

Inquiry into the Management, Governance and Use of Environmental Water

Parliament of Victoria Environment, Natural Resources and Regional Development Committee

Submission prepared by the Mallee Catchment Management Authority

1.1 Introduction

The Mallee Catchment Management Authority (CMA) welcomes the opportunity to provide input into the Environment, Natural Resources and Regional Development Committee's Inquiry into the Management, Governance and Use of Environmental Water.

As a Victorian CMA experienced in the delivery of environmental water, the Mallee CMA is committed to the efficient and effective use of environmental water. The dynamic nature of the Mallee environment requires decisions regarding environmental water to be directly informed by rigorous scientific information and analysis, along with strong local knowledge and understanding. We work closely with the water holders, river operators, researchers, and the community to ensure environmental water is used in the most efficient and effective way possible to deliver ecological benefits.

The Mallee CMA supports efforts to ensure environmental water allocations are managed, governed and used in the best way possible.

1.2 Purpose

In responding to the Environment, Natural Resources and Regional Development Committee's Inquiry into the Management, Governance and Use of Environmental Water, the Mallee CMA intends to draw on more than 13 years of experience to illustrate practical, on-ground examples of efficient and effective delivery of environmental water in the Victorian Mallee.

While not a water resource manager, the Mallee CMA is directly affected by the management and governance of environmental water entitlements. Appropriate management and governance of environmental water allocations is a responsibility that rests with water holders, but the Mallee CMA's responsibility is to our community

and our ability to continue to facilitate strong community involvement in caring for the region's land, water and biodiversity. Therefore, continued access to water allocated for environmental health is central to the way we – as an organisation and as a community - intend to care for our land, water and biodiversity into the future.

1.3 Context

The Mallee CMA is one of ten CMAs established in 1997 to facilitate integrated and ecologically sustainable management of natural, cultural and productive landscapes.

The Mallee CMA region covers 39,939km², around one-fifth of Victoria. It is the largest catchment management area in the state and runs along the Murray River from Nyah to the South Australian border, and south through vast dryland cropping areas and public reserves. The Mallee CMA region includes more than 760km of Murray River frontage, along with more than 555 km of Murray River anabranches and tributaries, and in excess of 900 wetlands (Mallee CMA, 2014).

While CMAs were established under the under the *Catchment and Land Protection Act 1994* (CaLP Act), the Mallee CMA is among those with obligations under the *Water Act 1989*, including operational management of the Environmental Water Reserve as a key component of an integrated program of river, wetland, floodplain and aquifer restoration (Water Act 1989 Statement of Obligations).

The Mallee CMA takes a strategic, structured approach to environmental watering.

The Mallee Regional Catchment Strategy (2013-19) is underpinned by the Mallee Waterway Strategy 2014-22, which covers 216 identified waterways. These waterways have then been grouped into 23 planning units according to hydrological interconnectedness and commonality of threats impacting on the waterways values. For each unit, the Mallee CMA has developed an Environmental Watering Management Plan that identifies environmental values and threats, and establishes long-term management goals.

Each year, the Mallee CMA works with the community to prioritise areas to receive environmental water, subject to ecological needs, water availability and seasonal conditions. These priorities are outlined within the Mallee CMA's Seasonal Watering Proposals, which outline potential watering actions for each climatic scenario (drought; dry; average; wet to very wet).

The Mallee CMA develops three watering proposals each financial year:

- One for the wetlands within the Mallee CMA region connected to the Wimmera-Mallee Pipeline¹;
- One for The Living Murray Icon Sites of Hattah Lakes and Lindsay-Mulcra-Wallpolla Islands; and
- One for Lower Murray Wetlands.

The information within these proposals is considered by the Victorian Environmental Water Holder, the independent statutory body responsible for holding and managing Victoria's environmental water entitlements, and collated into a Seasonal Watering Plan for Victoria.

The Mallee CMA first commenced environmental watering in 2004, delivering 3028 megalitres (ML) to 13 wetlands using temporary pumping infrastructure. In 2014-15, when commissioning environmental infrastructure at Hattah Lakes, the Mallee CMA coordinated delivery of more than 100 gigalitres (GL) at Hattah and other priority wetlands across the region.

In 2016-17, the Mallee CMA facilitated the watering of 24 wetlands, delivering approximately 39 GL. In addition to this, the Mallee CMA was able to take advantage of higher Murray River flows by facilitating the natural inundation of around 25 wetlands by opening 22 regulators and breaching 13 levee banks. Subject to seasonal conditions, water availability and operational considerations, the Mallee CMA is proposing to water 52 wetlands in 2017-18. Where possible, the timing of environmental water deliveries will reflect natural flooding cues to optimise ecological responses.

As at 1 August, 2017, the seasonal determination by the Northern Victoria Resource Manager remained unchanged at 66% of high reliability water shares (Resource Manager Northern Victoria, 2017). Based on advice from the Victorian Environmental

¹ The Wimmera-Mallee Pipeline (WMP) wetlands are located in the Wimmera-Mallee region, amid dryland cropping and grazing land. A former channel and dam system that provided stock and domestic water supply across this semi-arid landscape was removed and replaced with the pipeline, tank and reticulation systems between 2006 and 2010. This significantly reduced the availability of open water across the landscape, both in extent and frequency of inundation. To address this lack of open water, fifty-one priority sites consisting of either dams within terrestrial vegetation or wetlands with dams constructed within them, were connected to the pipeline to enable delivery of environmental water. A 1000 ML entitlement of environmental water was created to supply these sites. The fifty-one sites spread across three CMAs: Wimmera (13 sites), North Central (7 sites) and Mallee (31 sites).

Water Holder (VEWH), the Mallee CMA is planning its 2017-18 environmental water according to an “average” scenario. This means watering actions undertaken will aim to “recover” sites by improving ecological health and resilience, while also improving recruitment opportunities for key animal and plant species. For example, watering undertaken at Hattah Lakes during 2017-18 is aiming to improve the ecological health of large stands of blackbox, much of which has not been inundated since the 1970s.

In understanding environmental watering in the Mallee, it is important to note the Mallee CMA’s delivery of environmental water is unique in Victoria as it is largely achieved through pumping (using temporary infrastructure) and the use of environmental structures (e.g. regulators, track raising). This allows for targeted use of environmental water (i.e. only the amount of water required is piped or pumped to the priority wetland, minimising the need for large volumes of water to flood the area between the water source and the destination).

Significant investment in water management infrastructure, such as regulators, has been instrumental to continuing to improve the efficient delivery of environmental water in the Mallee. For example, the Mallee CMA coordinated the \$32 million package of environmental works constructed at Hattah Lakes, as part of The Living Murray program. This infrastructure allows this internationally recognised system of freshwater lakes to receive environmental water, in line with ecological needs and water availability. While the infrastructure can deliver as much as 1000 megalitres (ML) per day, it can do so without any impact on other river users. In addition to this, the Mallee CMA is currently working on developing seven of Victoria’s nine projects under the Sustainable Diversion Limits (SDL) Offset program – all involve the construction of environmental infrastructure to aid the efficient use of environmental water, that will help achieve the environmental objectives of the Basin Plan, using less water.

1.4 Response

The Mallee CMA has considered the Terms of Reference for the Environment, Natural Resources and Regional Development Committee’s Inquiry into the Management, Governance and Use of Environmental Water and will respond to each separately.

TOR #1: Assessment of the role of environmental water management in preventing or causing “blackwater” events

Blackwater events occur when floodwater returning to the river system contains elevated levels of dissolved organic carbon (Murray Darling Basin Authority, 2017). Normally the export of carbon from floodplains to a river channel is a beneficial process, providing sustenance to lowland river ecosystems. However, if the rate of oxygen consumption during decomposition of the organic carbon is faster than it can be replenished from the atmosphere, this can cause oxygen depletion in the water column. Low levels of dissolved oxygen can cause distress to fish and aquatic animals, with severe occurrences resulting in fish deaths.

The black appearance of the water is due to the release of carbon compounds (including tannins) as the organic matter decays – similar to the process of adding water to tea leaves (Murray Darling Basin Authority, 2017).

In the Mallee CMA’s experience, environmental watering undertaken within the Mallee CMA region has not caused blackwater events within the main Murray River channel for one or more of the following reasons (depending on the site and its history):

- Environmental watering is often undertaken at discrete wetland sites where there is little leaf litter present;
- Any environmental water returned to the Murray River following an environmental water delivery has been carefully managed and monitored to ensure any occurrence of water with very low dissolved oxygen levels is not released into the river in an uncontrolled manner.

Environmental watering undertaken at the Hattah Lakes in 2015-16 and in 2016-17 is evidence of the planning and monitoring undertaken to ensure the event did not cause or contribute to a blackwater event in the Murray River.

Based on the prediction for low inflow into the basin in 2016-17, the planned watering event at the Hattah Lakes was to top-up the semi-permanent wetlands to maintain aquatic habitat for fish and waterbirds. Under the scenario for a wet basin for this year, 35GL of water would be used to fill semi-permanent wetlands and some of the temporary wetlands. However, this environmental watering plan was superseded by the large natural flood event of 2016.

The natural flood hydrograph had two flood peaks, a small peak early on then a much larger peak in November 2016. The 35 GL was used to continue inflows into Chalka Creek following the first small high flow event in the River Murray and pumping stopped when the water level from the rising River Murray equaled the water level in the lakes and the natural increase in River Murray levels entered Chalka Creek.

The natural flood combined with the delivery of 35GL of environmental water exceeded the planned environmental water delivery under a wet basin scenario and provided much needed water to Black Box woodlands on the lower terraces of the floodplain. The positive effect this water has had on the Black Box woodlands is evidenced in much improved canopy densities, abundant flowering and the best seed fall since monitoring of seed fall started (Farmilo, Moxham, Kenny, & Sutter, 2017).

Long-term condition monitoring over the last 10 years has shown a positive trend in the condition of tree, wetland vegetation and floodplain vegetation. Wetland and floodplain plant communities have shown a gradual shift back towards expected functional groups, mainly through the shift from drought tolerant species towards wetland plants in wetlands and towards more flood tolerant species on the floodplain.

The operation of the pumps allowed the lakes on the floodplain to fill with water prior to the main flood event. The positive outcome from combining pumping with this natural event was that the lakes maintained relatively high dissolved oxygen concentrations compared to the main river channel. In an event where anoxic blackwater was of major concern, the lakes provided a refuge for aquatic animals.

Water quality was measured throughout the watering event at more than 23 sites, including sites in the lakes system itself and at points where the system connects to the Murray River. Not all sites were accessible for the whole of the natural flood event, and measurements were taken while access and safety allowed. These sites continue to be used for water quality monitoring during any environmental watering event undertaken at the Hattah Lakes. Water quality was measured using an Aquaread 5000 multi-parameter probe, calibrated daily before use. Set locations were used to maintain consistency across the event.

The main focus of the water quality monitoring was to continue collecting data on the water quality in the lakes themselves, particularly when the second larger peak of

water with low dissolved oxygen came down the Murray River peaking in mid-November. Additional monitoring sites at Messenger's regulator and in the main Murray River channel were set up to monitor the quality of water entering the Hattah Lakes system during the flood event. Water quality of the Murray River was obtained from data loggers already in river, set up by various water authorities for ongoing water quality assessments.

Between 19 October 2016 and 19 December, water quality in the lakes was measured eight times, with a pre-watering assessment made on 9 August, 2016. Monitoring commenced when the gates at Messenger's Regulator were opened to allow the natural floodwater to enter the Hattah Lakes system. Concurrent with the increase in water volume was the decrease in dissolved oxygen (DO) as water with low DO from further upstream made its way down the river.

The operation of the structures and pumping of environmental water prior to the low DO water coming down the Murray River allowed the lakes themselves to maintain relatively good DO levels compared to Chalka Creek and the river itself. Structures were able to be operated in such a way as to allow a large amount of low DO water to bypass the lakes.

Since the flood event, fish monitoring has shown that native fish including the large-bodied Golden Perch were present in the system. Non-native carp were also evident in high abundance. In addition to monitoring, fish eating birds, particularly Cormorant and Darter, were abundant and breeding in late summer. This suggests that fish numbers were high and could support large colonies of fish eating birds during a breeding event (Biosis, 2017) (MDFRC Pers. Comm.).

On the recession of the flood water, the landscape became very productive with abundant understory growth and productivity in the lakes. This provided opportunities for visitors to enjoy outdoor pursuits such as walking, birdwatching and canoeing. Camping was also very popular in autumn following the floods.

TOR#2: How environmental water and environmental water managers interact with, and utilise, management tools such as carryover and whether the carryover of environmental water impacts on the availability of water for irrigators

Carryover of environmental water has proven to be a useful tool for meeting ecological objectives in the Victorian Mallee, with a number of watering events undertaken that would not have been possible without the existence of carryover.

Perhaps the best example of this was during 2015-16, when the Mallee region experienced a very dry season, with no allocation made to the Wimmera-Mallee wetland environmental water entitlement. Despite this, carryover from previous years meant there was still environmental water available in 2015–16. Deliveries were made to 24 wetlands in the Mallee area, in spring 2015 and autumn 2016, with some wetlands receiving water once and others receiving water twice. Due to the dry conditions, watering was mostly of smaller parts of the wetlands to provide drought refuge in the landscape (Victorian Environmental Water Holder, 2017).

Many different animals (such as lace monitors, kangaroos, wallabies, turtles, carpet pythons, ducks, grebes, stilts and other waterbirds, frogs, yabbies and eastern long-necked turtles) used the Wimmera-Mallee wetlands in 2016–17. Vegetation (both submerged in the wetlands and on the banks, including nardoo, water milfoil and water ribbons) has responded well at the wetlands that were watered or naturally filled (via above average rainfall in winter 2016-17) and is contributing to the improved environmental conditions at these wetlands (Victorian Environmental Water Holder, 2017).

Similarly, carryover of environmental water can be of particular benefit when planning larger volume environmental water events, such as those undertaken at Hattah Lakes. Since 2013-14, when permanent pumping infrastructure and environmental works were commissioned, environmental watering events at Hattah Lakes have ranged from approximately 30 to 120 GL (delivered over a number of months). Planning of these events takes considerable time and interaction between various agencies, including the Mallee CMA, river operators, environmental water holders, and land managers. Advice from environmental water holders indicates the availability of carryover allocations for such events, which is particularly important as carryover provides increased certainty of water availability for large volume

environmental watering events that commence early in the water year (e.g. early July), prior to increases in allocations. As the Mallee CMA is not a water holder, the ability to access and use any carryover is determined by the environmental water holders.

It is important to note that planning for environmental water delivery in the Mallee CMA region ensures watering events do not adversely impact on other river users. For example, the pumps at Hattah Lakes are not operated at maximum capacity (i.e. 1000 ML per day) during periods of peak irrigation demand to ensure there is no impact on irrigation by reducing available flow volumes in the river. Similarly, environmental water delivery to protect the endangered Murray Hardyhead at Cardross Lakes utilises existing irrigation district infrastructure. In accordance with policy direction relating to interruptible supply, environmental water is only delivered once all irrigation demands have been satisfied.

TOR #3: Consideration of what barriers exist to the more efficient use of environmental water and how these may be addressed

It is acknowledged that both the Victorian and Commonwealth Environmental Water Holders have invested significant time and resources in improving the accessibility of information on their websites in recent years. For example, the VEWH now has extensive information available regarding the intent and purpose of environmental watering, along with the current watering program. This not only helps people in the general community understand why environmental watering is needed, it provides a central, public point of information on current events and decisions.

The transparency around environmental watering decisions could be further improved by the Victorian Environmental Water Holder making a public statement/s regarding the current scenario (i.e. drought; dry; average; wet to very wet) and providing rationale for assessment (e.g. VEWH has determined northern Victoria is currently in what is referred to as a “dry” scenario, and as such all environmental watering undertaken will be conducted to maintain river/wetland function. This assessment is based on climatic conditions, water availability etc). Under current practice, the VEWH advises CMAs of the relevant scenario applicable to the region. Making the statement public would further help community members to understand the current situation within the catchment and help increase public confidence in the rationale behind the watering decisions being made.

TOR #4: Assessment of fees and charges applied to environmental water and whether these differ from those imposed on other water users.

The Mallee CMA abides by the policy set out in the Northern Region Sustainable Water Strategy 2009, which states:

Policy 4.6 Charges for environmental water delivery in irrigation distribution systems: The following charges will be paid when environmental water is delivered through the irrigation distribution system. Where the environmental manager:

- a) Hold delivery shares, they will pay the standard delivery share charges*
- b) Relies on casual use, they will pay the standard casual use charges*
- c) Relies on interruptible access they will pay out of pocket costs*

When delivering environmental water outside of irrigation distribution systems, which predominantly the way Mallee CMA delivers environmental water, temporary pumping contractors are paid for the delivery, with procurement undertaken to test the competitive market.

The only exception to this is the operation of the permanent pumping infrastructure at Hattah Lakes, which is owned and operated in accordance with the joint venture arrangements underpinning The Living Murray program.

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