

Draft Regional Water Strategy

Gwydir:
Shortlisted Actions – Executive Summary

June 2022



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Cover image: Image courtesy of Belinda Collingburn, Department of Planning and Environment. Gwydir River upstream of Bingara, NSW.

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Acknowledging Aboriginal people

The NSW Government acknowledges Aboriginal people as Australia's first people and the traditional owners and custodians of the country's lands and water. Aboriginal 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 Gomeroi/Kamilaroi people as having an intrinsic connection with the lands and waters of the Gwydir Regional Water Strategy area. The landscape and its waters provide the Gomeroi/Kamilaroi people with essential links to their history and help them to maintain and practise their culture and lifestyle.

The NSW Government recognises that the Traditional Owners were the first managers of Country and that incorporating their culture and knowledge into management of water in the region is a significant step for closing the gap.



Artwork

Image courtesy of Nikita Ridgeway.
Aboriginal Brand Guidelines.

The NSW Government is committed to ensuring the Gwydir region has healthy, reliable and resilient water resources so that it remains a place where people want to live, work and play, both now and for future generations. This means ensuring that we make the best use of existing water resources and prepare for the future uncertainty presented by a more variable and changing climate.

The Gwydir region is a productive agricultural region of NSW and home to a wide variety of aquatic ecosystems including internationally and culturally significant wetland complexes. The region is located within the traditional lands of Gomeroi Nation. Gomeroi/Kamilaroi people have been caretakers of the Gwydir region for over 60,000 years.

The Gwydir region has access to surface water and good quality groundwater – for town and recreational use, cultural needs, environmental needs, agriculture and industry use.

Agriculture, which is dominated by broadacre cropping and livestock farms, has adapted to the region’s variable climate by producing annual or seasonal crops and investing in technology and improved management practices. Farm productivity has increased over the past 30 years, helping to offset the effects of hotter and drier conditions.¹

The region’s residents, businesses and the environment are tested during climate extremes. Between 2017 and early 2020, severe drought conditions saw:

- parts of the Gwydir River system stop flowing
- the size of the 2019–20 irrigated cotton crop shrink from an average of 74,670 ha to just 2,600 ha
- Uralla’s town water supply fall to critical levels and experience water quality challenges.

Despite this, no towns in the region ran out of water. But we know that droughts like this could happen again. We need to be prepared so that critical needs are protected, the environment can recover, and regional industries are sustainable.

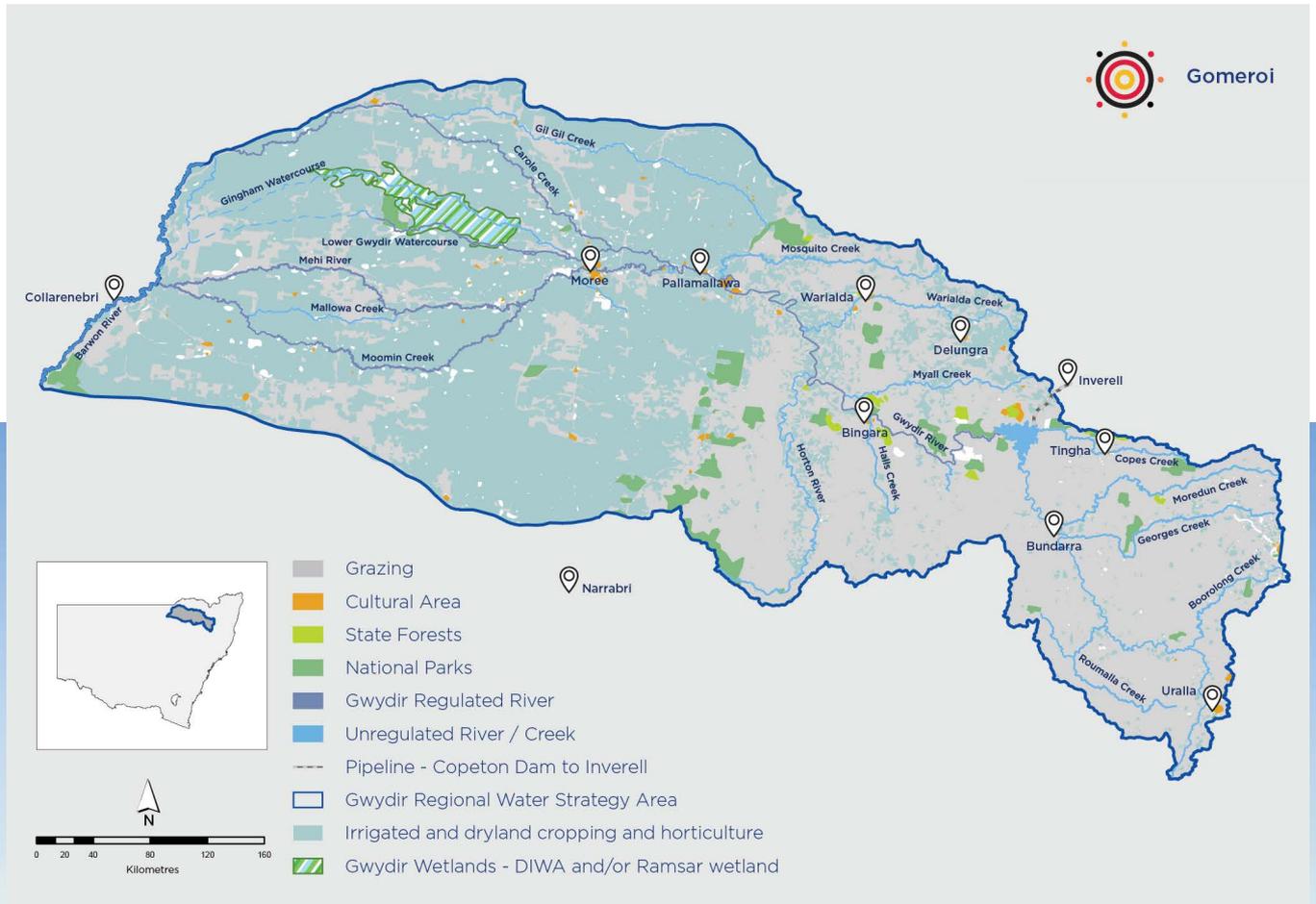
1. ABARES 2021, *Climate change impacts and adaptation on Australian farms*, retrieved on 12 August 2021 from www.awe.gov.au/abares/products/insights/climate-change-impacts-and-adaptation#recent-changes-in-seasonal-conditions-have-affected-the-profitability-of-australian-farms

Photography

Image courtesy of Don Fuchs, Destination NSW. Streetscape, Tingha.



Figure 1. Map of the Gwydir region



What is the purpose of the consultation paper?

The NSW Government is developing 12 regional water strategies that bring together the best and latest climate evidence with a wide range of tools and solutions to plan and manage each region's water needs over the next 20 to 40 years.

The Draft Gwydir Regional Water Strategy, including a long list of options, was released in late 2020.² Since public consultation on the Draft Gwydir Regional Water Strategy, we have taken on-board what we heard, undertaken additional

analyses to identify the challenges in the region that need to be tackled first and shortlisted the options into proposed actions that will help address these challenges.

The consultation paper presents the outcomes of this work. No decisions have been made on these proposed actions. The consultation paper seeks your views on what the best actions are to set the region up for the future before a final strategy and implementation plan are developed.

2. Full descriptions of the region, its water resources and water needs are provided in the draft strategy, which can be viewed and downloaded at www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/upcoming-public-exhibition/gwydir-regional-water-strategy



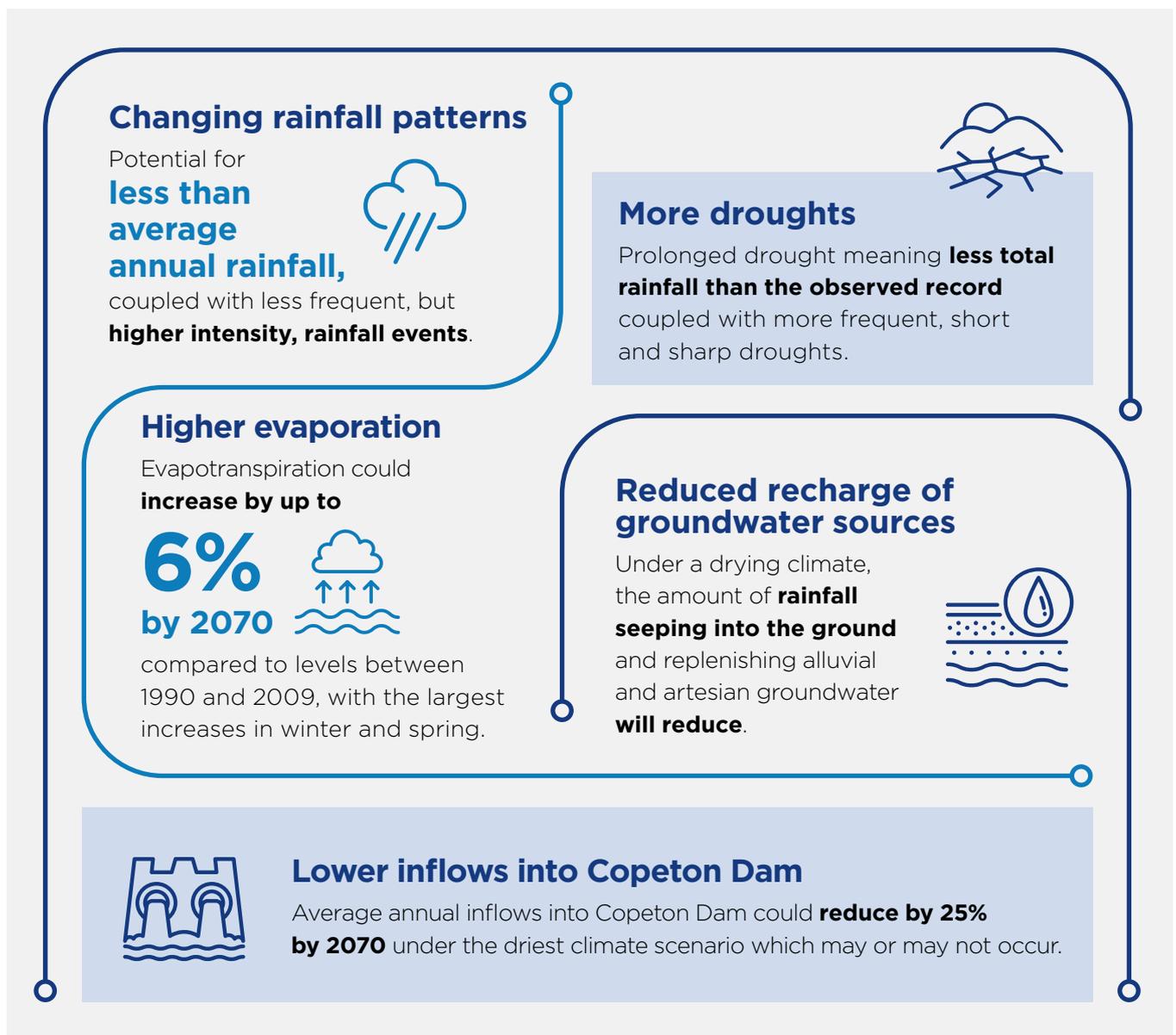
Photography

Image courtesy of iStock.
Mehi River, Moree.

What the future climate could look like in the Gwydir region

We don't know for certain what the future climate will be like. It may be similar to what we have experienced in the past, or it might be drier than we have seen in our lifetimes. Our analysis of different climate projections tells us that droughts could become hotter and longer, there could be higher evaporation rates and more unpredictable rainfall and river flows. We need to plan for this uncertainty and fully understand the future risks we face.

Figure 2. What the future climate could look like in the Gwydir region



What should we focus on first?

The Draft Gwydir Regional Water Strategy identified current and future water-related challenges and opportunities.³ Following feedback from public consultation and further technical analysis, we have identified 5 key challenges we propose should be the initial focus for the region. Other water challenges described in the Draft Gwydir Regional Water Strategy are important and will be revisited in future reviews of the strategy – which are expected to occur every 3 to 4 years.



Reducing water service risks and improving water supply resilience for the region's towns and villages

Climate risks could increase the number of times surface water is not available for towns in the region. Our modelling suggests that water supplies for towns relying on water from regulated rivers in the region are secure. There are risks, however, for towns supplied by unregulated rivers, such as Uralla. Alternative groundwater sources around Uralla generally have low yields and further investigations are underway to understand their reliability as a water source.

Towns and the region's artesian spa industry around Moree rely heavily on groundwater. However, in periods of drought, more people turn to groundwater, which can place additional stress on the aquifer. Moree relies on the Lower Gwydir Groundwater Source, which has declined by between 5 to 10 metres in some parts.⁴ A drier climate may result in less rainfall and river flow replenishing the aquifer.



Supporting licence holders in the face of declining water availability

Agriculture drives the Gwydir region's economy and is the region's largest employer – both directly and indirectly – employing nearly 50% of all workers in the region. Agricultural industries often have access to multiple sources of water.

The region also supports threatened and endangered native fish, birds and vegetation. Many of these ecological assets are also culturally important.

Our new climate data suggests that under a dry, long-term climate change scenario, average annual inflows into Copeton Dam could decline by 25% (from 285 GL to 213 GL) compared to the observed record. There is also potential for longer, multi-year droughts, which present risks for the agricultural sector, as well as for the ecological health and condition of environmental and cultural assets.

If we do not do anything to respond to these risks, the profitability of the region's farms could reduce by 20% over a 40-year period under a dry, long-term climate change scenario. Such severe drought conditions impose hardships on regional communities because the impacts extend to other parts of the economy, including retail, road transport, food manufacturing and construction sectors.

3. www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/upcoming-public-exhibition/gwydir-regional-water-strategy

4. Department of Planning and Environment 2022, *Lower Gwydir Groundwater Source—water level review*, retrieved 11 March 2022 from www.industry.nsw.gov.au/water/science/groundwater/document-library

There may also be reduced opportunities to water internationally significant wetlands, protect other water dependent ecosystems and native aquatic species, and maintain critical environmental needs.

The NSW Government is making significant investments to support the future of the region, including through the Moree Special Activation Precinct.⁵ This precinct will play a key role in diversifying and growing the region's economy, which, in turn, may help protect it from shocks during drought. However, the businesses within the precinct will need secure water to operate. We need to identify innovative ways to provide water to support the special activation precinct and future businesses that enter the region.



Delivering water to the end of the river system and connected valleys

Water released from Copeton Dam often travels long distances to reach water users along the Gwydir River and its tributary systems. The region's largest water users and some of the area's most important environmental assets and processes, including connectivity with the Barwon-Darling are located towards the end of the catchment. Delivering water to water users and environmental assets along the systems and downstream can be challenging as between 10 to 35% of the water released from Copeton Dam can be lost to evaporation.⁶

The system also experiences high evaporative losses from large, relatively shallow, private on-farm storages located near and to the west of Moree where, in summer, evaporation is more than 3 times average rainfall.

The Gwydir catchment is also part of the connected northern Basin system. It contributes 6% of the long-term average flow in the Barwon-Darling River.⁷ There are human and environmental needs in the Barwon-Darling River that rely on water flows from tributaries such as the Gwydir River system. A drier future climate will mean less water overall flowing along the Gwydir River and into the Barwon-Darling River, placing community, environment and industry needs at risk.



Dismantling barriers to Aboriginal water rights

Aboriginal people in the Gwydir region have always been closely linked to rivers and wetlands, and this relationship is essential to culture, community and connection to Country.

The historical dispossession of land and the effect of colonial era settler laws continue to impact Aboriginal people's access to water. Private land, fences and locked gates prevent Aboriginal people from accessing water, carrying out cultural practices, and using traditional knowledge to care for and manage waterways. In addition, government consultation processes do not complement Aboriginal governance and there is limited involvement of Aboriginal people in water consultation processes or water management decisions.

5. For further information see www.planning.nsw.gov.au/Plans-for-your-area/Special-Activation-Precincts/Moree-SAP

6. Obtained from the Gwydir General Purpose Accounting Reports available from www.industry.nsw.gov.au/water/allocations-availability/water-accounting/gpwar

7. This is the modelled flow contribution.



Improving the health and resilience of the region's aquatic ecosystems

Over the last 40 years, land use changes and water extraction have changed natural river flows, resulting in less water in rivers and wetlands, and modifications to how water moves through the region's landscape and connected systems. One consequence of these changes has been the substantial decline in the size and health of the Gwydir Wetlands.

Water for the environment in the Gwydir region is managed under increasingly mature and collaborative governance arrangements. Aboriginal people and their traditional knowledge and values are important contributors to decisions about how water for the environment is used, and the Australian and NSW governments work together to achieve mutual outcomes for the catchment and downstream systems, including meeting water needs during drought. While our water management has improved, challenges remain in using water for the environment effectively during dry and wet periods to protect and enhance the region's natural systems and assets.

Approximately 19% of the surface water entitlement in the region is held for the environment. Despite this volume of water recovered for the environment; it is not always possible to use this water to protect environmental needs during dry periods, particularly when drought operation measures are being used to manage the river and prioritise and extend water supplies.

In addition, physical and operational constraints limit the achievement of optimal environmental outcomes during average and wetter conditions. These limitations are because the targeted delivery of water cannot always reach the full extent of wetland complexes, be delivered at ecologically important times, or remain in the landscape long enough to support the completion of lifecycles.

The unconstrained growth in floodplain harvesting, which is the captured water that flows across the Gwydir floodplain for later use, has also impacted the health of the floodplain and downstream waterways by reducing the volume, frequency and duration of floods, and causing natural flow paths to be redirected or terminated, resulting in the isolation of floodplain waterholes from surface flows. Implementing the NSW Floodplain Harvesting Policy in the Gwydir valley will help manage these impacts and risks.



Photography

Image courtesy of Belinda Collingburn, Department of Planning and Environment.
Tareelaroi Weir, Gwydir River.

Addressing the challenges

We need to prepare now for a future where water sources and services may come under even greater stress. We need to use the knowledge we have gained during drought to find smarter and better ways of managing our water resources so that communities, industries and vital natural assets in the Gwydir region can thrive.

Importantly, there are limits on how much water can be sustainably taken from rivers and groundwater sources without causing short- and long-term impacts, such as other users being deprived of reasonable access to water and permanent damage to ecosystems. Surface water and most groundwater resources in the Gwydir region are fully or over committed and there is a risk of reduced water availability in the long term. This means that any new infrastructure or policy change that results in additional water or improved security being provided to one group of water users will lead to some water being taken from another group.

Getting the balance right means recognising these limits and trade-offs and understanding the stresses on the region's water resources and natural environment. While we may have to make some difficult choices, there are also opportunities to deliver on the water rights of Aboriginal people, enhance town and on-farm water efficiency and use water more effectively; restore river, wetland and floodplain habitats; and develop alternative water supplies that do not add further pressures to finite water resources.

There is no single action that we can take to address the challenges ahead. We have identified 3 regional priorities to meet the challenges for the region. Each priority is supported by a suite of actions. In shortlisting these actions, we have considered *Murray-Darling Basin Plan* rules, including the rules relating to sustainable levels of water take and the risks that the future climate poses.

Photography

Image courtesy of iStock.
Gwydir River, NSW.

PRIORITY 1: Water for critical human and environmental needs

The biggest challenge that the region and inland NSW will face in the context of a drier future is the ability to protect critical water needs, particularly during extended droughts, which are predicted to be more frequent and more intense. To make sure we are prepared for this scenario, the strategy includes proposed actions to support critical needs during dry periods.

PRIORITY 2: Sustainable water resources for new and existing users

The Gwydir region is one of the most productive regions in Australia, with almost 50% of the state's cotton produced in the local government areas of Moree and Narrabri (located in the Namoi catchment).⁸ NSW industry and government's world-class research and development facilities have helped the agricultural industries in the Gwydir achieve these productivity gains. The strategy proposes actions to support farmers, businesses and communities prepare for, withstand and recover from drought and manage the economic effects of reduced water availability.

Proposed actions focus on facilitating access to higher security, or alternate sources of water, supporting Aboriginal businesses and exploring opportunities to make sure the water entitlement and access framework can support industries coming to the Moree Special Activation Precinct, the Namoi Regional Jobs Precinct (which extends into the Gwydir Local Government Area) and the New England Renewable Energy Zone. Government investments in these precincts will diversify the regional economy and can support Gwydir communities to manage the economic effects of reduced water availability.

PRIORITY 3: Best use of existing water for the environment

Taking the final steps to implement the NSW Floodplain Harvesting Policy in the Gwydir valley will be a game changer and provide environmental benefits for the region. It is expected to deliver an approximate 58.5 GL increase in average annual flood volume across the floodplain in years when floods occur⁹ and reduce floodplain harvesting take by up to 30%.¹⁰ This should improve the environmental condition of the Gwydir valley floodplain and outcomes for waterbirds, native vegetation and native fish.¹¹

The Floodplain Harvesting Policy will also provide business and regulatory certainty. Not implementing the reforms would create uncertainty for all water users and the community. It could also lead to other flows being extracted, which would have impacts on the environment.

To support environmental water managers and ecosystems adapt to the Gwydir region's variable climate, the strategy also prioritises actions to reduce the impact of infrastructure on water-dependent ecosystems and species, changing constraints that limit water flows (including implementing the Gwydir Constraints Measures Project) and amending river operations so water in the system can achieve multiple benefits.

8. Australian Bureau of Statistics 2021, *Value of Agricultural commodities Produced*, Australia, state/territory and LGA regions on 7503.0—Value of Agricultural Commodities Produced, Australia, 2015-16, retrieved on 28 September 2021 from abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7503.02015-16?OpenDocument

9. Department of Planning, Industry and Environment 2021, *NSW Floodplain Harvesting Policy: Predicted environmental outcomes*, retrieved on 28 September 2021 from www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules/gwydir-valley

10. Department of Planning, Industry and Environment 2021, *Floodplain harvesting entitlements for the Gwydir valley regulated river system: Model scenarios*, retrieved on 28 September 2021 from www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules/gwydir-valley

11. Department of Planning, Industry and Environment 2021, *Environmental outcomes of implementing the Floodplain Harvesting policy in the Gwydir Valley: Report*, retrieved on 28 September 2021 from www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules/gwydir-valley

The proposed actions to support these priorities are in Attachment 1 in this executive summary. We want your views on whether these actions are the best way to set the region up for the future.

These priorities and actions can improve the Gwydir's readiness to adapt to a more variable climate and support the difficult decisions we may need to make to deliver healthy, reliable and resilient water resources for the region's future.

These proposed actions can help to position the Gwydir region for a future where well-managed, sustainable water resources are available for thriving communities, towns, industries, places and ecosystems. They can give us a better understanding of the vulnerabilities of the region, put in place measures to improve the region's resilience and establish the conditions for using our existing water resources more efficiently and effectively.

Implementing some of the actions may involve difficult decisions and may impact when water is available for different uses. Many of the shortlisted actions will need more detailed analysis and engagement. By starting to consider the benefits and implications of implementing the actions now, we will be in a better-informed position to make difficult decisions, should the need arise.

When will the actions be implemented?

A critical feature of the final Gwydir Regional Water Strategy is making sure we identify clearly what actions and investments are needed now and those that will or may be needed further into the future. The strategy considers a 20-year timeframe, aiming to chart a progressive journey that enables us to meet existing challenges, identify and prepare for foreseeable coming challenges and lay the groundwork for adapting to future uncertainties and changed circumstances.

Following public consultation, we will develop an implementation plan that will set out when we plan to commence each action and what we plan to achieve by when. The implementation plan will also identify key partners in effectively delivering these actions, including local councils, other government agencies and local Aboriginal communities.

Not all actions will be commenced at once, and funding will be a key consideration in planning when and how the actions will be implemented. The regional water strategies will be a key tool in securing funding as future opportunities arise.

We want your feedback on which actions should be prioritised for implementation over the next 3 to 5 years, and which ones should be implemented in the medium or longer term.

Photography

Image courtesy of iStock.
Creek, NSW.

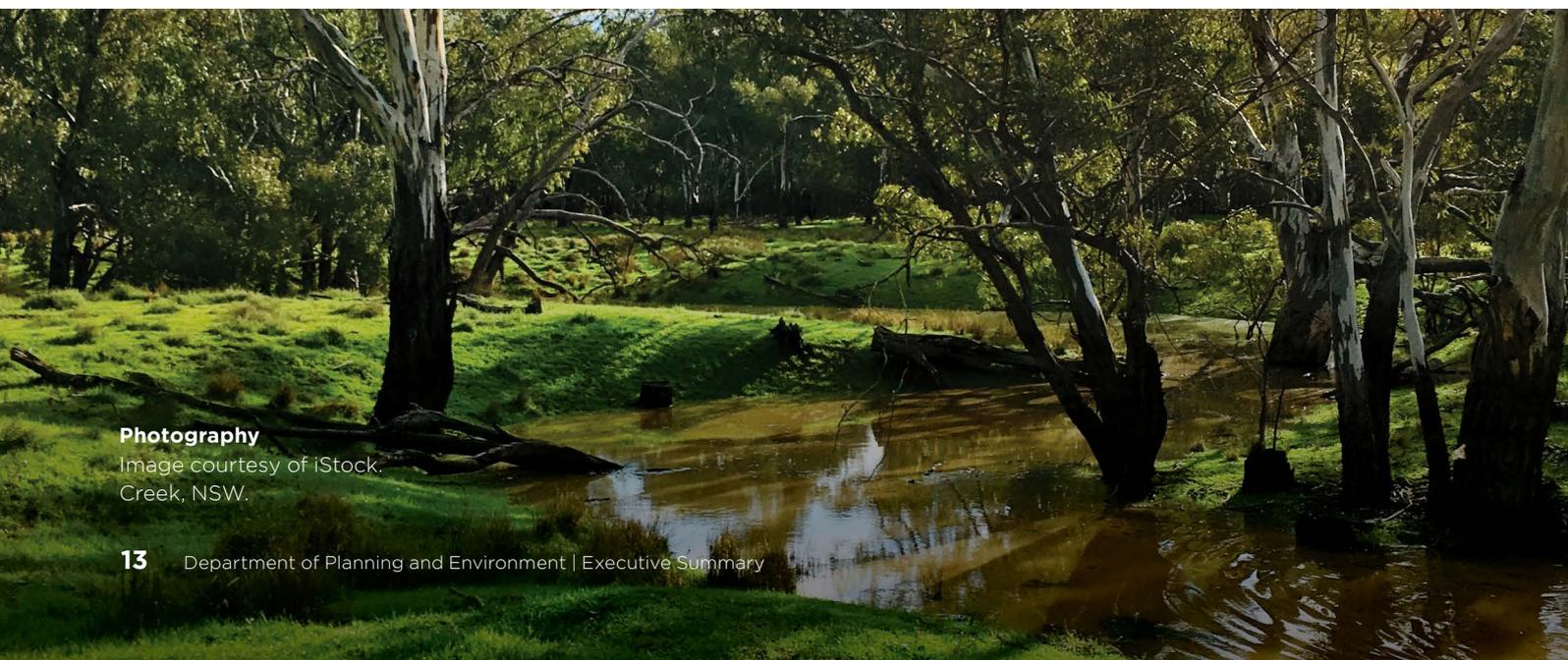
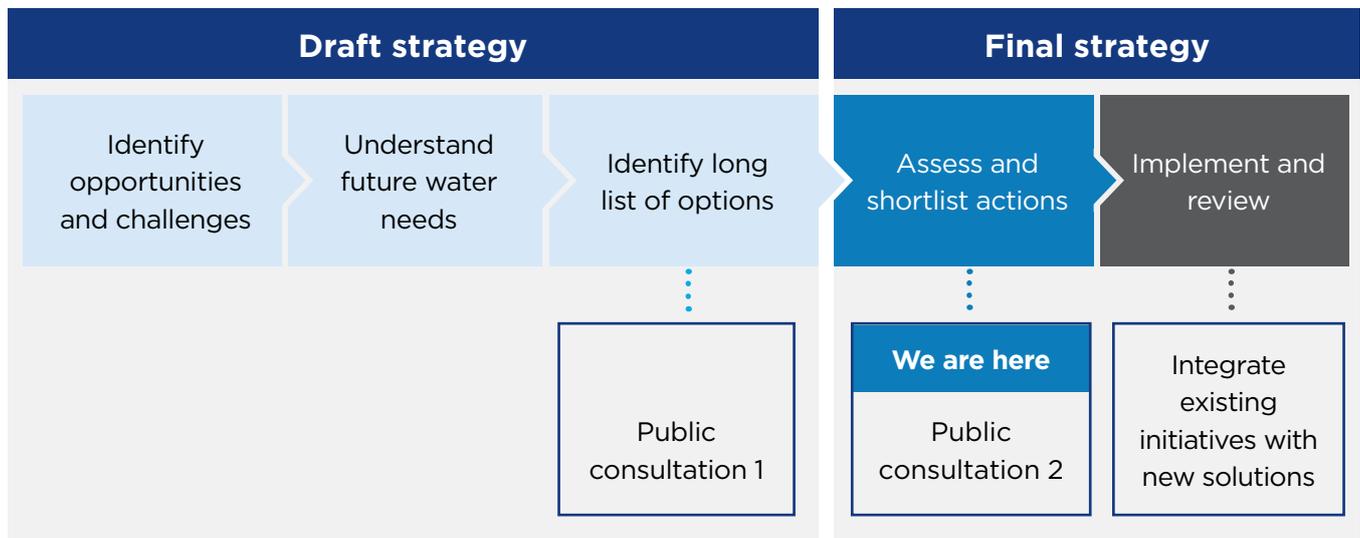


Figure 3. Regional water strategy delivery timeline



How to have your say

Your voice is important. The Gwydir Regional Water Strategy: Shortlisted actions – Consultation Paper is on public exhibition from 1 June 2022 to 26 June 2022. Supporting information is available at www.dpie.nsw.gov.au/gwydir-regional-water-strategy

You can also have your say by providing written feedback to the Department of Planning and Environment by midnight on 26 June 2022 via:

Web: www.dpie.nsw.gov.au/gwydir-regional-water-strategy

Email: regionalwater.strategies@dpie.nsw.gov.au

We would also be interested in your thoughts on:

- whether any of the actions in the consultation paper should not be shortlisted and why?

- how actions should be staged and which actions should be implemented first?

Please note that all submissions will be published on the Department of Planning and Environment’s website, unless you let us know in your submission that you do not wish the content to be released.

We will be holding community engagement sessions to give participants an understanding of the context for the regional water strategy and an overview of the key proposed priorities and actions. Face-to-face sessions will be held subject to COVID-19 restrictions and risks; otherwise, they will be held online. Details of these sessions can be found at the website listed above.

Photography
Image courtesy of iStock.
Gwydir River, Moree.

Attachment 1: Gwydir Regional Water Strategy – shortlist of proposed actions

Figure 4. Water security challenges and priorities for the Gwydir region

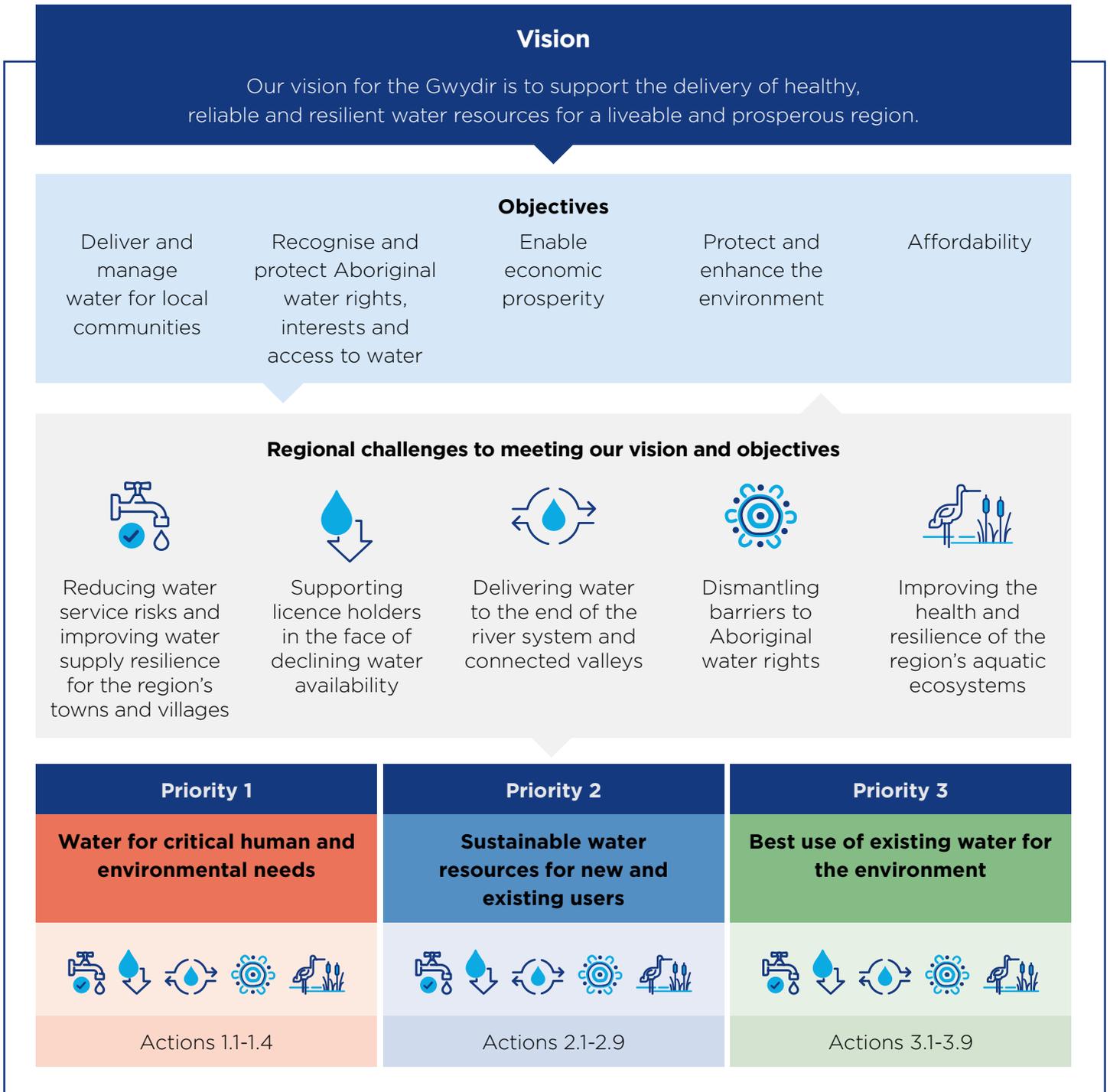
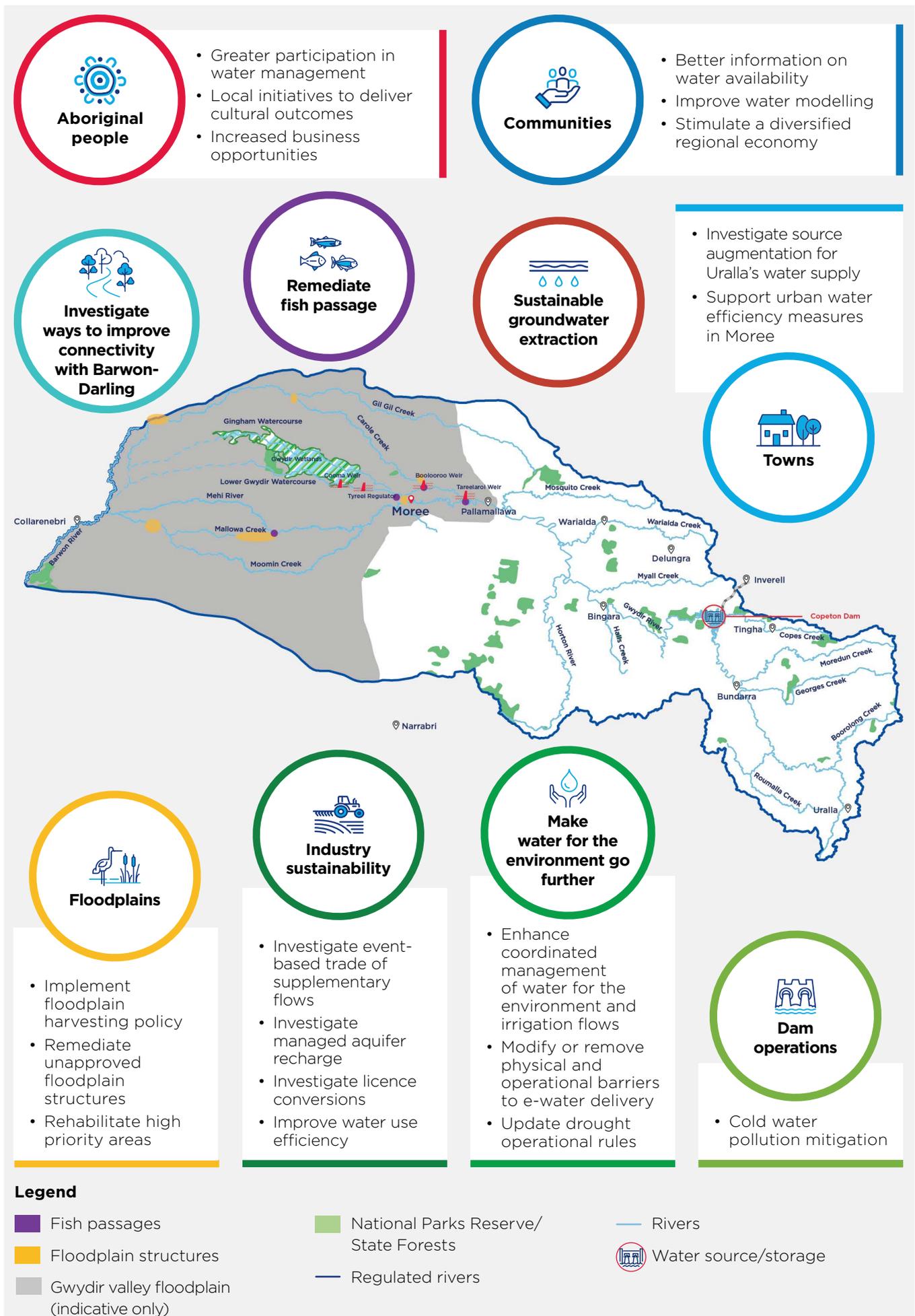


Figure 5. Location of Gwydir Regional Water Strategy – Shortlisted actions



Water for critical human and environmental needs

Challenges legend



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



Delivering water to the end of the river system and connected valleys



Dismantling barriers to Aboriginal water rights



Improving the health and resilience of the region's aquatic ecosystems

Proposed actions	Description	Challenges addressed
Action 1.1 Investigate source augmentation for Uralla's water supply	Support Uralla Shire Council to investigate and develop an additional water source for town supply and opportunities to reduce town water demand.	
Action 1.2 Support urban water efficiency measures in Moree	Support Moree Plains Shire Council to implement the NSW Government's new state-wide Water Efficiency Framework.	
Action 1.3 Develop and publish clear policy on how the region's groundwater resources will be managed sustainably into the future	Determine how to prioritise groundwater for critical needs, provide water users with greater clarity and certainty about how declining groundwater levels will be managed, and develop options to best manage fully committed groundwater systems.	
Action 1.4 Investigate ways to improve connectivity with the Barwon-Darling River on a multi-valley scale	Investigate options to improve connectivity for critical needs across all Barwon-Darling tributaries through the Western Regional Water Strategy.	

Sustainable water resources for new and existing users

Challenges legend



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



Delivering water to the end of the river system and connected valleys



Dismantling barriers to Aboriginal water rights



Improving the health and resilience of the region's aquatic ecosystems

Proposed actions	Description	Challenges addressed
Action 2.1 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.	
Action 2.2 Support adoption of on-farm water efficiency measures	Continue to support industry to invest in ways to improve water efficiency.	
Action 2.3 Assess the potential costs and benefits of event-based trade of supplementary flows	Investigate and review methods to enable trading to operate as supplementary events occur. Supplementary events are an important source of water for industry, the environment and downstream needs.	
Action 2.4 Increase the availability of high security water access licences	Investigate conversion of a small portion of general security licences to high security access licences in the region to encourage different industries into the region and support the Moree Special Activation Precinct.	

Proposed actions	Description	Challenges addressed
Action 2.5 Investigate managed aquifer recharge in the Gwydir region	Investigate possible sites for temporary storage of stormwater and river flows in aquifers, known as managed aquifer recharge. This action would also develop supporting policy to regulate the storage and recovery of this water.	
Action 2.6 Develop ongoing arrangements for participation of local Aboriginal people in water management	Support existing or new Aboriginal groups develop governance arrangements for involvement in water management activities and decision making.	
Action 2.7 Support place-based initiatives to deliver cultural outcomes for Aboriginal people	Support Aboriginal organisations and communities to develop tailored projects for their communities with the aim of moving away from central decision-making and developing a flexible program that can be adapted and driven by the principle of self-determination.	
Action 2.8 Support Aboriginal business opportunities in the Gwydir region	Support Aboriginal business development opportunities in the Gwydir region, some of which may require access to water resources.	
Action 2.9 Ensure the water management framework can support sustainable economic diversification	Work across government to understand the water supply and demand needs of emerging industries, including opportunities created by the emerging renewable energy industry and special activation precincts.	



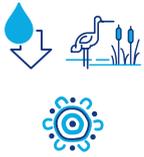
Photography

Image courtesy of Annette Corlis, Department of Planning and Environment. Strahmanns Pecan Farm, Trawalla Biniguy.

Best use of existing water for the environment

Challenges legend				
				
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	Delivering water to the end of the river system and connected valleys	Dismantling barriers to Aboriginal water rights	Improving the health and resilience of the region's aquatic ecosystems

Proposed actions	Description	Challenges addressed
Action 3.1 Fully implement the NSW Floodplain Harvesting Policy	Finalise licences and work approvals to measure and regulate floodplain harvesting take within legal limits in the Gwydir valley floodplain.	 
Action 3.2 Invest in continuous improvement to river system modelling in the Gwydir region	Enhance the capability of the Gwydir's river system model to support analysis of future operation, policy and planning decisions. This action could also explore how water models can link with other models (e.g. ecological and economic) to better understand vulnerability to future conditions including climatic variation.	   
Action 3.3 Provide clarity and certainty for environmental needs during drought operations	Update the Gwydir Incident Response Guide and prepare a Gwydir Valley Drought Management Plan to clarify when, how and why drought operations are triggered. This will allow more accurate planning of environmental releases and more informed environmental management during dry periods.	  

Proposed actions	Description	Challenges addressed
Action 3.4 Mitigate the impact of water infrastructure on native fish	Mitigate the impact of water infrastructure on native fish by: <ul style="list-style-type: none"> installing fish passages at 5 priority barriers in the Gwydir region progressing cold water pollution mitigation measures for Copeton Dam implementing diversion screens at priority pump sites in the Gwydir to protect native fish. 	
Action 3.5 Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate	Strategically target on-ground activities at high-priority locations to restore, conserve and protect critical riparian, wetland and floodplain habitat and species, or areas of high cultural value in the Gwydir region.	
Action 3.6 Remediate unapproved floodplain structures	Undertake an accelerated compliance program for unapproved floodplain structures in high-risk areas of the Gwydir valley floodplain.	
Action 3.7 Modify or remove physical and operational barriers to delivering water for the environment in the western Gwydir catchment	Implement the Gwydir Constraints Measures Project in the Gingham, Lower Gwydir and Mehi watercourses. In areas outside of the Gwydir Constraints Measures Project, implement identified measures (modification or removal of physical and operational barriers) in the Ballin Boora and Mallowa watercourses.	
Action 3.8 Protect ecosystems that depend on groundwater	Advance our knowledge and management of groundwater dependent ecosystems in the upper and lower Gwydir alluvial aquifers.	
Action 3.9 Assess gaps in the flow regime that are preventing achievement of environmental water requirements and identify cooperative actions to reinstate them	Identify gaps in the frequency and adequacy of different flow types under the current climate and future climate change scenarios and determine how to fill these flow gaps without significant impacts on water users.	



dpiensw.gov.au