

Variation to the Seasonal Watering Plan 2020-21

This variation was made to Section 3.7.2 Lower Barwon wetlands of the Seasonal Watering Plan 2020-21 by the VEWH Commission on 16 September 2020.

3.7.2 Lower Barwon wetlands

Amended text is shown in red

System overview

The estuarine reach of the Barwon River contains a system of wetlands and lakes including Lake Connewarre, Reedy Lake, Hospital Swamps, Salt Swamp and Murtnaghurt Lagoon. 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. 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 (Australian Height Datum). High water levels in the Barwon River can also result in natural wetting of the wetlands.

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 migratory birds from around the world. 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 a partly ephemeral system, but river regulation meant the lake was permanently wetted from the 1970s until 2016. This long-term wetting resulted in a decline in biodiversity. The full water levels reduced the extent and diversity of vegetation communities including coastal saltmarsh, and they reduced the availability of shallow wading habitat which in turn has resulted in lower waterbird diversity.

In 2016–17, Corangamite CMA and the VEWH implemented a four-year watering regime trial at Reedy Lake to reinstate a more natural wetting and drying cycle. The 2019–20 water year was the final year of the trial — three years of partial drying and one year completely full. **An independent review of the trial was undertaken in 2020 to determine its effect and inform future water management. The Lower Barwon Review recommended continuation of a wetting and partial drying regime to improve biodiversity and maintain the ecological character associated with the lower Barwon wetlands Ramsar site listing. The review also recommended further monitoring to fill identified knowledge gaps and to use the monitoring results to update the environmental watering recommendations by 2022.**

Hospital Swamps is made up of five wetland basins that support important ecological processes and significant ecological values including large areas of threatened coastal saltmarsh and diverse waterbird communities. Vegetation communities in Hospital Swamps have remained largely unchanged over time due to the maintenance of natural wetting and drying cycles.

Environmental watering objectives in the lower Barwon wetlands

	<p>Provide habitat for fish breeding and growth and improved conditions for migration and dispersal, when wetlands are connected to the Barwon River</p> <p>Reduce carp populations</p>
	<p>Provide varying water levels and conditions to promote soil salinisation, to support the persistence and growth of threatened salt-dependent ecological vegetation communities</p> <p>Improve soil health and enable the weathering of heavy metals in vegetation fringe soils</p>
	<p>Increase the diversity of ecological vegetation communities in the wetlands and improve the recruitment of aquatic vegetation</p> <p>Increase the growth and extent of coastal saltmarsh, herbfields and lignum shrubland ecological vegetation communities</p> <p>Reduce tall reed extent and increase open water habitat</p>
	<p>Maintain and improve the waterbug population and its biomass</p>
	<p>Maintain nutrient cycling and improve lake productivity</p> <p>Provide flushing inflows to remove accumulated salts</p> <p>Maintain surface water and groundwater interactions</p>
	<p>Provide suitable feeding and breeding habitat for waterbirds, including mud flats and shallow water for wading birds, flooded vegetation and wetland fringes</p> <p>Maintain and increase waterbird breeding events</p>

Traditional Owner cultural values and uses

Corangamite CMA worked with Wadawurrung Traditional Owners during the development of environmental watering plans for the lower Barwon wetlands, as part of an ongoing conversation to ensure Wadawurrung knowledge and culture is incorporated into decision-making, and that watering requirements for culturally-significant species are maintained.

As part of this partnership, the Wadawurrung have identified cultural values which are applicable to all waterways within Wadawurrung Country. Values that have been identified in the lower Barwon wetlands include:

- culturally significant wetland species, such as Porronggitj (brolga), Toolim (black duck), Kunuwarra (black swan), Buniya (eel), Tark (common reed) and Bal-yan (bull rush)
- recognition of wetlands as meeting, ceremony and trade places
- maintaining access to culturally important story places and ceremonial places
- protection of artefact sites.

Social, recreational and economic values and uses

In planning the potential watering actions in Table 3.7.3, Corangamite CMA considered how environmental flows could support values and uses including:

- water-based recreation (such as fishing and duck hunting)
- riverside recreation and amenity (such as birdwatching and spending time outdoors)
- socio-economic benefits (such as commercial fishing).

Recent conditions

Rainfall across the lower Barwon River catchment in 2019–20 was close to the long-term average. High rainfall in winter 2019 and in late summer to autumn 2020 contributed high flows in the river and delivered water to Reedy Lake and Hospital Swamps.

Water levels in Reedy Lake varied between 0.6 m and 1.0 m AHD throughout 2019–20. This followed three successive years of managed partial drying, where the lake was filled in winter and then allowed to draw down during summer and autumn. Monitoring at Reedy Lake over the last four years indicates the drying regime has improved the diversity of vegetation, increased species richness of brackish aquatic herbland plants and increased the abundance of waterbirds including Australasian bitterns and magpie geese.

In 2019–20, Hospital Swamps was filled in winter and then drawn down to 0.3 m AHD over summer.

Scope of environmental watering

Table 3.7.3 describes the potential environmental watering actions in 2020–21, their functional watering objectives (that is, the intended physical or biological effect 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 functions.

Table 3.7.3 Potential environmental watering actions and objectives for the lower Barwon wetlands.

Potential environmental watering action	Functional watering objective	Environmental objective(s)
Reedy Lake		
Winter/spring fill (July to Sept November) The inlet to Reedy Lake will be opened to allow high flows in the Barwon River to flow into the wetland.	<ul style="list-style-type: none"> • Maintain the water level to 0.8 m AHD (allowing for natural fluctuations) • Maintain waterbird breeding events • Inundate the vegetation at the wetland margins to provide feeding habitat for waterbirds • Maintain fish breeding and recruitment opportunities • Allow fish to move between the river, lake and estuary 	<ul style="list-style-type: none"> • Fish • Vegetation • Waterbirds

Potential environmental watering action	Functional watering objective	Environmental objective(s)
<p>Summer/autumn drawdown (Dec to mid-April) with top-ups as required to prevent complete drying.</p>	<ul style="list-style-type: none"> Gradually reduce water levels to approximately 0.3 m AHD by natural evaporation and assisted draw down (if required) to improve lake shore salinity and promote soil salinization and improve soil health Improve recruitment of aquatic macrophytes at wetland fringes Increase habitat diversity, including salt pans, mudflats, shallow water Improve habitat for wading birds over summer. Reduce organic matter on the wetland bed, which will increase lake productivity when re-flooded. Maintain terrestrial or mudflat plants by creating organic matter for habitat and processing on spring rise Limit expansion of tall reeds and maintain open water habitat Reduce carp population 	<ul style="list-style-type: none"> Soil Vegetation Water Quality Waterbirds
<p>Autumn/winter fill (mid-April to June)</p>	<ul style="list-style-type: none"> As per winter/spring fill objectives. 	<ul style="list-style-type: none"> Fish Vegetation Waterbirds
<p>Hospital Swamps</p>		
<p>Winter/spring fill (July to Sept Sept November) Hospital Swamps will be connected to the Barwon River for at least six weeks by keeping the inlet and outlet open</p>	<ul style="list-style-type: none"> Maintain the water level at 0.5 m AHD (allowing for natural fluctuations) Create habitat to support waterbug and fish populations Improve fish and waterbird breeding Allow fish to access the wetland from the river Dilute salt in the soil and surface water over winter and flush salt from deep wetland basins Promote and sustain the growth of important wetland vegetation communities 	<ul style="list-style-type: none"> Fish Vegetation Waterbirds Waterbugs Water Quality

Potential environmental watering action	Functional watering objective	Environmental objective(s)
Summer/autumn drawdown (Dec to April)	<ul style="list-style-type: none"> • Drawdown water level to less than 0.3m AHD to increase wetland salinity and maintain shallow wetland basins, wetland processes, and improve nutrient cycling • Improve habitat for fish reproduction • Expose mudflats and create shallow water habitat to support waterbird feeding • Dry wetland bed to increase soil salinity, reduce aquatic vegetation (primarily <i>Chara</i> and <i>Stuckenia</i>) species and reduce colonisation of wetland bed by annual herbland plants, reeds and other emergent macrophytes • Maintain vegetation structure • Reduce carp population 	<ul style="list-style-type: none"> • Fish • Soil • Vegetation • Waterbirds • Water quality
Autumn/winter fill (May to June)	<ul style="list-style-type: none"> • As per winter/spring fill objectives 	<ul style="list-style-type: none"> • Fish • Vegetation • Waterbirds • Waterbugs • Water Quality

Scenario planning

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

Wetting and partial drying regimes will be implemented at Reedy Lake and Hospital Swamps under all climate scenarios in 2020-21. The specific timing of filling and drawdown will be influenced by water levels in the lower Barwon River, because filling can only occur when water levels exceed 0.7 m AHD and managed drawdown can only occur when flow in the river is lower than in the wetland.

Corangamite CMA will monitor waterbirds in the lower Barwon wetlands in spring and summer and adapt the timing and rate of drawdown to avoid disturbing breeding waterbirds.

Table 3.7.4 Potential environmental watering for the Lower Barwon Wetlands under a range of planning scenarios.

Planning scenario	Dry	Average	Wet
Expected river conditions	<ul style="list-style-type: none"> • Some natural inflows from the Barwon River in winter/ spring • Dry conditions over summer will assist in the drawdown of the wetlands 	<ul style="list-style-type: none"> • Some natural inflows from the Barwon River in winter/ spring • Conditions over summer may assist drawdown of the wetland water levels 	<ul style="list-style-type: none"> • Overbank flows likely to inundate the wetlands as a result of higher river flows, stormwater inflows and local rain/run-off • Extensive drawdown of wetlands is unlikely
Reedy Lake ¹	<ul style="list-style-type: none"> • Winter/spring fill • Summer/autumn drawdown • Autumn/winter fill 		
Hospital swamps ¹	<ul style="list-style-type: none"> • Winter/spring fill • Summer/autumn drawdown • Autumn/winter fill 		

¹ Potential environmental watering at the lower Barwon wetlands is not classified as tier 1a, tier 1b or tier 2, because there is no limitation on the volume of water that can be supplied to the site from the Barwon River. Water can be diverted to the lower Barwon wetlands at any time of the year when river flows are above 0.7 m AHD.