used to supplement other flows when needed to achieve the low-flow target throughout the year and deliver summer/autumn freshes to manage water quality and control potential algal blooms. In all planning scenarios, there is insufficient water for the environment to meet low-flow demands year-round. In the dry and average planning scenarios, the demands are so large compared to the predicted supply that the demands would not be fully met even if all available water was prioritised for this purpose. For this reason, partial compliance with the low flow is the target under tier 1. Water for the environment will be used to top up natural and operational flows as needed to manage the water quality or provide longitudinal connectivity for fish and platypus.

Winter/spring freshes will be delivered as needed and as supply allows in the average and wet planning scenarios to support the movement and recruitment of native fish and platypus and to support streamside vegetation. There is unlikely to be enough supply to deliver winter/spring freshes in the dry planning scenario. The winter/spring low flow is a lower priority in all planning scenarios because it is likely to be at least partially met by natural inflows, which should maintain minimum habitat requirements. There is also a lower risk of adverse water quality outcomes if the flow is lower than recommended during winter and spring, compared to summer and autumn.

In all planning scenarios, a minimum carryover target of 400 ML is set to ensure high-priority flows can be delivered to Pyrites Creek (reach 6) and the lower Werribee River in 2027-28. Maintaining sufficient carryover in Lake Merrimu and Melton Reservoir will be prioritised over the delivery of tier 2 potential environmental watering actions in these reaches in 2026-27. The VEWH will work with Melbourne Water to refine a carryover target for 2027-28 once the new entitlement documents are finalised and the potential resource condition is clear.

Table 3.5.3 Werribee system environmental watering planning scenarios

Planning scenario	Dry	Average	Wet
Expected conditions	• Regulated flow conditions below Melton Reservoir year-round • Minimal passing flow to reach 6, possible operational water transfers during summer • Consumptive releases out of storage into reach 8 in summer/autumn	• Some spills from Melton Reservoir in winter/spring and periods of unregulated flow in reaches 8 and 9 and the estuary • Most low flow in reach 6 is met by passing flow • Consumptive releases out of storage into reach 8 in summer/autumn	• Regular large spills from Melton Reservoir in winter/spring and lengthy periods of unregulated flow in reaches 8 and 9 and the estuary • All low flow in reach 6 is provided by passing flow • Consumptive releases out of storage into reach 8 in summer/autumn
Expected availability of water for the environment[1]	• 1,560 ML	• 2,710 ML	• 4,760 ML
Upper Werribee River – reaches 4 and 5			
Potential environmental watering – tier 1 (high priorities)	• N/A	• N/A	• N/A
Potential environmental watering – tier 2 (additional priorities)	• Summer/autumn low flow • Summer/autumn freshes (six to eight freshes) • Winter/spring low flow • Winter/spring freshes (six freshes)		
Pyrites Creek – reach 6			
Potential environmental watering – tier 1 (high priorities)	• Winter/spring/summer low flow (partial) • Winter/spring/summer freshes (three freshes)	• Winter/spring/summer low flow • Winter/spring/summer freshes (four freshes) • Spring high flow	• Winter/spring/summer low flow • Winter/spring/summer freshes (six freshes) • Spring high flow
Potential environmental watering – tier 2 (additional priorities)	• Spring high flow • Winter/spring/summer freshes (two freshes)		

Planning scenario	Dry	Average	Wet
Lower Werribee River – reach 8, 9 and estuary			
Potential environmental watering – tier 1 (high priorities)	• Summer/autumn freshes (three freshes) • Summer/autumn low flow (partial)	• Summer/autumn freshes (five freshes) • Summer/autumn low flow (partial) • Winter/spring freshes (two freshes)	• Summer/autumn freshes (five freshes) • Summer/autumn low flow (partial) • Winter/spring freshes (two freshes)
Potential environmental watering – tier 2 (additional priorities)	• Winter/spring freshes (two freshes) • Winter/spring low flow • Summer/autumn fresh (one fresh) • Summer/autumn low flow (full demand)	• Winter/spring freshes (three freshes) • Winter/spring low flow • Summer/autumn low flow (full demand)	• Winter/spring freshes (four freshes) • Winter/spring low flow • Summer/autumn low flow (full demand)
Possible volume of water for the environment required to achieve objectives[2]	• 955 ML (tier 1) • 43,538 ML (tier 2)	• 2,000 ML (tier 1) • 31,640 ML (tier 2)	• 3,785 ML (tier 1) • 31,146 ML (tier 2)
Priority carryover requirements for 2027-28	• 400 ML		

1 Figures represent the forecast available supply under the VEWH's entitlement holdings as of June 2026. The available supply is expected to rise when the new entitlement is finalised.

2 Tier 2 figures include actions identified for reaches 4 and 5, which depend on finalising the entitlement and the return of water to the environment.

3.6 Moorabool system

Waterway manager – Corangamite Catchment Management Authority

Storage managers – Central Highlands Water and Barwon Water

Environmental water holder – Victorian Environmental Water Holder

System overview

The Moorabool River is a tributary of the Barwon River. It flows south from the Central Highlands between Ballarat and Ballan to join the Barwon River at Fyansford, just north of Geelong (Figure 3.6.1). The Moorabool catchment is highly regulated with major storages, including Lal Lal, Moorabool and Bostock reservoirs.

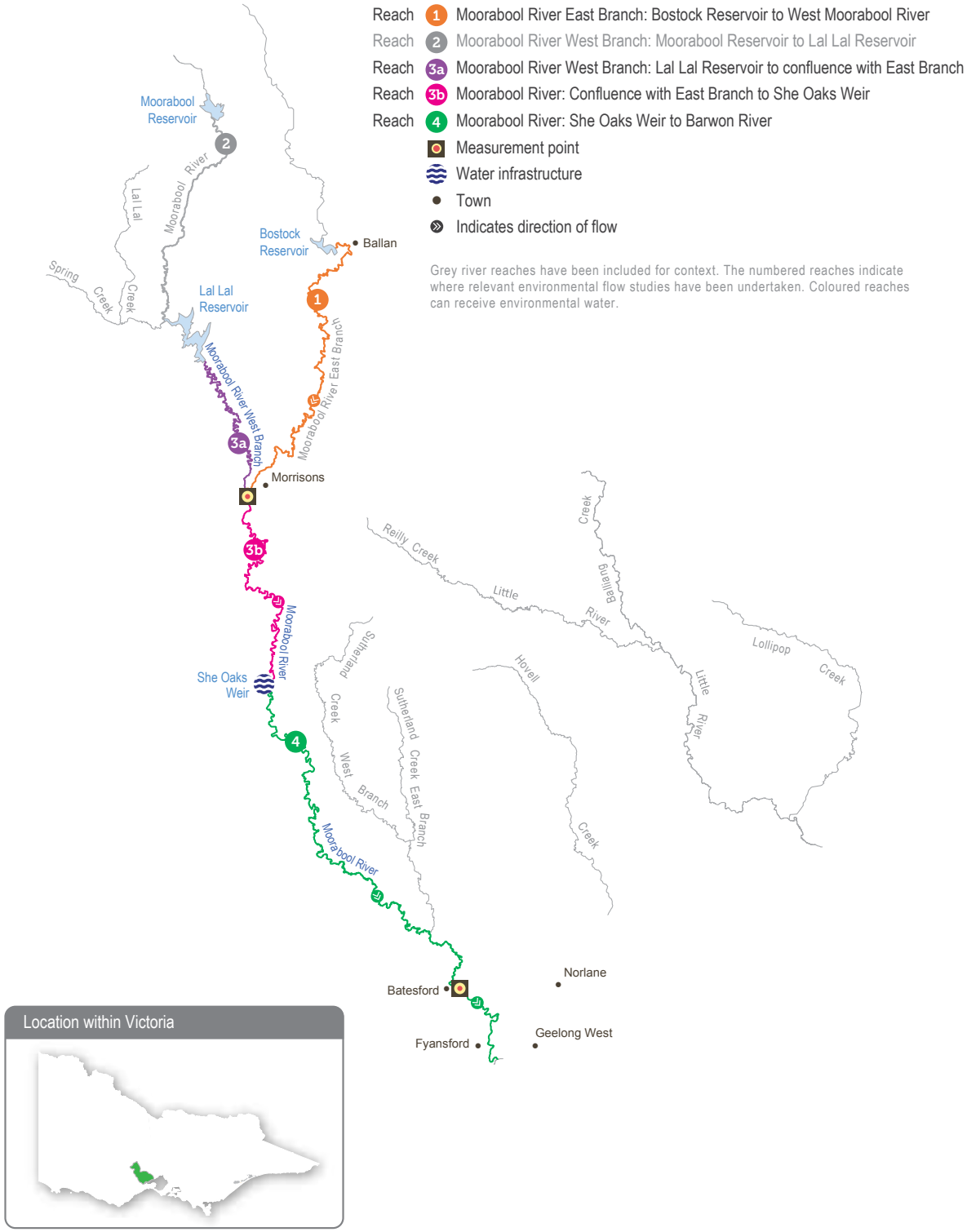
The lower section of the Moorabool River between She Oaks and Batesford has nine private diversion weirs that are significant barriers to fish. These barriers have increased the extent of slow-flowing habitat and reduced habitat diversity.

Water allocated to the Moorabool River environmental entitlement is stored in Lal Lal Reservoir. The entitlement references passing flow, a significant component of annual streamflow, helps maintain a low flow through winter. The use of environmental water in the Moorabool system is limited by inflows to the reservoir and was previously restricted by a use cap specified in the entitlement. This cap has now been removed as part of the ***Central and Gippsland Region Sustainable Water Strategy 2022*** actions 4-3 and 4-4. The priority reaches for deliveries of water for the environment are between Lal Lal Reservoir and She Oaks Weir (reaches 3a and 3b, as shown in **Figure 3.6.1**) and between She Oaks Weir and the confluence with the Barwon River (reach 4). Previously, the primary focus has been on reaches 3a and 3b, as that is where the available water had the most benefit. With the return of additional water to the environment and contributions made by Wadawurrung Traditional Owners, reach 4 can now also benefit from these actions.

The Moorabool system is a water supply catchment for Barwon Water and Central Highlands Water. Releases from Lal Lal Reservoir for urban water supply contribute to environmental outcomes in reaches 3a and 3b (above Barwon Water's diversion point at She Oaks) and allow more efficient delivery of water for the environment to reach 4. Barwon Water and Corangamite CMA coordinate operational and environmental releases, where possible, to optimise these benefits.

The ***Central and Gippsland Region Sustainable Water Strategy 2022*** action 4-3 proposed the return of water in Lal Lal (3 GL per year) and Bostock reservoirs (0.7 GL per year) to be shared between the environment and the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC). As a result, potential watering actions have been included for reach 1 of the Moorabool River, supplied by Bostock Reservoir, if water is made available during the 2026-27 water year and can be delivered. The approximate timeline for the statutory process to be completed and water to be made available is currently expected during August 2026.

Figure 3.6.1 Moorabool system



Environmental values

The Moorabool River is home to native fish species, including the Australian grayling, river blackfish, Australian smelt, flathead gudgeon, southern pygmy perch, short-finned eel, spotted galaxias and tupong. The system also contains extensive areas of endangered remnant vegetation, including streambank shrubland and streamside woodland ecological vegetation communities. Platypus, rakali (water rats) and a range of waterbugs are also present. The Moorabool River flows into the Barwon River, connecting it to the Ramsar-listed lower Barwon wetlands. However, the extent to which the Moorabool River can influence environmental values extends only throughout the reaches of the Moorabool itself.

Environmental objectives in the Moorabool system

	F1 – Increase the distribution, abundance and diversity of migratory species (tupong, short-finned eel, common galaxias, spotted galaxias, short-headed lamprey and Australian grayling) **F2** – Increase the distribution, abundance and diversity of non-migratory species (flat-headed gudgeon, Australian smelt, southern pygmy perch and river blackfish)
	**PR1** – Maintain a self-sustaining, breeding platypus population and support the dispersal of juveniles and the movement of adults
	**V1** – Maintain in-stream aquatic plant communities **V2** – Maintain streamside vegetation communities and promote recruitment
	**MI1** – Maintain the abundance and diversity of waterbug communities
	WQ1 – Maintain water quality **WQ2** – Prevent low-dissolved-oxygen blackwater events

Traditional Owner cultural values and uses

The Wadawurrung are the Traditional Owners of the land of the Moorabool River and parts of the Barwon, Leigh and Yarrowee rivers. The Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) is the statutory authority for the management of Aboriginal heritage values and culture, under the Victorian *Aboriginal Heritage Act 2006*.

Wadawurrung Traditional Owners have a strong connection to the Moorabool River and place high cultural value on it. They are a key partner in advocating for additional water recovery to help support a healthy river and associated cultural water objectives.

In 2020, WTOAC released ***Paleert Tjaara Dja Wadawurrung Country Plan***. The plan identifies waterways, rivers, estuaries and wetlands as key values to look after. WTOAC worked with waterway managers to improve outcomes on Country in line with *Paleert Tjaara Dja* and the ***Wadawurrung Nation Statement*** on water.

In 2019, WTOAC partnered with Corangamite CMA to complete an environmental flows study for the upper Barwon, Yarrowee and Leigh rivers. The study also identified cultural values in all waterways within Wadawurrung Country, including the Moorabool River, including:

- significant aquatic species such as platypus, short-finned eel, native trout galaxias spp, tupong, river blackfish, common reed and cumbungi/typha latifolia, which are Traditional sources of food, materials and medicines
- waterway confluences and deep pools, which are places for meeting, ceremonies, trade and marking clan boundaries.

As noted in the system overview, WTOAC will have water available for its self-determined use in Lal Lal and Bostock reservoirs from 2026. When this water is to be released alongside environmental water, conversations between Corangamite CMA and WTOAC will be vital in understanding how the two entitlements can be used to optimise outcomes when objectives align in providing flows. Conversations have been underway since the 2023-24 water year regarding the aligned use of environmental water and Wadawurrung water obtained through transfers via water corporations (Barwon Water and Central Highlands Water). These conversations have provided the basis for future discussions surrounding flow management.

Increasing the involvement of Traditional Owners in managing environmental flows and progressing opportunities towards self-determination in the environmental watering program is a core commitment of the VEWH and its program partners. This is reinforced by legislation and policy commitments, including the *Water Act 1989*, the ***Victorian Aboriginal Affairs Framework***, the 2016 ***Water for Victoria***, the 2022 ***Water is Life: Traditional Owner Access to Water Roadmap***, and, in some cases, agreements under the *Traditional Owner Settlement Act 2010*.

Table 3.6.1 summarises Traditional Owner cultural values and uses considered when proposing watering actions.

Table 3.6.1 Traditional Owner cultural values and uses, Moorabool system

Objectives & opportunities	Values & uses	What environmental watering aims to do
Maintain or improve the abundance, breeding and recruitment of platypus	• Meat and pelt	• Maintain or improve the abundance, breeding and recruitment of platypus
Maintain or improve the abundance of eels	• Meat, an important food source sometimes smoked • Large gatherings during the eel run at Buckley's Falls	• Provide water for pools, habitat and food sources, and water over riffles to allow eels to migrate
Maintain or improve the abundance of native trout galaxias spp	• Meat	• Provide water for pools, habitat and food sources, and water over riffles to allow fish to move between pools and breed, feed and find new habitat
Maintain or improve the abundance of river blackfish	• Meat	
Maintain or improve the abundance of water ribbons	• Plant food: finger-shaped tubers are crisp and sweet and cooked in a ground oven	• Maintain an adequate depth of water in channels

Objectives & opportunities	Values & uses	What environmental watering aims to do
Maintain or improve the condition, extent and abundance of common reed, pale rush and cumbungi	• Common reed. Weapon stems used for spear shafts for fishing. Reed cut while still green to make necklaces, weaving bags and baskets. Also, a food plant. • Weaving baskets • Fluff is used to pack wounds under a paperbark bandage	• Maintain an adequate depth of water to limit terrestrial encroachment into aquatic habitats. This will also support growth on terraces, channel edges and lower banks
Maintain or improve the abundance of river red gum	• The bark is removed for canoe, shelter and tools • Bowls • Nectar drink • Medicinal uses: the gum or sap was used for burns to shrink or seal them; the sap is high in tannin • Leaves are used for steam baths	
Maintain or improve the abundance of manna gum and swamp wallaby grass	• Timber is used for making clubs and shields • The sap-sucking lerp bug was gathered each season • Young leaves were fed onto a fire near the patient, and a poultice of well-chewed leaves was applied for backache • Quail flocks were attracted to manna gums • Leaves were split, dried out and re-constituted in running water • Fibres were twisted into rope to make long nets for game hunting	• Environmental watering cannot be considered to support this value in 2026-27 due to various constraints (such as an insufficient entitlement)
Deep pools	• Deep pools have cultural significance	• Help fill and ensure connectivity to pools where possible
Confluences (e.g., Moorabool and Barwon rivers)	• Confluences have high cultural value due to their historical use as meeting places for three different clans	• Maintain an adequate depth of water for connectivity
Holding cultural events on the Moorabool River	• Celebrations of culture, family events, fishing days and cultural festivals	• Summer/autumn freshes and some winter/spring freshes can be delivered to coincide with cultural events. This can support significant cultural values and species for a lead-up to or duration of an event

Watering planned and/or delivered in partnership with Traditional Owners to support cultural values and uses

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.6.2**, Corangamite CMA considered how environmental watering could support cultural, social, recreational and economic values and uses, including peak recreational use as required in the *Victorian Water Act 1989*, if the delivery does not compromise environmental outcomes.

Social and recreational activities that may benefit from environmental water releases in the Moorabool system include camping, canoeing, kayaking, swimming and angling.

Actions such as summer/autumn freshes will increase the Moorabool River's flow and provide ancillary benefits to water-based recreation opportunities, particularly camping and fishing, regardless of whether a watering action was timed to coincide within a specific timeframe.

The extent to which the Moorabool River can influence social, recreational and economic values extends only throughout the reaches of the Moorabool itself. The use of environmental water in a broader context throughout the Barwon River downstream of Fyansford is not viable. The main factors that impede the predictability and viability of environmental water's scope to influence social, recreational and economic values in the Barwon River include:

- the relative difference between the channel size of the Barwon and Moorabool rivers
- groundwater losses surrounding Batesford quarry
- the distance from the release points to the confluence.

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.6.2 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.6.2 Moorabool system potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Moorabool River west branch (targeting reach 3a)		
Winter/spring low flow (5-60 ML/day during June to November)	At 5-10 ML/day: • maintain in-stream vegetation • maintain connectivity and allow fish movement through the reach • maintain pool and riffle habitat for platypus and native fish A higher continuous flow of 60 ML/day would inundate the full extent of the channel bed and reduce intrusion by terrestrial vegetation into the stream bed	F1, F2 PR1 V1

Potential environmental watering action	Expected watering effects	Environmental objectives
Winter fresh (one fresh of 80-90 ML/day for five to 10 days during June to August)	• Provide connectivity between riffle and pool habitats to support fish and platypus movement through the reach • Maintain a clear flow path and control intrusions by terrestrial vegetation • Trigger the downstream spawning migration of tupong • Flush silt, scour pools and remove biofilms from hard substrates and the stream bed to maintain waterbug communities and transport organic matter to prevent blackwater events • Temporarily inundate the lower part of the riverbank to promote the growth and recruitment of streamside vegetation	
Spring fresh (one fresh of 80-90 ML/day for five to 10 days during September to November)	• Provide connectivity between riffle and pool habitats to support fish and platypus movement through the reach • Maintain a clear flow path and control intrusions by terrestrial vegetation • Trigger the upstream migration of juvenile galaxias, tupong, short-finned eel and Australian grayling • Flush silt, scour pools and remove biofilms from hard substrates and the stream bed to maintain waterbug communities and transport organic matter to prevent blackwater events • Temporarily inundate the lower part of the riverbank to promote the growth and recruitment of streamside vegetation	
Summer/autumn low flow (5-40[1] ML/day during December to May)	At 5-10 ML/day: • maintain refuge pools and riffle habitat for fish, waterbugs and platypus and submerged aquatic vegetation • maintain water quality for aquatic life by reducing periods of low dissolved oxygen, high temperature and high salinity Flow above 30 ML/day will water fringing vegetation, promoting growth and recruitment	
Small summer/autumn fresh (one fresh of 30-60 ML/day for three days during February to March)	• Allow fish and platypus movement through the reach • Maintain a clear flow path and control intrusions by terrestrial vegetation • Flush silt and scour biofilms and algae from the stream bed and transport organic matter to improve habitat and food for waterbugs • Maintain species within the marginal zone by watering fringing vegetation	

Potential environmental watering action	Expected watering effects	Environmental objectives
Summer fresh (one fresh of 60-80 ML/day for five days during January to February)	• Trigger the downstream spawning migration of adult short-finned eel • Maintain pool and riffle habitat and the condition of streamside vegetation, and promote recruitment • Allow fish and platypus to move through the reach to access habitat • Flush silt and scour biofilms and algae from the stream bed and substrates to improve habitat quality for waterbugs	F1, F2  MI1  PR1  V2
Autumn fresh (one fresh of 60-80 ML/day for five days during April to May)	• Trigger the downstream spawning migration of Australian grayling • Maintain pool and riffle habitat and the condition of streamside vegetation, and promote recruitment • Allow fish and platypus to move through the reach to access habitat • Flush silt and scour biofilms and algae from the stream bed and substrates to improve habitat quality for waterbugs	F1, F2  MI1  PR1  V2
Year-round freshes (trigger-based, of 30 ML/day for three days) *Triggers:* • *dissolved oxygen below 5 mg/L* • *electrical conductivity above 10,000 µs/cm* • *water temperature above 25°C*	• Maintain water quality by reducing periods of low dissolved oxygen, high water temperature and salinity • Transport organic matter to prevent blackwater events	WQ1, WQ2
Moorabool River east branch (targeting reach 1)		
Winter/spring low flow (8 ML/day during June to November)	• Maintain connectivity and allow fish movement through the reach • Maintain pool and riffle habitat for platypus and native fish • Maintain a clear flow path and control intrusions by terrestrial vegetation	F1, F2  PR1  V1

Potential environmental watering action	Expected watering effects	Environmental objectives
Spring fresh (one to two freshes of 37 ML/day for five days during September to November)	• Provide connectivity between riffle and pool habitats to support fish and platypus movement through the reach • Trigger the upstream migration of juvenile galaxias, tupong, short-finned eel and Australian grayling • Flush silt, scour pools and remove biofilms from hard substrates and the stream bed to maintain waterbug communities and transport organic matter to prevent blackwater events • Temporarily inundate the lower part of the riverbank to maintain the diversity of fringing vegetation species and promote the growth and recruitment of streamside vegetation	F1, F2 MI1 PR1 V2 WQ2
Summer/autumn low flow (1.2 ML/day during December to May)	• Maintain refuge pools and riffle habitat for fish, waterbugs and platypus and submerged aquatic vegetation • Maintain water quality for aquatic life by reducing periods of low dissolved oxygen, high temperature and high salinity	F1, F2 MI1 PR1 V1 WQ1
Summer/autumn freshes (two to three freshes of 2 ML/day for two to three days during December to May)	• Maintain the condition of streamside vegetation and promote recruitment • Allow fish and platypus to move through the reach to access habitat • Flush silt and scour biofilms and algae from the stream bed and substrates to improve habitat quality for waterbugs • Maintain water quality for aquatic life by reducing periods of low dissolved oxygen, high temperature and high salinity	F1, F2 MI1 PR1 V2 WQ1
Autumn/winter fresh (one fresh of 37 ML/day for five days during May to August)	• Provide connectivity between riffle and pool habitats to support fish and platypus movement through the reach • Trigger the downstream spawning migration of tupong • Flush silt, scour pools and remove biofilms from hard substrates and the stream bed to maintain waterbug communities and transport organic matter to prevent blackwater events • Temporarily inundate the lower part of the riverbank to maintain the diversity of fringing vegetation species and promote the growth and recruitment of streamside vegetation	F1, F2 MI1 PR1 V2 WQ2

1 The flow will generally target between 5 and 10 ML per day at the compliance point, but 40 ML per day could be achieved in combination with Barwon Water's transfer to She Oaks Weir and passing flow.

Scenario planning

Table 3.6.3 outlines potential environmental watering and expected water use in a range of planning scenarios.

Reach 3a (west branch)

The *Moorabool River Environmental Entitlement 2010* is currently being updated to reflect the return of water as per the ***Central and Gippsland Region Sustainable Water Strategy 2022***, which will enable more flexibility in delivering potential watering actions in the future. In recent years, there has been limited variation in the proposed watering regime year to year due to restrictions on how much water for the environment can be used each year. Due to dry conditions continuing from 2024-25 into 2025-26, allocation has remained low and is expected to affect the volume of water able to be carried over into 2026-27, if dry conditions persist. As a result, the suite of watering actions proposed to be delivered with available water in the drought and dry climate scenarios is more restricted than in previous years. It is not possible to predict the volume of additional water expected to become available in 2026 through the proposed return of water to the environment in Lal Lal Reservoir, so the potential watering actions proposed have remained the same as last year.

The Moorabool River requires a continuous low flow throughout the year and periodic freshes in all planning scenarios to achieve the intended environmental outcomes.

In the drought and dry planning scenarios, the main objective is to deliver a sufficient flow to maintain enough habitat to prevent significant declines in existing populations of native fish and platypus. There will be limited natural inflow to the river in these planning scenarios, so water for the environment will be used to deliver a low flow at the lower end of the recommended range (5 ML per day) to maintain a continuous flow throughout reach 3a for as long as possible. Water for the environment may be added to operational transfers to increase flow variability downstream of Lal Lal Reservoir and maintain some flow in the reaches downstream of She Oaks Weir once operational water is diverted. Even with these proposed watering actions, sections of the Moorabool River are likely to periodically cease flowing in the dry or drought planning scenarios, which would reduce the river's environmental condition and the size of plant and animal populations. In the drought planning scenario, water quality will be regularly monitored to inform the delivery of trigger-based, year-round freshes as needed.

In the average and wet planning scenarios, most of the recommended flow is expected to be provided through a combination of the natural flow, passing flow and operational releases, which will mean water for the environment can be used to deliver additional freshes to improve environmental conditions and increase populations of native plants and animals.

Delivering an autumn fresh in April/May is a high priority in all planning scenarios to trigger Australian grayling migration and spawning. In the average and wet planning scenarios, a summer fresh is proposed for January/February to trigger the downstream spawning migration of short-finned eel.

Winter and spring freshes are a lower priority than summer and autumn freshes and consequently depend on water availability in drought and dry conditions. A winter fresh would be delivered to trigger the downstream spawning migration of adult tupong, whereas spring freshes will aim to trigger the upstream migration of juvenile galaxias, tupong, short-finned eel and Australian grayling.

Although environmental flows released from Lal Lal Reservoir primarily target outcomes in reaches 3a and 3b, deliveries will be planned where possible to also provide benefits in reach 4.

In average and wet conditions, the priority carryover volume at the end of 2026-27 for the *Moorabool River Environmental Entitlement 2010* is 1,000 ML, which provides water to deliver a critical low flow if conditions turn dry in 2027-28 without affecting outcomes achievable through water delivery in 2026-27, with unknown inflows as part of the new entitlement. In drought and dry conditions in 2026-27, water availability will be more limited, and there is a need to balance critical environmental watering requirements across 2026-27 and in 2027-28. Therefore, the carryover target in drought and dry conditions in 2027-28 is reduced to 500 ML and 750 ML, respectively.

The 2026-27 water year will also see reduced passing flow from Lal Lal Reservoir while allowing the accounts to increase faster with inflows. This will contribute to fewer watering actions being supported with the natural flow and a more conservative use of the entitlement, focusing on low flow.

Reach 1 (east branch)

An environmental entitlement in the east branch of the Moorabool River is expected to come into effect in mid-2026, in line with the ***Central and Gippsland Region Sustainable Water Strategy 2022*** action 4-3. In the event water for the environment is made available and able to be delivered, the highest priority will be to maintain a continuous flow in all climate scenarios and provide summer/autumn freshes in drought and dry climate scenarios to maintain habitat for native fish and platypus and prevent poor water quality. If winter/spring watering actions are delivered, they are expected to be targeted at lower magnitudes if water availability is insufficient to meet the full demand and will depend on the capacity of the existing infrastructure. It is not possible to predict the volume of water expected to become available in 2026-27 through the return of water to the environment in Bostock Reservoir, hence these potential watering actions are included as tier 2 actions.

Water recovery in both Lal Lal and Bostock reservoirs and how they support the delivery of watering actions throughout the 2026-27 water year will depend on water storages at the time.

Table 3.6.3 Moorabool system environmental watering planning scenarios

Planning scenario	Drought	Dry	Average	Wet
Expected conditions	• Little rainfall with no inflow to Lal Lal Reservoir • Regular periods of no flow	• Below-average rainfall and inflow to Lal Lal Reservoir • Cease-to-flow events	• Moderate inflows to Lal Lal Reservoir, especially during winter and spring • Low flow over summer and high peaks in the winter months	• Lal Lal Reservoir is likely to fill and spill • Continuous flow year-round • Overbank flow in some parts during winter/spring
Moorabool River west branch (targeting reach 3a)				
Expected availability of water for the environment[1]	• 894 ML	• 1,174 ML	• 1,342 ML[2]	• 1,561 ML[2]
Potential environmental watering – tier 1 (high priorities)	• Year-round fresh(es) (if required) • Summer/autumn low flow (5 ML/day)	• Summer/autumn low flow (5 ML/day) • Winter/spring low flow (5 ML/day)	• Summer/autumn low flow (5 ML/day) • Winter/spring low flow (5 ML/day) • Autumn fresh • Summer fresh • Small summer/autumn fresh • Spring fresh (one fresh) • Winter fresh	• Summer/autumn low flow (of greater than 10 ML/day) • Winter/spring low flow (of greater than 10 ML/day) • Autumn fresh • Summer fresh • Small summer/autumn fresh • Spring fresh • Winter fresh • Spring fresh

Planning scenario	Drought	Dry	Average	Wet
Potential environmental watering – tier 2 (additional priorities)	• Winter/spring low flow (5 ML/day) • Autumn fresh • Spring fresh (one fresh) • Winter fresh	• Autumn fresh • Spring fresh (one fresh) • Winter fresh	• Spring fresh (one additional fresh)	• N/A
Possible volume of water for the environment required to achieve objectives	• 886 ML (tier 1) • 2,463 ML (tier 2)	• 1,108 ML (tier 1) • 1,553 ML (tier 2)	• 2,400 ML (tier 1) • 495 ML (tier 2)	• 780 ML (tier 1) • N/A (tier 2)
Priority carryover requirements for 2027-28	• 500 ML	• 750 ML	• 1,000 ML	
Moorabool River east branch (targeting reach 1)				
Expected availability of water for the environment	• It is not possible to predict water availability in 2026-27 from the proposed new environmental entitlement			
Potential environmental watering – tier 1 (high priorities)	• N/A			
Potential environmental watering – tier 2 (additional priorities)	• Summer/autumn low flow • Winter/spring low flow • Summer/autumn freshes • Spring fresh (one fresh) • Winter fresh		• Summer/autumn low flow • Winter/spring low flow • Spring fresh • Winter fresh • Spring fresh	
Possible volume of water for the environment required to achieve objectives	• 0 ML (tier 1) • 2,278 ML (tier 2)		• 0 ML (tier 1) • 2,550 ML (tier 2)	

1 Expected availability of water for the environment for target reach 3a is based on the current *Moorabool River Environmental Entitlement 2010*. It is not possible to predict the additional volume of water expected to become available in 2026 for use in 2026-27 through the return of water for the environment in Lal Lal Reservoir. Supply is expected to remain low, and storage levels will depend on inflows over winter/spring.

2 Up to 7,086 ML (11.9% inflows – capped at 7,500 ML three-year rolling average around 2,500 ML per year) can be stored under the current *Moorabool River Environmental Entitlement 2010*. The water recovery expected to come into effect in 2026-27 will see this increase to 18.65% inflows without a cap on delivery.

3.7 Barwon system

Waterway manager – Corangamite Catchment Management Authority

Storage manager – Barwon Water

Environmental water holder – Victorian Environmental Water Holder

The Barwon system includes the upper Barwon River and the lower Barwon wetlands.

The Barwon River flows east from the Otway Ranges, passing the towns of Forrest, Birregurra, Winchelsea, Inverleigh and the City of Geelong before discharging into Bass Strait at Barwon Heads. The Leigh and Moorabool rivers are major tributaries, joining the Barwon River at Inverleigh and Fyansford, respectively. Other tributaries, including Birregurra, Boundary, Callahan, Dewing, Matthews, Pennyroyal, Deans Marsh and Gosling creeks, flow into the Barwon River above Winchelsea. The main storages in the Barwon River catchments are the West Barwon and Wurdee Boluc reservoirs.

The Barwon estuary contains a Ramsar-listed system of wetlands and lakes collectively called the lower Barwon wetlands. Water for the environment can be used to manage the flow in the upper Barwon River and manage water levels in Reedy Lake and Hospital Swamps, which connect to the lower Barwon River.

3.7.1 Upper Barwon River

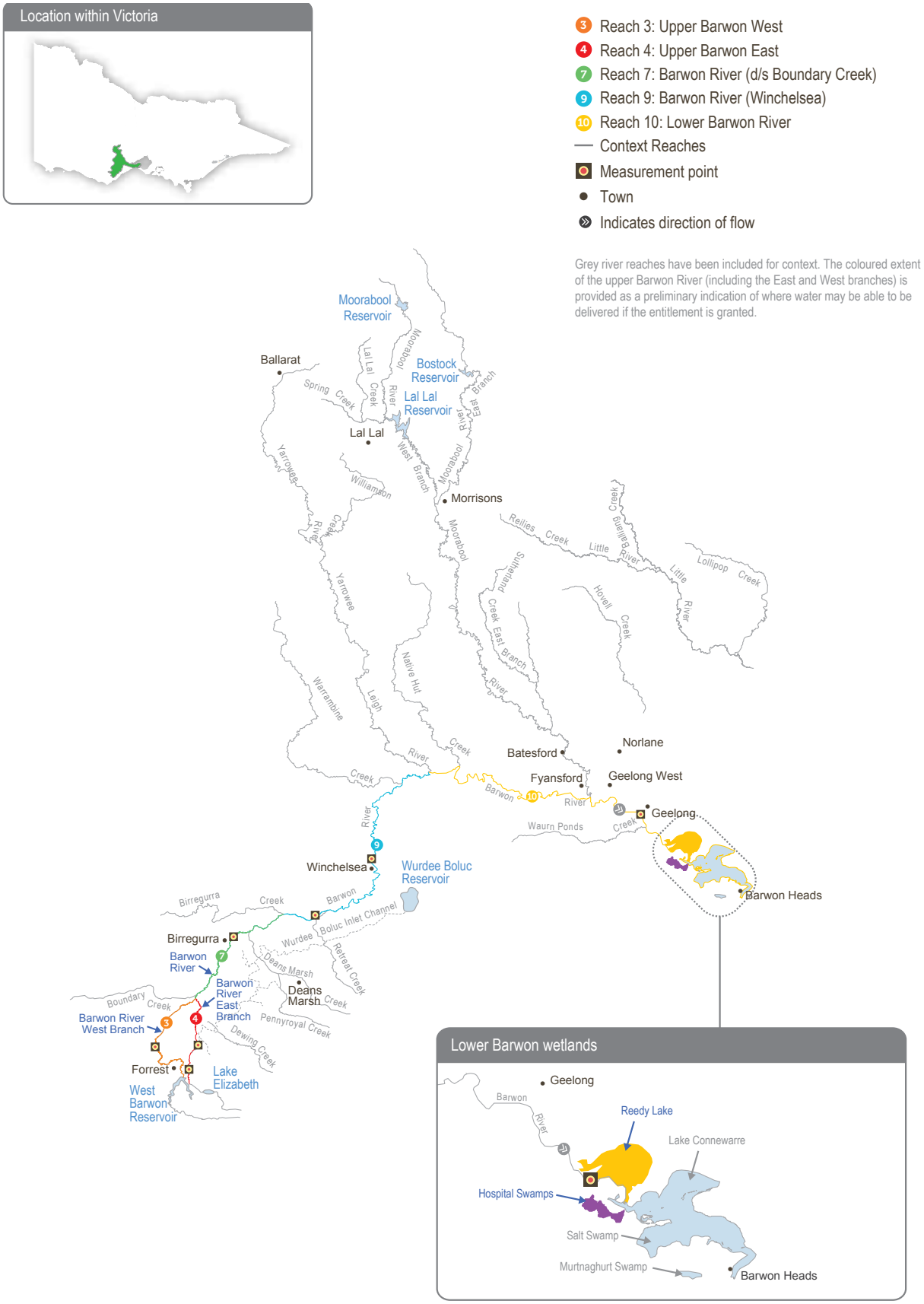
System overview

The operation of the West Barwon Reservoir regulates flows in the upper Barwon River. Water can be released directly from the reservoir into the west or east branches via a diversion tunnel. The junction of the two branches is near Boundary Creek. Downstream of the reservoir, operational water can be diverted into the Wurdee Boluc inlet channel, a 57 km channel that transfers water to Wurdee Boluc Reservoir.

Barwon Water releases passing flow in the order of 1-5 ML per day in both the upper east and west branches from the West Barwon Reservoir. These releases may increase to 15 ML per day in the east branch over September when storage levels are high. All the natural flow is passed down the east branch when West Barwon and Wurdee Boluc reservoirs collectively hold more than 26,100 ML in January, 22,900 ML in February and 20,900 ML in March. Flow spills from the reservoir when it is full, and natural inflows from unregulated tributaries add to the passing flow in the west branch. Regulated and unregulated tributaries add to the passing flow in the east branch.

The *Upper Barwon River Environmental Entitlement 2018* enables water for the environment to be made available from the West Barwon Reservoir (see **Figure 3.7.1**). The entitlement provides an average of 1,000 ML per year and up to 2,000 ML of the total storage capacity at full supply. Water for the environment was first delivered to the upper Barwon River in 2018-19. The current entitlement provides only enough water to meet the highest-priority potential environmental watering actions in the upper Barwon east branch (reach 4) and the upper Barwon west branch (reach 3), in particular climatic conditions.

Figure 3.7.1 Barwon system



Environmental values

The upper Barwon River is home to platypus and native fish species, including the river blackfish, short-finned eel, southern pygmy perch, Australian smelt and various galaxias, including the threatened little galaxias. The system retains some submerged aquatic vegetation, undercut banks, overhanging vegetation and riffle-pool sequences, which provide habitat for fish and other aquatic animals.

Long-term environmental objectives for the upper Barwon system are based on delivering watering actions recommended in the ***Upper Barwon, Yarrowee and Leigh rivers FLOWS study***. These include improving the breeding and recruitment of various fish, platypus and waterbug species, as well as improving the condition, extent and diversity of in-stream, emergent, streamside and floodplain vegetation. However, due to the limited size of the environmental entitlement, channel constrictions and historical channel diversions, the flow magnitudes for most of the potential watering actions described in this plan have been adjusted to be less than the known channel constraints. The watering actions presented in this plan aim to maintain rather than improve current ecological conditions within the upper Barwon River. Significant improvements in ecological condition are unlikely until complementary actions are taken to address channel constraints and other factors (such as unrestricted livestock access and weed infestation).

In 2026, Corangamite CMA undertook a project to develop and prioritise 'specific, measurable, achievable, realistic and time-based' (SMART) objectives and key evaluation questions for the *Upper Barwon River Environmental Entitlement 2018*. The first stage of the project developed objectives that can be achieved under interim water management arrangements and known constraints. Fish surveys, water quality testing and eDNA analysis will also inform a more comprehensive set of SMART objectives that will be developed at a later stage.

Environmental objectives in the upper Barwon River

	F1 – Maintain the continued presence of resident ornate galaxias and southern pygmy perch species as evidenced by observations in three out of every five years
	**PR1** – Maintain the presence of platypus in the upper Barwon River annually
	WQ1 – Maintain water quality in the east branch (scour valve to Yeodene Streamside Reserve and from east branch tunnel outlet to east branch diversion into Wurdee Boluc Inlet channel) such that dissolved oxygen is greater than 4 mg/L and the water temperature is less than 270°C

Traditional Owner cultural values and uses

The reaches of the Barwon River that can be most influenced by water delivered from the West Barwon Reservoir are on Eastern Maar Country.

In 2013, Eastern Maar Aboriginal Corporation (EMAC) received Registered Aboriginal Party (RAP) status under the Victorian *Aboriginal Heritage Act 2006*. In 2020, a variation to their RAP boundary was approved. This covered a large portion of land in south-west Victoria, including the Barwon River upstream of Winchelsea. In 2023, Eastern Maar gained formal recognition of their rights under the Commonwealth *Native Title Act 1993* for over half of the RAP area and on 21 March 2024, the Federal Court of Australia handed down a third native title determination, marking a significant milestone since their initial recognition in 2011 under the Native Title Act. Further areas remain in negotiation. The Native Title determination acknowledges Eastern Maar's ongoing connection and intrinsic relationship to Country across south-west Victoria, including parts of the Barwon River catchment.

The current environmental entitlement can have the most effect on the river reaches between the West Barwon Reservoir and Winchelsea, with diminishing benefits to the reaches downstream. The reaches of the river downstream of Winchelsea are on Wadawurrung Country. Corangamite CMA is working with Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) to understand opportunities to provide for cultural values and uses and other assertions for the management of water for the environment in the Barwon River downstream of Winchelsea, on Country where WTOAC holds Registered Aboriginal Party status.

EMAC and WTOAC have formal plans for how to heal Country in the region, and Corangamite CMA continues to work with each Traditional Owner group to identify their cultural objectives and associated values and uses that align with environmental flows.

Eastern Maar obligations to Country and objectives for Country are described in the ***Eastern Maar Country Plan Meerreengeeye Ngakeepoorryeeyt***. Eastern Maar assertions for *parreeyt* (water) are further documented in Eastern Maar's Nation Statement in ***Water is Life: Traditional Owner Access to Water Roadmap***.

WTOAC is keen to see the restoration of the upper Barwon progress, so that in the future, more natural flows will improve the health of Wadawurrung Country. WTOAC has been working with waterway managers through the development of seasonal watering proposals to improve outcomes on Country in line with the ***Paleert Tjaara Dja Wadawurrung Country Plan*** and the ***Wadawurrung Nation Statement*** on water:

- by 2030, the water in the waterways of the *Barree Warree Yulluk* is clean enough to drink
- by 2025, the waterways of the *Barree Warree Yulluk* will have sufficient cultural flows and connectivity to support culturally important species
- Wadawurrung Yaluks and waterway ecosystems are flowing freely and are healthy.

Increasing the involvement of Traditional Owners in managing environmental flows and progressing opportunities towards self-determination in the environmental watering program is a core commitment of the VEWH and its program partners. This is reinforced by legislation and policy commitments, including the *Water Act 1989*, the ***Victorian Aboriginal Affairs Framework***, the 2016 ***Water for Victoria***, the 2022 ***Water is Life: Traditional Owner Access to Water Roadmap***, and, in some cases, agreements under the *Traditional Owner Settlement Act 2010*.

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.7.1**, Corangamite CMA considered how environmental watering could support cultural, social, recreational and economic values and uses, including peak recreational use as required in the Victorian *Water Act 1989* if the delivery does not compromise environmental outcomes.

The adjacent land use of the upper Barwon River is dominated by grazing for livestock (beef, sheep and dairy) and forestry and is of significant economic value. Limited public access to the river frontage limits the upper Barwon's social and recreational values and uses.

In planning the potential environmental watering actions, Corangamite CMA considered how environmental flows could support values and uses, including:

- riverside recreation and amenity (such as birdwatching, trail running, mountain bike riding and walking)
- socio-economic benefits (such as for diverters for stock needs and domestic use; water levels and water quality can rely on the delivery of water for the environment, particularly in summer).

Although the watering actions in **Table 3.7.1** may support social, recreational and economic values and uses, they were not actively modified to accommodate such values and uses, and there have been no requests to alter the watering proposal to better accommodate shared benefits.

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.7.1 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.7.1 Upper Barwon River potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Upper Barwon River (targeting reach 3 – west branch)		
Winter/spring low flow (3-30 ML/day during June to November)	• Maintain adequate depth and water quality of permanent water in the channel/pools to provide habitat to support resident and migratory fish and platypus	F1, PR1, WQ1
Summer/autumn low flow (3-30 ML/day during December to May)		
Upper Barwon River (targeting reach 4 – east branch)		
Winter/spring low flow (1-10 ML/day during June to November)	• Maintain adequate depth and water quality of permanent water in the channel/pools to provide habitat to support resident and migratory fish and platypus • Provide enough velocity to mix pools	F1, PR1, WQ1
Summer/autumn low flow (0.5-5 ML/day during December to May)	• Maintain adequate depth and water quality of permanent water in the channel/pools to provide habitat to support resident and migratory fish and platypus	
Summer/autumn freshes (two to three freshes of 35 ML/day for two days during December to May)	• Maintain adequate depth and water quality of permanent water in the channel/pools to provide habitat to support resident and migratory fish and platypus • Provide enough velocity to mix pools	

Scenario planning

Table 3.7.2 outlines potential environmental watering and expected water use in a range of planning scenarios.

Planned watering actions for the upper Barwon River are derived from recommendations in the ***Upper Barwon, Yarrowee and Leigh rivers FLOWS study update***. Many of the flow magnitudes recommended in the study cannot be delivered due to the size of the environmental entitlement and the risk of inundating private land.

Observations during 2024-25 identified locations on both branches of the river that are significantly affected by constrictions and/or breakouts, which have affected the ability to deliver the proposed watering actions in this plan with water for the environment. In 2025, Corangamite CMA worked with Barwon Water and private landholders to find an alternative site where environmental water could be released into the east branch of the upper Barwon River. After reviewing identified options, a trial was implemented of the use of the Barwon-Colac transfer system (Gerangamete pipeline) and Wurdee Boluc Inlet Channel to release water at a scour point on the east Barwon River downstream of Callahan's Creek and upstream of the east and west Barwon confluence.

The trial was deemed a success, and erosion control works were completed in January 2026 to protect the scour valve, private property and the riverbank. The Gerangamete scour valve will be used in the 2026-27 water year to deliver a summer low flow to the east branch and downstream of the confluence if inundation issues of private property are yet to be resolved.

The use of the scour valve will also depend on Barwon Water's infrastructure maintenance requirements and the availability of the Barwon-Colac transfer system and the Wurdee Boluc Inlet Channel for transferring water. Corangamite CMA will continue to work with relevant agencies and landholders to resolve the remaining issues to enable deliveries of water for the environment and avoid affecting private land.

Given the current limitations, the main aim of watering actions is to deliver enough flow through the system to maintain water quality and pool habitat for aquatic animals. A low flow will aim to prevent or limit cease-to-flow events, and small freshes will be delivered as needed in the east branch during summer and autumn to manage potential water quality issues. The overall approach to environmental flows in the upper Barwon River in 2026-27 will help maintain existing populations of native fish, platypus and waterbugs, and it relies on natural events to deliver the greater flows needed to facilitate the movement and potential breeding of fish and platypus.

The Barwon Flagship Project is an integrated catchment management project working with stakeholders to address flow restrictions through streamside management and to improve the overall health of the upper Barwon River. The priority carryover requirement for 2027-28 for the upper Barwon River is 500 ML. This amount is the drought reserve amount agreed with the Upper Barwon Surface Water Advisory Group. Carryover will ensure sufficient water is available to deliver the highest-priority flows during the early part of 2027-28, if there are low allocations during the year.

Table 3.7.2 Upper Barwon River environmental watering planning scenarios

Planning scenario	Dry	Average	Wet
Expected conditions	• Disconnected pools during summer and autumn • Cease-to-flow events	• Low flow in summer and autumn • Peak flow in winter and spring	• Continuous flow throughout the year • Reservoir spills are likely, especially during winter and spring
Expected availability of water for the environment	• 2,080 ML	• 2,140 ML	• 2,240 ML
Upper Barwon River (targeting reach 3 – west branch)			
Potential environmental watering – tier 1 (high priorities)	• Summer/autumn low flow (delivered at a lower magnitude in the range) • Winter/spring low flow (delivered at a lower magnitude in the range)	• Summer/autumn low flow-(delivered at a lower magnitude in the range) • Winter/spring low flow (delivered at a lower magnitude in the range)	• Summer/autumn low flow (delivered at a lower magnitude in the range) • Winter/spring low flow
Potential environmental watering – tier 2 (additional priorities)	• Summer/autumn low flow (delivered at a lower magnitude in the range) • Winter/spring low flow (delivered at a lower magnitude in the range)	• Summer/autumn low flow (delivered at a lower magnitude in the range)	
Upper Barwon River (targeting reach 4 – east branch)			
Potential environmental watering – tier 1 (high priorities)	• Summer/autumn low flow	• Summer/autumn low flow	• Summer/autumn low flow • Summer/autumn fresh • Winter/spring low flow
Potential environmental watering – tier 2 (additional priorities)	• Summer/autumn fresh • Winter/spring low flow	• Summer/autumn fresh • Winter/spring low flow	
Possible volume of water for the environment required to achieve objectives	• 546 ML (tier 1) • 977 ML (tier 2)	• 273 ML (tier 1) • 1,297.5 ML (tier 2)	• 136 ML (tier 1) • 136 ML (tier 2)
Priority carryover requirements for 2027-28	• 500 ML		

3.7.2 Lower Barwon wetlands

System overview

The estuarine reach of the Barwon River contains a system of wetlands and lakes, including Lake Connewarre, Reedy Lake and Hospital Swamps, Salt Swamp and Murtnaghurt Lagoon (Figure 3.7.1). For thousands of years, the system has been a place of great significance to the Wadawurrung Traditional Owners. *Paleert Tjaara Dja Wadawurrung Country Plan* acknowledges the system's special place in their Dreaming.

Water for the environment can be used to manage water levels in Reedy Lake and Hospital Swamps, which connect to the Barwon River. The environmental entitlement for the lower Barwon wetlands does not provide access to water held in storage, and therefore does not require demand and supply data to support potential watering actions in the scenario planning. Instead, it allows water to be diverted from the Barwon River into Reedy Lake and Hospital Swamps when river levels are above 0.7 m AHD. High water levels in the Barwon River can also result in the natural wetting of the wetlands.

Water will be delivered and removed from Reedy Lake and Hospital Swamps using the infrastructure in place and by allowing natural processes (such as evaporation) to reduce water levels at times. Water monitoring stations are located near the inlet to Hospital Swamps, at 'big hole' in Reedy Lake and on the lower Barwon River upstream of the lower barrage. These gauges inform watering actions by measuring the water's level, electrical conductivity (salinity), temperature and dissolved oxygen.

Watering decisions are based on scientific recommendations and are influenced by the associated water levels in the lower Barwon River. It is important to note that in wet conditions, localised stormwater run-off and flows in the Barwon River are expected to overtop riverbanks and flow into the wetlands, regardless of structure operations.

Environmental values

Reedy Lake and Hospital Swamps form part of the internationally recognised Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, which is used by many thousands of internationally significant species. The wetlands support 47 known threatened plant and animal species and communities. These include some of Victoria's rarest species (such as the brolga, orange-bellied parrot, Australasian bittern, growling grass frog, Australian grayling and dwarf galaxias) and subtropical and temperate coastal saltmarsh communities. Reedy Lake supports a range of vegetation communities, including coastal saltmarsh, herbfields and reed beds.

Reedy Lake was naturally a partly ephemeral system, but river regulation meant the lake was nearly permanently wet from the 1970s until 2016. Wetting and drying regimes are now recommended to maintain the lake's ecological character and diverse habitats. Following a four-year (2016-17 to 2019-20) watering regime trial at Reedy Lake, the Lower Barwon Review in 2020 proposed to implement a long-term, seasonally adaptive water regime that avoids complete drying. At Reedy Lake, this means having the wetland full for a quarter of all years and having a partial drawdown in summer and autumn in three-quarters of all years.

Hospital Swamps comprises five wetland basins that support important ecological processes and significant environmental values, including large areas of coastal saltmarsh and diverse waterbird communities. Armstrong Creek development precinct, a series of constructed wetlands and diversion channels, has been shown to have a significant effect on the water levels at Hospital Swamps. In winter, increased flow enables connectivity to Hospital Swamps. This can limit the management of the outlet infrastructure, making it challenging to maintain the recommended water levels.

A FLOWS study for the lower Barwon wetlands is currently underway and expected to be completed in 2026-27. Recommendations about the watering regime may therefore differ in future editions of this plan.

Environmental objectives in the lower Barwon wetlands	
	**B1** – Provide suitable feeding and breeding habitat for waterbirds, including mudflats and shallow water for wading birds, flooded vegetation and wetland fringes
	**CN1** – Maintain nutrient cycling and improve lake productivity
	F1 – Provide habitat for fish breeding and for growth and improved conditions for migration and dispersal when wetlands are connected to the Barwon River **F2** – Reduce the carp population
	**MI1** – Increase the waterbug population and its biomass
	**V1** – Increase the diversity of ecological vegetation communities in the wetlands and increase the recruitment of aquatic vegetation **V2** – Increase the growth and extent of Coastal Saltmarsh, Herbfields and Lignum Shrubland ecological vegetation communities **V3** – Retard colonisation of tall reed in low-lying areas and increase open water habitat
	WQ1 – Remove accumulated salts **WQ2** – Maintain surface water and groundwater interactions

Traditional Owner cultural values and uses

The lower Barwon wetlands are part of Wadawurrung Country. Corangamite CMA is continuing to work with the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) to support their values and uses of the wetlands and to refine Corangamite CMA's understanding of how water regimes in the lower Barwon wetlands can support Wadawurrung aspirations.

Wadawurrung people place a high cultural value on the Barwon River. Many Wadawurrung people in the region have a connection and a long history with the river. Under the *Aboriginal Heritage Act 2006* and the Aboriginal Heritage Regulations 2007, any waterway or Ramsar-listed site is recognised as culturally sensitive.

In 2018, Corangamite CMA engaged representatives of WTOAC to inform part of the ***Upper Barwon, Yarrowee and Leigh rivers FLOWS study update*** and to assist in capturing Aboriginal values relevant to Wadawurrung Country in each of the waterway reaches. Many of these values, notably culturally significant species, are also common to wetlands of the Barwon River system. With the lower Barwon wetlands flows study underway in 2026, WTOAC are again involved in the steering committee.

WTOAC's 2020 ***Paleert Tjaara Dja Wadawurrung Country Plan*** identifies important cultural values and recommendations for the lower Barwon wetlands, including:

- culturally significant wetland species (such as brolga, black duck, black swan, short-finned eel, common reed and bull rush)
- recognition of wetlands as meeting, ceremony and trade places
- maintaining water holes and refuge pools
- maintaining access to culturally important story places and ceremonial places
- protection of artefact sites
- use of the appropriate Wadawurrung language for places of cultural importance
- increased opportunities for the Wadawurrung to be involved in monitoring and evaluation activities
- inclusion of the Wadawurrung in all communications about releases of water for the environment and other wetland-related activities.

Paleert Tjaara Dja Wadawurrung Country Plan acknowledges Reedy Lake and Hospital Swamps as special places in Wadawurrung Dreaming:

> "The chain of ponds from the Barwon River to Reedy Lake, Hospital Lake, Lake Connewarre and Estuary Bay is connected through water and Black Swan Dreaming".

WTOAC has been working with waterway managers to improve outcomes on Country in line with *Paleert Tjaara Dja* and the ***Wadawurrung Nation Statement***.

Increasing the involvement of Traditional Owners in managing environmental flows and progressing opportunities towards self-determination in the environmental watering program is a core commitment of the VEWH and its program partners. This is reinforced by legislation and policy commitments, including the *Water Act 1989*, the ***Victorian Aboriginal Affairs Framework***, the 2016 ***Water for Victoria***, the 2022 ***Water is Life: Traditional Owner Access to Water Roadmap***, and, in some cases, agreements under the *Traditional Owner Settlement Act 2010*.

Social, recreational and economic values and uses

In planning the potential environmental watering actions in **Table 3.7.3**, Corangamite CMA consulted with stakeholders to ensure it considered social, economic and recreational values relevant to environmental water management in the lower Barwon wetlands.

Opportunities for social, recreational and economic values and uses are incorporated into planning and watering decisions if they do not compromise environmental outcomes.

Expert advice (such as the **2012 environmental FLOWS study for the lower Barwon wetlands** and the ***Lower Barwon Review 2020***) emphasised that the entire lower Barwon recommended watering regime—providing a fill to the wetlands and allowing water levels to draw down at the right times—would have to be implemented to improve biodiversity and protect the long-term health of the wetlands. This may mean it is not possible to meet some expectations for shared benefits that don't maintain or improve environmental outcomes. Corangamite CMA manages water levels in the wetlands to meet environmental requirements, which concurrently benefit a range of social, economic and recreational values and uses, including:

- water-based recreation (such as swimming and fishing, particularly for river blackfish)
- riverside recreation and amenity (such as birdwatching, camping, trail running, mountain bike riding and walking)
- socio-economic benefits (such as for diverters for stock needs and domestic use; water levels and water quality can rely on environmental water deliveries, particularly in summer).

Although the watering actions in **Table 3.7.3** may support social, recreational and economic values and uses, they were not actively modified to accommodate such values and uses.

Scope of environmental watering

The term 'environmental watering' refers to the active delivery of held environmental water to support particular environmental objectives by altering the flow in a river or the water level in a wetland. While other terms are sometimes used to describe the delivery of environmental water, 'environmental watering' is deliberately used here and in seasonal watering statements to ensure consistency in the legal instruments that authorise the use of water for the environment in Victoria.

Table 3.7.3 describes the potential environmental watering actions in 2026-27, their expected watering effect (that is, the intended physical or biological effects of the watering action) and the longer-term environmental objectives they support. Each environmental objective relies on one or more potential environmental watering actions and their associated physical or biological effects.

Table 3.7.3 Lower Barwon wetlands potential environmental watering actions, expected watering effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Reedy Lake		
Autumn/winter/ spring fill (April to November) and top-ups as required (year-round) targeting 0.8 m AHD	• Maintain a mosaic of water depths and resources across the wetland to support waterbird breeding events • Inundate fringing wetland vegetation to provide foraging habitat for waterbirds • Maintain a sufficient depth of water around wetland vegetation to provide fish breeding habitat • Temporarily inundate the outer edges of the wetland to initiate the growth and recruitment of diverse vegetation communities, while permanently inundating the inner wetland vegetation communities • Allow fish to move between the river, lake and estuary • Stimulate waterbug communities to breed for waterbird feeding • Dilute soil and surface water salts, and initiate the decomposition of organic matter	B1, CN1, F1, MI1, V1, WQ1, WQ2
Summer/autumn drawdown (December to May) targeting 0.3 m AHD	• Dry out wetland-fringing vegetation to reduce the potential waterlogging of saltmarsh communities to support germination • Expose mudflats and margins to provide feeding habitat for wading/migratory waterbirds • Manage reed colonisation of low-lying areas by allowing drying and saline groundwater intrusion to reduce reed growth • Support a drying phase for vegetation communities that require drying to grow and recruit • Restrict carp movement and access to habitat • Allow vegetation to decay and soils to oxidise and release nutrients to improve lake productivity and maintain biogeochemical processes • Enable surface water/groundwater interaction by allowing saline groundwater to discharge to the wetland bed	B1, CN1, F2, V2, V3, WQ2

Potential environmental watering action	Expected watering effects	Environmental objectives
Hospital Swamps		
Autumn/winter/ spring fill (April to November) and top-up as required (year-round) targeting 0.5 m AHD	• Maintain a mosaic of water depths and resources across the wetland, inundate various vegetation communities and create nesting, breeding and feeding opportunities for waterbirds, fish and waterbugs • Increase water levels to trigger fish spawning and waterbird breeding; high water levels will allow fish to access the wetland from the river • Increase freshwater to dilute the salt in the soil and surface water over winter • Initiate the decomposition of organic matter • Inundate the outer edges and margins to initiate the growth and maintain the condition of important wetland vegetation communities	B1, CN1, F1, MI1, V1, WQ1, WQ2
Summer/autumn drawdown (December to May) targeting 0.1-0.3 m AHD	• Dry out the wetland-fringing vegetation and expose mudflats and margins to support the feeding of wading/ migratory waterbirds • Manage reed colonisation of low-lying areas by allowing drying and saline groundwater intrusion to reduce reed growth • Support a drying phase for vegetation communities that require drying to grow and recruit • Restrict carp movement and access to habitat • Allow vegetation to decay and soils to oxidise and release nutrients to improve lake productivity and maintain biogeochemical processes • Enable the interaction of surface water and groundwater by allowing saline groundwater to discharge to the wetland bed	B1, CN1, F2, V2, V3, WQ2

Scenario planning

Table 3.7.4 outlines potential environmental watering and expected water use in a range of planning scenarios.

A 2020 independent review of environmental watering at the lower Barwon wetlands recommended that Reedy Lake be partially drawn down on average in three out of four years and Hospital Swamps partially drawn down in most years. It also recommended that the timing of planned partial drawdowns should be adapted to avoid disrupting significant waterbird breeding events. The FLOWS study is currently being updated in 2026 to provide improved guidance as per the 2020 independent review recommendations. This may inform future seasonal watering proposals, but not the 2026-27 actions described here.

Wetland filling is proposed to commence as early as April, but it can occur at any point until November. Further top-ups may be needed throughout the year to achieve and maintain target water levels, particularly if waterbirds are breeding, and to provide some variability. Planned drawdowns can commence from December and continue until the following May at the latest to mimic natural seasonal patterns, but they will be delayed where required to avoid disrupting breeding waterbirds.

The planned partial drawdown may be difficult to carry out in the wet planning scenario, especially if there are multiple high-flow events in the Barwon River during summer and autumn. This has been evident in Reedy Lake, which has only once completed its drawdown period since the 2019-20 water year due to the wet conditions over the past five years. The planned wetland fill might also be difficult to achieve in the drought-dry planning scenario, due to the wetland's potential disconnection from the Barwon River for long periods.

Table 3.7.4 Lower Barwon wetlands environmental watering planning scenarios

Planning scenario	Drought-dry	Average	Wet
Expected conditions	• Limited to no flow from the Barwon River in winter/spring • Disconnection between the wetlands and the Barwon River for a long period • Natural drawdown may begin earlier than planned	• Some natural inflow from the Barwon River in winter/spring • More gradual lowering of water levels during drawdown	• Wetlands will be filled by overbank flow from the Barwon River • Stormwater inflow and local rain/run-off will provide regular top-ups • The proposed extent of drying of the wetland is unlikely
Reedy Lake			
Potential environmental watering – tier 1 (high priorities)	• Reedy Lake fill and top up (as required) • Reedy Lake drawdown	• Reedy Lake fill and top up (as required) • Reedy Lake drawdown	• Reedy Lake fill and top up (as required) • Reedy Lake drawdown
Hospital Swamps			
Potential environmental watering – tier 1 (high priorities)	• Hospital Swamps fill and top up (as required) • Hospital Swamps drawdown	• Hospital Swamps fill and top up (as required) • Hospital Swamps drawdown	• Hospital Swamps fill and top up (as required) • Hospital Swamps drawdown