

# SECTION 4: Western region



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## 4.1 Western region overview

The systems in the western region that can receive water from the VEWH's environmental entitlements are *Bochara-Bogara-Pawur* (Glenelg River), the Wimmera River system and the Wimmera-Mallee wetlands. The Wimmera River system and Wimmera-Mallee wetlands are part of the Murray-Darling Basin, although *Barringgi Gadyin* (Wimmera River) ends in terminal lakes without directly flowing into the Murray River.

Water for the environment in the western region is supplied from the Wimmera-Mallee System Headworks, which is a series of on-stream reservoirs, off-stream storages and connecting channels that harvest water (mainly near the Grampians) and distribute it to entitlement holders throughout the Wimmera catchment and parts of the Avoca, Loddon, Glenelg and Mallee catchments.

The Wimmera and Glenelg systems share water available under the *Wimmera and Glenelg Rivers Environmental Entitlement 2010*, and the VEWH works with the Wimmera and Glenelg Hopkins CMAs to determine how available allocation will be used in each river system in a given year. Additional water is available to the Glenelg River as a compensation flow account.

The Commonwealth Environmental Water Holder (CEWH) also holds entitlement in the Wimmera system that can be used to supply the Wimmera River and lower Mount William Creek systems. Water for the environment available to the Wimmera-Mallee wetlands is provided under the same entitlement but not shared with the Glenelg system. Instead, the water is available for use in small wetlands supplied by the Wimmera-Mallee Pipeline across the Wimmera, Mallee and North Central CMA areas.

The following system sections present the environmental values, objectives and planned actions for each system in the western region.

### Traditional Owners in the western region

Traditional Owners and their Nations in the western region have deep connections to Country that have endured for tens of thousands of years. These include inherent rights and cultural obligations to Country and community.

Barengi Gadjin Land Council Aboriginal Corporation (BGLC) represents Traditional Owners from the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk peoples, who were recognised in a 2005 Native Title Consent Determination under the Commonwealth *Native Title Act 1993*. In 2022 the Victorian Government and BGLC signed agreements under the *Traditional Owner Settlement Act 2010* and related legislation. BGLC is a Registered Aboriginal Party (RAP) under the Victorian *Aboriginal Heritage Act 2006*, for the area from Ouyen in the north, to Ararat in the south, and from the South Australia-Victoria border in the west, to Donald in the east.

In 2007, the Gunditjmara people, represented by the Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC), were granted native title rights and interests over almost 140,000 ha of Crown land, national parks, reserves, rivers, creeks and sea in south-west Victoria, bounded in the west by the Glenelg River and in the north by the Wannon River. GMTOAC is a RAP under the *Aboriginal Heritage Act 2006*.

The Eastern Maar are Traditional Owners of south-western Victoria, with land extending to the north in Ararat and encompassing Warrnambool, Port Fairy and the Great Ocean Road areas. The Eastern Maar Aboriginal Corporation represents the Eastern Maar people and manages their native title rights. It is also the RAP within the geographic area. In 2011, the Federal Court of Australia determined that both the Traditional Owners represented by GMTOAC and the Eastern Maar Aboriginal Corporation are the native title holders for the land and waters between the Shaw and Eumeralla rivers from Deen Maar to Lake Linlithgow. In 2023, formal recognition of Eastern Maar's rights under the Commonwealth *Native Title Act 1993* was extended to include much of the coastline of the Great Ocean Road and part of the Great Otway National Park. In 2024, a third native title determination was handed down.

The Burrendies Aboriginal Corporation (based in South Australia) works in partnership with the South East Aboriginal Focus Group (SEAFG), which, as First Nations from south-east South Australia, have ancestral connections across Bunganditj/Boandik Country from the Limestone Coast region in South Australia to the western parts of the *Bochara-Bogara-Pawur* (Glenelg River) catchment in Victoria. The SEAFG's ancestral connections include Tanganekald (Southern Clans), Tatiara/Ngarkat, Meintangk/Moandik/Mootatunga/Thangal, Potaruwutij/Pinejunga, Wichantunga/Wattunga and Bunganditj/Boandik.

Some parts of the Wimmera-Mallee wetlands are on the Country of the Dja Dja Wurrung people (Djaara), and on land of significance to the Barapa Barapa people. In 2013 the Dja Dja Wurrung Clans Aboriginal Corporation (trading as DJAARA) on behalf of the Dja Dja Wurrung

people (Djaara) entered into a Recognition and Settlement Agreement under the *Traditional Owner Settlement Act 2010* in Victoria. Under the agreement, Djaara have rights to access and use water for traditional purposes, providing the take of water does not affect other parties. DJAARA is an appointed RAP.

The Victorian Government is committed to self-determination for Traditional Owners through Treaty negotiations and policies such as ***Water is Life: Traditional Owner Access to Water Roadmap***. The VEWH and its program partners are working with Traditional Owners to embed government policy outcomes into the Victorian environmental watering program. Program partners in the environmental watering program are aware that structural changes (such as legislative, policy and governance changes) to how water is managed may be made in the future in recognition of Aboriginal water rights. Program partners have heard that Traditional Owners want empowerment and agency in water management, and in many cases, they want to manage water on Country on their own terms.

Engagement through other strategies, plans and processes also informs environmental objectives. These include regional catchment strategies, regional waterway strategies and technical studies (such as environmental flows studies and environmental water management plans). Traditional Owner cultural objectives for environmental flows may refer to cultural flows studies, Aboriginal Waterway Assessments, Traditional Owner Country Plans and other tools. These strategies, plans and technical reports describe a range of environmental, economic, social and Traditional Owner perspectives and longer-term objectives that influence actions and priorities for water for the environment.

**Table 4.11** Program partners and stakeholders that engaged with the Glenelg Hopkins CMA to develop the seasonal watering proposal and key documents informing the proposal for the Glenelg system (in alphabetical order)

<b>Partner/ stakeholder</b>	<b>Glenelg system</b>
<b>Community groups and environment groups</b>	<ul style="list-style-type: none"> <li>• Friends of the Glenelg River Inc.</li> <li>• Glenelg River User Group</li> <li>• Upper Glenelg Landcare</li> </ul>
<b>Government agencies</b>	<ul style="list-style-type: none"> <li>• Department of Energy, Environment and Climate Action</li> <li>• Grampians Wimmera Mallee Water</li> <li>• Limestone Coast Landscape Board</li> <li>• Natural Resources Southeast (South Australia)</li> <li>• Parks Victoria</li> <li>• Victorian Fisheries Authority</li> <li>• Victorian Environmental Water Holder</li> <li>• Wimmera CMA</li> </ul>
<b>Landholders/ farmers</b>	<ul style="list-style-type: none"> <li>• Individual landholders</li> </ul>
<b>Local businesses</b>	<ul style="list-style-type: none"> <li>• Glenelg River Boat Cruises</li> <li>• Harrow Discovery Centre</li> <li>• Nelson Boat and Canoe Hire</li> <li>• Paestan Canoe Hire</li> <li>• Vickery Bros (sand extraction)</li> </ul>
<b>Recreational users</b>	<ul style="list-style-type: none"> <li>• Casterton Angling Society Inc.</li> <li>• Dartmoor Angling club</li> <li>• Individual anglers</li> <li>• Kayakers</li> <li>• VRFish</li> </ul>
<b>Traditional Owners/Aboriginal corporations</b>	<ul style="list-style-type: none"> <li>• Barengi Gadjin Land Council</li> <li>• Burrendies Aboriginal Corporation</li> <li>• Gunditj Mirring Traditional Owner Corporation</li> <li>• Winda-Mara Aboriginal Corporation</li> </ul>

**Table 4.1.2** Program partners and stakeholders that engaged with the Wimmera CMA to develop the seasonal watering proposal and key documents informing the proposal for the Wimmera system (in alphabetical order)

<b>Partner/ stakeholder</b>	<b>Wimmera system</b>
<b>Community groups and environment groups</b>	<ul style="list-style-type: none"> <li>• Friends of Bungalally and Burnt Creek Group</li> <li>• Lake Lonsdale Action Group</li> <li>• Yarriambiack Creek Advisory Committee</li> </ul>
<b>Government agencies</b>	<ul style="list-style-type: none"> <li>• Commonwealth Environmental Water Office</li> <li>• Department of Energy, Environment and Climate Action</li> <li>• Glenelg Hopkins CMA</li> <li>• Grampians Wimmera Mallee Water</li> <li>• Hindmarsh Shire Council</li> <li>• Horsham Rural City Council</li> <li>• Murray-Darling Basin Authority</li> <li>• Northern Grampians Shire Council</li> <li>• Parks Victoria</li> <li>• Victorian Environmental Water Holder</li> <li>• Victorian Fisheries Authority</li> <li>• Yarriambiack Shire Council</li> </ul>
<b>Landholders/ farmers</b>	<ul style="list-style-type: none"> <li>• Wimmera community members, especially landholders and stock and domestic water users</li> </ul>
<b>Recreational users</b>	<ul style="list-style-type: none"> <li>• Dimboola Boat and Water Ski Club</li> <li>• Dimboola Fishing Classic</li> <li>• Dimboola Rowing Club</li> <li>• Field and Game</li> <li>• Hindmarsh Ski Club</li> <li>• Horsham Fishing Competition Inc.</li> <li>• Horsham Triathlon Committee</li> <li>• Jeparit Anglers Club</li> <li>• Natimuk Field and Gane</li> <li>• Natimuk Lake Water Ski Club</li> <li>• Paddle Victoria</li> <li>• VRFish</li> <li>• Wimmera Anglers Association</li> </ul>
<b>Traditional Owners</b>	<ul style="list-style-type: none"> <li>• Barengi Gadjin Land Council</li> </ul>

**Table 4.1.3** Program partners and stakeholders that engaged with the Mallee, North Central and Wimmera CMAs to develop the seasonal watering proposal and key documents informing the proposal for the Wimmera-Mallee wetlands (in alphabetical order)

Partner/ stakeholder	Wimmera-Mallee wetlands
<b>Community groups and environment groups</b>	<ul style="list-style-type: none"> <li>• Banyena Landcare Group</li> <li>• Birchip Landcare Group</li> <li>• Donald Landcare Group</li> <li>• Mallee CMA Aboriginal Reference Group</li> <li>• Mallee CMA Land and Water Advisory Committee</li> <li>• Wimmera Glenelg Storage Manager Reference Group</li> <li>• Wimmera-Mallee Pipeline Wetlands Environmental Water Advisory Group</li> <li>• Wimmera-Mallee Wetland Prioritisation Advisory Group</li> </ul>
<b>Government agencies</b>	<ul style="list-style-type: none"> <li>• Buloke Shire Council</li> <li>• Commonwealth Environmental Water Office</li> <li>• Department of Energy, Environment and Climate Action</li> <li>• Grampians Wimmera Mallee Water</li> <li>• Mildura Rural City Council</li> <li>• Parks Victoria</li> <li>• Victorian Environmental Water Holder</li> <li>• Yarriambiack Shire Council</li> </ul>
<b>Landholders/ farmers</b>	<ul style="list-style-type: none"> <li>• Private landholders</li> <li>• Wimmera-Mallee Pipeline Environmental Water Advisory Group (North Central CMA)</li> </ul>
<b>Recreational users</b>	<ul style="list-style-type: none"> <li>• Natimuk &amp; District Field &amp; Game Inc.</li> <li>• Recreational users in the local community</li> </ul>
<b>Traditional Owners</b>	<ul style="list-style-type: none"> <li>• Barapa Barapa Nation Aboriginal Corporation</li> <li>• Barengi Gadjin Land Council</li> <li>• Dja Dja Wurrung Clans Aboriginal Corporation</li> </ul>

## 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 western region are complemented by simultaneously addressing issues such as barriers to fish movement, high nutrient loads, loss of streambank vegetation and invasive species.

Victorian and Commonwealth government agencies, Traditional Owner groups, community groups and private landholders implement programs to protect and improve the environmental condition and function of land, soils and waterways throughout Victoria's catchments.

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

- fish passage works at Sandford Weir, Dergholm Gauge and Warrock are used in combination with the delivery of water for the environment to facilitate the movement of migratory fish from the estuary to the upstream reaches of the Glenelg and Wannon rivers
- installation of artificial wetland pontoons in the Dimboola weir pool and a regulating structure to reconnect Langlands Anabranch in the Horsham weir pool, as well as walking tracks to manage recreational access along the Wimmera River to reduce bank erosion
- weed and rabbit control to prevent bank erosion in the upper Wimmera catchment to improve water quality and stream form and increase native biodiversity
- stock-exclusion fencing along priority waterways throughout the Wimmera and Glenelg catchments to support the re-establishment of streamside and in-stream vegetation
- sand management, removal of excess bedload sand to improve the availability and quality of habitat for native fish, platypus and crayfish
- carp management activities in the Wimmera and Glenelg systems to reduce the number of carp and to better understand their behaviour in both rivers
- restoration of complex habitat for native fish by installing large wood in reach 2 of the Glenelg River using red gum trunks and root balls

- control of invasive species and stock-exclusion fencing in the Wimmera-Mallee wetlands.

For more information about integrated catchment management programs in the western region, refer to the Glenelg Hopkins, Mallee, North Central and Wimmera CMA's regional catchment strategies and regional waterway strategies.

## Risk management

When developing seasonal watering proposals for the Glenelg, Wimmera and Wimmera-Mallee wetland systems, environmental watering program partners assessed risks associated with potential environmental flows for 2024-25 and identified appropriate mitigating strategies. Risks and mitigating actions are continually assessed by program partners throughout the year (see **subsection 1.2.7**).

## Seasonal outlook 2024-25

Rainfall across the western region in 2023-24 was below average but varied seasonally and geographically. In the Glenelg system, rainfall was below the long-term average for most of winter and spring, with water for the environment needed to help maintain a continuous flow from Rocklands Reservoir to the estuary from late August 2023 to June 2024. Total rainfall across the Wimmera system in 2024-25 was also below the long-term average, although December and January were wetter than usual, and the natural flow during those months supported environmental flow objectives in the Wimmera River. Other parts of the Wimmera system had few natural events, and inflows to the catchment's storages were low. Water for the environment was used to maintain low flows in the MacKenzie River and Burnt Creek from early October 2023 and to provide freshes in the Wimmera River in February and March 2024. Small volumes of environmental water were delivered in upper Mount William Creek during November 2023 to top up refuges.

Water storages across the Wimmera-Mallee System Headworks were collectively at 71 per cent capacity at the start of 2023-24, rose to about 76 per cent in September 2023 and dropped to 59 per cent capacity at the end of March 2024. The *Wimmera and Glenelg Rivers Environmental Entitlement 2010* reached 87 per cent allocation in April 2024. The CEWH did not receive any new allocation in the Wimmera system, but

its carryover from 2022-23 was 21,725 ML. New allocation combined with carryover meant about 105,000 ML of water for the environment was available in 2023-24 across the CEWH's and the VEWH's entitlements.

Recent fish surveys detected large numbers of juvenile tupong in the Glenelg River for the second consecutive year, providing evidence that the increased flow has provided conditions suitable for population growth. Sampling in the Glenelg also identified good numbers of river blackfish. Wimmera system sampling indicated the recent recruitment in golden perch populations, indicating the positive effects of the recent higher flow.

The Bureau of Meteorology has forecast below-average rainfall across the western region during winter 2024. At the time of writing, Grampians Wimmera Mallee Water had not issued an allocation outlook for 2024-25. However, given storage levels, the VEWH expects a modest opening allocation in July 2024. The CEWH is not likely to receive any allocation in 2024-25 unless storage inflows are significantly above the long-term average. The VEWH expects to carry over about 67,700 ML in the Wimmera and Glenelg rivers environmental entitlement and 1,000 ML for use in the Wimmera-Mallee wetlands on 1 July 2024. The CEWH is expecting to carry over about 20,650 ML. These combined carryover volumes will help support environmental watering actions in 2024-25 and subsequent years if dry conditions develop and persist.

Carryover requirements are regularly a key consideration in the western region and influence the range of environmental watering actions that are authorised and delivered. The relatively full storages and high allocations received in the last two years have significantly boosted environmental water supplies for the short-to-medium term. This means that additional environmental watering actions can potentially be delivered in 2024-25 to increase the size and condition of native plant and animal communities in rivers and wetlands across the western region, improving their resilience ahead of the next dry period. The Glenelg Hopkins and Wimmera CMAs have planned potential environmental watering actions for 2024-25 to consolidate recent improvements in environmental conditions without setting a target carryover volume for 2025-26. The VEWH will monitor allocations and forecast climatic conditions during winter and spring and work with the Glenelg Hopkins and Wimmera CMAs to set a carryover target for 2025-26 if necessary.

The Wimmera-Mallee Pipeline wetland portion of the environmental entitlement is only likely to receive an allocation in 2024-25 if storage inflows are close to or greater than the long-term average. The planned watering actions for the wetlands in 2024-25 are expected to use up to 340 ML of available carryover, which will leave about 694 ML to support watering actions in future years. The current supply for the Wimmera-Mallee wetlands may allow essential watering actions to at least the end of 2026-27 without new allocations.



## 4.2 Glenelg system

**Waterway manager** – Glenelg Hopkins Catchment Management Authority

**Storage manager** – Grampians Wimmera Mallee Water

**Environmental water holder** – Victorian Environmental Water Holder

### System overview

**The Glenelg River (*Bochara* in Dhauwurd Wurrung, *Pawur* in Bunganditj and *Bogara* in Wergaia-Jadawadjali languages) rises in Gariwerd (the Grampians National Park) and flows west through Harrow and then south to Casterton and Dartmoor (Figure 4.2.1). The Glenelg River estuary flows through South Australia for a short distance before returning to Victoria and flowing into the sea at Nelson. At over 500 km, the Glenelg River is one of the longest rivers in Victoria.**

Moora Moora Reservoir and Rocklands Reservoir are Wimmera-Mallee System Headworks water storages in the Glenelg River system that contribute to the supply of water to towns and properties across the Wimmera, Mallee, Glenelg, Loddon and Avoca catchments. Water for the environment is actively managed in the Glenelg

River below Rocklands Reservoir. There are passing flow rules for the Glenelg River and upper Wannon River.

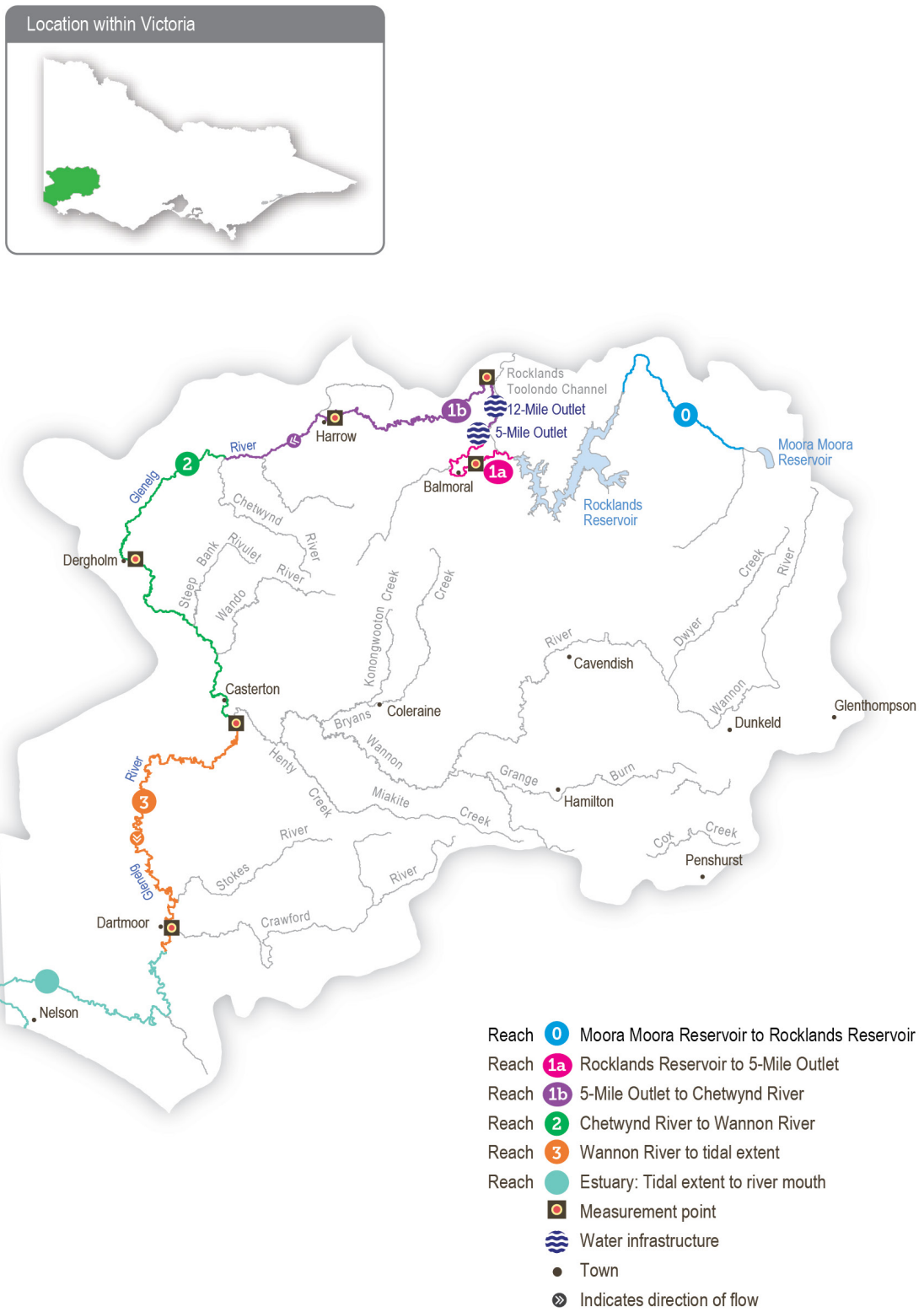
The priority reaches of the Glenelg River for deliveries of water for the environment are:

- Moora Moora Reservoir to Rocklands Reservoir (reach 0)
- Rocklands Reservoir to 5-Mile Outlet (reach 1a),
- 5-Mile Outlet to the confluence with the Chetwynd River (reach 1b),
- Chetwynd River to the Wannon River (reach 2), and
- Wannon River to the tidal extent just below the confluence with Crawford River (reach 3).

Water for the environment in the Glenelg system is released from Moora Moora Reservoir for reach 0, Rocklands Reservoir for reach 1a via the reservoir wall outlet and for reaches 1b, 2 and 3 via the 5-Mile and 12-Mile outlets.

The Glenelg River estuary benefits from environmental flows released to upstream reaches, but releases do not currently target the estuary. The Glenelg Hopkins CMA has investigated the importance of water for the environment in the Glenelg River estuary, listed as a heritage river reach and a site of international significance under the Ramsar Convention. Environmental flows provide landscape-scale benefits that support estuarine values.

Figure 4.21 The Glenelg system



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 Glenelg River starts in Gariwerd (the Grampians National Park) and flows to the sea through the Lower Glenelg National Park. The lower reaches of the Glenelg River are part of a landscape recognised as one of 15 national biodiversity hotspots, and the Glenelg Estuary and Discovery Bay site was listed under the Ramsar Convention as a site of international significance in February 2018.

The Glenelg River supports a range of rare and unique aquatic life, including the endangered Glenelg freshwater mussel, Glenelg spiny crayfish and a newly described species of river blackfish. It is also home to platypus and populations of native fish, including estuary perch, short-finned eel, tupong and three species of pygmy perch, including the threatened variegated pygmy perch and Yarra pygmy perch. Some of these fish species migrate long distances to and from the Glenelg River estuary to complete their life cycles. Sand extraction currently occurs around the Casterton to Dergholm reaches to provide deep pools, habitats and drought refuge areas, important to fish species and the macroinvertebrates that feed them.

Frasers Swamp is another important feature of the upper Glenelg system and is home to a healthy growling grass frog population. The swamp also meets the habitat requirements for the Australasian bittern, and investigations are underway to determine if they use this habitat.

The Glenelg River supports a variety of streamside vegetation communities and species, including the endangered Wimmera bottlebrush. Streamside and floodplain vegetation comprises river red gum woodlands with paperbark, bottlebrush and tea tree understorey.

## Environmental objectives in the Glenelg system



**F1** – Protect, maintain, and, where possible, enhance endemic fish populations, including threatened and diadromous species



**G1** – Maintain deep pool habitats and connectivity along the river



**MI1** – Maintain a wide range and large number of waterbugs to break down organic matter and support the river's food chain



**PR1** – Maintain the platypus population



**V1** – Maintain healthy and diverse mosaics of water-dependent vegetation (such as river red gums and Wimmera River bottlebrush)

**V2** – Prevent the establishment of terrestrial plants in the stream bed



**WQ1** – Maintain water quality for native fish, waterbugs, other water-dependent animals and aquatic vegetation

## Traditional Owner cultural values and uses

The Glenelg River, known as *Bochara* in Dhauwurd Wurrung, *Pawur* in Bunganditj and *Bogara* in Wergaia-Jadawadjali languages, is a significant feature in the cultural landscape of south-west Victoria. The river features in Traditional Owner creation stories. The Glenelg River continues to be an important place for Traditional Owners, who have been custodians of the area for thousands of years, using the rich resources available along the river and the associated habitats.

In planning for environmental flows in the Glenelg River, several on-Country meetings have been held to increase Traditional Owner involvement in environmental watering. There has also been an increase in communicating operational changes to water deliveries. When planning for the Glenelg River seasonal watering proposal, the Gunditj Mirring Traditional Owners Aboriginal Corporation, Barengi Gadjin Land Council and Burrandies Aboriginal Corporation, together with the Glenelg Hopkins CMA, have considered:

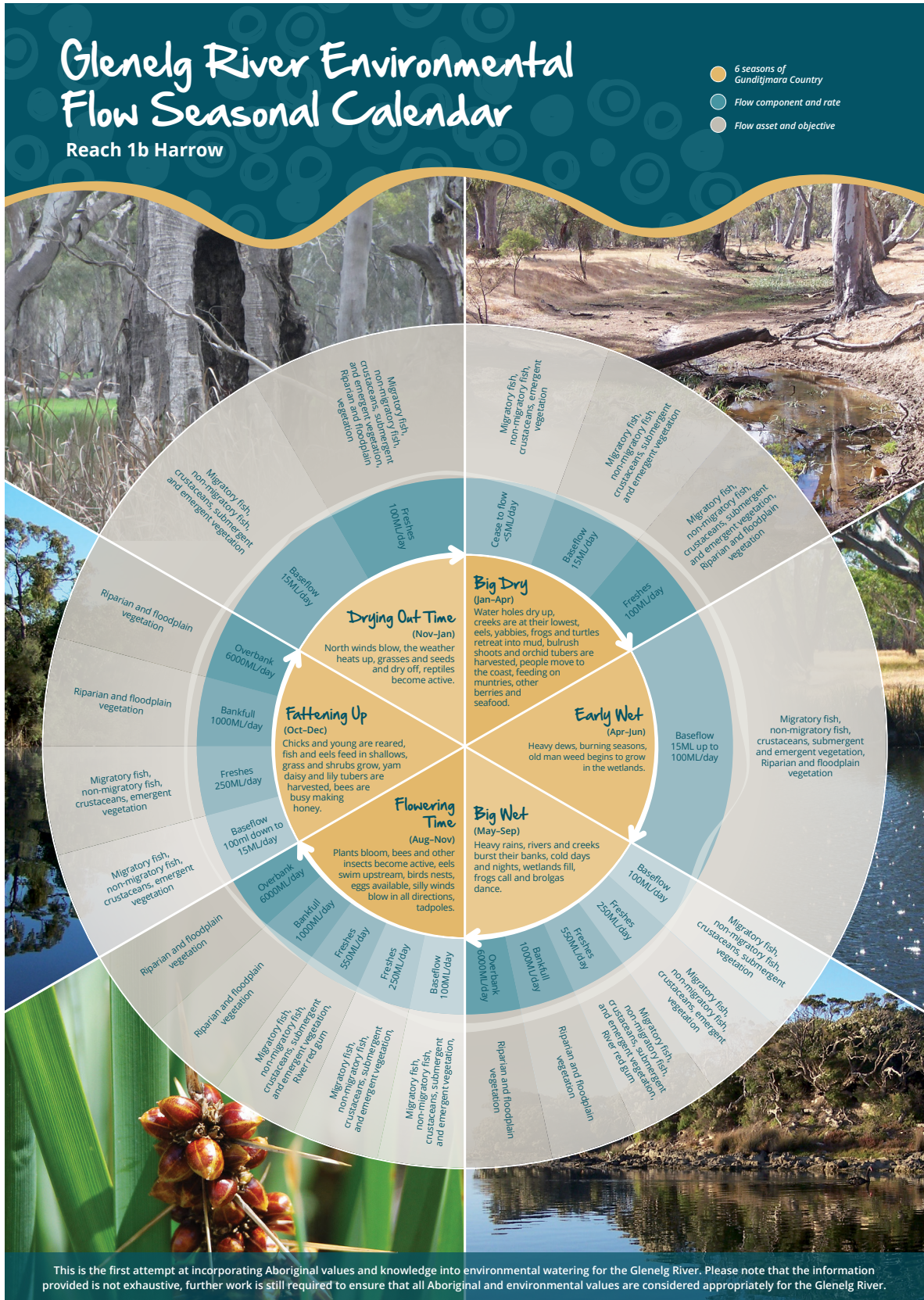
- supporting the health of cultural heritage sites (such as scar trees, ring trees, stone structures, middens and rock paintings) and native plants, which are sources of traditional foods and medicines
- that improving the health and abundance of totem species and their habitat by delivering water for the environment also benefits Traditional Owners' spiritual wellbeing
- supporting contemporary cultural events such as the Johnny Mullagh cricket match in March each year. A summer fresh is delivered to support environmental outcomes, but it also supports this event on the river.

Traditional Owners across the Glenelg catchment have retained a strong identity and connection to the traditional lands for which they have custodial rights and responsibilities. Cultural values in the Glenelg River system align strongly with environmental values. Cultural values are holistic and interrelated: they are bound up with the health of the river system overall and the Country of which the river is part. Traditional Owners' wellbeing is connected to the health of the river and of Country.

Gunditjmara Traditional Owners have identified that it is a priority to spend time on the river and increase cultural practices and connection to Country. They have highlighted the importance of increasing ceremonial and on-Country gatherings along the river, including at Casterton and the Glenelg Estuary.

The Glenelg River Yarns website was launched in late 2021 as part of the Glenelg River Cultural Flows project. The website shares cultural values and stories on a virtual tour and welcomes all visitors to Country.

Figure 4.2.2 Glenelg River Environmental Flow Seasonal Calendar



**Figure 4.2.2** was produced by the Gunditj Mirring Traditional Owners Aboriginal Corporation and describes the six seasons of Gunditjmarra Country. The northern part of the river upstream of the Harrow area is in Jadawadjali Country, and the south-west part of the system is in Boandik Country. The calendar describes the six seasons alongside flow components for reach 1b of the Glenelg River – from 5-Mile Outlet to Chetwynd River — and aligns them with corresponding watering effects and objectives. The calendar reflects the seasonal flow conditions that all Glenelg River system Traditional Owner groups recognise.

The value of the calendar is in its clear visual depiction of Traditional Owners’ knowledge, developed over many generations, of how varying flows correspond to seasonal conditions and broader environmental patterns. The six seasons will be embedded in future environmental flow recommendations and scenario planning.

Increasing the involvement of Traditional Owners in planning and managing environmental flows and ultimately progressing Traditional Owner self-determination in the environmental watering program is a core commitment of the VEWH and the Glenelg Hopkins CMA. 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*.

Planned environmental flows may be modified to align with cultural benefits so long as environmental outcomes are not compromised. The timing of the summer/autumn fresh for the Glenelg River is planned to support the annual Johnny Mullagh Cup cricket match between Gunditj Mirring and Barengi Gadjin Traditional Owners.

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 4.2.1** with an icon (as explained in **Figure 1.2.3**). This icon does not intend to indicate that these activities are meeting all the needs of Traditional Owners.



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 4.2.1**, the Glenelg Hopkins CMA considered how environmental flows could support values and uses, including:

- water-based recreation (such as canoeing and fishing)
- community events and tourism (such as the Johnny Mullagh Cup and visitation)
- socioeconomic 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).

Planned environmental flows may be modified to align with a community benefit so long as environmental outcomes are not compromised. Environmental flow releases support the spawning and recruitment of popular angling species like estuary perch and bream. Local anglers continue to report increased fish activity associated with the delivery of freshes, improving fishing opportunities in the river. Releases also support numerous fishing competitions, including the annual Casterton Angling Society carp competition and the tandanus catfish competition, partnering with local angling clubs, the Victorian Fisheries Authority and the North Central CMA.

The planning of the summer freshes improves accessibility, water quality and amenity for canoeists planning trips on the Glenelg River over the summer holiday period.

Summer and spring freshes improve conditions at popular riverside campgrounds in the upper reaches of the Glenelg River, including Fulham Reserve near Balmoral and the Johnny Mullagh Reserve at Harrow. This is acknowledged in **Table 4.2.1** with the following icons (as explained in **Figure 1.2.3**).



Watering planned to support angling activities



Watering planned to support water sports activities (e.g. canoeing)











Watering planned to support peaks in visitation (e.g. camping or other public activities on long weekends or school holidays)









## 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 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 environmental water in Victoria.



**Table 4.2.1** describes the potential environmental watering actions in 2024-25, 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 4.2.1** Glenelg system potential environmental watering actions, expected effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
Winter/spring low flow in reach 1a (60 ML/day or natural during June to November)	<ul style="list-style-type: none"> <li>Maintain water quality for fish and waterbugs</li> <li>Wet aquatic vegetation to maintain its condition and prevent encroachment by terrestrial species</li> <li>Maintain shallow-water habitat for fish, waterbugs and platypus</li> </ul>	 <b>F1</b>  <b>M1</b>  <b>PR1</b>  <b>V1, V2</b>
Winter/spring low flow in reach 1b (100 ML/day or natural during June to November)		
Winter/spring low flow in reach 2 (160 ML/day or natural during June to November)		
Winter/spring fresh(es) in reach 1b (one to five freshes of 250 ML/day for one to five days during June to November)	<ul style="list-style-type: none"> <li>Wet benches to improve the condition of emergent vegetation and vegetation on the riverbanks to support recruitment and growth and maintain habitat diversity</li> <li>Provide adequate water depth for fish passage and to cue fish movement</li> <li>Encourage female platypus to select nesting burrows higher up the bank to reduce the risk of a greater flow later in the year flooding burrows when juveniles are present</li> </ul>	 <b>F1</b>  <b>G1</b>  <b>PR1</b>  <b>V1</b>
Winter/spring fresh(es) in reach 2 (one to five freshes of 300 ML/day for one to five days during June to November)	<ul style="list-style-type: none"> <li>Scour sand from pools to improve the quality of fish habitat</li> </ul>	

Potential environmental watering action	Expected watering effects	Environmental objectives
<p><b>Summer/autumn low flow in reach 1a (10 ML/day during December to May)</b></p> 	<ul style="list-style-type: none"> <li>• Protect against a rapid decline in water quality in the low-flow period</li> <li>• Maintain edge habitats, pools and shallow-water habitat for fish, waterbugs and platypus</li> <li>• Maintain a near-permanent wetted stream channel to promote the growth of in-stream vegetation and prevent encroachment by terrestrial plants</li> </ul>	 <b>F1</b>  <b>PR1</b>  <b>V1, V2</b>  <b>WQ1</b>
<p><b>Summer/autumn low flow in reach 1b (15 ML/day during December to May)</b></p> 		
<p><b>Summer/autumn low flow in reach 2 (25 ML/day during December to May)</b></p> 		
<p><b>Summer/autumn low flow in reach 3 (80 ML/day during December to May)</b></p> 		
<p><b>Summer/autumn low flow in reach 0 (0.5 ML/day during December to May)</b></p>	<ul style="list-style-type: none"> <li>• Maintain edge habitats, pools and shallow-water habitat for fish, waterbugs (western swamp crayfish) and platypus</li> <li>• Maintain a near-permanent wetted stream channel to promote the growth of in-stream vegetation and prevent encroachment by terrestrial plants</li> </ul>	 <b>F1</b>  <b>MI1</b>  <b>PR1</b>  <b>V1, V2</b>



Potential environmental watering action	Expected watering effects	Environmental objectives
<p>Summer/autumn fresh(es) in reach 1a (one to two freshes of 60 ML/day for two to three days during December to May)</p> 	<ul style="list-style-type: none"> <li>• Flush fine silt from the stream bed and hard substrate to improve the quality of the fish and waterbug habitat</li> <li>• Wet emergent vegetation on the lower banks to improve its condition</li> <li>• Flush pools to improve water quality and lower temperatures</li> <li>• Provide sufficient flow to allow native fish and platypus to access habitat</li> </ul>	    
<p>Summer/autumn fresh(es) in reach 1b (one to two freshes of 100 ML/day for two to three days during December to May)</p> 		
<p>Summer/autumn fresh(es) in reach 2 (one to two freshes of 150 ML/day for two to three days during December to May)</p> 		
<p>Summer/autumn fresh(es) in reach 3 (one to two freshes of 150 ML/day for three days each or natural during December to May)</p> 		

## Scenario planning

**Table 4.2.2** outlines potential environmental watering and expected water use in a range of planning scenarios.

Rainfall across the Glenelg catchment in 2023-24 was close to the long-term average, and natural run-off combined with managed passing flows helped meet many of the planned watering actions during the year. These flows and contributions from environmental water releases helped consolidate the improvements to native fish and vegetation populations that resulted from the widespread floods in 2022-23.

Environmental watering actions in the Glenelg River typically target reaches 1b and 2 because that is where managed flows can have the greatest environmental effect. The high supply of environmental water in 2024-25 will allow a wide range of watering actions to be delivered in the Glenelg system for the second consecutive year. In particular, the greater supply will likely allow summer/autumn freshes in reach 1a in the drier planning scenarios, winter/spring freshes in reach 2 and potential releases in reach 0.

The priority environmental objectives for environmental flows in 2024-25 are to:

- maintain channel form and water quality
- maintain connectivity and provide migration opportunities for native fish
- support juvenile recruitment of native fish
- promote in-stream vegetation and edge habitat for macroinvertebrates, fish and platypus.
- prevent the establishment of terrestrial plants in the stream bed

Delivering a summer/autumn low flow to maintain a continuous flow in reaches 1a, 1b and 2 is the highest-priority environmental watering action in all planning scenarios. Monitoring in recent years has demonstrated that maintaining a continuous flow and so avoiding cease-to-flow events is the most effective way of preventing declines in the abundance and condition of native fish and platypus populations in the Glenelg River. A summer/autumn low flow is proposed among other watering actions for reaches 1a, 1b and 2 in all planning scenarios and is the only environmental watering action proposed for reach 2 in the drought planning scenario. In the drought planning scenario, another flow is not planned for reach 2 because it could not be delivered with the forecast available supply and would likely have less environmental benefit than a flow delivered in reaches 1a and 1b. Water for the environment will not be used to deliver a low

flow to reach 3 in any planning scenario because a low flow release from Rocklands Reservoir is unlikely to have much effect so far downstream in the drought-to-dry planning scenarios, and low flow objectives in that reach should be met by tributary inflows in average and wet conditions.

Summer/autumn freshes are the next-highest-priority watering action in the Glenelg River and are needed to vary the flow, support fish migration and improve water quality outcomes. In the drought planning scenario, summer/autumn freshes will only be delivered to reaches 1a and 1b because environmental water can be efficiently delivered to those reaches via the Rocklands wall, Five Mile and 12 Mile outlets, and they support some of the Glenelg River's most flow-sensitive environmental values. The increased availability of environmental water compared to other years allows summer/autumn freshes to be delivered to reach 2 in the very dry planning scenario and to all reaches (including reach 3) in the dry-to-wet planning scenarios.

Environmental watering actions in reach 1a are significantly constrained by releases that can be made from the Rocklands Reservoir wall and the hydraulic interactions at Frasers Swamp. Reach 1a is immediately downstream of Rocklands Reservoir, meaning it has little natural inflow and relies heavily on mandated passing flow and managed environmental flows. However, large releases from Rocklands Reservoir can potentially flood private land adjacent to Frasers Swamp. A winter/spring low flow is the largest flow proposed to be delivered to reach 1a in the dry-to-wet planning scenarios if sufficient water is available. While a greater flow would likely have an environmental benefit, it is not planned due to the potential risk of flooding private land.

Winter/spring freshes will be delivered in reach 1b and reach 2 where possible in the average and wet planning scenarios to trigger fish and platypus movement, wet vegetation higher up the bank and scour sand from some pool substrates to improve habitat quality for fish and macroinvertebrates. Similar flows are likely to occur at least partially in reach 3 by tributary inflows and local catchment run-off in the average and wet planning scenarios.

Water for the environment has been delivered occasionally to reach 0 in recent years. These releases have partly addressed specific environmental requirements and have also been used to help understand what flow magnitudes can be achieved via managed flow releases from Moora Moora Reservoir. A summer/autumn low flow may be delivered to reach 0 in 2024-25 in average or wet planning scenarios to further test

environmental responses to managed releases, but this flow is a lower priority than planned deliveries to reaches 1a, 1b and reach 2.

During the scenario planning process, the Glenelg Hopkins CMA used a flow delivery model to inform decisions about the volumes of environmental water required. The model cannot accurately predict the contribution of passing flow to proposed environmental watering actions, contributions that are potentially significant in the average and wet planning scenarios. Therefore, the volumes in **Table 4.2.2** will likely

be greater than needed in average and wet planning scenarios.

Carryover will be vital to ensure sufficient water availability to deliver the highest-priority flows during summer and autumn 2025-26 if there are low allocations during the year. The VEWH will work with the Wimmera and Glenelg Hopkins CMAs to refine a carryover target for 2025-26 once winter and spring storage inflows are known and the potential resource outlook for the following year is clear.

**Table 4.2.2** Glenelg River system environmental watering planning scenarios

Planning scenario	Drought	Very dry	Dry	Average	Wet
<b>Expected availability of water for the environment<sup>1</sup></b>	• 62,813 ML	• 69,303 ML	• 80,660 ML	• 90,394 ML	• 98,100 ML
<b>Glenelg River (targeting reach 1a)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>
	<b>Tier 1b (supply deficit)</b>				
	• N/A				
<b>Potential environmental watering – tier 2 (low priority)</b>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Summer/autumn fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> </ul>	• N/A		

Planning scenario	Drought	Very dry	Dry	Average	Wet
<b>Glenelg River (targeting reach 1b)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring freshes (three freshes)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (three freshes)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>
	<b>Tier 1b (supply deficit)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>				
<b>Potential environmental watering – tier 2 (low priority)</b>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring fresh (one fresh)</li> <li>• Summer/autumn fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> </ul>	
<b>Glenelg River (targeting reach 2)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring freshes (three freshes)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring freshes (five freshes)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>
	<b>Tier 1b (supply deficit)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>				

Planning scenario	Drought	Very dry	Dry	Average	Wet
<b>Potential environmental watering – tier 2 (low priority)</b>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring fresh (one fresh)</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> </ul>
<b>Glenelg River (targeting reach 3)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>		<ul style="list-style-type: none"> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn freshes (two freshes)</li> </ul>
	<b>Tier 1b (supply deficit)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>				
<b>Potential environmental watering – tier 2 (low priority)</b>	<ul style="list-style-type: none"> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn freshes (two freshes)</li> </ul>			
<b>Glenelg River (targeting reach 0)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>			<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>
	<b>Tier 1b (supply deficit)</b>				
	<ul style="list-style-type: none"> <li>• N/A</li> </ul>				
<b>Potential environmental watering – tier 2 (low priority)</b>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>	<ul style="list-style-type: none"> <li>• Summer/autumn low flow</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	
<b>Possible volume of water for the environment required to achieve objectives</b>	<ul style="list-style-type: none"> <li>• 11,781 ML (tier 1a)</li> <li>• 42,177 ML (tier 2)</li> </ul>	<ul style="list-style-type: none"> <li>• 12,010 ML (tier 1a)</li> <li>• 40,128 ML (tier 2)</li> </ul>	<ul style="list-style-type: none"> <li>• 13,635 ML (tier 1a)</li> <li>• 38,503 ML (tier 2)</li> </ul>	<ul style="list-style-type: none"> <li>• 25,843 ML (tier 1a)</li> <li>• 32,265 ML (tier 2)</li> </ul>	<ul style="list-style-type: none"> <li>• 26,159 ML (tier 1a)</li> <li>• 30,133 ML (tier 2)</li> </ul>
<b>Priority carryover requirements for 2025-26</b>	<ul style="list-style-type: none"> <li>• The VEWH will work with the Wimmera and Glenelg Hopkins CMAs to refine a carryover target for 2025-26 once winter and spring storage inflows are known and the potential resource outlook for the following year is clear.</li> </ul>				

1 Volume represents the available water for the Wimmera and Glenelg systems under the shared *Wimmera and Glenelg Rivers Environmental Entitlement 2010* and is the sum of carryover and estimated new allocations

## 4.3 Wimmera system

**Waterway manager** – Wimmera Catchment Management Authority

**Storage manager** – Grampians Wimmera Mallee Water

**Environmental water holders** – Victorian Environmental Water Holder and Commonwealth Environmental Water Holder

### System overview

***Barringgi Gadyin (Wimmera River) rises in the Pyrenees Ranges near Elmhurst and flows through Horsham, Dimboola and Jeparit before terminating at Lake Hindmarsh, which is Victoria's largest freshwater lake and the first of a series of terminal lakes. The Wimmera River receives flows from several regulated tributaries, including the MacKenzie River, Mount William Creek and Burnt Creek (Figure 4.3.1). These tributaries, plus Bungalally Creek and the Wimmera River below Mount William Creek, can receive water for the environment. In exceptionally wet periods, Lake Hindmarsh will overflow into Outlet Creek and then to Lake Albacutya, an internationally recognised Ramsar-listed wetland. Many wetlands beyond Lake Albacutya have not filled with water for decades.***

Water in the Wimmera system is stored in three on-stream reservoirs (Lake Wartook on the MacKenzie River, Lake Lonsdale on Mount William Creek and Lake Bellfield on Fyans Creek) and in several off-stream storages (Taylors Lake, Lake Fyans and Toolondo Reservoir). A channel system enables water to be moved between storages. Water can also be transferred from Rocklands Reservoir in the Glenelg system to the Wimmera system via the Rocklands-Toolondo Channel and from Moora Moora Reservoir via the Moora Channel. The connected storages and channels are collectively called the Wimmera-Mallee System Headworks. Water harvested in the system headworks is used for town, stock and domestic supply throughout the Wimmera catchment and parts of the Avoca, Hopkins, Loddon, Glenelg and Mallee catchments. Passing flows are provided to the Wimmera River and lower Mount William and Fyans creeks.

Priority reaches in the Wimmera system that can receive water for the environment are Wimmera River reaches 3 and 4, MacKenzie River reaches 2 and 3, upper and lower Mount William Creek, upper and lower Burnt Creek and Bungalally Creek.

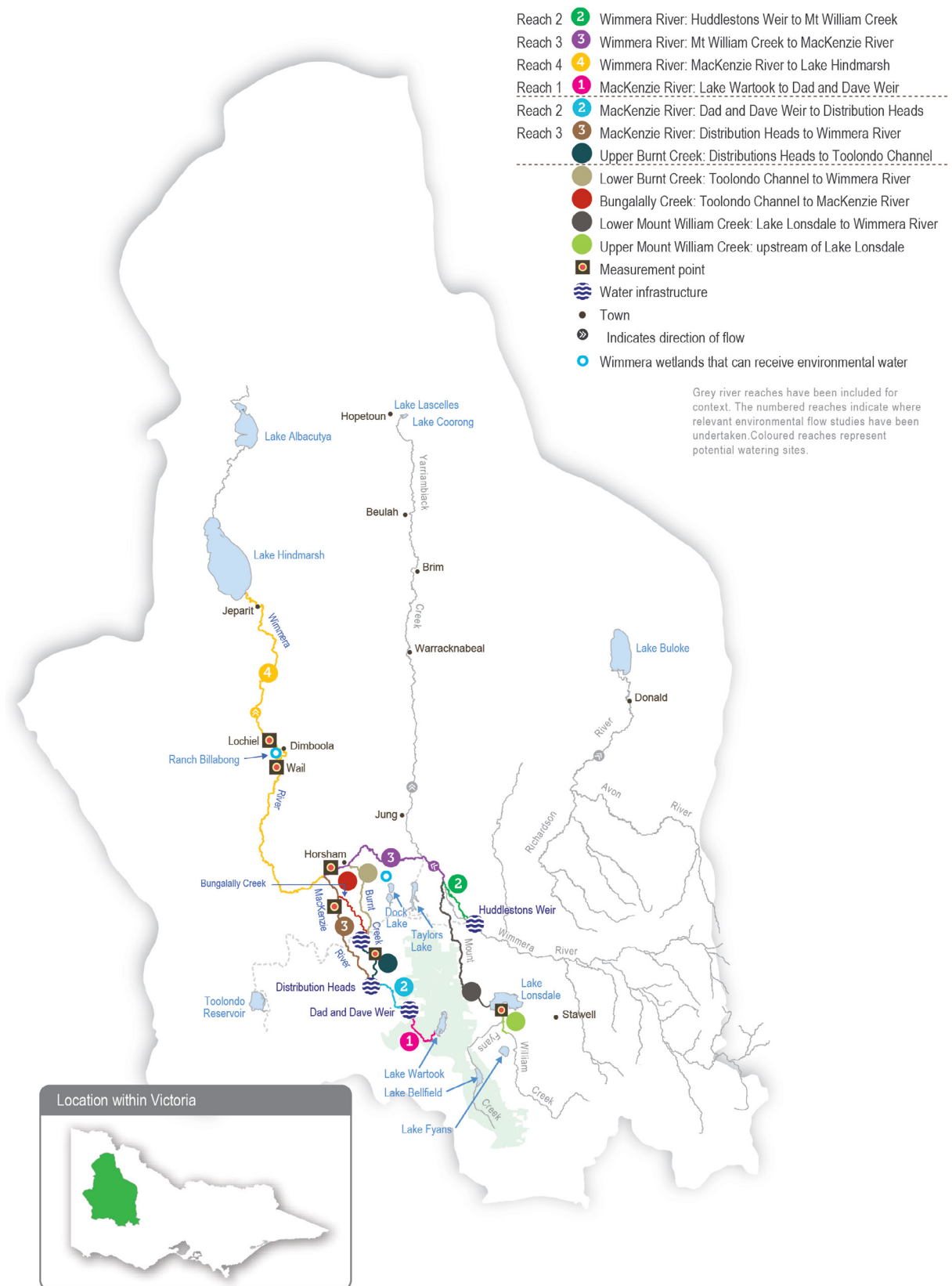
Yarriambiack Creek is a distributary of the upper Wimmera River that would have naturally received a flow during high-flow or flood events. Lower reaches of the Wimmera River have priority for environmental water, which means no water is diverted for environmental watering to this creek. Grampians Wimmera Mallee Water provides recreational entitlements via the Wimmera-Mallee Pipeline to the creek at the Warracknabeal, Brim and Beulah weir pools.

Downstream of Jeparit, the Wimmera River reaches the terminal lakes, including Lake Hindmarsh, a wetland of national significance and Lake Albacutya, recognised internationally under the Ramsar Convention. These lakes do not usually receive environmental water but rely mainly on passing flows and/or unregulated flows to provide suitable inundation to achieve environmental outcomes. However, in a wet year, regulated releases are of some value for raising the levels of terminal lakes and improving environmental outcomes.

Dock Lake, near Horsham, would have naturally filled via spills from nearby Green Lake when there was significant run-off from the northern edge of the Grampians. In the 1930s, Dock Lake was modified to allow it to be used as a water storage for irrigation supply in the Wimmera-Mallee system. Dock Lake was removed from the supply system after the Wimmera-Mallee Pipeline was completed in 2010. Water can be delivered to Dock Lake from Green Lake via a gravity-fed channel when there is sufficient water in Green Lake.

Ranch Billabong, near Dimboola, is an anabranch of the Wimmera River at Dimboola. It is on land managed by Barengi Gadjin Land Council Aboriginal Corporation. The anabranch was disconnected from the Wimmera River by changes to a road that traverses land between the river and the billabong. Restoring elements of the natural water regime at Ranch Billabong aims to improve habitat for native animal and plant communities and is an important outcome for Traditional Owners.

**Figure 4.31 The Wimmera system**



## Environmental values

The Wimmera River supports abundant native fish populations, including one of Victoria's few self-sustaining populations of freshwater catfish. The Wimmera River also supports native waterbird, turtle, frog and rakali (water rat) populations.

The MacKenzie River contains the only confirmed remaining platypus population in the Wimmera system and supports locally important populations of native fish, including river blackfish and southern pygmy perch. It also supports populations of threatened Glenelg spiny crayfish, western swamp crayfish and turtles, as well as the critically endangered Wimmera bottlebrush. Managed releases from Lake Wartook for urban supplies and an environmental flow maintain a regular flow in the middle and upper reaches of the MacKenzie River and provide refuges for regionally important populations during dry periods.

Vegetation along Burnt and Bungalally creeks provides habitat corridors for terrestrial wildlife. Upper Burnt Creek contains an important native fish community and a threatened western swamp crayfish population, which is also becoming established in lower Burnt Creek. Mount William Creek supports regionally important populations of obscure galaxias, southern pygmy perch and rakali (water rats).

Dock Lake is a natural wetland that was modified and used as part of the Wimmera-Mallee System Headworks until 2010. When wet, Dock Lake provides feeding and breeding habitat for large numbers of waterbirds and frogs.

Ranch Billabong is a small wetland near Dimboola that supports river redgums, various aquatic plant species, waterbirds and frogs. It also includes a range of culturally significant plant species (such as sneezeweed).

In very high flow periods, the Wimmera River discharges Lake Hindmarsh and Lake Albacutya, large sub-terminal lakes. Lake Albacutya is a Ramsar-listed wetland, and Lake Hindmarsh is Victoria's largest freshwater lake. Both provide significant habitat for waterbirds when wet.

## Environmental objectives in the Wimmera system



**A1** – Maintain the frog population by providing feeding and breeding habitat



**B1** – Maintain the waterbird population by providing roosting, feeding and breeding habitat in floodplain wetlands



**F1** – Protect and increase the native fish population, including one of Victoria's few self-sustaining freshwater catfish populations



**G1** – Maintain the channel's capacity and diversity



**M11** – Increase the abundance and diversity of waterbugs to break down dead organic matter and support the waterway's food web

**M12** – Maintain the crayfish population by providing feeding and breeding habitat



**PR1** – Increase the abundance and distribution of the platypus population by providing places to breed and feed, as well as opportunities for juveniles to disperse



**T1** – Maintain the turtle population by providing feeding and breeding habitat



**V1** – Improve the condition, abundance and diversity of native aquatic, emergent and streamside vegetation

**V2** – Prevent the establishment of terrestrial plants in the stream bed



**WQ1** – Maintain water quality to provide suitable conditions for waterbugs, native fish and other water-dependent animals and plants



## Traditional Owner cultural values and uses

The Wimmera's waterways are the life blood of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk people, collectively known as the Wotjobaluk Nations and represented by the Barengi Gadjin Land Council Aboriginal Corporation (BGLC).

In August 2022, the Victorian Government and the Wotjobaluk Nations entered into a Recognition and Settlement Agreement (RSA). In the RSA the Victorian Government recognised the Wotjobaluk Nations have a special relationship with *Barringgi Gadyin*, and that the river has a central place in their culture. The Victorian Government acknowledged in the RSA the aspirations of the Traditional Owners in regard to water, including to monitor and manage cultural and environmental flows associated with waterways. In December 2005, the Federal Court made its first determination that native title existed in south-east Australia, including in much of the lower *Barringgi Gadyin*.

In planning for environmental flows in *Barringgi Gadyin*, BGLC and the Wimmera CMA work together to support cultural objectives and values, including supporting contemporary cultural events (such as the Wimmera River Challenge).

Planned environmental flows may be modified to align with cultural benefits so long as environmental outcomes are not compromised. Where Traditional Owners are more deeply involved in the planning and/or delivery of environmental flows for a particular site, their contribution is acknowledged in **Table 4.3.1** with an icon (as outlined in **Figure 1.2.3**). In the Wimmera system, Wimmera CMA and BGLC work in partnership to support cultural values at Ranch Billabong. The delivery of water for the environment at Ranch Billabong aims to provide a more natural flooding regime, restore indigenous plant species (such as old man weed and sneezeweed) and animal habitats, control selected weed species and improve amenity and suitability for gatherings and events (such as earth oven and bark-canoe cultural activities).

Water for the environment was delivered to Ranch Billabong in 2018, 2019, 2020 and 2021. In 2022, Ranch Billabong filled naturally by flooding. Watering during the past five years has improved water quality and vegetation condition, consistent with the cultural objectives of the Traditional Owners. BGLC manages the site and has controlled weed species and enhanced accessibility by building walking

tracks and culvert crossings around the billabong. In 2023, a jetty was built and there were improvements to the surrounding area. A piped system is planned to permanently reconnect *Barringgi Gadyin* (Wimmera River) to the Ranch Billabong anabranch.

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*.

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 4.3.1** with an icon (as explained in **Figure 1.2.3**). The use of this icon is not intended to indicate that these activities are meeting all the needs of Traditional Owners, but 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 4.3.1**, the Wimmera CMA considered how environmental flows could support shared benefits, for example:

- water-based recreation (such as canoeing, fishing, rowing, and water skiing)
- riverside recreation and amenity (such as birdwatching, cycling, running, and walking)
- community and tourism events (such as fishing competitions at Dimboola, Jeparit and Horsham, rowing at Dimboola, the Kannamaroo Festival at Horsham, including the Wimmera River Duck Race, the Wimmera River Park Run, the Peter Taylor Memorial Barefoot Water Ski Tournament and Night Jump at Dimboola; and supporting small business, including chartered river cruises, pop-up food vendor caravans and general visitation)

- socioeconomic benefits (such as for diverters for irrigation, stock needs and domestic use: water levels and water quality, which can rely on the delivery of water for the environment, particularly in summer, and associated tourism events).

Planned environmental flows may be modified to align with a community benefit so long as environmental outcomes are not compromised. Water for the environment can temporarily raise water levels in Horsham, Dimboola and Jeparit weir pools to improve conditions for community events, including fishing competitions and water skiing and rowing events. Water for the environment held in the weir pools is released after community events to support environmental objectives further downstream when required.








The Wimmera CMA, in consultation with stakeholders, also refrains from releasing environmental water from water storages at peak recreational times. It does so only when this does not compromise environmental outcomes in Wimmera waterways to ensure maximum water levels in these storages. This is acknowledged in **Table 4.3.1** with the following icons (as explained in **Figure 1.2.3**).


















## 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 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 environmental water in Victoria.


















**Table 4.3.1** describes the potential environmental watering actions in 2024-25, 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 4.3.1** Wimmera system potential environmental watering actions, expected effects and environmental objectives

Potential environmental watering action	Expected watering effects	Environmental objectives
<b>Wimmera River (reach 4)</b>		
<p><b>Winter/spring low flow (30 ML/day during June to November)</b></p> 	<ul style="list-style-type: none"> <li>• Maintain access to habitat for native fish, waterbugs and in-stream vegetation</li> </ul>	  <p>F1 M1</p>  <p>V1</p>
<p><b>Small winter/spring fresh(es) (one to five freshes of 70 ML/day for one to four days during June to November)</b></p> 	<ul style="list-style-type: none"> <li>• Increase water depth to provide a stimulus for fish movement</li> <li>• Provide flow variability to maintain water quality and diversity of fish habitats</li> </ul>	  <p>F1 WQ1</p>

Potential environmental watering action	Expected watering effects	Environmental objectives
<p><b>Medium winter/spring fresh(es) (one to three freshes of 200-300 ML/day for one to three days during June to November)</b></p> 	<ul style="list-style-type: none"> <li>• Provide variable flow during the high-flow season for fish movement</li> <li>• Provide flow variability to maintain water quality and diversity of fish habitats</li> <li>• Wet lower benches to support native streamside vegetation, draw in and transport organic debris and maintain habitat for waterbugs and fish</li> <li>• Flush surface sediments from hard substrates for macroinvertebrates</li> </ul>	 <b>F1</b>  <b>MI1</b>  <b>V1</b>  <b>WQ1</b>
<p><b>Trial large spring fresh(es) (one to two freshes of 500-1,300 ML/day for two to three days during September to November)</b></p>	<ul style="list-style-type: none"> <li>• Cue fish spawning and movement</li> </ul>	 <b>F1</b>
<p><b>Summer/autumn low flow (15 ML/day or natural during December to May)</b></p> 	<ul style="list-style-type: none"> <li>• Maintain edge habitats in deeper pools and in-stream habitat to support native fish populations and waterbugs</li> <li>• Maintain soil moisture for streamside vegetation and a near-permanent, inundated stream channel for aquatic vegetation</li> <li>• Prevent the growth of terrestrial plants in the stream bed</li> </ul>	 <b>F1</b>  <b>MI1</b>  <b>V1, V2</b>
<p><b>Summer/autumn fresh(es) (one to three freshes of 70 ML/day for two to seven days during December to May)</b></p>	<ul style="list-style-type: none"> <li>• Flush pools to prevent a decline in water quality and to maintain habitat for fish and waterbugs</li> <li>• Provide fish passage to allow fish to move through the reach</li> </ul>	 <b>F1</b>  <b>MI1</b>  <b>WQ1</b>
<b>MacKenzie River (reach 3)</b>		
<p><b>Winter/spring low flow (10 ML/day or natural during June to November)</b></p>	<ul style="list-style-type: none"> <li>• Maintain edge habitats and deeper pools and runs for waterbugs, platypus, native fish and crayfish populations</li> <li>• Maintain soil moisture for streamside vegetation and near-permanent inundated stream channel for aquatic vegetation and prevent the growth of terrestrial plants in the stream bed</li> </ul>	 <b>F1</b>  <b>MI1, MI2</b>  <b>PR1</b>  <b>V1, V2</b>

Potential environmental watering action	Expected watering effects	Environmental objectives
<b>Winter/spring fresh(es) (one to three freshes of 15-60 ML/day for two to seven days during June to November)</b>	<p>At 15 ML/day:</p> <ul style="list-style-type: none"> <li>Provide a variable flow to maintain habitats at times that a continuous minimum low flow cannot be provided to support fish, platypus and waterbugs</li> </ul> <p>At above 35 ML/day:</p> <ul style="list-style-type: none"> <li>Increase flow rates and water depth to facilitate fish movement</li> <li>Flush pools to prevent a decline in water quality</li> <li>Maintain soil moisture for streamside vegetation</li> </ul>	 <b>F1</b>  <b>M11</b>  <b>PR1</b>  <b>V1</b>  <b>WQ1</b>
<b>Summer/autumn low flow (5-10 ML/day or natural during December to May)</b>	<ul style="list-style-type: none"> <li>Maintain pool habitat for native fish and crayfish populations</li> <li>Maintain edge habitats and deeper pools and runs for waterbugs and platypus</li> <li>Maintain soil moisture for streamside vegetation and near-permanently inundated stream channel for aquatic vegetation and prevent the growth of terrestrial plants in the stream bed</li> </ul>	 <b>F1</b>  <b>M11, M12</b>  <b>PR1</b>  <b>V1, V2</b>
<b>Summer/autumn freshes (three to four freshes of 35 ML/day for two to seven days each during December to May)</b>	<ul style="list-style-type: none"> <li>Provide a variable flow during the low-flow season for fish movement</li> <li>Flush pools and provide flow variability to maintain water quality</li> <li>Flush sediments from hard substrates to increase biofilm production and food for waterbugs</li> </ul>	 <b>F1</b>  <b>M11</b>  <b>WQ1</b>
<b>Upper Burnt Creek</b>		
<b>Winter/spring low flow (1 ML/day or natural during June to November)</b>	<ul style="list-style-type: none"> <li>Maintain edge habitats and shallow-water habitat for waterbugs</li> <li>Maintain soil moisture for streamside vegetation and a near-permanently inundated stream channel for aquatic vegetation and prevent the growth of terrestrial plants in the stream bed</li> <li>Maintain a sufficient area of pool habitat for native fish and crayfish populations</li> </ul>	 <b>F1</b>  <b>M11, M12</b>  <b>V1, V2</b>
<b>Winter/spring fresh(es) (one to five freshes of 15-60 ML/day for three to seven days during June to November)</b>	<ul style="list-style-type: none"> <li>Allow fish to move throughout the reach</li> </ul> <p>At above 30 ML/day, the above plus:</p> <ul style="list-style-type: none"> <li>Flush sediments from hard substrates to increase biofilm production and food for waterbugs</li> </ul>	 <b>F1</b>  <b>M11</b>

Potential environmental watering action	Expected watering effects	Environmental objectives
<b>Summer/autumn low flow (1 ML/day or natural during December to May)</b>	<ul style="list-style-type: none"> <li>Maintain edge habitats and shallow-water habitat for waterbugs</li> <li>Maintain soil moisture for streamside vegetation and a near-permanently inundated stream channel for aquatic vegetation and prevent the growth of terrestrial plants in the stream bed</li> <li>Maintain a sufficient area of pool habitat for native fish and crayfish populations</li> </ul>	 <b>F1</b>  <b>V1, V2</b>  <b>M11, M12</b>
<b>Summer/autumn freshes (three freshes of 30 ML/day for two to seven days each during December to May)</b>	<ul style="list-style-type: none"> <li>Prevent a decline in water quality by flushing pools in the low-flow season</li> <li>Allow fish to move throughout the reach</li> <li>Flush sediments from hard substrates to increase biofilm production and food for waterbugs</li> </ul>	 <b>F1</b>  <b>WQ1</b>  <b>M11</b>
<b>Lower Burnt Creek</b>		
<b>Bankfull fresh (one fresh of 45 ML/day for two days at any time)</b>	<ul style="list-style-type: none"> <li>Inundate streamside vegetation to maintain plant condition and facilitate recruitment</li> <li>Move organic debris in the channel to support waterbugs</li> <li>Maintain the structural integrity of the channel and prevent the loss of channel capacity</li> </ul>	 <b>G1</b>  <b>V1</b>  <b>M11</b>
<b>Fresh(es) (four freshes of 15 ML/day for three to seven days at any time)</b>	<ul style="list-style-type: none"> <li>Maintain water quality</li> <li>Maintain a sufficient area of pool habitat for native fish and crayfish populations</li> </ul>	 <b>F1</b>  <b>WQ1</b>  <b>M12</b>
<b>Bungalally Creek</b>		
<b>Bankfull fresh (one fresh of 60 ML/day for two days at any time)</b>	<ul style="list-style-type: none"> <li>Inundate the streamside zone to maintain its condition and facilitate the recruitment of streamside vegetation communities</li> <li>Maintain the structural integrity of the channel and prevent the loss of channel capacity</li> </ul>	 <b>G1</b>  <b>V1</b>
<b>Lower Mount William Creek</b>		
<b>Year-round low flow (5 ML/day or natural)</b>	<ul style="list-style-type: none"> <li>Maintain edge habitats and shallow-water habitat for waterbugs and endemic fish</li> <li>Maintain soil moisture for streamside vegetation and a near-permanently inundated stream channel for aquatic vegetation and prevent the growth of terrestrial plants in the stream bed</li> </ul>	 <b>F1</b>  <b>V1, V2</b>  <b>M11</b>

Potential environmental watering action	Expected watering effects	Environmental objectives
<b>Winter/spring fresh(es) (one to five freshes of 100 ML/day for three to seven days during June to November)</b>	<ul style="list-style-type: none"> <li>Wet benches to draw in and transport organic debris and allow native fish to move throughout the reach</li> <li>Flush surface sediments from hard substrates to support waterbugs</li> <li>Inundate the streamside zone to maintain its condition and facilitate the recruitment of streamside vegetation communities</li> </ul>	 <b>F1</b>  <b>M11</b>  <b>V1</b>
<b>Summer/autumn freshes (three freshes of 20-30 ML/day for two to seven days during December to May)</b>	<ul style="list-style-type: none"> <li>Prevent a decline in water quality by flushing pools during low flow</li> <li>Flush surface sediments from hard substrates to support waterbugs</li> <li>Provide a variable flow and allow the movement of fish throughout the reach during the low-flow season</li> </ul>	 <b>F1</b>  <b>M11</b>  <b>WQ1</b>
<b>Upper Mount William Creek</b>		
<b>Top-up pools (summer/autumn)</b>	<ul style="list-style-type: none"> <li>Maintain edge and shallow-water habitat for native fish and waterbugs</li> <li>Maintain water quality</li> </ul>	 <b>F1</b>  <b>M11</b>  <b>WQ1</b>
<b>Dock Lake</b>		
<b>Winter/spring partial fill</b>	<ul style="list-style-type: none"> <li>Trigger the growth and germination of wet-phase wetland vegetation communities</li> <li>Support feeding and breeding habitat for waterbirds, frogs, waterbugs and turtles</li> </ul>	 <b>A1</b>  <b>B1</b>  <b>M11</b>  <b>T1</b>  <b>V1</b>
<b>Ranch Billabong</b>		
<b>Fill and top-ups year-round</b> 	<ul style="list-style-type: none"> <li>Inundate wetland vegetation to maintain the condition of plants and facilitate their recruitment</li> <li>Improve water quality for frogs and waterbirds</li> </ul>	 <b>A1</b>  <b>B1</b>  <b>V1</b>

1 These potential watering actions may, in select circumstances and with the oversight of the Wimmera River Operational Advisory Group (comprising Wimmera CMA, VEWH and CEWH representatives), be augmented and targeted at a higher-than-recommended rate to have the best chance of water reaching lakes Hindmarsh and Albacutya and achieving the desired environmental outcomes.

## Scenario planning

**Table 4.3.2** outlines potential environmental watering and expected water use in a range of planning scenarios.

Rainfall across the Wimmera catchment in 2023-24 was close to the long-term average, and natural run-off combined with the managed passing flows helped meet many of the planned watering actions that the Wimmera CMA chose to deliver during the year. These flows, as well as contributions from environmental water, maintained a continuous flow in the Wimmera River from winter to the end of summer and helped consolidate the improvements to native fish populations and vegetation communities that resulted from the widespread floods in 2022-23. A large supply of environmental water in 2024-25 will provide scope to deliver potential watering actions to maintain the Wimmera system's currently good environmental values in drought-to-dry conditions and continue to improve environmental conditions if there is average or above-average rainfall.

### Wimmera River

In all planning scenarios, the highest-priority potential watering actions in the Wimmera River include low flows and small freshes throughout the year to maintain diverse aquatic habitats and suitable water quality throughout the length of the river and opportunities for fish to move to access various resources or breed. In the drought and very dry planning scenarios, low flows may be delivered below the recommended magnitude to conserve water, but it may be increased at any time or supplemented with freshes if needed to manage potential water quality issues. In the average and wet planning scenarios, there should be enough water to deliver low flows at their recommended magnitude year-round and additional freshes to boost the river's environmental health.

The Wimmera CMA may temporarily restrict or cease the river's flow during the spring low-flow period to encourage carp to congregate below the Horsham weir (and potentially at other suitable locations) so they can be removed using electrofishing. Any cease-to-flow event would have a short duration and be followed by a fresh to avoid water quality problems and prevent harm to native fish. Restricting the flow to manage carp will only be attempted in the cooler seasons to avoid potential water quality problems and may not be possible in wetter conditions.

Winter/spring low flow actions planned for the Wimmera and MacKenzie rivers may, in select circumstances and with the oversight of the Wimmera River Operational Advisory Group (comprised of Wimmera CMA, VEW and CEWH representatives), be augmented and targeted at a higher-than-recommended rate to provide the best chance of water reaching lakes Hindmarsh and Albacutya and achieving the desired environmental outcomes.

Increased water availability and greater contributions from natural run-off in dry, average and wet conditions will allow larger freshes to be delivered to provide opportunities for more widespread fish movement, improve the composition and condition of vegetation on banks and benches within the channel and wash organic matter into the river to support riverine food webs. More and larger freshes will likely be delivered in average and wet conditions, although they may also occur naturally.

A large spring fresh may be trialled in average and wet conditions in 2024-25 to trigger golden perch spawning. A regular stocking program mainly sustains the golden perch population in the Wimmera River, but numerous fish exhibited spawning behaviour in response to a large natural event in November 2021, and the Wimmera CMA is keen to see if natural spawning and recruitment can be supported with environmental watering. The flow volume to trigger golden perch spawning in the Wimmera River is unknown, and there is also some uncertainty about the maximum environmental flow that can be delivered through reach 4 of the Wimmera River. The Wimmera CMA aims to work with Grampians Wimmera Mallee Water (the storage manager) to coordinate releases from multiple storages to deliver the largest possible flow to reach 4 (within current system constraints) during the spring golden perch breeding season. The trial will only proceed if suitable monitoring is used to assess fish responses. The peak flow volume will also be measured to understand the largest flow that can be delivered through the system and to inform future flow plans.

### **MacKenzie River/Burnt Creek/ Bungalally Creek**

In the MacKenzie River and upper Burnt Creek, water for the environment will be used to deliver a low flow year-round and small to medium freshes in summer/autumn and winter/spring. The low flow will aim to maintain habitat for native fish, platypus and crayfish that recruited or improved their condition in recent years, and the freshes will aim to improve water quality, transport organic material, support fish and platypus dispersal and water streamside vegetation. In the drought-to-dry planning scenarios, freshes are only delivered as needed to prevent poor water quality and are likely to be delivered at the lower end of the planned magnitude and duration to conserve the available supply. In the average and wet planning scenarios, freshes in the MacKenzie River may be delivered at their full recommended magnitude and duration to increase opportunities for native fish and platypus to disperse and to increase the quality and quantity of their food to improve their condition and provide potential breeding opportunities. The target volume of winter/spring freshes in the MacKenzie River and upper Burnt Creek will vary depending on the weather and the observed environmental conditions, including the vegetation's response to wetting. Watering actions for reach 3 of the MacKenzie River typically provide a suitable flow to meet objectives in reach 2.

A bankfull flow may be delivered to Bungalally Creek and lower Burnt Creek in the dry-to-wet planning scenarios to maintain the channel's form and improve the health of the streamside vegetation. Freshes of 15 ML per day may also be delivered to the lower Burnt Creek to top up and refresh refuge pools in the same planning scenarios. These flows can only be delivered during periods of high natural flow throughout the system, so they are not included in the drier planning scenarios.

### **Mount William Creek**

Water from Lake Lonsdale is expected to be used to help meet environmental flow targets in the Wimmera River throughout 2024-25 in all planning scenarios. This water will be delivered via lower Mount William Creek and is expected to meet the planned environmental watering actions for lower Mount William Creek en route.

Water from Lake Fyans may be used in any planning scenario in 2024-25 to top up refuge pools in upper Mount William Creek to improve water quality and habitat availability for native fish populations.

### **Ranch Billabong and Dock Lake**

Water for the environment will likely be used to top up water levels in Ranch Billabong in drought, very dry and dry conditions to maintain water quality and support the ongoing recovery of the river red gum and associated understorey vegetation surrounding the billabong. In wet and average conditions, the billabong is expected to fill naturally.

Environmental flow objectives for Dock Lake require large volumes of water that can only be achieved with significant contributions from natural events and only when Green Lake is full. These conditions will only likely be met in the wet (and possibly average) planning scenarios in 2024-25.

### **Carryover**

Carryover will be vital to ensure sufficient water is available to deliver the highest-potential watering actions during summer and autumn 2025-26 if there are low allocations during the year. The VEWH will work with the Wimmera and Glenelg Hopkins CMAs to set a carryover target for 2025-26 once winter and spring storage inflows are known and the potential resource outlook for the following year is clear.



**Table 4.3.2** Wimmera system environmental watering planning scenarios

<b>Planning scenario</b>	<b>Drought</b>	<b>Very dry</b>	<b>Dry</b>	<b>Average</b>	<b>Wet</b>
<b>Expected river conditions</b>	<ul style="list-style-type: none"> <li>• Infrequent, unregulated flow for reach 2 of the MacKenzie River, upper Burnt Creek and lower Mt William Creek</li> <li>• Regulated releases provide flow at other times and locations</li> </ul>	<ul style="list-style-type: none"> <li>• Periodic, unregulated flow for reach 2 of the MacKenzie River, upper Burnt Creek and lower Mt William Creek</li> <li>• Regulated releases provide flow at other times and locations</li> </ul>	<ul style="list-style-type: none"> <li>• Periodic, unregulated flow for reach 2 of the MacKenzie River, upper Burnt Creek and lower Mt William Creek</li> <li>• Regulated releases provide flow at other times and locations, apart from the modest passing flow</li> </ul>	<ul style="list-style-type: none"> <li>• Regular, unregulated flow for reach 2 of the MacKenzie River, upper Burnt Creek and lower Mt William Creek</li> <li>• Regular passing flow and unregulated releases for the Wimmera River and lower Mt William Creek</li> <li>• Regulated releases provide flow at other times and locations</li> </ul>	<ul style="list-style-type: none"> <li>• Regular, unregulated flow for reach 2 of the MacKenzie River, upper Burnt Creek and lower Mt William Creek</li> <li>• Frequent passing flow and unregulated releases for the Wimmera River and lower Mt William Creek</li> <li>• Regulated releases provide flow at other times and locations</li> </ul>
<b>Predicted supply of water for the environment under the Wimmera-Glenelg environmental entitlement<sup>1</sup></b>	• 62,813 ML	• 69,303 ML	• 80,660 ML	• 90,394 ML	• 98,100 ML
<b>Predicted supply of water for the environment under the CEWH's entitlement<sup>2</sup></b>	• 17,553 ML	• 17,553 ML	• 17,553 ML	• 17,553 ML	• 17,553 ML

Planning scenario	Drought	Very dry	Dry	Average	Wet
<b>Wimmera River (targeting reach 4)</b>					
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>				
	<ul style="list-style-type: none"> <li>• Winter/spring low flow (partially delivered at lower magnitude)</li> <li>• Small winter/spring fresh (one fresh for one day)</li> <li>• Summer/autumn low flow (partially delivered at lower magnitude)</li> <li>• Summer/autumn fresh (one fresh)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Small winter/spring freshes (two freshes for two days each)</li> <li>• Medium winter/spring fresh (one fresh for one day)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Small winter/spring freshes (three freshes for three days each)</li> <li>• Medium winter/spring freshes (two freshes for two days each)</li> <li>• Large spring fresh (one fresh for two days)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (two freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Small winter/spring fresh (one fresh for four days)</li> <li>• Medium winter/spring freshes (three freshes for three days each)</li> <li>• Large spring freshes (two freshes for two days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>	
	<b>Tier 1b (supply deficit)</b>				
	<ul style="list-style-type: none"> <li>• Winter/spring low flow (full magnitude)</li> <li>• Summer/autumn low flow (full volume)</li> </ul>				

Planning scenario	Drought	Very dry	Dry	Average	Wet	
<b>Mackenzie River (targeting reach 3)</b>						
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>					
	<ul style="list-style-type: none"> <li>• Winter/spring low flow (partially delivered at lower magnitude)</li> <li>• Winter/spring freshes (four fresh for four days each)</li> <li>• Summer/autumn low flow (partially delivered at lower magnitude)</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>		<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (five freshes for five days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (four freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (five freshes for seven days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (four freshes)</li> </ul>		
	<b>Tier 1b (supply deficit)</b>					
	<ul style="list-style-type: none"> <li>• Winter/spring low flow (full magnitude)</li> <li>• Summer/autumn low flow (full magnitude)</li> </ul>					
<b>Upper Burnt Creek</b>						
<b>Potential environmental watering – tier 1 (high priorities)</b>	<b>Tier 1a (can be achieved with predicted supply)</b>					
	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (two freshes for three days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (three freshes for three days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (five freshes for five days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>	<ul style="list-style-type: none"> <li>• Winter/spring low flow</li> <li>• Winter/spring freshes (five freshes for seven days each)</li> <li>• Summer/autumn low flow</li> <li>• Summer/autumn freshes (three freshes)</li> </ul>		
	<b>Tier 1b (supply deficit)</b>					

Planning scenario	Drought	Very dry	Dry	Average	Wet	
<b>Lower Burnt Creek</b>						
Potential environmental watering – tier 1 (high priorities)	• N/A		• Freshes (three freshes) • Bankfull fresh	• Freshes (two freshes) • Bankfull fresh		
<b>Bungalally Creek</b>						
Potential environmental watering – tier 1 (high priorities)	• N/A			• Bankfull fresh		
<b>Lower Mount William Creek<sup>3</sup></b>						
Potential environmental watering – tier 1 (high priorities)	• Year-round low flow • Summer/autumn freshes (three freshes of two to seven days)			• Year-round low flow • Summer/autumn freshes (three freshes of two to seven days)	• Year-round low flow • Winter/spring fresh (one fresh) • Summer/autumn freshes (three freshes of three to seven days)	
<b>Upper Mount William Creek</b>						
Potential environmental watering – tier 1 (high priorities)	• Top up pools					
<b>Dock Lake</b>						
Potential environmental watering – tier 1 (high priorities)	• N/A				• Winter/spring partial fill	
<b>Ranch Billabong</b>						
Potential environmental watering – tier 1 (high priorities)	• Fill and top-ups (year-round)					
Possible volume of water for the environment required to achieve objectives	• 21,099 ML (tier 1a) • 3,863 ML (tier 1b)	• 21,099 ML (tier 1a) • 3,863 ML (tier 1b)	• 27,405 ML (tier 1a) • 6,703 ML (tier 1b)	• 28,116 ML (tier 1a) • 5,387 ML (tier 1b)	• 23,922 ML (tier 1) <sup>4</sup> • 3,799 ML (tier 1b)	

Planning scenario	Drought	Very dry	Dry	Average	Wet
<b>Priority carryover requirements for 2025-26</b>	<ul style="list-style-type: none"> <li>The VEWH will work with the Wimmera and Glenelg Hopkins CMAs to refine a carryover target for 2025-26 once winter and spring storage inflows are known and the potential resource outlook for the following year is clear.</li> </ul>				

- 1 Volumes represent the available water for the Wimmera and Glenelg systems under the shared *Wimmera and Glenelg Rivers Environmental Entitlement 2010* and are the total of carryover and estimated new allocations.
- 2 Volumes represent the available water for the Wimmera system held by the Commonwealth Environmental Water Holder under the *Bulk Entitlement (Wimmera and Glenelg Rivers – GWMWater) Order 2010* and are the total of carryover and estimated new allocations.
- 3 All deliveries targeting Wimmera River reach 4 are expected to provide a flow that meets the requirements of this reach. Demands for water for the environment for these actions are zero as a result.
- 4 Models used to estimate the possible volume of water for the environment required to achieve objectives are insufficiently specific about the required volume in the wetter planning scenarios, and they likely overstate the potential demands. Demands in wet conditions would likely be much lower than this as the natural flows would meet the requirements for most actions.

## 4.4 Wimmera-Mallee wetlands system

**Waterway manager** – Mallee, North Central and Wimmera catchment management authorities

**Storage manager** – Grampians Wimmera Mallee Water

**Environmental water holder** – Victorian Environmental Water Holder

### System overview

**The Wimmera-Mallee wetlands include 52 sites on public and private land spread across north-west Victoria (Figure 4.4.1). From the early 20th century until the construction of the Wimmera-Mallee Pipeline Project (WMPP) in 2010, the deeper areas of these wetlands received water most years from the open channels associated with the Wimmera Mallee Domestic and Stock Channel System.**

The WMPP replaced stock and domestic supply dams with tanks and the open-channel distribution system with pipelines to improve water efficiency. A portion of the water savings from the WMPP was converted to an environmental entitlement to improve

the condition of the area’s flow-stressed rivers, creeks and wetlands; the rest was used to create regional development opportunities and boost supply reliability for other users. The WMPP reduced the amount of open-water habitat in predominantly agricultural areas formerly supplied by the open-channel system, so a separate 1,000 ML environmental entitlement was created to water some of the wetlands that were previously supplied through the channel system. Fifty-two priority wetlands can receive water from this environmental entitlement.

Water for the environment can only be delivered to the wetlands when there is sufficient capacity in the Wimmera-Mallee Pipeline system, which can be affected by demand from other pipeline customers. The North Central, Mallee and Wimmera CMAs work closely with Grampians Wimmera Mallee Water and land managers (including Parks Victoria, the Department of Energy, Environment and Climate Action and private landowners) to take account of pipeline capacity constraints when ordering environmental deliveries to wetlands.



## Environmental values

There are many wetland types in the Wimmera-Mallee wetlands system, including freshwater meadows, open freshwater lakes and freshwater marshes. This diversity provides various wetland habitats for plants and animals across the Wimmera-Mallee region. The wetlands also vary in size and support different vegetation communities. Some support native waterbird populations, including brolgas, egrets, blue-billed ducks, freckled ducks, Australian painted snipes and glossy ibis. The vulnerable growling grass frog, turtles and many other native animals may use the wetlands as drought refuges and drinking holes. Rare and vulnerable vegetation species (such as spiny lignum, ridged water-milfoil, chariot wheels, cane grass and the recently reintroduced marbled marshwort) are also present in some wetlands.

Falla Dam is being trialled as a reserve site for critically endangered Murray hardyhead as part of the Murray Hardyhead Native Fish Recovery Plan. Some Murray hardyhead were introduced to Falla Dam in November 2023 with the intention of them surviving and being used to restock populations at sites outside the Wimmera-Mallee wetlands system that are adversely impacted by drought or other disturbances in the future.

### Environmental objectives in the Wimmera-Mallee wetlands



**A1** – Maintain the frog population



**B1** – Maintain populations of waterbirds and other native birds by providing resting, feeding and breeding habitat



**F1** – Maintain the translocated small-bodied native fish population



**T1** – Maintain the turtle population



**TA1** – Provide watering holes for native animals and terrestrial birds across the landscape



**V1** – Maintain the condition of aquatic and fringing plants, including lignum, river red gum and black box communities and improve the diversity of wetland vegetation communities

## Traditional Owner cultural values and uses

The broad geographic area that includes the Wimmera-Mallee wetlands has a longstanding cultural connection for the Traditional Owners of the region, including groups represented by the Barengi Gadjin Land Council Aboriginal Corporation and the Dja Dja Wurrung Clans Aboriginal Corporation (DJAARA) and Barapa Barapa Traditional Owners. Some sites have artefacts and scar trees recorded in or adjacent to them, and further cultural surveys could better inform the management of water for the environment at those sites.

The Barengi Gadjin Land Council (BGLC) is the Registered Aboriginal Party for a significant land area of the Wimmera-Mallee wetlands. The Barengi Gadjin Land Council represents the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagalk peoples.

In May 2022, the BGLC and the North Central CMA undertook a cultural values assessment at Creswick Swamp. Cultural values identified at the site include river red gums and eastern grey kangaroos. In September 2023, the BGLC and the North Central CMA met at Creswick Swamp with Parks Victoria, the Department of Energy, Environment and Climate Action and Banyena Landcare. The group conducted a site assessment and discussed how a cultural burn at Creswick Swamp in 2024-25 could complement environmental watering by suppressing weeds and encouraging native vegetation.

BGLC provided the following statement to the North Central CMA after exploring Creswick Swamp.

“We are strengthening our commitment to caring for the Country and preserving its ecological balance. The information we gather and share will prove instrumental in safeguarding the survival of the various species that call this area home. Even during our walk, we witnessed the presence of lizards and even encountered a tiger snake within the wildlife reserve. Such encounters emphasise the importance of our collective efforts in maintaining the welfare of these species.”

In early 2024, BGLC and the Wimmera, North Central and Mallee CMAs attended a Wimmera-Mallee wetlands community field day. They visited six sites along the Wimmera-Mallee Pipeline and discussed proposed environmental watering for 2024-25. The day provided an opportunity for BGLC to communicate important cultural values and discuss how environmental water can help protect those values.

The Mallee CMA's engagement with BGLC has increased to include discussions about healing Country and seasonal watering proposals for 2024-25.

In recent years, the BGLC water officers and the Wimmera CMA have undertaken monitoring at Sawpit Swamp Wildlife Reserve, Wal Wal Swamp Wildlife Reserve, Carapugna (Watchem Bushland Reserve) and Mutton Swamp Wildlife Reserve, helping to understand environmental flow deliveries and values at the sites.

The Barengi Gadjin Land Council has discussed the significance of the wetlands and their aspiration to undertake work at these sites in future and provided the following statement to the Mallee CMA when discussing environmental watering.

"The Wimmera-Mallee is living cultural landscape, and there is a lack of recorded data regarding the cultural values over many sections of the Wimmera-Mallee Pipeline. Several highly significant places are outlined through our Country Plan, but like all places across our Country, the rivers, creeks, lakes, wetlands and swamps and all other landscape features in this area are of high cultural significance. We wish to care for Country again through our traditional land management practices and revive and share the ancient narrative of this area. Mapping the cultural values of places along the Wimmera-Mallee Pipeline will be essential in contributing to integrated catchment management.

"We are unable to identify places of particular cultural values and uses confidently until Aboriginal Water Assessment/ Cultural Heritage Surveys are systematically undertaken across Wimmera-Mallee Pipeline sites. All the swamps, wetlands and soaks of this area are of high cultural significance as they are linked to Traditional trading routes that extend in all directions. It is essential that all of these places are managed correctly and water quality and biodiversity are improved."

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 4.4.1**, the Mallee, North Central and Wimmera CMAs considered how environmental flows could support values and uses, including:

- water-based recreation (such as fishing, swimming and yabbying)
- riverside recreation and amenity (such as birdwatching, duck and quail hunting, photography, camping, picnicking and walking)
- community events and tourism (such as orienteering and citizen science, including collecting data about bird species and abundance, frog species and microbat recordings).

## 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 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 environmental water in Victoria.






**Table 4.4.1** describes the potential environmental watering actions in 2024-25, 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.










Delivery of water for the environment to the Wimmera-Mallee wetlands is affected by various constraints associated with delivery infrastructure, surrounding private land and competing demands on pipeline capacity. This means most sites don't have a target wetting and drying cycle, which shapes planning for most other wetlands in this plan. Instead, the expected watering effects outlined here describe the overall outcomes expected from watering multiple wetlands across each CMA region during 2024-25.

Some sites have a deep central dam that can provide a near-permanent water source for aquatic vegetation, frogs, waterbirds and turtles, as well as shallow marsh or floodplain woodland areas that are inundated when the dam overtops. In some circumstances, water for the environment may be used to overtop the central dams to support wetland vegetation and create additional foraging opportunities in the surrounding wetland/floodplain habitats.

**Table 4.4.1** Wimmera-Mallee wetlands potential environmental watering actions, expected effects and environmental objectives

Potential environmental watering action	Expected effects	Environmental objectives	
<b>Mallee wetlands</b>			
Barbers Swamp	<ul style="list-style-type: none"> <li>Stimulate the growth of aquatic and fringing vegetation and allow the plants, including ridged water-milfoil, black box and spiny lignum, to complete their life cycles</li> </ul>		
Broom Tank		A1	B1
Bull Swamp	<ul style="list-style-type: none"> <li>Provide a permanent water source for refuge and to support feeding and breeding opportunities for frogs, turtles, waterbirds and terrestrial species</li> </ul>		
Chiprick		T1	TA1
Clinton Shire Dam			V1
Cokum Bushland Reserve			
Considines			
Coundons Wetland			
Cronomby Tanks			
D Smith Wetland			
Goulds Reserve			
Greens Wetland			
Homelea			
J Ferrier Wetland			
John Ampt			
Kath Smith Dam			
Lake Danaher Bushland Reserve			
Mahoods Corner			
Morton Plains Reserve			

Potential environmental watering action	Expected effects	Environmental objectives	
Newer Swamp	<ul style="list-style-type: none"> <li>Stimulate the growth of aquatic and fringing vegetation and allow the plants, including ridged water-milfoil, black box and spiny lignum, to complete their life cycles</li> </ul>		
Pam Juergens Dam		A1	B1
Part of Gap Reserve	<ul style="list-style-type: none"> <li>Provide a permanent water source for refuge and to support feeding and breeding opportunities for frogs, turtles, waterbirds and terrestrial species</li> </ul>		
Paul Barclay		T1	TA1
Poyner			
R Ferriers Dam			
Rickard Glenys Dam			
Roselyn Wetland			
Shannons Wayside			
Tchum Lake – dam (Tcham Lakes Lake Reserve)			
Tchum Lake – wetland (Tcham Lakes Lake Reserve)			
Uttiwillock Wetland			
<b>North Central wetlands</b>			
Chirrup Swamp	<ul style="list-style-type: none"> <li>Provide a permanent water source for refuge and to support feeding and breeding opportunities for frogs, waterbirds and turtles</li> </ul>		
Corack Lake		A1	T1
Creswick Swamp	<ul style="list-style-type: none"> <li>Maintain varying depths of water to support aquatic and fringing plants' life cycles</li> </ul>		
Davis Dam		B1	V1
Jeffcott Wildlife Reserve	<ul style="list-style-type: none"> <li>Maintain water levels to prolong wetting and ensure successful waterbird breeding events if they start</li> </ul>		
Jesse Swamp	<ul style="list-style-type: none"> <li>Wet black box and rare cane grass to allow plants to complete their life cycles and support juvenile plants</li> <li>Maintain varying depths of water to support the life cycles of aquatic and fringing plants</li> </ul>		TA1
Falla Dam	<ul style="list-style-type: none"> <li>Maintain the permanent water and submerged vegetation (ruppia) in a condition that can support translocated Murray hardyhead</li> </ul>		F1

Potential environmental watering action	Expected effects	Environmental objectives	
<b>Wimmera wetlands</b>			
Carapugna	<ul style="list-style-type: none"> <li>Provide a permanent water source for refuge and to support feeding and breeding opportunities for frogs, turtles, waterbirds and terrestrial species</li> </ul>		
Challambra Swamp		A1	B1
Crow Swamp	<ul style="list-style-type: none"> <li>Stimulate the growth of aquatic and fringing vegetation and allow the plants, including chariot wheels, sneezeweed, ridged water-milfoil and spiny lignum, to complete their life cycles</li> </ul>		
Fieldings Dam		T1	TA1
Harcoans Swamp			
Krong Swamp			
Mutton Swamp			
Opies Dam			
Pinedale			
Sawpit Swamp			
Schultz/Koschitzke			
Tarkedia Dam			
Wal Wal Swamp			
			V1

## Scenario planning

**Table 4.4.2** outlines potential environmental watering and expected water use in a range of planning scenarios.

Rainfall in the Wimmera-Mallee during 2023-24 was close to the long-term average, and many of the Wimmera-Mallee wetlands received some local catchment run-off and retained water from 2022-23 due to lower evaporation rates. Wetlands that dropped below target levels in summer 2023-24 were topped up using environmental water in autumn 2024. As a result, most Wimmera-Mallee wetlands are expected to start 2024-25 with moderate-to-high water levels.

The wetlands proposed to be watered in each planning scenario in 2024-25 were determined according to the following principles. In drought conditions, the highest priority is to maintain permanent water in the deeper sections of the wetlands to provide drought refuge for waterbirds, frogs, turtles and terrestrial animals and to support the growth and life cycles of wetland plants. In wetter planning scenarios, water for the environment may be delivered, depending on pipeline system capacity, to water

larger areas of a wetland. Large rainfall events and catchment inflows partially or entirely fill some wetlands in the average and wet planning scenarios, and water for the environment may be used in those cases to top up, fill or overtop wetlands to improve fringing wetland plant communities and provide additional habitat for waterbirds, frogs and turtles.

Kath Smith Dam and Sawpit Swamp received significant inflows during 2022-23 and 2023-24 and spilled into surrounding wetland areas. These sites are expected to hold water through winter/spring 2024-25 and not be actively watered in any planning scenario during 2024-25 to allow them to draw down and dry through the remainder of the year.

Five sites have been added to planning for 2024-25 after being deliberately drawn down in 2023-24. Part of Gap Reserve (Stephen Smith Dam), Round Swamp Bushland Reserve (Marlbed Lake Swamp/Newer Swamp) and Towma (Lake Marlbed) are all expected to receive environmental water in all planning scenarios, while Shannons Wayside and Goulds Reserve will receive water in the dry-to-wet and average and wet planning scenarios, respectively.

Falla Dam is now being managed to support a translocated population of endangered Murray hardyhead. Therefore, it must be topped up yearly, as it is in all planning scenarios. The proposed water regime at Falla Dam aims to maintain a permanent body of water with adequate salinity levels and submerged vegetation (ruppia) to provide cover and breeding habitat for the fish. Twenty-eight other wetlands are also likely to be watered in all planning scenarios to achieve individual objectives at those sites and to maintain a range of wetland habitats across the region.

Broom Tank, Chiprick Bushland Reserve, Coundons Wetland, Homelea, Lake Danaher Bushland Reserve, Shannons Wayside and Tchum Lake – Dam (Tcham Lakes Lake Reserve) will potentially be topped up in dry-to-wet conditions but are a low priority for watering in the drought planning scenario because they generally dry up quickly in very hot and dry conditions and are not effective drought refuges. Krong Swamp is also a poor drought refuge and will only potentially be watered in wet conditions.

The high water levels in many wetlands at the start of the year and high environmental water allocations will provide an opportunity to overtop some of the Wimmera-Mallee wetlands to improve the condition of surrounding wetland vegetation communities and provide additional

feeding and breeding opportunities for frogs and possibly waterbirds. Overtopping flows may be provided at four wetlands in all planning scenarios to consolidate the environmental benefits of recent wet conditions. If sufficient environmental water is available, additional wetlands will be overtopped in the dry and average (nine further sites) and wet planning scenarios (10 further sites).

Allocations to the environmental entitlement that supplies the wetlands in the Wimmera-Mallee wetland system are highly unreliable, averaging just 381 ML a year over the life of the entitlement. The ability to carry over water from one year to another allows waterway managers and the VEWH to manage the system in dry periods effectively. Experience shows that high allocations in wet and average years (such as 100 per cent in 2022-23 and 49 per cent in 2023-24) are needed to support watering actions for multiple years if dry conditions return. The forecast carryover volume at the end of 2023-24 will help meet expected demands across the Wimmera-Mallee wetlands for at least the next two years in all planning scenarios. The North Central, Mallee and Wimmera CMAs and the VEWH will monitor climatic conditions and seasonal allocation outlooks during 2024-25 to inform a carryover target in the Wimmera-Mallee wetland system for 2025-26.

**Table 4.4.2** Wimmera-Mallee wetland system environmental watering planning scenarios

<b>Planning scenario</b>	<b>Drought</b>	<b>Dry</b>	<b>Average</b>	<b>Wet</b>
<b>Predicted supply of water for the environment</b>	• 1,034 ML	• 1,034 ML	• 1,284 ML	• 2,034 ML
<b>Potential environmental watering – tier 1 (high priorities)</b>	<ul style="list-style-type: none"> <li>• Barbers Swamp</li> <li>• Bulls Swamp</li> <li>• Carapugna (Watchem Bushland Reserve)</li> <li>• Challambra Swamp</li> <li>• Chirrup Swamp*</li> <li>• Clinton Shire Dam</li> <li>• Cokum Bushland Reserve</li> </ul>	<ul style="list-style-type: none"> <li>• Barbers Swamp</li> <li>• Broom Tank</li> <li>• Bulls Swamp</li> <li>• Carapugna (Watchem Bushland Reserve)*</li> <li>• Challambra Swamp*</li> <li>• Chirrup Swamp*</li> <li>• Chiprick Bushland Reserve</li> </ul>	<ul style="list-style-type: none"> <li>• Barbers Swamp</li> <li>• Broom Tank</li> <li>• Bulls Swamp*</li> <li>• Carapugna (Watchem Bushland Reserve)*</li> <li>• Challambra Swamp*</li> <li>• Chirrup Swamp*</li> <li>• Chiprick Bushland Reserve</li> </ul>	<ul style="list-style-type: none"> <li>• Barbers Swamp</li> <li>• Broom Tank</li> <li>• Bulls Swamp*</li> <li>• Carapugna (Watchem Bushland Reserve)*</li> <li>• Challambra Swamp*</li> <li>• Chirrup Swamp*</li> <li>• Chiprick Bushland Reserve</li> </ul>

Planning scenario	Drought	Dry	Average	Wet
(continued) <b>Potential environmental watering – tier 1 (high priorities)</b>	<ul style="list-style-type: none"> <li>• Corack Lake*</li> <li>• Creswick Swamp</li> <li>• Cronomby Tanks</li> <li>• Crow Swamp</li> <li>• D Smith Wetland</li> <li>• Davis Dam*</li> <li>• Falla Dam</li> <li>• Fieldings Dam</li> <li>• Greens Wetland</li> <li>• Harcoans Swamp (Burrereo Bushland Reserve)</li> <li>• J Ferrier Wetland</li> <li>• Jeffcott Wildlife Reserve</li> <li>• Jesse Swamp*</li> <li>• John Ampt (House Dam)</li> <li>• Mahoods Corner</li> <li>• Morton Plains Reserve</li> <li>• Mutton Swamp</li> <li>• Opie’s Dam</li> <li>• Pam Juergens Dam</li> <li>• Part of Gap Reserve (Stephen Smith Dam)</li> <li>• Paul Barclay</li> <li>• Pinedale</li> <li>• Poyner</li> <li>• R Ferriers Dam</li> <li>• Rickard Glenys Dam</li> </ul>	<ul style="list-style-type: none"> <li>• Clinton Shire Dam</li> <li>• Cokum Bushland Reserve</li> <li>• Corack Lake*</li> <li>• Coundons Wetland</li> <li>• Creswick Swamp</li> <li>• Cronomby Tanks</li> <li>• Crow Swamp*</li> <li>• D Smith Wetland</li> <li>• Davis Dam*</li> <li>• Falla Dam</li> <li>• Fieldings Dam</li> <li>• Greens Wetland</li> <li>• Harcoans Swamp (Burrereo Bushland Reserve)*</li> <li>• Homelea</li> <li>• J Ferrier Wetland</li> <li>• Jeffcott Wildlife Reserve</li> <li>• Jesse Swamp*</li> <li>• John Ampt (House Dam)</li> <li>• Lake Danaher Bushland Reserve</li> <li>• Mahoods Corner</li> <li>• Morton Plains Reserve</li> <li>• Mutton Swamp*</li> <li>• Opie’s Dam</li> <li>• Pam Juergens Dam</li> <li>• Part of Gap Reserve (Stephen Smith Dam)</li> </ul>	<ul style="list-style-type: none"> <li>• Clinton Shire Dam</li> <li>• Cokum Bushland Reserve</li> <li>• Considines</li> <li>• Corack Lake*</li> <li>• Coundons Wetland</li> <li>• Creswick Swamp</li> <li>• Cronomby Tanks</li> <li>• Crow Swamp*</li> <li>• D Smith Wetland</li> <li>• Davis Dam*</li> <li>• Falla Dam</li> <li>• Fieldings Dam</li> <li>• Goulds Reserve</li> <li>• Greens Wetland</li> <li>• Harcoans Swamp (Burrereo Bushland Reserve)*</li> <li>• Homelea</li> <li>• J Ferrier Wetland</li> <li>• Jeffcott Wildlife Reserve</li> <li>• Jesse Swamp*</li> <li>• John Ampt (House Dam)</li> <li>• Lake Danaher Bushland Reserve</li> <li>• Mahoods Corner</li> <li>• Morton Plains Reserve</li> <li>• Mutton Swamp*</li> <li>• Opie’s Dam</li> <li>• Pam Juergens Dam</li> </ul>	<ul style="list-style-type: none"> <li>• Clinton Shire Dam</li> <li>• Cokum Bushland Reserve</li> <li>• Considines</li> <li>• Corack Lake*</li> <li>• Coundons Wetland</li> <li>• Creswick Swamp</li> <li>• Cronomby Tanks</li> <li>• Crow Swamp*</li> <li>• D Smith Wetland</li> <li>• Davis Dam*</li> <li>• Falla Dam</li> <li>• Fieldings Dam</li> <li>• Goulds Reserve*</li> <li>• Greens Wetland</li> <li>• Harcoans Swamp (Burrereo Bushland Reserve)*</li> <li>• Homelea</li> <li>• J Ferrier Wetland</li> <li>• Jeffcott Wildlife Reserve</li> <li>• Jesse Swamp*</li> <li>• John Ampt (House Dam)</li> <li>• Krong Swamp*</li> <li>• Lake Danaher Bushland Reserve</li> <li>• Mahoods Corner</li> <li>• Morton Plains Reserve</li> <li>• Mutton Swamp*</li> <li>• Opie’s Dam</li> <li>• Pam Juergens Dam</li> </ul>

Planning scenario	Drought	Dry	Average	Wet
(continued) <b>Potential environmental watering – tier 1 (high priorities)</b>	<ul style="list-style-type: none"> <li>Roselyn Wetland/Reids Dam</li> <li>Round Swamp Bushland Reserve (Marlbed Lake Swamp/Newer Swamp)</li> <li>Schultz/Koschitzke</li> <li>Tarkedia Dam</li> <li>Towma (Lake Marlbed)</li> <li>Uttiwillock Wetland</li> <li>Wal Wal Swamp</li> </ul>	<ul style="list-style-type: none"> <li>Paul Barclay</li> <li>Pinedale*</li> <li>Poyner</li> <li>R Ferriers Dam</li> <li>Rickard Glenys Dam</li> <li>Roselyn Wetland/Reids Dam</li> <li>Round Swamp Bushland Reserve (Marlbed Lake Swamp/Newer Swamp)</li> <li>Schultz/Koschitzke*</li> <li>Shannons Wayside</li> <li>Tarkedia Dam*</li> <li>Tchum Lake – Dam (Tcham Lakes Lake Reserve)</li> <li>Towma (Lake Marlbed)</li> <li>Uttiwillock Wetland</li> <li>Wal Wal Swamp*</li> </ul>	<ul style="list-style-type: none"> <li>Part of Gap Reserve (Stephen Smith Dam)</li> <li>Paul Barclay</li> <li>Pinedale*</li> <li>Poyner</li> <li>R Ferriers Dam</li> <li>Rickard Glenys Dam</li> <li>Roselyn Wetland/Reids Dam</li> <li>Round Swamp Bushland Reserve (Marlbed Lake Swamp/Newer Swamp)</li> <li>Schultz/Koschitzke*</li> <li>Shannons Wayside</li> <li>Tarkedia Dam*</li> <li>Tchum Lake – Dam (Tcham Lakes Lake Reserve)</li> <li>Tchum Lake – Wetland (Tcham Lakes Lake Reserve)</li> <li>Towma (Lake Marlbed)</li> <li>Uttiwillock Wetland*</li> <li>Wal Wal Swamp*</li> </ul>	<ul style="list-style-type: none"> <li>Part of Gap Reserve (Stephen Smith Dam)</li> <li>Paul Barclay</li> <li>Pinedale*</li> <li>Poyner</li> <li>R Ferriers Dam</li> <li>Rickard Glenys Dam</li> <li>Roselyn Wetland/Reids Dam</li> <li>Round Swamp Bushland Reserve (Marlbed Lake Swamp/Newer Swamp)</li> <li>Schultz/Koschitzke*</li> <li>Shannons Wayside</li> <li>Tarkedia Dam*</li> <li>Tchum Lake – Dam (Tcham Lakes Lake Reserve)</li> <li>Tchum Lake – Wetland (Tcham Lakes Lake Reserve)</li> <li>Towma (Lake Marlbed)</li> <li>Uttiwillock Wetland*</li> <li>Wal Wal Swamp*</li> </ul>
<b>Possible volume of water for the environment required to achieve objectives</b>	<ul style="list-style-type: none"> <li>121 ML</li> </ul>	<ul style="list-style-type: none"> <li>173 ML</li> </ul>	<ul style="list-style-type: none"> <li>284 ML</li> </ul>	<ul style="list-style-type: none"> <li>340 ML</li> </ul>
<b>Priority carryover requirements for 2025-26</b>	<ul style="list-style-type: none"> <li>800 ML</li> </ul>			

\* Delivery to the site is expected to provide temporary, shallow inundation of at least part of the surrounding wetland or floodplain.