

WHAT IS SALINITY?

# Salinity Fact Sheet



## The Salt in Our Soil - Why We Need to Know About Salinity

### What is Salinity?

**Salinity refers to the concentration of salt that can be found in our groundwater, soils, rivers, floodplains, and wetlands.**

When it rains, or through irrigation practices, the salt naturally stays in the soil due to environmental factors that make up the Mallee region, setting it apart from other agricultural areas in our State.

During the early establishment of the Mallee region, irrigation, and agricultural practices like land clearing,

led to excess water draining away from the root zone of crops and causing a rise in groundwater levels, creating groundwater mounds.

This agricultural development, paired with things like high evaporation rates and free draining soils, means in the Mallee our groundwater systems are as salty as seawater.

In short, salinity affects production in crops, pastures, and trees by interfering with nitrogen uptake, reducing growth and stopping plant reproduction.

## Why is it Important to Monitor Salinity Levels in Our Groundwater?

**An increase in salinity levels found in groundwater, rivers, and waterways can have a detrimental impact on irrigated crops, town water supplies and infrastructure such as hot water systems and evaporative coolers.**

The Mallee Region is a wind-driven landscape and lacks the surface drainage that other areas might have, meaning it's important to monitor and manage the salinity levels found in groundwater, rivers, and waterways.



### Salinity and the Mallee

**Since the 1990's, salinity has been managed through the modernisation of irrigation practices, and the implementation of groundwater salinity catchment systems that divert salt to inland catchment areas for harvest and disposal.**

These mitigating practices have been made possible by the introduction of **salinity management policies including** Salinity Impact Charges introduced in 1994.

Since then, improvements in the salinity levels in the Murray River have been reported, however salt continues to accumulate in floodplains and drainage basins.

There has also been a significant increase in the area **irrigation** development covers, meaning there's a significant area of land that has very little salinity data available.

### Salinity in the Murray River

**Like many other irrigated areas, the Mallee region contains saline aquifers underneath the surface of the soil. Saline aquifers are made up of porous rock formations throughout the soil, that contain saline dense water that is as salty as the sea.**

These aquifers are connected to the Murray River and its floodplains throughout the Mallee region, so when additional water is applied to the surface – whether through weather events or irrigation practices – the water enters the aquifer from above and pushes the saline groundwater out into low lying areas such as rivers and floodplains.

Increase in river salinity is costly to both agricultural potential, and the environment in the local and downstream areas. That's why managing the impacts of salinity is crucial to the long-term sustainability of irrigation in the region.

## Salinity Management in the Mallee Region

**Mallee Catchment Management Authority (Mallee CMA) is responsible for managing salinity throughout the Victorian Mallee region as part of the regulatory obligation under the Basin Salinity Management 2030 Strategy.**

Mallee CMA's role is to identify, implement and manage salinity impacts through delivering on Victoria's Sustainable Irrigation Program and identified mitigation programs and procedures in the Salinity Management Framework.

While Mallee CMA continues to implement mitigating processes from earlier salinity management models such as the Victorian Mallee Irrigation Region Land and Water Management Plan, the threat remains.

Highly saline groundwater is still prevalent above river levels and other low spots in the landscape, continuing to drive groundwater and salt towards the river, floodplains and wetlands, which continues to present a risk of causing impacts to water quality and agricultural productivity.



## So, How do we Monitor and Manage Salinity?

**The first step in effectively managing salinity is gaining a clear insight into the salinity levels in our groundwater, river systems, and floodplains.**

Airborne Electromagnetic Surveying, or AEM, is an accurate and cost effective way to determine the levels of salinity in specific areas of concern, and to collect the necessary data to inform ways to better manage salinity.

AEM, as opposed to ground drilling, is a non-invasive way to gain insight into salinity levels. The AEM system,

consisting of a transmitter and receiver coil that are suspended from a low-flying helicopter, provides vital information on salinity in riverbeds, soil, floodplains, and groundwater.

The information obtained through a groundwater modelling survey such as an AEM is a way to monitor salinity levels, helping to inform best practice processes, such as salinity interception schemes and efficient irrigation, in the management of salinity throughout regions like the Victorian Mallee.

# Did You Know?

**Salinity has been noted as one of Victoria's greatest environmental threats** and an ongoing problem for the Murray River.

**Salt inception schemes have been implemented**, capturing saline groundwater before it enters the Murray River and diverting it inland for harvesting and disposal.

**In the 1990's a plan was developed to improve irrigation practices that would offset the impact of irrigation on salinity levels** and in the generation since we've seen the modernisation and sophistication of irrigation methods improve dramatically to align with best practice models.

Since the last salinity AEM survey, the **irrigation and agricultural area has expanded by 42%**, meaning there's a large area of land that doesn't have sufficient Salinity insights.



## Project Contact

For additional information:

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