

Environmental Impact Summary Fund to Date (2015 – June 2019)

	Summary of Outcomes	
Watering Metrics	Number of Watering Events	8
	Number of Wetlands watered	21
	Area of Wetlands watered (ha)	178 ha
	Volume of water delivered (ML) <ul style="list-style-type: none"> • Fund Donated Water • Commonwealth Environmental Water Total Volume	764 ML 2551 ML 3,315 ML

Environmental Water Delivery

From the inception of the Fund until 30 June 2019, donations of cash and water from the Fund have enabled the delivery of a total of 3,315 ML of water including 764 ML of Fund donated water and 2,551 ML of water from the Commonwealth Environmental Water Office to 21 wetlands across Victoria and New South Wales through eight watering events.

Figure 1 shows the combined environmental water delivered in each financial year. Water donations from the Fund commenced in the FY18 financial year.

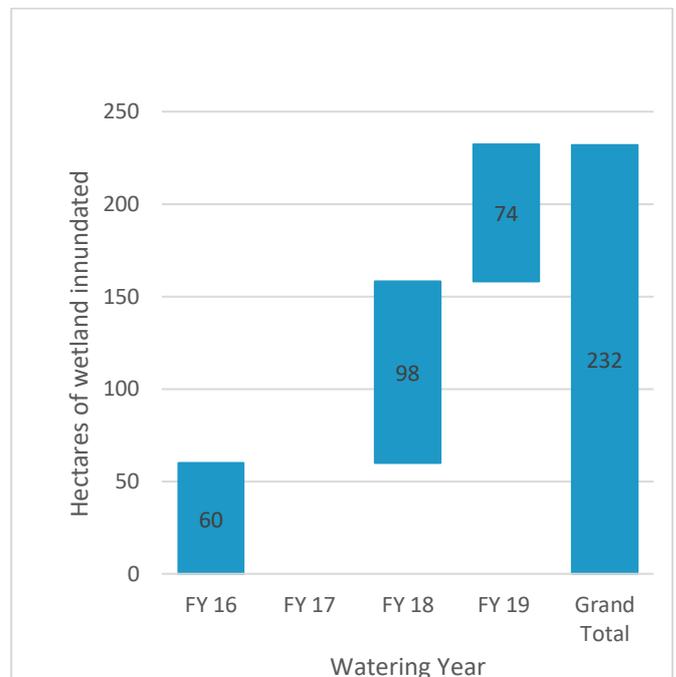
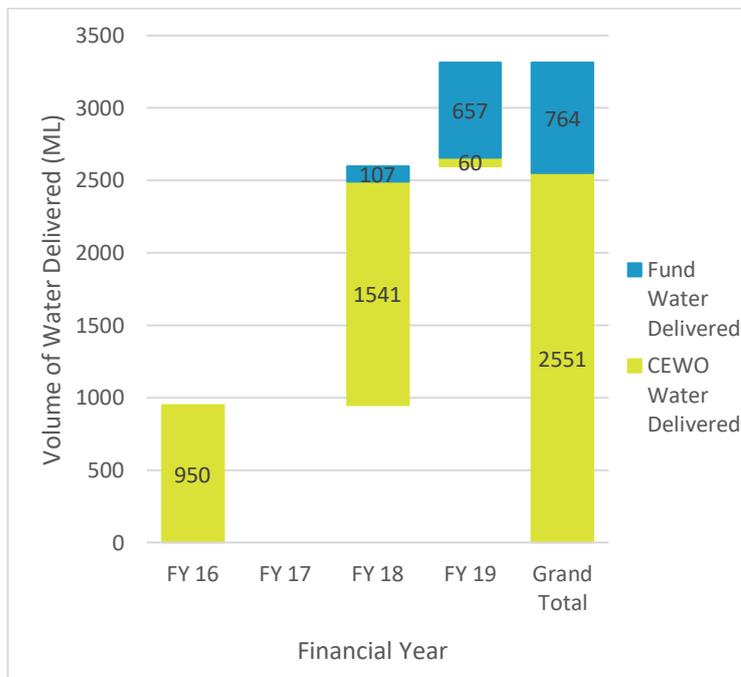


Figure 1. Volume of Water Delivered in each financial year.

Figure 2. Cumulative area of wetlands receiving water.

The watering events have enabled the inundation of a total of 178 hectares of individual wetlands and floodplains. This total increases to 232 hectares when repeat watering events to the same wetlands are included. Figure 2 shows the cumulative area of wetlands receiving environmental water since the inception of the Fund. The benefit of watering wetlands extends far beyond the area of wetland inundated by improving the condition of terrestrial vegetation, providing important corridors of habitat for mobile species including migratory waterbird thereby influencing and improving biodiversity across the broader landscape.

Wetlands Receiving Environmental Water

A brief overview is provided below of the value and significance of the wetlands and wetland complexes that have benefited from the delivery of environmental water through the Fund. A number of these wetlands have received repeated watering events over a number of years to reinstate the natural flow regimes.



Wingillie Station Wetland Complex

The Wingillie Station wetland complex is strategically located within a broader floodplain wetland landscape as it is immediately downstream from the CCB/Backwater Lagoon and Lucerne Day watering sites. It contains a range of vegetation communities and habitat types including semi-permanent and intermittent wetlands which support a range of flora and fauna species including the nationally endangered Southern Bell Frog (*Litoria raniformis*).

Watering event at Lake Henry in the Wingillie Station Wetland Complex

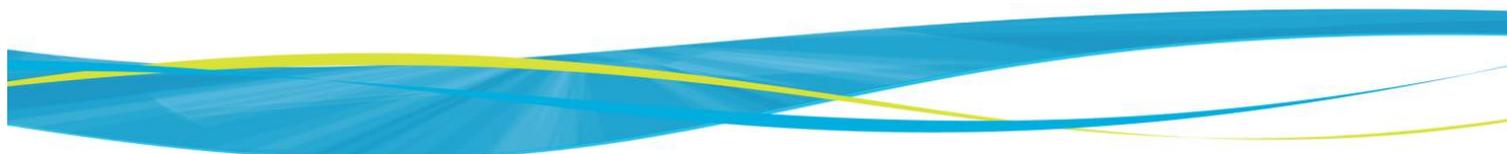
Carrs, Cappitts and Bunberoo (CCB) Wetland Complex

The CCB wetland complex is currently jointly managed by NSW National Parks and Wildlife Service and the Tar-Ru Lands Board of Management. The vegetation associated with the wetland complexes contain at least two known scar trees and 17 culturally significant plant species.



Lucerne Day Wetland

Lucerne Day wetland is strategically located within a broader floodplain wetland landscape with the Wingillie and CCB wetland complexes.



Yambuna Lagoon

Yambuna Lagoon is located in northern Victoria east of Echuca. It is part of the Lower Goulburn River Floodplain Wetlands of National Significance and is listed as a wetland of importance within the Goulburn Broken Catchment Management Authority Waterways Strategy. It supports a diversity of wetland types along with two threatened plant species.



Yambuna Lagoon pre-watering



Yambuna Lagoon during watering

O'Kanes Swamp

O'Kanes Swamp, a private wetland located near Yarrawonga in northern Victoria. O'Kanes Swamp is a rain-fed shallow freshwater marsh that is significant as a known Brolga *Grus rubicundus* breeding site.

Response to Environmental Watering

Waterbirds

Monitoring of waterbird diversity and abundance has been undertaken prior to watering, during watering events, and 12 weeks after watering events commenced. The results have demonstrated a clear response to environmental watering events with increases in both diversity and abundance either during the watering event or 12 weeks after the watering. The watering events have provided suitable habitat for 44 waterbird species.



Great Egret and Yellow-billed Spoonbills at Yambuna Lagoon

Threatened Species

Two species listed as nationally vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* were recorded in response to the watering events. Significantly, the Southern Bell Frog *Litoria raniformis* was recorded at 6 wetlands and based on the calling intensity and duration it is suspected that the watering events supported breeding for this species. A further eleven species listed as threatened in either New South Wales or Victoria have been recorded at

seven different wetlands and in response to five of the watering events. These include the Eastern Great Egret *Ardea modesta* and the White-bellied Sea-eagle *Haliaeetus leucogaster*. In addition, two significant migratory species were recorded – Sharp-tailed Sandpiper *Calidris acuminata* and Common

Greenshank *Tringa nebularia* – both of which are listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* as part of international agreements.

Murray Hardyhead Reintroduction

Water provided by the Fund to Wingillie in FY 19 has supported the return of a locally extinct fish species to Murray River waters in New South Wales. The nationally endangered Murray Hardyhead *Craterocephalus fluviatilis* was reintroduced to wetlands within the Wingillie Station Wetland Complex. This small, short-lived native fish has not been recorded in rivers or wetlands in New South Wales for more than 10 years.



The Funds' support and environmental water donations have contributed to improve the environmental value of floodplain and wetland habitats on the property for several years in preparation for the reintroduction of Murray Hardyhead. After environmental water was released to site in October 2018, a translocation of 780 Murray Hardyhead from a population in South Australia was successfully undertaken in November 2018. Follow-up surveys detected 1079 Murray Hardyhead, with a range of sizes recorded, indicating that spawning and recruitment has occurred since the release.

A seasonal watering regime has been implemented to maximise ephemeral wetland processes and promote the development of food and breeding habitat for Murray Hardyhead along with other species. A commitment has been made for Fund donations to the ongoing supply of environmental water of this site in coming years to support the establishment of a viable self-sustaining population.

The reintroduction represents the first attempt in New South Wales re-establish a freshwater fish species that is likely to have been locally extinct. The translocation is a joint project involving the Commonwealth Government, the NSW Department of Primary Industries Fisheries, Western Local Land Services, the SA Department of Environment and Water, Aquasave - Nature Glenelg Trust, the Murray Darling Wetlands Working Group, the owners of the Wingillie Station in western NSW. The watering event supporting the translocation was made possible with support and water provided through the Murray-Darling Basin Balanced Water Fund in partnership with Murray Darling Wetlands Working Group, Environmental Water Trust and The Nature Conservancy.

Vegetation

Vegetation monitoring has been undertaken for seven wetlands in relation to five of the watering events. Five of these wetlands showed an increase in aquatic plant diversity in response to the watering events. The watering has maintained and enhanced native vegetation communities including those dominated by River Red Gum, Black Box and Lignum, and with 75% of the plant species identified being native. Tree canopy extent and density as a measure of tree health are also being monitored, however, due to the slower response time for tree health, the results will need to be analysed and interpreted over a longer time period following multiple years of watering.

This report provides an update on the outcomes achieved through the donations of water and cash from the Murray Darling Basin Balanced Water Fund under its constitution. The donations are made to the Environmental Water Trust, which has engaged the Murray Darling Wetlands Working Group to deliver environmental watering services with scientific oversight and review provided by The Nature Conservancy.