

# Seasonal Watering Proposal



Photo: Lake Little Hattah,  
Hattah-Kulkyne National Park

**2024-25**  
**Hattah Lakes**

**mallee**  
catchment management authority

## Document Control

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## 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.

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**Cover image:** Lake Little Hattah, Hattah-Kulkyne National Park



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# 1 Context

Mallee Catchment Management Authority is pleased to present the final 2024-25 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 2024-25.

While the format of this SWP differs to previous years, it retains key information outlining what environmental flows may be delivered during 2024-25, the rationale for the planning of these, a summary of engagement that occurred, and the associated risk management.

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). Target 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, delivery of water to the wetlands also supports cultural, social and economic values. These are captured in feedback received from Aboriginal Community, industry and the local community.

Key areas of the proposal are detailed below:

- **Scope of environmental watering** – Describes the range of potential watering actions which may be delivered during 2024-25 (Summary provided in Table 1.1).

*Table 1-1 Summary of the proposed watering in 2024–25 for the Hattah Lakes icon site and key stakeholder engagement that informed this SWP.*

Wetland	Delivery method	Land Manager
Hattah Lakes semi-permanent lakes (Lakes Lockie, Little Hattah, Hattah, Bulla, Yerang and Mournpall)	Pumped (10,000ML)F	Parks Victoria

- **Scenario planning** – Describes how the combination of actions may change depending on the climate scenario.
- **Risk management** – This is an important chapter of the proposal and will be based on the outcomes from the 2024 Shared Operational Risk Workshop – in particular the risk management table.

This document has been developed in consultation with Traditional Owner 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 5.2.4). 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.

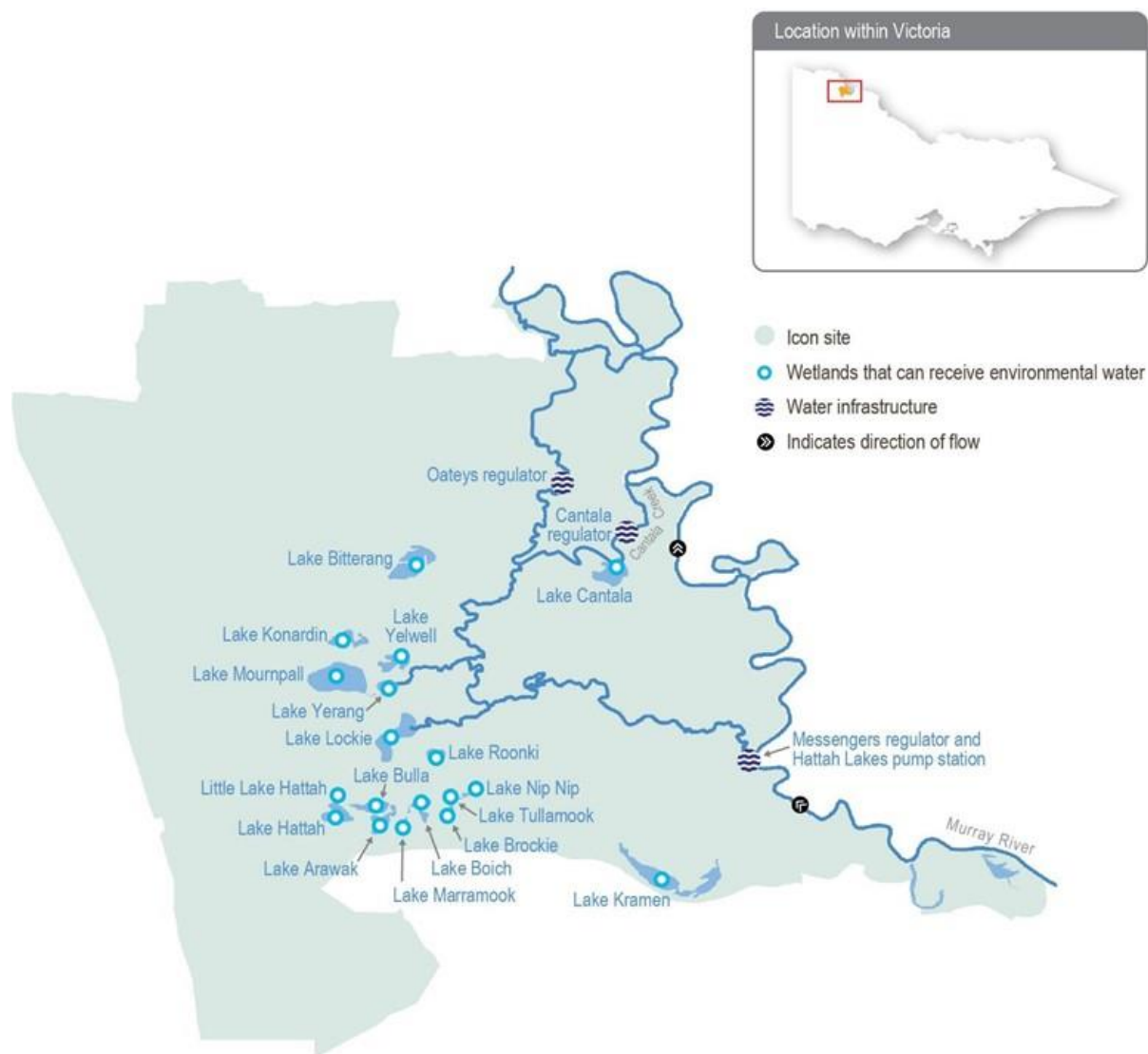


Figure 2-1: Hattah Lakes

### 3 Traditional Owner Cultural Values and Uses

The Hattah Lakes system is part of a highly sensitive region for Aboriginal cultural values and lies on the border of two documented language groups, the Latji Latji and the Jari Jari. Groups 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 Aboriginal archaeological sites at the Hattah Lakes are registered on the Aboriginal Cultural Heritage Register and Information System, with the freshwater lakes and wetlands providing 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, such as native species used for food and medicine.

A "Talk water" event at Hattah Lakes was held with Traditional Owners (10/10/23). Traditional Owners present were Culpra Milli, Munatunga Elders, Gilby Corporation, Latji Latji Mumthelang, Tati Tati Land & Water, Tati Tai Wadi Wadi, Wadi Wadi and Dadi Dadi/Weki Weki.

Information about seasonal watering planning for Hattah Lakes and the water delivery history of Hattah was discussed. Discussion occurred about the recent flood water receding back to the lakes and subsequently the Murray River. Maps were shown of the flood extent at the peak of the recent flood, illustrating the inundation of the Hattah Lakes. There was discussion about the 2024/25 SWP for the Hattah Lakes, including the north of Hattah-Kulkyne National Park. Discussions included; where Traditional Owners would like to see water delivered, cultural values at these sites, fauna and flora values and activities that they have undertaken, or would like to undertake.

Feedback from Traditional Owners demonstrated that some didn't understand the timelines for planning and delivery. Mallee CMA is putting together a communication tool for Traditional Owners demonstrating planning and delivery timelines in a visual way to provide a better understanding of the process.

An activity was used with Traditional Owners for them to identify environmental water priorities. Maps and pins were a useful interactive tool providing pins to locations and stickers for input from Traditional Owners which encouraged deep discussions.

Discussions covered the planning of water for the environment and Traditional Owners' interests and aspirations for the Hattah Lakes region, including:

- Traditional Owners expressed where they would like to see water delivered, their cultural values at these sites, fauna and flora values and any activities that they have undertaken, or would like to
- understanding reasons why drying and drawdown might be of benefit to the landscape. Traditional Owners requested further background around the drawing down phase for wetlands and why this is part of environmental water delivery
- water is important for all areas and wetlands
- the "circle of life" and water attracting fish and birds and other animals coming to feed off them, then this in turn provided food for Aboriginal people when other animals came to the water. This provides hunting for Aboriginal people and for Aboriginal people who still practice hunting today.

The first round of "Talk Water" events were completed in Spring 2023, prior to the start of water planning in January 2024. A second round of Talk Water events are planned for March-May 2024, after 2024-25 watering planning has been completed. This second round of discussions with Traditional Owners will enable Mallee CMA to demonstrate how the information and aspirations of



Traditional owners has been incorporated into the watering prioritisation and planning process, within the SWP.

On 6/03/2024, a post “talk water” event was conducted with Traditional Owner groups for 2024/25 SWP for Hattah.

Overall feedback from Traditional Owners was a desire to have equal decision-making in regard to where to put water and would like to be provided with the SWP information prior to the “Talk Water” events, so that they are able to review it and have a response beforehand.

Some other comments included:

- we want more involvement from the beginning
- we would like On Country visits to scope out Cultural Areas of sensitivity prior to water delivery. Especially important post floods due to water uncovering sites.

Traditional Owners collectively agreed to have the same list of Cultural Values to be consistent across all sites:

- Cultural Activities
- Native flora and fauna – Birds, reptiles, frogs, kangaroos, possums, turtles, fish
- Fishing
- Bush foods
- Endangered plants and animals
- Change carp control to carp eradication
- Scar trees
- Clay balls
- Plants of cultural significance
- Aquatic vegetation.

Several Traditional Owner groups have provided a statement of support for the SWP. Those being:

Munatunga Elders:

**“It is nice to be asked and involved in discussions and decisions about environmental watering with the Mallee CMA”.**

Munatunga Elders would like to continue with current process. Including:

- Traditional Owners and Elders should be involved in discussions and planning before SWPs are written.
- Continue to have On-country field trips where Traditional and elders are able to view the water, the site and the changes in condition of plants etc. Field trips allow Traditional Owners and Elders to look at the environment and see that environmental watering is having benefit.

Tati Tati/Wadi Wadi Land and Water Seasonal Watering Statement:

In regards to watering of site next year -

“Very happy and excited to know that these sites are going to be watered in the near future”.

“Our level of participation in this project has been excellent and we have been involved from the beginning”.

Dadi Dadi/Weki Weki Seasonal Watering Statement:

"We are happy about the water proposals and sites we visited and discussed at Euston club recently".

"Hopefully we Traditional Owners and people of interest can venture back out to these sites during and after the watering events to see what outcomes and benefits to the environment and wildlife".

"We feel positive about this event and engagement thus far".

Latji Latji Mumthelang Seasonal Watering Statement:

"Regardless of potential rainfall presumed approaching this season, it is imperative to maintain water regimes next year".

"Watering is very important for our natural environments. It is essential for the health of our floodplains vegetation and can act as a trigger for germination of our indigenous medicinal plants such as Old Man Weed and various other cultural grasses and trees including the rejuvenation of our billabongs and water systems. A number of bird and fish species also rely on our watering to provide suitable breeding conditions".

"Everybody should know of the six seasons we live by, and we need to incorporate this knowledge into these watering regimes".

"Partnerships in the decision-making processes and planning of frameworks would be a good initiative with the implementation of a delegated Corporation representative, forming a funded indigenous advisory group. This would promote and empower outcomes for MCMA incorporating cultural knowledge with a professionally equipped Authorisation. (Walking together to make a better future)".

"It would be desired if we could have discussions surrounding an implementation of a walking together statement with MCMA".

Tati Tati Land & Water Statement:

"Spokesperson stated Tati Tati Land & Water are very happy and excited to water on country saying it is very positive".

"Tati Tai Land & Water are also very happy with the level of participation the group is involved and the group really wants to be on country when the water is been delivered".

Wadi Wadi Nation Statement:

"Wadi Wadi Nation is a very strong yes to Country needing watering on most sites, and very happy with participants involvement. If we don't do anything now, we will lose the lot. When the environmental watering begins it is important for Wadi Wadi representation to be out on site and be involved in the follow ups and monitoring".

All Traditional Owners with an interest in Hattah Lakes have been invited to make a Seasonal watering Statement. Some groups have not responded or have chosen not to make a statement or comment.

## 4 Social Recreational and Economic Values and Uses

In planning the potential environmental watering actions in Table 5.2.12, 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 lake, multiple ecotourism operators who benefit directly when the lakes contain water, social wellbeing from connecting with nature, and social gatherings).

The Hattah Lakes is a high-profile site to the local tourism industry 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 2024–25 season are presented in Table 4.1.

The condition of the Hattah Lakes icon site 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.

Current feedback from the public, via conversations with Mallee CMA staff and formal surveys, is that connecting with nature at Hattah Lakes is very important for the community's health and wellbeing. The community appreciate and seek opportunities to be closer to nature through activities including kayaking, walking, bird watching, fishing and social gatherings, as evidenced by feedback received at community markets (Figure 4-1). Evidence of this site being used for recreational purposes includes, posts on social media from local interest clubs including; Mildura

Birdlife, Sunraysia Bushwalkers and Sunraysia inspired photographers.



Figure 4-1 Word clouds of community values gathered from engagement events and sites which came up most frequently as being important.

The site is commercially important for apiarists, who use Hattah Lakes to rest their bees away from commercial crops. 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 out of season, ensuring they are in top condition for pollinating local horticultural orchards.

Economically, the site is important to local businesses that benefit from national and international tourism. These benefits will be experienced by local accommodation providers and hospitality venues in nearby towns. After delivery of environmental water in 2021 to the lakes following a drying event, Parks Victoria recorded a noticeable increase in visitors using the park. A general store ('Hattah Store') on the Calder highway, nearby to the main entrance to the Hattah Lakes, noticed 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.

Hattah Lakes is an excellent educational resource for local and non-district 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 2024–25.





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	-Commercial enterprise	Water delivery benefits vegetation outcomes, which support flower production providing abundant resources for bees.

Beneficiary	Connection to the waterway	Values/ Uses/ Objectives/ Opportunities	How have these benefits been considered?
	of almond trees and other horticultural crops.		
Bird watching	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	Water is regularly delivered to sites for the purpose of meeting waterbird and bird objectives.
Camping	Water draws people to sites. Increasing the quality and beauty of a region draws tourists to the area.	-Recreation -Fishing -Birdwatching -Photography	Water attracts people. Campers, given the option, will generally prefer setting up at a site close to water. This provides them with instant access to the water in which to undertake complementary recreational pursuits.
Indigenous cultural value	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 -Water is spiritual and important for the land -Meeting place for Traditional Owners, Elders and Aboriginal community	Water is spiritual to Aboriginal people and important for the land. Traditional Owners and Elders enjoy coming out on country and experiencing the benefits of water such as attracting birdlife and animal
Local businesses	Businesses such as retail and hospitality benefit from increased tourism. Local ecotourism companies take visitors and community on tours through the Hattah-Kulkyne National Park and participate in a range of recreational activities.	-Local employment opportunities -Retaining money in local communities -Support local industry/business	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 relates to increased eco-tourism opportunities.
Research	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. -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.
Schools and education of community	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). -Recreation/outdoor education (e.g. School camps).	Through delivery of environmental water, 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' children's book is being used by



Beneficiary	Connection to the waterway	Values/ Uses/ Objectives/ Opportunities	How have these benefits been considered?
		-Connection with country and indigenous/cultural education.	primary school children to visit the lakes and 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 -Tour operators	Community consultation and engagement is regularly undertaken as part of the environmental water delivery program. Community members and visitors are considered in water delivery planning with site access being maintained where possible and information being communicated.

*Table 4.2 Environmental 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.


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	<b>HL9</b> - 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	<b>HL1</b> - 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).  <b>HL2</b> - 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  V2 - By 2030, maintain the extent and improve the condition of river red gum, black box and lignum, compared to 2006 baseline levels	<b>HL3</b> - Improve species richness and abundance of native water-dependent floodplain and wetland aquatic vegetation at the Hattah Lakes Icon Site by 2030.  <b>HL4</b> - Improve condition and maintain extent from baseline (2006) levels of river red gum ( <i>Eucalyptus camaldulensis</i> ), black box ( <i>E. largiflorens</i> ) and lignum ( <i>Duma florulenta</i> ) 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	<b>HL7</b> - 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.

<p>B2 - Maintain the regional waterbird population by providing refuge during droughts</p>	<p><b>HL8</b> – 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.</p> <p><b>HL6</b> - 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.</p>
 <p>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</p>	<p><b>HL1</b> - 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).</p>

## 6 Engagement

Mallee CMA has engaged with a variety of different stakeholders and community in the development of the SWP (Table 2). Engagement included face to face meetings with community members, formal meetings with program partners, attendance at pop ups and community market events, newsletter articles, digital content through website and social media, distribution of a flyer and community values survey.

Various platforms have been utilised to provide engagement opportunities to the key stakeholders including Traditional Owners, Parks Victoria, Victorian Environmental Water Holder, Lower Murray Water, Goulburn Murray Water Authority and landholders. Engagement with these key stakeholders was imperative to the prioritisation and planning process. Due to the interest in water management by communities, it is important proposed watering sites are supported by high quality justification and background information. All meetings between stakeholders and community and Mallee CMA staff provide opportunity for stakeholder feedback. Discussions around rationale for site selection and gathering support for proposed watering were the main objectives of any communications activities with the community.

In developing the 2024/25 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 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 as had previously been done. This new 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-November 2023, with all engagement mapped against the [International Association for Public Participation \(IAP2\) Spectrum](#). This ensured all engagement recognised stakeholders' levels of concern in environmental water planning, and clearly stated the promise being made to stakeholders at each participation level.

Using the International Association for Public Participation's (IAP2) spectrum, key stakeholders were engaged at the higher end of the IAP2 spectrum - 'involve' and 'collaborate'. Face to face meetings, where practical, were conducted and online platforms were utilised where restrictions impeded in-person consultation. Joint planning and sharing of information are the key proponents of this type of engagement.

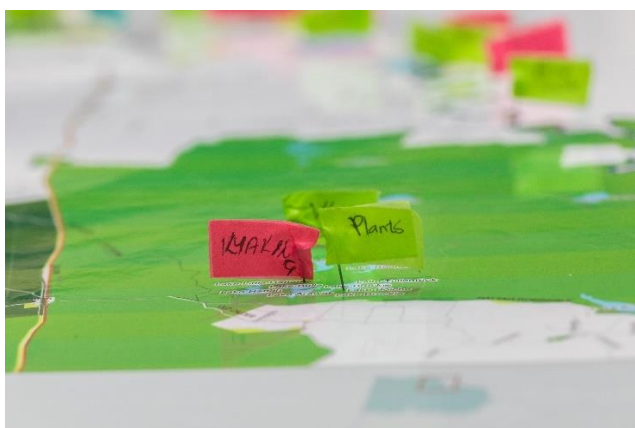
Traditional Owner consultation occurred at the IAP2 level of INVOLVE. This level of engagement was chosen to work directly with Traditional Owners throughout the development of the Hattah SWP. As part of this level of engagement, Mallee CMA will ensure Traditional Owners concerns and aspirations are directly reflected in the SWP. Furthermore, Mallee CMA will work directly with Traditional Owner groups to demonstrate how their input influenced decision making.

Community consultation occurred at the IAP2 level of CONSULT. This level of engagement was chosen to obtain public feedback regarding community values of wetlands they visit. As part of this level of engagement, Mallee CMA will provide feedback to the community regarding how their input influenced the planning of environmental water.

The general public, local council, tourism organisations, recreational clubs and environmental groups were engaged at lower levels, such as 'consult' and 'inform' on the IAP2 spectrum. An interactive map was used at markets and drop-in days where community members were asked to identify the values/uses at specific sites and which sites they would like to receive environmental water by placing flag pins on a map where they occurred. Data collected was then factored into Mallee CMA's

planning for the 2024/25 SWP. Online surveys, fact sheets and social posts were also used to communicate with those that could not meet face-to-face. These methods of engagement provided an opportunity for the community to provide feedback and outline community values for the sites to better inform current and future water planning.

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*

Agency consultation with Parks Victoria (PV) and Goulburn Murray Water (GMW) occurred at the IAP2 level of COLLABORATE. This level of engagement was chosen to partner with PV and GMW in the development of the SWP. Mallee CMA have looked to PV and GMW for advice and innovation in environmental water planning at the Hattah Lakes. Their advice and recommendations have been incorporated as much as possible in the SWP.

Agency consultation with Mildura Rural City Council (MRCC) occurred at the IAP2 level of INFORM. This level of engagement was chosen to provide MRCC with balanced and objective information regarding the SWP. Mallee CMA will continue keep MRCC informed.

Following completion of this SWP, Mallee CMA will produce informative community flyers and website updates detailing which lakes have been chosen to receive water for the environment water and why. Targeted consultation and engagement activities will be undertaken throughout the coming year with relevant community and stakeholders. This will offer the opportunity for further in-depth and detailed discussions and planning and will help to close the loop on engagement activities conducted earlier in the year which asked for feedback, by demonstrating how the feedback that was provided has been considered in writing this proposal.



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	Aboriginal community members	Involve	<ul style="list-style-type: none"><li>Face-to-face meetings with individual Traditional Owners and community members across the catchment who have an interest in Hattah</li><li>Meeting on country with Traditional Owners at Hattah to discuss SWP for 2024/25 (10/10/23).</li></ul>	<p>Allow Traditional Owners, Elders and Aboriginal community members to speak for Country.</p> <p>Opportunity to guide watering operations to benefit items of cultural significances.</p> <p>Two-way sharing knowledge between cultural practices and floodplain management principles</p>
Community groups and environment groups	Wider community	Inform Consult	<ul style="list-style-type: none"><li>Online – web based and social media</li><li>Drop in day to talk about Hattah SWP with locals at Nangiloc General Store (17/11/2023)</li><li>Attendance at local markets to talk with community about SWPs, including for the Hattah Lakes. These markets included Sunraysia Farmers Market in Mildura (2/9/2023 and 2/12/2023) and Red Cliffs Country Market (3/9/2023 and 8/10/2023).</li></ul>	To engage with local community about environmental watering at Hattah, where they would and wouldn't like to see water. 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	<ul style="list-style-type: none"><li>Presentation and discussion of proposed watering sites (14/3/2024).</li></ul>	To provide information to community who value and utilise the site and capture community values for the site.
	Sunraysia Bushwalking Club	Inform	<ul style="list-style-type: none"><li>Fact sheet</li></ul>	
	Mildura 4WD Club	Inform		

	Mid-Murray Field Naturalists	Inform		
<b>Government agencies</b>	Parks Victoria (PV)	Collaborate	<ul style="list-style-type: none"> <li>• Mallee CMA meets monthly with PV</li> <li>• Annual risk assessment workshop, including discussion of proposed sites (19/02/2024)</li> <li>• Presentation of proposed Hattah environmental watering at Hattah Ramsar group meeting (12/3/2024)</li> </ul>	Discussion with key local Parks Victoria (PV) Staff regarding proposed sites and seek advice on what they would like to see across their areas of responsibility and any issues with practical logistics.
	Victorian Environmental Water Holder (VEWH)	Collaborate	<ul style="list-style-type: none"> <li>• Discussion of SWP guidelines (24/1/2024)</li> <li>• Annual risk assessment workshop, including discussion of proposed sites (19/2/2024).</li> <li>• Ongoing discussion as planning progresses.</li> </ul>	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	<ul style="list-style-type: none"> <li>• Presentation of sites at TLM icon site Managers Forum (15/2/2024)</li> </ul>	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	<ul style="list-style-type: none"> <li>• Annual risk assessment workshop, including discussion of proposed sites (19/2/2024).</li> </ul>	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	<ul style="list-style-type: none"> <li>• Annual risk assessment workshop (19/2/2024)</li> </ul>	
	Department of Energy, Environment and Climate Action (DEECA)	Inform	<ul style="list-style-type: none"> <li>• Presentation of sites at TLM icon site Managers Forum (15/2/2024)</li> </ul>	

	Mildura Rural City Council	Inform	<ul style="list-style-type: none"> <li>Regular formal and informal conversations through various meetings and face-to-face interactions.</li> </ul>	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	<ul style="list-style-type: none"> <li>Fact sheet / website information</li> </ul>	To inform the community of the development of the plan and how input can be provided to Mallee CMA.
Local businesses and tourism operators	Hattah Lakes Store	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.
	Sunraysia Apiarist Association	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information Apiarists about the planning underway for environmental watering and opportunities to ask questions as required.
	Murray Offroad Adventures	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.
	Mallee Tours	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.
	Mildura Information Centre	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.
	Wildside Outdoors	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.
	Visit Mildura	Inform	<ul style="list-style-type: none"> <li>Fact sheet</li> </ul>	To provide information for visitors to the area and local community about the upcoming watering events and provide opportunity to provide feedback.

## 7 Scope of Environmental Watering







The process for the extent of watering of the Hattah Lakes in this 2024-25 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 2024/25 were updated late in 2020.

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. The approach used to gather this information and outcomes from consultation and communication is detailed in Sections **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference source not found.**.




Special consideration was given to the Victorian Murray Floodplain Restoration Project (VMFRP), in particular the proposed Hattah North component of that project. The project areas will potentially have construction of infrastructure commencing across the 2025-26 year so this was taken into account when planning for environmental water of the Hattah Lakes across 2024-25.

Actions proposed for 2024-25 will require the operation of the permanent pumping infrastructure located at Messengers regulator at the Chalka creek inlet.

Table 7-1: Potential Watering Actions in 2024-25 at Hattah Lakes

Wetlands	Potential environmental watering action	Climatic scenario/s	Expected watering effects	Rationale	Environmental objectives	VEWH objectives
<b>Hattah Lakes</b>	Drawdown	Drought	<ul style="list-style-type: none"> <li>• Provide conditions for lakebed herbland to establish during drawdown.</li> <li>• Provide shallow-water habitat to provide refuge and feeding habitat for wetland-dependant species including frogs and water birds.</li> </ul>	<p>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.</p> <p>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.</p>	HL1, HL2, HL3, HL6	 
<b>Hattah Semi-Permanent Lakes (Lockie, Little Hattah, Hattah, Bulla, Yerang and Mournpall).</b>	Top up southern lakes to 42.5 m AHD during spring through delivery of up to 10,000 ML.	Dry Average	<ul style="list-style-type: none"> <li>• Maintain water in semi-permanent wetlands (Lakes Lockie, Hattah, Little Hattah, Bulla, Yerang and Mournpall).</li> <li>• Provide soil moisture to improve condition of riparian vegetation, specifically River Red Gum.</li> <li>• Provide shallow-water habitat to provide refuge and feeding habitat for wetland-dependant species including frogs and water birds.</li> </ul>	<p>This delivery, after allowing over a year of drawdown, will build on positive environmental gains achieved following delivery and flood in the previous years, particularly for the southern lakes.</p> <p>Filling the southern lakes will result in a mosaic of habitats across the Hattah system as the northern lakes continue to drawdown and dry. This will support a much more diverse range of flora and fauna species across the icon site. It also supports and aligns with our long-term goals of wide scale condition improvement across the site for vegetation actioned through larger deliveries that would be less feasible without smaller scale deliveries.</p> <p>A spring delivery will help improve the productivity of wetlands through the inundation of dried sediments and the activation of carbon and nutrients into the water column to support food webs of fish, frogs and waterbirds that have been in high numbers post-</p>	HL1, HL2, HL4, HL3, HL6, HL8, HL9	   



			<ul style="list-style-type: none"> <li>Stimulate the release of carbon and nutrients to increase productivity of the floodplain foodwebs.</li> <li>Increase wetland productivity.</li> <li>Provide a diversity of habitat across the Hattah lakes system through provision of a variety of water levels across the lakes.</li> </ul>	<p>flooding. The shallower lakes that will have dried by spring will have time to establish presence of flora and fauna prior to spring. Seasonal spring cues rely on plants and animals being present in the system to be able to respond to the new spring flush entering the system.</p> <p>Small-bodied fish populations will be supported through spring watering in the southern lakes through provision of increased and improved access to habitat. This will support continuation of successful annual breeding and development of a strong fish community following two years of flooding.</p>		
<b>All Hattah Lakes (except Lake Kramen)</b>	Open all structures to allow natural flow to enter lakes.	Wet	<p>As above plus:</p> <ul style="list-style-type: none"> <li>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.</li> </ul>	<p>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.</p> <p>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.</p>		
<b>All remaining lakes in the Hattah Lakes system (excluding lakes Lockie, Little Hattah, Hattah, Bulla, Yerang and Mournpall)</b>	Drawdown	Dry Average Wet (for Lake Kramen only)	<ul style="list-style-type: none"> <li>Drawdown of all persistent temporary wetlands as well as the episodic Lake Kramen and the lakes in the northern section of the Hattah Lakes (Lakes Bitterang, Cantala and Woterap).</li> </ul>	<p>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.</p>	HL1, HL2, HL3, HL6	 

		<ul style="list-style-type: none"> <li>• Provide conditions for lakebed herbland to establish during drawdown.</li> <li>• Provide shallow-water habitat to provide refuge and feeding habitat for wetland-dependant species including frogs and water birds.</li> </ul>	<p>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 waterbirds shift, providing more favourable conditions for wading and shorebird species.</p>		
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## 8 Scenario Planning

Scenario planning and prioritisation for 2024–25 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. Sites chosen for 2024-25 focus on sites that are behind their watering regimes and a consecutive inundation, following natural flooding in 2022, and continued high river conditions throughout 2023-24, will promote germination and aid in the process of restoring their ecological character.

From a long-term planning perspective, the influence of the VMFRP applies significant weight to planning and prioritisation for this year. Proposed start of construction will likely limit our ability to undertake watering across the construction footprint for approximately 1.5 years. This means there will be a period where the landscape may be without water. With this in mind, planning has focused on building resilience into the environment across the icon site where possible.

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.

Water availability is a strong consideration during scenario planning. As all water for the region comes from upstream storages, there is some ability to predict water availability locally at the Hattah Lakes. Included in consideration is carryover water, forecasting and inflows. Carryover is particularly important to consider for early year demands (i.e. early spring). The availability of high river flow, and unregulated flows in the River Murray passing the Hattah Lakes site also ensures higher confidence in water availability for delivery, and increases the likelihood of following a higher usage water scenario.

### 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.

Under a Drought scenario, no water will be delivered to the Hattah Lakes. The lakes will continue to draw down, with a number of shallow lakes drying during the year. The flooding in Summer 2022/23 and August 2023 and ability of many of the lakes to retain water over a number of years means that critical habitat will be maintained for 2024–25.

Lake Kramen will continue to draw down in 2024–25 following natural flooding in summer 2022-23 and in line with long-term planning.

At this point, we do not envisage a drought scenario to eventuate in 2024–25. For this to occur there needs to be a significant shift that indicates no in-flows are forecast for the system over the next 6+ months.

## 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
- Support connectivity between sites

Under a Dry scenario, environmental water delivery will look to continue to build resilience and maintain key functions of wetlands across Hattah Lakes. This will be achieved through delivery of up to 10,000 ML of water during spring to top up the southern semi-permanent lakes (Lakes Lockie, Hattah, Little Hattah, Bulla, Yerang and Mournpall), targeting a retention level of 42.5 m AHD. This will build on positive environmental gains achieved following natural inundation in the previous couple of years and help create a mosaic of diverse habitats across the landscape.

Lake Kramen will continue to draw down in 2024–25 following natural flooding in summer 2022-23 and in line with long-term planning.

## 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

Actions under an average scenario will be the same as under a dry scenario. Delivery of up to 10,000 ML of water targeting a retention level of 42.5m AHD in the southern semi-permanent lakes.

Current indications have the 2024-25 water year starting with this scenario with high expected carry over and average rainfall forecast.

## 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 environmental watering actions for the Hattah Lakes under each climatic scenario for 2024-25

Planning scenario	Drought	Dry	Average	Wet
Expected conditions	<ul style="list-style-type: none"> <li>Year-round low flow in the Murray River and no natural inflow to the Hattah Lakes; substantial wetland drying will occur</li> </ul>	<ul style="list-style-type: none"> <li>Rare high-flow events in the Murray River and no natural inflow to the Hattah Lakes</li> </ul>	<ul style="list-style-type: none"> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Lengthy periods of high flow in the Murray River with major spills from storages resulting in widespread inundation of the Hattah Lakes and floodplain</li> </ul>
Hattah Lakes				
Potential environmental watering – tier 1 (high priorities)	Tier 1a (can be achieved with predicted supply)			
	No action. Natural flooding in Summer 2022/23 and again in August 2023 will provide sufficient water to maintain lake refuge at the landscape scale.	Deliver water to target a water level of 42.5 m AHD in the southern Hattah Lakes (retention level).	If river levels allow for unregulated flow into the system, structures will be opened to allow unimpeded flow. If 42.5 m AHD not achieved, regulators will be closed at peak of flow and water pumped to target a water level of 42.5 m AHD in the southern Hattah Lakes (retention level).	All structures will be opened to allow natural flow to enter.
Possible volume of water for the environment required to achieve objectives	<ul style="list-style-type: none"> <li>No delivery</li> </ul>	<ul style="list-style-type: none"> <li>10,000ML (Tier 1a)</li> </ul>	<ul style="list-style-type: none"> <li>10,000ML (Tier 1a)</li> </ul>	<ul style="list-style-type: none"> <li>No delivery</li> </ul>
Priority carryover requirements for 2025-26	<ul style="list-style-type: none"> <li>N/A</li> </ul>			



## 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 2024-25

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or 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.	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Planned deliveries can be interrupted and rescheduled with minimal impact on outcomes</li> <li>Weir pool manipulations may be curtailed in high demands periods</li> <li>Consult MCMA to prioritise watering actions that will have outcomes severely affected if delivery is interrupted and liaise with DELWP and MDBA to plan avoidance of interruptions</li> </ul>	MCMA MDBA VEWH	Low	Static
Environment	Maintenance activities by the storage operator or constructing authority affect the ability to deliver water to sites.  - Hattah assessment - flood damages have been addressed to enable 2024-25 planned actions	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Monitor maintenance activities and schedules to identify possible issues and reschedule deliveries actions if required to minimise any disruption.</li> <li>Provision of early advice of planned maintenance actions.</li> <li>Ensure consultation with storage operator on watering plan development</li> </ul>	MCMA GMW 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.	Possible	Minor	Low	<ul style="list-style-type: none"> <li>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.</li> <li>Land Managers implement the required</li> </ul>	MCMA	Low	Static

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
					management activities prior to and during environmental watering events. This includes: <ul style="list-style-type: none"> <li>• identification of impacted assets</li> <li>• 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</li> <li>• communication of planned events, access closures and alternative recreational opportunities</li> </ul> *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.	Parks Vic		
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	Likely	Moderate	Medium	Land Managers: <ul style="list-style-type: none"> <li>• implement management activities to prevent access to flooded roadways (e.g. close roads, communicate planned events, install signage)</li> <li>• repair damage during and after environmental watering events</li> <li>• Consider rationalisation of road networks to remove unwanted access tracks and improve the standard of retained tracks.</li> </ul> *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.	Parks Vic	Low	Static

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
Legal	Access routes into public park areas may be inundated by delivery of environmental water, leading to potential economic impacts on commercial operators.	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Communication and advice to commercial operators to alert them of environmental watering, via Land Manager as licensing authority.</li> </ul>	MCMA	Low	Static
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	Unlikely	Minor	Low	<ul style="list-style-type: none"> <li>Monitor ABA balances and undertake regular communications with CMA as part of usage monitoring and portfolio management activities.</li> <li>Monitor deliveries in progress to ensure that they align with ordered/approved volumes. This may include consultation via the OAG to cover all sites</li> </ul>	VEWH MCMA	Low	Static
Business Costs	Costs exceed approved VEWL funding for delivery actions at a site basis, leading to impacts on watering activities (including possibly cessation of deliveries).	Possible	Moderate	Medium	<ul style="list-style-type: none"> <li>Develop accurate costings including allowances for planned risk mitigation actions and tracking of actuals against estimates.</li> <li>Reallocate funding, based on proposals developed by MCMA.</li> <li>Ensure specifications for service providers include coverage of contingency measures</li> </ul>	MCMA VEWH 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  Note: There are also reputational risks if effective engagement and	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Develop accurate costings including allowances for planned risk mitigation actions, and tracking of actuals against estimates.</li> <li>Undertake early assessments to identify potential cultural heritage issues and include in planning, with appropriate contingency allowances</li> <li>Reallocate funding within the overall funding contract, based on proposals</li> </ul>	MCMA MCMA VEWH	Low	Dynamic

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
	management of cultural values issues in not undertaken with T.O.s Time for undertaking assessments is biggest risk to implementing watering actions				developed by MCMA.  Note: potential future recognition of joint management arrangements with TOs may see a need for provision of funding.			
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.	Likely	Moderate	Medium	<ul style="list-style-type: none"> <li>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.</li> <li>Obtain any necessary formal approvals/permits and implement required actions.</li> <li>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 ACRIS)</li> <li>Apply MCMA cultural heritage site assessment processes</li> </ul>	MCMA	Low	Dynamic
Environment	Total cost of proposed delivery actions exceeds the funding that can be provided by VEWH, limiting scope of the program and not achieved planned environmental outcomes	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Prioritise funding and site selection in line with available resources.</li> <li>Undertake preliminary assessment of costs during development of proposals and scoping of the plan.</li> </ul>	VEWH	Low	Static
Reputational	Reporting of water usage and updating of water register lags behind deliveries, leading to possible overuse of environmental entitlements and incorrect reporting	Possible	Major	Medium	<ul style="list-style-type: none"> <li>Post estimated usage to water register during or immediately after delivery and adjust for actuals as soon as possible.</li> <li>Review water accounting processes to identify any opportunities for improvement.</li> </ul>	GMW	Low	Static

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
	of “water used/available” in the water market, with implications for efficient functioning of the water market.				<ul style="list-style-type: none"> <li>Regular reporting of delivery volumes and progress to VEWH</li> </ul>	Storage Operators  MCMA		
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.	Likely	Minor	Low	<ul style="list-style-type: none"> <li>Ensure delivery routes downstream of pump sites can withstand the proposed flow rates without unacceptable impacts.</li> <li>Armouring and other protections may be installed if required.</li> <li>- Implement ramp up and ramp down phases for flows to reduce erosion risks</li> <li>- residual risk not rated, to be addressed in relevant delivery plan</li> </ul>	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 )	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Ensure asset ownership is clear and asset owners undertake pre-event inspections and maintain assets as required*. (including electrical supply to Hattah pumps).</li> <li>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.</li> <li>- ensure levees designs are fit for purpose and address trafficability needs or control traffic access to levees etc. to ensure safety</li> <li>- require inspections to ensure temporary levees are built according to specifications during construction, and prior to commencement of delivery</li> <li>- Site selection for pump and meter to</li> </ul>	MCMA / Asset Owner	Low	Dynamic



Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
					minimise potential for damage, including protection of meter from falling tree limbs or other damage if required. - Develop agreed accounting process to estimate delivery volumes in the event of meter damage/data loss  *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.	VEWH/GMW		
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)  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	Possible	Major	Medium	<ul style="list-style-type: none"> <li>• Ensure asset ownership is clear and asset owners undertake pre-event inspections and maintain assets as required.</li> <li>• Undertake operational monitoring during each event and respond as necessary to prevent failures.</li> <li>- ensure levee designs are fit for purpose and address trafficability needs or control traffic access to temporary levees etc. to ensure safety</li> <li>- Adapt and apply levee design standards being developed as part of VMFRP program</li> <li>- require inspections to ensure temporary levees are built according to specifications during construction, and prior to commencement of delivery</li> </ul> *Note that insufficient resources are likely to limit the asset owner's ability to perform maintenance and inspections. Increased	MCMA / Asset Owner	Low	Dynamic

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
					resources may reduce the likelihood of the risk occurring.			
Reputational	Noise impacts from temporary pumping installations lead to complaints and adverse publicity, and potentially EPA noise pollution enforcement actions	Unlikely	Minor	Low	<ul style="list-style-type: none"> <li>• Site selection and pump placement to minimise noise impacts.</li> <li>• Selection of quiet pumping equipment and installation of noise suppression measures.</li> <li>• Ensure that pumping contractors check and maintain equipment</li> <li>• Consider curtailing pumping during peak camper visitation periods for public land sites.</li> </ul>	MCMA	Low	Dynamic
Safety	Water delivery infrastructure (including temporary pumps etc.) creates safety risks for public.  Note: Water deliveries may also encourage increased visitation to particular sites.	Possible	Moderate	Medium	<ul style="list-style-type: none"> <li>- Install safety barricades and implement suitable traffic control measures</li> <li>- Provide alert in the appropriate "changed conditions" sections of the PV website.</li> </ul>	MCMA/asset owner 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	Unlikely	Minor	Low	<ul style="list-style-type: none"> <li>• Monitoring climate forecasts and developing contingency plans for possible changes to actions.</li> <li>• Identify any potential changes to proposed actions arising through SCBEWC</li> <li>• Communicate potential for changes to watering actions to stakeholders and the wider community.</li> <li>• Review MCMA register of structures and ensure that structures are adjusted/operated as necessary in light of changed conditions.</li> </ul>	MCMA VEWH MCMA MCMA  MCMA	Low	Dynamic

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
					<ul style="list-style-type: none"> <li>Implement more responsive procurement processes to allow adaptation to changing conditions (e.g. ability to promptly engage pumping contractors)</li> </ul>			
Legal	Environmental deliveries cause unauthorised inundation of private land, resulting in impacts on farm activities and assets.	Unlikely	Moderate	Low	<ul style="list-style-type: none"> <li>Update and ensure currency of any applicable agreements covering inundation of private land.</li> <li>Review previous watering events to identify any high-risk locations and develop specific actions as appropriate.</li> <li>Undertake site inspections prior to commencement of deliveries to identify new risk areas for action (including consideration of risks to property access routes).</li> <li>Inform landholders of intended watering actions and provide a contact number to call if they become aware of issues during the event.</li> </ul>	MCMA	Low	Static
Environment	Other environmental water managers' competing priorities and objectives may limit the ability to achieve intended objectives. (E.g. weir pool lowering prevents deliveries to Lindsay/Wallpolla)	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Early communication of priorities and objectives to other environmental water managers, and development of combined NSW/Vic watering proposals to SCBEWC</li> <li>Participation and co-ordination through various forums including OAGs.</li> <li>Studies to quantify relative benefits and impacts of competing actions.</li> </ul>	MCMA	Low	Dynamic
Business Costs	Insufficient resources available (including staff, funding for maintenance of roads, regulators, pumping etc), across partner organisations to deliver all planned	Possible	Minor	Low	<ul style="list-style-type: none"> <li>Partners notify the CMA and VEVH of resourcing constraints in advance of deliveries and VEVH convenes OAG meetings to consider implications and potential solutions</li> </ul>	MCMA MCMA MCMA	Medium	Dynamic

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
	<p>environmental watering actions, leading to cancellation or interruptions of deliveries and/or impacts to roads and infrastructure etc (esp. in PV areas).</p> <p>Note:</p> <ul style="list-style-type: none"> <li>- This risk relates to unplanned resource shortfalls, for example where Parks staff are diverted to bushfire duties with no advance warning.</li> <li>- Causes of risk may also include shortage of service providers, rather than just staff shortages.</li> </ul>				<ul style="list-style-type: none"> <li>• Continue to actively prioritise actions to match available resources and ensure key actions are delivered.</li> <li>• Reallocation of tasks and available funding.</li> </ul> <p>Note: also requires site specific assessments</p>			
Environment	<p>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.</p> <p>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.</p> <p>For 2024-25, additional cultural heritage risk assessments will need to be undertaken to assess flood impacts.</p>	Likely	Moderate	Medium	<ul style="list-style-type: none"> <li>• Early planning and prioritisation of actions.</li> <li>• Providing advice and early warning to each organisation of the actions proposed to understand the approvals expected to be required from each organisation.</li> <li>• Land managers to provide confirmation of approval requirements.</li> <li>• Streamlining annual watering plan approvals process.</li> <li>• Ensuring minimum water levels are maintained in critical wetlands prior to the end of the water year to provide a buffer against delays.</li> </ul> <p>Note: Especially relevant for PV environmental and cultural access approvals.</p>	<p>MCMA</p> <p>MCMA</p> <p>Land Managers</p> <p>VEWH</p> <p>MCMA</p>	Low	Dynamic

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
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.	Likely	Moderate	Medium	<ul style="list-style-type: none"> <li>• 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.</li> <li>- residual risk not rated, to be addressed in relevant delivery plan</li> </ul>	MCMA	Low	Static
Environment	<p>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.</p> <p>Note: The likelihood of this risk increases when a sequence of dry years concentrate pest animal on environmental watering sites.</p>	Likely	Moderate	Medium	<ul style="list-style-type: none"> <li>• Study/understand life history of species and develop high level management strategies.</li> <li>• 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.</li> <li>- Implement pest reduction efforts prior to delivery of water, to ensure increases in populations remain within "tolerable" levels (Note: This risk is still rated as medium after mitigation actions.)</li> </ul>	DEECA  MCMA or Land Manager	Medium	Static
Environment	Introduction of pest plants through works (including importation of fill) to establish pump sites and levees results in environmental impacts.	Possible	Major	Medium	<ul style="list-style-type: none"> <li>• Ensure machinery is cleaned in accordance with PV plant hygiene protocols.</li> <li>• Use weed free or appropriately treated fill that complies with PV specifications.</li> <li>- where possible, stockpile temporary levee</li> </ul>	MCMA	Low	Static



Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
					fill on site and reuse to avoid importing weeds • Provide advice to PV of intended works and ensure their inclusion in the PV environmental access agreement.			
Environment	Under either wet or dry conditions, access to temporary pumping sites in parks will deteriorate, reducing access and limiting watering actions	Possible	Moderate	Medium	• Coordination and advice PV on proposed delivery sites. • Repair track damage, including targeted fixes	MCMA 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.	Likely	Moderate	Medium	• Communicate the key objectives and benefits of environmental watering to the community through a range of channels. • 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. • Install explanatory signage on environmental watering at key sites. • Share communications materials and key messages between partners. - Tailor messaging for 24-25 to explain why watering after floods is positive	MCMA MCMA Land mgr. or MCMA 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. - Targeted site inspections with TOs, with regard to potential erosion and flood impacts from 22-23 - PV assessment of cultural heritage aspects of watering proposals	MCMA MCMA PV	Low	Static

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
Safety	Negative community sentiment in relation to government decisions/actions creates a safety risk for staff involved in environmental watering actions	Possible	Moderate	Medium	<ul style="list-style-type: none"> <li>• Timely sharing of information on known aggressive individuals or groups amongst all partners.</li> <li>• Share incident reports promptly to all partners</li> <li>• Ensure operational staff are informed of issues/risks and appropriate responses</li> </ul>	All	Low	Dynamic
Safety	People camping on floodplains may be displaced by environmental water deliveries and may be aggressive towards e-water staff as a result  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. <ul style="list-style-type: none"> <li>• Share incident reports promptly to all partners</li> <li>• Ensure operational staff are informed of issues/risks and appropriate responses</li> <li>- ensure safe operational procedures for staff are followed</li> <li>- providing information on watering actions in multiple languages</li> </ul>	All	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	<ul style="list-style-type: none"> <li>• Erect warning signage and implement road closures supported by public advice on changed conditions.</li> <li>• Consider installation of track closure gates and gauge boards at high risk sites</li> <li>• Undertake information programs to warn the public not to drive through flood water.</li> <li>• Identify non-flooded alternative sites for public use.</li> </ul>	Parks Vic	Low	Static
Safety	Negative community sentiment in relation to government decisions/actions creates a safety risk for staff involved in	Possible	Moderate	Medium	<ul style="list-style-type: none"> <li>- ensure staff are alerted to warnings about violent members of public</li> <li>- share intelligence on risks between agencies</li> </ul>	All	Low	Static

Risk category	Risk description	Pre-Mitigation Risk			Mitigation actions	Lead organisation for action	Residual Risk Rating	Risk type Static or Dynamic
		Likelihood	Consequence	Risk Rating				
	environmental watering actions  *This is state wide risk, but may not apply in all systems - the risk rating will reflect local risk levels				- Strategic Communication of benefits of e-water and concern over safety to wider public (with co-ordination between partners) - ensure safe operational procedures for staff are followed			

## 10 Approval, Endorsement and Consent

WATERWAY MANAGER APPROVAL OF THE SEASONAL WATERING PROPOSAL
<p>I, the authorised representative of the agency shown below, approve the Seasonal Watering Proposal for the Hattah Lakes system in 2024-25.</p> <p>SIGNED FOR AND ON BEHALF OF MALLEE CATCHMENT MANAGEMENT AUTHORITY</p> <p>Signature of authorised representative:</p> <p>Name of authorised representative: James Kellerman</p> <p>Position of authorised representative: General Manager Operations and Community</p> <p>Date: 19/4/2024</p>

ENDORSEMENT 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 2024-25.				
Role	Endorsing partner	Representative Role	Status Date	Notes/Comments
<b>Storage Manager</b>	Goulburn Murray Water	Andrew Shields <i>River Operations Manager</i>	<input checked="" type="checkbox"/> Endorsed. Date: 18/04/2024	<i>Endorsement via letter.</i>
<b>Water Corporation</b>	Lower Murray Water	Vijay Ignatius <i>Manager Water Quality and Environment Title</i>	<input checked="" type="checkbox"/> Endorsed. Date: 12/04/2024	<i>Endorsement via letter.</i>
<b>Land Manager</b>	Parks Victoria	Don Arnold <i>District Manager North West</i>	<input checked="" type="checkbox"/> Endorsed. Date: 19/04/2024	<i>Endorsement via email.</i>

CONSENT TO USE OF CONTENT					
Role	Endorsing partner	Content	For use in the		Notes
			Seasonal Watering Proposal	Seasonal Watering Plan	
<b>Traditional Owner</b>	Dadi Dadi Weki Weki	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	
<b>Traditional Owner</b>	Wadi Wadi Land & Water	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	
<b>Traditional Owner</b>	Tati Tati Land & Water	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 08/04/2024	
<b>Traditional Owner</b>	Latji Latji Mumthelang	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 10/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 10/04/2024	
<b>Traditional Owner</b>	Wadi Wadi Nation	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 10/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 10/04/2024	
<b>Traditional Owner</b>	Munatunga Elders	Chapter 3	<input checked="" type="checkbox"/> Consent provided. Date: 05/04/2024	<input checked="" type="checkbox"/> Consent provided. Date: 05/04/2024	



## 11 References

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.

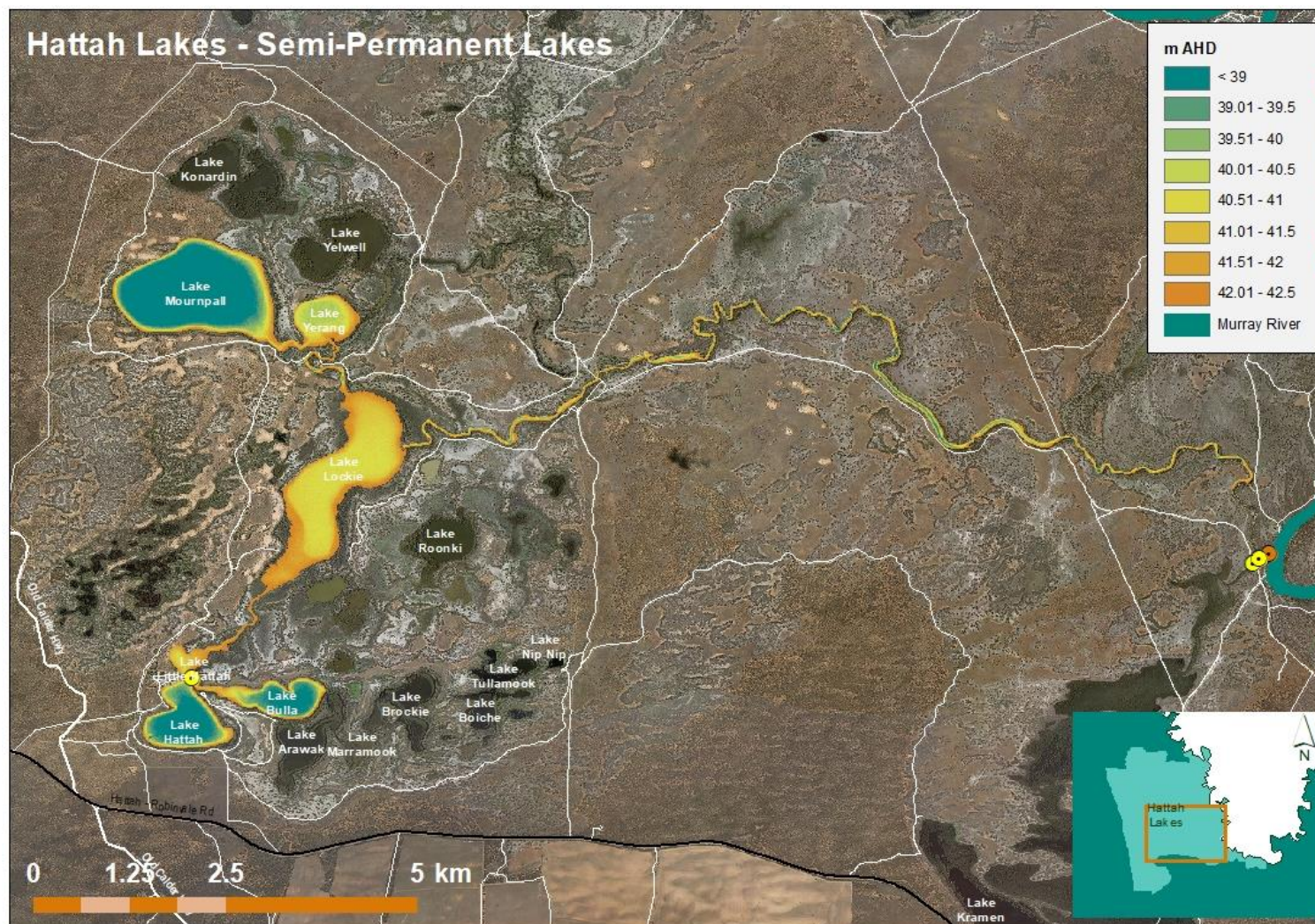
Mallee CMA. (2022). Hattah Lakes Operating Plan. Mildura: Mallee CMA.

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 - Acronyms and abbreviations


Abbreviation	Description
AHD	Australian Height Datum
DEECA	Department of Energy, Environment and Climate Action
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVC	Ecological Vegetation Class
FFG	<i>Flora and Fauna Guarantee Act 1988</i>
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 DELWP).
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.
<i>Water Act 1989</i>	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	<ul style="list-style-type: none"> <li>The event is expected to occur in most circumstances and/or</li> <li>Risk will occur within the next 6 months/or several times a year and/or</li> <li>Controls associated with the risk are extremely weak and/or non-existent and without control improvement the risk will eventuate.</li> </ul>	75-100
Likely	2	<ul style="list-style-type: none"> <li>The event is likely to occur in most circumstances and/or</li> <li>Risk will occur in the next 12 months/or once or twice a year and/or</li> <li>The majority of the controls associated with the risk are weak and without control improvement it is likely the risk will eventuate.</li> </ul>	50-74
Possible	3	<ul style="list-style-type: none"> <li>The event might occur and/or</li> <li>Risk will occur in the next 24 months/or once in two years and/or</li> <li>Some controls need improvement and if there is no improvement it is possible the risk will eventuate.</li> </ul>	25-49
Unlikely	4	<ul style="list-style-type: none"> <li>The event could occur at some time and/or</li> <li>Risk will occur in the next 60 months/or once in five years and/or</li> <li>Controls environment is strong with few control gaps and requires assurance check to maintain control effectiveness.</li> </ul>	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	<ul style="list-style-type: none"> <li>Limited effect on the natural and/or built environment and/or the environment suffers harm for up to 5 years.</li> <li>Environmental recovery on a minor scale up to 5 years.</li> <li>Mostly impacts environmental values at a single location in an individual system.</li> </ul>	<p>Cost impact on total budget of up to 5%.</p>	<ul style="list-style-type: none"> <li>Minor injuries or illness (physical/ mental) requiring first aid or medical attention of staff, visitor, contractor, or member of the public.</li> </ul>	<ul style="list-style-type: none"> <li>Staff complaints, passively upset, and uncooperative.</li> <li>10-15% staff turnover with minor loss of skills, knowledge, and expertise.</li> </ul>	<ul style="list-style-type: none"> <li>Adverse localised public and political interest.</li> <li>Limited attention on a single issue in local media over a short period.</li> </ul>	<p>Non-compliance with legislation or breach of duty of care, identified externally and either:</p> <ul style="list-style-type: none"> <li>resolved internally with no further escalation; or</li> <li>resulting in minor compensation, and/or negative precedent.</li> </ul>	<ul style="list-style-type: none"> <li>Minor short-term impact on business unit's delivery of services/functions.</li> <li>Customers/stakeholders/ communities slightly inconvenienced.</li> <li>Up to 1 day impact on business unit's critical activities.</li> <li>Minor impact (up to 10% delay) on project or program milestones.</li> </ul>	<ul style="list-style-type: none"> <li>Limited potential impact on heritage sites/artefacts</li> <li>Exposure of previously unknown cultural heritage items</li> </ul>
Moderate	2	<ul style="list-style-type: none"> <li>Moderate effect on the natural and/or built environment and/or environment suffers harm for 5-10 years.</li> <li>Environmental recovery on a small scale and/or over a period 5-10 years.</li> <li>Impacts environmental values at multiple locations in an individual system.</li> </ul>	<ul style="list-style-type: none"> <li>Cost impact on total budget between 5-10%.</li> </ul>	<ul style="list-style-type: none"> <li>Significant injury or illness (physical/ mental) requiring inpatient hospitalisation of staff member, visitor, contractor, or member of the public.</li> </ul>	<ul style="list-style-type: none"> <li>Low morale, disengagement, increased absenteeism, and workplace conflict.</li> <li>15-25% staff turnover with loss with resignations of some key staff.</li> </ul>	<ul style="list-style-type: none"> <li>Adverse localised negative public and political attention.</li> <li>Short term negative local media attention.</li> <li>Local community concern on a single issue over a sustained period.</li> </ul>	<p>Non-compliance with legislation or breach of duty of care resulting in:</p> <ul style="list-style-type: none"> <li>external investigation or report to responsible authority; and/or</li> <li>prosecution or civil action, with one of moderate level of compensation or moderate level of negative precedent.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate impact on business unit's delivery of services/functions.</li> <li>Customers/stakeholders/ communities inconvenienced.</li> <li>Up to 3 days impact on business unit's critical activities.</li> <li>Significant impact (10-20% delay) on project or program milestones.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate potential impact on heritage sites/artefacts</li> <li>Damage to previously unknown cultural heritage items or values</li> </ul>
Major	3	<ul style="list-style-type: none"> <li>Major effect on the natural and/or built environment and/or environment suffers harm for 10-20 years.</li> <li>Environmental recovery on a large scale and/or over a period of 10-20 years.</li> <li>Impacts regional environmental values or affects connected systems.</li> </ul>	<ul style="list-style-type: none"> <li>Cost impact on total budget between 10-20%.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive and/or permanent injury or illness (physical/ mental) of staff member, visitor, contractor, or member of the public.</li> </ul>	<ul style="list-style-type: none"> <li>Major morale issues, high absenteeism.</li> <li>25-50% staff turnover with resignations of key staff.</li> <li>Staff are not skilled to meet priorities.</li> </ul>	<ul style="list-style-type: none"> <li>Serious adverse public attention at State/National level.</li> <li>Negative State/National media on one or more issues over a prolonged period.</li> <li>Repeated displeasure by the Minister.</li> <li>Medium-term negative public interest (correspondence and phone calls) and political interest (in Parliament).</li> </ul>	<p>Non-compliance with legislation or breach of duty of care resulting in:</p> <ul style="list-style-type: none"> <li>external investigation or report to responsible authority;</li> <li>public inquiry (i.e. Royal Commission/ Parliamentary Committee);</li> <li>prosecution or civil action with high level compensation and high-level negative precedent; and/or</li> <li>sanctions imposed by external regulator.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing difficulties in delivering the business unit's services/functions.</li> <li>Major impact on customers/ stakeholders/ communities</li> <li>Up to 10 days impact on business unit's critical activities</li> <li>Major impact (20-50% delay) on project or program milestones</li> </ul>	<ul style="list-style-type: none"> <li>Major potential impact on heritage sites/artefacts</li> <li>Damage to known cultural heritage items or values</li> </ul>
Extreme	4	<ul style="list-style-type: none"> <li>Very serious effect on the natural and/or built environment and/or environment suffers long term harm (20+ years).</li> </ul>	<ul style="list-style-type: none"> <li>Cost impact on total budget between &gt;20%.</li> </ul>	<ul style="list-style-type: none"> <li>Single or multiple deaths or severe permanent disability or illness (physical/mental)</li> </ul>	<ul style="list-style-type: none"> <li>Organisation wide morale issues and absenteeism.</li> </ul>	<ul style="list-style-type: none"> <li>Very serious public outcry at State/National level.</li> <li>Negative State/National media over a prolonged period.</li> </ul>	<p>Non-compliance with legislation or breach of duty of care resulting in:</p> <ul style="list-style-type: none"> <li>prosecution or civil action leading to imprisonment of an officer;</li> </ul>	<ul style="list-style-type: none"> <li>Long term and severe impact on delivery of services/functions</li> <li>Severe impact on customers /stakeholders/communities</li> </ul>	<ul style="list-style-type: none"> <li>Very serious potential impact on heritage sites/artefacts</li> </ul>

	<ul style="list-style-type: none"> <li>• Environmental recovery on a very large scale and/or over a long period (20+ years).</li> <li>• Impacts environmental values state-wide.</li> </ul>		of staff, visitor, contractor, or member of the public.	<ul style="list-style-type: none"> <li>• &gt;50% staff turnover.</li> <li>• Staff are not skilled to meet core corporate outputs.</li> </ul>	<ul style="list-style-type: none"> <li>• Breakdown of public confidence in the Government / department / Minister or key project/program.</li> <li>• On-going or prolonged negative public interest (correspondence and phone calls) and political interest (in Parliament).</li> </ul>	<ul style="list-style-type: none"> <li>• public inquiry (i.e. Royal Commission/ Parliamentary Committee)</li> <li>• uninsured compensation payments</li> <li>• negative precedent requiring very serious impact and major reform to the department; and/or</li> <li>• severe sanctions imposed by external regulator.</li> </ul>	<ul style="list-style-type: none"> <li>• More than 10 days impact on business unit's critical activities</li> <li>• Vital or very serious delays (&gt;50% delay) to program/project delivery or project/program objective is not met</li> </ul>	<ul style="list-style-type: none"> <li>• Destruction of cultural heritage items or values</li> </ul>
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