



25 February 2024

NSW Natural Resources Commission  
GPO Box 5341  
Sydney NSW 2001

By email to: [nrc@nrc.nsw.gov.au](mailto:nrc@nrc.nsw.gov.au)

## REVIEW OF THE NSW MURRAY AND LOWER DARLING REGULATED WATER SHARING PLAN

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The National Parks Association NSW (NPA) appreciates the opportunity to submit comments on the Commission's review of the NSW Murray and Lower Darling Regulated water sharing plan.

NPA's mission is to protect nature through community action. Our strengths include State-wide reach, deep local knowledge, evidence-based input to policy and planning processes, and over 65 years' commitment to advancing the NSW protected area network and its professional management. We also provide outstanding opportunities for experiencing and learning about nature through our unrivalled program of bushwalking, field surveys, bush regeneration and other outdoor activities.

The NPA believes it is important that Australia protect and sustain healthy and resilient freshwater ecosystems and their associated biodiversity (flora and fauna). This requires actions to i) protect and sustain healthy and resilient freshwater ecosystems and their associated biodiversity (flora and fauna) and that ii) Natural flows and flow regimes must be protected and managed so that riverine connectivity and associated floodplains remains healthy from the source to the sea (or from sources to naturally terminal wetlands).

We understand under the NRC wants submissions to focus on at least one of the following questions:

1. To what extent do you think the plan has contributed to environmental outcomes?
2. To what extent do you think the plan has contributed to social outcomes?
3. To what extent do you think the plan has contributed to economic outcomes?
4. To what extent do you think the plan has contributed to cultural outcomes?
5. To what extent do you think the plan has contributed to meeting its objectives?
6. What changes do you think are needed to the water sharing plan to improve outcomes?

Our submission will focus on the two questions associated with environmental and social outcomes, with our views on the changes required to the water sharing plan to improve these outcomes outlined at the end of each section.

### Overview

The area covered by the plan is a significant environmental asset. The NPA estimates there are more than seventy significant environmental habitats in the water sharing plan area - most of which support Commonwealth or State listed threatened species and/or ecological communities, many of which also provide vital refugia such as drought refuges and pathways for dispersal and/or ephemeral breeding and nursery sites for aquatic and semi aquatic wildlife. For example, the Lower Darling and Menindee Lakes are listed as part of the endangered NSW Lowland Darling River aquatic ecological community. The WSP must therefore contribute to the enhancement of the ecological condition of such valued water-dependent ecosystems.



It is also a significant area for native fish species in the wider Murray-Darling Basin including iconic species such as Golden Perch and Murray Cod (vulnerable), as well as other threatened species including Silver Perch and Freshwater Catfish. It supports a suite of small and medium-bodied fish species and is home to the threatened Darling River Snail (critically endangered). In a 'whole of Basin context', the region is important for the wider breeding and recruitment for fish throughout the Basin (Stuart and Sharpe 2017). The WSP must therefore facilitate connectivity to the wider basin (and - combined with the information outlined in the above paragraph- provide critical refugia for breeding stock during times of drought).

Scientific research has found, the river system was once characterised by: near-perennial flows (85% of the time), with lotic (flowing water) habitats; and near-annual, inchannel, flow pulses. Based on mean monthly flows from 1885–1950, prior to flow regulation, the research found the Barwon-Darling River at Menindee flowed for around 90% of the time, respectively, including continuous flows for up to 19 years (Mallen-Cooper and Zampatti 2020). Further evidence is that lotic biota are found consistently in Aboriginal middens dating back over the past 15,000 years, thus indicating the long-term persistence of lotic conditions.

However, at present flow storage and diversion rates under the WSP encourage: i) increased frequency and duration of zero flows in some reaches; ii) low flows which are now frequently below lotic thresholds, and ii) reduced (by over 90%) magnitude of near-annual flow pulses. Consequently, in modern droughts, the river becomes predominantly lentic (still-water) habitat.

The result being a mismatch between water volumes and flows with the fish community that exists in the Lower Darling-Baaka. They have suffered a series of significant fish kill events in recent decades, culminating in the mass deaths of millions of native fish at Menindee during summer 2018/19 and in 2023. Each event has been linked to prolonged low flow or cease to flow conditions, or recommencement flow events (following cease to flow periods) which caused a sudden deterioration in water quality (Stocks and Ellis 2023).

There are no 'storylines' or historical physical evidence that such fish kills were 'naturally' occurring events within the local First Nations people experiences. So this is a 'new' phenomenon. It is therefore the NPA's view the NSW Murray and Lower Darling Regulated water sharing plan needs significant revision so that the rules align with the intent of the objectives. That is: it must actually protect and contribute to the enhancement of the environment whilst supporting surface water-dependent social and cultural values.

In particular, as a water sharing plan is generally in place for ten years, there is a need to transition from a WSP that entrenches existing extraction rates and practices, towards one that realizes the goals and objectives of the [long term water plan](#) now. This transition could be complemented by sound social infrastructure support packages that address the apparent environmental and social problems, such as: incentives to create off-stream storage as an alternative water supply for towns and individual landholders. Thus preventing ecologically detrimental periods of zero flow whilst increasing community resilience - especially during droughts.

Connectivity was consistently raised as an important issue in the development of the regional water strategy, with widespread community support for ensuring there are appropriate triggers to minimise or prevent cease-to-flow periods and protect connectivity flows throughout the catchment. The NPA's submission below provides some suggestions to the NRC for the WSP that may improve such connectivity.

### **To what extent do you think the plan has contributed to environmental outcomes?**

The broad environmental objective of this Plan is to protect, and contribute to the enhancement of, the ecological condition of the water sources and their water-dependent ecosystems. Specific targets include:

- protecting and contributing to the enhancement of

- targeted native fish, native vegetation and high diversity hotspots and significant habitat for native fish, frogs, waterbirds and native vegetation.
- longitudinal and lateral connectivity within and between water sources to support target ecological processes,
- water quality within target ranges for the water sources to support water dependent ecosystems and ecosystem functions,
- to support environmental watering in the water sources to contribute to maintaining or enhancing ecological condition in streams, riparian zones, dependent wetlands and floodplains

It is the NPA's view that while this intent is admirable, the rules and institutional arrangements to support them, do not align and are not apparent.

A common premise for the Barwon-Darling River is that it has a highly variable hydrology with long periods of zero flow. Yet, reviewing hydrological and hydraulic data, particularly during severe droughts, reveals that within this variability there is also consistency, with: persistent baseflows supporting lotic habitats; and near-annual, landscape-scale flow pulses (Mallen Cooper and Zampati 2020). Thus the premise is not accurate and is a classic case of the 'Shifting Baseline Syndrome': a gradual change in the 'accepted' norm for the condition of the natural environment. This syndrome is recognised by many scientists as one of the fundamental obstacles to addressing a wide range of global environmental issues.

Droughts are characterised by low flows that directly affect habitat and riverine connectivity; which in turn regulate the distribution, abundance and diversity of aquatic biota (Rolls et al. 2012). As the WSP area has been shown to not just be an important site for aquatic biota in and of itself, but also an important area for refugia during times of stress and a source for dispersal across the wider basin when 'good' times return, understanding the hydro-ecological relationships is critical- as the rules in the WSP specify how we make trade-offs between consumptive water use and maintaining ecosystem integrity (Bunn and Arthington 2002).

Under the current WSP, it is clear the trade-offs in place are not balanced. Two impacts on hydrology and hydraulics stand out: 1) the loss of low flows and associated lotic conditions, and 2) a reduction in regular flow pulses. While aquatic species in the Barwon-Darling can survive temporary periods of zero flow and lentic conditions, historically, these periods were dispersed within long periods (month-years) of continuous lotic conditions, enabling populations of uniquely lotic biota to persist (Mallen-Cooper and Zampati 2020). The NPA believes this is evidence that the water sharing plan is out of balance. It embeds extraction rates that remove any chance of long periods of continuous lotic conditions. It therefore cannot be said to be "protecting" let alone "contributing to the enhancement" of the environment.

The situation might be understandable as managing low flows in droughts to meet societal and environmental needs is complex and contentious enough for any government. However, for northern MDB it is compounded because we have administratively and geographically compartmentalised water management to sub-units. Connectivity between different sub-catchment planning units becomes particularly difficult when trying to meet all the various objectives at a time of water scarcity. It is the NPAs view such administrative disaggregation needs to be addressed in the review.

The NPA urges that there should be more co-design across government. But this does not require major administrative re-structuring. Water volumes and discharge are the universal currency of flow management. To remove the geographical divisions between river stretches, there needs to be end of system low targets in the various tributaries across the system. Currently, the various specific WSPs that are in effect across the entire catchment largely work independently and have little or no requirement to pass water from upstream storage dams to the lower reaches. A requirement to do so, would compel the various players to work together without requiring a massive administrative and legislative restructure.

**In sum:** the NPA can see no evidence that the WSP has contributed to its stated environmental outcomes. Indeed, recent events: 2023 hypoxic black water fish kills, the 2018 fish kills, the trialling of pure oxygen pumping, declining fish populations, and the outbreak of anchor worms indicate the plan

keeps the system in poor health. We believe one cause is the complex administrative intersections that occur in the northern MDB, with its multi-scaled institutional complexity, intersecting administrative, socio-political and biophysical processes, actually inhibiting connectivity. For example, the division of the Darling/Baaka into an unregulated water source to the high-water mark of Lake Wetherell and a regulated water source from Menindee Lakes to the Murray River under separate water sharing arrangements causes significant management problems for improving environmental health and connectivity for an endangered ecological community. While changing such wider institutional arrangements might be beyond the scope of NRC review, the Commission could make recommendations that improve the agility of Menindee Lake management: mechanisms that create specific end of system flows and translucency would be useful. This might include;

- increasing the Environmental Water Allowance in Menindee Lakes so that CEHW is not asked to maintain baseline fish populations in times of stress. That is, HEW should not be used for PEW functions because the PEW in the WSP is inadequate.
- Amending the Lower Darling River Flow Restart Allowance so that it is up to the task required and allows management to be more agile and flexible in its use.
- Closer examination of opportunities to implement end of system flow rules, translucency rules, and greater co-design within government so that the various Water Sharing Plans operate largely INTERdependently. Some level of public transparency around this would be helpful.
- Not changing the designation of HEW once it reaches Menindee lakes so that it can be used for downstream environmental outcomes. At present it seems a resource purchased with public money, becomes a private asset simply because it reaches a lake.

The Darling/Baaka is the key connector between the Northern and Southern Basins, so improved management arrangements are critical to the environmental health of the whole Murray-Darling Basin. Such improved management arrangements between sub-catchments may also contribute to wider social outcomes: for example, preventing increased upstream extractions for an annual crop (cotton) reducing the flow downstream to Menindee for permanent crops.

Given the CSIRO is estimating stream flow decline of between 5-20% by 2026 and increases in evapotranspiration by 8%, it is critical the NRC also highlight that:

- there are wider practical, legal, and policy challenges across multiple scales because climate risks intersect not just water- but with the many social, economic and environmental policy domains beyond (see next section of submission).
- A need for currency. The Murray-Darling Basin Agreement was established back in 1963 under very different conditions. The declining condition of the river system, the much greater scale of extraction, greater evapotranspiration, and lower stream flows mean that the Agreement needs to be upgraded to consider both the current and likely future environments. Are the sharing arrangements around 640/480GL still appropriate? Should this arrangement be more adaptive to consider seasonal breeding and dispersal events?

### **To what extent do you think the plan has contributed to social outcomes?**

The broad social and cultural objectives of this Plan are to provide access to surface water to support surface water-dependent social and cultural values. It is the NPA's view that while the plan may contribute to the above social outcomes, the connection is not clear or direct. The evidence around this includes:

- The MDB is an area of great environmental, social, indigenous, economic and tourism importance (Bark et al., 2015). The existing weir pools in the WSP region are known to be an important social resource for many local communities.
- Many farming communities are dependent on the ecological and environmental resources for their living, and thus the long-term economic and social fabric within these communities also

depends on the long-term environmental health on the river. The current WSP plan fails to adequately provide for a healthy riverine ecosystem as there are insufficient flows of reasonable quality water. By not transitioning to the long term water management plan and entrenching old practices, the current plan to some degree is 'short changing' the community and is a threat to the long term economic outcomes of the region.

- Many locals also have strong spiritual connections with the river – and so a river in decline impacts their social wellbeing. However wellbeing is the consequence of many different interactions and the term is sometimes used interchangeably with related concepts such as 'quality of life', 'life satisfaction', 'wellness', 'health' and 'mental health'- which clearly depends on a variety of factors not only water.
- Climate variability can significantly influence future farm viability. Social and ecological impacts of climate change, such as distress caused by negative changes in the home landscape and feelings of loss and hopelessness, can be damaging to health in many ways, including physical health and work productivity (Yazd, et al. 2020).
- When climate fluctuations are extreme, farmers face significant stress because they have to deal with multiple pressures at once: dealing with low allocations of irrigation water, higher temperatures and lower rainfall (Wheeler and Zuo, 2017). Thus it is no wonder researchers have identified a direct link between heat waves, droughts and high temperatures with mental disorders and wellbeing (Pailler and Tsaneva, 2018).

The above bullet points, provide evidence that water is more than just a mere commodity or economic good, its abundance has multi-layered impacts on economics, society and environment, which in turn, influence each other (Wheeler et al., 2019). Water is one part of a farm's natural capital, but there are many different types of capitals that influence social wellbeing (namely: physical, social, financial, human, and natural). These capitals influence the capacity people to survive shocks and stresses, as well as the overall the quality of their lives.

All this makes it difficult to unpack any specific social outcome as a result of this WSP.

Indeed, it could be argued that looking for a direct connection between a WSP and broad social outcomes might suggest there is a lack of long term resilience within a regional community. Policy must be focussed on long-term, preventative approaches, as opposed to the current short-term, reactive and potentially harmful policies. A community's clear and apparent connection with a water sharing plan might only demonstrate that they are more vulnerable to crisis when the next drought occurs. While this view might seem provocative, it is simply used to highlight the importance of a water sharing plan working in partnership with other agro-ecological and soil/water policy tools (Wheeler and Marning 2019) to reduce the farming community's vulnerability to water security shocks. Policies that help create markets and conditions where farmers are rewarded for public good activities (e.g. protecting (and creating) environmental/ecosystem services, carbon markets, leasing of water rights to environmental water, payment for temporary easements, or for private land conservation) may play a very important role in creating a more resilient community: creating more resilient farms to withstand the effects of drought, but also in providing income when traditional farm production is not possible.

The western regional water strategy identifies that declining water security for towns and small communities is a challenge that must be addressed. Overall, it is the NPAs view that this needs to be done in a way that has stronger considerations about the wellbeing and resilience of rural communities. The new WSP should work in tandem with infrastructure interventions for towns and cities. This could involve access to new water sources, such as additional groundwater sources, off-stream storage, recycling and desalination. Most of Australia has low rainfall. For regional towns, a lack of supply diversification creates further water security risks for these communities. Moreover, the dependency for on in-stream extraction makes the fish communities more prone to mass kills events during times of stress.

Any revision to the WSP needs to make the connection between the western regional water strategy apparent.

### **First Nations**

For First Nations people the WSP's vision is provide for the spiritual, social, customary and economic benefits of surface water to Aboriginal communities, The broad Aboriginal cultural objective of the WSP aligns to this: "to maintain, and where possible improve, the spiritual, social, customary and economic values and uses of water by Aboriginal people".

However, after these statements 'customary' and 'spiritual' and not mentioned again in the WSP. Furthermore, the share components of regulated river (high security) access licences is 0 ML/year for cultural water and under Part 7, The Minister may only grant a high security Aboriginal cultural access licences for "personal, domestic or communal purpose, including drinking, food preparation, washing, manufacturing traditional artefacts, watering domestic gardens, cultural teaching, hunting, fishing, gathering, and for recreational, cultural and ceremonial purposes". It would seem that the current plan, as it progresses from vision to rules, constraints and at later ignores the needs of local indigenous communities. Such inclusion of Indigenous values is tokenistic. For Australian Indigenous peoples, the nurture of water landscapes holds significant meaning and purpose. Limited access to water and its associated impacts on cultural practice have created a history of socio-economic disadvantage ([hyperlink reference](#)). The outcry from indigenous people about the fish kills in terms of impact on their own spiritual connection to country was heartbreaking and needs to be addressed in any review of the plan (Moggridge & Thompson 2021).

The NSW Western regional water strategy found widespread support for all options that improved the participation of Aboriginal people in water management. Ensuring that the needs and values of Aboriginal people are recognised and represented within the strategy was repeatedly endorsed. Initiatives that support the involvement of Aboriginal people in the active management of rivers and water were also supported. It is time to move from words to actions- in this regard a revised WSP can help remove the barriers to Aboriginal people's water rights.

### **Conclusion**

I hope our submission informs your deliberations.

I can be contacted at [REDACTED]

Yours sincerely

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**National Parks Association of NSW**

*protecting nature through community action*

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