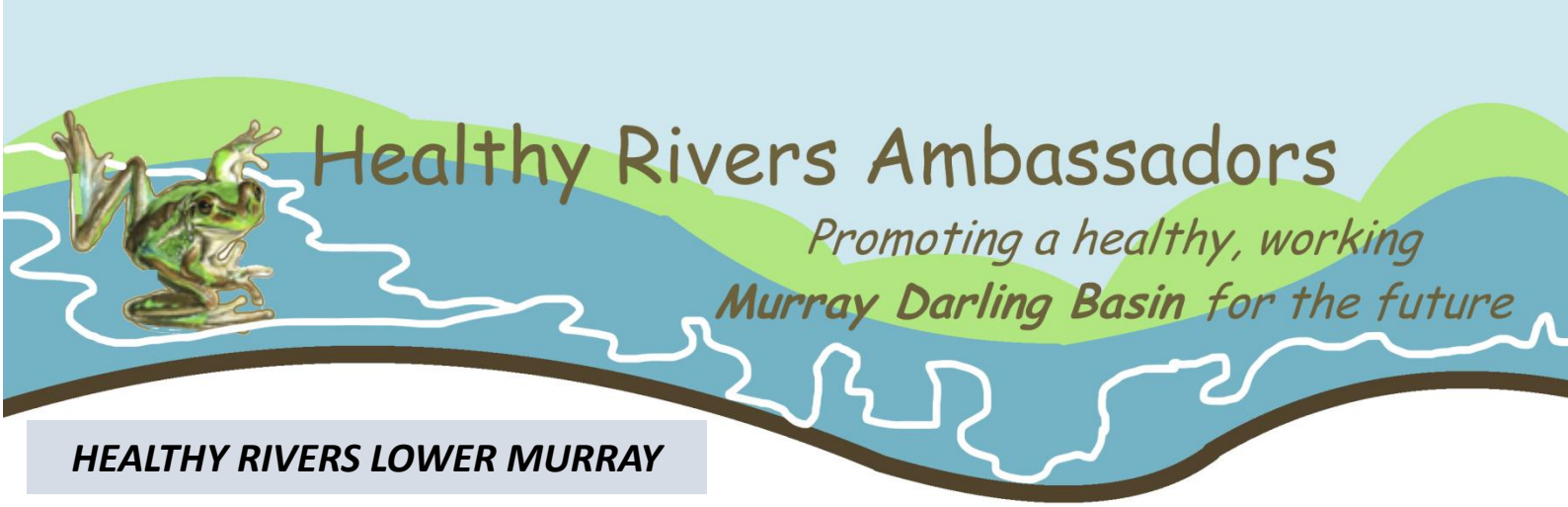

HEALTHY RIVERS LOWER MURRAY

2 April 2025

WHY CONTINUED FLOWS TO THE LOWER MURRAY VALLEY MATTER

In 2012, the Murray-Darling Basin Plan set out to reduce over-allocation of water beyond sustainable limits. It has not yet achieved even the compromised targets that were set, and the *Restoring Our Rivers Bill* (2023) is the best hope of getting the Basin Plan back on track, delivering essential outcomes to manage sustainably the finite water resources of the Basin.

As representatives of downstream communities, we are very concerned about ongoing misinformation from upstream groups, including claims that water flowing to downstream communities is misused and wasted, and that water would be used more productively if diverted to upstream irrigators. It is essential for the well-being of all Basin communities that all users manage limited water resources sustainably and share them equitably.

We stress the importance of ensuring sufficient minimum flows through all Basin river valleys, to keep the rivers flowing from source to sea, to deliver water to downstream communities, to maintain water quality, to export pollutants and to support river and floodplain ecosystems (Dula *et al.* 2024). Everyone who depends on Basin water resources should be supported into the future, not just those lucky enough to be located in upstream regions.

Flows to the Lower Murray bring benefits to the whole Basin

The *Restore our Rivers Bill* (2023) can facilitate effective and urgent implementation of the Basin Plan to benefit all Basin communities. It is urgent to speed up full water recovery while assisting regional communities to adjust to having less water in the future (BOM 2024). Minimum flows to downstream reaches must be secured and delivered, particularly to the Lower Darling and the Lower Murray.

Water delivered to the Lower Murray benefits all river communities along the way. It is also absolutely essential for the future well-being of the entire state of South Australia, as well as river communities and industries:

- 75% of South Australia's population is reliant on the Murray River for its domestic water supplies. In 'normal' years, about 40% of supply comes from the River but in drought years, like 2024-25, up to 90% comes from the River. The desalination plant, our insurance policy, is already in full production (100 GL/annum) in this extending drought. Water supplies for Adelaide and multiple regional towns are reliant on the barrages keeping seawater out of the River and maintaining freshwater at all the pipeline offtake points along the river channel from Morgan to Tailem Bend.
- The South Australian share represents <10% of water taken from the Murray-Darling Basin, and SA has kept within its minimum entitlement of 1850 GL ever since 1968, while upstream states have greatly increased their take. New South Wales takes the largest share, at 43%, with Victoria taking 37%.
- Evaporation losses from the Lower Lakes come from within South Australia's minimum entitlement. On its way to the Lakes, that water is also used to provide transport and flow throughout the 680 km of mainstream channel in South Australia, delivering water to 16 towns and 50,000 ha of irrigated agriculture, before it reaches the barrages at the Murray Mouth.

Rivers die from the mouth up. It is happening in major river systems worldwide, such as the Colorado River in the US and the Mekong River in South East Asia. Maintaining minimum flows to the Lower Murray reach is critical to providing water of sufficient quality for the survival of dependent communities and industries through the whole of South Australia.

The consequences of over-allocation combined with the Millenium Drought were devastating for the end of the Murray-Darling system. River Murray flows reached historically low levels, Lakes Alexandrina and Albert were no longer connected and previously submerged aquatic habitat was colonised by terrestrial species. Sulphate soils became toxically acid and aquatic species in the estuarine habitats were unable to complete their life cycles. The Millenium Drought is still having a very long-lasting impact in the Lower Murray Valley and some species have still not recovered from that event. Tens of thousands of mature trees died on floodplains and turtle and mussel populations in the Lower Lakes were decimated (MDBC 2005).

During recent years of heavy rainfall in the upstream catchments, flows to the downstream reaches were restricted and did not overflow onto floodplains in the first two years of high flows. When the river finally flooded through the Lower Murray Valley in the third wet year, the peak was too short and rose and fell too quickly to provide any lasting benefits to Lower Murray ecosystems. Post-flood, positive growth in vegetation occurred for about three months before plants began again to show signs of stress, floodplains dried out and salt started evaporating from floodplain surfaces through capillary action from highly saline groundwater. Research by the Goyder Institute found that the immediate environmental response in the Katarapko and Pike floodplain areas included reduced shallow groundwater salinities, with some saline groundwater discharging from the floodplains into the river at specific locations. Dissolved oxygen levels did not reduce to critical levels and any low oxygen events that did occur came into South Australia from further upstream (Goyder Institute 2024).

During extended dry periods and low flows, the only water passing the barrages to reach the Coorong and keep critical habitats and species alive is environmental water. The greater volume of the environmental water reaching the Lower Murray Valley and Lakes Alexandrina and Albert has already benefitted all upstream users along its passage from upstream reaches. Water is reused as it flows for hundreds of kilometres down the rivers, sustaining healthy habitats across the entire Basin.

Long periods of low flows led to extended toxic algal blooms affecting Lake Alexandrina and the Goolwa Channel lasting from March to July 2024. This event triggered a human Health Alert warning not to ingest and to avoid contact with this water. This water was also unusable for stock and irrigation and caused significant economic losses due to curtailed recreational water activities, coinciding with a usually busy tourist period for the area through school holidays, Easter and Anzac Day.

Ongoing lack of river flows since the 2022-23 flood means that expensive dredging must continue at the Murray Mouth because there is not sufficient outward flow to counteract coastal sand being driven in by tides and storms (Prof N Harvey pers comm. 2025). With sea level rise this problem will increase, with salt water contaminating fresh water supplies for towns around the lakes, and potentially reaching pipeline offtakes supplying regional South Australia.

There is ongoing misinformation in upstream communities that removal of the barrages at the Murray Mouth would return the Lower Lakes and estuary to a ‘natural’ condition and release additional water that could be transferred to upstream irrigators. There is extensive peer-reviewed scientific information to refute this view, highlighting the very serious consequences to downstream communities if the barrages were removed. The Lower Lakes Independent Science Review by CSIRO for the MDBA (Chiew *et al.* 2020) found that the Lower Lakes were largely fresh prior to European settlement. This finding was based on palaeoecological evidence, water balance estimates, hydrological and hydrodynamic modelling, traditional knowledge of the Ngarrindjeri People and anecdotal evidence of early explorers and colonists.

The pre-development long term average annual inflow from the Murray River was more than 13,000 GL. Upstream development has reduced the river inflow to the Lakes by about half, resulting in more frequent incursion of seawater into the Lower Lakes. The Estuary could only be returned to a ‘natural’ condition if all

upstream storages were removed to restore natural river flows, before removing the barrages. If the barrages were removed but all upstream storages remained in place, the Lower Lakes would rapidly become entirely marine, killing all freshwater species. There are modelled estimates that saline water would reach the Adelaide water pipeline offtakes within a few weeks.

Without the barrages, water supplies to towns, irrigators and farmers around the Lower Lakes cannot be maintained. Without the barrages, water supplies to 75% of South Australia's population, agriculture and industries cannot be maintained. Without the barrages, the freshwater values in the Lower Lakes cannot be maintained. This would significantly change the ecological character of the Ramsar listed site, which is a wetland of international importance that Australia has an international obligation to maintain. This would also impact traditional owner values and other socio-economic values such as tourism that are reliant on a healthy Coorong, Lower Lakes and Murray Mouth system.

Removing the barrages would not result in any water savings, as the evaporated volume is included in the minimum entitlement for South Australia. This volume of water is required to transport and deliver water to all communities and licensed irrigators along the 680 km valley and around the Lower Lakes, and to supply critical water supplies to Adelaide and most regional areas in South Australia, which only has limited water storage capacity due to lack of suitable dam sites. These flows are also essential to export accumulated salt, nutrients, algae and organic matter out of the Basin.

With climate change, management of the Lower Lakes, Coorong and Murray Mouth will become more challenging. Sea level rise would cause more seawater to flow into the Lower Lakes while catchment runoff in the southern Murray-Darling Basin is projected to decline under a changing climate. A key concern is likely step changes as critical thresholds are breached, with sudden shifts in ecological condition and processes which may be irreversible (IPCC 2023). There are significant gaps in knowledge of the biophysical impact under a changing climate. There is a need to develop adaptation options to manage the social, environmental and economic vulnerabilities, not just for the Lower Murray Valley, but for the whole Murray Darling Basin system.

Concluding Statement

All Basin communities will be better off with functioning river systems and compliant management of water take along the full length of the river valleys. Going forward, it will be necessary for all water users in the Basin to adjust and to find ways to survive and thrive using less water. That is the reason John Howard began the water reform process, to reduce over-allocation and to sustain healthy rivers in order to support dependent human communities and industries.

The Lower Murray is currently in severe drought, while the headwaters of the Basin are being deluged with record-breaking rains. Maintaining minimum flows to the Lower Murray is critical to sustain South Australia and we need the Basin Plan to be implemented effectively as soon as possible.

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