

Central region

In 2017-18 in the Central region, there were fabulous outcomes for native fish such as the Australian grayling, as well as frogs, plants and the iconic platypus. Water for the environment delivered to Bolin Bolin Billabong for the first time helped native vegetation growth and provided cultural benefits for Wurundjeri people.

Water for the environment delivered to the Central region in 2017-18 (megalitres)

◆ Yarra system	24,054 ML
◆ Tarago River	1,764 ML
◆ Maribyrnong system	290 ML
◆ Werribee system	2,573 ML
◆ Moorabool River	2,746 ML
◆ Lower Barwon wetlands Water diverted from Barwon River	



Yarra system

Dights Falls is a special location on the Yarra River: downstream of the falls, the river is a brackish water estuary, while upstream of the falls, the river is freshwater. The falls have created a very deep and large weir pool on the upstream side, which is important habitat for native fish like Australian grayling that migrate from the estuary into the freshwater.

Water quality in the weir pool can reduce, particularly in the summer months when water temperatures warm up. At times, low oxygen levels can be harmful to fish and other animals living in the river. Delivering water for the environment can quickly improve water quality at Dights Falls.

To protect native fish as they move upstream and through the Dights Falls fishway, Melbourne Water installs specialised water quality monitoring equipment over the warm summer months to continuously measure dissolved oxygen and temperature.

"During December to February, we install a temporary buoy, which has three sensors suspended through the water column below. This gives us live information on the condition of the water in the river and helps us target our releases of summer freshes from the upper Yarra system," said Melbourne Water's Cheryl Edwards.

In February 2018, during a particularly hot and dry spell with continuous low flows in the Yarra River, oxygen in the water was dropping to critical levels that are harmful to fish.

"The dissolved oxygen was approaching 3 milligrams/litre and dropping. Above 5 milligrams/litre is good, below 2 milligrams/litre becomes critical. The temperature was 26 degrees Celsius and rising, which prompted us to bring forward our planned summer environmental flow," Cheryl said.

"As a result, oxygen stabilised after the flow release came through and this was maintained throughout the high-risk summer period, allowing fish to pass through the Dights Falls weir pool to better quality habitat further upstream."

Fish monitoring has shown improvements to locations where priority fish have been detected, including the threatened Australian grayling, with evidence they occur as far up the Yarra River as Woori Yallock. Scientists have also recorded other threatened species such as Macquarie perch, common galaxias and river blackfish throughout the waterway.

Waterway manager:
Melbourne Water

Storage manager:
Melbourne Water

Site	Volume delivered in 2017-18 (ML)
Yarra River	24,035
Bolin Bolin Billabong	Water was diverted into Bolin Bolin Billabong from the Yarra River as part of the spring fresh – using the water twice – once for the river and once for the billabong.
Yering Backswamp	19

 **Yarra River:** *The Wurundjeri people call the Yarra River 'Birrarrung', meaning 'place of mist and shadows'. In 1835, when surveyor John Wedge asked Wurundjeri people what they called the lower section of the river they replied 'Yarro Yarro', meaning 'it flows'. He misunderstood and the river became known as the Yarra.*

Source: Melbourne Water

Left: Buoy at Dights Falls,
by Cheryl Edwards, Melbourne Water

Central

Tarago River

The threatened Australian grayling is being given a boost from environmental flows into the Tarago River.

Monitoring in the Tarago River is improving understanding about the link between environmental flows and Australian grayling migration and spawning, with the duration of the release being the critical ingredient.

"We are now really confident that environmental flows need to be at least 10 days' duration to support fish migration and initiate successful spawning," said Melbourne Water's Sarah Gaskill.

"In April 2018, we were pleased to successfully deliver this flow because it was such a dry autumn that there was no chance of the flows occurring naturally."

Monitoring has shown that environmental flows in the Tarago River improve the quality and quantity of food and habitat for platypus and increase opportunities for these rare animals to move. In 2017-18, this monitoring was fed into a review of the environmental flows study. This study helps enhance water delivery targeted at specific plants, animals, fish and river processes.

It's not only the threatened native plants and animals that are getting a much-needed boost from the flows – visitors to the Glen Cromie Holiday Park also appreciated the timing. The delivery of a summer environmental flow was planned to coincide with a long weekend. So, in addition to the ecological and water quality benefits, the community enjoyed the flows, too.



"The timing, from our perspective, was sensational," said Karen Azzopardi from Glen Cromie Holiday Park.

"We were fully booked for the Australia Day long weekend and, being such a hot weekend, the river was the place to be! I hope that the extra flows were a success for the environment, too. I know it made a big difference here and immediately the eels were coming out in the evening."

Waterway manager:
Melbourne Water

Storage manager:
Melbourne Water

Site	Volume delivered in 2017-18 (ML)
Tarago River	1,764

Above: Charlie and Karen Azzopardi (owners of Glen Cromie Caravan Park) with Sarah Gaskill (Melbourne Water) at the park's environmental flow information sign, by Alison Miller, VEWH

Maribyrnong system

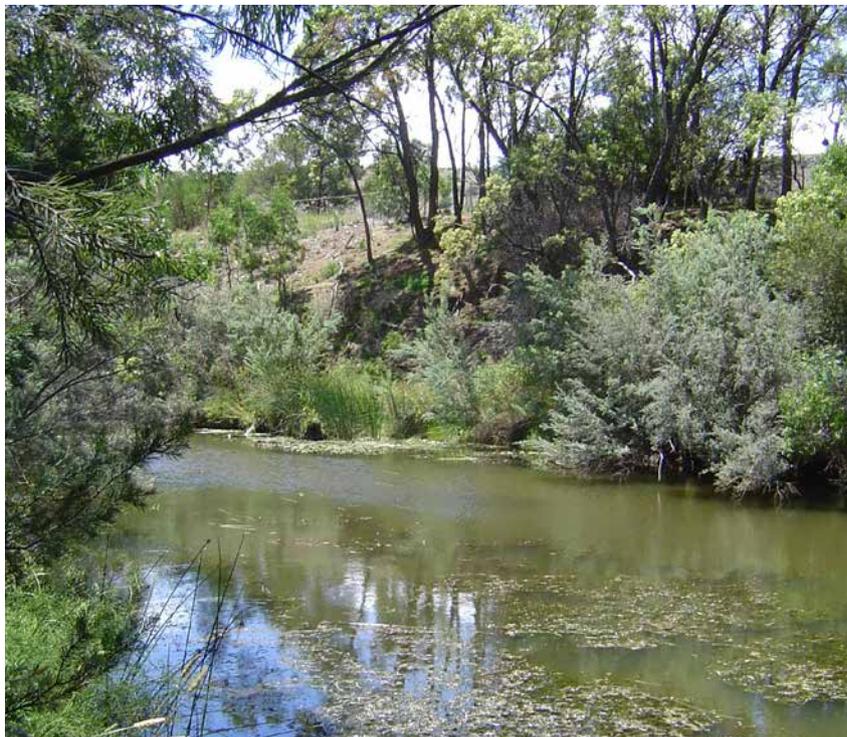
A delivery of flows in summer helped support movement of native fish in Jacksons Creek, which flows into the Maribyrnong River – one of Melbourne’s most valued waterways.

Much of the upper Maribyrnong catchment was an ephemeral system, meaning that it did not flow continuously all year round. However, Jacksons Creek, which flows from Rosslynne Reservoir into the Maribyrnong River, maintains a permanent flow now, and has deep pools to provide refuge for fish such as short-finned eels, common and ornate galaxias, flathead gudgeon, tupong and Australian smelt. Platypus also inhabit several reaches of the creek.

“The environmental flow in Jacksons Creek is not large enough to have an impact in the Maribyrnong River, but there is enough water to provide a flow within the Jacksons Creek from Rosslyn Reservoir,” said Melbourne Water’s Simon Catzikiris.

“When the flow passes through many small but permanent pools along the way, the fresh water improves water quality and gives fish a chance to move from pool to pool and find better habitat.”

The VEWH does not hold a formal environmental entitlement in the Maribyrnong system and relies on temporary trades to maintain the river’s water quality and health. Over



the past four years, Melbourne Water and the VEWH have worked with local water licence holders to purchase unused water to deliver down the waterway to maintain the river’s water quality and health.

Waterway manager:
Melbourne Water

Storage manager:
Southern Rural Water

Site	Volume delivered in 2017–18 (ML)
Upper Jacksons Creek	290

 **Maribyrnong River:** *The name Maribyrnong is a version of the Aboriginal term ‘Mirring-gnay-bir-nong’, which translates as ‘I can hear a ringtail possum’.*

Source: Melbourne Water

Above: Maribyrnong River,
by Bill Moulden, Melbourne Water

Central

Werribee system

Waterway managers are using water for the environment as efficiently as possible to give nature a boost, by protecting plants, waterbugs, frogs and migratory native fish.

During October and November 2017, two environmental flows from Merrimu Reservoir to Pyrites Creek were made to provide habitat for waterbugs and frogs. Environmental flows released from Merrimu Reservoir to Pyrites Creek eventually pass through to Melton Reservoir.

“Environmental flows released from Merrimu Reservoir target objectives in Pyrites Creek, which then flows into Melton Reservoir. We’re able to temporarily recapture this water in Melton Reservoir and release it later to target environmental objectives in the lower Werribee River,” said Melbourne Water’s Helen Clarke.

This flexibility is important to achieve improved river health in a system that has only a small amount of water for the environment available. Essentially, the same water can be used to achieve two different sets of outcomes.

“Downstream of Melton Reservoir in the Werribee River, our environmental objectives change from improving outcomes for bugs and frogs to fish and vegetation,” Helen said.

Water temporarily stored in Melton Reservoir was used to deliver a spring environmental flow from Melton Reservoir for the lower reaches of the Werribee River to provide benefits for streamside plants and enable fish movement, so they can feed and breed more successfully.

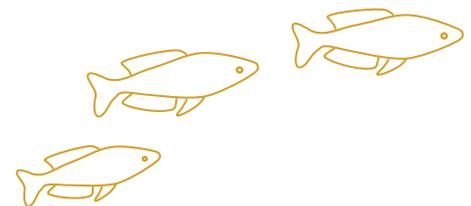


“Native fish are moving and breeding further up the river than we have ever seen before. This is the result of a gradual improvement in the health of the river over recent years, thanks to water for the environment,” Helen said.

Waterway manager:
Melbourne Water

Storage manager:
Southern Rural Water

Site	Volume delivered in 2017–18 (ML)
Pyrites Creek	1,265
Werribee River	1,307



Above: Pyrites Creek, by Southern Rural Water
Right: Werribee River looking upstream, by Melbourne Water



Central

Moorabool River

Animals and fish that live in the Moorabool River are starting to thrive after water for the environment has improved the river's health, for both the environment and for people.

An example of this shared benefit of environmental flows was in early February 2018 when an environmental flow was released down the Moorabool River from Lal Lal Reservoir, primarily to trigger the migration of adult short-finned eel.

To coincide with the flow and showcase the shared benefits of flows for both the community and the environment, the Traditional Owners – the Wadawurrung – and Corangamite CMA hosted a fishing day for the Wadawurrung community: the Wadawurrung Moorobull Yaluk Kuwin River Day.

"FishCare provided rods, bait and volunteers, and while we may not have caught many fish, all those who attended had a great day on the river," said Kristen Lees of Corangamite CMA.

Corrina Eccles, Cultural Education Coordinator at Wathaurung Aboriginal Corporation (trading as Wadawurrung), said it was critically important to have a shared vision of care and understanding of the way their old people cared for water, land and all things living for many generations.

"We need to work together as one, acknowledging the intangible and tangible heritage of the Wadawurrung.



"I am aware that there are certain parts of the Moorabool River that are stressed and unwell – it is vital we all walk together to get better outcomes for our water.

"Our aspiration is to have Traditional Owners working on Country in caring for water alongside some of these agencies so that our future aspirations and cultural values are embedded, respected and valued."

Waterway manager:
Corangamite CMA

Storage manager:
Central Highlands Water

Site	Volume delivered in 2017-18 (ML)
Moorabool River	2,746



Above: Community activity on Moorobull Yaluk Kuwin River Day, by Corangamite CMA

Lower Barwon wetlands

Most wetlands shouldn't always be wet. Varying water levels and periodic drying allows for different processes to work, protecting the long-term health of the important plants and animals in the lower Barwon wetlands.

To control the extensive reed beds that are choking the wetlands and to improve habitat for waterbirds, it is recommended that the wetland is partially dried over summer, followed by a fill in winter, in three out of every four years. Once in four years it is recommended that Reedy Lake remains filled all year round.

Corangamite CMA's Sharon Blum-Caon said it is important to be adaptive.

"The three-in-four-year drying is unachievable if there is a large summer flood. The important thing is to monitor conditions and provide the optimal wetting and drying regime on average, over the long term."

Sharon said water levels and quality were closely monitored throughout the partial drying to protect other environmental values.

"To protect waterbirds, we manage the drawdown as slowly as possible, drawing down slowly in spring to ensure waterfowl nesting sites stayed inundated through the breeding season."



The process is underpinned by rigorous science to ensure the wetlands can be as healthy as possible.

Vegetation monitoring by researchers at the Arthur Rylah Institute has found evidence of recruitment by the endangered hypersaline coastal saltmarsh and increases in the abundance of brackish aquatic herbland.

Community involvement has been vitally important. Lowering water levels at Reedy Lake is an important management action that supports the health of a regionally important waterway, which will ensure all user groups can continue to enjoy the benefits of the lake into the future.

"We've had a highly-engaged local advisory committee who provide invaluable advice and support in

implementing our environmental watering in Reedy Lake and nearby Hospital Swamps. We really value the knowledge and energy they bring to our program," said Sharon.

Waterway manager:
Corangamite CMA

Site	Volume delivered in 2017-18 (ML)
Reedy Lake	Water was diverted into Reedy Lake from the Barwon River
Hospital Swamps	Water was diverted into Hospital Swamps from the Barwon River

| Above: Reedy Lake inlet channel during drying regime, by Saul Vermeeren, Corangamite CMA

community highlights

* Restoring cultural connections to Bolin Bolin Billabong

Bolin Bolin Billabong, located next to the Yarra River in Bulleen, is one of the few remaining billabongs in Melbourne. It used to have such a large eel population that it was able to sustain up to 500 Wurundjeri people over summer. The billabong is highly valued for ecological, cultural and liveability attributes.

Today paints a different picture, with the Bolin Bolin Billabong under threat due to changes in river flows from the Yarra River, reducing the frequency of water flowing into the billabong. But thanks in part to water for the environment, the billabong's future looks brighter.

In October 2017, Wurundjeri Council held a ceremony to realise the long-held goal of delivering water into the billabong – the first time it had received water in many years.

The environmental response was also immediate – and loud! Frogs found the watering just to their liking, with the calls of four different species filling the evening air.

Monitoring of water levels and vegetation response is currently underway and a long-term solution is being finalised. Rehabilitation work has also been undertaken to complement the watering including pruning hazardous trees, weed control and revegetation with native plants.

The long-term vision is to improve the health of the billabong by providing a more natural wetting

and drying regime for the billabong in partnership with key stakeholders. Restoration of Bolin Bolin is pivotal, as the centre of a significant cultural riverscape that is a significant place of gathering and reinvigorated cultural practice for Wurundjeri.



* **Bolin Bolin:** Means 'place of many lagoons' in the Woi wurrung language. The Bolin Bolin Billabong is a highly significant site to the Wurundjeri people and was an important gathering place for the Kulin Nation during eel harvest time.

Source: Melbourne Water

Left: Didgeridoo at Bolin Bolin Billabong smoking ceremony, by VEWH
Right: Water released into Bolin Bolin Billabong, by Sarina Loo, VEWH

