

# NSW Murray and Murrumbidgee Regional Water Strategies



What we heard

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# Acknowledgement of Country

The NSW Government acknowledges First Nations people as its first people and the traditional owners and custodians of the country's lands and water. First Nations people have lived in NSW for over 60,000 years and have formed significant spiritual, cultural, and economic connections with its lands and waters.

Today, they practice the oldest living culture on earth.

The NSW Government acknowledges the First Nations/Traditional Owners from the Murray and Murrumbidgee regions as having an intrinsic connection with the lands and waters of the Murray and Murrumbidgee Regional Water Strategy areas.

We recognise that the Traditional Owners were the first managers of Country and incorporating their culture and knowledge into management of water in these regions is a significant step towards closing the gap.

Under these regional water strategies, we seek to establish meaningful and collaborative relationships with First Nations people. We will seek to shift our focus to a Country-centred approach, respecting, recognising and empowering Aboriginal knowledge in water management processes at a strategic level.

We show our respect for Elders past, present and future through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places where Aboriginal people are included socially, culturally and economically.

As we refine and implement these regional water strategies, we commit to helping support the health and wellbeing of waterways and Country by valuing, respecting and being guided by First Nations/Traditional Owners, who know that if we care for Country, it will care for us.

We acknowledge that further work is required under these regional water strategies to inform how we care for Country and ensure First Nations/Traditional Owners hold a strong voice in shaping the future for Indigenous/Aboriginal and non-Aboriginal communities.

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[water.dpie.nsw.gov.au/plans-and-programs/regional-water-strategies](https://water.dpie.nsw.gov.au/plans-and-programs/regional-water-strategies)

Draft NSW Murray and Murrumbidgee Regional Water Strategy  
What we heard

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# Introduction

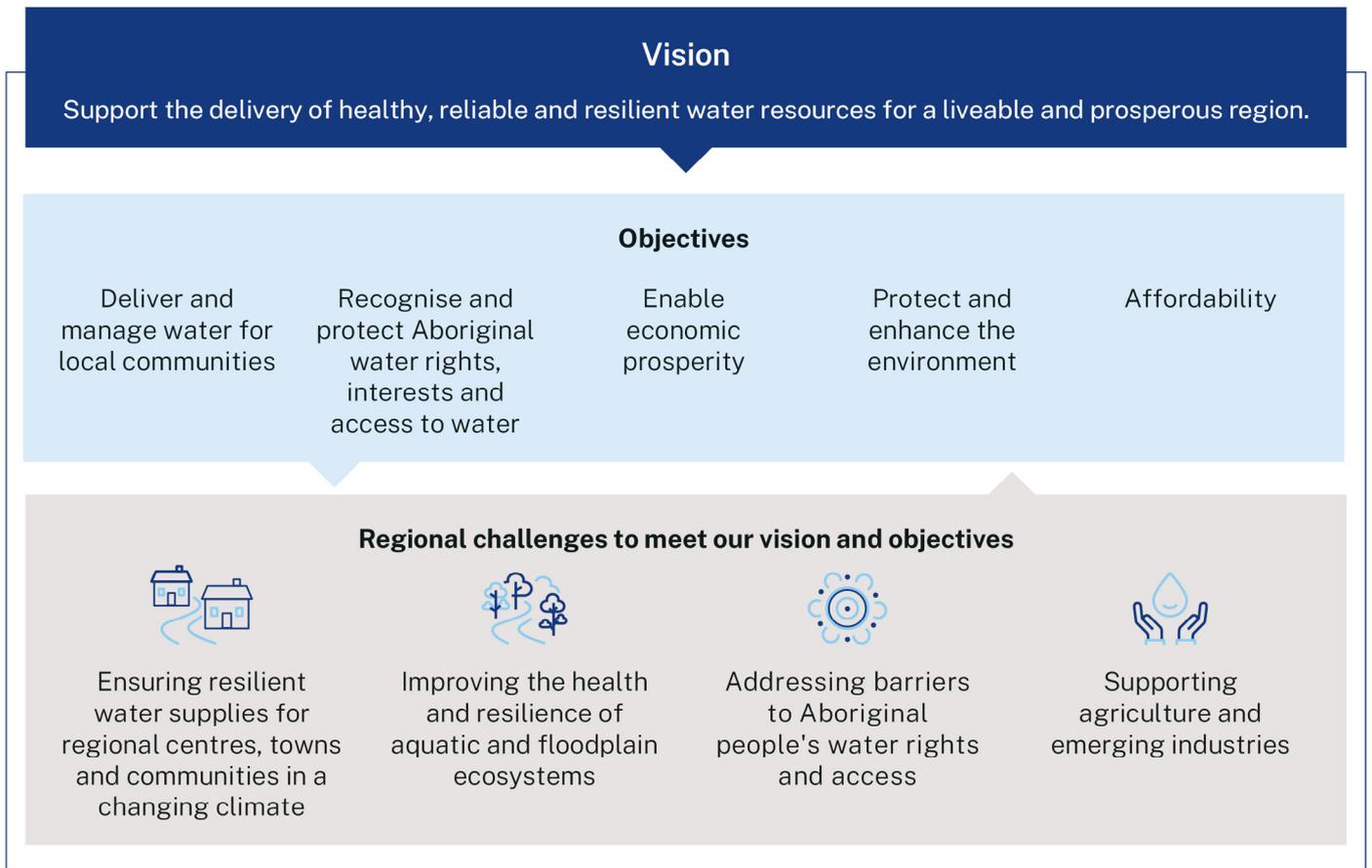
The NSW Government is taking action to improve the security, reliability, quality and resilience of the state's water resources for current and future generations.

As part of this program of investment and reform, the NSW Department of Planning and Environment (the department) is preparing regional water strategies that combine climate evidence and economic and ecological analysis, with input from water service providers, local councils, communities, Aboriginal people, and other stakeholders.

**Figure 1** NSW water strategy regions



Figure 2 NSW Murray and Murrumbidgee Regional Water Strategy: overview of strategy vision, objectives and water security challenges



# Two regions, one vision

Regional water strategies are being developed to guide how the NSW Government can best address water-related challenges specific to the NSW Murray and Murrumbidgee regions.

New, comprehensive water strategy approaches for both regions will help to address future water resource challenges, inform policy and infrastructure choices, support regional development and growth, and create new opportunities.

The vision for the NSW Murray and Murrumbidgee regions is to: *Support the delivery of healthy, reliable and resilient water resources for liveable and prosperous regions.*

To achieve this, both regions will need to be positioned so there is the right amount of water of the right quality available for communities, Aboriginal people, towns, industries and the environment.

In line with other regions, the regional water strategies for the NSW Murray and Murrumbidgee will focus on working closely with communities to deliver water resources that:

- deliver and manage water for local communities
- enable economic prosperity
- recognise and protect Aboriginal people's water rights, interests and access to water
- protect and enhance the environment
- are affordable.

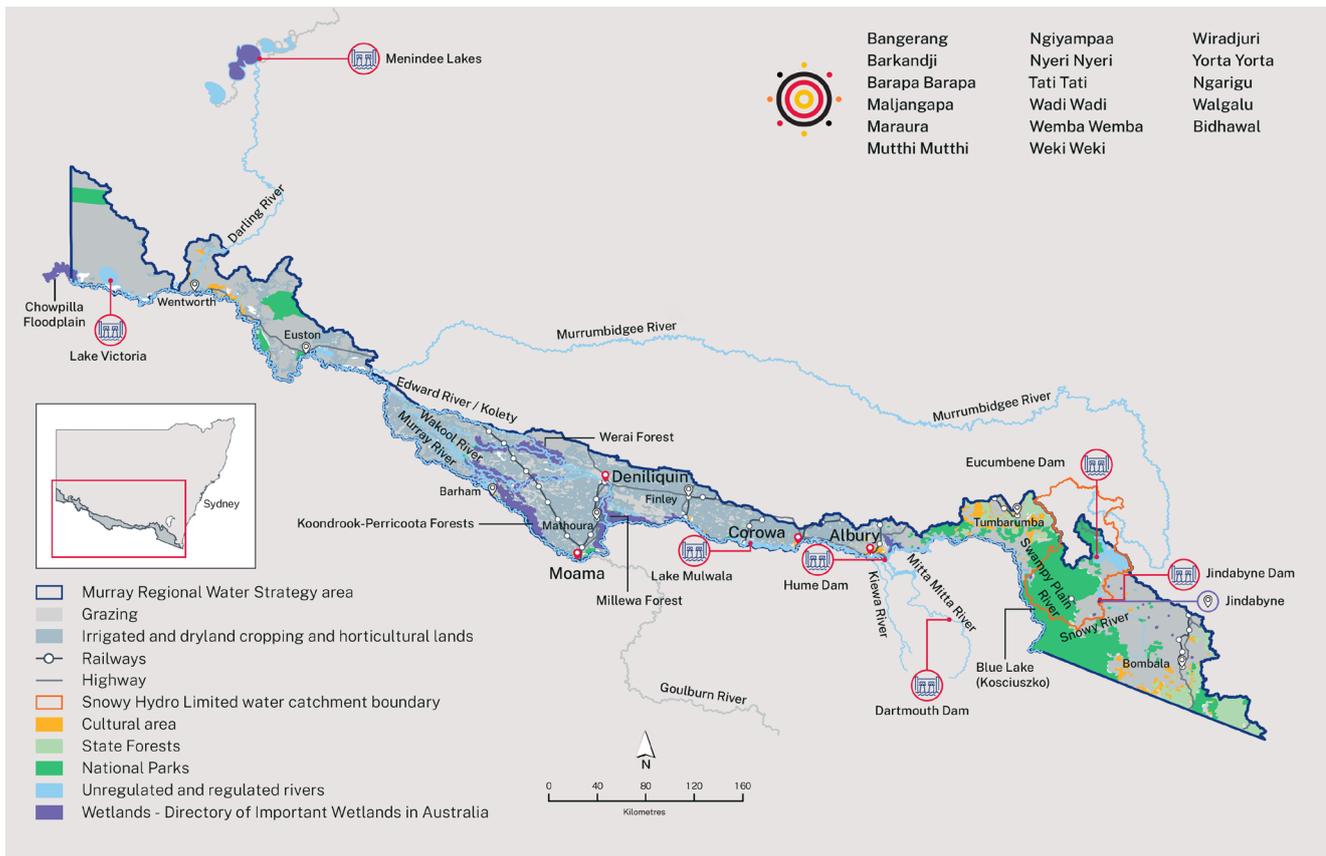
There will be clear and accountable actions for all levels of government to maximise opportunities and tackle the challenges faced by both the NSW Murray and Murrumbidgee regions.

This will include focusing on improving opportunities for Aboriginal people in the water sector, maintaining and improving supply to NSW licence holders, supporting agribusiness and population growth, improving catchment and river system health, improving water delivery operations and supporting enhancements to town water supplies.

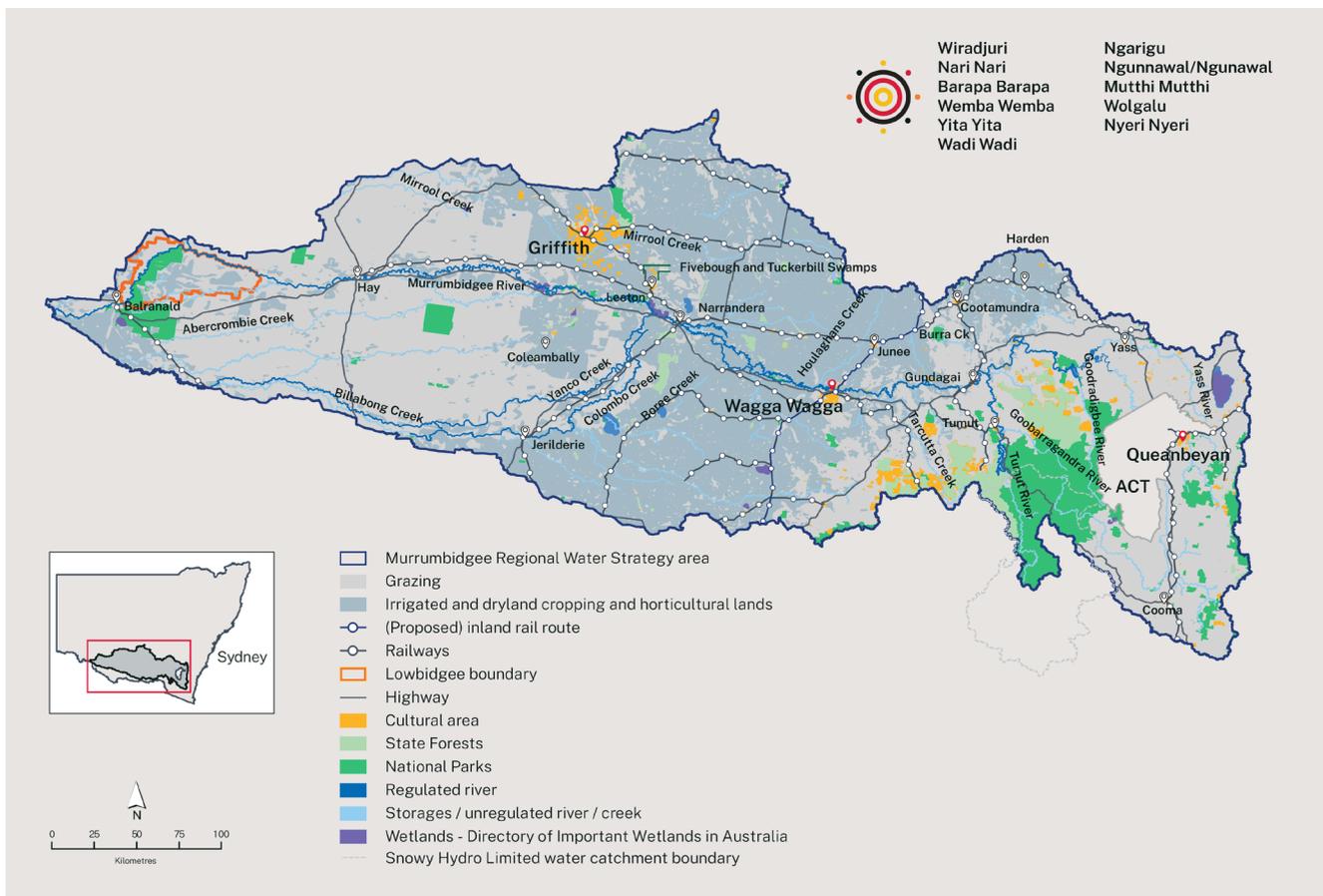


Image courtesy of Destination NSW.  
Yarrangobilly River Walk, Kosciuszko National Park.

**Figure 3** Map of the NSW Murray regional water strategy area



**Figure 4** Map of the NSW Murrumbidgee regional water strategy area



# Securing NSW Murray’s and Murrumbidgee’s water future

The NSW Murray and Murrumbidgee are two of the largest regions in NSW. Managing water in these regions is extremely complex, with interstate agreements and rules governing water sharing between ACT, NSW, Victoria and South Australia (including releases from the Snowy Scheme).

Regional water challenges stem from a highly variable climate, ongoing competition for water resources, physical constraints and the complexities of the southern connected basin. These challenges are likely to be exacerbated by future climate conditions, such as changing rain and snowfall patterns, increased evapotranspiration, longer dry periods and more intense storms.

The draft NSW Murray and Murrumbidgee regional water strategies seek to address these challenges and realise a range of opportunities (see Table 1) with a long list of options and improved understanding through new climate data, modelling and scientific understanding to support a range of environmental, social, cultural and economic outcomes.

**Table 1** Summary of water-related challenges of the NSW Murray and Murrumbidgee regions

NSW Murray	NSW Murrumbidgee
Inadequate water management framework to meet the needs and aspirations of Aboriginal people	
Current water sharing arrangements are based on data that is between 120 and 125 years old	
Insufficiently integrated land and water planning and management	
Vulnerability of town water supply and amenity	
Degradation of riverine and floodplain ecosystems	
Limits to water availability in times of a changing climate	
	Limitations of existing water infrastructure, delivery and operations

# Engagement

The department’s engagement approach for the regional water strategies is designed to share information, gather feedback and consult with key stakeholders.

A phased approach to engaging on the NSW Murray and Murrumbidgee regional water strategies will ensure that these communities are able to provide input at critical stages, help prioritise options and nominate preferred actions.

The [draft Murray Regional Water Strategy](#) and [draft Murrumbidgee Regional Water Strategy](#) were placed on public exhibition from 11 April to 22 May 2022.

An extensive engagement program with the general public, Aboriginal people, stakeholder groups and local government supported this process and included online webinars and face-to-face public information sessions.

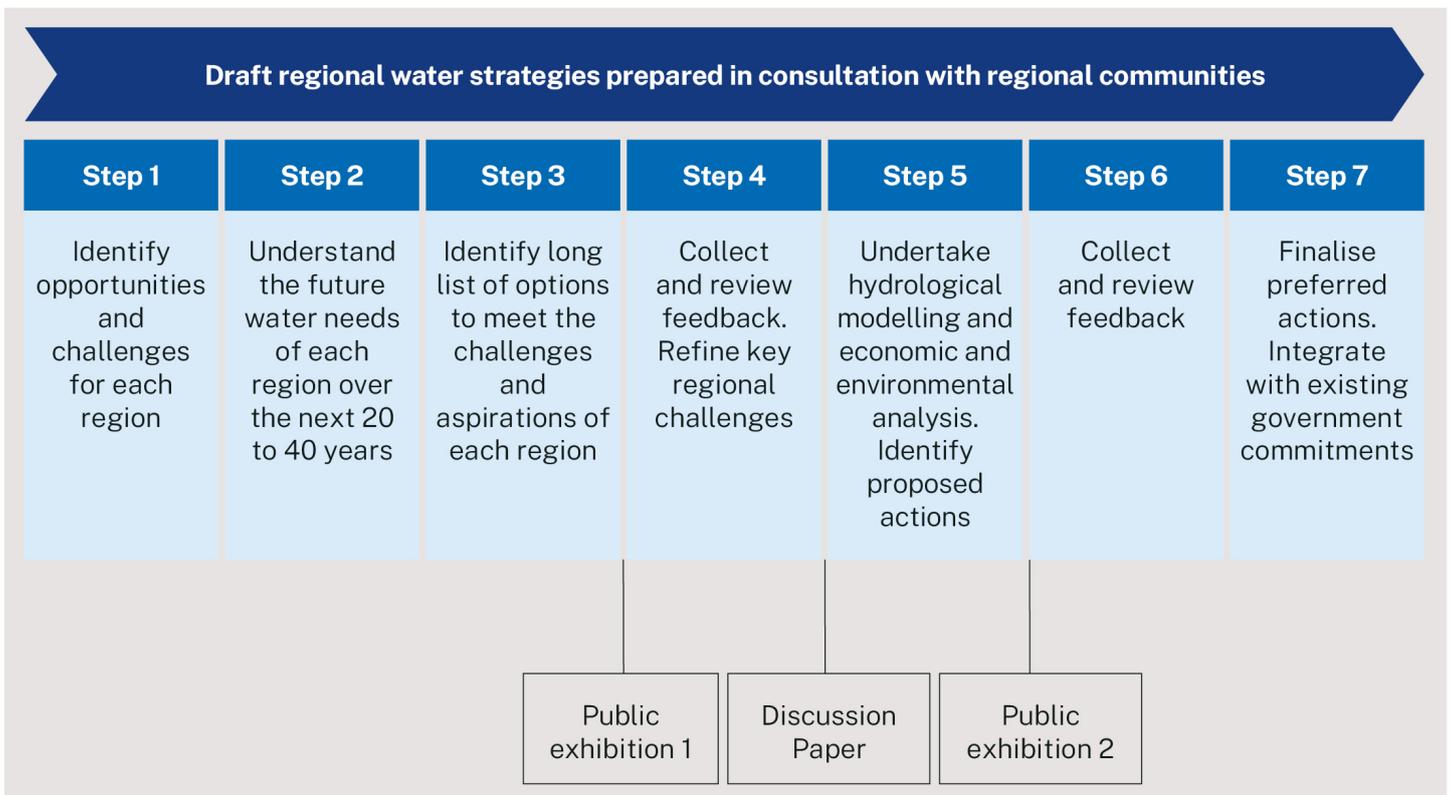
Given the inter-connectedness of the NSW Murray and Murrumbidgee regions, and the significant overlap in communities and stakeholder groups, engagement outcomes have been consolidated in this report.

## How we engaged

Engagement with stakeholders, NSW Murray and Murrumbidgee regional communities and organisations, local councils, water utilities, industry organisations, and Aboriginal communities allowed people to ask questions, share feedback and obtain information about the draft strategies, including the challenges and long list of options.

The development of the NSW Murray and Murrumbidgee regional water strategies will continue to be supported by a phased engagement approach (Figure 4).

**Figure 5** Regional water strategies phased approach to consultation



The department's engagement program during public exhibition comprised:

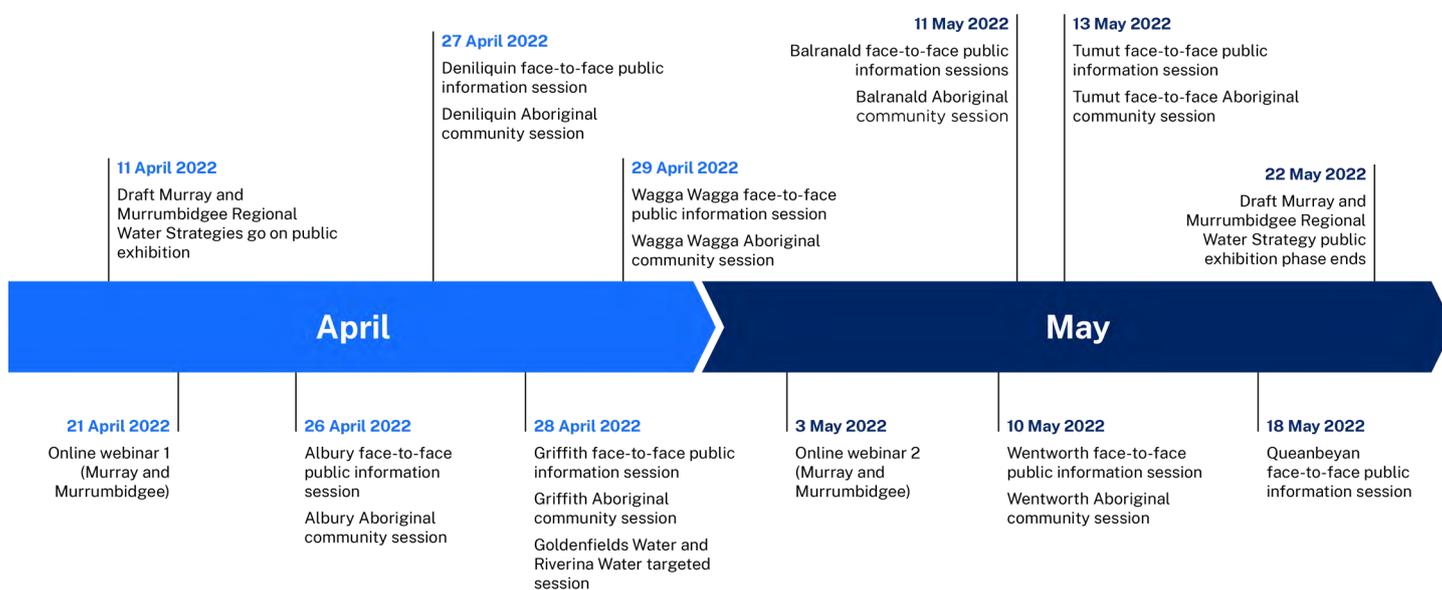
- Live public webinars held on 21 April and 3 May 2022
- Aboriginal community meetings offered in Albury (26 April), Deniliquin (27 April), Griffith (28 April), Wagga Wagga (29 April), Wentworth (10 May), Balranald (11 May) and Tumut (13 May).

Public information sessions held at:

- Albury, 26 April 2022
- Deniliquin, 27 April 2022
- Griffith, 28 April 2022
- Wagga Wagga, 29 April 2022
- Wentworth, 10 May 2022
- Balranald, 11 May 2022
- Tumut, 13 May 2022
- Queanbeyan, 18 May 2022

A formal submissions process, with 41 submissions received.

**Figure 6** Overview of public exhibition engagement



Overall participation across both regions is shown below:

**Figure 7** NSW Murray and Murrumbidgee public exhibition engagement at a glance



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## Engagement outcomes and next steps

The department received a range of general feedback on the draft strategies, with most themes aligning across both regions. A summary of these themes is provided below and explored in more detail in subsequent sections of this report.

**Table 2** NSW Murray and Murrumbidgee public exhibition feedback by theme

### Key themes common to both regions

- |   |  |
|---|--|
| <b>1. Climate data sets and modelling</b>                             | <ul style="list-style-type: none"><li>• Concern that the strategies use a ‘worst-case scenario’ approach to modelling, which many consider unreasonable and unlikely to eventuate.</li><li>• Suggestion that the data, information and modelling used to inform the strategies consider wet future conditions as well as dry.</li><li>• Support for ensuring that the data, information and modelling used in the strategies are made publicly available, preferably prior to the strategies being finalised, to aid transparency and understanding.</li><li>• Concern that the timeframes used to calculate projected climate change impacts are different from the planning horizon/timeframe of the strategies.</li></ul>   |
| <b>2. Water security, availability and use</b>                        | <ul style="list-style-type: none"><li>• Concern that the water access licence conversion option (present in both strategies) may negatively impact general security licences as well as economic, social and environmental outcomes.</li><li>• Suggestion for further investigation into the trends impacting reliability of water licences as way of understanding the extent of the issue and to help identify drivers and ways of addressing.</li><li>• Support for options and actions aimed at gaining a better understanding of people’s behaviours and assumptions around water availability and use in both regions.</li></ul>   |
| <b>3. Environmental health, ecosystems and water quality</b>          | <ul style="list-style-type: none"><li>• Strong support for programs aimed at supporting and improving environmental and economic outcomes across both regions.</li><li>• Support for the NSW Government’s commitment to protect and support environmental values.</li><li>• Support for initiatives that address the impacts of a changing and variable climate, particularly in relation to water quality and availability and protecting local ecosystems.</li><li>• The importance of ensuring that regional water strategies align with other key water plans, policies and initiatives was noted.</li><li>• Bushfire and flooding impacts were noted as contributors to poor water quality and it was suggested that traditional burning methods be considered as a way of addressing water quality issues.</li><li>• Concerns about Sustainable Diversion Limit Adjustment Mechanism (SDLAM) projects and the Reconnecting River Country Program, particularly from upper NSW Murray and Murrumbidgee users who feel that the Reconnecting River Country Program is exacerbating bank erosion (e.g. around Tumut), impacting the amenity of riverbank land and causing inundation of productive agricultural land.</li></ul> |
| <b>4. Improving water-related opportunities for Aboriginal people</b> | <ul style="list-style-type: none"><li>• Strong support for improving opportunities for Aboriginal people to be more involved in water-related matters, such as regional land and water management, access to water entitlements, recognising and respecting Aboriginal cultural and spiritual ties and connection to Country, and acknowledging the cultural significance of water.</li><li>• Suggestion for addressing operational challenges and costs associated with managing Aboriginal water allocation.</li></ul>   |

## Key themes common to both regions

- |   |  |
|---|--|
| <b>5. Land and water management and planning</b>  | <ul style="list-style-type: none"><li>• Recognition that the inter-connectedness of both regions is key to successful water management.</li><li>• Strong calls for improvements to inter-jurisdictional water sharing and management, noting the complexity of interstate agreements and rules impacting both regions. This included suggestions for mechanisms such as inter-jurisdictional working groups to support better outcomes.</li></ul>  |
| <b>6. Strategy development and implementation</b> | <ul style="list-style-type: none"><li>• Support for ensuring that the regional water strategies align with government commitments and other water management plans, policy, priorities and legislation.</li><li>• Support for further consultation with the community and stakeholders before the draft strategies and actions are finalised, including ensuring there is culturally-sensitive engagement with Aboriginal people.</li><li>• Suggestion that options undergo additional reliability, impact and cost assessments.</li></ul> |

The department has used this feedback to refine the key challenges for the regions and will publish draft regional water strategies discussion papers for both the NSW Murray and Murrumbidgee regions. The discussion papers have been prepared in response to requests from stakeholders for further engagement as the strategies are developed. We will also release the results of the new river system modelling based off the new climate data. The feedback received on the discussion papers and modelling data will be incorporated into the next draft regional water strategies for the NSW Murray and Murrumbidgee regions.

A second public exhibition, planned for mid-2023, will allow feedback on a short list of options and actions ahead of finalising the strategies and developing an implementation plan.

Recognising the importance of obtaining input from Aboriginal communities, the department is also planning further targeted engagement to capture the perspectives and viewpoints of Aboriginal people across both regions in a culturally sensitive and appropriate way.

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# Feedback by theme



Image courtesy of Destination NSW,  
Truenorth Helicopters, Snowy Mountains.

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# Feedback by theme

## Theme 1: Climate datasets and modelling

### Theme 1 feedback common to both regions

- Concern that the strategies use a ‘worst-case scenario’ approach to modelling, which many consider unreasonable and unlikely to eventuate.
- Suggestion that data, information and modelling used to inform the strategies considers wet future conditions as well as dry.
- Support for making data, information and modelling publicly available to aid transparency and promote understanding of how it has been applied to the strategies, preferably prior to the strategies being finalised.
- Concern that the timeframes used to calculate projected climate change impacts are different from the planning horizon/timeframe of the strategies.

### NSW MURRAY

#### Support

- Suggested that the strategy also considers past and present data, alongside predictions for the future.
- Suggested that climate data also includes low- and moderate-impact climate change scenarios.
- Support for ensuring that the strategy considers the full range of wet and dry conditions in its modelling and data.
- Recognition that using historically reported information, paleoclimatic data and climate change predictions are important, but that the approach used should be transparent.

#### Concern

- Concern that relying on ‘worst-case scenario’ modelling may:
  - result in negative social, economic and environmental impacts
  - reduce water available under licence for irrigated agriculture.
- Concern at a reliance on incomplete climate and hydrological modelling, noting the difficulty of accurately forecasting and validating decisions based on such data.
- Importance of not relying on ‘worst-case scenario’ or lowest inflow modelled data when making decisions on water access or flood risk management was noted.
- Concern about the impact of current modelling approaches on NSW Murray Valley general security licences.
- Concern that flooding events and the Darling River system are not currently included in the modelling.

### NSW MURRUMBIDGEE

#### Support

- Support for data, information and modelling to be accessible and communicated clearly and transparently before the strategy is finalised.
- Suggestion for datasets to be provided to local water utilities (LWU) to support completion of secure yield assessments.
- Suggestion for population projections to be used in the modelling to accurately reflect future urban water demands.

#### Concern

- Concern at ‘worst-case scenario’ modelling and a need for greater transparency around the likelihood of this scenario.
- Concern that the approach to data and modelling is conservative and does not consider the full range of wet and dry conditions.
- Concern that incomplete modelling makes it difficult to properly assess risk and impact.

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## Theme 2: Water security, availability and use

### Theme 2 feedback common to both regions

- Concern that the water access licence conversion option (present in both strategies) may negatively impact General Security licences as well as economic, social and environmental outcomes.
- Suggestion for further investigation into the trends impacting reliability of water licences as way of understanding the extent of the issue and to help identify drivers and ways of addressing.
- Support for options and actions aimed at gaining a better understanding of people's behaviours and assumptions around water availability and use in both regions.

### NSW MURRAY

#### Support

- Support for reviewing the allocation and accounting framework in the NSW Murray (regulated system). This was considered a high priority, provided credible modelling is completed.
- Support for providing opportunities for available water to be shared amongst users during severe drought.
- Support for investigating urban water recycling investments and policy to support greater water security and availability.
- Support for options to improve demand management for urban water use. It was suggested that large water-dependent industries reliant on potable water should be required to compete for water licences on open markets.
- Support for increased use of recycled water in public open spaces to reduce town water use.
- Feedback that as water recycling on farms is already highly developed, the focus of the strategy should be on supporting town water recycling opportunities.
- Support for using data and analytics to understand water-user behaviour and availability of surface water, especially during drought.
- Support for investigating behaviours that motivate the underuse of water.
- Support for optimising water availability to meet current and future needs of irrigated agriculture.
- Support for water access licence conversion for some industries to be able to convert General Security licences to High Security (e.g. dairy to support breeding herds).

#### Concern

- Concern about past changes to Available Water Determination rules and the impact on reliability of General Security licences.
- Concern that current levels of water storage may not be able to support additional demand resulting from the option: water access licence conversion.
- Concern that water security, viability and productivity of irrigated agriculture are not adequately addressed in the draft strategy.
- The need for new infrastructure or better use of existing infrastructure to increase water security was raised.
- Increasing water security through reducing demand for climate-dependent water supplies was considered important.
- Utilising Snowy Scheme storage to increase water security was considered critical.
- Concern that the strategies place too much emphasis on the Murray-Lower Darling Long Term Water Plan.
- Concerns that the Murray-Lower Darling Long Term Water Plan has the potential to impact water security and elevate flooding risk.

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## NSW MURRUMBIDGEE

### Support

- Support for consultation on storage projects and options for water infrastructure.
- Suggestion for sub-surface or off-channel storage structures to be considered as alternatives to increasing water storage.
- The importance of further investigation into how water sharing arrangements may impact licence reliability was raised.
- Suggestion for local water utilities to be involved in the review of drought rules. The review should include considerations for Upper Murrumbidgee water needs, water quality and threatened species.
- Suggestion for economic prosperity and for the importance of food and fibre to be emphasised in the strategy.

### Concerns

- Concern about the impacts of climate change on water availability.
  - The importance of understanding how to use available water sources more sustainably was emphasised.
  - The importance of optimising available water to meet existing and future demands of irrigated agriculture in the region was noted.
  - Concern about barriers to water efficiency and reliability. Further investigation into efficiency measures for on-farm and off-farm water storage and use was suggested.
  - Concern that the full range of regional water security challenges, beyond town water supply, have not been adequately addressed.
  - Concern about the ability of town water to meet demand as populations grow.
  - Suggestion that town water security risk ratings identified in the strategies are inaccurate and require appropriate consultation.
  - Concern that increasing water storage through infrastructure may result in negative environmental impacts.
  - Noted that water management in the NSW Murrumbidgee region is complex and requires coherent and integrated planning, regulation and legislation.
  - Understanding how water sharing arrangements may impact entitlement reliability was considered important.
  - Concern was expressed about the risks to water supply if commitments for SDLAM supply and constraints projects are not met.
  - Noted that there is confusion about how and where to access information about water and licences.
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## Theme 3: Environmental health, ecosystems and water quality

### Theme 3 feedback common to both regions

- Strong support for programs and projects aimed at supporting and improving environmental and economic outcomes for both regions.
- Support for the government's commitment to protect and support environmental values.
- Support for initiatives that address the impacts of a changing and variable climate, particularly in relation to water quality and availability and protecting local ecosystems.
- The importance of ensuring that regional water strategies align with other key water plans, policies and initiatives was noted.
- Bushfire and flooding impacts were noted as contributors to poor water quality and it was suggested that traditional burning methods be considered as a way of addressing water quality issues.
- Concerns about the implementation of SDLAM projects and the Reconnecting River Country Program, particularly from NSW Murray and Murrumbidgee riparian landholders who feel that the Reconnecting River Country Program is exacerbating bank erosion (e.g. around Tumut), impacting the amenity of riverbank land and causing inundation of productive agricultural land.

### NSW MURRAY

#### Support

- A view that protecting and sustaining healthy ecosystems should be a priority of the strategy.
- Reducing pollution was also considered a priority.
- Ecological targets and objectives of the Murray-Lower Darling Long Term Water Plan should be incorporated and considered in the strategy.
- Suggestion for additional water allocations to be assigned to protected areas for more effective ecosystem conservation.
- SDLAM projects and the Reconnecting River Country Program were supported in the context of addressing environmental issues and improving environmental outcomes.
- The need for greater protection of base flows to maintain water quality was noted.
- The need to recognise major programs and significant government and private investment already underway to improve water quality in the NSW Murray Valley was noted.
- Suggestion for environmental water delivery rules, practices and programs to be reviewed as part of the strategy.

#### Concerns

- Concern about water quality issues, including salinity, elevated nutrient levels, blue-green algae, hypoxic blackwater and cold-water pollution.
- Concern about the impacts of a changing and variable climate on the environment, water sources, availability, water sharing and water users. Impacts of climate change on water quality and ecological degradation were also of concern.
- It is important for the strategy to acknowledge the existing plans and policies to assist in managing climate change impacts, such as the water sharing plans, NSW Extreme Events Policy and incident response guides.

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## NSW MURRUMBIDGEE

### Support

- Support for increased management of ecological assets during drought and bushfire.
- Support for the development of specific water allocations and plans for areas which contain aquatic and semi-aquatic ecosystems.
- Support for an audit of ecological sites and flow regimes in the Upper Murrumbidgee to be undertaken and included in the draft strategy.
- Suggestion made for an Upper Murrumbidgee river and catchment rehabilitation program, with inter-jurisdictional governance, to be established as a priority. This program would support protection of threatened fish species and the health of the river.
- Acknowledgement that management of freshwater communities, and the geomorphological features critical to their health, needs to be tailored to specific needs.
- Options aimed at addressing the degradation of riverine and floodplain ecosystems should be prioritised.
- Opportunities to improve the health of the environment, ecology and groundwater-dependent ecosystems should be explored in the strategy.

### Concerns

- Concern about water quality issues in the region.
  - Concern that rainfall events and flows are causing erosion and increasing turbidity.
  - Concern about erosion issues caused by the variability and rate of change of releases from Blowering Dam and river and dam operations.
  - Concern about erosion issues on the Tumut River from additional flows from the Snowy Scheme and environmental releases.
  - Concern about the impacts of a changing and variable climate on issues such as bacteria in water, algal blooms, cease to flow and degradation of water quality and ecological refuges.
  - Concern raised about managed aquifer recharge (MAR) and associated risks to groundwater quality.
  - Concern that new water infrastructure may cause further degradation of the riverine and floodplain ecology and loss of habitat.
  - Concern that water infrastructure options in the draft strategy do not align with objectives in the *NSW Water Management Act 2000* to protect, enhance and restore water sources and associated environment and water quality.
  - Providing greater flexibility for environmental water management was considered important.
  - Concern that environment and habitat revegetation and restoration work is prioritised in areas that are convenient, rather than where it is needed. There was a view that re-vegetation and restoration works are not being properly conducted by land and river management teams and that this therefore requires closer monitoring.
  - Concern that flows of the Upper Murrumbidgee are being impacted by Tantangara Dam, with resulting impacts on environmental objectives.
  - Concern that high flows are causing inundation of productive agricultural land and impacting landholders.
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## Theme 4: Improving water-related opportunities for Aboriginal people

Due to the COVID-19 pandemic, engagement with Aboriginal people was highly constrained in this first phase of engagement. However, engagement with Aboriginal people in 2022 was less challenging and resulted in productive discussions at some sessions. The department is committed to ongoing engagement with Aboriginal people and will explore opportunities for targeted engagement in future rounds of consultation to ensure Aboriginal communities can contribute in a meaningful way.

### Theme 4 feedback common to both regions

- Strong support for improving opportunities for greater involvement of Aboriginal people in water-related in water-related matters, such as regional land and water management, access to water entitlements, recognising and respecting Aboriginal cultural and spiritual ties and connection to Country, and acknowledging the cultural significance of water.
- Suggestion for considering how operational challenges and costs associated with managing Aboriginal water allocation can be addressed.

#### NSW MURRAY

##### Support

- Acknowledging the role Aboriginal stakeholders and communities can play in assisting with water management in the region was considered important.
- Involving Aboriginal cultural and spiritual values in modern river system and water management was considered important.
- Including Aboriginal objectives and perspectives in planning and delivery of environmental water was considered important.

##### Concerns

#### NSW MURRUMBIDGEE

##### Support

- Respecting and understanding cultural sites and values in water management was considered important.
- There was support for options that enable Aboriginal communities to access culturally significant areas, traditional sites and cultural water access licences.
- Support for improving availability of cultural water, and some submissions provided further feedback that the commercial use of water should not be permitted.
- An explanation of how cultural water entitlements may apply to the Upper Murrumbidgee was called for.
- Support for options that generate employment opportunities for Aboriginal communities.

##### Concerns

- Concern that Aboriginal people are separated from water policy, management and decision making.
- Concern that dam operation is impacting riverbank erosion and consequently cultural value.
- Concern that Aboriginal people and communities have not been included in consultation in water related matters, such as water sharing plans.

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## Theme 5: Land and water management and planning

### Theme 5 feedback common to both regions

- Strong agreement that acknowledging the inter-connectedness of both regions is key to successful water management.
- Strong calls for improvements to inter-jurisdictional water sharing and management, noting the complexity of interstate agreements and rules impacting both regions. This included suggestions for establishing mechanisms such as inter-jurisdictional working groups to support better outcomes.

### NSW MURRAY

#### Support

- Support for inter-jurisdictional land and water management challenges and opportunities to be incorporated into the strategy.
- Suggestion for inter-state water sharing to be reviewed, with consideration of inequities, and included in the strategy.
- Due to the complexity of inter-jurisdictional management, a suggestion was made to establish a regional resource, such as a Murray Regional Director, to manage and meet the complex needs of water management.
- Suggestion to develop a tri-state agreement to facilitate collaboration and decision making.
- Considering water-related constraints when planning for development and land use was considered important.

#### Concerns

- Recognising the effectiveness of existing water management systems was considered important but tempered by concern that the approach to water management in the draft strategy is reactionary and precautionary.
  - The need to prevent water management in one state from impacting water entitlement availability and reliability in another state was noted.
  - Concern that floodplain management has not been adequately considered in the strategy.
  - Clarity is needed whether floodplain harvesting will be permitted under the Southern Basin Water Sharing Plans (which currently do not permit floodplain harvesting).
  - More information is required to explain why the former 50 ML limit on floodplain harvesting under the Water Sharing Plan for the NSW Murray and Lower Darling has been removed.
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## NSW MURRUMBIDGEE

### Support

- Further consultation on inter-jurisdictional water management was supported. A suggestion was made for an inter-jurisdictional government working group, which includes Aboriginal representatives, to be established.
- Understanding how the Snowy Water Licence review, the inter-governmental agreements and the Snowy Mountain Scheme interact and provide environmental outcomes in water management is considered important.

### Concerns

- Concern that the Upper Murrumbidgee River and region have not been adequately considered in water management and planning.
  - Water management of the Upper Murrumbidgee should be in line with best practice and informed by community and stakeholder engagement.
  - The need to explain how climate change has been incorporated into water sharing arrangements was noted.
  - Concern that the existing focus of the Reconnecting River Country Program does not align with the objectives of the *Water Act 2007*, *Water Management Act 2000* and the Murray-Darling Basin Plan.
  - Understanding how local water utilities can assist the department in managing groundwater resources is important.
  - Concern that landholders are not adequately acknowledged at present and a suggestion that regional water strategies should address this, including how to improve and manage landholder rights.
  - It was suggested that land use planning options should be included in the strategy.
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## Theme 6: Strategy development and implementation

### Theme 6 feedback common to both regions

- Support for ensuring that the regional water strategies align with government commitments and other water management plans, policy, reform priorities and legislation.
- Support for further consultation with the community and stakeholders before the draft strategies and actions are finalised, including ensuring there is culturally-appropriate engagement with Aboriginal peoples.
- Suggestion that options undergo additional reliability, impact and cost assessments.

#### NSW MURRAY

##### Support

- Support for trust to be built between stakeholders, the community and the department to support successful delivery of the strategy and implementation plan.
- Support for knowledge sharing, collaboration and transparent decision-making throughout the development and implementation of the strategy.

##### Concerns

- Concern about the extent and timeframe for engagement conducted during public exhibition. It was noted that additional time is needed for the community and stakeholders to provide a considered response to the draft strategy and options.
- Additional consultation with NSW Murray Valley stakeholder groups should be undertaken to ensure local knowledge is incorporated into the strategy.
- Concern about the options assessment process, including the perceived risk of a siloed assessment.

#### NSW MURRUMBIDGEE

##### Support

- Support for involving key stakeholders, including Aboriginal people, in decision-making for the strategy.
- Support for further consultation to be undertaken with key stakeholders and for programs to be developed to appropriately engage Aboriginal people.
- Suggestion for transparency in how feedback to the strategy will be considered and incorporated into the strategy.
- Suggestion for the strategy to include a separate section for the Upper Murrumbidgee to ensure the range of integrated local challenges and opportunities are highlighted.

##### Concerns

- Concern that irrigators, farmers, major industry groups and community-based organisations have not been adequately consulted or involved in decision making.
- Concern about consultation fatigue.
- Importance of a transparent options assessment process was noted.
- Understanding how the options will be achieved and how they will be funded will be crucial to the successful delivery of the strategy.
- Suggestion that options relevant to the Upper Murrumbidgee River and region should be subject to an individual prioritisation process due to regional nuances and challenges.

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# Feedback by challenges and opportunities



Image courtesy of Neil Andrews.  
Olsens Lookout, Geehi Valley–Snowy Mountains.

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# Feedback by challenges and opportunities

## Shared challenges and opportunities

During consultation, participants were asked to provide feedback on the common challenges and opportunities faced by the NSW Murray and Murrumbidgee regions.

### Challenges

1. Inadequate water management framework to meet the needs and aspirations of Aboriginal people, which also prevents Aboriginal people from fulfilling their rights and obligations to care for Country under their law and customs.
2. Current water sharing arrangements based on only 120-125 years of recorded data, which limits understanding of how vulnerable the region could be to future extreme events.
3. Insufficiently integrated land and water planning and management, which can lead to population and industry growth occurring in areas that have pre-existing water availability constraints.
4. Vulnerability of town water supplies and amenity, which are key factors in fostering liveable and vibrant regional towns and maintaining the wellbeing of communities.
5. Degradation of riverine and floodplain ecosystems, which has led to a loss of native vegetation and wetlands and a decline in the conditions of fish communities and waterbird habitat.
6. Limits to water availability in times of a changing climate, which increases competition for water and could hinder growth and prosperity of the regions industries.

### Opportunities

1. Availability of new climate datasets and updated integrated modelling to test the appropriateness of existing rules, regulations and policies, including the existing water allocation and accounting framework and additional opportunities to support existing reviews already underway.
2. Improved resilience and potential options to improve water security, quality and delivery efficiency; increased participation of Aboriginal people in water-related economic and cultural opportunities; better integration of land and water management and improvements for environmental management.
3. Improved understanding of trends in water use in the regions, with a draft option to investigate regulatory, policy, operational and infrastructure solutions to enhance water security for regional communities and support the productive capacity of the regions' industries.
4. Improve the understanding of groundwater in the region—with development of a draft option to improve the understanding of groundwater processes, groundwater usage and risks to existing groundwater sources.

## Feedback on regional challenges

Feedback from consultation and submissions across the NSW Murray and Murrumbidgee regions on the challenges identified in the draft strategies is summarised below:

### NSW MURRAY

Challenge	Summary of feedback
<b>Degradation of riverine and floodplain ecosystems</b>	<ul style="list-style-type: none"><li>• There was support for the government's commitment to protect and support environmental values across the catchments.</li><li>• There was support for better management of water to achieve environmental outcomes, including protecting recharge opportunities and reducing pollution.</li><li>• Concern was expressed about an increasing reliance on groundwater sources during drought.</li><li>• There was also concern that lifting constraints on flow volumes could result in further erosion and degradation and produce negative outcomes for the environment.</li></ul>
<b>Limits to water availability in times of changing climate</b>	<ul style="list-style-type: none"><li>• The impacts of climate change on water availability were recognised and identified as one of the greatest risks for industry.</li><li>• There was support for developing information to demonstrate how climate change is currently factored into water sharing arrangements and plans.</li></ul>
<b>Limitations of existing water infrastructure delivery and operations</b>	<ul style="list-style-type: none"><li>• Concern that existing water infrastructure would not be able to meet current and future demands of industry.</li><li>• Storage capacity, physical constraints and operational limitations were identified as potential barriers to efficient and reliable water supply.</li></ul>

### NSW MURRUMBIDGEE

Challenge	Summary of feedback
<b>Vulnerable town water supplies and amenity</b>	<ul style="list-style-type: none"><li>• There was concern about relying on groundwater sources for town water during drought. It was noted that this challenge was related to anthropogenic water issues.</li></ul>
<b>Degradation/erosion of riverine and floodplain ecosystems</b>	<ul style="list-style-type: none"><li>• This was supported as a key challenge. Of noted concern was the loss of river red gum trees due to erosion and water logging of their root base.</li></ul>
<b>Limits to water availability in times of changing climate</b>	<ul style="list-style-type: none"><li>• Concern that focusing on competition for water to service growth and prosperity would result in a human-centred approach.</li></ul>
<b>Limitations of existing water infrastructure delivery and operations</b>	<ul style="list-style-type: none"><li>• Concern that Murrumbidgee groundwater resources are already over-allocated.</li><li>• Concern that the existing water infrastructure would not be able to meet the current and future demands of industry.</li><li>• Storage capacity, physical constraints and operational limitations were identified as potential barriers to efficient and reliable water supply.</li></ul>

## Additional water-related challenges for consideration

Additional challenges suggested during engagement and submissions for consideration by the department are detailed below.

### NSW MURRUMBIDGEE

Challenge	Summary of feedback
<b>Upper Murrumbidgee River and region</b>	<ul style="list-style-type: none"><li>• Concern that the Upper Murrumbidgee River and region are not adequately considered in state and federal water management reforms to improve the health of waterways, deliver better outcomes for Aboriginal people and provide water for critical human needs.</li><li>• Concern about the complexity and nuances of the Upper Murrumbidgee River and region. Noted that strategies and plans in place to support improved health of the Upper Murrumbidgee are not realising their objectives for the environment or Aboriginal people.</li><li>• Concern that the current water sharing plan for the Murrumbidgee and the rules and operations for the Upper Murrumbidgee are impacting water quality, water security and contributing to negative social, cultural and environmental impacts. Suggestion for an additional option to be considered where NSW, Victoria and Australian governments undertake a transparent and accountable review of the Snowy Water Inquiry outcomes implementation deed to address this challenge.</li><li>• Concern about the health of the Upper Murrumbidgee River. Noted that a key contributor to poor health is reduced flows, as the large majority of headwater flows are diverted at Tantangara Dam for the Snowy Hydro Scheme.</li><li>• Concern about inter-jurisdictional water management and the challenge of incorporating and understanding relevant agencies involved in water management.</li><li>• Concern about the impacts and management of climate change, drought and bushfires on the Upper Murrumbidgee River and region.</li><li>• Concern that the current operating environment makes it difficult to meet environmental, social and cultural objectives which govern water use in the Upper Murrumbidgee to protect the river.</li></ul>
<b>Irrigation</b>	<ul style="list-style-type: none"><li>• Noted that optimising water availability to meet the current and future needs of irrigated agriculture is a challenge.</li></ul>
<b>Water quality and recharge</b>	<ul style="list-style-type: none"><li>• Concern about future deterioration of water quality and potentially limited opportunities for recharge due to climate change.</li></ul>
<b>Urban growth</b>	<ul style="list-style-type: none"><li>• Concern that projected urban growth in NSW regions and around the ACT had not been adequately considered.</li></ul>
<b>Tumut River channel</b>	<ul style="list-style-type: none"><li>• A suggestion to further examine options that addressed Tumut River channel capacity constraints.</li></ul>

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## Feedback on regional opportunities

There was no feedback received on the opportunities listed. However, there were additional opportunities that were identified and listed for each region below.

### Additional water-related opportunities for consideration

Additional opportunities suggested during engagement and submissions for consideration by the department are detailed below.

#### NSW MURRAY

Opportunity	Summary of feedback
<b>Modern water management framework</b>	<ul style="list-style-type: none"><li>Developing a modern water management framework to meet the seven NSW Water Strategy priorities was proposed.</li></ul>

#### NSW MURRUMBIDGEE

Opportunity	Summary of feedback
<b>Upper Murrumbidgee River and region</b>	<ul style="list-style-type: none"><li>An opportunity for the Upper Murrumbidgee River to be used as a route to improve flows to the river downstream of Burrinjuck and Blowering Dams was raised. This would present potential opportunities to improve water quality, environmental, social and cultural outcomes.</li><li>Support for establishing a NSW and ACT Community Advisory Panel for the Upper Murrumbidgee would include Aboriginal representatives to support decision making and implementation of options in the draft strategy and water management more broadly.</li><li>Identified the opportunity for the strategy to support holistic and effective planning and management of the Upper Murrumbidgee River and system.</li></ul>
<b>Modern water management framework</b>	<ul style="list-style-type: none"><li>Developing a modern water management framework to meet the 7 NSW Water Strategy priorities was supported.</li></ul>
<b>Policy clarity and alignment</b>	<ul style="list-style-type: none"><li>Support for the opportunity to develop more coherent and integrated water planning, regulations and legislation, and increasing understanding of how these apply to regulators such as the NSW Department of Planning and Environment, Environment Protection Authority and Office of Local Government.</li></ul>
<b>Broader scope of benefits</b>	<ul style="list-style-type: none"><li>Support for consideration of the broader set of services and benefits that water brings to people, economies and nature to proactively manage river health.</li></ul>
<b>River repair</b>	<ul style="list-style-type: none"><li>Support for investing in river 'repair' options.</li></ul>

# Feedback by options



Image courtesy of Destination NSW.  
Mountain biking, Kosciuszko National Park.

# Feedback by options

## NSW Murray and Murrumbidgee long list of options

### NSW Murray: Long list of 44 proposed options

A long list of options has been developed that could be included in the NSW Murray Regional Water Strategy. The options consider the opportunities and challenges facing the region and meet at least one regional water strategy objective.

<b>NSW MURRAY</b>	
<b>Inadequate water management framework to meet the needs and aspirations of Aboriginal people</b>	<b>Vulnerability of town water supplies and amenity</b>
1. Improve access to culturally significant areas and waterways for Aboriginal people	16. Enhance southern inland floodplain management plans
2. Review Aboriginal Cultural Water Access Licence framework	17. Investigate water quality improvement measures
3. Support long-term participation of local Aboriginal people in water-related matters	18. Manage groundwater salinity
4. Fund water entitlements for Aboriginal communities	19. Monitor sediment compaction over the long term
5. Secure flows for water dependent cultural sites	20. Review impediments to water recycling projects
6. Shared benefit projects (environmental and cultural outcomes)	21. Managed aquifer recharge investigations and policy
7. Incorporate Aboriginal history of water and cultural in the Southern Basin into water data	22. Secure and reliable access to groundwater for towns
<b>Current water sharing based on 125 years of data</b>	23. Maintain water-related amenity in the Murray during droughts
8. Review drought rules for the NSW Murray region	24. Investigate inter-regional connections
9. Review the allocation and accounting framework in the NSW Murray (regulated system)	25. Investigate groundwater desalination for industry and towns
10. Investigate Murray River system water sharing, delivery and accounting arrangements under the Murray-Darling Basin Agreement	<b>Degradation of riverine and floodplain ecosystem</b>
11. Review groundwater extraction limits	26. Improve protection of groundwater dependent ecosystems
12. Provide increased clarity about sustainable groundwater management	27. Address cold water pollution in the Hume Dam
13. Investigate water access licence conversion	28. Remediate fish passage
<b>Insufficiently integrated land and water planning and management</b>	29. Implement fish-friendly water extraction
14. Investigate land use change and population growth impacts on water resources	30. Improve flows to important ecological sites
15. Develop climate risk evidence base to inform the next Snowy Water Licence review	31. Develop a river and catchment recovery program for the NSW Murray region

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## NSW MURRAY

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| <b>32.</b> Review environmental water arrangements   | <b>38.</b> Develop targeted education and capacity-building programs                                  |
| <b>33.</b> Re-establish threatened fish species through habitat restoration and conservation re-stocking | <b>39.</b> Investigate water availability in the Murray region  |
| <b>34.</b> Better understand the economic value of ecosystem services of riverine environmental assets   | <b>40.</b> Investigate non-residential water efficiency (towns and industries)                        |
| <b>Limits to water availability in times of a changing climate</b>                                       | <b>41.</b> Investigate the expansion of cloud seeding in key water supply catchments                  |
| <b>35.</b> Better understand water use with data collection and analytics                                | <b>42.</b> Undertake joint exploration for minerals and groundwater with the Geological Survey of NSW |
| <b>36.</b> Improve the understanding of groundwater sources and processes, risks and impacts             | <b>43.</b> Review water markets and trade   |
| <b>37.</b> Undertake a water dependent industry resilience study   | <b>44.</b> Consider hydrological processes in bushfire management                                     |
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## NSW Murrumbidgee: Long list of 53 proposed options

A long list of options has been developed for consideration. The options consider the opportunities and challenges facing the region and meet at least one regional water strategy objective.

<b>NSW MURRUMBIDGEE</b>	
<b>Inadequate water management framework to meet the needs and aspirations of Aboriginal people</b>	<b>Vulnerability of town water supplies and amenity</b>
1. Improve access to culturally significant areas and waterways for Aboriginal people	18. Review impediments to water recycling projects
2. Review Aboriginal cultural water access licence framework	19. Assess potable re-use for towns
3. Assess access arrangements for Murrumbidgee cultural water access licence	20. Managed aquifer recharge investigations and policy
4. Fund water entitlements for Aboriginal communities	21. Secure and reliable access to groundwater for towns
5. Secure flows for water-dependent cultural sites	22. Maintain water-related amenity in the Murrumbidgee during droughts
6. Shared benefit project (environment and cultural outcomes)	23. Improve protection of groundwater dependent ecosystems
7. Support long-term participation of local Aboriginal people in water-related matters	<b>Degradation of riverine and floodplain ecosystem</b>
8. Incorporate Aboriginal history of water and culture in the Southern Basin into water data	24. Address cold water pollution
<b>Current water sharing based on 120 years of data</b>	25. Improve flows to important ecological sites
9. Review drought rules for the Murrumbidgee region	26. Develop a river and catchment recovery program for the Murrumbidgee region
10. Review the allocation and accounting framework in the Murrumbidgee (surface water)	27. Investigate water quality improvement measures
11. Review groundwater extraction limits	28. Manage groundwater salinity
12. Provide increased clarity about sustainable groundwater management	29. Assess pollution from disused mines and mineral occurrences
13. Investigate water access licence conversion	30. Review environmental water arrangements
<b>Insufficiently integrated land and water planning and management</b>	31. Re-establish threatened fish species through habitat restoration and conservation re-stocking
14. Investigate land use change and population growth impacts on water resources	32. Monitor sediment compaction over the long term
15. Strengthen inter-jurisdictional water management	<b>Limits to water availability in times of a changing climate</b>
16. Develop climate risk evidence base to inform the next Snowy Water Licence review	33. Investigate alternatives for increased storage capacity
17. Enhance southern inland floodplain management plans	34. Investigate new storage at Lake Mejum-Coolah

## NSW MURRUMBIDGEE

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| 35. Install gravity pipeline along Tumut River                    | 45. Improve the understanding of groundwater sources and processes, risks and impacts |
| 36. Raise Blowering Dam   | 46. Undertake a water-dependent industry resilience study                             |
| 37. Enlarge Burrinjuck Storage Reservoir                          | 47. Develop targeted education and capacity building programs                         |
| 38. Expand Bundidgerry off-river storage and a new transfer canal | 48. Investigate water availability in the Murrumbidgee region                         |
| 39. Augment Tombullen Storage and modify operational changes      | 49. Investigate non-residential water efficiency (towns and industries)               |
| 40. Investigate inter-regional connections                        | 50. Investigate expansion of cloud seeding in key water supply catchments             |
| 41. Change environmental releases from Murrumbidgee storages      | 51. Undertake joint exploration for groundwater with the NSW Geological Survey        |
| 42. Review flood management and airspace operation                | 52. Review water markets and trade  |
| 43. Investigate groundwater desalination for industry and towns   | 53. Consider hydrological processes in bushfire management                            |

### Limitations of existing water infrastructure, delivery and operations

44. Better understand water use with data collection and analytics

As the department refines and implements the regional water strategies, it commits to helping support the health and wellbeing of waterways and Country by valuing, respecting and being guided by First Nations/Traditional Owners.

We acknowledge that further work is required under these regional water strategies to inform how we care for Country and to ensure First Nations/Traditional Owners have a strong voice in shaping the future of water management in the Murray and Murrumbidgee regions.

## NSW Murray:

### Options 1-7: Inadequate water management framework to meet the needs and aspirations of Aboriginal People

There was significant support for options aimed at addressing Aboriginal access to and involvement in water management. The need for more consultation with Aboriginal stakeholders and communities to capture Aboriginal cultural perspectives and incorporate local knowledge into the draft strategy and options was noted – in particular, very little feedback from Aboriginal communities has been received on these options and further consultation is required.

Options	Summary of feedback
<b>1. Improve access to culturally significant areas and waterways for Aboriginal people</b>	<ul style="list-style-type: none"><li>• Support for greater involvement of Aboriginal stakeholders to inform water management and to support greater protection of culturally significant sites and spiritual values.</li><li>• Noted that any changes to water management rules to support greater protection of culturally significant sites and spiritual values would not be supported if they have third-party impacts to existing water rights or impact water availability.</li></ul>
<b>2. Review Aboriginal Cultural Water Access Licence framework</b>	<ul style="list-style-type: none"><li>• Support for greater uptake through improvements to the Aboriginal Cultural Water Access Licence framework.</li><li>• Support for greater access to licences, provided economic activity is not permitted on the licences.</li><li>• Noted that the considerations for this option need to be expanded to include amending the legislation to enable inclusion and diversity and for genuine consultation to be undertaken to define what licences can be used for.</li></ul>
<b>3. Support long-term participation of local Aboriginal people in water-related matters</b>	<ul style="list-style-type: none"><li>• Concern that the scope of this option excludes Aboriginal people from operating their own water.</li><li>• Consideration needed on how to reduce costs involved with managing Aboriginal water allocation with no financially productive use.</li><li>• Noted that the considerations for this option need to be expanded. Consideration of capital requirements, fees, and operational implications hindering Aboriginal participation needed to be added.</li></ul>
<b>4. Fund water entitlements for Aboriginal communities</b>	<ul style="list-style-type: none"><li>• Noted that this option should encompass the implementation of an Aboriginal water right.</li><li>• Consideration needed of how to make participation more accessible, including through reducing operational costs and implications.</li></ul>
<b>5. Secure flows for water dependent cultural sites</b>	<ul style="list-style-type: none"><li>• Suggestion for this option to be considered by the environment group of the department and in consultation with Aboriginal stakeholders and community.</li></ul>
<b>6. Shared benefit projects (environmental and cultural outcomes)</b>	<ul style="list-style-type: none"><li>• Support for resources and support mechanisms to increase Aboriginal input into environmental water planning.</li><li>• Concern about impacts to the environment in terms of a decrease in water availability for environmentally-specific purposes.</li><li>• Concern about impacts to attainment of cultural water.</li></ul>
<b>7. Incorporate Aboriginal history of water and cultural in the Southern Basin into water data</b>	<ul style="list-style-type: none"><li>• Support for Aboriginal people having the right to protect and sustain cultural sites.</li><li>• Noted that work is already underway to coordinate environmental flows to meet cultural needs.</li><li>• Noted that the considerations for this option are too narrow and need to be expanded.</li></ul>

## NSW Murrumbidgee:

### Options 1-8: Inadequate water management framework to meet the needs and aspirations of Aboriginal people

There was significant support for options aimed at addressing Aboriginal access to and involvement in water management, with a focus on supporting long term participation of Aboriginal people in water-related matters and management.

Understanding and respecting cultural water and values were also considered important.

Options	Summary of feedback
<b>1. Improve access to culturally significant areas and waterways for Aboriginal people</b>	<ul style="list-style-type: none"><li>• Support for improving Aboriginal people's access to culturally significant areas and waterways.</li><li>• Suggestion for greater awareness of cultural values and sites to ensure adequate and appropriate resources are provided.</li></ul>
<b>2. Review Aboriginal Cultural Water Access Licence framework</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion to include the potential for legislation to be amended to support greater inclusion and diversity of cultural perspectives.</li></ul>
<b>3. Assess access arrangements for Murrumbidgee Cultural Water Access Licence</b>	<ul style="list-style-type: none"><li>• Support for assessing access arrangements for Murrumbidgee Cultural Water Access Licences.</li></ul>
<b>4. Fund water entitlements for Aboriginal communities</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion for the draft strategy to better explain how cultural water licences apply to the Upper Murrumbidgee and their relationship with the operation of the Snowy Hydro Scheme.</li></ul>
<b>5. Secure flows for water-dependent cultural sites</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion to include a process to identify cultural sites to ensure they receive better quality flows. Suggestion for an Aboriginal Waterways Assessment program to be undertaken to support this process.</li></ul>
<b>6. Shared benefit project (environment and cultural outcomes)</b>	<ul style="list-style-type: none"><li>• Mixed views about this option, with concern about further erosion of the purpose and application of environmental water.</li></ul>
<b>7. Support long-term participation of local Aboriginal people in water-related matters</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion for a co-design approach to be used to incorporate cultural insights and knowledge.</li><li>• Suggestion for greater engagement, which can be facilitated through establishment of a NSW-ACT Community Advisory Panel for the Upper Murrumbidgee, with Aboriginal representatives involved.</li><li>• Concern about the costs involved in water licencing, which is often a barrier to Aboriginal participation. Suggestion for this option to include a consideration of how these costs can be reduced.</li><li>• Suggestion for this option to provide a greater understanding of how a flow regime can support cultural values and positive outcomes.</li></ul>
<b>8. Incorporate Aboriginal history of water and culture in the Southern Basin into water data</b>	<ul style="list-style-type: none"><li>• Support for this option and for greater involvement and participation of Aboriginal people in water management through co-design and Advisory Panels.</li><li>• Suggestion for this option to provide a greater understanding of how a flow regime can support cultural values and positive outcomes.</li></ul>

## NSW Murray:

### Options 8-13: Current water sharing arrangements based on 125 years of data

There was general support for options in this category, with caution expressed about potential impacts to water licence reliability and the environment, and the need for adequate consideration of these matters prior to the progression of options.

Options	Summary of feedback
<b>8. Review drought rules for the NSW Murray region</b>	<ul style="list-style-type: none"><li>• Noted that the existing system for drought rules is effective and adaptable, negating the need for this option.</li><li>• Suggestion to implement parameters around this option so that the influence of the worst-case scenario modelling does not impact existing irrigated agriculture.</li><li>• Concern that this option would result in negative changes in allocation reliability for General Security Licence holders.</li></ul>
<b>9. Review the allocation and accounting framework in the NSW Murray (regulated system)</b>	<ul style="list-style-type: none"><li>• Considered to be a priority once a credible modelling scenario has been selected and an advisory group has been established to support the review.</li><li>• Support for investigating opportunities to increase water security, such as through the utilisation of combined storages.</li><li>• Noted that the issue of underuse against the Sustainable Diversion Limit needs to be addressed as part of the review.</li><li>• Suggestion for consideration of this option to commit to an outcome, rather than an activity, and for Aboriginal cultural protection and environmental preservation to be considered in the review.</li><li>• Suggestion for inclusion of additional options that optimise access to high flows.</li><li>• Suggestion to also review the aims, extent, impacts and opportunities of the use of carryover as a risk management tool.</li></ul>
<b>10. Investigate Murray River system water sharing, delivery and accounting arrangements under the Murray-Darling Basin Agreement</b>	<ul style="list-style-type: none"><li>• Considered to be a priority once a credible modelling scenario has been selected and an Advisory Group has been established to support the investigation.</li><li>• Noted that it is not appropriate to undertake a review of the Murray-Darling Basin Agreement as the draft strategy only covers a single catchment.</li><li>• Noted that the NSW Government should recognise the role the Darling Rivers system plays in Murray River flows.</li></ul>
<b>11. Review groundwater extraction limits</b>	<ul style="list-style-type: none"><li>• Concern about impacts and reduction of entitlements as a result of the review.</li><li>• Suggestion to include scientific studies as a consideration for this option to understand the operation, health and management of groundwater and groundwater dependent ecosystems.</li><li>• Noted that a review has already been undertaken and did not identify required changes, aside from adjustments to the Basin Plan, therefore negating the need for this option.</li></ul>
<b>12. Provide increased clarity about sustainable groundwater management</b>	<ul style="list-style-type: none"><li>• Support for overbank flows to groundwater recharge to be urgently addressed.</li><li>• Concern about impacts and reduction of entitlements as a result of this option.</li></ul>

Options	Summary of feedback
13. <b>Investigate water access licence conversion</b>	<ul style="list-style-type: none"> <li>• Support for industries, such as the dairy industry, having the ability to convert General Security to High Security Licences for the survival of breeding herds.</li> <li>• Concern about the impact of conversion to General Security Licence holders.</li> <li>• Noted that storages are not able to meet additional demand for High Security Licences or town water supplies.</li> <li>• Suggestion for an additional consideration to include the potential liability risk to government if they are unable to meet the need for increased security of access in a conversion of a licence.</li> <li>• Noted that investment in technology and research into water efficiency should be undertaken before investigating licence conversion.</li> </ul>

## NSW Murrumbidgee:

### Options 9-13: Current water sharing arrangements based on 120 years of data

There was support for options in this category, but with a request that these options be considered in the context of improved outcomes for the environment.

Option 9 was most frequently discussed, with feedback noting the need for rules to align with other strategies and for rules to consider social, environmental and cultural needs.

Options	Summary of feedback
9. <b>Review drought rules for the Murrumbidgee region</b>	<ul style="list-style-type: none"> <li>• Suggestion for rules to be consistent with NSW Water Strategy objectives and other strategies, and for environmental health to be considered.</li> <li>• Suggestion for Local Water Utilities to be involved in the review.</li> </ul>
10. <b>Review the allocation and accounting framework in the Murrumbidgee (surface water)</b>	<ul style="list-style-type: none"> <li>• Suggestion for environmental health to be considered.</li> <li>• Suggestion for inclusion of an additional option that enables better use of high flow periods.</li> <li>• Noted that the allocation rules are unnecessarily conservative which impacts agricultural productivity.</li> </ul>
11. <b>Review groundwater extraction limits</b>	<ul style="list-style-type: none"> <li>• Suggestion for consultation to be undertaken and for the review to be transparent.</li> <li>• Suggestion for this option to include an additional consideration to improve understanding of healthy groundwater and groundwater-dependent ecosystems.</li> </ul>
12. <b>Provide increased clarity about sustainable groundwater management</b>	<ul style="list-style-type: none"> <li>• Suggestion for environmental health to be considered.</li> <li>• Noted that sustainable groundwater management should aim to minimise adverse impacts.</li> </ul>
13. <b>Investigate water access licence conversion</b>	<ul style="list-style-type: none"> <li>• Suggestion for environmental health to be considered.</li> </ul>

## NSW Murray:

### Options 14-19: Insufficiently integrated land and water planning and management

There was support for options in this category with commentary focused on the priority and importance of Option 14 (Investigate land use change and population growth impacts on water resources) and the need for sensible modelling scenarios, particularly for Option 15 (Develop climate risk evidence base to inform the next Snowy Water Licence review).

Further consideration of inter-jurisdictional land use challenges and water availability challenges were noted as important.

Options	Summary of feedback
<b>14. Investigate land use change and population growth impacts on water resources</b>	<ul style="list-style-type: none"><li>• Support for this option to be considered a high priority, with a suggestion to address future population demands through water recycling, restricting urban subdivision and implementing a State Environmental Planning Policy (SEPP).</li><li>• Noted that the scope of this option should be extended and that inter-jurisdictional land use challenges to support protection of water resources should also be considered.</li><li>• Suggestion for an additional consideration to include the possible land use planning restrictions which may be triggered if water availability decreases.</li></ul>
<b>15. Develop climate risk evidence base to inform the next Snowy Water Licence review</b>	<ul style="list-style-type: none"><li>• Concern expressed about the use of inaccurate modelling and climate assumptions.</li><li>• Noted that the existing Snowy Water Licence and methodologies account for evidence-based climatic risks that are known and projected.</li></ul>
<b>16. Enhance southern inland floodplain management plans</b>	<ul style="list-style-type: none"><li>• Support for floodplain management plans to protect the environment.</li><li>• Concern that this option would negatively impact water recovery.</li><li>• Concern that this option will be used to implement Basin Plan objectives noting that it should not be used as tool to implement the Basin Plan objectives.</li><li>• Noted the importance of the plan to be appropriate for the NSW Murray region and to not be based on the Northern Basin template.</li><li>• Not considered to be a priority as flood management plans are already in practice. However, concern was expressed that there is no existing effective floodplain management in the region.</li></ul>
<b>17. Investigate water quality improvement measures</b>	<ul style="list-style-type: none"><li>• Suggestion for the department to consider programs and investments already in place to support water quality improvements.</li></ul>
<b>18. Manage groundwater salinity</b>	<ul style="list-style-type: none"><li>• Support for addressing the overuse of groundwater to manage groundwater salinity.</li><li>• Suggestion for the department to consider programs already in place which manage salinity risks.</li><li>• Suggestion for the department to reconsider granting new groundwater licences that may increase salinity risks.</li></ul>
<b>19. Monitor sediment compaction over the long term</b>	<ul style="list-style-type: none"><li>• Concern about water being delivered to users downstream of the Barmah Choke.</li><li>• Not considered to be a high priority.</li></ul>

## NSW Murrumbidgee:

### Options 14-17: Insufficiently integrated land and water planning and management

There was mixed feedback to options in this category, with commentary focused on inter-jurisdictional land and water management and special considerations for the Upper Murrumbidgee catchment.

Options	Summary of feedback
<b>14. Investigate land use change and population growth impacts on water resources</b>	<ul style="list-style-type: none"><li>• Suggestion for the option to include a consideration that restrictions to land use planning legislation may be triggered by limited water availability. It was noted that growth and land use in the area may be impacted by such restrictions.</li><li>• Measures should be developed to direct development to appropriate locations.</li><li>• Suggestion to analyse impacts on productive water security if permanent nut plantings increase in the Southern Basin.</li><li>• Suggestion to foster partnerships between government, stakeholders and community, including inter-jurisdictional relationships to support planning.</li></ul>
<b>15. Strengthen inter-jurisdictional water management</b>	<ul style="list-style-type: none"><li>• Noted the importance of transparent water management within and between jurisdictions.</li><li>• Suggestion to establish an advisory group to support consultation and decision making with community, stakeholders and government agencies and utilities.</li></ul>
<b>16. Develop climate risk evidence base to inform the next Snowy Water Licence review</b>	<ul style="list-style-type: none"><li>• Suggestion for the establishment of an advisory group to support consultation and decision making with community, stakeholders and government agencies and utilities.</li><li>• Suggestion for this option to include a recommendation to progress the Snowy Water Licence review, ensuring the review adequately addresses specific Upper Murrumbidgee challenges.</li><li>• Suggestion to bring forward the Snowy Water Licence review to ensure the scope is broad enough to adequately address the issues facing the Upper Murrumbidgee. Noted that a review of the Snowy Water Inquiry outcomes implementation deed would strengthen a future review of the Snowy Water Licence.</li><li>• Suggestion for 'banking' water in Snowy Hydro dams to be considered.</li><li>• Question about how the strategy will impact the Snowy Licence.</li></ul>
<b>17. Enhance southern inland floodplain management plans</b>	<ul style="list-style-type: none"><li>• Suggestion for this option to prioritise water requirements of wetlands and protection of associated ecosystems.</li></ul>

## NSW Murray:

### Options 20-25: Vulnerability of town water supplies and amenity

There was mixed feedback to options in this category, with support for Options 20 and 21 and a combination of support and concern expressed for Options 22-25.

Option 21 (Managed aquifer recharge investigations and policy) received the most support, while concern was expressed for Option 23 (Maintain water-related amenity in the Murray during droughts).

Water security challenges and town water supply and recycling opportunities were key topics explored.

Options	Summary of feedback
<b>20. Review impediments to water recycling projects</b>	<ul style="list-style-type: none"><li>• Support for this option to explore the various uses for water to avoid waste and to reduce demand on climate-dependent water supplies.</li><li>• Support for progressing recycling options for use in towns to encourage water saving initiatives.</li><li>• Noted that water recycling on farms is already well progressed and this option should focus on town water recycling opportunities.</li></ul>
<b>21. Managed aquifer recharge investigations and policy</b>	<ul style="list-style-type: none"><li>• Support expressed for this option, with the suggestion for considerations within this option to include benefits for aquatic ecosystems that would result from reduced extraction.</li><li>• Noted that such storage could lead to reduced evaporation, extraction and remove the need for additional dams or weirs. Suggestion to explore opportunities for progressing artesian storage through forced recharge.</li></ul>
<b>22. Secure and reliable access to groundwater for towns</b>	<ul style="list-style-type: none"><li>• Support for towns to access groundwater in times of extended drought, noting that towns should not be granted additional groundwater licences without securing water entitlements through trade.</li><li>• It was noted that water licences for towns should not be bought on the open market.</li><li>• Concern expressed about over allocation and overuse of groundwater.</li></ul>
<b>23. Maintain water-related amenity in the Murray during droughts</b>	<ul style="list-style-type: none"><li>• Support for this option to be progressed as water amenity is considered a priority.</li><li>• Concern that this option conflicts with the needs of the environment and that the extent of the option is unclear.</li><li>• Suggestion that this option could be resolved through existing mechanisms.</li></ul>
<b>24. Investigate inter-regional connections</b>	<ul style="list-style-type: none"><li>• Concern that the extent of the option is unclear.</li><li>• Concern about the removal of water property rights of existing General Security Licence holders.</li><li>• Concern expressed about inter-basin transfers.</li><li>• Suggestion for options to reduce climate-dependency to be prioritised over implementation of pipelines.</li></ul>
<b>25. Investigate groundwater desalination for industry and towns</b>	<ul style="list-style-type: none"><li>• Concern about the potential increase in reliance on groundwater sources.</li><li>• Noted that groundwater extraction through desalination must be based on geography. Suggestion that this option is limited to specific zones in the Western region.</li><li>• Concern that this option conflicts with existing groundwater rules and regulations.</li></ul>

## NSW Murrumbidgee:

### Options 18-23: Vulnerability of town water supplies and amenity

There was mixed feedback to options in this category, with a focus on maintaining water-related amenity and a healthy natural environment and ecosystems during times of drought.

Options	Summary of feedback
<b>18. Review impediments to water recycling projects</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion for value for money to also be addressed within this option.</li><li>• Suggestion for investment in sustainable and self-sufficient water systems. There was also a suggestion for town water supplies to be prioritised with water quality considered and for a review to be conducted into the release volumes from Tantangara Dam.</li></ul>
<b>19. Assess potable re-use for towns</b>	<ul style="list-style-type: none"><li>• Support for this option and for encouraging water recycling opportunities in towns.</li><li>• Concern about cross-contamination by households not accessing the correct source on their property or by damaging pipes during renovations.</li><li>• Need to understand local logistical considerations around managing water from reverse osmosis plants.</li></ul>
<b>20. Managed aquifer recharge investigations and policy</b>	<ul style="list-style-type: none"><li>• Mixed response to this option, with support for storage to reduce the need for direct extraction from river systems, minimising evaporation and reliance on dams and weirs. However, concern was expressed about risk of impacts to groundwater quality.</li><li>• Concern about the potential impact on existing groundwater extractions.</li><li>• Suggestion for greater clarity to be provided on whether excess irrigation water being returned to regulated systems is being monitored for water quality issues.</li></ul>
<b>21. Secure and reliable access to groundwater for towns</b>	<ul style="list-style-type: none"><li>• Suggestion for management of groundwater and land use planning legislation to be considered as part of this option.</li><li>• Concern about overuse, over-allocation and the poor condition of groundwater in the region.</li><li>• Question about how to effectively implement this option, given the difficulty receiving approvals for groundwater bores.</li></ul>
<b>22. Maintain water-related amenity in the Murrumbidgee during droughts</b>	<ul style="list-style-type: none"><li>• Concern that this option does not align with the needs of the natural environment.</li><li>• Suggestion for this option to include amenity targets for locations in the Upper Murrumbidgee. There was also a suggestion for this option to include a cost benefit analysis of extractive uses compared to amenity in a range of important sites.</li><li>• Suggestion for inter-jurisdictional water planning to support improved water and integrated catchment management.</li></ul>
<b>23. Improve protection of groundwater dependent ecosystems</b>	<ul style="list-style-type: none"><li>• Noted improving understanding of groundwater systems is important.</li><li>• Suggestion for investment in sustainable and self-sufficient water systems. There was also a suggestion for town water supplies to be prioritised with water quality considered and for a review to be conducted into the release volumes from Tantangara Dam.</li></ul>

## NSW Murray:

### Options 26-34: Degradation of riverine and floodplain ecosystems

Support was expressed for options in this category, with feedback highlighting the importance of undertaking stakeholder engagement and supporting stakeholder partnerships in progressing these options.

Ecological objectives and targets of the Murray-Lower Darling Long Term Water Plan and the Native Fish Strategy for the Murray-Darling Basin were seen as key considerations for these options.

Options	Summary of feedback
<b>26. Improve protection of groundwater dependent ecosystems</b>	<ul style="list-style-type: none"><li>• Support for protecting groundwater dependent ecosystems, however there was a suggestion for the department to provide greater clarity on the rationale for why this option has been included in the draft strategy.</li><li>• Noted that groundwater dependent ecosystems in the NSW Murray region are considered to be adequately protected by groundwater sharing plans.</li></ul>
<b>27. Address cold water pollution in the Hume Dam</b>	<ul style="list-style-type: none"><li>• Support for addressing cold water pollution. However, there were concerns that addressing cold water pollution is a long-standing issue which has not yet been resolved.</li><li>• Interest in further involvement in landscape scale action to improve river and catchment health to address cold water pollution.</li></ul>
<b>28. Remediate fish passage</b>	<ul style="list-style-type: none"><li>• Support for this option and fostering collaborative partnerships to develop a whole-of-system approach for fish outcomes. Noted that this investment should be delivered through the SDLAM program.</li><li>• Suggestion for an additional consideration of this option to include how different fish passage structures can affect the ability of different species to safely navigate through a passage.</li></ul>
<b>29. Implement fish-friendly water extraction</b>	<ul style="list-style-type: none"><li>• Support for fish-friendly water extraction as a voluntary participation program.</li><li>• Suggestion to use SDLAM funding to support this option and for additional sites to be included in the option.</li></ul>
<b>30. Improve flows to important ecological sites</b>	<ul style="list-style-type: none"><li>• Support for improving flows, with a suggestion for this option to consider the native fish ecological objectives outlined in the Murray-Lower Darling Long Term Water Plan.</li><li>• Suggestion for this option to include flows to enhance native fish breeding opportunities.</li><li>• Suggestion for this option to be incorporated into the Basin Plan SDLAM to support investment and outcomes through a holistic approach.</li></ul>
<b>31. Develop a river and catchment recovery program for the NSW Murray region</b>	<ul style="list-style-type: none"><li>• Support for this option, with a suggestion for this option to consider the native fish ecological objectives outlined in the Murray-Lower Darling Long Term Water Plan and objectives of the Native Fish Strategy for the Murray-Darling Basin.</li><li>• Suggestion for the department to explain the 'standard' of ecological health and environmental outcomes expected.</li></ul>

Options	Summary of feedback
<b>32. Review environmental water arrangements</b>	<ul style="list-style-type: none"> <li>• Support for reviewing environmental water arrangements. However, it was noted that this option should not be considered until a credible modelling scenario has been developed and adequate consultation, through an advisory group, has been conducted.</li> <li>• Concern about the impacts of this option on general security licence holders.</li> <li>• Suggestion for environmental watering programs, delivery rules and practice to be reviewed.</li> <li>• Suggestion for inclusion of additional options that protect and improve environmental water flows to enhance native fish breeding opportunities.</li> </ul>
<b>33. Re-establish threatened fish species through habitat restoration and conservation re-stocking</b>	<ul style="list-style-type: none"> <li>• Support for this option, noting that partnerships should be formed to assist in delivering positive on-the-ground environmental outcomes.</li> <li>• Noted that habitat restoration programs are already in place which provide examples of opportunities and challenges associated with restoration.</li> </ul>
<b>34. Better understand the economic value of ecosystem services of riverine environmental assets</b>	<ul style="list-style-type: none"> <li>• General support for this option, noting that partnerships should be formed to assist in delivering positive on-the-ground environmental outcomes.</li> <li>• One submission noted that this was not a priority.</li> </ul>

## NSW Murrumbidgee: Options 24-32: Degradation of riverine and floodplain ecosystems

Support was expressed for options within this category, with a focus on protecting and supporting ecosystems and establishing inter-jurisdictional governance between the ACT and NSW.

Option 25 (Improve flows to important ecological sites) and Option 30 (Review environmental water arrangements) were most frequently commented on.

Options	Summary of feedback
<b>24. Address cold water pollution</b>	<ul style="list-style-type: none"> <li>Suggestion for this option to be considered with Option 16 (Develop climate risk base to inform the next Snowy Licence Review) and Option 30 (Review environmental water arrangements).</li> </ul>
<b>25. Improve flows to important ecological sites</b>	<ul style="list-style-type: none"> <li>Suggestion for this option to include Upper Murrumbidgee River flow regime and environmental water rules.</li> <li>Suggestion for this option to consider the range of water-dependent ecosystems the catchment supports. There was also a suggestion for this option to include water allocations and plans for protected areas that contain aquatic and semi-aquatic ecosystems.</li> <li>Suggestion for this option to include drought contingencies for management of ecological assets and protection of Upper Murrumbidgee health, cultural values and water quality. There was also a suggestion for this option to include considerations for providing financial support for programs to support private landholders and to develop plans for remediation in runoff areas.</li> </ul>
<b>26. Develop a river and catchment recovery program for the Murrumbidgee region</b>	<ul style="list-style-type: none"> <li>Suggestion to establish and adequately fund an Upper Murrumbidgee river and catchment recovery program in line with inter-jurisdictional governance.</li> <li>Suggestion for this option to include drought contingencies for management of ecological assets and protection of Upper Murrumbidgee health, cultural values and water quality. There was also a suggestion for this option to include considerations for providing financial support for programs to support private landholders and to develop plans for remediation in runoff areas.</li> </ul>
<b>27. Investigate water quality improvement measures</b>	<ul style="list-style-type: none"> <li>Suggestion for greater recognition of the impacts of environmental and regulated flows on water quality for towns.</li> </ul>
<b>28. Manage groundwater salinity</b>	<ul style="list-style-type: none"> <li>Support for managing groundwater salinity.</li> </ul>
<b>29. Assess pollution from disused mines and mineral occurrences</b>	<ul style="list-style-type: none"> <li>Support for assessing pollution from disused mines and mineral occurrences.</li> </ul>
<b>30. Review environmental water arrangements</b>	<ul style="list-style-type: none"> <li>Concern that incomplete modelling will be used to restrict additional water to meet future unspecified environmental needs.</li> <li>Suggestion for this option to be considered with Option 16 (Develop climate risk base to inform the next Snowy Licence Review) and Option 24 (Address cold water pollution).</li> <li>Noted that additional priorities for this option include allowing greater flexibility for environmental water planning, adequate resourcing for an ecological response monitoring program and reporting on environmental flows, funding a catchment restoration program between ACT and NSW and undertaking an audit of ecological assets and sites.</li> <li>Suggestion for inclusion of additional options that protect and improve environmental water flows to enhance native fish breeding opportunities.</li> </ul>

Options	Summary of feedback
<b>31. Re-establish threatened fish species through habitat restoration and conservation re-stocking</b>	<ul style="list-style-type: none"> <li>• Suggestion for this option to include consideration of native fish ecological objectives in the Murrumbidgee Long-Term Water Plan.</li> <li>• Suggestion for flow regimes to be reinstated to support this option.</li> </ul>
<b>32. Monitor sediment compaction over the long term</b>	<ul style="list-style-type: none"> <li>• Noted the importance of opportunities to address risks to and improve the health of groundwater sources, the environment and ecosystems.</li> </ul>

## NSW Murray:

### Options 35-44: Limits to water availability in times of a changing climate

Support was expressed for options in this category, with feedback focused on the cloud seeding program and incomplete climate modelling.

Stakeholder and community involvement in decision making was also supported.

Options	Summary of feedback
<b>35. Better understand water use with data collection and analytics</b>	<ul style="list-style-type: none"> <li>• Support for understanding water use, which was noted as particularly important as the climate continues to change.</li> <li>• Noted that analysis should consider extensive consultation undertaken with community and industry stakeholders.</li> <li>• Suggestion for analysis to be conducted to understand water use in the context of more mature markets and for utilisation of private carryover to be incorporated into analysis.</li> <li>• Suggestion for new data and analytics to focus on methods to increase the proportion of surface water available to users.</li> </ul>
<b>36. Improve the understanding of groundwater sources and processes, risks and impacts</b>	<ul style="list-style-type: none"> <li>• Support for this option. However, it was suggested that this information may already be available.</li> <li>• Noted that this option may enable urban water supplies to be secured from recoverable groundwater.</li> </ul>
<b>37. Undertake a water dependent industry resilience study</b>	<ul style="list-style-type: none"> <li>• Support for this option, with a suggestion to involve stakeholders in decision making and to consider consultation already undertaken with community and stakeholders to inform this option.</li> <li>• Suggestion for this option to also include 'optimisation' to determine opportunities for the greatest resilience in the NSW Murray region.</li> </ul>
<b>38. Develop targeted education and capacity-building programs</b>	<ul style="list-style-type: none"> <li>• Support for this option to encourage constructive collaboration between government and stakeholders to improve water management and water use.</li> <li>• Suggestion to progress this option in consultation with a stakeholder advisory group.</li> </ul>
<b>39. Investigate water availability in the Murray region</b>	<ul style="list-style-type: none"> <li>• Support for this option, with a suggestion to progress this option in consultation with a stakeholder advisory group.</li> <li>• Suggestion for this option to be reworked based on a better understanding of the Murray Darling Basin Agreement and based on an investigation into existing water management rules and behaviours that underpin underuse.</li> </ul>

Options	Summary of feedback
40. Investigate non-residential water efficiency (towns and industries)	<ul style="list-style-type: none"> <li>• Support for this option to improve the management and efficient use of water in the region. This includes investigating alternatives to flood irrigation practices, diversifying into water-efficient industries and exploring technologies and water management advancements to minimise the evaporation of stored and run-off-river water.</li> <li>• Support for users, aside from irrigators, finding efficiencies.</li> <li>• Suggested that water savings are returned to the environment.</li> <li>• Noted that this option is not considered to be a priority as the amount of water used is not substantial.</li> </ul>
41. Investigate the expansion of cloud seeding in key water supply catchments	<ul style="list-style-type: none"> <li>• Mixed views on this option, with a suggestion for this option to be amended to explore the efficacy of the current cloud seeding program in the context of climate change.</li> <li>• Concern about the expansion of cloud seeding in water catchments.</li> </ul>
42. Undertake joint exploration for minerals and groundwater with the NSW Geological Survey	<ul style="list-style-type: none"> <li>• Support for this option, with a desire to consider the water needs mining may require.</li> <li>• Noted that it is not sustainable to put additional pressure on groundwater sources to provide water security during drought and a drying climate.</li> </ul>
43. Review water markets and trade	<ul style="list-style-type: none"> <li>• Support for this option. However, it was noted that a review is already underway in response to the Australian Competition and Consumer Commission and this option should consider the recommendations made from the ACCC review.</li> <li>• Support for stakeholders to be involved in decision making for this option.</li> <li>• Suggestion for a public water register to be developed to support this option.</li> </ul>
44. Consider hydrological processes in bushfire management	<ul style="list-style-type: none"> <li>• Support for this option, provided it considers the status of aquatic fauna, the opportunity for 'cool burns' to be allowed to reduce bushfire severity and risk and involves stakeholder involvement in expanding bushfire management.</li> </ul>

## NSW Murrumbidgee:

### Options 33-43: Limitations of existing water infrastructure, delivery and operations

There was mixed feedback to these options, with a focus on ensuring water infrastructure, delivery and operations do not contribute to further degradation of the riverine and floodplain ecology.

Concern was expressed that several options in this category conflict with the NSW Water Management Act (2000) objective to protect, enhance water sources, ecosystems, biological diversity and water quality.

Greater stakeholder and community involvement in decision making was strongly encouraged.

Options	Summary of feedback
<b>33. Investigate alternatives for increased storage capacity</b>	<ul style="list-style-type: none"><li>• Mixed views on this option, with support for increased capacity of water storage. However, concern was also expressed for increase to water storage capacity due to potential conflicts with NSW Water Management Act (2000) objective to protect, enhance water sources, ecosystems, biological diversity and water quality.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>34. Investigate new storage at Lake Mejum–Coolah</b>	<ul style="list-style-type: none"><li>• Mixed views on this option, with a support for increased storage and for a feasibility study to be undertaken for this project. However, concern was also expressed for increase to water storage capacity due to potential conflicts with NSW Water Management Act (2000) objective to protect, enhance water sources, ecosystems, biological diversity and water quality.</li><li>• Noted that it should be made clear that this option is a new project that will go beyond previous investigations.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>35. Install gravity pipeline along Tumut River</b>	<ul style="list-style-type: none"><li>• Mixed views on this option, with support for this option to address challenges posed by Tumut River channel capacity constraints. However, concern was expressed about degradation of the riverine and floodplain ecology and habitats.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>36. Raise Blowering Dam</b>	<ul style="list-style-type: none"><li>• Mixed views on this option, with support for further assessment, to understand the potential for reducing the likelihood of Snowy Hydro release restrictions, maximising water conservation and improving floodplain management. However, concern was expressed about degradation of the riverine and floodplain ecology and habitats.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>37. Enlarge Burrinjuck Storage Reservoir</b>	<ul style="list-style-type: none"><li>• Mixed views on this option, with support expressed for enlarging the Reservoir. However, concern was expressed about degradation of the riverine and floodplain ecology and habitats and impacts on small local businesses, e.g. caravan parks and tourist businesses.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>38. Expand Bundidgerry off-river storage and a new transfer canal</b>	<ul style="list-style-type: none"><li>• Concern was expressed about degradation of the riverine and floodplain ecology and habitats and the sustainability of this option.</li><li>• Noted that construction of Lake Coolah may negate the need to progress this option.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>39. Augment Tombullen Storage and modify operational changes</b>	<ul style="list-style-type: none"><li>• Concern expressed about degradation of the riverine and floodplain ecology and habitats.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>

Options	Summary of feedback
<b>40. Investigate inter-regional connections</b>	<ul style="list-style-type: none"> <li>• Concern expressed about degradation of the riverine and floodplain ecology and habitats.</li> <li>• Question raised whether this option considers the ACT.</li> <li>• Suggestion to involve stakeholders in decision making for this option.</li> <li>• Suggestion for inclusion of an additional option, similar to Option 6 in the Lachlan Regional Water Strategy, for an 'inter-regional pipeline connections project investigation' to address water security for the Cobar from Murrumbidgee system.</li> </ul>
<b>41. Change environmental releases from Murrumbidgee storages</b>	<ul style="list-style-type: none"> <li>• Concern expressed about degradation of the riverine and floodplain ecology and habitats.</li> <li>• Suggestions for this option to include actions to protect releases from Tantangara Dam from extraction, allow water allocations to be carried over between water years in the Snowy Scheme.</li> <li>• Suggestions for increased flexibility of environmental flow management in the Upper Murrumbidgee and for adequate management of environmental flow allocations.</li> <li>• Noted the desire for greater clarity to be provided around the purpose of this option and implications for achieving environmental and productive outcomes.</li> <li>• Suggestion to involve stakeholders in decision making for this option.</li> </ul>
<b>42. Review flood management and airspace operation</b>	<ul style="list-style-type: none"> <li>• Mixed views on this option, with a suggestion for part of this option to involve reviewing the appropriateness of Tumut River channel capacities referenced in the water sharing plan for the Murrumbidgee.</li> <li>• Concern expressed about degradation of the riverine and floodplain ecology and habitats.</li> <li>• Suggestion to involve stakeholders in decision making for this option.</li> </ul>
<b>43. Investigate groundwater desalination for industry and towns</b>	<ul style="list-style-type: none"> <li>• Concern expressed about degradation of the riverine and floodplain ecology and habitats.</li> <li>• Suggestion to involve stakeholders in decision making for this option.</li> </ul>

## NSW Murrumbidgee:

### Options 44-53: Limits to water availability in times of a changing climate

Support was expressed for options within this category, with a focus on the efficacy and cost of the current cloud seeding program in the context of climate change predictions.

Feedback identified the need to consider bushfire and climate change impacts and for further consultation and engagement with the community and stakeholders on issues explored through these options.

Options	Summary of feedback
<b>44. Better understand water use with data collection and analytics</b>	<ul style="list-style-type: none"><li>• Support for improving understanding of water use through data and analytics.</li><li>• Suggestion for this option to align with an audit of ecological assets and sites.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>45. Improve the understanding of groundwater sources and processes, risks and impacts</b>	<ul style="list-style-type: none"><li>• Support for improving understanding of groundwater sources, processes, risks and impacts.</li></ul>
<b>46. Undertake a water-dependent industry resilience study</b>	<ul style="list-style-type: none"><li>• Support for a water-dependent industry study to be undertaken.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>47. Develop targeted education and capacity building programs</b>	<ul style="list-style-type: none"><li>• Support for education and capacity building programs.</li><li>• Suggestion for this option to include considerations to better optimise waste allocations, incorporate lessons learned from previous events and use up to date information for planning and preparedness.</li><li>• Suggestion for this option to investigate water availability and management of flows in a changing climate and consider hydrological processes to manage impacts of drought and fire.</li><li>• Suggestion to involve stakeholders in decision making for this option and to engage with Aboriginal communities and stakeholders.</li></ul>
<b>48. Investigate water availability in the Murrumbidgee region</b>	<ul style="list-style-type: none"><li>• Support for investigating water availability.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li></ul>
<b>49. Investigate non-residential water efficiency (towns and industries)</b>	<ul style="list-style-type: none"><li>• Support for investigating non-residential water efficiency.</li><li>• Suggestion to involve stakeholders in decision making for this option.</li><li>• Suggestion to develop additional options to improve the management and efficient use of water in the region and to reduce domestic and industry demand. This includes investigating alternatives to flood irrigation, diversifying into water-efficient industries, investing in water efficiency measures and evaluating options for water recycling and reuse.</li></ul>
<b>50. Investigate expansion of cloud seeding in key water supply catchments</b>	<ul style="list-style-type: none"><li>• Mixed views about this option, with support expressed for the investigation. However, a suggestion was made to amend this option to address the efficacy and cost of the current cloud seeding program in the context of climate change predictions.</li></ul>
<b>51. Undertake joint exploration for groundwater with the NSW Geological Survey</b>	<ul style="list-style-type: none"><li>• Mixed views about undertaking joint exploration for groundwater.</li></ul>

Options	Summary of feedback
<b>52. Review water markets and trade</b>	<ul style="list-style-type: none"> <li>• Noted that this option should also include inter-jurisdictional trading between the ACT and NSW and that an integrated approach between land and water use is needed.</li> <li>• Suggestion to involve stakeholders in decision making for this option.</li> <li>• Suggestion for the strategy to include more than one option for strengthening management of water trading and security, particularly for the water utilities in the upper catchment who are seeking additional water to support growth.</li> </ul>
<b>53. Consider hydrological processes in bushfire management</b>	<ul style="list-style-type: none"> <li>• Considered to be important given the bushfire risk in the upper catchment.</li> <li>• Noted that this option should consider vulnerable aquatic fauna and endangered species in the area which could be impacted by bushfire.</li> </ul>

## Additional options

Some participants proposed additional options for the department to consider as part of this phase 1 feedback.

### NSW Murray: additional options suggested for consideration

NSW MURRAY	
Option recommendation	Summary of feedback
<b>Channel sharing arrangements</b>	<ul style="list-style-type: none"><li>• Support for an additional option to improve channel sharing arrangements for environmental water releases.</li></ul>
<b>Murray-Darling Basin Plan impact review</b>	<ul style="list-style-type: none"><li>• Support for options that improve understanding of how the Murray-Darling Basin Plan might impact water users and to identify options to address these impacts.</li><li>• Reviewing the Basin Plan pre-requisite policy measures, rules and implementation was also suggested.</li></ul>
<b>Snowy storage</b>	<ul style="list-style-type: none"><li>• Support for an additional option to consider better utilising Snowy storages to increase water security.</li></ul>

### NSW Murrumbidgee: additional options suggested for consideration

NSW MURRUMBIDGEE	
Option recommendation	Summary of feedback
<b>Water licence reliability</b>	<ul style="list-style-type: none"><li>• Support for additional options to investigate and remediate declining water licence reliability.</li></ul>
<b>Channel sharing arrangements</b>	<ul style="list-style-type: none"><li>• Support for an additional option to improve channel sharing arrangements for environmental water releases.</li></ul>
<b>Murray-Darling Basin Plan impact review</b>	<ul style="list-style-type: none"><li>• Support for options that improve understanding of how the Murray-Darling Basin Plan might impact water users and to identify options to address these impacts.</li><li>• Reviewing the Basin Plan pre-requisite policy measures, rules and implementation was also suggested.</li></ul>
<b>Upper Murrumbidgee River improvements</b>	<ul style="list-style-type: none"><li>• Support for an audit of ecological sites and flow regimes in the Upper Murrumbidgee to be undertaken and included in the draft strategy</li><li>• Support for an additional option for NSW, Victoria and Commonwealth governments undertake a transparent and accountable review of the Snowy Water Inquiry outcomes implementation deed to improve the Upper Murrumbidgee River.</li></ul>
<b>Research, technology and educate</b>	<ul style="list-style-type: none"><li>• Support for additional options for research priorities, technology adaption and education initiatives.</li></ul>

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# Response to feedback



Image courtesy of Destination NSW.  
Citrus Trees, Griffith.

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## Response to feedback

Since the publication of the draft NSW Murray and Murrumbidgee regional water strategies, the NSW Water Strategy had been developed. Some of the issues highlighted in the NSW Murray and Murrumbidgee regional water strategies and from communities in the NSW Murray and Murrumbidgee regions are consistent challenges across the state. These state-wide issues have been included as priority focus areas in the NSW Water Strategy and are outlined below.

Your feedback has been used to refine the key challenges that we need to focus on in the final NSW Murray and Murrumbidgee regional water strategies.

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### Further consultation

We have heard your feedback requesting more consultation on the regional water strategies, and for stakeholders to have a greater say in how options are shortlisted and prioritised.

As a result, the department is publishing discussion papers with a refined set of regional challenges and additional modelling analysis to spark discussion ahead of the options short listing process. We will then prepare a second round of consultation papers and engage with all stakeholders through public exhibition on a shortlist of actions.

### Climate datasets and modelling

The new climate datasets and updated modelling that underpin the draft NSW Murray and Murrumbidgee regional water strategies are an important advance on previous climate work. We can now better assess the likelihood of a range of drought conditions and the impacts on surface water security and reliability over a wider range of climate conditions. This is a major improvement from our previous reliance on the observed historical records only.

The key next step is to work with our stakeholders and the community to detail how this climate data should be used.

A priority action in the NSW Water Strategy is for the NSW Government to review water allocation frameworks and water sharing plan provisions in response to a better understanding of extremes in water availability.

This will include exploring risk management approaches for a more adaptive water allocation and accounting framework, and understanding how the new climate data can inform this work. Progressing this requires detailed and focused engagement with our stakeholders and the community. It cannot happen overnight. It also depends on stakeholders and communities having a workable understanding of these risks and having conversations about the level of risk they are willing to accept.

The new climate data is already being used in business cases to assess the impacts and benefits of proposed major state water infrastructure. This information will be useful for local water utilities and other stakeholders

in assessing the long-term water security of individual towns. Making this data available in a useable format is a priority under the Town Water Risk Reduction Program.

We use a range of plausible scenarios when assessing options proposed in the regional water strategy. The full modelling (based on the historical record, stochastic long-term data and dry climate change scenarios) will be complete to enable a detailed assessment of the options. Dry climate change is one scenario, but the historical data and stochastic long-term data include both wet and dry sequences. The dry climate change scenario is not used for decisions on water access such as for Water Sharing Plans, water resource plans and available water determinations.

The seemingly long projections and planning timeframes are needed to ensure we are ready to adapt to a range of climate scenarios by implementing the right infrastructure and management arrangements in time for when they will be needed.

As with all types of science, we need to continually improve the data. The next step to improving the climate data and modelling method is to apply it to assess climate impacts on groundwater and associated risks. This is being progressed through the NSW Groundwater Strategy.

### Water security, availability and use

We acknowledge the feedback we received about water security and how water is made available and used across a range of stakeholders. In particular, we acknowledge the concerns with regards to the option of water access licence conversions and its potential to negatively impact existing general security licences and other environmental, economic and social outcomes.

We will also seek to explore options that will enable us to further investigate the trends impacting the reliability of water licences as well as to better understand people's behaviour around water use and assumptions of water availability. We will engage with our stakeholders when further developing these options.

Individual infrastructure options will be assessed as part of the rapid cost benefit analysis when shortlisting options. Each infrastructure option has separate benefits, costs and impacts localised to the area and the catchment.

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The NSW Government has placed an enhanced state-wide focus on sustainable groundwater management and a draft NSW Groundwater Strategy was made publicly available for comment mid-2022. Opportunities to progress region-specific groundwater options in addition to state level actions will be explored in the final NSW Murray and Murrumbidgee regional water strategies.

## Environmental health, ecosystems and water quality

The feedback on the draft NSW Murray and Murrumbidgee regional water strategies was supportive of the options that improve environmental and ecosystem health and increase the connectivity throughout the NSW Murray and Murrumbidgee catchments. We are already looking to supplement our existing long list of options to pick up ideas that were raised by stakeholders during the public exhibition. These include options to improve environmental watering delivery and fish populations, and to address key water quality challenges for both surface water and groundwater.

We acknowledge the feedback we received about the SDLAM projects, but note that SDLAM projects are already well advanced and we are considering ways for the NSW Murray and Murrumbidgee regional water strategies to complement SDLAM work.

We also noted stakeholder and community concerns regarding several options that may have a negative impact on the environment, ecosystem health and basic landholder rights. This feedback will help us to inform the options assessment process.

## Improving water-related opportunities for Aboriginal people

One of the primary objectives of the draft NSW Murray and Murrumbidgee regional water strategies is to recognise and protect Aboriginal water rights, interests and access to water. It is also priority 2 in the NSW Water Strategy.

While our engagement with Aboriginal people in the NSW Murray and Murrumbidgee regions was limited, the department remains committed to having an ongoing dialogue with Aboriginal people as we progress through the options assessment process and the development of the final Murray and Murrumbidgee regional water strategies and the Aboriginal Water Strategy.

Unlike many other challenges in the region, the fundamental water rights of Aboriginal people is still a major gap in water management across NSW and the Basin. Addressing this issue will set up a framework for addressing the Aboriginal community options identified in the draft regional water strategies. These options will be progressed through a State Aboriginal Water Strategy. Opportunities to progress region-specific

Aboriginal community options, in parallel with this state-level action, will be explored in the final NSW Murray and Murrumbidgee regional water strategies.

## Management of Land and Water

We have heard from stakeholders including Aboriginal people about how the inter-connectedness of the NSW Murray and Murrumbidgee geographical areas as well as the intricacies between land and water management is fundamental to effective water management in the region.

There is an important link between land use and water management. How land is used determines water management needs – whether water is servicing urban developments or being provided to other uses (including industry, environmental, cultural or recreational needs). Land use planning decisions and development control also have a key role to play in protecting water sources.

Future water reliability and security in a changing climate will be critical to land use, urban development planning decisions and industry development initiatives in regional NSW. In particular, there is an opportunity to consider water availability and impacts much earlier and more strategically through the planning system. We have begun this work by using the evidence in the regional water strategies to inform:

- The next generation of regional plans, including the Riverina Murray Regional Plan 2041, the Far West Regional Plan 2036 and the South East and Tablelands Regional Plan 2036.
- Future work on special activation precincts – including the Wagga Wagga Special Activation Precinct and the Snowy Mountains Special Activation Precinct.
- Regional job precincts such as at Albury and at South Jerrabomberra.

We acknowledge that the boundaries of these plans and strategies do not always align with the boundaries of the NSW Murray and Murrumbidgee regional water strategies, hence the NSW Water Strategy has committed to better integrate land use planning, development approvals and water management (NSW Water Strategy Action 4.4) across the state. In addition, the NSW Water Strategy commits to adopting a more intense, state-wide focus on improving water quality (NSW Water Strategy Action 3.5) through the definition of clear roles, accountabilities and frameworks for monitoring, assessing and addressing water quality risks across the state.

The Department of Primary Industries – Agriculture is undertaking a three-year program to identify and map important agricultural land. Knowing where this land is situated and understanding value and contribution to the state's economy and food security will assist in making decisions about current and future land uses and their

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water needs. A comprehensive and consistent approach to collecting water statistics and related information will greatly help this process.

We have also acknowledged the strong calls for improvements to the inter-jurisdictional water sharing and management arrangements, noting the complexity of current interstate agreements and rules impacting both regions. We will explore mechanisms to introduce inter-jurisdictional working groups to support better environmental, social and economic outcomes in the region.

## Strategy development and implementation

Further consultation is very important as we again engage with the general community and stakeholders about how the draft regional water strategies will be developed and finalised. This will also assist development of the implementation plans to be included in the final strategies. Future consultation will again include face-to-face meetings, online webinars and a formal submission process.

We will more broadly consult with all stakeholders including Joint Organisations, irrigation and environmental representatives and Aboriginal stakeholders. Engagement with Aboriginal stakeholders and communities will continue to be culturally appropriate.

We acknowledge that various areas such the Upper Murrumbidgee and NSW Murray Valley have unique issues around catchment and river health that need to be considered. We will include this as we examine the options and challenges and as we consult further with communities.

We also need to ensure that regional water strategies align with government commitments and other water management plans, policy, reforms and legislation which is supported across both regions.

## Next steps

Your feedback during the public exhibition has helped us to refine the key challenges that the strategies for both regions need to focus on. Importantly, we have listened to feedback from stakeholders that they want to be more involved in the development of the NSW Murray and Murrumbidgee regional water strategies. As a response, we have published two discussion papers that outline the key regional challenges to ensure we are focusing on the most important issues. A second draft Regional Water Strategy Consultation Paper for both the NSW Murray and Murrumbidgee regions, identifying a shortlist of options and proposed actions, will be realised in 2023 for stakeholder feedback. We expect to finalise the regional water strategies and implementation plans later in 2023.



Image courtesy of iStock.  
Murray River, Moama.



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**More information:**

[water.dpie.nsw.gov.au/plans-and-programs/regional-water-strategies](http://water.dpie.nsw.gov.au/plans-and-programs/regional-water-strategies)



Image courtesy of Department of Planning and Environment

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