

Targeted Engagement Session: Gwydir Regional Water Strategy

The Department of Planning and Environment convened a targeted engagement session on the Gwydir Regional Water Strategy in Moree on 8 June 2022. The session was during the public exhibition period of the strategy and provided the department with an opportunity to hear diverse perspectives ahead of its finalisation.

The session was run by an independent facilitator and attended by representatives of the following groups:

- Gomeroi/Kamilaroi First Nation
- Cotton Australia
- Gwydir Shire Council
- Gwydir Valley Irrigators Association
- Moree Shire Council
- Murray Darling Basin Authority
- Inland Rivers Network
- NSW Department of Planning and Environment - Water

The Commonwealth Environmental Water Office was an apology.

About the targeted session

The objective of the engagement session was to discuss shortlisted actions in the Gwydir Regional Water Strategy – Consultation Paper. The session focused on three themes:

- Connectivity
- Supporting regional economic resilience and diversification
- Developing ongoing arrangements for participation of Aboriginal people in water management

A summary of the main discussion points is given below.

Theme 1: Connectivity

Connectivity objectives

The department presented details on the connectivity actions in the Western Regional Water Strategy and their relationship to water resource access in the Gwydir valley.

The group was presented the proposed connectivity objectives.

- Reduce the impact of cease to flow periods
- Protect the first flush of water after an extended drought
- Support water quality and reduce risk of algal blooms forming
- Support fish migration

It was explained that connectivity is not intended to:

- maintain a constantly flowing river
- reduce the overall amount of water being taken out of rivers, consistent with limits set by the Basin Plan
- move productive use of water from one valley to another
- secure connectivity between groundwater and surface water

Points raised by participants

- Connectivity objectives were generally supported, with a range of 3.5 to 3.8 (out of 5) regarding the importance of each objective.
- First Nations water rights need to be reflected in all of the objectives.
- Objectives may need to consider the lifecycle requirements of smaller fish that are food sources for larger fish species.
- Connectivity objectives must be fair to all water users.

Proposed draft triggers under s324 of the *Water Management Act 2000*

The department presented draft triggers for temporary water restrictions (see table below) and initial analysis of the benefits and impacts of restricting lower priority licences in the northern tributaries and Barwon–Darling when Menindee Lakes is below 195 GL.

For the Gwydir valley, initial modelling predicts the restrictions could result in a 1% reduction in overall water take over the long-term.

	Implementing	Lifting
Wilcannia	Cease-to-flow for 120 days	400 ML/day for 10 days (or 4,000 ML)
Bourke	Cease-to-flow for 60 days	972 ML/day for 10 days (or 9,720 ML)
Menindee Lakes	Lakes fall below 195 GL Up to 12 months critical human needs Wetted habitats in Lake Wetherell	When there is enough water to restart the river
Northern valleys	Stage 4 drought or: Cease to flow for 30 days: Border Rivers: below Goondiwindi Weir Gwydir River: below Yarraman Macquarie: below Warren Weir Namoi: below Mollee Weir	Resumption of flow targets for each of the northern tributaries

Points raised by participants

- Participants queried what benefits would be achieved at Menindee Lakes by restricting water users in the northern valleys. The department explained that the intention and main benefit was to have enough water in Menindee Lakes to provide up to 12 months of water for critical human and environmental needs.
- Benefits and impacts will depend on when the restrictions are put in place. If restrictions keep water users in drought for an extra year, the economic impacts are more significant. The improvements achieved during an individual event would depend on the conditions of river, water and ecosystem at the time.
- Participants queried how the water is assumed to be stored in Menindee Lakes when it reaches 195 GL. The department clarified that the operational intention is to store the water in the upper lakes.
- The management of Menindee Lakes impacts when it falls below 195 GL, which at times cannot be controlled by water in the Northern Basin.
- Water security for Aboriginal people existed prior to infrastructure and that water security was supported by the Great Artesian Basin.
- The river needs the right grass, trees and ecology to be protected from the water in the first flush. The location of trees and plants help to maintain the river during the dry times. Rehabilitation of native trees and plants is important.
- Participants expressed a preference for rules over temporary water restrictions because it provides greater certainty and can allow for water to be taken at other times but acknowledged that rules may not suit all circumstances. In these instances temporary restrictions may still be needed.
- Participants expressed a strong desire to make sure any rules changes are clear and fair.

Are the proposed options effective in meeting the proposed connectivity objectives?

Participants were asked if they thought the options around changing the timing of when supplementary licences could take water or using Held Environmental Water would be effective in meeting the proposed connectivity objectives.

Points raised by participants

- The use of Held Environmental Water should be suspended until dry periods.
- Critical human needs for water should be protected over agricultural needs.
- The presented options wouldn't meet objectives as even if all supplementary water was left in the river it would not solve connectivity issues.
- In between years, not just low and high flow events/years are important for the environment.
- Is Held Environmental Water for the river/valley or for downstream users/valleys?
- Supplementary water can't meet connectivity objectives in all situations.

- Because Held Environmental Water delivery capacity is restricted it would be difficult to use it to assist with meeting connectivity targets.
- Short-lived fish species breed during the small flow events, so small events are still important as they can't survive the longer drought. Could small amounts of water be released for those species?
- Aboriginal/cultural water is not included in the discussion on connectivity. Aboriginal representation needs to be included in all discussions.
- Overall river health should be considered. Is just adding more water going to help solve problems? Or should overall river health be considered just as important?

Concluding remarks

In concluding discussion on this theme, participants commented that:

- there needs to be a clear definition of connectivity and when actions to improve it are relevant, i.e. after an extended drought
- connectivity is still important in-between droughts, not only after a long drought
- water sharing plans cover standard operations and therefore connectivity actions should only pertain to periods after drought.

Theme 2: Supporting regional economic resilience and diversification

The department presented details on why supporting future diversification could build regional resilience to increasing climate variability and extreme weather events.

- Agriculture employs half of the Gwydir region's workforce and contributes significantly to economic output, however irrigated agriculture relies on low reliability surface water licences.
- Droughts of multiple years impact the region's economy. The frequency of consecutive years of low water availability for general security licence holders could increase.
- Agricultural industries will continue to underpin the regional economy in coming decades; however there are opportunities to diversify.

Supporting regional economic diversification

Points raised by participants

The group was asked for their thoughts on how we can support the region's existing agricultural industry as well as diversification into new industries.

The group made the following comments regarding diversification.

- Diversification has been attempted for years. It needs to be realistic and focus on opportunities that can only be done in the region and not on the east coast.
- Some efforts had been made by local councils to attract abattoirs and greenhouses to the area, but lack of reliable water was reducing interest.

- The availability of a mixed licence type that includes groundwater and surface water (previously known as a conjunctive use licence) could help attract businesses such as abattoirs.
- Development of a tourism industry led by Aboriginal people has significant potential. However development of the industry is restricted by existing skills and capabilities. There needs to be a focus on capability partnerships.
- A framework for converting general security to high security licences would need to be careful about the volume of water that is set aside for its delivery. This may result in a higher conversion factor.
- Converting licences to high security would help to attract diversified business to the Moree special activation precinct.
- The lack of access to Gwydir Wetlands for both for Aboriginal and non-aboriginal people is a missed opportunity for tourism and recreation.
- Aboriginal participants also detailed their spiritual and historical connection to the wetlands.

The group also made the following general comments.

- The first priority of government should be to make sure critical human critical needs are met.
- The system is capped so there is no 'new' water available. Therefore we need to get smarter at using water, such as collecting runoff from solar panels. The stormwater harvesting regulatory framework needs to be amended to support this.
- If future droughts are likely to be more extreme, the environment loses more than other water users.
- Industry and markets need clear rules (from government) to make investment decisions.

Improve public access to climate information and water availability forecasts

The department presented information on this shortlisted action, which would improve existing platforms and products to provide information about water availability and climate change in forms that are suitable for water users and their business planning needs.

Participants were what information they needed to make business decisions and to assist with adaptation to a changing climate.

Points raised by participants

Participants had a variety of views, which included:

- there is a lot of information available, and any type of forecast needs to be taken with a grain of salt
- many water users just use water when it is in their water account and don't use predictive climate or water availability forecasts
- a system that shows accurate in-event (during event) flow forecasting would be very helpful for decision making and could result in significant savings for businesses.

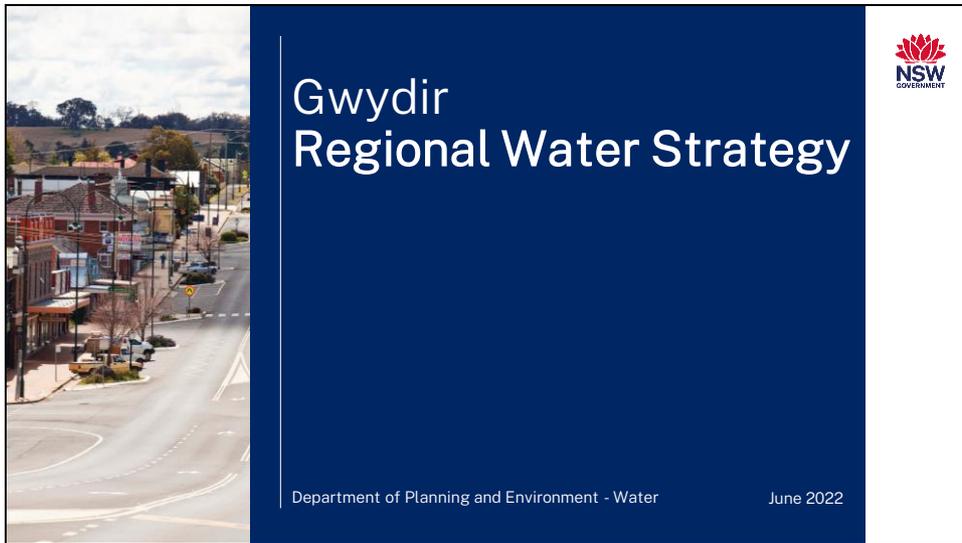
Theme 3: Developing ongoing arrangements for participation of Aboriginal people in water management

The department presented information on Aboriginal-focused actions that have been shortlisted.

Points raised by participants

- When times are dry, Aboriginal and non-aboriginal communities need to work together. The name of the action doesn't matter.
- There needs to be capability partnerships to support the start-up of Aboriginal businesses, combining aboriginal knowledge with existing companies would boost work for aboriginal businesses.
- The health of the river determines food security for Aboriginal people. Improved river health means improved fish health which improves food security for Aboriginal people.

Attachment A: Session presentation



Regional Water Strategy objectives



-  **Deliver and manage water for local communities**
Improve water security, water quality and flood management for regional towns and communities.
-  **Enable economic prosperity**
Improve water access reliability for regional industries.
-  **Recognise and protect Aboriginal water rights, interests and access to water**
Including Aboriginal heritage assets.
-  **Protect and enhance the environment**
Improve the health and integrity of environmental systems and assets, including by improving water quality.
-  **Affordability**
Identify least cost policy and infrastructure options.

2

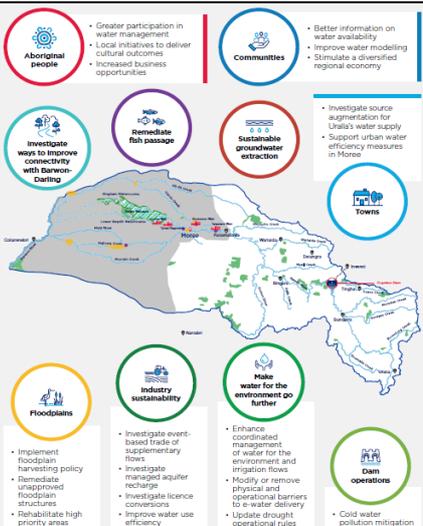


Regional challenges

Where should we focus first?

- Reducing water service risks and improving water supply resilience for the region's towns and villages
- Supporting licence holders in the face of declining water availability
- Dismantling barriers to Aboriginal water rights
- Delivering water to the end of the river system and connected valleys
- Improving the health and resilience of the region's aquatic ecosystems

5



Aboriginal people

- Greater participation in water management
- Local initiatives to deliver cultural outcomes
- Increased business opportunities

Communities

- Better information on water availability
- Improve water modelling
- Stimulate a diversified regional economy

Investigate ways to improve connectivity with Barwon-Darling

Remediate fish passage

Sustainable groundwater extraction

- Investigate source augmentation for Uralla's water supply
- Support urban water efficiency measures in Moree

Towns

Floodplans

- Implement floodplain harvesting policy
- Remediate unapproved floodplain structures
- Rehabilitate high priority areas

Industry sustainability

- Investigate event-based trade of supplementary flows
- Investigate managed aquifer recharge
- Investigate licence conversions
- Improve water use efficiency

Make water for the environment go further

- Enhance coordinated management of water for the environment and irrigation flows
- Modify or remove physical and operational barriers to e-water delivery
- Update drought operational rules

Dam operations

- Cold water pollution mitigation

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Today we want to discuss shortlisted actions using the following themes:

- **Theme 1: Connectivity**
- **Theme 2: Supporting regional economic resilience and diversification**
- **Theme 3: Developing ongoing arrangements for participation of Aboriginal people in water management**

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Themes and shortlisted actions

Draft Gwydir Regional Water Strategy

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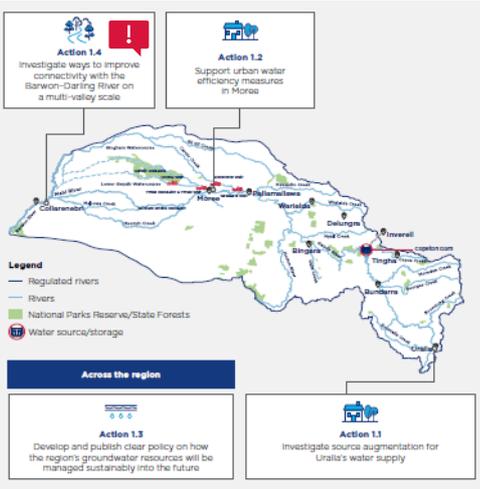
Common questions

- How could this action benefit or impact the people or group you represent?
- What are the opportunities or emergent issues to implementing this action?
- Are there other actions that you would like to see prioritised ahead of this action?

8

Theme 1: Connectivity

Water for critical human and environmental needs



We need to explore whether we need to enable water to flow across connected systems at important times.



Context for connectivity actions

- The Barwon-Darling and Lower Darling rely on flows from upstream catchments
 - Approx 6% of inflows into the BD come from the Gwydir
- Connectivity is important during wet, dry and average years
- Connectivity during extended dry periods is most challenging
 - Water management can influence short cease to flow periods, but not long dry periods
- Some stakeholders believe water is being taken by lower priority licences upstream when downstream needs have not been met



There is no clear agreement on what an acceptable level of connectivity is and how we can improve it 11

Connectivity objectives – what should we focus on?



Proposed connectivity objectives

- Reduce the impact of cease to flow periods
- Protect the first flush of water after an extended drought
- Support water quality and reduce risk of algal blooms forming
- Support fish migration

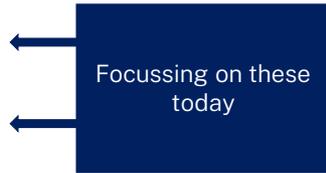
The work is not intended to:

- maintain a constantly flowing river
- reduce the overall amount of water being taken out of rivers, consistent with limits set by the Basin Plan
- move productive use of water from one valley to another
- secure connectivity between groundwater and surface water

How can we achieve these objectives?



1. Use emergency powers in the legislation (temporary water restrictions)
2. Change the timing around when licence holders can take water
3. Major reform programs
 - Overhaul water sharing arrangements
 - New or larger infrastructure



Proposed connectivity objectives



- Reduce the impact of cease to flow periods
- Protect the first flush of water after an extended drought
- Support water quality and reduce risk of algal blooms forming
- Support fish migration



- Do you agree with these objectives?
- If not, how do you propose we amend the objectives?

1. Proposed draft triggers under s324 of the *Water Management Act 2000*



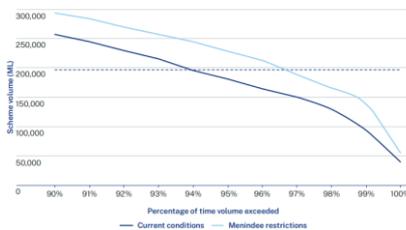
Objective: protect the first flush of water after an extended dry period

	Implementing	Lifting
Wilcannia	Cease-to-flow for 120 days	400 ML/day for 10 days (or 4,000 ML)
Bourke	Cease to flow for 60 days	972 ML/day for 10 days (or 9,720 ML)
Menindee Lakes	Lakes fall below 195 GL - Up to 12 months critical human needs - Wetted habitats in Lake Wetherell	When there is enough water to restart the river
Northern valleys	Stage 4 drought or: cease to flow for 30 days: • Border Rivers: below Goondiwindi Weir • Gwydir River : below Yarraman • Macquarie: below Warren Weir • Namoi: below Mollee Weir	Resumption of flow targets for each of the Northern tributaries

1. Initial analysis of 195GL Menindee target



Menindee Lakes volumes over time when applying restrictions when Menindee Lakes is below 195GL



Region	Reduction in overall water take
Border Rivers	1%
Gwydir	1%
Namoi	1%
Macquarie	No change
Barwon-Darling	Small reduction likely

Modelling assumptions:

- use total Menindee storage (not active) across all lakes.
- Restricted supplementary licences, B-Class licences, C-Class licences when the lakes were below 195GL and lifted when lakes were above 250GL (total storage)
- Data does not include last drought

Temporary water restriction triggers



- Do you support the proposed draft triggers?
- If not, which ones don't you support and why?
- Would you prefer implementing triggers through rules rather than temporary water restrictions?

2. Will restricting lower priority licences help meet downstream connectivity needs?



Target	Trigger for restrictions
Menindee Lakes and Lower Darling Protect the first flush and support drought recovery.	Restrictions could be implemented if Menindee Lakes Storage [®] is forecast to fall below 195 GL. If releases have ceased below the Menindee Lakes, restrictions would not be lifted until the Lakes were forecast to have enough water to provide up to 12 months of water for human needs and allow the river to be restarted.
Northern Valleys Protect the first flush and support drought recovery.	Cease to flow for 30 days: • Border Rivers: below Goondiwindi Weir • Gwydir River: below Yarraman • Macquarie: below Warren Weir • Namoi: below Mollee Weir. Resumption of flow triggers are being developed for each of the Northern tributaries for lifting restrictions.
Algal suppression Preserve a flushing flow event to break up and disperse algal blooms.	To achieve a flow of 3,000 ML/day for 7 days at Wilcannia if flows are below the following triggers throughout the spring/summer period: a. Walgett – 250 ML/d b. Brewarrina – 510 ML/d c. Bourke – 450 ML/d d. Wilcannia – 350 ML/d.
Fish migration Preserve events needed for fish dispersal, spawning, and migration at appropriate times of the year.	Achieve the following: • Dispersal and condition: 15,000 ML/d for 15 days at Bourke between July and September • Spawning: 15,000 ML/d for 15 days at Bourke between October and April • Migration: 14,000 ML/d for 15 days at Brewarrina between October and April. These targets will be revised once fishways are installed.

We have looked at:

- Flows needed to meet connectivity objectives
- Whether changing the timing of water taken by lower priority licences helps improve downstream needs
- High level impact analysis

2. Will restricting lower priority licences help meet downstream connectivity needs?



Objective	Effectiveness in meeting objective	Impacts on diversions over the long term
Reduce impact cease to flow	N/A	N/A
Protect first flush	✓ 3% reduction in time Menindee Lakes is below 195GL	Initial estimate of potential change in overall water taken by licences: Gwydir: 1% reduction Namoi: 1% reduction
Algal suppression	✓	Changes in total long-term diversions: Gwydir: 3% reduction Namoi: 3% reduction
Fish migration	Minimal benefits	

19

2. Can general security held environmental water help meet downstream needs?



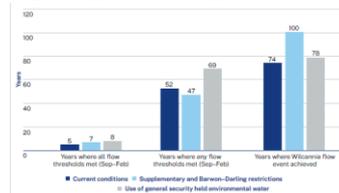
- Held environmental water could help meet lower flow targets, but limited by volume.
- Restrictions on supplementary licences could help meet higher flow targets but the timing may not align with needs



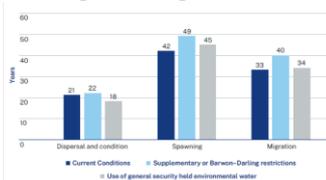
Note these are theoretical scenarios that compare using entire HEW portfolio with reducing all supplementary licences.

Removing all supplementary licences OR using the entire HEW portfolio will have impacts that have not been analysed

Algal suppression targets



Fish migration targets



20

Restricting lower priority licences and using held environmental water (GSE)



- Are these options effective in meeting the proposed connectivity objectives?
- What additional information or analysis do we need to undertake to understand trade-offs?
- What options should we consider to mitigate or offset impacts?

21

2. What are the operational constraints?



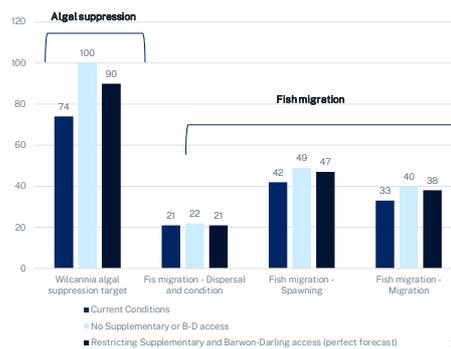
Approach relies on accurate forecasting:

- Impacts on licence holders depend on how accurately we can forecast.
- Benefits do not change substantially
- We cannot implement the targets by using flow forecasting alone

Options on a way forward if the targets are implemented:

- Rules based approach – clearer but less effective
- Operational decision making – more complex operationally but could be more effective

Number of years the algal suppression and fish migration targets are met under a perfect forecasting scenario compared to a bookend scenario by removing all lower priority licences



22

Implementation approach



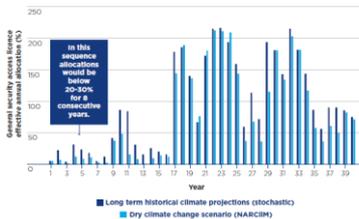
- Do you have a preferred implementation approach?
 - Rule based triggers (similar to resumption of flow rule in Barwon-Darling Water Sharing Plan)
 - Operational decision making – more complex operationally but could be more effective

23

Theme 2: Supporting regional economic resilience and diversification

- Agriculture employs half of the Gwydir region’s workforce and contributes significantly to economic output
- Irrigated agriculture relies on low reliability surface water licences
- Droughts of multiple years impact the region’s economy. The frequency of consecutive years of low water availability for general security licence holders could increase.

Figure 8. Effective annual allocations for general security licences under different climate scenarios
 The graph shows one potential 40-year sequence from the 10,000-year dataset we have developed. It shows the end of year effective annual allocations in the regulated Gwydir River could be low for extended periods of time under long term historic and long term climate projections. In this 40-year sequence, general security allocations would be less than 50% over an 8-year period in the 2017 to 2020 drought, effective annual allocation was below 50% for 2 consecutive years.



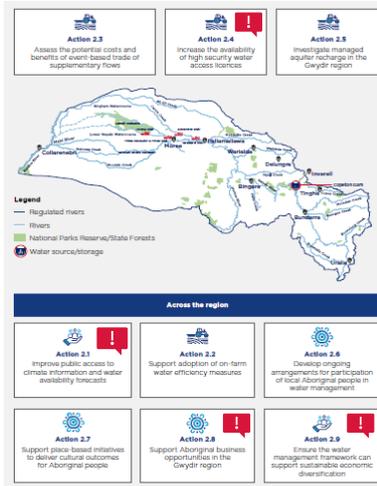
% of stochastic runs with GSE effective allocation below 10–50% for 3, 5 & 8 consecutive years

Consecutive years	Effective end of water year allocation				
	10%	20%	30%	40%	50%
3	2.7%	13.5%	33.4%	52.3%	69.3%
5	0.4%	2.9%	10.3%	21.8%	39%
8	0%	0%	0.5%	3.7%	10.2%

% of NARCIIM runs with GSE effective allocation below 10–50% for 3, 5 & 8 consecutive years

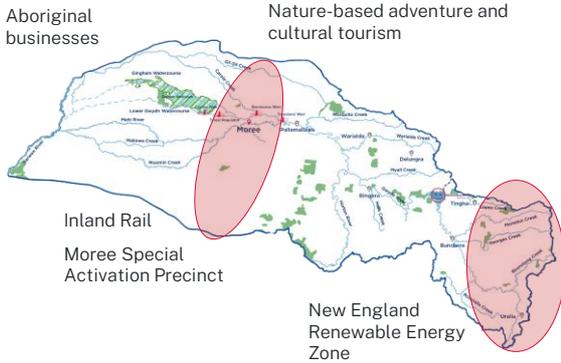
Consecutive years	Effective end of water year allocation				
	10%	20%	30%	40%	50%
3	18	45.9	69.9	84.8	92.1
5	3.2	20.7	40.5	58.6	71.9
8	0	3.6	14.5	23.8	37.4

Sustainable water resources for new and existing users



Agricultural industries will continue to underpin the regional economy in coming decades; however supporting future diversification could build regional resilience to increasing climate variability and extreme weather events.

Supporting sustainable economic diversification



- How do we support the existing agricultural industry and diversification into new industries?
- What are the economic opportunities for First Nations peoples?

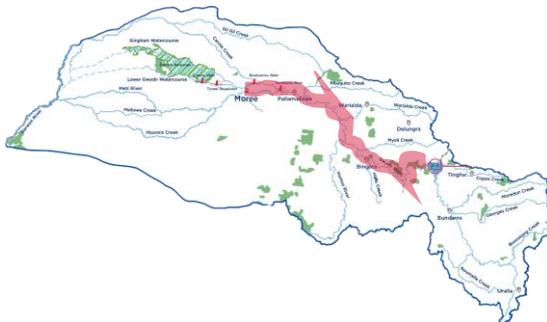
For more detail on this action see **pages 75–77** of the Gwydir Consultation Paper.

27

Increase the availability of high security water licences



Convert 41 GL of general security licences to 18 GL of high security licences.



- Do you see there being appetite for conversion of general security licences to high security licences?

For more detail on this action see **pages 66–68 and 126–129** of the Gwydir Consultation Paper.

28

Improve public access to climate information and water availability forecasts



Improve existing platforms and products to provide information about water availability and climate change in forms that are suitable for water users and their business planning needs

For more detail on this action see **pages 62–63** of the Gwydir Consultation Paper.



- What water availability or climate information and information products do you need to make decisions for your business?
- What else is needed to help industry adapt to a changing climate?

29



Theme 3: Developing ongoing arrangements for participation of Aboriginal people in water management

Develop ongoing arrangements for participation of Aboriginal people in water management



Aboriginal communities told us we need to

- Earn their trust
- Acknowledge needs differ between communities
- Adopt flexible approaches that can be driven locally

Improving arrangements will assist implementation other actions:

- Support place-based initiatives to deliver cultural outcomes for Aboriginal people
- Support Aboriginal business opportunities



31

Attachment B: Post It note feedback on actions

Proposed action	Participant feedback
Temporary water restrictions	Any restrictions have impacts but that doesn't mean they shouldn't occur. But there needs to be certainty they will achieve the outcome required and that there was not a better solution
	Impact water access/property rights at critical times
	Clarity of rules. Forecasting. Keep it simple.
	Amend Water Sharing Plans to provide certainty, not temporary restrictions
	The economic cost/loss should be compared with other options
Flow regimes	Question: Why does NSW want to take the lead on this? Would it not be better to use the Basin Plan process?
Timing of when lower priority licences can take water	A very dangerous approach. Just because they are lower priority doesn't mean that there should be rule changes.
	Restrict water at a critical time – during or at the break of drought
	Forecasting of flows for certainty – pay back of water access. Ensuring back up system for when there isn't water
	Ensure back-up systems are augmented
	What other complementary actions are available? What's the role of Water Sharing Plans versus HEW?
Sustainable economic diversification	Diversification is great but hard! Be realistic!!
	Gomeroi participation
	Policy to allow innovation
Increase availability of High Security water licences	Recommend categorising the options/actions and list the economic beneficiaries. Prioritisation of the impacted people based on distance and other factors. Could enable diversification that would lead to more equally distributed benefits
	Increase in high security allocation would allow water for industry and growth
	High risk – the reliability of remaining general security must be protected. Many existing industries successfully manage variability
	Agree. Help keep licences to increase development and sustainability.
	Risk of over-commitment of water in dry. Delivery risk.
	Recommend switch to mainly groundwater. Underground dams could help with this (Biniguy site).
	NRAR not allowing us to do it.
Improve access to information	Be clear on NSW role compared to others. No duplication.