

Upper Namoi Water in the Landscape Initiative (WITLI)

Submission to the 2026 Murray-Darling Basin Plan Review

The *Upper Namoi Water in the Landscape Initiative* (WITLI) welcomes this opportunity to provide input into the 2026 Murray-Darling Basin Plan Review. The Review will help the Murray-Darling Basin Authority (MDBA) and the entire Murray-Darling Basin (MDB) community take stock of the almost 14 years of operation of the Plan. Our submission is based on our own understanding of the key issues in our region, as well as our responses to the concerns raised in the MDBA's Discussion Paper. In summary, we have grouped our submission around five critical points:

- Groups across the MDB such as WITLI provide an ideal opportunity for the MDBA and the Basin governments to collaborate to address fundamental challenges.
- The lack of a comprehensive Basin headwater strategy threatens water resource management across the Basin.
- Failure to understand and meet headwater user needs may generate conflicts that will impede implementation of Basin-wide planning.
- The lack of headwater region hydrological knowledge threatens water resource management across the whole MDB.
- Engagement of stakeholders in the headwater regions in a meaningful research agenda can facilitate better informed, fair, effective and efficient water governance and management across the entire Basin.

1. Introduction to WITLI

Groups across the MDB such as WITLI provide an ideal opportunity for government, business, and civil society to collaborate to address fundamental hydrological challenges.

The *Upper Namoi Water in the Landscape Initiative* (WITLI) is a consortium of citizens and organisations focused on sustainable hydrological management of the Upper Namoi catchment. This is the headwater region for the Namoi River in northern New South Wales, one of the 22 major river catchments forming the Murray-Darling Basin.

Members of WITLI include Tamworth Regional Council, Tamworth Regional Landcare, the University of New England, landholders, First Nations, major employers and facility managers. They hold diverse interests, knowledge and resources, and are committed to engagement and innovation. WITLI aims to be proactive, well-informed, representative, and an ideal vehicle for engaging headwater stakeholders – government, business, and civil society – to collaborate to address fundamental hydrological challenges. Moreover, WITLI engages with other community groups and collaborative initiatives focussed on, amongst other things, the concerns of headwater regions along the Great Dividing Range.



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As such, WITLI and similar groups are valuable points of engagement for the MDBA and other important stakeholders to address the ‘future knowledge priorities’ of the Discussion Paper including:

‘Strengthening collaboration between Basin governments, communities, industry and researchers to set common priorities, enable innovation and test new ideas’ (p. 81).

WITLI urges the MDBA to act on this priority by developing a community collaboration program, which would foster co-development of biophysical and social initiatives and provide an effective mechanism for constructive community engagement.

2. Headwater regions are critical to the whole MDB

The lack of comprehensive headwater catchment management threatens water resource management across the whole MDB.

The Discussion Paper has much to commend it, but we believe there is a missing emphasis – the crucial role of headwater regions in establishing a solid base for all other concerns of the MDBA outlined in the Discussion Paper.

The quantity, quality, and timing of flows of water to the MDB depend on the headwater regions. More than 80% of flows in the lowland region of the Namoi is generated from the Upper Namoi headwater region, and this is a typical proportion for most of the major eastern located river catchments across the Basin.

Historically, slow, shallow, meandering watercourses and chains-of-ponds filtered sediments, deposited nutrients, and absorbed water into the ‘sponge’ of the soil matrix and broader landscape. This in turn

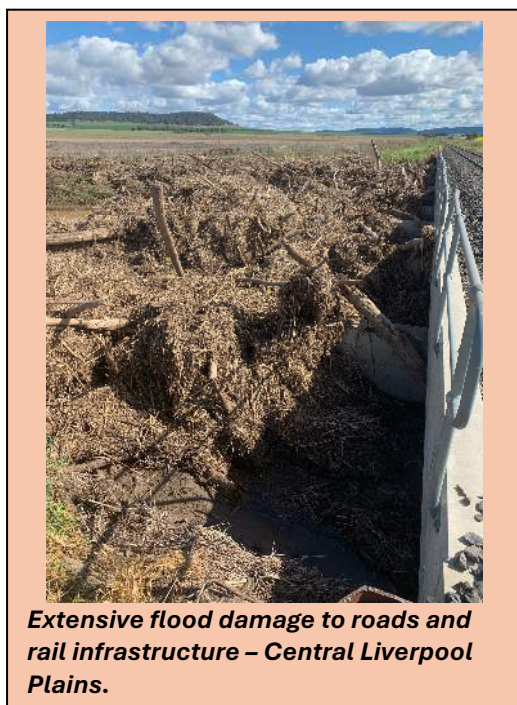
mitigated both flood and drought episodes by slowing flow, providing a steady release of water to nourish wetlands, and ensuring connectivity to and in lower parts of the catchment, as well as enabling surface–groundwater exchanges. This pattern was repeated across the 22 major river catchments of the Basin.

A range of factors – including historic land management over the past two centuries, a variable climate, and changes to the stream and river network – have coalesced to change the hydrology of headwater regions, such as the Upper Namoi. Soils have become drier and less absorbent, and surface water conveyance has accelerated through an extended network of channels that have become more efficient water movers. This exacerbates river channel erosion, resulting in deeply incised channels that convey surface water quicker, resulting in increasingly damaging floods, which poses immense challenges for local governments, water utilities, and water users.



Remnant waterhole, Wallabadah, once common within the drainage systems and larger sub-catchments. Ponds and floodplains provided multiple storages, allowing water to infiltrate into the underlying aquifer. This process has been lost due to erosion and expansion of the channel drainage network.

Moreover, the ability of the ‘sponge’ to provide a measured release of water in droughts is diminished.



Extensive flood damage to roads and rail infrastructure – Central Liverpool Plains.

Consequently, headwater regions set the scene for many of the major issues highlighted in the Discussion Paper, including:

- *Chapter 4 – Water for the environment:* Headwaters generate the majority of water available within each of the 22 major river catchments, and by extension, the entire MDB. Therefore, they are fundamental to delivering sufficient water that can be formally dedicated for environmental uses. A key concern of this chapter is the impacts of climate change.

Climate change will affect all regions of the 22 catchments – lower and upper – and the best projections predict overall a hotter and drier environment, with a more variable and sporadic pattern of rainfall. Nonetheless, the upper catchments can be expected to remain cooler and wetter compared with lower regions but more

variable. Potentially, headwater regions will become (and may already be) key refugia for flora and fauna pushed out of the hotter, drier habitats in the lower parts of the catchment. This crucial role of drought refuges is referenced in the Discussion Paper – e.g. ‘Strengthen prioritisation: Prioritise key environmental assets and ecosystem functions (such as drought refuges) ...’ (p. 42). However, these references are not explicitly connected to the unique position of headwater regions as climate refugia within the Basin.

- *Chapter 5 – Improving river connectivity in the northern Basin:* connectivity involves not simply rivers flowing continuously, pushing out salts and nutrients and preventing the stagnation and eutrophication that led to mass fish deaths at Menindee, the Coorong, and other lower catchment wetlands and rivers (p. 13 Discussion Paper). Connectivity also involves water moving *over and under* the earth in a complex dynamic that is not perfectly understood from the headwater regions to lower parts of the catchments. If headwater hydrology is dysfunctional or disrupted, then the resilience of the whole system to withstand and absorb the shocks of major floods and droughts is disrupted. This has negative implications for ‘*Improving floodplain and wetland health*’ (Chapter 6), ‘*Responding to native fish decline*’ (Chapter 7), and ‘*Managing water quality*’ (Chapter 8). Fish deaths in localities such as Menindee and the Coorong are symptoms, not causes, of overall declining health of catchments that starts in the headwater zone. The ‘sponge’ facility of headwater regions is essential to water quality for the entire basin. Upper catchments slow down and filter water where it first falls as rainfall, preventing erosion and nutrient overload.

Our main observation of 14 years of operation of the Plan is that it lacks an overall headwater region strategy. Headwater catchment management, especially river

channel, riparian zone and floodplain management and other nature-based activities will be increasingly pivotal to the quality, quantity and ability to access water resources in the lower regions of the Basin's catchments. WITLI urges the MDBA to support the establishment of a dedicated headwater regions institute, to assist the MDBA, Basin governments, and stakeholders develop a headwater region strategy.

3. Potential for Conflict – Opportunities for co-operation

Failure to understand and meet headwater user needs may generate conflicts that will impede implementation of Basin-wide planning.

It goes without saying that the MDBA is acutely aware of the potential for conflict—and has multiple historical experiences of trying to resolve conflicts – amongst the myriad competing interests across the Basin.

Even within headwater regions, water stakeholders include local governments and residents; First Nations; dryland farmers and irrigators; intensive agricultural operations (horticulture and animals); industrial facilities including abattoirs, agricultural processors, and mines; renewable energy facilities; water authorities, utilities and regulators; and urban and rural residents.

Regional and rural people are especially dependent on water resources for cultural and spiritual nourishment, livelihoods, and economic development. Many in headwater regions are working together to refine innovative land, riparian and river management practices to protect sustainable water resources – e.g. see this YouTube clip: [Big Jacks Creek Rehabilitation - NSW Local Land Services](#)

Given the pressures created by historic overuse and a changing climate, there is increasing potential for water resources conflict between headwater region water user groups, and between upper and lower catchment communities. Conflict *per se* is not unhealthy if it stimulates holistic thinking and clever solutions. Unresolved conflict, on the other, can stymie engagement, encourage misinformation, and derail

implementation of high-level water planning instruments. Stakeholder pressures will increase as water supply becomes more vulnerable, and that this is likely to translate into political action which could greatly complicate the task of managing both the MDB, and issues of concern to regional and local government communities.

Community engagement and pre-emptive planning could provide new solutions to problems before they 'mature'. WITLI offers an effective mechanism for constructive community engagement.



4. Missing coherent & reliable data for headwater regions, vital for decision-making

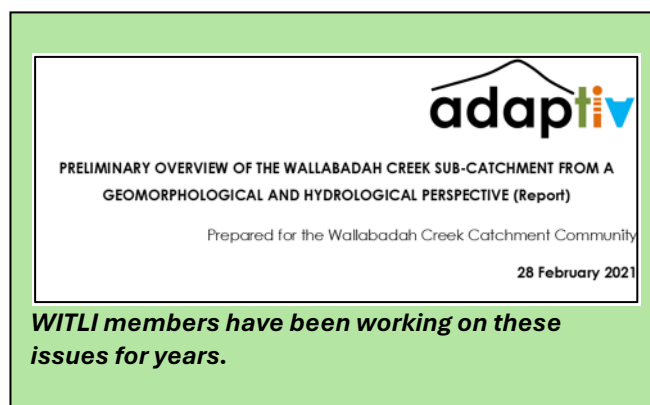
The lack of comprehensive headwater region hydrological information, modelling, and focussed research capacity threatens water resource management across the whole MDB.

WITLI endorses the aspiration of Chapter 11 of the Discussion Paper – ‘Improving science and knowledge to inform Basin water management’ – and its ‘future knowledge priorities’, including:

- ‘sustained investment by Basin governments in science and monitoring for robust and effective decision-making’
- ‘integrating condition monitoring data with predictive climate models that manage high levels of uncertainty’
- ‘strengthening collaboration between Basin governments, communities, industry and researchers to set common priorities, enable innovation and test new ideas’ (p. 81).

In the headwater regions, these priorities would help alleviate the lack of basic decision-making data about land and water processes. Gaps include:

- Understanding of the unique effect of two centuries of land management and river channel changes on the hydrology of headwater regions in the Basin. Changes in both flood and low-flow hydrology and the implications for groundwater hydrology are deemed significant for consumptive and non-consumptive users as a result of these historical changes.
- Lack of hydrological models, with sufficient precision, that allow the effect of land use, river channel management and climatic variability on the hydrology of headwater regions to be better understood. These models should be at a sufficient resolution to allow changes to individual flood events to be investigated. Changing flood and low-flow hydrology has a significant influence on water security for both consumptive and non-consumptive users.
- Prediction of the compounding effects of climate change, land use and river management on water resources, including consideration of riparian and river channel management, and urbanisation on flood and low flow hydrology and the risk to water security.
- Impact of changing hydrology on public and private developments and infrastructures including roads, dams, railways, commercial facilities, agricultural intensification, and renewable energy facilities. And conversely, the impact of developments and infrastructure on hydrology.
- Systemic impacts of headwater climate change.



- Forecast risks of natural resource management, actions and risk mitigation.
- Co-benefits of good land and river channel management – e.g. nature-based conservation, carbon management, and healthy water resources.

The Discussion Paper acknowledges the critical need for better understanding the influence of changed headwater hydrology on flow and connectivity in the case of the Upper Murrumbidgee (Box 11.2, p. 84) but similar attention needs to be directed to all headwater regions across the Great Dividing Range.

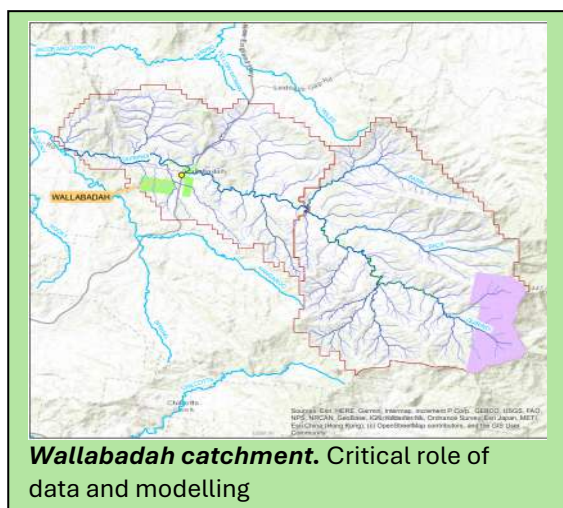
We are pleased to see strong emphasis in the Discussion Paper on the importance of improving fundamental knowledge of groundwater systems ‘to better inform future Basin water management decisions’ (p. 82). As the Discussion Paper notes:

‘Groundwater knowledge in the Basin is insufficient to inform future water management. Areas to improve our understanding include issues in high-risk areas identified by the sustainable diversion limit (SDL) assessments, thresholds for ecosystem health, groundwater quality, boundaries between different groundwater systems, climate impacts on groundwater recharge and connections between First Nations peoples and groundwater. Developing new models would also improve our understanding’ (p. 83).

Crucial knowledge of headwater region groundwater systems is undeveloped compared with lower catchment zones. Many of the connected groundwater systems in the headwater regions are contained within fractured rock which behave differently to the alluvial groundwater systems that dominated the lowland regions of the Basin. Better understanding of groundwater systems is relevant to all headwater regions, but is acknowledged by the Discussion Paper as a particular problem in our region, with two of the three groundwater systems of major concern located in the Namoi catchment – i.e. (at p. 32):

- ‘Lower Namoi Alluvium (GS 29): the initial assessment indicates declining groundwater levels may impact the productive base of the groundwater system’.
- ‘Upper Namoi Alluvium (GS 47): the initial assessment indicates declining groundwater levels may impact surface water to groundwater connectivity and the productive base of the groundwater system’.

We urge the MDBA to make groundwater research – especially in, but not limited to, the Upper Namoi – a priority for implementing the science and knowledge targets of Chapter 11.



5. Developing a holistic research agenda for investigating the social and biophysical processes in headwater regions to optimise whole-of-Basin management

Engagement of stakeholders in the headwater regions can facilitate better informed, fair, effective and efficient water governance and management across the entire Basin.

The MDB Review provides an opportunity for the MDBA to initiate and support an ambitious, collaborative research project, with stakeholder organisations involved in headwater region hydrological issues. WITLI acknowledges that this is not a task for the MDBA alone, which is reflected early on in the Discussion Paper:

‘Many factors affecting the health of the Basin lie outside the Plan’s regulatory scope, including climate change mitigation, land-use practices, natural resource management, economic development and population growth. Responsibility for most of these rests with Basin state governments’ (p. 2)

Nonetheless, the MDBA is a powerful and important voice and influential stakeholder in MDB governance, and its support is critical to persuading Basin state governments of the urgency and efficacy of timely action.

The WITLI purview is the Upper Namoi but there is likely to be significant commonality of issues across the Basin’s headwater regions. For Queensland, New South Wales, Victoria and the ACT, these regions are located along the Great Dividing Range (GDR). Even important inland catchments such as the Barwon-Darling and Lower Darling (Baaka) – which are subjects of significant concern in the Discussion Paper (pp. 15-17, 24-28, 47-49) – are dependent on upstream flows (including from the Namoi) ultimately originating in the GDR.

WITLI proposes that a holistic headwater region research agenda would engage with GDR communities to address a wide range of headwater landscapes and interests. The research agenda includes land, riparian, river and water management projects involving landholders across the region, as well as monitoring and modelling the potential benefits of possible initiatives.

We suggest the research agenda should focus on identifying institutional arrangements to govern headwaters, to ensure sustainable and equitable water access for GDR and MDB water stakeholders.

Based on consultation and a major symposium WITLI hosted in 2025, we have identified four broad categories of governance and management issues that need to be addressed in a comprehensive research agenda for the headwater regions:

- Agricultural land & water issues
- Domestic & community hydrological issues
- Social, political & cultural factors
- Environmental challenges.

For our region, preliminary discussions amongst WITLI stakeholders have illuminated five initial research projects that could be replicated in the Upper Namoi and other comparable GDR communities:

1. The disparities and commonalities between cultural flows for First Nations communities and environmental flows.
2. The potential for local governments – in our case, the Tamworth Regional Council – to be able to protect water security by ‘banking’ water efficiency improvements in the form of a water credit.
3. Institutional impediments to collective community action on riverine nature repair.
4. Identification of parts of the landscape with disproportionate contributions to water resource problems (quantity and quality).
5. Improving understanding of surface and groundwater dynamics in the headwater regions.

As recommended in part 2 above, the formation a dedicated

headwater regions institute would assist the whole Basin community in formulating and implementing an effective research agenda.

6. Conclusion

The next statutory review of the Murray-Darling Basin Plan will occur in 10 years, so this review is a crucial process in setting the direction for the next decade of protection, maintenance and repair of Australia’s most productive watershed. The potential for conflict is heightened as water availability becomes more constrained by the ineffectiveness of historical water management and governance, and newer threats from climate change.

In this submission, WITLI makes four key recommendations.

First, the MDBA develop a **community collaboration program** to enable the co-development of biophysical and social initiatives focused on providing an effective mechanism for constructive community engagement.

Second, that the MDBA develop a dedicated **headwater regions strategy** to guide the management and governance of water resources in the upper catchments. This is based on the fundamental importance of headwater zones in generating most of the water for the entire Basin, the threats to these zones, and their role in providing water resource quality and quantity for a range of environmental, production, and Cultural services downstream.



2025 Upper Namoi Water in the Landscape Symposium – In line with its commitment to bringing stakeholders together for respectful dialogue, WITLI hosted this Symposium in Tamworth, which was attended by more than 100 delegates, representing diverse stakeholder interests. The aims were to: • Provide a collaborative opportunity for water users and policy makers to discuss issues • Explore how different water interests might be affected by anticipated developments in the Namoi headwaters, and • Begin identifying solutions.

The Symposium commenced with a series of presentations from speakers representing First Nations, Landcare, Local Governments, farmer/irrigators and the peak farmers’ association, industry, university/research, and the NSW Government. Delegates workshopped ways to address the Water in the Landscape challenges, and to optimise water sustainability and community benefit across four domains: • Land & water management initiatives • Land & water management initiatives • Town & community initiatives • Policy initiatives • Research & education initiatives. A full report is available on request.

Third, that MDBA support the rolling out of a comprehensive **headwater region research agenda** to address the dearth of understanding of important hydrological processes in the headwater regions for both surface water and groundwater, and their relationships with and impacts on flow and connectivity in lower parts of the catchment.

Fourth, to facilitate the above recommendations, that the MDBA supports the formation of a dedicated **headwater regions institute**. This will guide and assist the MDBA, Basin governments, and other stakeholders collaborate to develop effective strategy and research for the headwater regions.

WITLI is one of many collaborations across the basin that are active and willing to partner with the MDBA and other stakeholders to work on practical solutions for the next decade.