

[REDACTED]

**Subject:** FW: Extension to make a submission on NSW Murrumbidgee RWS documents  
**Date:** Thursday, 30 November 2023 9:05:54 AM

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[REDACTED]

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**From:** [REDACTED]  
**Sent:** Thursday, 30 November 2023 8:54 AM

[REDACTED]

**Subject:** Re: Extension to make a submission on NSW Murrumbidgee RWS documents

Hi Aaron,

Thank you for the extension to submit a response to the NSW RWS documentation. Please find attached a submission from [REDACTED], which complements the survey completed on the 19th.

I apologise this is coming through this morning and not COB yesterday evening.

I note that the [REDACTED] raised concerns about the limited information in the regional challenges document not reflecting as much of the upper Murrumbidgee, and noted your response that you are working to include further information for the upper Murrumbidgee, which we greatly welcome.

The [REDACTED] sees this strategy as an absolutely critical document to the long term management and health of our river system, and it is a high priority to engage with as it is developed. We're looking forward to future engagement with you and your team on the development of this document.

Kind regards,

[REDACTED]

[REDACTED]

[REDACTED]



**30 November 2023**

**Submission from:** [REDACTED]

**Re: [REDACTED] submission on the Murrumbidgee Discussion Paper: Draft regional challenges, December 2022; the 'What we Heard' Report; and the Climate and Hydrological modelling report**

Dear Sir/Madam,

We are writing in response to the request for feedback on the following documents:

- Murray and Murrumbidgee Regional Water Strategies – What we heard report
- Murrumbidgee Discussion Paper on Regional Challenges – draft
- Murray and Murrumbidgee Climate and Hydrological Modelling report - draft

We also refer to [REDACTED] earlier submission dated 3 June 2022 (Attachment A). This submission also complements initial responses provided to the survey which closed on Sunday 19 November.

[REDACTED]  
The [REDACTED] is a strong and diverse community-based network of individuals and agency/group representatives taking a coordinated approach to creating quality natural resource management (NRM) outcomes for the Upper Murrumbidgee catchment. The [REDACTED] has been operating for three decades, in recognition that NRM issues do not stop at State or Council boundaries. The [REDACTED] values knowledge sharing, networking, collaboration and inclusion, and is the regional leader in facilitating communication between the community, NGOs and government agencies.

***NSW Murray and Murrumbidgee Regional Water Strategies, What we Heard*** (December 2022)

Overall, the 'What we Heard' report appears to have captured the wide range of issues raised during the first round of consultation, and should continue to be used as a point of reference throughout the development of the Regional Water Strategy.

We acknowledge that the key matters raised in our submission have been reflected within this report, namely those under the broad headings of;

- 1) Coordination of cross-jurisdictional water management,
- 2) Management of water in drought, fire and under climate change, and
- 3) Environmental releases from Upper Murrumbidgee storages.

***Summary Feedback - Draft Regional Water Strategy Murrumbidgee Discussion Paper: Draft regional challenges*** (December 2022)

- The draft strategy does not provide a true representation of the upper Murrumbidgee region, making it more difficult to understand and address the challenges. The issues

captured in the What we Heard report have not translated into the regional challenges document.

- [REDACTED] suggests that another key challenge be included given the complexity of jurisdictional stakeholders in the region, and Upper Murrumbidgee in particular, and the necessity for ongoing collaborative and coordinated water management in this region.
- The interaction between the operations of Snowy Hydro Limited and the waters of the upper Murrumbidgee catchment, Goodradigbee and Tumut Rivers needs to be better documented, as these present both challenges and opportunities for future water management.

[REDACTED] looks forward to the next steps in the development of the Strategy, including in developing the proposed actions, and refer to our earlier submission (dated 3 June 2022) which outlined specific actions to address the priority areas. We consider these important to addressing the issues in the Upper Murrumbidgee River.

Specific feedback on the discussion paper follows:

**Snapshot (p5).** We are concerned that by omitting the ACT (which is entirely within the catchment) from the Snapshot, it does not accurately reflect the Murrumbidgee region. Whilst acknowledging that the NSW government is preparing this water strategy for NSW, the current presentation does not provide a true context by which to interpret the objectives and information contained within this draft strategy. Nor does it reflect the issue of insufficiently integrated land and water planning and management raised during the consultations and highlighted in the What we Heard report. We also note that this complexity with ACT and Commonwealth governments involvement in the region was raised in the Webinars.

For these reasons [REDACTED] suggests that the Snapshot incorporate ACT and Snowy Hydro (Cw'lth Govt) information as follows:

Population: 726,601 (NSW 262,000; ACT 464,601)

Major water storages: include Tantangara Dam, with a storage capacity of 254 GL (given its impact on the Upper Murrumbidgee)

Cities: Canberra as a capital city (included as new item noting the strategy has a regional focus and this is not true for the whole region).

Gross Value Added (2020-21), \$16.7 billion (NSW); in 2022-23, Gross State Product for the ACT was \$48.7 billion.

#### **Addition of new 'Challenge' – Cross-jurisdictional water management**

[REDACTED] notes that limiting discussion to NSW strategies does not address the complexity of policy and jurisdictional management in the region. (*How regional water strategies fit with other NSW water strategies (pp9-10)*). The issue of strengthening inter-jurisdictional water management is a key issue raised during consultations.

[REDACTED] suggests that a new challenge be included to address cross-jurisdictional complexities to water management given that this is unique situation to all other NSW water strategy regions. The need to address this issue in the strategy is a pressing one considering a future with significant population growth projections and declining water due to climate change (as outlined in the discussion paper).

A cross-jurisdictional approach is relevant to the four 'challenges' in the discussion paper e.g. cross border and jurisdiction environment management and conservation, town water supply, supporting

agriculture and emerging industries, and Aboriginal involvement as groups such as the Ngunnawal people, for example, are not defined by State/Territory borders.

In particular we note that, unlike any other NSW region, the Murrumbidgee region includes the ACT which is wholly situated within the Murrumbidgee River Catchment and has large water storages in the upper Murrumbidgee River Valley. Cooperation with NSW in water management is a necessity. In addition, it contains a major, separately regulated, water user – SnowyHydro.

We draw your attention to the ACT government that acknowledges the close working relationship required with NSW in the *ACT Water Strategy 2014-44: Striking the Balance*, including:

- Action 1 Strengthen coordination and collaboration for catchment management across the ACT and region;
- Action 12 Strengthen water trading arrangements. (Noting The ACT has taken steps in water trading, which will allow the ACT to purchase water from other parts of the MDB to meet future demand).

And in the *Strategy Implementation Plan Two (2019-23)*:

- establishment and ongoing support for the ACT and Region Catchment Management Coordination Group.

It would be useful for the NSW Strategy to make reciprocal commitments. We note that reference is made in the discussion paper to an ACT & NSW government non-binding agreement. It is not clear that this agreement effectively addresses all matters that will be included in the Murrumbidgee Water Strategy.

#### **Climate change will put pressure on water availability for towns and communities (p19)**

We note that climate change is already here and is impacting towns and communities. We suggest that this section be broadened to include climate change in the here and now, as well as what may happen in the future.

In the Upper Murrumbidgee, flows ceased during the summer of 2019-20. This led to water quality problems, including blue-green algae outbreaks and disconnected pools exacerbated by high sedimentation within the river channel. The water supplies to Tharwa could no longer be provided from the river. Widespread bushfires and the associated runoff from heavy rainfall in 2020 further depleted the water quality.

#### **Growing regional centres are placing pressures on supplies (pp20-21)**

Again, we suggest that reference at least to the ACT population be included to provide context for the water issues likely to arise over the life of this strategy, particularly in the Upper Murrumbidgee. ACT's current population of 464,601 is projected to increase to 589,000 by 2041. This means a population in the Upper Murrumbidgee of 717,079 in the next 20 years compared to 112,849 for the rest of the Murrumbidgee region. The population figures provided in the table in this section do not reflect the reality for the region.

The ACT is increasingly being considered part of the solution to supply water to NSW towns such as Yass, Murrumbateman and Bungendore. Queanbeyan–Palerang Regional Council (QPRC) buys bulk water from the ACT. We understand that QPRC is now proceeding with the bulk water supply design for a pipeline to Bungendore, with storage near Brooks Hill reserve and chlorination plant on intersection of the coast highway and millhouse road. The growing suburbs of Googong are also now partly connected to Murrumbidgee water. These changes will increase pressure on ACT water supply, and therefore the increased likelihood of reliance on the Upper Murrumbidgee for Critical Human Water Needs in future.

The ACT also needs to be recognised for its contribution of flows to the system and its commitment to sustainable water management. The ACT applies environmental flow guidelines to ensure the application and protection of environmental flows, as well as other activities including upgrades water treatment plant/processes to improve water quality leaving the ACT, ongoing Landcare, Waterwatch and restoration activities to improve catchment health to benefit locals, and those downstream.

This highlights the need for this strategy to factor in the ACT in terms of both future supply, demands and broader catchment health and ecosystem function.

#### **Native fish remain under stress from physical and operational barriers (pp26)**

Threats to native fish outlined include structures (e.g. dams weirs etc.), cold water pollution and unscreened pumps. In the Upper Murrumbidgee River, the greatest threat is simply a lack of flows and this should be added to the list of threats here. Threats by invasive species including redfin, gambusia, carp and trout, also need to be included.

#### **The operations of Snowy Hydro need to be captured in the challenges**

The interactions between the Murrumbidgee catchment and Snowy Hydro operations are significant and need to have a great emphasis placed in the challenges report. These operations risk critical human water needs, ecological, cultural and socio-economic values in the Upper Murrumbidgee catchment, while also placing increased pressure on the channel of the Tumut River. The strategy should include consideration for optimising the operations of Snowy Hydro infrastructure to achieve broader benefits for the entire system.

With Snowy 2.0 being constructed in the lifetime of this strategy, the strategy will need to acknowledge the challenges and opportunities this brings to the management of the catchment overall, including managing competing objectives and interactions with the Murray-Darling Basin Plan reforms.

#### **Modelling report**

The modelling report is a quite technical document which would benefit from further conversations with community members and other modelers, to hear more about the approach and assumptions used, how to interpret the outputs and what they likely mean at various locations in future. Some specific feedback is included below, but given the technical nature of the work, it cannot be assumed the matters outlined below are exhaustive, and that it's likely the community will have more queries as it better understands the modelling:

- 1) It would be good to understand the setting of 1 ML/day as the cease to flow level for the Upper Murrumbidgee. Impacts will occur well below this threshold, and Cooma loses access to water below 32 ML/day at Mittagang Crossing. A low flow threshold should be discussed with community, and perhaps seen at which point Critical Human Water Needs are no longer met.
- 2) We would like to acknowledge that increased cease-to-flow events shown by the modelling for the Upper Murrumbidgee River, together with the 49% reduction in flows at Balranald are cause for concerns, and should be seen as significant impact scenarios to avoid/mitigate as part of the strategy.
- 3) Scenarios which include changes in the operation of Tantangara Dam should be considered.
- 4) Hydrological, climatological modelling requires a commitment to continual review and revision as our understanding of climate change trends improves. The ANU, ACT government

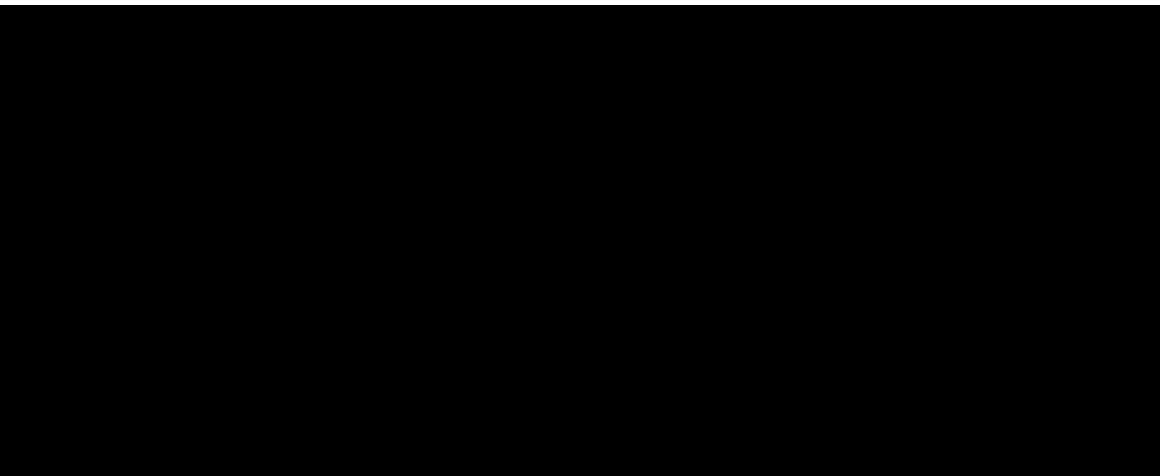
and University of Canberra also have experts on these matters, and we recommend engaging with these experts for such a critical piece of work.

## Overall

- The What we Heard report captures feedback and issues raised through earlier consultation and should continue to be used in the development of the strategy.
- Many of the issues raised for the Upper Murrumbidgee region through submissions and captured in the What we Heard report, have not been picked up in the draft regional challenges document.
- The ACT and region needs to be better factored into the strategy, given its role as potential supply and demand for the region.
- We suggest that inter-jurisdictional governance and management needs to be added as a new challenge, and potentially identified further when referred for. For example, we are referring to inter-jurisdictional governance between ACT and NSW, however, more broadly in the catchment, there will be governance matters which include Snowy Hydro, Commonwealth (via various agencies such as MDBA, DCCEEW, CEWH etc.) and joint governments.
- Snowy Hydro interactions with the rivers in the upper catchment are a regional challenge. The potential for a change in operations to provide significant benefits to the Upper Murrumbidgee, Goodradigbee and Tumut River systems must be considered in the development of the strategy. With Snowy 2.0 being constructed in the lifetime of this strategy, the strategy will need to acknowledge the challenges and opportunities this brings to the management of the catchment overall, including managing competing objectives and interactions with the Murray-Darling Basin Plan reforms.
- Lack of flows in the Upper Murrumbidgee remains the key challenge for Critical Human Water Needs, town water supply, ecology, culture and socio-economic outcomes.
- We would welcome further conversations in relation to the modelling work where both community and modelling experts are in the conversation, to understand the process, interpret the outputs and assess whether we have the parameters right (e.g. cease to flow rates, scenarios etc.).

Thank you for the opportunity to comment on these documents. We look forward to further engagement in the development of this critical strategy for the catchment.

Kind regards,



Attachments:

**Attachment A:** [Redacted] Submission on the Draft Regional Water Strategy, 3 June 2022

Submission from: [REDACTED]

To the: Draft Murrumbidgee Regional Water Strategy

NSW Department of Planning and Environment - Water

[REDACTED]

The [REDACTED] is a strong and diverse community-based network of individuals and agency/group representatives taking a coordinated approach to creating quality natural resource management (NRM) outcomes for the Upper Murrumbidgee catchment. The [REDACTED] has been operating for three decades, in recognition that NRM issues do not stop at State or Council boundaries. The [REDACTED] values knowledge sharing, networking, collaboration and inclusion, and is the regional leader in facilitating communication between the community, NGOs and government agencies.

Our membership comprises community groups (including Landcare, catchment groups and other NGOs), government (local and state), individuals (or households) and corporations. During the 2021-2022 financial year there were 11 community groups, four government, seven individual, and three corporate memberships.

### Issues in the Upper Murrumbidgee Region

The [REDACTED] takes an integrated system-scale approach to the Upper Murrumbidgee catchment. This includes considering the complex interactions between activities on the land and water quantity/quality, surface water and groundwater, and the range of different uses for economic, social, environmental and cultural purposes. We are pleased to see that the regional water strategies are similarly taking a broad and integrated systems-based approach.

One of our fundamental concerns is that to date, despite the Upper Murrumbidgee River having been substantially modified, it has remained relatively untouched by the water reforms in NSW and the broader Murray-Darling Basin. When the river ceased to flow for the first time in its recorded history during the summer of 2019/20, this was a major red flag for communities all along the river. Many of our members are keen to understand why this occurred, why the Tantangara Dam releases haven't been effective during dry periods, and are grappling with the extremely complex administrative arrangements across multiple jurisdictions.

Based on discussions at our 18 May 2022 General meeting and a survey of our membership, the [REDACTED] proposes to highlight three main issues in water management in the Upper Murrumbidgee region:

- 1) Coordination of cross-jurisdictional water management,
- 2) Management of water in drought, fire and under climate change, and
- 3) Environmental releases from Upper Murrumbidgee storages.

## 1) Coordination of cross-jurisdictional water management

The [REDACTED] plays an important role in facilitating conversations between organisations involved in water and natural resource management issues in the region. However, it is extremely difficult to incorporate and properly understand all the relevant agencies involved in water management. Given the size of our nearby population and the unique ecology of our region, the water strategy needs to more adequately reflect these specific water management challenges and possible solutions.

We are in the process of developing an interactive map to assist our members with this, in consultation with the Murray-Darling Basin Authority. We believe that the NSW government has an important role to play too. This is particularly true at this time, given that the NSW Natural Resources Commission has commenced a review of the Murrumbidgee Unregulated Water Sharing Plan and the Snowy Water Licence is also subject to its first full review.

Currently, all these instruments and consultation arrangements appear to operate in isolation from one another. The Regional Water Strategy is an opportunity to consider a holistic picture and better integrate these arrangements for the more effective management of this important and highly modified river system.

## 2) Management of water in drought, fire and under climate change

During the period 2017-2020, NSW experienced its most severe drought on record. Persistent low rainfall combined with high temperatures to create severe water shortages and unprecedented bushfires. Climate modelling indicates that these conditions are likely to be experienced more regularly into the future.

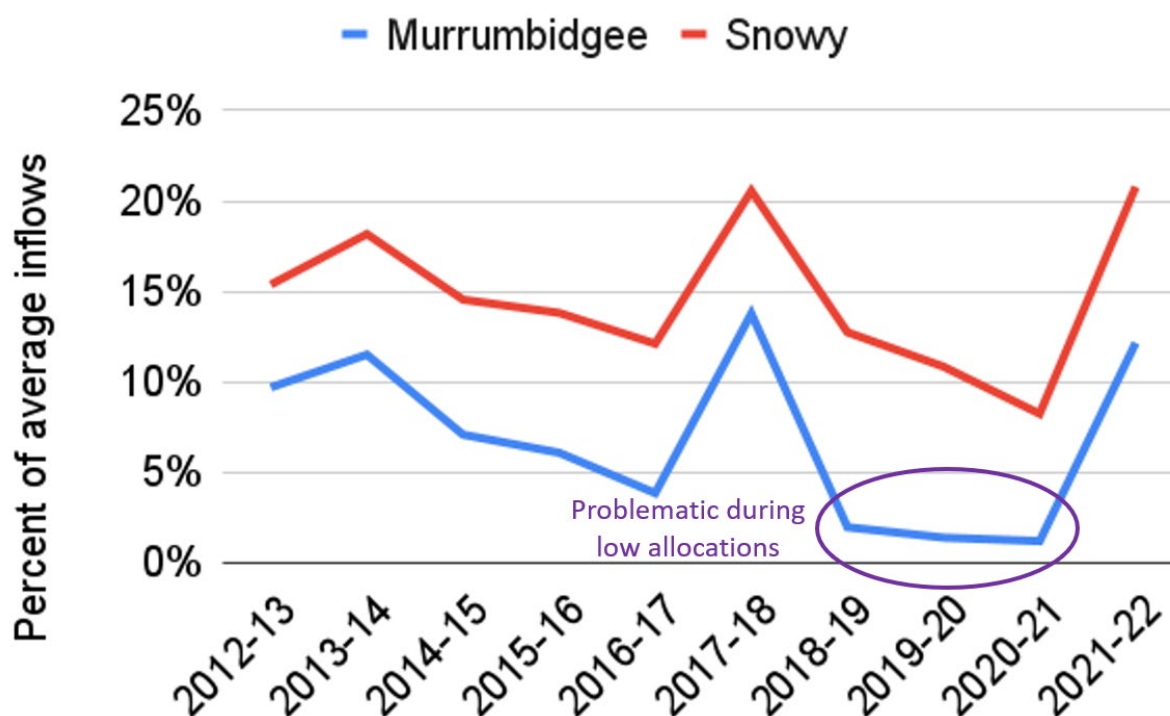
In the Murrumbidgee catchment, conditions were dry, however relatively less severe than in other parts of NSW. Allocations to regulated rivers in southern NSW were low, but high priority needs were still assured.

In the Upper Murrumbidgee however, flows ceased for the first time in recorded history during the summer of 2019/20. This led to widespread water quality problems, including blue-green algae outbreaks and disconnected pools exacerbated by high sedimentation within the river channel. The water supplies to Tharwa could no longer be provided from the river. Widespread bushfires and the associated runoff from heavy rainfall in 2020 further depleted the water quality.

The NSW *Water Management Act 2000* prioritises critical human and environmental water needs – these needs were clearly not met in the Upper Murrumbidgee River during the summer of 2019/20. Serious consideration needs to be given to a reset of these arrangements, in light of this drought and future conditions under climate change.

Allocations under the Snowy Water Licence for the Snowy Montane Releases need to be explored further, alongside a review of the Snowy Water Inquiry Outcomes Implementation Deed (SWIOID). As shown in Figure 1, the Upper Murrumbidgee River is much more vulnerable than the Snowy River to low allocations. During the period 2018/19 to 2020/21, only 1-2 percent of average inflows was being provided downstream of Tantangara Dam (compared to about 10 percent in the Snowy downstream of Jindabyne Dam). More sustainable baseflows should be provided from the Snowy Scheme to support the critical needs of the Upper Murrumbidgee River and its communities.





**Figure 1.** Percentage of annual inflows released from Snowy storages into the Upper Murrumbidgee and Snowy Rivers since 2012/13

### 3) Environmental releases from Upper Murrumbidgee storages

Despite the Snowy Water Initiative of the early 2000s, the Snowy Scheme today captures more than 90 percent of average inflows to Tantangara Dam, diverting this water inland and away from the Upper Murrumbidgee River. Natural inflows are estimated to average 260 gigalitres per year, but the total release over the last ten years has summed to only 179 gigalitres.

Figure 2 illustrates the substantial reduction of flows resulting from the construction of Tantangara Dam. While a small improvement to flows was observed from Snowy Montane Releases during the wetter period from 2011-2017, the most recent drought demonstrates that the river is still highly vulnerable to low allocations and these persistently low flows.

This has resulted in a range of impacts on the health of the Upper Murrumbidgee River, with their ongoing social, cultural and environmental costs:

- Ecosystem health rated in very poor condition, with the fish community rated as poor to extremely poor (Sustainable Rivers Audit 2008).
- Significant sand slugs have created barriers to connectivity and reducing habitat for a range of species, including fish and platypus.
- Periodic flushing flows are infrequent and totally ineffective in some reaches downstream of the dam, meaning that sediment and bacteria cannot be cleaned out.

Despite this, the river still retains areas of high ecological significance, with critical aquatic habitat for several nationally threatened species, including Macquarie Perch & Murray Cod. These issues are summarised in the infographic developed by the [redacted] and shown at Figure 3.

A number of specific actions should be undertaken to fulfil the intent of the SWIOID and improve the effectiveness of environmental releases. These are summarised under Option 41 below.

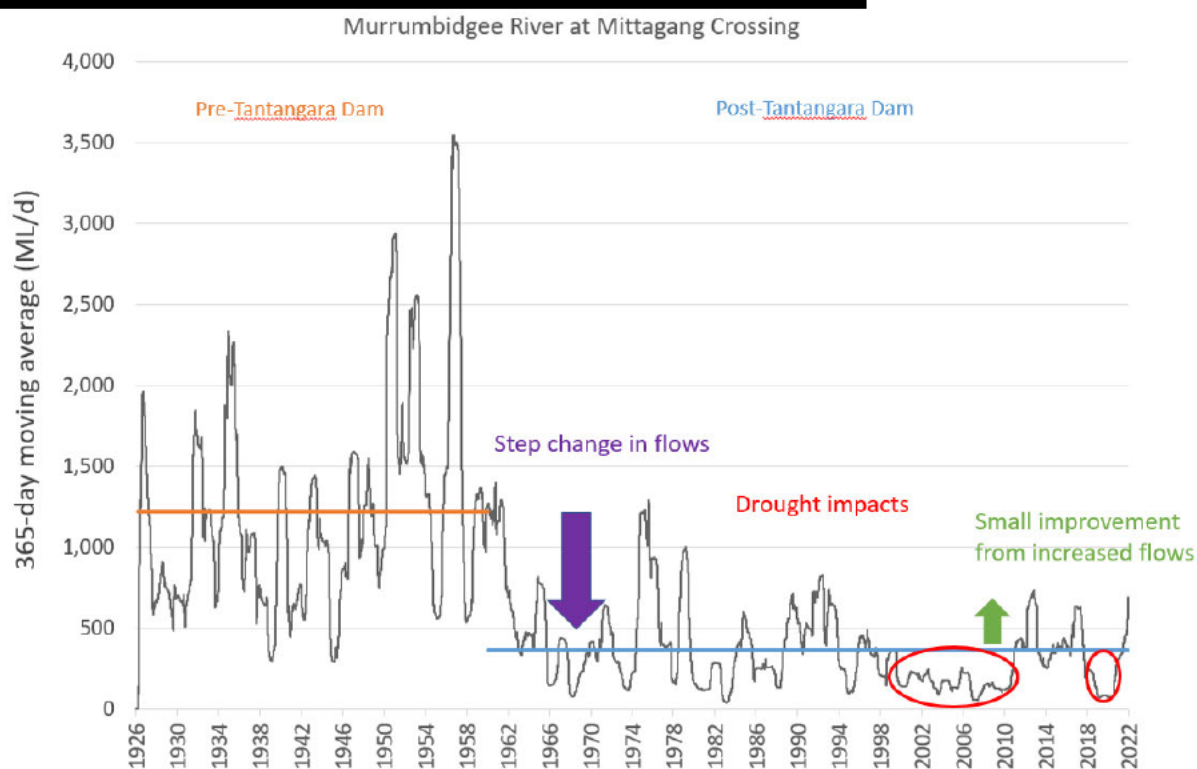


Figure 2. Flows in the Upper Murrumbidgee River at Mittagang Crossing

### Priorities from the Draft Strategy

From the 53 'Murrumbidgee long list of options' in the draft Regional Water Strategy, the [redacted] has identified a 'short list' of 18 options that we believe should be prioritised in the Upper Murrumbidgee region. We asked our members which were most important to them:

Options from The Draft Strategy		Importance Rating
1	7. Support long-term participation of local Aboriginal people in water-related matters.	★★★★☆
2	8. Incorporate Aboriginal history of water and culture in the southern Basin into water data.	★★☆☆☆
3	9. Review drought rules for the Murrumbidgee region.	★★★★☆
4	14. Investigate land use change and population growth impacts on water resources.	★★★★☆
5	15. Strengthen inter-jurisdictional water management.	★★★★☆
6	16. Develop climate risk evidence base to inform the next Snowy Water Licence Review.	★★★★☆
7	18. Review impediments to water recycling projects.	★★☆☆☆
8	23. Improve protection of groundwater dependent ecosystems.	★☆☆☆☆
9	25. Improve flows to important ecological sites.	★☆☆☆☆
10	26. Develop a river and catchment recovery program for the Murrumbidgee region.	★★★★☆
11	27. Investigate water quality improvement measures.	★★★★☆
12	28. Manage groundwater salinity.	★☆☆☆☆
13	30. Review environmental water arrangements.	★★★★★
14	31. Re-establish threatened fish species through habitat restoration and conservation restocking.	★★★★★
15	41. Change environmental releases from Murrumbidgee storages.	★★★★★
16	47. Develop targeted education and capacity building programs.	★★★★☆
17	48. Investigate water availability in the Murrumbidgee region.	★★☆☆☆
18	53. Consider hydrological processes in bushfire management.	★★☆☆☆

## Feedback

We present here a list of actions from our membership with reference to the above short list of priorities in the Upper Murrumbidgee region. We welcome the opportunity to continue this conversation with the NSW Government about ways to improve the social, environmental and cultural outcomes without compromising our region's economic opportunities.

### **Inadequate water management framework to meet the needs and aspirations of Aboriginal people.** (Options 7 & 8)

- Involve Aboriginal participation in water planning and co-design to incorporate cultural insights into water management.
- Establish NSW-ACT Community Advisory Panel for the upper Murrumbidgee which includes standing Indigenous representatives.
- Increase Aboriginal engagement to understand cultural values and learn how a healthier flow regime can support cultural values and create positive outcomes for Aboriginal people.
- Provide support to facilitate Aboriginal participation and engagement.

### **Current water sharing arrangements based on 120 years of data.** (Option 9)

- Review drought rules for the Upper Murrumbidgee for critical human water needs, water quality, and threatened species.
- Focus on lessons learned from 2019 (cease to flow) and base water management on the latest climate modelling.

### **Insufficiently integrated land and water planning and management.** (Options 14, 15 & 16)

- Strictly manage and monitor development to avoid pressure on groundwater, surface water and riparian zones.
- Provide resources to create better partnerships between DPE Water and DPE Environment, then expanded to ACT Government.
- Establish an Upper Murrumbidgee interjurisdictional government working group with Indigenous representatives.
- Re-consider the economics of water provision/diversion in terms of demand management, in line with the National Water Reform Framework and Agreements and their underlying principles of efficiency and equality of water use. Full cost pricing of water diversions can generate environment levies with revenue to be directed to environmental works.
- Engage community for consumers and producers to understand the full value of water, including environmental and cultural values.
- Provide the river and catchment recovery programs with adequate funding and resources. It should be informed by and integrated with the work of existing programs (e.g. UMDR, Landcare, ACT Government, Rivers of Carbon).

### **Vulnerability of town water supplies and amenity.** (Options 18 & 23)

- Invest in sustainable, self-sufficient water systems in new developments, e.g. larger lots, recycling, composting toilets. The riparian eco-system should not be placed under additional pressure.
- Prioritise water supply to towns, with the understanding that water quality, i.e. the presence of blue green algae, bacteria and suspended solids, is as important a consideration as water quantity, when considering impacts on amenity and supply.

- Review release volumes from Tantangara Dam to better prioritise base flows for critical human and environmental needs.

**Degradation of riverine and floodplain ecosystems.** (Options 25, 26, 27, 28, 30 & 31)

- Identify upstream causes of turbidity following high rainfall events and create plans for remediation in runoff areas.
- Establish an Upper Murrumbidgee River and Catchment Recovery program with adequate funding. This needs cross-jurisdictional governance (in line with option 16).
- Establish an audit of ecological, cultural and social values and assets for the Upper Murrumbidgee- significant knowledge gaps need to be filled to inform strategies.
- Include contingencies to manage ecological assets in drought and from major disturbance events such as bushfire. Protection of ecological refuges will be key in these times.
- Protect the health of the Upper Murrumbidgee to protect water quality and support cultural values, amenity and suitability of water to be used for water supply.
- Provide strategic and sustained financial support for programs which support private landholders on whose land works will take place e.g. land degradation in riparian zones and small tributaries.
- Invest in education programs to manage riverbank grazing to improve river ecosystem function.

**Limitations of existing water infrastructure, delivery and operations.** (Option 41)

- Protect releases out of Tantangara Dam from extraction under the Murrumbidgee unregulated river water sharing plan.
- Allow for water allocations to be carried over in the Snowy Scheme between water years.
- Review the way allocations are made to the Snowy montane rivers, which can involve difficult trade-offs between rivers.
- Increase flexibility of environmental flow management in the upper Murrumbidgee River. Currently flows are planned one year in advance, which means that releases cannot be adjusted to coincide with and/or complement natural events.
- Ensure that environmental flow allocations do not contribute to passing baseflows released from Tantangara Dam, so that critical human and basic riverine needs are met first.
- Increase the outlet capacity of Tantangara Dam to allow scouring flows above the current maximum of 1,500 ML/day.
- Increase environmental allocations from Tantangara Dam to the Upper Murrumbidgee.

**Limits to water availability in times of a changing climate.** (Options 47, 48 & 53)

- Use the latest information to plan for extreme events.
- Learn from the recent black summer about the importance of refuge pools for town firefighting protection.
- Investigate water availability in a changing climate with predicted increased demand due to population growth.
- Calculate a sustainable diversion limit for the Upper Murrumbidgee.
- Manage flows to maintain ecological refuges in a changing climate - lack of refuges can wipe out fish in one event.
- Considering hydrological processes under the combined effects of fire and drought. Both can contribute to faster runoff, less soil infiltration, rapid erosion, pollution and sedimentation.

# Towards a Healthy Upper Murrumbidgee River Issues Overview

- Communities are concerned about the impacts of water and land management on environmental, cultural and social values.
- Upper Murrumbidgee River aquatic ecosystems are in poor health due to impaired flow, historical land clearing, pesticides and development pressure.
- Improving outcomes in the region requires enhanced water releases from Tantangara Reservoir, water management rules that protect flows and complementary natural resource management activities.

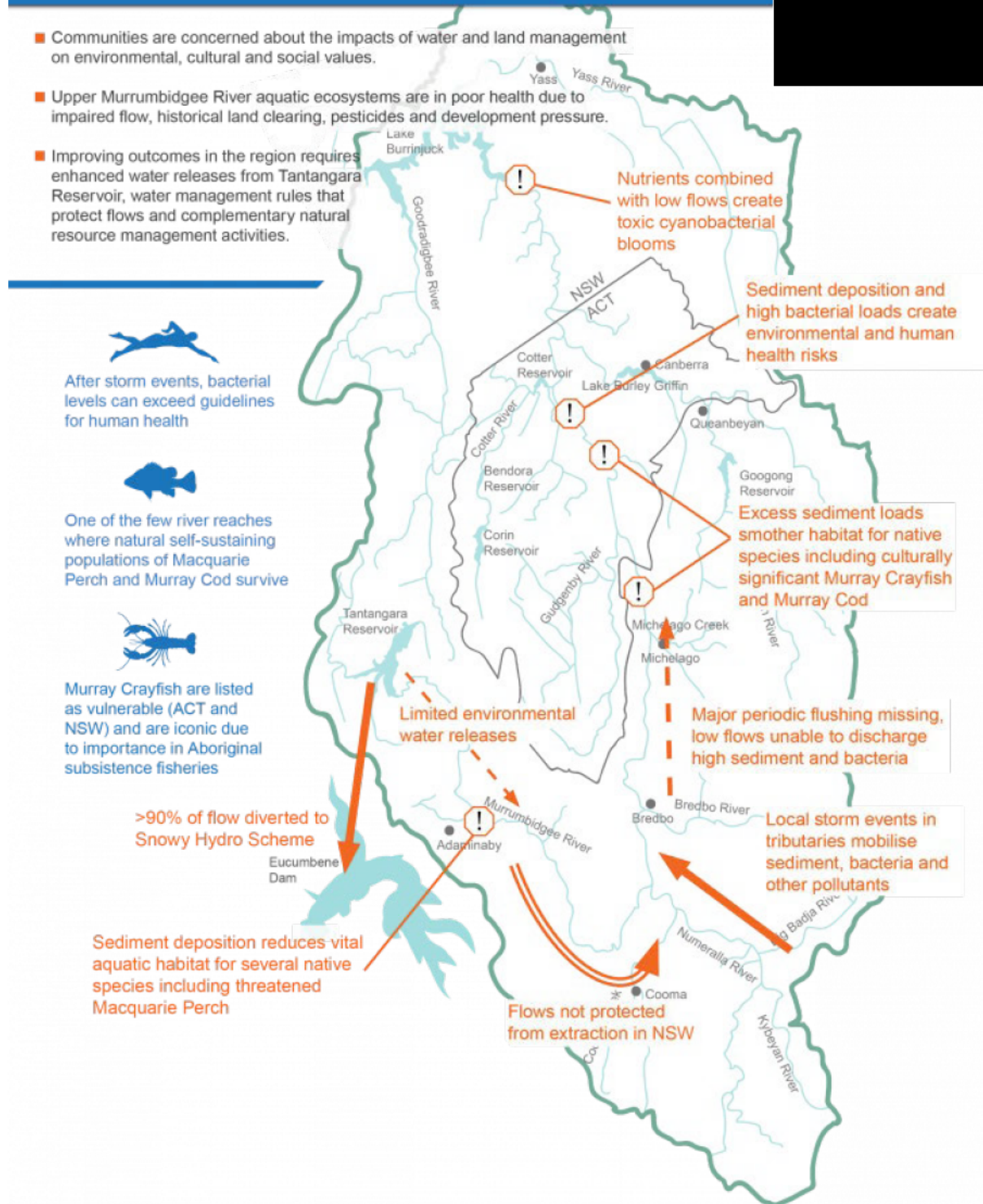


Figure 3. Overview of water issues in the Upper Murrumbidgee River



Recorded Date	Response Id	Q3_1	Q3_3	Q3_4	Q4
Recorded Date	Response ID	Please complete all of the contact details below for you or for the organisation whose views you are - * Your name (or the name of your organisation)	Please complete all of the contact details below for you or for the organisation whose views you are - Telephone number	Please complete all of the contact details below for you or for the organisation whose views you are - * Email address	* Do you want your name/the name of your organisation to remain confidential?
19/11/2023 22:00		Upper Murrumbidgee Catchment Network			I consent to my name/my organisation's name being shared publicly in the record of submissions

Q5	Q5_5_TEXT	Q5_10_TEXT	Q6	Q7	Q7_6_TEXT
Blowering Reservoir, Snowy Mountains - Destination NSW  * What is your main interest in or connection to the NSW Murray and/or Murrumbidgee regions?  Select all that apply. - Selected Choice	Blowering Reservoir, Snowy Mountains - Destination NSW  * What is your main interest in or connection to the NSW Murray and/or Murrumbidgee regions?  Select all that apply. - I represent an interest group (please specify) - Text	Blowering Reservoir, Snowy Mountains - Destination NSW  * What is your main interest in or connection to the NSW Murray and/or Murrumbidgee regions?  Select all that apply. - Other (please specify) - Text	* Which of the following documents have you read? Select all that apply.	* What are the main reasons you have not read some or all of these documents? Select all that apply - Selected Choice	* What are the main reasons you have not read some or all of these documents? Select all that apply - Other (please specify) - Text
I live in the NSW Murray or Murrumbidgee region, I work in the NSW Murray and/or Murrumbidgee regions, I visit the NSW Murray and/or Murrumbidgee regions, I represent an interest group (please specify), I am interested in cultural water rights and access, I am interested in water management for regional centres, towns and communities, I am interested in water for	Upper Murrumbidgee Catchment Network	Social connections, swimming, fishing etc.	I have read the discussion paper on key challenges for the Murrumbidgee region, I have read the report on the climate and hydrological modelling results for the NSW Murray and Murrumbidgee regions	Not all the documents are relevant to me	

the environment, I am interested in water for agriculture and emerging industries, Other (please specify)					
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Q8	Q9_1	Q9_2	Q9_3	Q9_4	Q10
* Which of the following documents are you giving feedback on in this survey? Select all that apply	* To what extent do you agree or disagree that these are the key water-related challenges for the NS - Challenge 1: Ensuring resilient water supplies for regional centres, towns and communities in a changing climate	* To what extent do you agree or disagree that these are the key water-related challenges for the NS - Challenge 2: Improving the health and resilience of aquatic and floodplain ecosystems	* To what extent do you agree or disagree that these are the key water-related challenges for the NS - Challenge 3: Addressing barriers to Aboriginal people's water rights and access	* To what extent do you agree or disagree that these are the key water-related challenges for the NS - Challenge 4: Supporting agriculture and emerging industries	Please outline the reasons for your answers to the previous question.
The discussion paper on key challenges for the Murrumbidgee region, The report on the climate and hydrological modelling results for the NSW Murray and Murrumbidgee regions					

Q11	Q25_Id	Q25_Name	Q25_Size	Q25_Type
Please provide details of any additional water-related challenges for the NSW Murray region that you	If you would like to provide further feedback on the key water-related challenges for the NSW Murray region, please upload a file containing your additional comments below. - ID	If you would like to provide further feedback on the key water-related challenges for the NSW Murray region, please upload a file containing your additional comments below. - Name	If you would like to provide further feedback on the key water-related challenges for the NSW Murray region, please upload a file containing your additional comments below. - Size	If you would like to provide further feedback on the key water-related challenges for the NSW Murray region, please upload a file containing your additional comments below. - Type

Q12_1	Q12_2	Q12_3	Q12_4	Q13
* To what extent do you agree or disagree that these are the key water-related challenges for the Mu - Challenge 1: Ensuring resilient water supplies for regional centres, towns and communities in a changing climate	* To what extent do you agree or disagree that these are the key water-related challenges for the Mu - Challenge 2: Improving the health and resilience of aquatic and floodplain ecosystems	* To what extent do you agree or disagree that these are the key water-related challenges for the Mu - Challenge 3: Addressing barriers to Aboriginal people's water rights and access	* To what extent do you agree or disagree that these are the key water-related challenges for the Mu - Challenge 4: Supporting agriculture and emerging industries	Please outline the reasons for your answers to the previous question.
Strongly agree	Strongly agree	Strongly agree	Agree	Town water should be largely ok d/s of Burrinjuck and Blowering if the MDB Plan works as intended for CHWN. It remains a large challenge for the Upper Murrumbidgee River (UMR), as does improving health and resilience of the UMR. First Nations water rights are so far behind. I agree supporting agriculture and communities - including agricultural activities in the UMR which need to be recognised but ranked only slightly lower to reflect that ag and industries have been prioritised for decades.

Q14	Q26_Id	Q26_Name	Q26_Size	Q26_Type	Q15
Please provide details of any additional water-related challenges for the Murrumbidgee region that y	If you would like to provide further feedback on the key water-related challenges for the Murrumbidgee - ID	If you would like to provide further feedback on the key water-related challenges for the Murrumbidgee - Name	If you would like to provide further feedback on the key water-related challenges for the Murrumbidgee - Size	If you would like to provide further feedback on the key water-related challenges for the Murrumbidgee - Type	Climate and hydrological modelling The climate and hydrological modelling report presents climate and baseline hydrological modelling results under 3 plausible climate scenarios including: historical climate long-term historical climate dry future climate Presenting these results for the NSW Murray and Murrumbidgee regional water



					strategies is intended to inform the community's understanding of the range of potential climate challenges the regions' water resources may face into the future. * Do you understand the details of the 3 climate scenarios?
Balancing Hydrpower needs with all other needs. It is critical SHL operates to provide energy, but need a better balance for other water users. Water for drought reserves for agriculture, critical bushfire responses, and social amenity are also high priorities.					No

Q16	Q17	Q17_1_TEXT	Q18	Q18_1_TEXT
Is there any additional information we could include, or different ways we could present the information	* Do you think the climate scenarios selected are reasonable? - Selected Choice	* Do you think the climate scenarios selected are reasonable? - No (please outline why not) - Text	* Would you like further information on a particular section or result within the climate and hydrological - Selected Choice	* Would you like further information on a particular section or result within the climate and hydrological - Yes (please provide the section heading, page number and reason/s why this information would be helpful to you) - Text
I somewhat understand the 3 scenarios but perhaps not enough to answer a confident 'yes'. Understanding more about why these scenarios are used for this, but not for water sharing plan planning would be helpful. Also need to understand what these scenarios assume about operations of Tantangara dam.	No (please outline why not)	I've answered yes but flag that I'm highly uncertain on this. Perhaps place a low value on my response and suggest testing this question more with others with more modelling expertise.	Yes (please provide the section heading, page number and reason/s why this information would be helpful to you)	Perhaps commentary on how the analysis considers Tantangara operations and historical flows. Also, a sense of whether flows of 1 ML/d (cease to flow), 30 ML/d or 60 ML/d are enough for the river to function. 1 ML/d as cease to flow seems very low. Flows of 30 ML/d at Mittagang are sufficient for Cooma water supply, but then extracted for supply, so can't be assumed it's indicates a functioning river.

Q19	Q19_1_TEXT	Q20_Id	Q20_Name	Q20_Size	Q20_Type
* Do you think any key results within the climate and hydrologically modelling report require further - Selected Choice	* Do you think any key results within the climate and hydrologically modelling report require further - Yes (please provide the section heading, page number and reason/s why further consideration is required) - Text	If you would like to provide further feedback, please upload a file below. - ID	If you would like to provide further feedback, please upload a file below. - Name	If you would like to provide further feedback, please upload a file below. - Size	If you would like to provide further feedback, please upload a file below. - Type
Yes (please provide the section heading, page number and reason/s why further consideration is required)	- Whether 1 ML/d at cease to flow is too low? (i.e. this will rarely happen, but Cooma loses access below 30 ML/d at Mittagang, and the river is perhaps in a lot of trouble well before 1 ML/d. These are just initial points to this survey and I aim to make a submission within the next week.				

Q21	Q21_6_TEXT	Q21_10_TEXT	Q22	Q23	Q23_1_TEXT
* How did you hear about this survey? - Selected Choice	* How did you hear about this survey? - Social media (please specify channel/s e.g. Facebook, Instagram, LinkedIn) - Text	* How did you hear about this survey? - Other (please specify) - Text	* Do you identify as Aboriginal and/or Torres Strait Islander?	* Speak language other than English at home? - Selected Choice	* Speak language other than English at home? - Yes (please specify below) - Text
Email or e-newsletter from the department			Neither Aboriginal nor Torres Strait Islander	No	