Department of Climate Change, Energy, the Environment and Water

# NSW BSM2030 Status Report

## 2023-2024

October 2024





## Acknowledgement of Country



Department of Climate Change, Energy, the Environment and Water acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.

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#### Acknowledgements

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# Contents

| Acknowledgement of Countryii |   |                                   |    |  |
|------------------------------|---|-----------------------------------|----|--|
| 1                            | Purpose of the report                       |                                   | 4  |  |
| 2                            | Key achievements                            |                                   | 4  |  |
|                              | 2.1   | Governance and accountability     | .4 |  |
|                              | 2.2   | Salinity management in catchments | .5 |  |
|                              | 2.3   | Community engagement              | .5 |  |
| 3                            | State works and measures                    |                                   |    |  |
| 4                            | Review of models and register entries       |                                   |    |  |
| 5                            | Proposed or new accountable actions         |                                   |    |  |
| 6                            | End of valley target sites                  |                                   |    |  |
| 7                            | Basin-wide core salinity monitoring network |                                   |    |  |

## 1 Purpose of the report

Under the Basin Salinity Management 2030 (BSM2030) Strategy, State Contracting Governments and the Murray-Darling Basin Authority (MDBA) are required to prepare alternating BSM2030 status updates and comprehensive biennial reports for the Basin Officials Committee (BOC) and Ministerial Council. The NSW 2023-2024 BSM2030 Status Report has been prepared consistent with the Basin Salinity Management (BSM) Reporting Procedure and the BSM2030 Reporting Plan 2024.

## 2 Key achievements

## 2.1 Governance and accountability

In January 2024, the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) replaced the Department of Planning and Environment, with the responsibility for observing BSM Procedures and complying with accountability requirements as set out in Schedule B of the Murray-Darling Basin Agreement remaining with DCCEEW Water.

NSW remains committed to the BSM2030 strategy through its active participation at the Basin Salinity Management Advisory Panel, Technical Working Group for Salinity Modelling and other forums; progressing the review of high priority register entries to maintain the accuracy of the salinity registers; and other review tasks required to inform the BSM2030 strategic review.

NSW has continued to address the ongoing challenge of salinity through a variety of measures in 2023-24 through improving catchment knowledge and the capacity of stakeholders to manage for salinity risks; and pursuing processes to embed salinity management in the NSW water management framework.

Outcomes and key achievements include:

- Maintaining a net credit balance on the Salinity Registers in 2023-2024, in a continued commitment to Schedule B of the Agreement.
- Completion of a groundwater conceptual model for assessing the salinity impacts from irrigation development in the NSW Sunraysia region.
- Progressing improvements to the method to assess the salinity impacts from irrigation development in the Murray Irrigation Limited area of operations.
- Continuing to support the MDBA to address outstanding recommendations from previous audits including the finalisation of the Murray Source model and preparation for BSM2030 strategic review.
- Adopting a new internal procedure for preliminary salinity assessments of Department-led projects, including SDLAM projects, into the DCCEEW Water project management framework.
- Launching the NSW Basin Salinity Management Program webpage and publication of the 2021-2023 comprehensive report.
- Sharing NSW's experience in engaging with local communities to manage salinity with other jurisdictions at the biennial Basin Salinity Management Forum in Albury and arranging a field trip highlighting the complexities of managing salinity and the variability of salinity processes in the upper catchments in a changing climate.
- Maintaining strong community and agency engagement and training program utilising the Hydrogeological Landscapes (HGL) framework developed for NSW salinity management

## 2.2 Salinity management in catchments

During this reporting period, NSW has pursued knowledge improvements with respect to landscape management, modelling adaptation, and salinity dynamics and processes. NSW has continued to explore salinity risk in catchments and investigate improvements to the current end of valley targets and associated modelling needs.

- Completion of Hydrogeological Landscape (HGL) mapping for the Murrumbidgee catchment and commencement in the Namoi and mid Murray catchments.
- Using expert advice from Manly Hydraulics Laboratory and the Australian National University to develop a methodology to review end of valley targets and assess the salinity risk from catchments using several sub catchments in the Murrumbidgee catchment as a pilot study.
- Partnering with Landcare and Local Land Services on projects to monitor water quality and known salinity sites in high-risk landscapes, with the project expanding in 2024 into the mid Lachlan areas.
- Development of a mobile application for the capture of salinity site survey information, with pilot use undertaken by Landcare networks in the Macquarie catchment and agency staff.

### 2.3 Community engagement

DCCEEW Water has continued to provide salinity technical support to various natural resource management agencies and groups in high-risk landscapes.

Features of engagement in 2023-24 have been:

- Large upswing in landholder requests for advice in managing expanding landscape salinity caused through combination of a wetter climate and a change in land use to continuous cropping.
- Continued training of Local Land Service and Landcare groups in the upper catchments of the Murrumbidgee, Lachlan and Macquarie valleys in salinity management and understanding salinity processes.
- Partnership with Landcare, Soils Knowledge Network and other departmental agencies to conduct soil sampling, soil education workshops and training in soils and salinity across the central west of NSW

## 3 State works and measures

The NSW Salt Interception Scheme (SIS) program currently consists of four salt interception schemes, three of which are included in the Joint Venture program and are jointly owned with the benefits shared between the Basin states:

- 1. Mallee Cliffs SIS located on the River Murray, in the south-west corner of NSW
- 2. Buronga SIS located on the River Murray, in the south-west corner of NSW and downstream of Mallee Cliffs
- 3. Upper Darling SIS located on the Darling River downstream of Bourke, in north-west NSW

The fourth scheme, Billabong Creek SIS, is located on the Billabong Creek in southern NSW, north of the town of Albury. This is solely owned by NSW, as are the benefits to the community that it generates.

Joint Venture program operated scheme statistics for 2023-24 are shown in Table 1. All three schemes were operated in accordance with the operating rules, resulting in a total of 104,618 tonnes of salt being diverted from the Murray and Darling River systems.

Table 1. Summary of NSW Joint Venture salt interception scheme statistics for 2023-24

| Scheme            | Volume pumped<br>(ML) | Salt load diverted<br>(tonnes) | Average salinity<br>(EC units) |
|-------------------|-----------------------|--------------------------------|--------------------------------|
| Mallee Cliffs SIS | 985                   | 32,602                         | 51,600                         |
| Buronga SIS       | 1,708                 | 42,798                         | 39,196                         |
| Upper Darling SIS | 942                   | 29,218                         | 46,948                         |

## 4 Review of models and register entries

NSW has prioritised the completion of outstanding register entries according to their credit/debit value to maximise the likelihood of a realistic Salinity Register balance prior to the commencement of the BSM2030 strategic review.

During the 2023-24 period, the review of two of NSW's largest register entries were progressed: Sunraysia Irrigation Development 1997-2006 and Murray Irrigation Limited Land and Water Management Plan (LWMP), along with the assessment of the provisional register entry for irrigation development in the Sunraysia region since 2007. All three assessments are due to be completed in 2025.

Investigations are continuing as to whether the review of Legacy of History register entries can be achieved through catchment risk assessments. A summary of the status of NSW register reviews as of June 2024 is provided in Table 2.

Table 2. Status of NSW BSM2030 Register reviews for 2023-24

| Register entry  | Last review<br>year | BOC agreed review year | New review<br>date | Status      |
|---|---------------------|------------------------|--------------------|-------------|
| Mallee Legacy of History –<br>dryland clearing and pre-88<br>irrigation | 2010                | 2020                   | 2030               | Complete    |
| RISI Stage 1 & 2  | 2016, 2014          | 2021                   | 2030               | Complete    |
| Improved Buronga SIS  | 2006                | 2021                   | 2027               | Complete    |
| Improved Buronga Mildura-<br>Merbein SIS                                | 2005                | 2021                   | 2027               | Complete    |
| Mallee Cliffs SIS   | 2013                | 2021                   | 2027               | Complete    |
| Sunraysia Irrigation<br>Development 1997-2006                           | 2007                | 2021                   | 2021               | In progress |
| Sunraysia Irrigation<br>Development 2007-2018<br>(provisional)          | NA                  | NA                     | 2025               | In progress |
| Lachlan Legacy of History   | 2010                | 2022                   | 2026               | Delay       |

| Murrumbidgee Catchment<br>Legacy of History   | 2010 | 2022 | 2026 | Delay       |
|---|------|------|------|-------------|
| Murray (MIL) LWMP   | 2010 | 2020 | 2025 | In progress |
| Darling Catchment Legacy<br>of History – Macquarie,<br>Macintyre, Gil Gil Ck, Namoi,<br>Castlereagh and Bogan | 2010 | 2022 | 2026 | Delay       |
| Boggabilla Weir   | 2007 | 2021 | 2027 | Delay       |
| Pindari Dam enlargement   | 2007 | 2021 | 2027 | Delay       |
| Upper Darling SIS   | 2014 | 2019 | 2030 | Complete    |

### Sunraysia Irrigation Development 1997-2006 and (provisional) 2007-2018

Significant progress has been made to deliver on NSW's largest register review during the reporting period. The Department has invested in the development of a numerical model to assess the salinity impact from irrigation growth in the region and will be used to assess development changes into the future. Project governance has been established through an internal working group, with external oversight through the MDBA appointed independent peer assessor and steering committee.

The conceptual model was completed in 2024 for the NSW Sunraysia region, consisting of surface terrain, stratigraphy, geology and structural features extending from around Tooleybuc to the South Australian border. The outputs included a geological model in ArcGIS and a 3-dimensional model in Leapfrog, as well as the underlying datasets to inform the development of the numerical model. The numerical model will be progressed in 2024, followed by the calibration of the model and salinity impact assessment in 2025.

#### Murray Irrigation Limited Land and Water Management Plan (LWMP)

The LWMP was implemented in the 1990's after a prolonged period of wet climatic conditions created extensive shallow water tables and waterlogging across the Murray Irrigation Districts of Berriquin, Denimien, Cadell and Wakool. The climate period following the implementation of the LWMP was dominated by the extended Millennium drought which created difficulties in validating the predicted runoff modelled over the wetter Benchmark Period (1975-2000) with the observed post 2000 system drain flow behaviour.

NSW are reviewing the assessment method used for the previous salinity impact assessment in 2009, including addressing outstanding issues, to improve the representation of processes that contribute to the export of salt and dilution flows. NSW has also been exploring how to define the impact of the LWMP separate to the impact of other water reforms that have occurred since 2000.

## 5 Proposed or new accountable actions

There were no new or proposed accountable actions for NSW in 2023-24.

Assessment of the salinity benefit of the state-owned Billabong Creek Salt Interception Scheme will be completed following confirmation of the scheme's operation. Preliminary assessments were completed for some NSW led SDLAM projects in 2023. These assessments will be reviewed once the specific details of each project have been confirmed.

# 6 End of valley target sites

NSW has continued to monitor flow and EC at all of its End of Valley Target sites over the reporting period (Table 3).

All NSW's end of valley target sites have been maintained for data monitoring in 2034-24. The Castlereagh River had periods of no data acquisition when the river flowed within the sandbed or was restricted to pools. A number of within catchment monitoring sites require repair due to damage received from previous floods.

Full end of valley target monitoring results and commentary for 2023-24 will be included in the next comprehensive report.

| Site number | Site location                     | Conductivity | Stream flow |
|-------------|-----------------------------------|--------------|-------------|
| 416001      | Barwon @ Mungindi                 | 365 days     | 365 days    |
| 418058      | Mehi @ Bronte                     | 365 days     | 365 days    |
| 419026      | Namoi @ Goangra                   | 365 days     | 365 days    |
| 420020      | Castlereagh @ Gungalman<br>Bridge | 256 days     | 273 days    |
| 421012      | Macquarie @ Carinda               | 343 days     | 316 days    |
| 421023      | Bogan @ Gongolgon                 | 356 days     | 365 days    |
| 425008      | Darling @ Wilcannia               | 365 days     | 365 days    |
| 412004      | Lachlan @ Forbes                  | 365 days     | 365 days    |
| 410130      | Murrumbidgee @ Balranald          | 365 days     | 362 days    |
| 409016      | River Murray @ Heywoods           | 365 days     | 365 days    |

Table 3. Salinity monitoring data availability summary for End of valley target sites in 2023-24.

# 7 Basin-wide core salinity monitoring network

NSW continued to monitor surface and groundwater monitoring sites within the Basin. The core salinity monitoring network provides critical information that underpins modelling, review of accountable actions, river operations and SIS management and the evaluation of targets.

In December 2019, NSW nominated 236 surface water and 614 groundwater sites for inclusion onto the core salinity monitoring network.

In June 2024, surface water EC sites within catchments was reassessed to identify which sites should be upgraded to continuous EC monitoring sites for within catchment risk work. Identification of sites for possible mid valley and sub catchment target monitoring purposes was also completed.

The upgrade of these sites is funding dependent, and also needs to meet multiple objectives in water quality.

Reassessment of groundwater monitoring bores critical for the management of salt interception schemes and Lake Victoria operations is currently under review and will be completed by the end of 2024.

Groundwater monitoring bores for the management of the salt interception schemes, Lake Victoria and Kulcurna have been reviewed, with new plans implemented and all loggers replaced. The new network is now fit for purpose, enabling the monitoring of sites for management and improved reporting. Work is ongoing to improve the monitoring and maintenance of the new network.

Work is progressing on evaluation of the end of valley target sites, as well as a suite of mid valley and sub catchment target sites for spatially determining the causal pathways and impact of stream salinity with view to informing catchment risk assessments and BSM2030 strategic review.