# Seasonal Watering Proposal


Lake Bulla

## 2025-26

## Hattah Lakes

mallee
catchment management authority

# Document Control

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**Contact**
For further information on any of the information contained within this document contact:

Nicole Wishart

Executive Manager Waterways, Wetlands and Statutory Functions, Mallee Catchment Management Authority

# Acknowledgement of Country

Mallee Catchment Management Authority (CMA) acknowledges and respects Traditional Owners, Aboriginal communities and organisations. We recognise the diversity of their cultures and the deep connections they have with Victoria's lands and waters.

We value partnerships with them for the health of people and country.

Mallee CMA Board, management and staff pay their respects to Elders past, present and emerging and recognise the primacy of Traditional Owners' obligations, rights and responsibilities to use and care for their traditional lands and waters.



Cover image: Lake Bulla, Hattah-Kulkyne National Park

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# 1 Context

Mallee Catchment Management Authority is pleased to present the final 2025-26 Hattah Lakes Seasonal Watering Proposal (SWP).

This SWP identifies the Mallee Catchment Management Authority's (CMA's) proposed priorities for use of managed environmental water for the Hattah Lakes in 2025-26. Information from this document has informed development of the Seasonal Watering Plan 2025-26, available on the Victorian Environmental Water Holder (VEWH) website from 30 June 2025. The Seasonal Watering Plan is the state-wide plan outlining where, when, and why water for the environment can be delivered throughout Victorian waterways, including the Hattah Lakes.

The actions outlined in this proposal are informed by ecological objectives and management goals outlined in the Hattah Environmental Water Management Plan (EWMP). Other environmental themes guiding site selection include providing and supporting refuge and habitat, maintaining site condition and creating resilience. This ensures the ability of sites to 'bounce back' and respond when conditions become more favourable (i.e. flooding/high river). Targeted flora and fauna include inundation-dependent wetland Ecological Vegetation Class (EVCs) and terrestrial vertebrates, as well as a focus on the requirements of waterbirds and frogs, such as habitat and food resources.

Planning for environmental watering actions incorporates information around required water regimes, current condition, plus the provision and maintenance of habitat for water dependent species with critical needs.

In addition to providing water for environmental benefit, an important part of the watering regime is the drying phase. As the southern lakes in the Hattah Lakes system have been inundated five out of the last five years, the lakes now require time to dry out. There are no scenarios where water delivery is planned for Hattah Lakes during 2025-26, except under a wet scenario when regulating structures would be kept open. The drying phase allows vegetation, particularly on the littoral zone, to grow and set seed. In addition, any plants that require drier soil conditions will have the opportunity to germinate.

Key areas of the proposal are detailed below:

- Scope of environmental watering – Describes the intention to drawdown the wetlands in 2025-26
- Risk management – This is an important chapter of the proposal and will be based on the outcomes from the 2025 Shared Operational Risk Workshop – in particular the risk management table.

This document has been developed in consultation with Traditional Owner groups, various community groups, Parks Victoria, Goulburn Murray Water (GMW), the Department of Energy, Environment and Climate Action (DEECA) and Victorian Environmental Water Holder (VEWH). We are grateful for their time and input.

# 2 System Overview

The Hattah-Kulkyne National Park is situated in north-west Victoria, adjacent to the Murray River (Figure 2.1). The national park contains a complex of more than 20 semi-permanent freshwater lakes known collectively as the Hattah Lakes.

The ecology of the Hattah Lakes and the surrounding floodplain is strongly influenced by the flooding regimes of the Murray River. The system fills when there is high flow in the Murray River, and some lakes hold water for several years after floods recede. Regulation of the Murray River has significantly reduced the frequency and duration of small to medium-sized natural floods in the Hattah Lakes system. Over time, this has degraded vegetation communities and reduced the diversity and abundance of animals that use the vegetation and wetlands for habitat and food.

The Hattah Lakes complex can be broadly divided into the southern Hattah Lakes, which contain permanent to semi- permanent wetlands, and the higher-elevation northern Hattah Lakes, which are mostly episodic wetlands.

The Messenger, Oateys and Cantala regulators allow water to flow between the Murray River and the Hattah Lakes. When the flow in the Murray River is about 26,000 ML per day, water begins to flow through Messengers regulator into Chalka Creek and through the Hattah Lakes complex. A permanent pump station can deliver up to 1,000 ML per day to the southern Hattah Lakes through Chalka Creek. The regulators and pump station are used in combination with several small, constructed levees to deliver a pattern of flooding to the lakes system that is recommended to improve environmental outcomes. Lake Kramen is in the south-east area of Hattah-Kulkyne National Park and is disconnected from the main Hattah Lakes complex. The Hattah Lakes pump station can deliver up to 145 ML per day to Lake Kramen. New infrastructure proposed under the Victorian Murray Floodplain Restoration Project (VMFRP) will allow water to reach additional wetlands and floodplain areas in the northern Hattah Lakes.

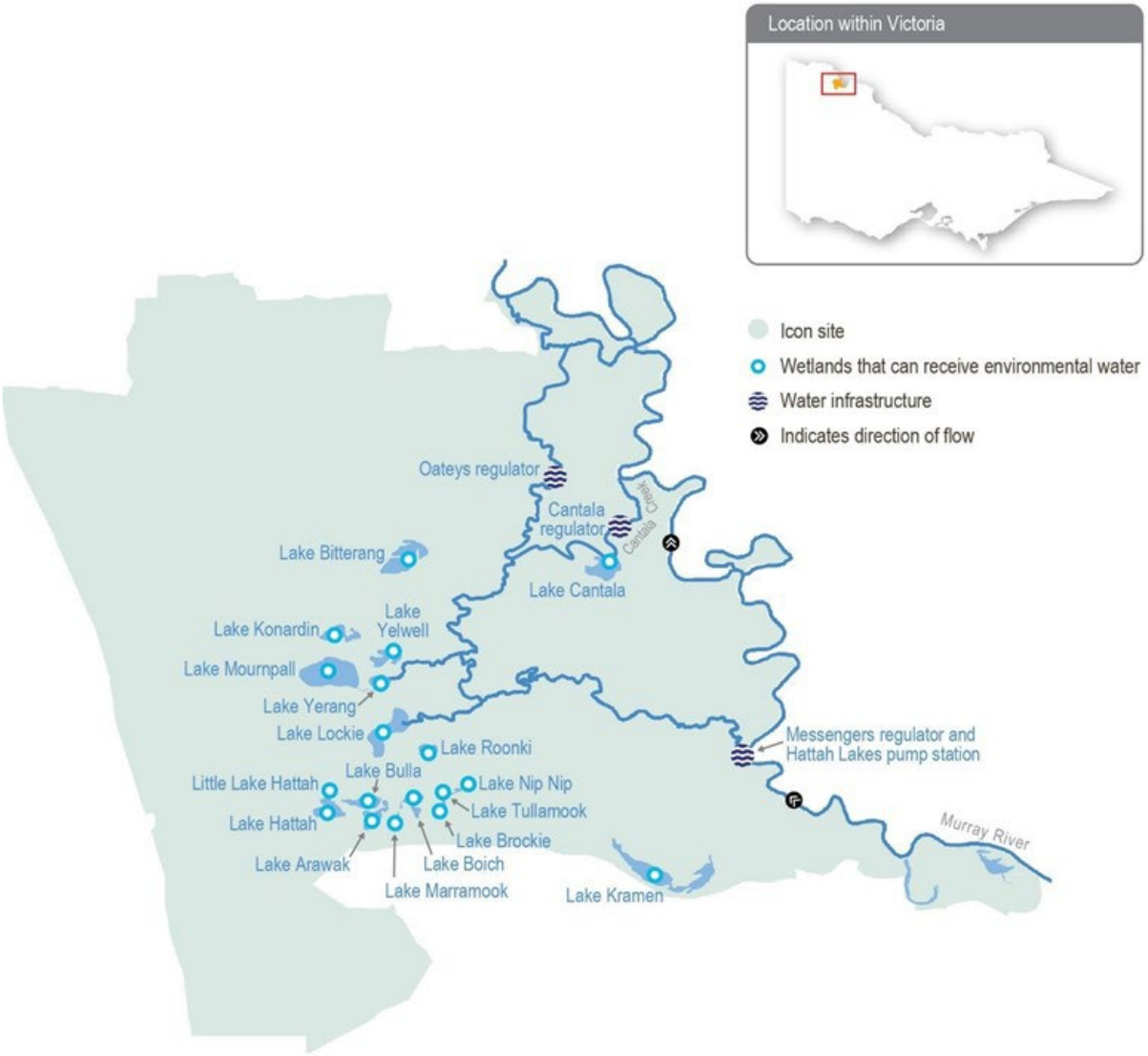


*Figure 2-1: Hattah Lakes*

# 3 Traditional Owner Cultural Values and Uses

Located on the border of two documented language groups, Latji Latji and Jari Jari, the Hattah Lakes system is highly significant in terms of Aboriginal cultural values. Key stakeholders with an interest in Hattah Lakes include: Latji Latji, Latji Latji Mumthelang, Tati Tati Kaiejin, Tati Tati Land and Water, Wadi Wadi Land and Water, Murray Valley Aboriginal Corporation, Gilby Corporation, Dadi Dadi Weki Weki, Culpra Milli, Nyeri Nyeri and Munatunga Elders.

More than 1,000 archaeological sites at Hattah Lakes are registered on the Aboriginal Cultural Heritage Register and Information System. Freshwater lakes and wetlands provide focal points for trade and cultural exchanges among the region's Traditional Owners. Local Aboriginal communities maintain strong connections to the land and its resources, including the use of native species for food and medicinal purposes.

Mallee CMA held five environmental water planning sessions with Traditional Owners from September to December 2024. Engagement events were held with Tati Tati Land and Water, Wadi Wadi Land and Water, Dadi Dadi/Weki Weki, Culpra Milli, Munatunga Elders, Gilbie Corporation, Njeri Njeri and Kilpara Mukwara (formerly Latje Latje Mumthelang). At each event, Mallee CMA staff were able to express the immense value Traditional Owner input brought to the 2024-25 environmental water program.

During September/October, an overview of the spring environmental water plan was provided to Traditional Owners, along with a proposal to allow the lakes to draw down throughout 2025-26 to benefit various grasses, herbs, birds and animals, whilst removing carp.

Traditional Owners discussed their values and aspirations for environmental water management at Hattah Lakes in 2025-26 and identified activities and issues of importance to them, including: fishing and camping; keeping water in the lakes to allow plants to grow and thrive, and for birds and animals to breed and flourish; protecting threatened plant and animal/bird species; and ensuring the protection of burial sites from the impacts of water.

A Mallee CMA Talk Water event with Traditional Owners was held on 6 November 2024 to work through current events, future planning**,** the importance of various bird species at the lakes, and the benefits of letting the lakes dry for a period of time before rewatering.

Further discussion included yabbies, birds, plants, the protection of Cultural Heritage, and ensuring burial sites are not exposed to damage and weeds. Other topics of discussion included on-Country visits to view the sites before (and after) environmental water is delivered to assess environmental and Cultural Heritage impacts.

Two environmental water planning events were held in December 2024. Positive feedback was provided regarding the current planning for water delivery (including drawdown practices). All stakeholders agreed they would like to be more involved in monitoring the environmental and cultural impacts of environmental water delivery.

*Table 3-1: Cultural objectives relevant to the Hattah Lakes.*

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

# 4 Social, Recreational and Economic Values and Uses

In planning the potential environmental watering actions in Table 7.1, Mallee CMA considered how environmental flows could support values and uses, including:

- water-based recreation (such as fishing, kayaking and swimming)
- riverside recreation and amenity (such as birdwatching, camping, photography and walking)
- community events and tourism (educational opportunities, including bushwalking, birdwatching and bug hunting; local school education programs; Melbourne-based schools' educational excursions; and tours involving kayaking, bike riding and camping)
- socioeconomic benefits (such as commercial beekeepers who rest bees away from horticultural orchards in native flowering trees around the lakes, multiple ecotourism operators who benefit directly when the lakes contain water, social wellbeing generated by connecting with nature, and social gatherings).

The Hattah Lakes system is a high-profile tourism destination, providing important recreation, amenity and cultural opportunities for tourists and local community members. It is a destination that is both recommended and promoted at the Mildura Information Centre, on the 'Visit Mildura' website and through Parks Victoria, the land manager. Shared benefit considerations for the 2025-26 season are presented in Table 4.1.

The condition of the Hattah Lakes directly affects social and economic outcomes for businesses, residents and visitors alike. When environmental conditions deteriorate, as they did during the millennium drought, the values for community deteriorated. Recreation and tourism-based industries suffer as visitor numbers drop, while amenity and other social and cultural values derived from the Hattah Lakes decline. The improvement in environmental conditions, through delivery of environmental water outside times of natural flooding, has a positive relationship on improved social and economic outcomes. Specifically, this creates improved amenity and recreational opportunities, as well as job and income growth in the tourism sector.

Feedback regarding the social and recreational values of Hattah Lakes clearly indicates it is valued by community members as a site where they can connect with nature and, as such, is important to health and wellbeing. Through conversations with Mallee CMA staff members and via formal surveys, it is evident community members appreciate and seek opportunities to be closer to nature through activities at Hattah Lakes such as kayaking, walking, bird watching, fishing and social gatherings. These values are illustrated below in word clouds, where the higher frequency words are larger in size than those less used (Figure 4-1). These word clouds provide an "at-a-glance" insight into community values of the site. Additional evidence of the recreational values of Hattah Lakes can be found on social media posts from local special interest clubs including Mildura

Birdlife, Sunraysia Bushwalkers, and Sunraysia Inspired Photographers.

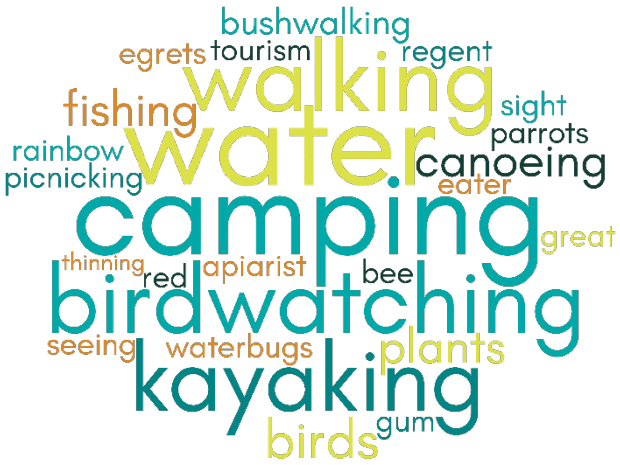


*Figure 4-1 Word cloud of important community values gathered from engagement events*

From an economic point of view, Hattah Lakes is also valued by both apiarists, almond producers and tourism businesses.

Hattah Lakes is located close to significant almond plantings along the Murray River in Sunraysia, Victoria. More than half of all almonds grown in Australia each year are grown in Sunraysia, with almonds now Australia's most valuable horticultural export, bringing in more than $750 million worth of export revenue in 2022-23 alone (Hort Innovation, 2023). Each year, almond producers rely on bees to pollinate their orchards, with hundreds of hives moved into the region during August/September. Almond trees are not wind-pollinated easily, so bees are required to pollinate and produce nuts efficiently. Prior to the bees commencing their pollination services, apiarists often choose to "rest" their bees at Hattah Lakes (subject to agreement with Parks Victoria), where water and food sources are readily available. Delivery of environmental water to the site promotes flowering of floodplain trees and supports growth of understorey vegetation, which helps maintain and improve the health of bees, ensuring they are in top condition for pollinating local horticultural orchards.

Hattah Lakes is also important to local businesses that benefit from national and international tourism (e.g. local accommodation providers and hospitality venues in nearby towns). After delivery of environmental water to the lakes in 2021 following a drying event, Parks Victoria recorded a noticeable increase in visitors using the park. Similarly, the nearby general store experienced a significant increase in business during periods of water delivery and when the lakes contain water. Additionally, local ecotourism operators, such as Mallee Tours, Wildside Adventure and Murray Off-road Adventures benefit from water within the Hattah Lakes, with operators reporting an increase in bookings when water is in the lakes.

Hattah Lakes is also highly patronised by local and Melbourne-based schools; providing an opportunity for students to immerse themselves in wetland topics, develop field assessment skills and grow an appreciation of the importance of wetlands and environmental watering. Schools from as far away as metropolitan Melbourne frequent the Hattah Lakes to support various components of their curriculum. The Mallee CMA regularly receives positive feedback from local

schools relating to the value that students gain as a result of these educational excursions to the Hattah Lakes.

*Table 4-1 Shared benefit considerations for 2025–26.*

| Beneficiary | Connection to the waterway | Values/ Uses/ Objectives/ Opportunities | How have these benefits been considered? |
|---|---|---|---|
| Apiarists | Local apiarists have a licence to use Hattah-Kulkyne National Park for their bee hives. The availability of water in the lakes and flowering floodplain trees and vegetation helps to improve the health of bees prior to pollination of almond trees and other horticultural crops. | -Commercial enterprise | Simulating the natural water cycle of the lakes and implementing a drawdown benefits vegetation outcomes, which support flower production providing abundant resources for bees. |
| Bird observers | Hattah Lakes is a popular location for both local community and visitors to undertake bird watching. A search on social media will show numerous posts from bird watchers visiting the Hattah Lakes. | -Recreation opportunities | Allowing the lakes to drawdown will provide feeding and habitat for wading and shorebirds which will provide opportunities for people to undertake bird watching. |
| Campers | Water draws people to sites. Increasing the quality and beauty of a region draws tourists to the area. | -Recreation<br>-Fishing<br>-Birdwatching<br>-Photography | Although a drying phase will be implemented, there will still be water in the lakes accompanied by vegetation growth response. Water attracts people. Campers, given the option, will generally prefer setting up at a site close to water. This drawdown will still provide them with instant access to the water in the southern Hattah area. |
| Traditional Owners and Aboriginal community members | Water improves the environment and attracts bird life and animals. It is also spiritual and gives Aboriginal people a sense of belonging to be on country. | -Cultural significant plants<br>-Water is spiritual and important for the land<br>-Meeting place for Traditional Owners, Elders and Aboriginal community | Water is spiritual to Aboriginal people and important for the land. Traditional Owners and Elders have been involved in the seasonal watering proposal planning and understand the importance of implementing a drawdown cycle. They enjoy coming out on Country and experiencing the benefits of water and drawdown such as attracting birdlife and animals |
| Local business operators | Businesses such as retail and hospitality benefit from increased tourism.<br>Local ecotourism companies take visitors and community on tours through the Hattah-Kulkyne | -Local employment opportunities<br>-Retaining money in local communities<br>-Support local industry/business | The residual water attracts tourism and encourages locals to undertake recreation pursuits across these areas. This relates to increased patronage at near-by hospitality and accommodation facilities and directly |

| Beneficiary | Connection to the waterway | Values/ Uses/ Objectives/ Opportunities | How have these benefits been considered? |
|---|---|---|---|
| | National Park and participate in a range of recreational activities. | | relates to increased eco-tourism opportunities. |
| Researchers | Studying the wetland, floodplain and rivers during different stages (wet, dry, during drawdown), increases understanding of the natural environment and the requirements of the flora, fauna and processes that reside across these habitats. | -Condition monitoring and Intervention based projects around watering.<br>-Large-scale system investigations | Provision of water to sites, and working with researchers to target particular flora, fauna or hydrological outcomes is supported by projects which will better inform future management of the region. Condition Monitoring and Intervention Monitoring projects through the Living Murray Program are conducted at the site annually. |
| School students | Schools from across Victoria use the Hattah Lakes as a focus for components of their curriculum. This includes hiking/camping trips and studies. | -Natural resource education (e.g. food webs, effects of flooding, water uses).<br>-Recreation/outdoor education (e.g. School camps).<br>-Connection with country and indigenous/cultural education. | Through implementation of a drying phase, the environmental benefits and values of the site is maintained, making it an appealing site for school trips and education-based activities. The 'Hattah Lakes Wildlife Detective Book' was developed by Mallee CMA as a tool for primary school students to learn about the ecosystem and cultural values of the site. |
| Tourists | Increasing the quality and beauty of a water dependant (Floodplain/wetlands) region through application of water draws tourists to the area. The local tourism industry and business such as accommodation and hospitality benefits as a result of increased tourism. Hattah Lakes is a popular location as it provides a high value site for camping, fishing, swimming, photography and bush walking. | -Recreation opportunities<br>-Tour operators | Community consultation and engagement is regularly undertaken as part of the environmental water delivery program.<br>Community members and visitors are considered in water delivery planning with site access being maintained where possible and information being communicated. |

*Table 4.2 Recreational objectives of Hattah Lakes*

| | |
|---|---|
|  | Environmental watering will also support water sports activities (e.g. canoeing, kayaking, rowing, swimming, water skiing) |
|  | Environmental watering will also support waterbird-related recreational activities (e.g., twitching, birdwatching) |
|  | Environmental watering will also support angling activities |
|  | Environmental watering will also support peaks in visitation (e.g., camping, or other public activities on long weekends or school holidays) |

# 5 Environmental Values and Objectives

Hattah Lakes is home to a diverse range of flood-dependent vegetation that changes with the topography of the landscape. Vegetation types range from wetland communities in low-lying areas that require almost annual flooding to lignum and black box communities situated higher on the floodplain that only need flooding once every four to five years (on average).

A combination of natural flooding and the delivery of environmental flows since 2010 has improved tree canopy health and recruitment of black box and river red gum communities throughout the Hattah Lakes. Woodland birds, including the endangered regent parrot, have benefitted from improved tree health. Maintaining an ecologically diverse and healthy littoral zone requires variation in wetland water depth. Receding lakes allow germination of seed and improves resilience of plant communities in this zone. The littoral zone also provides feeding opportunities for birds including mudflat habitat for shorebirds.

Hattah Lakes provides important waterbird breeding sites in an arid landscape. A total of 34 species of waterbirds are known to breed at the lakes when conditions are suitable. Another six species of waterbirds breed in the surrounding floodplain.

Wetland drought refuge sites are limited in the region, making the Hattah Lakes critically important for water-dependent flora, waterbirds and terrestrial animals during dry periods.

The Hattah Lakes support large-bodied native fish species (such as golden perch) and small-bodied wetland species (such as carp gudgeon). Fish move between the lakes and the Murray River when the flow is suitable. They also persist in wetlands that retain water in the Hattah Lakes during dry years before re-dispersing during floods.

*Table 5-1 Environmental objectives of Hattah Lakes*

| Environmental objectives in the Hattah Lakes | Environmental Water Management Plan Objectives |
|---|---|
| F1 - Maintain populations of small-bodied and large-bodied native fish at the Hattah Lakes | **HL9 -** Maintain recruitment of populations of small-bodied native fish and presence of large-bodied native fish at Hattah Lakes by 2030. |
| CN1 - By 2030, improve the function of water-dependent ecosystems by improving productivity linkages between the river and floodplain/wetland habitats | **HL1 -** By 2030, maintain a diversity of freshwater ecosystem types within the Hattah Lakes Icon Site, including semi-permanent lakes, persistent temporary wetlands, floodplain woodlands, shrublands, and episodic wetlands (Lake Kramen).<br>**HL2 -** By 2030, maintain the ecological character of the Hattah-Kulkyne Lakes Ramsar site. |
| V1 - By 2030, improve the richness of species and the abundance of native water-dependent floodplain and wetland aquatic vegetation<br>V2 - By 2030, maintain the extent and improve the condition of river red gum, black box and lignum, compared to 2006 baseline levels | **HL3 -** Improve species richness and abundance of native water-dependent floodplain and wetland aquatic vegetation at the Hattah Lakes Icon Site by 2030.<br>**HL4 -** Improve condition and maintain extent from baseline (2006) levels of river red gum (*Eucalyptus camaldulensis*), black box (*E. largiflorens*) and lignum (*Duma florulenta*) to sustain communities and processes typical of such communities at the Hattah Lakes Icon Site by 2030. |

| | | |
|---|---|---|
|  | B1 - Maintain the regional waterbird population by providing conditions for breeding and fledging at least three times every 10 years<br><br>B2 - Maintain the regional waterbird population by providing refuge during droughts | HL7 – By 2030, maintain or improve biodiversity at Hattah Lakes by ensuring that feeding habitat for the dominant guilds of waterbirds, most notably waterfowl, herbivores and piscivores, are supported.<br><br>HL8 – By 2030, protect and restore ecosystem functions of water-dependent ecosystems that support successful colonial nesting waterbird species at Hattah Lakes by providing conditions for breeding and fledging at least three times every 10 years.<br><br>HL6 - Provide refugia to support the long-term survival and resilience of waterbirds, including during drought, to allow for subsequent re-colonisation beyond Hattah Lakes by 2030. |
|  | G1 - Maintain a variety of freshwater ecosystem types within the Hattah Lakes icon site, including semi-permanent lakes, persistent temporary wetlands, floodplain woodlands, shrublands and episodic wetlands | HL1 - By 2030, maintain a diversity of freshwater ecosystem types within the Hattah Lakes Icon Site, including semi-permanent lakes, persistent temporary wetlands, floodplain woodlands, shrublands, and episodic wetlands (Lake Kramen). |

# 6 Engagement

A variety of stakeholders have been engaged to inform the development of this SWP. All engagement has been tailored to stakeholders' interests and mapped against the International Association for Public Participation's (IAP2) spectrum (Table 6-1).

In developing the 2025/26 SWP engagement plan, Mallee CMA seized the opportunity to review previous years' efforts, document the lessons learned and implement key changes. Among the changes delivered was the earlier engagement of Traditional Owners and community members in the annual environmental water planning process. This approach meant the values and perspectives of Traditional Owners and community members informed preliminary planning and discussions, rather than being incorporated later in the planning phase. This approach facilitated more meaningful engagement and has helped further build trust between Traditional Owners, community members and the Mallee CMA.

SWP engagement activities commenced in September 2024 and included:

- Face-to-face meetings with special interest groups and community members;
- Formal meetings with partner agencies;
- Attending community events to discuss planned wetting/drying actions;
- Distributing newsletter articles and publications with information about planned wetting/drying actions; and
- Releasing digital content (including social media).

One method used to engage Traditional Owners and community members was the 'Pins in Maps' activity. Participants were asked to place a coloured pin in a map to represent their values/uses at the various wetlands. The coloured pins corresponded to four categories: recreation, flora/fauna, water, and other. A high number of responses were collected by undertaking this activity at a wide range of community engagement events including on-Country visits, drop-in sessions, citizen science activities, and local markets. Additionally, the 'Pins in Maps' activity proved to be an engaging method to initiate place-based conversations about environmental water.


*Figure 6-1. 'Pins in Maps' activity used to collect community values and uses*

Online surveys, fact sheets and social posts have also been effective methods of engaging the community in the SWP process. These methods of engagement provided an opportunity for the community to provide feedback and outline their values to better inform current and future water planning.

Following completion of this SWP, Mallee CMA will produce informative flyers and website updates to outline the environmental watering/drying actions to be undertaken across the catchment in 2025-26. Targeted consultation and engagement activities will be undertaken with relevant community and stakeholders to provide the opportunity for further in-depth and detailed discussions to help to "close the loop" and demonstrate how their feedback informed planning.

*Table 6-1 Summary of stakeholder engagement that informed this SWP.*

| Category | Stakeholder(s) | IAP2 Level of Engagement | Engagement method | Engagement purpose |
|---|---|---|---|---|
| Traditional Owners, Aboriginal Community & Aboriginal organisations | Traditional Owners | Involve | • Face-to-face meetings with individual Traditional Owners and community members across the catchment who have an interest in Hattah<br>• Meeting with Traditional Owners to discuss SWP for 2025/26 (24/09/2024, 25/10/2024, 06/11/2024, 2/12/2024 and 08/12/2024), | Allow Traditional Owners, Elders and Aboriginal community members to speak for Country.<br>Opportunity to guide watering operations to benefit items of cultural significances.<br>Two-way sharing knowledge between cultural practices and floodplain management principles |
| Community groups and environment groups | Wider community | Inform<br>Consult | • Online – web based and social media<br>• Attendance at Red Cliffs Market (01/12/2024) to talk with community about SWPs, including the Hattah Lakes.<br>• MCMA hosted a community event at Outlet Creek to talk about SWPs, including Hattah Lakes (08/12/2024). | To engage with local community about environmental watering at Hattah to gain an understanding of important wetland values and uses. Using 'pins in maps' to gather data on what activities community undertake at the Hattah Lakes or activity aspirations. All of which helped inform the preparation of the Hattah SWP. |
| | Mallee CMA Land and Water Advisory Committee | Consult | • Presentation and discussion of proposed actions (13/03/2025) | To provide information to community who value and utilise the site and capture community values for the site. |
| | Special interest groups | Inform | • Fact sheet<br>• Social media and digital content | |
| Government agencies | Parks Victoria (PV) | Collaborate | • Mallee CMA meets monthly with PV<br>• Annual risk assessment workshop, including discussion of proposed sites (13/02/2025)<br>• Presentation of proposed drying | Discussion with key local Parks Victoria (PV) Staff regarding the planned drying phase for Hattah Lakes; advice regarding park usage and practical logistics. |

| | | | | |
|---|---|---|---|---|
| | | | phase for Hattah at Hattah Ramsar group meeting | |
| | Victorian Environmental Water Holder (VEWH) | Collaborate | • Discussion of SWP guidelines (14/01/2025)<br>• Annual risk assessment workshop, including discussion of proposed sites (13/02/2025).<br>• Ongoing discussion as planning progresses. | Ongoing planning and consultation with input from VEWH regarding water availability, current and forecast water conditions, risk planning and feasibility. |
| | Murray-Darling Basin Authority (MDBA) | Inform | • Presentation of sites at TLM icon site Managers Forum (21/2/2025 | Share planning and provide opportunity for feedback and comment regarding any operation and/or on-ground works currently or planned to be undertaken over the coming year. Opportunities to coordinate with adjacent icon site managers. |
| | Goulburn Murray Water | Consult | • Annual risk assessment workshop, including discussion of proposed sites (13/2/2025). | Share planning and provide opportunity for feedback and comment regarding any operation and/or on-ground works currently or planned to be undertaken over the coming year. |
| | Commonwealth Environmental Water Holder (CEWH) | Inform | • Annual risk assessment workshop (13/2/2025) | |
| | Department of Energy, Environment and Climate Action (DEECA) | Inform | • Presentation of sites at TLM icon site Managers Forum (21/02/2025 | |
| | Mildura Rural City Council | Inform | • Regular formal and informal conversations through various meetings and face-to-face interactions. | Share planning and provide opportunity for feedback and comment regarding any operation and/or on-ground works being or planned to be undertaken over the coming year. |
| **Landholders/farmers** | Neighbouring Landholders | Inform | • Fact sheet / website information | To inform the community of the development of the plan and how input can be provided to Mallee CMA. |
| **Local businesses and tourism operators** | Local businesses | Inform | • Fact sheet | To provide information for visitors to the area and local community about the and provide opportunity to provide feedback. |

| | | | | |
|---|---|---|---|---|
| | Special interest NRM groups (e.g. apiarists) | Inform | • Fact sheet | To provide information about the planning underway for environmental watering and opportunities to ask questions as required. |
| | Tourism operators that utilise Hattah Lakes and the Mildura Visitor Information Centre | Inform | • Fact sheet | To provide information for visitors to the area and local community about the drying phase required for Hattah Lakes and provide opportunity to provide feedback. |

# 7 Scope of Environmental Watering

The process for the extent of watering of the Hattah Lakes in this 2025-26 SWP has considered a number of factors. Primary considerations were the current condition of the site, with respect to the current hydrological state of individual wetlands within the Hattah Lakes, the ecological values present and the expected condition (under pre-regulation watering conditions). The process also included an assessment of the site's Environmental Objectives and a comparison of actual watering regimes to recommended optimal watering regimes at each wetland within the system. Much of this required information is identified in Hattah Lakes Environmental Water Management Plans (EWMP). The Environmental Objectives used for 2025/26 were updated late in 2020.

Over the last five years, the Hattah Lakes have received inundation by either naturally high river flows or environmental water via pumping infrastructure. The decision to enter into a drying phase is supported by risks of maintaining a too frequent inundation regime means that plants on the lower terraces may not have the opportunity to germinate and grow, or the inundation drowns them prior to setting seed. The drying phase allows vegetation, particularly on the littoral zone to grow and set seed, assisting in establishing lakebed herbland. In addition, any plants the require drier soil conditions will have the opportunity to germinate.

Drying the lakes will also assist in the management of non-native species of fish, particularly carp. Restoration of the wetlands and floodplain involves managing proesses that minimise threatening processes on the floodplain. In the Hattah Lakes, carp have been identified an important contributor to slowing the recovery process in wetlands.

In addition to current environmental condition and long-term objectives, community and Aboriginal objectives are also considered. This information has been received from a wide range of community and stakeholders including landholders and land managers, recreational and special interest groups and Traditional Owners.

*Table 7-1: Potential Watering Actions in 2025-26 at Hattah Lakes*

| Wetlands | Potential environmental watering action | Climatic scenario/s | Expected watering effects | Rationale | Environmental objectives | VEWH objectives |
|---|---|---|---|---|---|---|
| **All Hattah Lakes** | Drawdown | • Drought<br>• Dry<br>• Average | • Provide shallow-water habitat to provide refuge and feeding habitat for wetland-dependant species including frogs and water birds.<br>• Provide conditions for lakebed herbland to establish during drawdown.<br>• Stimulate the release of carbon and nutrients to increase productivity of the floodplain food webs.<br>• Increase wetland productivity.<br>• Drawdown of all persistent temporary wetlands as well as | Following recent significant inundation and flooding, the lakes will continue to draw down, with a number of the shallower lakes likely drying throughout the year. The ability of many of the larger lakes (e.g. Bitterang, Mournpall, Hattah) to retain water over a number of years means that critical habitat will be maintained at the landscape scale. Additionally, after multiple years of inundation of the wetlands and floodplain, the ecosystem will not be substantially impacted from ongoing drawdown and drying.<br>Drawdown will see a progression of water dependant vegetation species establish on the exposed mud and as the exposed soil dries. This will allow for seeds to set and replenish the soil seedbank ready for future inundation and drawdown events. Shallower water levels across a number of lakes will see the composition of waterbird shift, providing more favourable conditions for wading and shorebird species | HL1, HL2, HL3, HL6 | V1<br>B1 |

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| | | | the episodic Lake Kramen and the lakes in the northern section of the Hattah Lakes (Lakes Bitterang, Cantala and Woterap). | | | |
| **All Hattah Lakes (except Lake Kramen)** | Open all structures to allow natural flow to enter lakes. | Wet | As above plus:<br>• Provide natural connection between Hattah Lakes wetlands and floodplain to allow the exchange of nutrients, carbon, fish and propagules between the floodplain and the Murray River system.<br>• Stimulate the growth and improve the condition of river red gums that fringe wetlands<br>• Stimulate new growth of aquatic vegetation<br>• Inundate dry areas of wetlands to release carbon and nutrients to increase food web productivity | In addition to the above rational, natural connection is the pinnacle of wetland management. Where possible, disruption of natural flow should be avoided. Under natural conditions, cues for native flora and fauna are much stronger and greater environmental benefits can be achieved on a much broader scale.<br>Where natural connection does not achieve the maximum desired hydrological and environmental outcome (as per an Average scenario), Hattah regulators are to be shut, and additional water delivered through the Messengers pumps. Delivery should target 42.5 m AHD in the southern lakes as planned under the Average scenario. | | CN |

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| | | | • Inundate a variety of types of wetlands at different elevations across the Hattah Lakes to increase habitat diversity | | | |

# 8 Scenario Planning

Scenario planning and prioritisation for 2025–26 for the Hattah Lakes is being heavily influenced by a number of critical factors. Foremost is the consideration of the current environmental condition of the landscape. The decision to dry down the lakes in 2025-26 follows five consecutive years of receiving inundation. This now provides opportunity to allow plants to germinate, grow and set seed for assisting to establish lakebed herbland. The regular connection and disconnection of creeks, wetland and floodplains allows for essential nutrient cycling and exchange of minerals and sediments.

The influence of local weather on water scenario planning and flow triggers is very low across the Hattah Lakes. Local water availability is highly dependent on conditions experienced in the upper catchments, the resulting in-flow and flow in the adjacent River Murray. Local rainfall, with the exception of extreme rainfall events, has limited to no effect on flooding and inundation of local floodplain and wetlands across the Islands. Temperature, particularly during the warmer months, also has little bearing on scenario planning. Even during milder conditions, evaporation in the region is still high, thus not a strong factor influencing decision making.

## Drought

A Drought scenario is enacted when the Probability Of Exceedance (POE) is 99%. This means that the inflows are the lowest on record. The main watering objective is to 'Avoid irretrievable loss of key environmental assets. The underlining management objectives are to:

- Avoid critical loss of species, communities and ecosystems
- Maintain key refuges
- Avoid irretrievable damage or catastrophic events.

## Dry

A Dry scenario is enacted when the Probability Of Exceedance (POE) is 90%. This means that the inflows are in the bottom 10% of all years. The main watering objective is to 'Ensure priority river reaches and wetlands have maintained their basic functions. The underlining management objectives are to:

- Maintain river functioning with reduced reproductive capacity
- Maintain key functions of high priority wetlands
- Manage within dry spell tolerances

## Average

An Average scenario is enacted when the Probability Of Exceedance (POE) is 50%. This means that the inflows are on average with most years. The main watering objective is 'Ecological health of priority river reaches and wetlands have been protected or improved'. The underlining management objectives are to:

- Enable growth, reproduction and small-scale recruitment for a diverse range of flora and fauna
- Promote low-lying floodplain-river connectivity
- Support medium flow river and floodplain functional processes
- Support connectivity between sites

Under all the above scenarios, no water will be delivered to the Hattah Lakes. The lakes will continue to draw down. The flooding in 2022 and 2023, and environmental watering in Spring 2024 as well as

the ability of many of the lakes to retain water over a number of years, means that critical habitat will be maintained for 2025-26.

Lake Kramen will continue to draw down in 2025-26 following natural flooding in summer 2022-23 and in line with long-term planning.

## Wet

A Wet scenario is enacted when the Probability Of Exceedance (POE) is 10%. This means that the inflows are in the top 10% of all years. The main watering objective is to 'Improve the health and resilience of aquatic ecosystems'. The underlining Management objectives are to:

- Enable growth, reproduction and large-scale recruitment for a diverse range of flora and fauna
- Promote higher floodplain-river connectivity
- Support high flow river and floodplain functional processes

During a Wet scenario, all regulating structures will be open to allow unimpeded flow of the high river. This will be enacted in the event where water level on the Murray River side of regulating structures exceeds that of the water level on the lakes side (if any).

*Table 8-1: Proposed draw down actions for the Hattah Lakes under each climatic scenario for 2025-26*

| Planning scenario | Drought | Dry | Average | Wet |
|---|---|---|---|---|
| Expected conditions | • Year-round low flow in the Murray River and no natural inflow to the Hattah Lakes; substantial wetland drying will occur | • Rare high-flow events in the Murray River and no natural inflow to the Hattah Lakes | • Short periods of high flow in the Murray River with minor spills from storages, most likely in late winter/ spring, providing minor natural inflow to the Hattah Lakes | • Lengthy periods of high flow in the Murray River with major spills from storages resulting in widespread inundation of the Hattah Lakes and floodplain |
| Hattah Lakes | | | | |
| Potential environmental watering – tier 1 (high priorities) | Tier 1a (can be achieved with predicted supply) | | | |
| | No action. | No action. | No action. | All structures will be opened to allow natural flow to enter. |
| Possible volume of water for the environment required to achieve objectives | • No delivery | • No delivery | • No delivery | • No delivery |
| Priority carryover requirements for 2025-26 | • Approximately 50 GL of water will be required to fill the semi-permanent Hattah Lakes in spring 2025. | | | |

# 9 Risk Management

The risk management section is specifically targeted at the proposals for watering discussed earlier and should be reassessed if changes are made to the watering schedule.

*Table 9.1 Risk assessment of watering the Hattah Lakes for 2025-26*

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Environment | Extended periods of high demand could lead to system or delivery shortfalls which reduce access for environmental water deliveries, resulting in failure to complete planned actions.<br>Risk requires inclusion and tailoring in DPs - (will only apply to some wetlands and likelihood and consequence could vary between sites) | Possible | Minor | Low | • Planned deliveries can be interrupted and rescheduled with minimal impact on outcomes<br>• Weir pool manipulations may be curtailed in high demands periods<br>• Consult MCMA to prioritise watering actions that will have outcomes severely affected if delivery is interrupted and liaise with DEECA and MDBA to plan avoidance of interruptions | MCMA<br>MDBA<br>VEWH | Low | Static |
| Environment | Other environmental water managers' competing priorities and objectives may limit the ability to achieve intended objectives.<br><br>Risk does not require inclusion and tailoring in DPs - this is just part of normal annual SWP planning | Possible | Minor | Low | • Early communication of priorities and objectives to other environmental water managers, and development of combined NSW/Vic watering proposals to SCBEWC<br>• Participation and co-ordination through various forums including OAGs.<br>• Studies to quantify relative benefits and impacts of competing actions.<br>Note - mitigations may need to be reviewed and improved or expanded to addressed increased complexity arising from new SDLAM projects (in NSW and Vic) coming on-line. | MCMA | Low | Dynamic |
| Environment | Maintenance activities by the storage operator or constructing authority affect the ability to deliver water to sites.<br><br>- Hattah assessment - flood damages have been addressed to enable 2024-25 planned actions | Possible | Minor | Low | • Monitor maintenance activities and schedules to identify possible issues and reschedule deliveries actions if required to minimise any disruption.<br>• Provision of early advice of planned maintenance actions.<br>- Ensure consultation with storage operator on watering plan development | MCMA<br>GMW<br>MCMA | Low | Static |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Environment | Maintenance activities by the storage operator or constructing authority affect the ability to deliver water to sites.<br>Risk requires inclusion and tailoring in DPs - needs tailored consideration | Possible | Minor | Low | • Monitor maintenance activities and schedules to identify possible issues and reschedule deliveries actions if required to minimise any disruption.<br>• Provision of early advice of planned maintenance actions.<br>• Ensure consultation with storage operator on watering plan development | MCMA<br><br>Storage Operator<br>MCMA | Low | Static |
| Reputational | Access routes into public park areas may be inundated by delivery of environmental water, leading to potential impacts on recreational opportunities for park users.<br>Risk requires inclusion and tailoring in DPs - needs tailored consideration | Possible | Minor | Low | • Watering proposals to identify potential impacts (e.g. flooding footprint overlaid with key land roads and recreational assets) and ensure proposed watering plans are communicated to land mgrs.<br>• Land Managers implement the required management activities prior to and during environmental watering events. This includes:<br>• identification of impacted assets<br>• preparation of resources required (e.g. signage, maintenance of alternative recreational sites) to implement road, walking track and campsite closures and to direct users to alternative sites<br>• communication of planned events, access closures and alternative recreational opportunities<br>*Note that insufficient resources may limit the land manager's ability to implement management activities. Increased resources may reduce the likelihood of the risk description occurring. | MCMA<br><br>Parks Vic | Low | Static |
| Safety | Access routes into public park areas may be inundated by delivery of environmental water, leading to potential safety risks for park users and Parks Vic staff (e.g. by driving through flooded waterways). | Unlikely | Moderate | Low | • Erect warning signage and implement road closures supported by public advice on changed conditions.<br>• Consider installation of track closure gates and gauge boards at high-risk sites<br>• Undertake information programs to warn the public not to drive through flood water.<br>• Identify non-flooded alternative sites for public use. | Parks Vic | Low | Static |
| Business Costs | Park visitor vehicles cause damage to tracks, or to other assets in the surrounding landscape, due to off-road activity (by users going off track to avoid floodwaters) during and after environmental watering.<br>Risk requires inclusion and tailoring in DPs - needs tailored consideration | Likely | Moderate | Medium | Land Managers:<br>• implement management activities to prevent access to flooded roadways (e.g. close roads, communicate planned events, install signage)<br>• repair damage during and after environmental watering events<br>• consider rationalisation of road networks to remove unwanted access tracks and improve the standard of retained tracks.<br>*Note that insufficient resources may limit the land manager's ability to implement management activities. Increased resources may reduce the likelihood of the risk description occurring. | Land Manager | Low | Static |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Environment | Delivery of greater volumes than ordered may result in an overdraw of environmental water account, leading to water not being available as per approved watering statement to complete subsequent planned actions.<br>Risk requires inclusion and tailoring in DPs - depends on the volume of the delivery (affects consequence rating). Treatment is likely to be similar however | Unlikely | Minor | Low | • Monitor ABA balances and undertake regular communications with CMA as part of usage monitoring and portfolio management activities.<br>• Monitor deliveries in progress to ensure that they align with ordered/approved volumes. This may include consultation via the OAG to cover all sites<br>-Post estimated usage to water register during or immediately after delivery and adjust for actuals as soon as possible. | VEWH<br>MCMA<br>GMW | Low | Static |
| Business Costs | Costs exceed approved VEWH funding for delivery actions at a site basis, leading to impacts on watering activities (including possibly cessation of deliveries).<br>Risk does not require inclusion and tailoring in DPs - No this should be considered collectively during the SWP planning and so treatment is program-wide (may be covered in Risk ID #10)? Would only apply to DP if estimated delivery costs or volume for a particular site are grossly inaccurate and the error is only detected part way through the delivery. this would be result of poor planning so treatment is still at the planning stage and is a program wide risk and treatment. | Possible | Moderate | Medium | • Develop accurate costings including allowances for planned risk mitigation actions and tracking of actuals against estimates.<br>• Reallocate funding, based on proposals developed by MCMA.<br>• Ensure specifications for service providers include coverage of contingency measures<br>Prioritise funding and site selection in line with available resources.<br>Undertake preliminary assessment of costs during development of proposals and scoping of the plan. | MCMA<br>VEWH<br>MCMA | Low | Static |
| Environment | Cost and/or time required to undertake cultural heritage assessments and implementation of any required actions may prevent watering actions being undertaken at a site leading to failure to achieve environmental benefits<br><br>*Note: There are also reputational risks if effective engagement and management of cultural values issues in not undertaken with Traditional Owner'sTime for* | Possible | Minor | Low | • Develop accurate costings including allowances for planned risk mitigation actions, and tracking of actuals against estimates.<br>• Undertake early assessments to identify potential cultural heritage issues and include in planning, with appropriate contingency allowances<br>• Reallocate funding within the overall funding contract, based on proposals developed by MCMA.<br><br>*Note: potential future recognition of joint management arrangements with Traditional Owners may see a need for provision of funding.* | MCMA<br>MCMA<br>VEWH | Low | Dynamic |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| | *undertaking assessments is biggest risk to implementing watering actions*<br>Risk does not require inclusion and tailoring in DPs- this should be covered in the Cultural Heritage tick box in the DP rather than the risk assessment. | | | | | | | |
| Legal | Failure to recognise cultural heritage issues at a site targeted for watering may result in necessary permits and approvals not being obtained, leading to prosecution and fines.<br>Risk does not require inclusion and tailoring in DPs - this should be covered in the Cultural Heritage tick box in the DP rather than the risk assessment. | Likely | Moderate | Medium | • Undertake desktop reviews and site assessments of footprint of activities being undertaken with archaeologists, traditional owners and land managers, to identify approval needs and contingency measures - standard practice for all sites.<br>• Obtain any necessary formal approvals/permits and implement required actions.<br>• Monitor developments from VFMRP assessment process and adapt and apply procedures as required (noting that some of this information has not yet been entered into ACHRIS).<br>• Apply MCMA cultural heritage site assessment process. | MCMA | Low | Dynamic |
| Environment | Pumping of environmental deliveries into wetlands results in erosion downstream of pump discharge, leading to water quality impacts and the need to suspend watering actions and rectify the damage.<br>Risk requires inclusion and tailoring in DPs - only relevant for some sites and needs to be actively managed during delivery. | Likely | Minor | Low | • Ensure delivery routes downstream of pump sites can withstand the proposed flow rates without unacceptable impacts.<br>• Armouring and other protections may be installed if required.<br>• Implement ramp up and ramp down phases for flows to reduce erosion risks | MCMA | Low | Dynamic |
| Environment | Failure of delivery infrastructure or water monitoring assets (including water meters) may result in interruptions to watering actions, leading to failure to achieve environmental objectives. (includes failure of temporary works)<br>Risk requires inclusion and tailoring in DPs - only relevant for some sites and needs to be actively managed during delivery | Possible | Minor | Low | • Ensure asset ownership is clear and asset owners undertake pre-event inspections and maintain assets as required. *<br>• Undertake operational monitoring during each event and respond as necessary to prevent failures. This may include float switches to prevent high water levels, and trail cameras for real time monitoring if risk level warrants.<br>• Ensure levees designs are fit for purpose and address trafficability needs or control traffic access to levees etc. to ensure safety<br>• Require inspections to ensure temporary levees are built according to specifications during construction, and prior to commencement of delivery<br>• Site selection for pump and meter to minimise potential for damage, including protection of meter from falling tree limbs or other damage if | MCMA / Asset Owner<br><br>VEWH/ GMW | Low | Dynamic |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| | | | | | required.<br>• Develop agreed accounting process to estimate delivery volumes in the event of meter damage/data loss<br><br>**Note that insufficient resources are likely to limit the asset owner's ability to perform maintenance and inspections. Increased resources may reduce the likelihood of the risk occurring.* | | | |
| Safety | Failure of levees installed as part of delivery infrastructure or water monitoring assets may result in injury to the public or staff. (includes failure of temporary works and levees)<br><br>*Note: these events could also lead to interruption/abandonment of watering actions leading to failure to achieve environmental objectives, however safety issues pose highest risk*<br>Risk requires inclusion and tailoring in DPs - only applies to some sites and level of risk varies between sites depending on size of levee, volume of water and public access/use of levee. Risk needs to be actively managed as part of levee construction and monitoring during operation. | Possible | Major | Medium | • Ensure asset ownership is clear and asset owners undertake pre-event inspections and maintain assets as required.<br>• Undertake operational monitoring during each event and respond as necessary to prevent failures.<br>• Ensure levee designs are fit for purpose and address trafficability needs or control traffic access to temporary levees etc. to ensure safety<br>• Adapt and apply levee design standards being developed as part of VMFRP program<br>• Require inspections to ensure temporary levees are built according to specifications during construction, and prior to commencement of delivery<br>**Note that insufficient resources are likely to limit the asset owner's ability to perform maintenance and inspections. Increased resources may reduce the likelihood of the risk occurring.* | MCMA / Asset Owner | Low | Dynamic |
| Reputational | Noise impacts from temporary pumping installations lead to complaints and adverse publicity, and potentially EPA noise pollution enforcement actions.<br>Risk requires inclusion and tailoring in DPs - only applies to some sites and level of risk varies between sites depending on size of levee, volume of water and public access/use of levee. Risk needs to be actively managed as part of levee | Unlikely | Minor | Low | • Site selection and pump placement to minimise noise impacts.<br>• Selection of quiet pumping equipment and installation of noise suppression measures.<br>• Ensure that pumping contractors check and maintain equipment<br>• Consider curtailing pumping during peak camper visitation periods for public land sites. | MCMA | Low | Dynamic |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| | construction and monitoring during operation. | | | | | | | |
| Safety | Water delivery infrastructure (including temporary pumps etc.) creates safety risks for public.<br><br>*Note: Water deliveries may also encourage increased visitation to particular sites. Risk requires inclusion and tailoring in DPs - only applicable to some sites and requires active management during delivery.* | Possible | Moderate | Medium | • Install safety barricades and implement suitable traffic control measures<br>• Provide alert in the appropriate "changed conditions" sections of the PV website. | MCMA/asset owner<br>PV | Low | Static |
| Environment | Changes in seasonal conditions (esp. from dry to wet) and moving to expanded watering action scenarios may lead to difficulties in planning and implementing necessary actions, limiting the potential scope of watering actions resulting in failure to achieve environmental benefits.<br><br>Risk does not require inclusion and tailoring in DPs - considered prior to final SW Proposal | Unlikely | Minor | Low | • Monitoring climate forecasts and developing contingency plans for possible changes to actions.<br>• Identify any potential changes to proposed actions arising through SCBEWC<br>• Communicate potential for changes to watering actions to stakeholders and the wider community.<br>• Review MCMA register of structures and ensure that structures are adjusted/operated as necessary in light of changed conditions.<br>• Implement more responsive procurement processes to allow adaptation to changing conditions (e.g. ability to promptly engage pumping contractors) | MCMA<br>VEWH<br>MCMA<br>MCMA<br><br>MCMA | Low | Dynamic |
| Legal | Environmental deliveries cause unauthorised inundation of private land, resulting in impacts on farm activities and assets.<br>Risk requires inclusion and tailoring in DPs - this will only apply to some sites and requires active mitigation during delivery to monitor water levels etc. | Unlikely | Moderate | Low | • Update and ensure currency of any applicable agreements covering inundation of private land.<br>• Review previous watering events to identify any high-risk locations and develop specific actions as appropriate.<br>• Undertake site inspections prior to commencement of deliveries to identify new risk areas for action (including consideration of risks to property access routes).<br>• Inform landholders of intended watering actions and provide a contact number to call if they become aware of issues during the event. | MCMA | Low | Static |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Business Costs | Insufficient resources available (including staff, funding for maintenance of roads, regulators, pumping etc), across partner organisations to deliver all planned environmental watering actions, leading to cancellation or interruptions of deliveries and/or impacts to roads and infrastructure etc (esp. in PV areas).<br>*Note:*<br>*- This risk relates to unplanned resource shortfalls, for example where Parks staff are diverted to bushfire duties with no advance warning.*<br>*- Causes of risk may also include shortage of service providers, rather than just staff shortages.*<br>*Assessment relates to 2025-26 conditions. Risk may require inclusion and tailoring in DPs - generic wetlands risk (Exceptions may exist if known blackspot areas?)*<br>*PICK UP IN DELIVERY PLAN* | Possible | Moderate | Medium | • Partners notify the CMA and VEWH of resourcing constraints in advance of deliveries and VEWH convenes OAG meetings to consider implications and potential solutions<br>• Continue to actively prioritise actions to match available resources and ensure key actions are delivered.<br>• Reallocation of tasks and available funding. | MCMA<br>MCMA<br>MCMA | Medium | Dynamic |
| Environment | The time required to for planning, approvals, procurement and implementation of watering actions may delay or prevent timely commencement of spring watering actions, limiting achievement of environmental objectives.<br><br>*Note: This issue may affect multiple locations - moderate consequence. Construction activities associated with the VMFRP are also likely to shorten the available window for deliveries.*<br>*For 2024-25, additional cultural heritage risk assessments will need to be undertaken to assess flood impacts.* | Likely | Moderate | Medium | • Early planning and prioritisation of actions.<br>• Providing advice and early warning to each organisation of the actions proposed to understand the approvals expected to be required from each organisation.<br>• Land managers to provide confirmation of approval requirements.<br>• Streamlining annual watering plan approvals process.<br>• Ensuring minimum water levels are maintained in critical wetlands prior to the end of the water year to provide a buffer against delays.<br>*Note: Especially relevant for PV environmental and cultural access approvals.* | MCMA<br>MCMA<br>Land Managers<br>VEWH<br>MCMA | Low | Dynamic |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| | *For 2024-25, additional cultural heritage risk assessments will need to be undertaken to assess flood impacts.*<br><br>*Risk does not require inclusion and tailoring in DPs - this is just part of normal annual SWP planning* | | | | | | | |
| Service Delivery | Environmental water deliveries may impact adversely on infrastructure or land management works (e.g. fire mgmt. works, kangaroo census and culls etc.) that are being undertaken by other stakeholders. Risk requires inclusion and tailoring in DPs - important to ask this question in the DP at the site level | Likely | Moderate | Medium | • Early planning and communications of proposed actions with land managers and other stakeholders to minimise likelihood of impacts, and scheduling of proposed works outside of planned delivery periods. | MCMA | Low | Static |
| Environment | Environmental deliveries create improved conditions for existing non-native species (e.g. carp, invasive species, feral animals) and over-abundant native species (e.g. kangaroos, Red Gum encroachment) leading to adverse environmental impacts.<br><br>Note: The likelihood of this risk increases when a sequence of dry years concentrate pest animal on environmental watering sites.<br>For 2024-25, additional cultural heritage risk assessments will need to be undertaken to assess flood impacts.<br><br>Risk does not require inclusion and tailoring in DPs - this is just part of normal annual SWP planning. | Likely | Moderate | Medium | • Study/understand life history of species and develop high level management strategies.<br>• Develop and implement site specific management strategies aimed at eradication/control of existing populations (e.g. carp management strategy, willow removal program, water-lily spraying program, feral animal programs) in high risk locations. This mitigation may also require collaborative effort from private landholders and could offer opportunities for community participation but may be limited by availability of resources by partners.<br>• Implement pest reduction efforts prior to delivery of water, to ensure increases in populations remain within "tolerable" levels<br>*(Note: This risk is still rated as **medium** after mitigation actions.)* | DEECA MCMA or Land Manager | Medium | Static |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Environment | Introduction of pest plants through works (including importation of fill) to establish pump sites and levees results in environmental impacts.<br>Risk requires inclusion and tailoring in DPs - this will only apply to some sites, risks will differ between those sites and will need to be actively managed during delivery works. | Possible | Major | Medium | • Ensure machinery is cleaned in accordance with PV plant hygiene protocols.<br>• Use weed free or appropriately treated fill that complies with PV specifications.<br>• Where possible, stockpile temporary levee fill on site and reuse to avoid importing weeds<br>• Provide advice to PV of intended works and ensure their inclusion in the PV environmental access agreement. | MCMA | Low | Static |
| Environment | Under either wet or dry conditions, access to temporary pumping sites in parks will deteriorate, reducing access and limiting watering actions.<br>Risk requires inclusion and tailoring in DPs where these scenarios expected | Possible | Moderate | Medium | • Coordination and advice PV on proposed delivery sites.<br>• Repair track damage, including targeted fixes | MCMA<br>PV | Low | Static |
| Reputational | Failure to demonstrate the benefits of environmental watering and/or community concerns over environmental watering actions reduce community support for environmental watering.<br>Risk does not require inclusion and tailoring in DPs - currently worded as a program level risk (and treatment). | Likely | Moderate | Medium | • Communicate the key objectives and benefits of environmental watering to the community through a range of channels.<br>• Publicise watering activities undertaken or in progress, and ensure LMW has information on watering actions in a form that can be provided to their customers.<br>• Install explanatory signage on environmental watering at key sites.<br>• Share communications materials and key messages between partners.<br>• Tailor messaging for 24-25 to explain why watering after floods is positive | MCMA<br>MCMA<br>Land mgr or MCMA<br>All | Low | Static |
| Cultural Heritage | Environmental water deliveries and/or associated operational and monitoring actions result in damage to unknown cultural heritage sites. | Possible | Moderate | Medium | • Apply MCMA standard cultural heritage operational assessment procedures to proposed watering sites.<br>• Targeted site inspections with Traditional Owners, with regard to potential erosion and flood impacts from 22-23<br>• PV assessment of cultural heritage aspects of watering proposals | MCMA | Low | Static |
| Safety | Negative community sentiment in relation to government decisions/actions creates a safety risk for staff involved in environmental watering actions | Possible | Moderate | Medium | • Timely sharing of information on known aggressive individuals or groups amongst all partners.<br>• Share incident reports promptly to all partners<br>• Ensure operational staff are informed of issues/risks and appropriate responses | All | Low | Dynamic |

| Risk category | Risk description | Pre-Mitigation Risk | | | Mitigation actions | Lead organisn. for action | Residual Risk Rating | Risk type Static/ Dynamic |
|---|---|---|---|---|---|---|---|---|
| | | Likelihood | Consequence | Risk Rating | | | | |
| Safety | People camping on floodplains may be displaced by environmental water deliveries and may be aggressive towards e-water staff as a result<br><br>Note: Where English is not a first language, individuals may be concerned and feel frightened or threatened, and react accordingly | Possible | Moderate | Medium | • Timely sharing of information on known aggressive individuals or groups amongst all partners.<br>• Share incident reports promptly to all partners<br>• Ensure operational staff are informed of issues/risks and appropriate responses<br>• Ensure safe operational procedures for staff are followed<br>• Providing information on watering actions in multiple languages | All | Low | Static |
| Environment | Volumes delivered are insufficient to meet hydrologic targets due to multiple factors, for example high losses at very dry sites, hot weather causing excessive evaporation, antecedent conditions and inflow rates. | Possible | Moderate | Medium | • Review historic deliveries and incorporate learning from those to accurately estimate demands.<br>• Monitor deliveries and Seek approval from VEWH for reallocation of water between sites and/or watering statements as required. | MCMA | Low | Dynamic |
| Environment | Surface or groundwater discharge from saline sites exceeds the targets in the BSM2030 leading to impact on the environment or consumptive users locally | Unlikely | Minor | Low | • Revise watering options and/or implement monitoring and operational actions to prevent and limit impacts<br>• Monitor salinity impacts due to 23-24 flooding and adjust plans accordingly | MCMA | Low | Static |

# 10 Approval

| WATERWAY MANAGER APPROVAL OF THE SEASONAL WATERING PROPOSAL | |
|---|---|
| I, the authorised representative of the agency shown below approve the Seasonal Watering Proposal for the Hattah Lakes system in 2025-26 and declare that:<br>• the information provided in this proposal is true and correct,<br>• all required approvals and endorsements from storage managers, land managers, Traditional Owners or other relevant party have been granted, and<br>• unless otherwise stated, any consent/s required to use or reproduce Traditional Owner language and knowledge has been obtained for the purpose of Seasonal Water Planning. | |
| SIGNED FOR AND ON BEHALF OF MALLEE CATCHMENT MANAGEMENT AUTHORITY | |
| Signature of authorised representative: |  |
| Name of authorised representative: | Jenny Collins |
| Position of authorised representative: | Chief Executive Officer |
| Date: | 14/04/2025 |

# 11 References

Hort Innovation. (2015). *Australia's top 10 trade commodities – Almonds*. Hort Innovation | Australia's top 10 trade commodities – Almonds

VEWH. (2021). Victorian Environmental Watering Program Risk Management Framework . Victorian Environmental Water Holder.

Mallee CMA. (2021a). Hattah Lakes Environmental Water Management Plan. Mildura, Victoria: Prepared by the Mallee Catchment Management Authority.

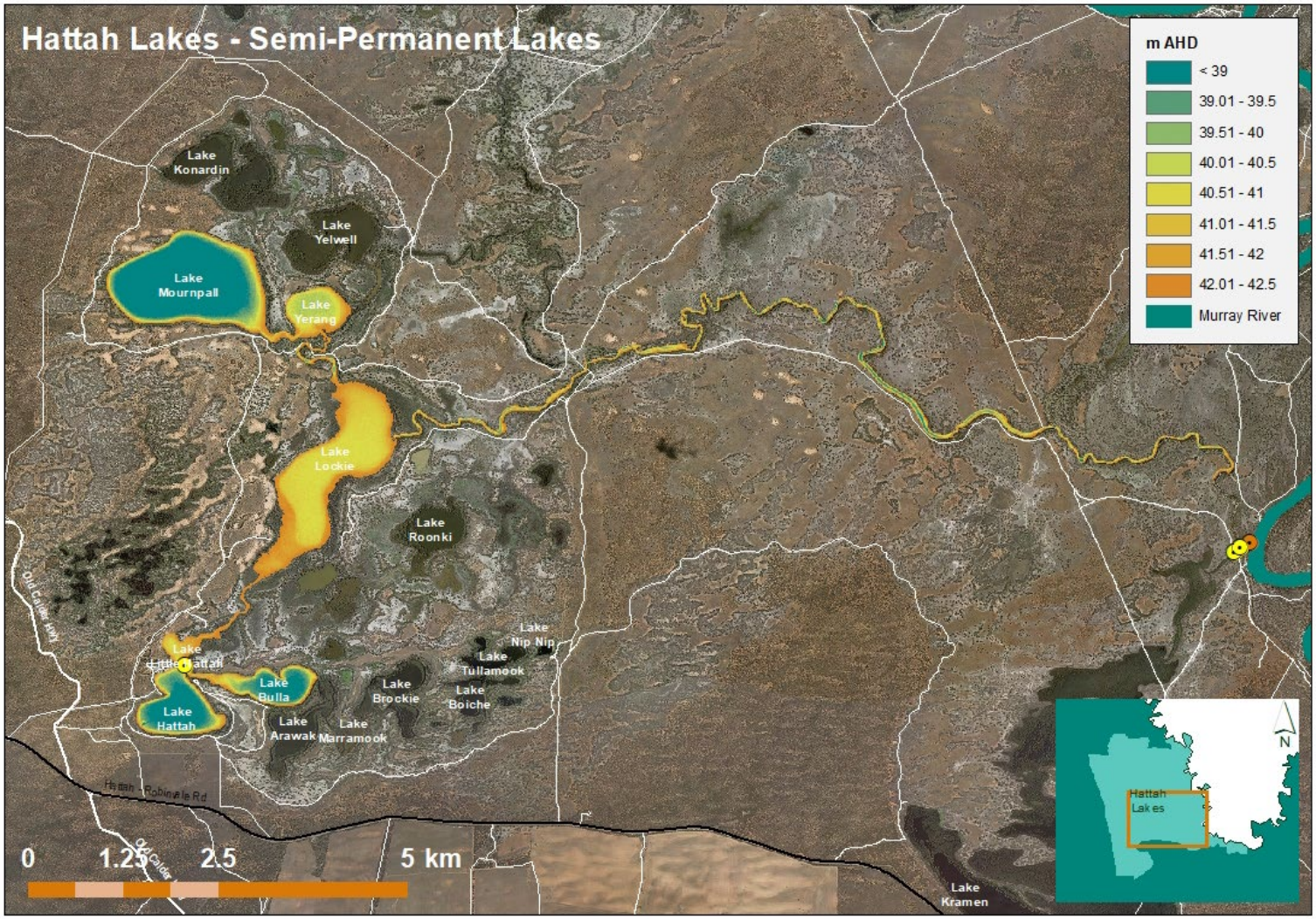
Mallee CMA. (2021b). Hattah Lakes icon site Watering Guide. Mildura: Mallee Catchment Management Authority.

Mallee CMA. (2022). Hattah Lakes Operating Plan. Mildura: Mallee CMA.

Butler F, Palmer G, Bloink C, Linn M, Murrell J, Kerr N, van Asten T, McPhan L, Halliday B, Walker G, Lewis S (2023). The Living Murray Condition Monitoring: Hattah Lakes 2022–23, Part A. Report to Mallee Catchment Management Authority, Ecology Australia Pty. Ltd., Thomastown, Victoria.

# 12 Appendices

## Appendix 1 - Site Map



# Appendix 2 – Current satellite image

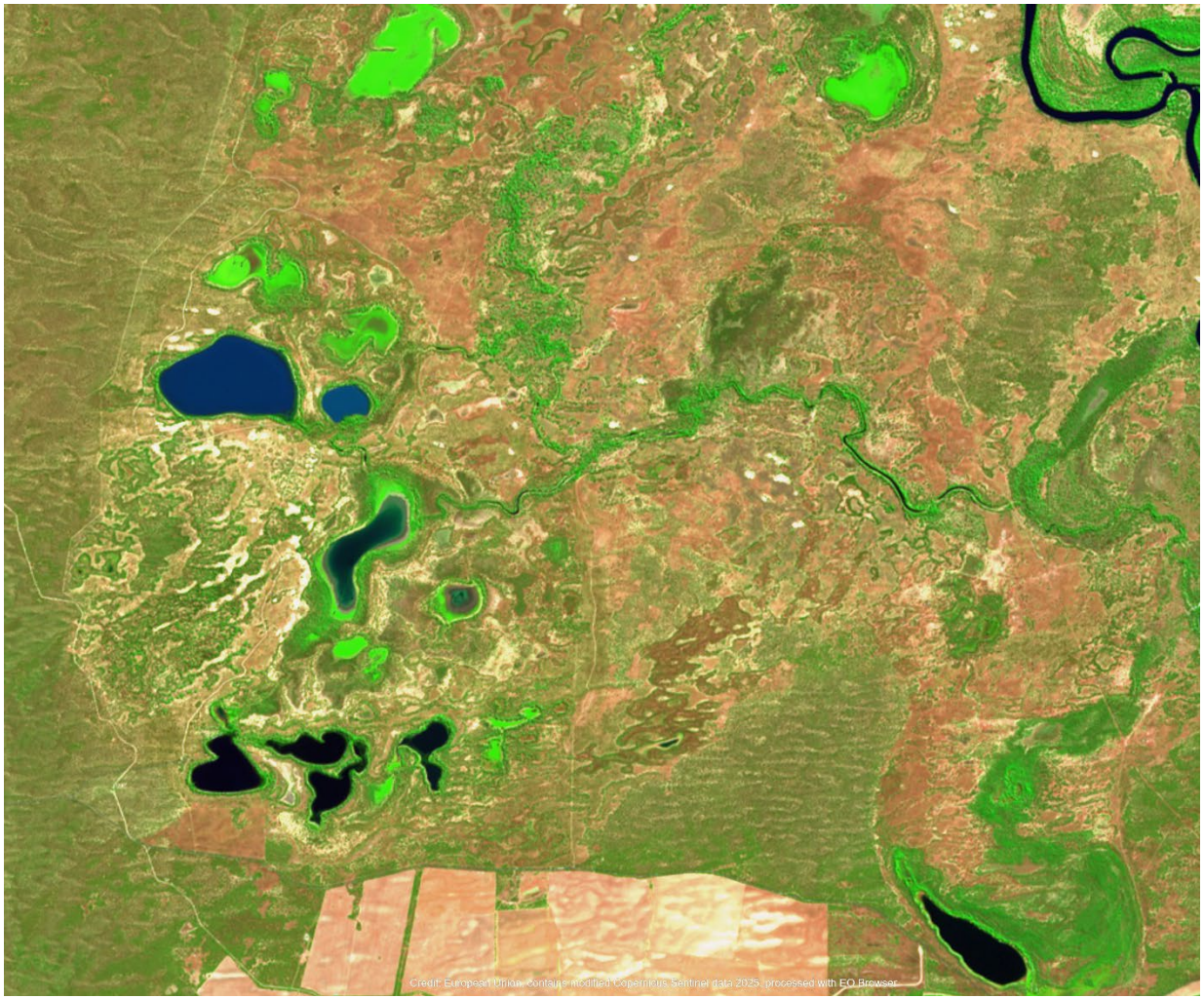



Image taken 02/04/25 - Drawdown currently progressing

# Appendix 2 - Acronyms and abbreviations

| Abbreviation | Description |
|---|---|
| AHD | Australian Height Datum |
| DEECA | Department of Energy, Environment and Climate Action |
| EPBC | *Environment Protection and Biodiversity Conservation Act 1999* |
| EVC | Ecological Vegetation Class |
| FFG | *Flora and Fauna Guarantee Act 1988* |
| LMW | Lower Murray Water |
| LTWP | Long-term Watering Plan |
| MCMA | Mallee Catchment Management Authority |
| MDB | Murray-Darling Basin |
| MDBA | Murray-Darling Basin Authority |
| MDBC | Murray-Darling Basin Commission |
| ML | Megalitres |
| ML/d | Megalitres a day |
| POE | Probability of Exceedance |
| VEWH | Victorian Environmental Water Holder |
| VMFRP | Victorian Murray Floodplain Restoration Project |

# Appendix 3 - Glossary

| Term | Description |
|---|---|
| Australian Height Datum (AHD) | Height above sea level |
| Blackwater | A natural occurrence caused by the breakdown of plant matter causing the water to discolour. The water turns black and can have very low levels of dissolved oxygen, which can stress or kill fish and other animals that breathe underwater. |
| Carryover | Unused water of which entitlement holders are allowed to retain ownership into the following season, according to specified rules. |
| Consumptive water | Water owned by water corporations or private entitlement holders held in storages and actively released to meet domestic, stock, town and irrigation needs. |
| Drawdown | Water released from a dam or reservoir at the end of the irrigation season for the purposes of its operation and/or maintenance. |
| Environmental objectives | Measurable target outcomes for each environmental value in the system, to be achieved by ongoing implementation of one or more watering actions as well as complementary actions (such as controlling invasive species or installing fishways). Target outcomes may take years or several decades to achieve. |

| Term | Description |
|---|---|
| Environmental water management plan | A plan developed by a waterway manager setting long-term environmental objectives and based on consultation with key stakeholders, local community and advisory groups to inform the seasonal watering proposal for the particular system. |
| Expected watering effect | The physical, chemical, biological or behavioural effect expected from a potential environmental watering action. Each potential environmental watering action will have one or more expected watering effects. |
| Land manager | An agency or authority responsible for conserving natural and cultural heritage on public land including parks and reserves (such as Parks Victoria and DEECA). |
| Low flow | A relatively stable, sustained and low flow in a river, generally being its minimum natural level. |
| Megalitre | One million (1,000,000) litres. |
| Operational release | A release made from a major storage to enable the water distribution system to operate or to make water available to consumptive water users |
| Potential environmental watering action | An environmental flow component that has been identified for a particular system in a particular year. |
| Program partners | Are those organisations with a responsibility for delivering some part of the environmental watering program. It includes waterway managers, storage managers, land managers, environmental water holders. In some areas, Traditional Owners, scientists and community members may also be program partners. |
| Recruitment | The increase in plants or animals when they survive to the settlement or maturity stage. |
| Seasonal watering plan | The VEWH's annual operational document, that outlines potential environmental watering across the state in the forthcoming water year. |
| Seasonal watering proposal | This document. An annual proposal outlining the regional priorities for the use of water for the environment in each water year that is submitted by waterway managers to the VEWH for consideration in its seasonal watering plan. |
| Seasonal watering statement | A statement by the VEWH authorising a CMA to apply or use water from its water for the environment entitlements consistently with the seasonal watering plan. |
| Shared benefits | The many cultural, economic, recreational, social and Traditional Owner benefits of environmental watering. |
| Stakeholders | Are those organisations or individuals with a keen interest in the environmental watering program, who are engaged by one of the program partners during planning, delivery or reporting. |
| Storage manager | An organisation appointed by the Minister for Water to operate major water storages in a particular river basin, to deliver water to entitlement holders |
| Tier 1 | Potential environmental watering actions that are required this year to achieve intended environmental objectives, given current environmental conditions and the planned environmental watering strategies under each climate scenario. |
| Tier 2 | Potential watering actions that are generally not required every year to achieve intended environmental objectives but are needed over the long-term. At the time of developing a seasonal watering plan, tier 2 potential watering actions are not considered necessary to deliver in the current year under specific climate scenarios, but they are likely to be needed in coming years and may be delivered in the current year if environmental conditions change or to take advantage of operational circumstances. |

| Term | Description |
|---|---|
| | |
| Unregulated or Natural flow | A natural streamflow that cannot be captured in a major reservoir or storage. |
| Victorian Environmental Water Holder (VEWH) | The independent statutory body responsible for holding and managing Victorian water for the environment entitlements and allocations. |
| *Water Act 1989* | The legislation that governs water entitlements and establishes the mechanisms for managing Victoria's water resources. |
| Water entitlement | The right to a volume of water that can (usually) be stored in reservoirs and taken and used under specific conditions. |
| Water for the environment | Water available for environmental purposes including entitlements held by the VEWH, passing flows and unregulated flows. |
| Water year | The same as a financial year: from 1 July to 30 June the next year. |
| Waterway manager | The agency or authority (such as a CMA or Melbourne Water) responsible for the environmental management of a catchment or waterway. |
| Waterway or Wetland | A river, wetland, creek, floodplain, estuary or other body of water. |

# Appendix 4 - Guidance Material

**Table 2 Risk likelihood rating table adapted from (DELWP, 2019)**

| Likelihood | | Description | Probability |
|---|---|---|---|
| Almost certain | 1 | • The event is expected to occur in most circumstances and/or<br>• Risk will occur within the next 6 months/or several times a year and/or<br>• Controls associated with the risk are extremely weak and/or non-existent and without control improvement the risk will eventuate. | 75-100 |
| Likely | 2 | • The event is likely to occur in most circumstances and/or<br>• Risk will occur in the next 12 months/or once or twice a year and/or<br>• The majority of the controls associated with the risk are weak and without control improvement it is likely the risk will eventuate. | 50-74 |
| Possible | 3 | The event might occur and/or<br>• Risk will occur in the next 24 months/or once in two years and/or<br>• Some controls need improvement and if there is no improvement it is possible the<br>risk will eventuate. | 25-49 |
| Unlikely | 4 | • The event could occur at some time and/or<br>• Risk will occur in the next 60 months/or once in five years and/or<br>• Controls environment is strong with few control gaps and requires assurance check<br>to maintain control effectiveness. | 0-24 |

**Table 3 Risk Rating matrix (DELWP 2019).**

| Likelihood | | Consequence | | | |
|---|---|---|---|---|---|
| | | Minor | Moderate | Major | Extreme |
| | | 1 | 2 | 3 | 4 |
| Almost certain | 1 | Medium (4) | High (8) | Extreme (12) | Extreme (16) |
| Likely | 2 | Low (3) | Medium (6) | High (9) | Extreme (12) |
| Possible | 3 | Low (2) | Medium (4) | Medium (6) | High (8) |
| Unlikely | 4 | Low (1) | Low (2) | Low (3) | Medium (4) |

**Table 4 Risk consequence (DELWP, 2019)**

| Rating Risk | | Environment | Business Costs | People | | Political/ Reputational | Legal | Service Delivery | Cultural Heritage |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Safety and Wellbeing | People and Culture | | | | |
| Minor | 1 | • Limited effect on the natural and/or built environment and/or the environment suffers harm for up to 5 years.<br>• Environmental recovery on a minor scale up to 5 years.<br>• Mostly impacts environmental values at a single location in an individual system. | Cost impact on total budget of up to 5%. | • Minor injuries or illness (physical/ mental) requiring first aid or medical attention of staff, visitor, contractor, or member of the public. | • Staff complaints, passively upset, and uncooperative.<br>• 10-15% staff turnover with minor loss of skills, knowledge, and expertise. | • Adverse localised public and political interest.<br>• Limited attention on a single issue in local media over a short period. | Non-compliance with legislation or breach of duty of care, identified externally and either:<br>• resolved internally with no further escalation; or<br>• resulting in minor compensation, and/or negative precedent. | • Minor short-term impact on business unit's delivery of services/functions.<br>• Customers/stakeholders/ communities slightly inconvenienced.<br>• Up to 1 day impact on business unit's critical activities.<br>• Minor impact (up to 10% delay) on project or program milestones. | • Limited potential impact on heritage sites/artefacts<br>• Exposure of previously unknown cultural heritage items |
| Moderate | 2 | • Moderate effect on the natural and/or built environment and/or environment suffers harm for 5-10 years.<br>• Environmental recovery on a small scale and/or over a period 5-10 years.<br>• Impacts environmental values at multiple locations in an individual system. | • Cost impact on total budget between 5-10%. | • Significant injury or illness (physical/ mental) requiring inpatient hospitalisation of staff member, visitor, contractor, or member of the public. | • Low morale, disengagement, increased absenteeism, and workplace conflict.<br>• 15-25% staff turnover with loss with resignations of some key staff. | • Adverse localised negative public and political attention.<br>• Short term negative local media attention.<br>• Local community concern on a single issue over a sustained period. | Non-compliance with legislation or breach of duty of care resulting in:<br>• external investigation or report to responsible authority; and/or<br>• prosecution or civil action, with one of moderate level of compensation or moderate level of negative precedent. | • Moderate impact on business unit's delivery of services/functions.<br>• Customers/stakeholders/ communities inconvenienced.<br>• Up to 3 days impact on business unit's critical activities.<br>• Significant impact (10-20% delay) on project or program milestones. | • Moderate potential impact on heritage sites/artefacts<br>• Damage to previously unknown cultural heritage items or values |
| Major | 3 | • Major effect on the natural and/or built environment and/or environment suffers harm for 10-20 years.<br>• Environmental recovery on a large scale and/or over a period of 10-20 years.<br>• Impacts regional environmental values or affects connected systems. | • Cost impact on total budget between 10-20%. | • Extensive and/or permanent injury or illness (physical/ mental) of staff member, visitor, contractor, or member of the public. | • Major morale issues, high absenteeism.<br>• 25-50% staff turnover with resignations of key staff.<br>• Staff are not skilled to meet priorities. | • Serious adverse public attention at State/National level.<br>• Negative State/National media on one or more issues over a prolonged period.<br>• Repeated displeasure by the Minister.<br>• Medium-term negative public interest (correspondence and phone | Non-compliance with legislation or breach of duty of care resulting in:<br>• external investigation or report to responsible authority;<br>• public inquiry (i.e. Royal Commission/ Parliamentary Committee);<br>• prosecution or civil action with high level compensation and high-level negative precedent; and/or<br>• sanctions imposed by external regulator. | • Ongoing difficulties in delivering the business unit's services/functions.<br>• Major impact on customers/ stakeholders/ communities<br>• Up to 10 days impact on business unit's critical activities<br>• Major impact (20-50% delay) on project or program milestones | • Major potential impact on heritage sites/artefacts<br>• Damage to known cultural heritage items or values |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | calls) and political interest (in Parliament). | | | |
| **Extreme** | **4** | • Very serious effect on the natural and/or built environment and/or environment suffers long term harm (20+ years).<br>• Environmental recovery on a very large scale and/or over a long period (20+ years).<br>• Impacts environmental values state-wide. | • Cost impact on total budget between >20%. | • Single or multiple deaths or severe permanent disability or illness (physical/mental) of staff, visitor, contractor, or member of the public. | • Organisation wide morale issues and absenteeism.<br>• >50% staff turnover.<br>• Staff are not skilled to meet core corporate outputs. | • Very serious public outcry at State/National level.<br>• Negative State/National media over a prolonged period.<br>• Breakdown of public confidence in the Government / department / Minister or key project/program.<br>• On-going or prolonged negative public interest (correspondence and phone calls) and political interest (in Parliament). | Non-compliance with legislation or breach of duty of care resulting in:<br>• prosecution or civil action leading to imprisonment of an officer;<br>• public inquiry (i.e. Royal Commission/ Parliamentary Committee)<br>• uninsured compensation payments<br>• negative precedent requiring very serious impact and major reform to the department; and/or<br>• severe sanctions imposed by external regulator. | • Long term and severe impact on delivery of services/functions<br>• Severe impact on customers /stakeholders/communities<br>• More than 10 days impact on business unit's critical activities<br>• Vital or very serious delays (>50% delay) to program/project delivery or project/program objective is not met | • Very serious potential impact on heritage sites/artefacts<br>• Destruction of cultural heritage items or values |