

Report on Managing Water Quality and Salinity - New South Wales

New South Wales' annual report on the implementation of the water quality and salinity management plan (Schedule 12, Item 14)

Reporting context

The water quality and salinity management plan provides a Basin-wide framework of water quality objectives and targets for Basin water resources. The water quality and salinity management plan is set out in Chapter 9 of the Basin Plan and includes a list of the key causes of water quality degradation, water quality objectives for Basin water resources and water quality targets for long-term planning.

The purpose of this report is to monitor the extent to which the water quality and salinity management plan has been implemented. This report is a requirement of Chapter 13 of the Basin Plan and relates to Item 14 of Schedule 12.

Indicators for measuring success

Implementation of the water quality and salinity management plan is evaluated using the following five indicators:

- Recorded salinity at reporting sites is consistent with the salinity targets (**Indicator 14.1**)
- Adequacy of the flushing of salt from the River Murray System to the Southern Ocean (salt export) (**Indicator 14.2**)
- Governments are having regard to water quality and salinity targets when managing water flows (**Indicator 14.3**)
- Governments are having regard to water quality targets when making decisions about using environmental water (**Indicator 14.4**)
- Measures governments take to achieve end-of-valley salinity targets (**Indicator 14.5**)

Indicator 14.1: Salinity at reporting sites is consistent with the salinity target in s9.14(5)

14.1.1. Proportion of days where measured salinity met the target EC at reporting sites

Response

No response required from Basin Governments or CEWH. MDBA report only.

Indicator 14.2: Adequacy of flushing to provide salt export (s9.09)

14.2.1. Estimated Salt Export (Tonnes) from the River Murray System to the Southern Ocean

Response

No response required from Basin Governments or CEWH. MDBA report only.

14.2.2: Flushing Adequacy

Response

No response required from Basin Governments or CEWH. MDBA report only.

Indicator 14.3: Managing water flows with regard to water quality targets (s9.14)

14.3.1: What procedures and tools were in place to enable water quality targets (dissolved oxygen, recreational water quality and salinity) to be met

Response

New South Wales is in the process of developing their Water Quality Management Plans that will demonstrate procedures and tools required for having regard for the targets in s9.14 when managing water flows.

Existing water quality data capture and operational governance structures are in place to inform water management in New South Wales. Further development of Environmental Water and Monitoring Plans are currently under way to allow greater regard for the water quality targets in s9.14 when managing water flows; namely targets for low dissolved oxygen/blackwater, blue green algae and salinity events.

14.3.2: Statement that procedures and tools were used to meet water quality targets

Response

New South Wales undertakes routine state-wide river water quality monitoring at key locations across all catchments of the New South Wales Murray-Darling

Response

Basin; this includes the capture and characterisation of rivers and streams in terms of long-term physical and chemical features.

Water Sharing Plans for regulated rivers that have an Environmental Contingency Allowance have water set aside for environmental flows to assist with management of poor water quality events.

s9.14 a) to maintain dissolved oxygen at a target value of at least 50% saturation

- New South Wales operates a network of dissolved oxygen early warning sensors in the Murray and Riverina regions. Information from these sensors is disseminated weekly during high risk times and management options discussed by multi-agency river operation groups when a warning for a potential low dissolved oxygen or blackwater event is triggered.

- Physical monitoring of dissolved oxygen occurs routinely in all New South Wales Murray-Darling Basin catchments, with the potential to monitor key water flow events as required during high risk times.

s9.14 b) the targets for recreational water quality in s9.18

- In New South Wales, the State Algae Advisory Group, the Technical Advisory Group and the six Regional Algal Co-ordinating Committees within the Murray-Darling Basin are coordinated under the New South Wales Algal Risk Management Framework.

- Managing the risk of algal blooms in New South Wales fresh waters includes a multi-agency co-ordinated algal monitoring program, management of blooms and the release of public notifications. Algal warning levels are for recreational water use as set out in the Australian Guidelines for Managing Risks in Recreational Water.

s9.14 c) the levels of salinity at the reporting sites set out in the following table should not exceed the values set out in the table, 95% of the time.

- New South Wales continuously monitors river salinity at a number of key locations within the Murray-Darling Basin.

- Modelling tools support salinity management by enabling assessment of salinity regimes under a 'stationary' water management regime, enabling different management options to be explored and evaluated, or to allow the extrapolation of salinity into the future or into geographic areas where there is little data available.

- New South Wales adheres to its obligations under the Basin Salinity Management Strategy by remaining a positive balance on the salinity registers, and to maintain the Basin salinity targets in the Murray-Darling Basin Agreement for salinity planning and management.

- The Murray-Darling Basin Authority, Basin Officials Committee and Basin States undertake long-term salinity planning and management functions in accordance

Response

with the targets in Appendix 1 of Schedule B, including the Basin Salinity Management Strategy Operational Protocols.

14.3.3. Case study

Response

Water quality monitoring in the Murray River region during extremely hot weather conditions recorded dissolved oxygen levels of less than 5.0mg/litre and water temperatures over 30°C in the Niemur River. The combination of warm water temperatures and low dissolved oxygen concentrations is known to cause stress and mortality to some native fish species.

The Niemur River Offtake Regulator had been open since October 2013 to allow for fish migration as part of the Edward-Wakool Fish Flow program and was due to close in late January 2014. The decision was made to keep the regulator to the Niemur River open and to increase the existing flows from ~40ML/day to 200ML/day using environmental water delivered via Colligen Creek Weir for the duration of February 2014. Use of Commonwealth Environmental Water for the mitigation of poor water quality events was included in the Murray Lower Darling Annual Environmental Water Plan 2013/14.

Indicator 14.4: How were water quality targets taken into account when making decisions about using environmental water

14.4.1. Statement that procedures and tools were in place

Response

NSW environmental water (EW) events seek to maximise environmental outcomes whilst having regard to the Basin Plans water quality and salinity targets. All approvals for EW releases need to demonstrate adequate risk identification and mitigation, and have regard to the targets in s9.14, as prescribed in Form A (Request to deliver environmental water). Where possible, modelling is used to assess potential water quality impacts of proposed water actions (e.g. bank erosion, blackwater, acid sulphate soils, salinity, dissolved oxygen and temperature). The delivery strategy is developed with regard to water quality and salinity targets. Additionally, risk mitigation strategies are developed to address potential water quality impacts and salinity issues that may occur during the delivery of environmental water. These may include cessation of water delivery, changes to the timing, duration or inundation extent of the environmental water delivery, or use of dilution flows.

14.4.2. Statement of how procedures and tools were used

Response

Risk assessments, monitoring, and mitigation actions were undertaken for all NSW EW events in 2013/2014. Prior to the release of environmental flows, relevant infrastructure managers were consulted, and throughout the course of

Response

watering events, regular phone calls, email updates, and site inspections with stakeholders and landholders were carried out to keep them informed and mitigate any concerns. In addition to visual checks and regular water quality and soil monitoring, dissolved oxygen and temperature loggers were maintained in the Murrumbidgee River. In the event of any changes in water quality, there was appropriate communication with scientists, government, and the community in order to implement appropriate mitigation strategies. Climatic changes were also monitored and watering adjusted accordingly in order to minimise impacts of flood water. All 2013/2014 environmental watering events in NSW were completed with the approval and support of the community, landholders, stakeholders and relevant government departments, and with positive environmental outcomes.

14.4.3. Case study

Response

In 2013-2014, an environmental water event in Tuppal Creek planned to deliver up to 1,500 ML of NSW and Commonwealth water to replenish refuge pools and potentially improve water quality within the system. Tuppal Creek was identified in the approved *Murray and Lower Darling Valleys Annual Environmental Watering Plan 2013-14* as a priority to be watered under a dry scenario. High salinity and black water were identified as potential risks during the water delivery. Regular water quality monitoring and soil salinity was measured to enable appropriate actions to be initiated in the event of any exceedances. Responses to changes in water quality involved communication with involved parties, including:

- Regular phone calls and site inspections with the Tuppal Creek landholders prior to and during the delivery of the water;
- Email updates as required to Tuppal stakeholders including landholders, Commonwealth Environmental Water Office (CEWO), Murray Local Land Services (LLS), Murray Irrigation (MI), National Parks and Wildlife Services (NPWS), State Water Corporation and Local Shire Councils;
- Regular emails and phone calls with MI staff;
- Senior Environmental Water Management Officer provided Murray and Lower Darling Environmental Water Advisory Group with event updates;
- Media release to inform the community.

During the environmental watering event, the flows in Tuppal Creek picked up a lot of organic material creating a dark tea coloured flow front for several kilometres. Office of Environment and Heritage (OEH) staff worked closely with the Tuppal community to regularly check the water. Dissolved oxygen levels remained high and electrical conductivity low. After discussions with local scientists, LLS, CEWO and Tuppal landholders it was agreed to keep the event going as the carbon exchange would have positive outcomes and flows in the Edward River would provide sufficient dilution. To mitigate community concerns, all Tuppal landholders were updated frequently via email about the black water and a media release was published in the local Deniliquin Pastoral Times prior to the Tuppal flows reaching the Edward River. The media release provided the wider community with the necessary information. Effective communication between the relevant government agencies enabled the media release to be put out in the required timeframe.

During the EW event, the Tocumwal area received 50-90mm in a 24 hour period which resulted in rainfall rejection and runoff entering the Lalaty Drain. Approximately 2,092ML of water flowed from Lalaty Drain into the Tuppal Creek.

Response
<p>Flows reached more than 300ML/day, which cut off landholder access in three locations along the creek. In order to minimise the third party impacts, environmental releases were stopped on the 12th April until 18th April. OEH worked closely with Murray Irrigators Limited and the affected landholders to minimise the impacts of flood water.</p> <p>Because of the risk mitigation and management systems in place, and the effective communication strategies, significant impacts to water quality were prevented. This watering event was successful in achieving the desired environmental outcomes and all parties involved were satisfied with the results.</p>

Indicator 14.5: Implementation of measures to achieve end-of-valley salinity targets

No response required from Basin governments or CEWH. MDBA reports on this indicator on behalf of Basin governments, drawing on their Basin Salinity Management Strategy implementation reports against end-of-valley targets.

14.5.1. Types of measures implemented

Response
No response required from Basin Governments or CEWH. MDBA report only.

14.5.2. Summary of objectives, activities and achievements with regard to each measure implemented

Response
No response required from Basin Governments or CEWH. MDBA report only.