Basin Salinity Management 2030 - South Australia's Status Report 2019-20

Government of South Australia
Department for Environment and Water

1. Overview of Outcomes and Key Achievements

South Australia remains committed to the ongoing delivery of salinity management obligations under Schedule B of the Murray-Darling Basin Agreement (the Agreement) and implementation of the Basin Salinity Management 2030 (BSM2030) strategy. The ongoing management of salinity in the Murray-Darling Basin is critical to continue to protect the environment, irrigated agriculture, industry and critical human water supplies from the adverse effects of high salinities.

The BSM2030 strategy builds on previous investments in salinity management as part of the Salinity and Drainage Strategy (1988-2000) and the Basin Salinity Management Strategy (2001-2015), while addressing contemporary issues such as the effects of environmental watering and exploring ways to optimise the operation of salt interception schemes.

South Australia's outcomes and key achievements in implementing the BSM2030 strategy in 2019-20 include:

- Salinity remained below the Basin Salinity Target and South Australian End of Valley Targets.
- South Australia maintained a positive balance of $7.435 million on the Salinity Registers.
- The review of the Loxton to Bookpurnong groundwater model and accountable actions was completed, and substantial progress was made on the reviews of the Pyap-Kingston and Berri-Renmark groundwater models and accountable actions.
- River Murray operations and environmental watering actions were made in accordance with annual operating plans, to maintain salinity levels below Basin Plan salinity targets.
- The assessment of the potential salinity impacts from actions undertaken as part of the South Australian Riverland Floodplain Integrated Infrastructure Project (SARFIIP) has been substantially completed.
- Construction of the Pike groundwater management scheme as part of SARFIIP has been completed and the majority of the scheme is fully operational.
- The salinity impacts associated with weir pool manipulation have been investigated and construction of models to quantify potential salt loads to the River Murray has commenced.
- Development of an integrated operations strategy to support environmental water planning, manage cumulative salinity risks and support real-time decision making was progressed.

2. Update on Existing and New State Works or Measures

South Australia has two existing State Works or Measures that are included on the Salinity Registers - the Qualco-Sunlands Ground Water Control Scheme and the Pike salt interception scheme.

The Qualco-Sunlands Ground Water Control Scheme is operated by a private trust in accordance with the *Ground Water (Qualco-Sunlands) Control Act 2000*.

The Pike salt interception scheme is operated by the Murray-Darling Basin Authority (MDBA) on behalf of the South Australian Government. In 2019-20 the scheme was operated in accordance with the operations and maintenance manual and any directions provided by the MDBA as part of the responsive salt interception scheme trial.

The construction of a third State Work or Measure under SARFIIP has recently been completed to enhance the benefits of inundation of the Pike and Katarapko floodplains and to reduce salt loads entering the River Murray. Operation of the Pike groundwater management scheme is currently in a trial and testing phase prior to handover of the asset to the Department for Environment and Water (DEW). The salinity benefits associated with the scheme will be included on the salinity register once groundwater modelling is completed and approved by the MDBA.

3. Review of Models and Accountable Actions

To meet obligations under BSM2030, DEW maintains and updates a series of accredited MODFLOW groundwater models to assist in calculating South Australia's salinity register entries.

In 2019-20, South Australia completed the reviews of the Loxton to Bookpurnong groundwater model and accountable actions with the revised model and salinity impacts endorsed by the Basin Salinity Management Advisory Panel at meeting 45 on 19 February 2020. The reviews of the Pyap-Kingston and Berri-Renmark groundwater models and accountable actions were also substantially completed in 2019-20 and they will be provided to the Basin Salinity Management Advisory Panel for endorsement following completion of the independent peer review.

South Australia is undertaking a review of the Morgan to Wellington groundwater model and associated accountable actions in 2020-21 and does not have any proposed amendments to the BSM2030 review plan.

4. Proposed or New Accountable Actions

In accordance with Schedule B of the Agreement, the South Australian Government has notified the MDBA that actions proposed to be undertaken as a part of SARFIIP are likely to have a Significant Effect (as defined in Schedule B sub clause 18(3)).

Groundwater models for the Pike and Katarapko floodplains are currently being finalised by DEW to assess the potential salinity impacts to the River Murray from the construction and operation of environmental regulators, levee banks and groundwater management schemes as part of SARFIIP. It is anticipated that the salinity register entries for these actions will be included on the 2021 salinity registers.

5. Monitoring Results for End of Valley Target Sites

BSM2030 retains the End of Valley Targets to preserve Basin-wide monitoring and to inform the assessment of salinity risk to the shared water resources and within-valley assets. As part of BSM2030, flow and salinity must be monitored at each End of Valley Target site and reported annually. The flow monitoring results for the Basin Salinity Target and the three South Australian End of Valley Target sites are presented in Table 1.

In 2019-20, monitored daily salinity remained significantly below the target levels at all sites. The program of salinity controls implemented to date, including improved irrigation system and on-farm practices and salt interception schemes, have contributed to the maintenance of in-river salinity levels below target levels.

Table 1- End-of-Valley summary report card

Valley	End of Valley Target (as % of baseline)	Valley Reporting Site	2019-20 Monitoring data (Daily Mean EC)
SA Border	412 EC (80%ile)	Murray at SA Border (A4261022)	247 EC (Max) 130 EC (Average) 149 EC (80%ile)
Berri	543 EC (80%ile)	Murray at Berri (A4260537)	270 EC (Max) 163 EC (Average) 198 EC (80%ile)
Basin salinity target	800 EC (95%ile)	Murray at Morgan (A4260554)	333 EC (Max) 234 EC (Average) 318 EC (95%ile)
Below Morgan	770 EC (80%ile)	Murray at Murray Bridge (A4261162)	418 EC (Max) 285 EC (Average) 322 EC (80%ile)

6. Basin-wide Core Salinity Monitoring Network

The BSM2030 strategy requires partner governments and the MDBA to nominate their core salinity monitoring network and make a commitment to the operation, maintenance and reporting on the delivery of monitoring at these sites for the life of the strategy.

The Basin-wide Core Salinity Monitoring Network includes monitoring sites considered critical to underpin the models that quantify register entries, evaluate trends at End of Valley Target sites, assess compliance with the Basin Plan, improve knowledge in priority areas and support management of the river, salt interception schemes and environmental flows.

South Australia nominated 435 groundwater bores that are monitored by DEW in October 2017. A further 475 groundwater bores that are monitored to support the SIS program in South Australia have been nominated by the MDBA. The MDBA has also nominated 66 surface water sites in South Australia for inclusion in the monitoring network that are funded by the Joint Programs.

No changes have been made to the sites included in the Basin-wide core salinity monitoring network for which South Australia is responsible for in 2019-20.

More information

Further information on the Basin Salinity Management 2030 strategy and South Australia's salinity management program is available online at:

http://www.environment.sa.gov.au/managing-natural-resources/river-murray/restoring-river-health/water-quality-and-salinity