
2018 RIVER MURRAY SALINITY ZONING POLICY

Background to the policy

Introduction

The River Murray Salinity Zoning Policy is a key element of South Australia's broader salinity management program. The policy aims to minimise the salinity impacts from new irrigation development and assist South Australia to meet its obligations under the Murray-Darling Basin Agreement.

The policy was reviewed in 2017 and amendments to the administration of the River Murray Salinity Zoning Policy were made in early 2018. This paper provides an overview of the 2017 review and the background to development of the 2018 policy.

The River Murray Salinity Zoning Policy

The River Murray Salinity Zoning Policy applies to irrigation located within 15 kilometres of the 1956 flood line, excluding the Lower Murray Irrigation Management Zone; Angas Bremer Irrigation Management Zone; and areas below Wellington because of differences in groundwater salinities and irrigation recharge.

The River Murray Salinity Zoning Policy regulates the amount of water that can be utilised for irrigation within salinity impact zones by implementing a set of rules for granting and varying site use approvals. Site use approvals provide an authorisation to apply a maximum volume of water for the purpose of irrigation on particular land parcels on an annual basis.

Controlling water use on land for the purpose of irrigation helps to limit the amount of drainage below irrigation areas. This in turn helps to keep salinity in the River Murray at acceptable levels in the longer term.

Background to River Murray Salinity Management

The availability of low salinity water from the River Murray underpins the health and productivity of the \$2.2 billion Murraylands and Riverland food and wine industry.

Salinity emerged as a significant problem for irrigated agriculture, water supplies and the environment in the Murray-Darling Basin in the 1960s when drought and elevated salinity levels caused significant irrigated crop damage.

The degree to which horticulture is susceptible to salinity is a function of crop sensitivity to salt, irrigation method, soil type, growth stage, rootstock, rainfall and leaching.

Within South Australia, saline groundwater that is generally saltier than seawater naturally flows towards the river channel where it enters floodplains and the River



Murray. The flow of irrigation drainage water below the root zone to the groundwater table creates pressure which increases the rate at which naturally saline groundwater discharges salt into the river and floodplains. Groundwater mounds grew significantly in the 1970s to early 1990's due to excessive drainage under irrigation areas.

Today advances in irrigation technology result in significantly less water draining below irrigation areas; however, there is still an effect particularly as leaching is required to remove salt from the root zone of crops.

In some areas it can take over 50 years from the commencement of irrigation, for drainage water to reach the groundwater table. This means that the effect of current irrigation on salinity in the River Murray may not be observed for many years.

As it is not feasible to completely revegetate the catchment and irrigated agriculture is vitally important to the State's economy, ongoing management is needed to keep salinity in the River Murray at an acceptable level.

For the past 30 years the salinity threat has been successfully and jointly managed via a collaborative salinity management program established under the Murray-Darling Basin Agreement. Management initiatives that have been implemented to reduce salt loads entering the River Murray include:

- Improved irrigation systems and irrigation management practices that increase application efficiencies and reduce drainage.
- Construction and operation of salt interception schemes that divert on average, about 400,000 tonnes of salt per year away from the river to disposal basins (www.mdba.gov.au).
- A Basin wide salinity accountability framework, including the Basin Salinity Register, that requires adverse salinity impacts from state actions to be fully offset.
- State based policies and programs to manage salinity impacts from irrigation development.

The Basin wide salinity accountability framework uses a system of salinity credits and debits to account for a Basin State's salinity impact on the River Murray and to confirm that a state remains compliant with its obligations under the Murray-Darling Basin Agreement. Basin States are required to maintain Basin Salinity Register entries in balance or in surplus by offsetting any actions which will increase salinity impacts (debits) such as irrigation, with actions that reduce salinity impacts (credits) such as salt interception schemes.

The Basin Plan will further contribute to the management of salinity by increasing dilution flows through the recovery and use of environmental water. However, even with the Basin Plan, management action is still required to protect water users from elevated levels of salinity.

The 2017 Review of the South Australian River Murray Salinity Zoning Policy

Supporting sustainable irrigation development is a Government priority and the review of the zoning policy was initiated in response to the concerns raised by stakeholders that the policy was unnecessarily restricting irrigation development and limiting the ability of businesses to respond to market conditions.

The key objectives that guided the review were to:

- Enable new irrigation development while maintaining obligations under the Murray-Darling Basin Agreement.
- Make it easier for businesses to change to higher water use crops.
- Ensure that salinity impacts from irrigation are not increased beyond those accounted for and offset on the Basin Salinity Register.

The review also considered opportunities to improve clarity, certainty and communication under the River Murray Salinity Zoning Policy.

The review of the River Murray Salinity Zoning Policy involved an expert review panel made up of key stakeholders and technical experts with experience in irrigation and salinity management, engagement with key stakeholders and two rounds of community consultation on an issues paper in April 2017 and a consultation paper in October 2017.

The expert panel and feedback received from the consultation process shaped the new 2018 policy. Key changes included:

- The provision of 30 year site use approvals.
- The ability for existing growers to vary their site use to meet increased crop water requirement resulting from a change in crop type.

Stakeholders requested that the changes be made as soon as possible to support the growth of the horticultural industry in South Australia.

Findings of the 2017 Review

Salinity credits made available for irrigation development when the policy was introduced in 2003 have nearly been fully assigned to site use approval applications approved over the last fourteen years. The allocation of further salinity credits to offset future increased water use would reduce South Australia's Salinity Register balance and result in the state moving into debit prior to the current predicted date of 2050.

Increasing irrigation development beyond that currently offset on the Basin Salinity Register would increase the need for further investment in salinity mitigation actions such as salt interception schemes. There are very few opportunities left to cost effectively generate more salinity credits from salt interception schemes and increased disposal of saline groundwater to Noora and Stockyard Plain Basins may have an impact on adjacent landholders.

However, capacity exists for approximately 14,200 ha of further irrigation development without exceeding the volumes currently approved on site use approvals or the salinity

impact currently accounted for on the Basin Salinity Register, as not all authorisation holders have developed up to their approved site use volume.

While South Australia has offset 56,200 hectares (ha) of irrigation that has been accounted for on the Basin Salinity Register, the 2017 estimate of actual irrigated area shows approximately 42,000 ha of irrigation within the salinity impact zones.

These findings enabled the 2018 policy to include provisions to free up capacity for irrigation development without new investment in salinity mitigation and in a way that ensures South Australia does not adversely affect its Basin Salinity Register balance. Policy review triggers were also considered to ensure that the amount of irrigation in the ground does not exceed that accounted for on the Basin Salinity Registers.

The review also looked at the relationship between crop type and theoretical leaching fractions and found that theoretical leaching rates and estimated drainage rates under irrigation are unlikely to vary significantly under different irrigated crop types and irrigation systems. This finding means that as long as an existing area of irrigation remains the same, an existing crop can be replaced with a higher water use crop without the salinity impacts increasing.

The previous policy allowed water use to increase in the low salinity impact zone, within available credits, in order to encourage irrigation development where it would have less impact. The review found that there has been limited development in the low salinity impact zone due to a number of factors unrelated to the salinity zoning policy, as well as the spare capacity to continue development within the high salinity impact zone which is closer to the River and existing irrigation infrastructure.

Development of the 2018 River Murray Salinity Zoning Policy

In addition to the findings above, there were a number of other important matters that were considered when developing the 2018 River Murray Salinity Zoning Policy.

Compliance with Schedule B of the Murray-Darling Basin Agreement

The policy had to enable South Australia to meet its salinity obligations under Schedule B of the Murray-Darling Basin Agreement. This includes keeping the total of any salinity credits in excess of, or equal to the total of any salinity debits by 2050 and enabling effective monitoring, evaluation and reporting of irrigation salinity impacts.

Existing Site Use Approval Holders

The policy should maintain opportunities for existing site use approval holders to increase their water use in line with their development requirements.

It was considered unlikely that all existing site use approval holders would require all of their currently approved volume, particularly within a 10 year planning timeframe.

Providing for new irrigation development

The benefits of providing for new development where there is no existing site use approval were also considered.

Many factors such as commodity prices, availability of land and water, and input costs (e.g. power and infrastructure) influence irrigation development. These factors reduce the likelihood that irrigation development would exceed the proposed available capacity during the life of the new policy.

Salinity Zones

The salinity zones were originally developed to maximise the potential for further irrigated agricultural development while minimising the associated salinity impacts. The low salinity impact zone can accommodate significantly more irrigation development than the high salinity impact zone for the same estimated salinity impact. To encourage more development in the low salinity impact zone less restrictions were placed on the granting and variation of site use approvals. Despite less restrictions, the previous zoning policy has not been a significant factor in encouraging development in the low salinity impact zone.

The majority of the unused capacity already offset on the Basin Salinity Registers is in the high salinity impact zone and most new development is likely to occur in this zone due to other drivers affecting businesses.

Measuring salinity impact of irrigation

Under the salinity zoning policy the volume of water that can be utilised for irrigation on a specific parcel of land is specified on the conditions included on a site use approval. Under the previous policy if someone wished to change crop types to a higher water use crop on the same parcel of land, this may have required additional site use approval volumes to be obtained or the total irrigated area to be reduced. The reason for this approach was that higher water use would have a greater drainage rate and therefore a bigger salinity impact.

The review explored opportunities to improve the flexibility to change crop types under the salinity zoning policy, as current irrigation management systems and irrigation scheduling mean it is possible for irrigators to manage individual irrigation events and reduce root zone drainage under all crop types, regardless of crop water requirements.

The 2018 River Murray Salinity Zoning Policy

Amendments to the River Murray Salinity Zoning Policy were approved in February 2018. The key elements of the 2018 policy include:

- No change to existing site use approvals. Irrigators that have surplus capacity on their existing site use approvals can continue to increase their water use up to their current maximum volume, without the need to apply for a variation.
- New developers can access 30 year site use approvals. The current option of more permanently reducing or increasing the volume on your site use approval

as part of an exchange of site use approval volumes with another authorisation holder is also still available.

- Crop type change can occur through an application to increase an existing site use approval volume within a specified maximum area.
- The commitment of the South Australian Government to meet its obligations under the Murray Darling Basin Agreement is demonstrated by providing a clear pathway for compliance through retirement of 30 year site use approvals if necessary.

More detail on the 30 year and increased crop water requirement products is provided below.

Key Elements

Site Use Approvals which expire after thirty years.

New irrigation development is supported through new site use approvals, which will permit the use of a maximum irrigation volume for a thirty year period.

A condition will be included on these site use approvals that will define the area and location that can be irrigated. To avoid speculative applications, thirty year site use approvals cannot be used as part of an exchange of site use approval volumes and will need to provide evidence demonstrating a commitment to develop new irrigation (e.g. as a minimum an irrigation plan consistent with the Pressurised Irrigation Code of Practice will be required). New site use approvals may lapse if a proportion of the volume approved is not used within a defined period.

If the sum of existing and thirty year approvals resulted in development beyond the available capacity accounted for on the Basin Salinity Register there would be a significant increase in salinity impact. If required, increased salinity risk from new irrigation development can be managed by not renewing thirty year site use approvals when the end of the thirty year period is reached. To reduce the effect this would have on horticultural businesses a review will be conducted 10 years prior to the end of the thirty year site use approval to determine whether the approval can be renewed for a further limited period. By providing ten years notice, it gives holders of a thirty year site use approvals sufficient time to find replacement volumes through exchanging site use approvals between authorisation holders.

The opportunity to gain a more permanent site use approval through the exchange of site use approval volumes in the same salinity impact zone will also still be available for all developers.

Increased crop water requirement site use approval.

Existing site use approval holders will be able to increase their maximum irrigation volume to change crop types from a low water use crop like grapes to a higher water

use crop like almonds on application. This maximum irrigation volume will not be subject to a fixed term period.

As part of the application an additional condition will be included on the site use approval to define the maximum area and the location that can be irrigated (based on maximum crop area over the last five years). The additional condition is proposed to ensure that site use approval holders do not use crop type change as a mechanism to increase irrigated area.

If, following an increase to the maximum irrigation volume to meet higher crop water requirements, a site use approval holder wishes to enter into an exchange of site use approval volume, it is proposed that they could revert back to their original maximum site use approval volume to enable this to occur.

Salinity Zones

The zones were retained in the 2018 policy to ensure that the volume approved for the purpose of irrigation in the low salinity impact zone does not move to the high salinity impact zone as part of an exchange of site use approval volumes. If this were to happen it could potentially increase the impact of salinity from irrigation beyond that currently accounted for on the Basin Salinity Registers. An exchange of site use approval volumes can take place between authorisations in the High Salinity Impact Zone, or between authorisations within the Low Salinity Impact Zone. They can also take place between the High and Low Salinity Impact Zones as long as the authorisation which is increasing in volume is in the Low Salinity Impact Zone.

To simplify the policy, both thirty year site use approvals and increased crop water requirement site use approvals may be applied for in either the high or low salinity impact zone.

Removal of Prior Commitment

The River Murray Water Allocation Plan (WAP), adopted on 3 October 2017 included a provision to conclude the application process for prior commitment in the high salinity impact zone, following a six month grace period after the adoption of the Plan.

When amendments to the River Murray Salinity Zoning Policy were approved the period during which prior commitment claims could be lodged had not yet expired. As a result a provision to allow prior commitment applications to be received up until the time specified by the River Murray WAP was included in the 2018 River Murray Salinity Policy. This period has now lapsed.

Ten Year Review

The 2018 policy includes the requirement to undertake a review in 2027 following a review of the Basin Salinity Management 2030 strategy planned for 2026. This will allow any changes to Basin wide management to be considered.

The review carried out in 2027 will consider South Australia's current and projected future compliance with the Murray-Darling Basin Agreement and provide an

opportunity to revise the policy to ensure there is a balance between irrigation development, South Australia's Basin Salinity Register compliance, and future salinity risks to other users.

Other review points have also been incorporated into the new policy in the event that adverse salinity impacts occur.