



14. Managing water quality and salinity



Part 14.

Managing water quality and salinity

The Wimmera-Mallee Water Resource Plan and Wimmera-Mallee Water Quality Management Plan, at [Appendix A](#), explain how water quality is managed in the Wimmera-Mallee. This Part summarises the Basin Plan approach to water quality management, and the Wimmera-Mallee Water Quality Management Plan. The requirements of the Basin Plan are met through the detailed information provided in the Wimmera-Mallee Water Quality Management Plan.

14.1 Water quality through the Basin Plan

The Basin Plan states (at section 5.04):

- i. *the objective in relation to water quality and salinity is to maintain appropriate water quality, including salinity levels, for environmental, social, cultural and economic activity in the Murray-Darling Basin; and*
- ii. *the outcome in relation to water quality and salinity is that Basin water resources remain fit for purpose.*

The Basin Plan seeks to achieve these primarily through:

- *Basin states' preparation of an assessment of risk to availability and condition for each water resource plan area; development and implementation of strategies to address each medium to high risk identified; and consideration of risks in the preparation of a water resource plan for each water resource plan area (10.40-10.43).*
- *specifying in Chapter 9:*
 - *water quality objectives for Basin water resources (9.03-9.09)*
 - *causes of water quality in the Basin (9.02)*
 - *water quality targets for: 1) water resource plans, 2) managing flows, and 3) long-term salinity planning (9.10-9.14).*
- *having regard to targets for managing water flows by the Murray-Darling Basin Authority, Basin Officials Committee, Basin states when managing flows, the Commonwealth Environmental Water Holder and holders of held environmental water and managers of planned environmental water (9.14); and*
- *application of long-term salinity targets in performing long-term salinity planning and management by the Murray-Darling Basin Authority, Basin Officials Committee and agencies of Basin states (9.19).*
- *Basin states' preparation and implementation of Water Quality Management Plans in accordance with requirements set out in clauses 10.29-10.35 having regard to a number of elements of Chapter 9.*

14.1.1 Wimmera-Mallee Water Resource Plan Risk Assessment

Victoria has prepared the Wimmera-Mallee Water Resource Plan Risk Assessment (see [Appendix B](#)), considering risks to condition and availability of water in the water resource plan area. Consideration was given to scenarios that could affect water resources, including the risks that changes to condition could have on different beneficial uses. Risks were considered in the development of this water resource plan.

14.1.2 Having regard to targets for managing water flows

Victorian water managers and the Victorian Environmental Water Holder have regard to the following targets for managing flows in performing their duties and reporting on their actions annually through the Basin Plan reporting requirements:

- dissolved oxygen: to maintain dissolved oxygen at a target value of at least 50% saturation; and
- recreation water: the targets for recreational water quality in section 9.18 of the Basin Plan.

The Basin Plan also presents targets for salinity that should be given regard in managing water flows. These targets, presented at section 9.14 (5)(c), are not applicable to the waters of the Wimmera-Mallee water resource plan area.

14.1.3 Applying targets for long-term salinity planning and management

Victoria applies the targets for long-term salinity planning to catchment strategies and salinity action plans. The end-of-valley targets that apply to the Wimmera-Mallee are the:

- Wimmera River at Horsham (gauging site 415200):
 - median concentration: 1,380 (EC or $\mu\text{s}/\text{cm}$)
 - 80th percentile concentration: 1,720 EC or $\mu\text{s}/\text{cm}$
 - mean salt load 31,000 tonnes per year
- Avoca River at Quambatook (gauging site 408203):
 - median concentration: 2,096 (EC or $\mu\text{s}/\text{cm}$)

14.2 Wimmera-Mallee Water Quality Management Plan

The Wimmera-Mallee WQMP has been developed in a manner consistent with the Basin Plan requirements of sections 10.29–10.35. It is also consistent with WQMPs developed by each of the Basin states across the Murray-Darling Basin. When viewed together, these plans will present a picture of water quality issues across the Murray-Darling Basin, and key measures being undertaken to address them.

This WQMP was developed using significant investigations from the Wimmera-Mallee Water Resource Plan Risk Assessment and technical papers that involved review of key documents, plans and strategies, in consultation with Victoria's most informed practitioners and stakeholders in the region.

14.3 Water quality degradation

10.30 Surface water

The causes of water quality degradation in the water resource plan area are listed and discussed in **Table 3** of the Water Quality Management Plan at **Appendix A** to the Wimmera-Mallee Comprehensive Report.

Groundwater

No causes, or likely causes, of groundwater water quality degradation have been identified as there is no degradation of water quality in the Wimmera-Mallee (groundwater) water resource plan area.

The Basin Plan requires Basin states to identify the causes of water quality degradation. The WQMP identifies a breadth of causes of surface water quality degradation, while identifying that there is no broad-scale water quality degradation of the region's groundwater resources. Causes of surface water quality degradation can be summarised as:

- salinisation of surface waters is occurring through interception of naturally saline groundwater through rises in groundwater levels, and cutting in of surface water beds
- cleared areas of the catchment contribute elevated suspended sediments and nutrients
- dissolved oxygen outside natural ranges, and cyanobacteria (blue-green algae) are also water quality issues in the area.

Water quality degradation processes occurring at more local scales were also identified and are listed in the WQMP.

14.4 Water quality management

10.31 Surface water

Part 4.3.2 of the Water Quality Management Plan at **Appendix A** to the Wimmera-Mallee Comprehensive Report identifies risks related to the condition (quality) of water resources and explains why measures addressing the risk have or have not been included in the water resource plan.

Groundwater

Part 5.3.2 of the Water Quality Management Plan at **Appendix A** to the Wimmera-Mallee Comprehensive Report identifies risks related to the condition (quality) of water resources and explains why measures addressing the risk have or have not been included in the water resource plan.

The WQMP describes Victoria's water quality management framework and identifies two measures for specification under the Basin Plan.

These measures were identified as key for the implementation of water quality management actions or are already elements of the framework of water quality management in the Basin.

Table 57: Water quality measures and relevant Basin Plan water quality objectives

Water quality objective	Contributing measures (for surface water and groundwater)		
	Measure 1: Implementation of State Environment Protection Policies (or equivalent) for water	Measure 2: Implementing Wimmera-Mallee Long-term Watering Plan	Measure 3: Implementing the South Australian-Victorian Border Groundwaters Agreement
Freshwater-dependent ecosystems	✓	✓	NA
Raw water for treatment for human consumption	✓	✓	Where relevant aquifers used locally
Irrigation water	NA	NA	There is no distributed groundwater for irrigation
Recreational water	✓	✓	NA
Maintaining good levels of water quality	✓	✓	✓
Salt export	NA	NA	NA

10.33(1) Measures to be undertaken that contribute to the achievement of the objectives set out in sections 9.04 to 9.08 of the Basin Plan are set out in **Part 4.4.1** and **Part 4.4.2** of the Water Quality Management Plan at **Appendix A** to the Wimmera-Mallee Comprehensive Report.

14.5 Measure 1: Implementation of State Environment Protection Policies or equivalent (surface water and groundwater)

Victoria's water quality protection framework was first established by the *Environment Protection Act 1970* (the EP Act). The EP Act was updated in 2017 and states that the objective of the Environment Protection Authority (EPA) is to protect human health and the environment by reducing the harmful effects of pollution and waste.

The EP Act establishes the powers, duties and functions of the Environment Protection Authority. These include the administration of the EP Act and any regulations and orders made according to it, administering State Environment Protection Policies (SEPPs) and industrial waste management policies, issuing works approvals, licences, permits, pollution abatement notices and implementing National Environment Protection Measures.

The EP Act has a basic philosophy of preventing pollution and environmental damage by setting environmental quality objectives and establishing programs to meet them in State Environment Protection Policies. These policies aim to safeguard the environmental values and human activities (beneficial uses) that need protection from the effect of pollution and waste in the State of Victoria.

State Environment Protection Policy (Waters) 2018 is the instrument that formally defines the beneficial uses and environmental quality (water quality) objectives for the whole of Victoria,

including the Wimmera-Mallee water resource plan area. The SEPP (Waters) identifies legally enforceable rules for decision makers and obligations on industry to protect our water environments.

Obligations in the SEPP (Waters) include the requirements for the management of risks to beneficial uses, for example how municipal councils must manage their assets, and how water corporations and other industries manage waste and wastewater. Obligations to protect groundwater beneficial uses are also listed.

The SEPP (Waters) is also used to inform a range of strategies and plans that are prepared at varying scales.

14.6 Measure 2: Implementation of the Wimmera-Mallee Long-term Watering Plan objective to maintain adequate surface water salinity to enable growth and reproduction of aquatic vegetation (surface water only)

Victoria has prepared long-term watering plans (LTWPs) for each of its three surface water resource plan areas in accordance with Chapter 8 of the Basin Plan and consistent with the Basin Environmental Water Plan. The Wimmera-Mallee Long-term Watering Plan (LTWP) 2015 identifies maintaining salinity levels, including in the Wimmera River, as an objective.

Salinity levels that allow growth and reproduction of aquatic vegetation have been identified as one of four priority ecosystem functions in the Wimmera-Mallee water resource plan area, and maintaining appropriate salinity levels is among 13 objectives of the LTWP. For the Wimmera River, meeting the end-of-valley target at Horsham Weir 100 per cent of the time has been identified as a key target. It is expected that this will be achieved through low flow watering to prevent water quality decline and freshes to flush pools of water.

14.7 Measure 3: Implementing the South Australian-Victorian Border Groundwaters Agreement (groundwater only)

The Border Groundwaters Agreement between the South Australian and Victorian governments aims to cooperatively manage the groundwater resources along the states' border. The agreement provides that the available groundwater shall be shared equitably between the two states. The agreement allows for a permissible annual volume (PAV) to be extracted for each aquifer in a zone in the designated area. The PAV is the maximum licensed extraction volume that is permitted in each aquifer in a zone. It provides for a groundwater rate of drawdown that must not be exceeded in a zone and allows for a permissible distance from the border to be prescribed within this area in each state.

The agreement's Review Committee must agree to any proposed licensed withdrawals of groundwater or bore construction (excluding domestic and stock bores) and a permissible salinity level can be specified for each zone to safeguard groundwater quality in order to safeguard water quality. This has not yet been set for any zone.

14.8 Victorian water quality management framework complementing the achievements of the measures

Victoria has a range of actions, tools and strategies that complement the specified measures to achieve water quality outcomes. Many of these are part of Victoria's adaptive framework for catchment and water management.

These actions are set out against the Basin Plan objectives that they support:

Table 58: Complementary management actions to support water quality outcomes

Water quality objective for	Complementary management actions to support water quality outcomes
Water-dependent ecosystems	<ul style="list-style-type: none"> Implementation of the Lake Albacutya Ramsar Site Strategic Management Plan (DSE, 2003) Implementation of Mallee Regional Catchment Strategy Implementation of Wimmera Regional Catchment Strategy Implementation of North Central Catchment Strategy Implementation of SEPP (Waters) Implementation of the Victorian Waterway Management Strategy Implementation of the Wimmera Waterway Strategy Implementation of the North Central Waterway Strategy Implementation of the Victorian environmental watering program
Raw water treatment for human consumption	<ul style="list-style-type: none"> Compliance with the <i>Safe Drinking Water Act 2003</i> and associated regulations Achievement of storage management objectives (Minister for Water, 2010) and implementation of storage management rules (GMMWater, 2016) Implementation of the measures identified in "Water-dependent ecosystems" above
Recreational water quality	<ul style="list-style-type: none"> Achievement of storage management objectives (Minister for Water, 2010) and implementation of storage management rules (GMMWater, 2016) Implementation of statewide coordination plan for blue-green algae management as per the <i>Blue-Green Algae Circular</i> (DELWP, 2016a)
Maintaining good levels of water quality	Measures listed in Table 57 above

Further information on Victoria's future approaches to, and priorities for, water management are described in the Wimmera-Mallee Water Resource Plan Risk Assessment and *Water for Victoria*.

14.9 Measures for groundwater

There are two measures to contribute to the achievement of water quality objectives for the Wimmera-Mallee groundwater water resource plan area specified in this Water Resource Plan. These are measures 1 and 3 as outlined above. No degradation of groundwater in the Wimmera-Mallee water resource plan area has been identified. Victoria has local management plans operating for local scale planning rather than at the water resource plan scale.

14.10 Supporting development of measures through identified water quality targets

10.32(1) Surface water

The water quality target values for the Wimmera-Mallee water resource plan area are set out in **Table 7** and **Table 8** of the Water Quality Management Plan at **Appendix A** to the Wimmera-Mallee Comprehensive Report. The water quality target values for Ramsar sites in the Wimmera-Mallee water resource plan area are the targets set out in the Basin Plan.

Groundwater

No water quality targets have been identified for groundwater resources in the Wimmera-Mallee (groundwater) water resource plan area.

WQMPs also include water resource plan targets to inform the development of measures (measures are not required to be designed to achieve the targets). The Basin Plan puts forward water resource plan targets for freshwater-dependent ecosystems, irrigation and recreation, and Basin states can use these targets or adopt alternative targets if they meet certain criteria.

14.10.1 Water resource plan targets for the Wimmera-Mallee WQMP

Targets for freshwater-dependent ecosystems

10.32(2)(a) The water quality target values identified are those referred to in **Table 7** and **Table 8** of **Appendix A** to the Wimmera-Mallee Comprehensive Report.

The targets of the Basin Plan for freshwater-dependent ecosystems were developed having regard to the procedures set out in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC), as were the development of Victoria's environmental quality objectives for rivers and streams, contained within SEPP (Waters). For the purposes of 10.32 of the Basin Plan, Victoria identifies alternative targets for the Wimmera-Mallee water resource plan area for, fresh water-dependent ecosystems.

Targets for recreational waters

10.32(2)(c) The water quality target values are those set out in **Table 7** and **Table 8** of **Appendix A** to the Wimmera-Mallee Comprehensive Report.

The Wimmera-Mallee WQMP identifies the Basin Plan's targets for recreational waters. As above, for the purposes of 10.32 of the Basin Plan, Victoria identifies alternative targets for the Wimmera-Mallee water resource plan area for recreational water.



Targets for irrigation waters

There is no irrigation water distributed by an irrigation infrastructure operator in the Wimmera-Mallee water resource plan area, and no irrigation water targets have been identified.

Having regard to targets

Further detail on how Victoria had regard to these targets in the development of the measures is described in [Appendix A](#).

14.11 Water quality target values for groundwater

No water quality targets have been identified for groundwater resources in the Wimmera-Mallee (groundwater) water resource plan area, the reasons for this are described below and in [Appendix A](#).

Fresh water-dependent ecosystems

Water quality targets do not apply as groundwater in the Wimmera-Mallee is mostly saline (>3000 EC) and therefore is not classified as freshwater for the purposes of freshwater dependent ecosystems.

Irrigation water

Water quality targets do not apply as no groundwater is distributed by an irrigation infrastructure operator for irrigation.

Recreational water

Water quality targets for recreational water do not apply to groundwater, this is because as groundwater is not used in places for recreation and does not support the growth of blue-green algae unless exposed through surface ponds, where it becomes classified as surface water.

14.12 Impact of water quality management on another state

Surface water within the Wimmera-Mallee water resource plan area is essentially internally draining. Flows from the Wimmera and Avoca rivers have no impact on water resources in another state. The only hydrological connectivity with Basin water resources in another state is groundwater along the South Australian-Victorian border and management of this area is supported by the South Australian-Victorian Border Groundwaters Agreement described in Measure 3.

The South Australian Department of Environment, Water and Natural Resources was consulted on water quality management in the Wimmera-Mallee water resource plan area and was comfortable with Victoria's approach.