Regional Water Strategy

Gwydir – Executive Summary

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

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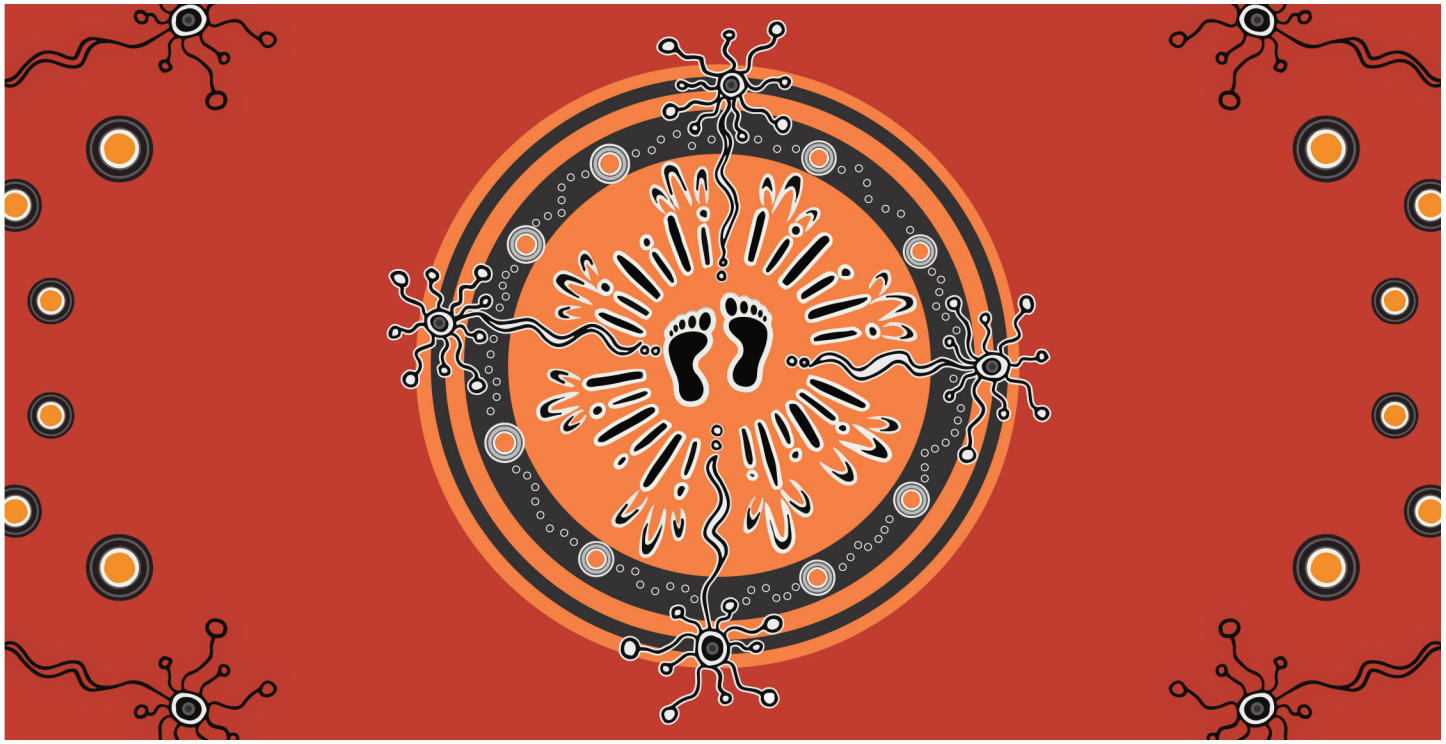


Acknowledging First Nations people

The NSW Government acknowledges First Nations people as its first Australian people and the traditional owners and custodians of the country's lands and water. We recognise that 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 Gomeroi people as having an intrinsic connection with the lands and waters of Gwydir Regional Water Strategy area. The landscape and its waters provide the Gomeroi people with essential links to their history and help them to maintain and practice their traditional culture and lifestyle.

We recognise 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.

Under this regional water strategy, 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 cultural and traditional Aboriginal knowledge in water management processes at a strategic level.

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

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

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

Artwork courtesy of Nikita Ridgeway.

Water is our most precious resource. It supports the essential needs of communities in the Gwydir region and is vital for maintaining our aquatic environments and Aboriginal cultural heritage. It is central to liveability within the region and supports our industries and employment.

The NSW Government is committed to having healthy, reliable and resilient water resources. We want the Gwydir region to remain 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 future uncertainties, such as a more variable and changing climate, and changing industries, populations and water needs.

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.

Surface and groundwater sources are used for town water supplies, recreation, cultural purposes, and environmental, agricultural and industrial needs.

The region is tested during climate extremes and, between 2017 and early 2020, severe drought conditions caused:

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

These dry conditions were quickly followed by floods and wet years.

We know that droughts like this could happen again, and we know that we may be experiencing more extreme periods in the future. We need to be prepared so that critical human and environmental needs are protected, and regional businesses and lifestyles are maintained.

Image courtesy of Daryl Albertson, Department of Planning and Environment. Royal Spoonbill, Upper Gingham Wetlands.

Figure 1. Map of the Gwydir region

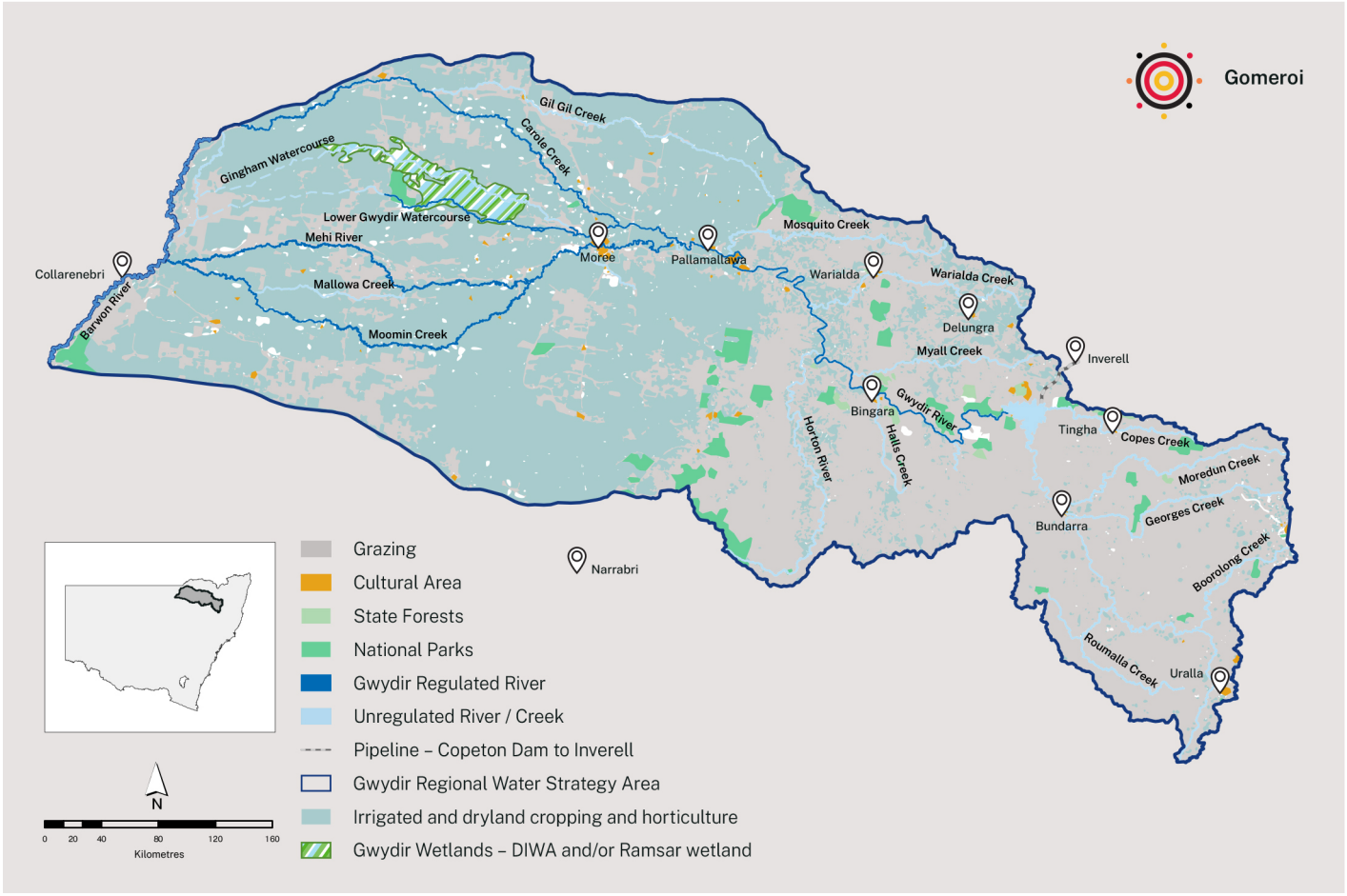


Image courtesy of Destination NSW. Township, Moree.

Purpose of the Gwydir Regional Water Strategy

Regional water strategies 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. With increased pressures on our valuable water resources, including a more variable and changing climate, we need to prepare now for the future.

The Gwydir Regional Water Strategy identifies the critical challenges we need to tackle over the coming decades as well as the priorities and actions that will set us up to respond to these challenges.

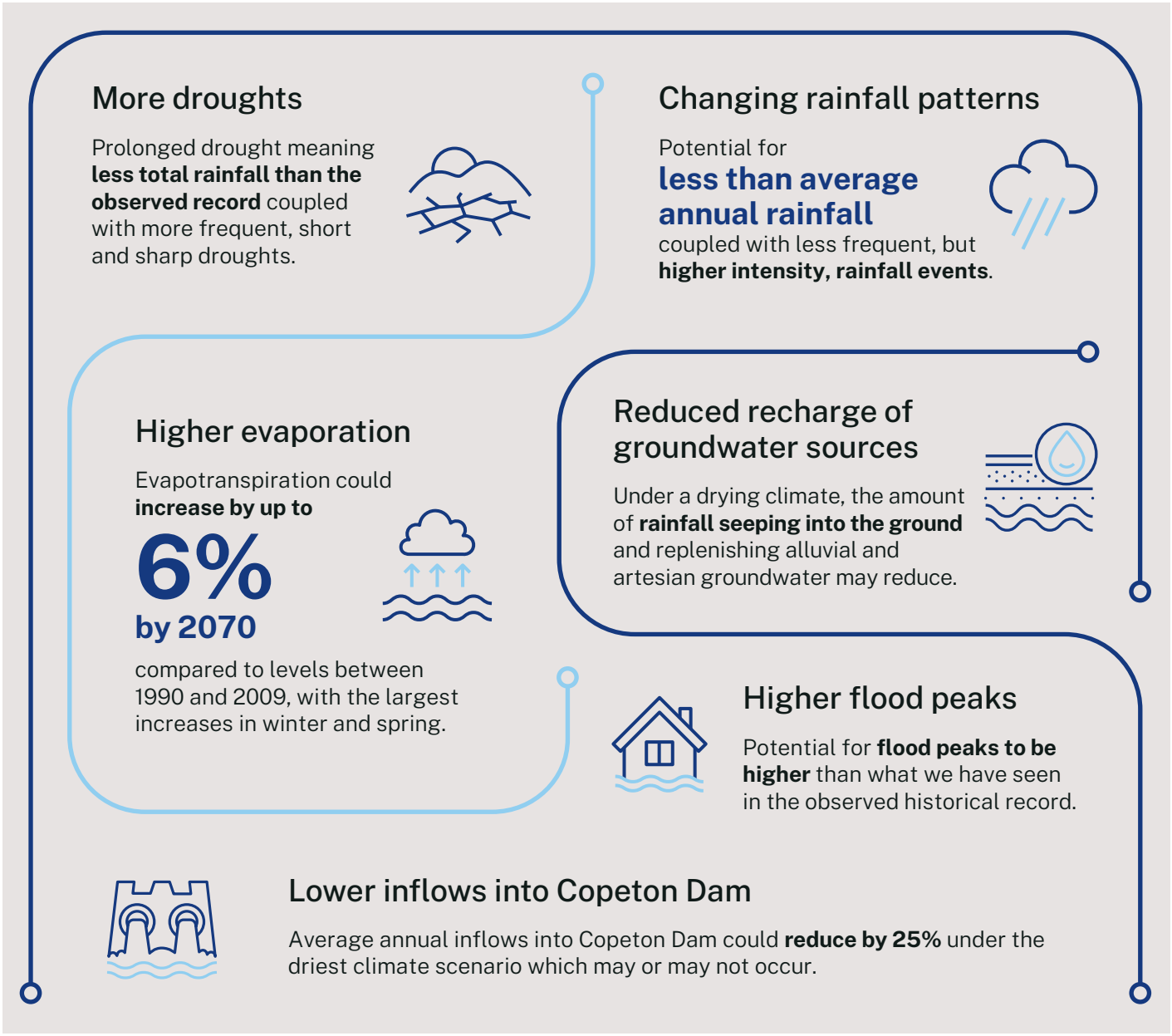
The actions outlined in the regional water strategy provide a foundation for building resilience and realising the benefits of working together to reach the vision for the region. Meaningful engagement and a collaborative approach to planning and decision making will achieve sustainable and equitable outcomes over the strategy's 20-year horizon and beyond.

Image courtesy of Destination NSW. Farmer picking cotton on a farm, Moree.

What the future climate could look like in the Gwydir region

We don't know for sure 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 high 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



Key regional challenges – what we will focus on first

The Gwydir Regional Water Strategy identifies 5 key challenges as the initial focus for the region. Other water challenges, as described in the Draft Gwydir Regional Water Strategy, will be revisited in future reviews of the strategy.

Improving water resilience for towns and villages

Less reliable flows in unregulated rivers and creeks are increasing water security and water quality risks for the towns, rural landholders and industries that rely on them. A drier future climate could also reduce the reliability of groundwater resources.

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 Copeton Dam 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. During periods of drought more people depend on groundwater, which can place additional stress on the aquifer. Moree relies on the Lower Gwydir Groundwater Source, which has declined by 5–10 m in some parts.[1] A drier climate may result in less rainfall and river flow to replenish the aquifer.

Supporting licence holders in the face of declining water availability

Aquatic ecosystems, including the Gwydir Wetlands, and the region's main industry of agriculture rely heavily on general security licences, which have low reliability and often receive zero or low water allocations during drought. Droughts that last multiple years impact the region's economy and the health of its natural ecosystems. Ongoing changes to climate could increase drought frequency and severity.

Agriculture drives the Gwydir region's economy and is its largest employer – both directly and indirectly – employing nearly 50% of all workers in the region. Agricultural industries rely on water and 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 culturally important.

Our new climate data suggests that there is 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 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.

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. This precinct will play a key role in attracting jobs and stimulating the local 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 future businesses, including the special activation precinct in Moree.

1. Department of Planning and Environment 2022, *Lower Gwydir Groundwater Source – water level review*, www.dpie.nsw.gov.au/water/science-data-and-modelling/groundwater-management-and-science/groundwater-document-library

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

High evaporation rates and smaller river channels make it difficult to deliver water efficiently from Copeton Dam to industry and environmental assets at the end of the catchment and connected valleys.

Water released from Copeton Dam often travels long distances to reach water users along the Gwydir River and its distributary systems. The region's largest water users, and some of the area's most important environmental assets and processes, are located towards the end of the catchment.

Delivering water along the systems and downstream can be challenging as 10 to 35% of the water released from Copeton Dam can be lost to evaporation.[2] The Gwydir catchment is part of the connected northern Basin system. It contributes 6% of the long-term average flow in the Barwon–Darling River.[3]

People and environmental assets in the Barwon–Darling River rely on water flowing from tributaries such as the Gwydir River system. A drier future climate in the Gwydir region will mean less water flowing into the Barwon–Darling River – placing community, environment and industry at risk both within the Gwydir and downstream.

Addressing barriers to Aboriginal water rights

'We can't sing our song no more, we can't live on the river no more to look after her, for you all'. (Gomeroi people).

'Yaama Nginda Gomeroi Wunnungulda. We are Gomeroi, we have our way of doing business. You have to be invited to sit around our fire. We share language and we engage together. You are asked to identify who you are and what you represent and be clear in your intent. Then, and only then can we do business together.'

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.

Fences and locked gates on public land, prevent Aboriginal people from accessing Country, carrying out cultural practices and using traditional knowledge to care for and manage waterways. Access to waterways is critical to providing a purpose and pathway for young people to connect to culture and provide a space for healing, as well as for food, medicine and teaching.

To date government consultation processes have not complemented Aboriginal governance and there is limited involvement of Aboriginal people in water consultation processes or water management decisions.

Image courtesy of Belinda Collingburn, Department of Planning and Environment. Copeton Dam, NSW.

2. Obtained from the *Gwydir General Purpose Accounting Reports* available from, www.industry.nsw.gov.au/water/allocations-availability/water-accounting/gpwar
3. This is the modelled flow contribution.

Improving the health and resilience of aquatic and floodplain ecosystems

Development has contributed to changes in flow variability, water quantity and water quality. This has impacted the health of water-dependent ecosystems and assets in the region and connected valleys. There are challenges in being able to use 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 having been 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 the wetlands, 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 beyond sustainable diversion limits, which is the capturing of water flowing across the Gwydir floodplain for later use, has also impacted the health of the floodplain and waterways. It has reduced the volume, frequency and duration of floods, and has caused natural flow paths to be redirected or terminated, resulting in the isolation of floodplain waterholes from surface flows. Regulating and enforcing compliance with floodplain harvesting licences will limit take to pre-1998 levels. It will decrease floodplain harvesting and is expected to deliver up to a 40 GL increase in average annual flood volume across the floodplain in years when floods occur.[4]

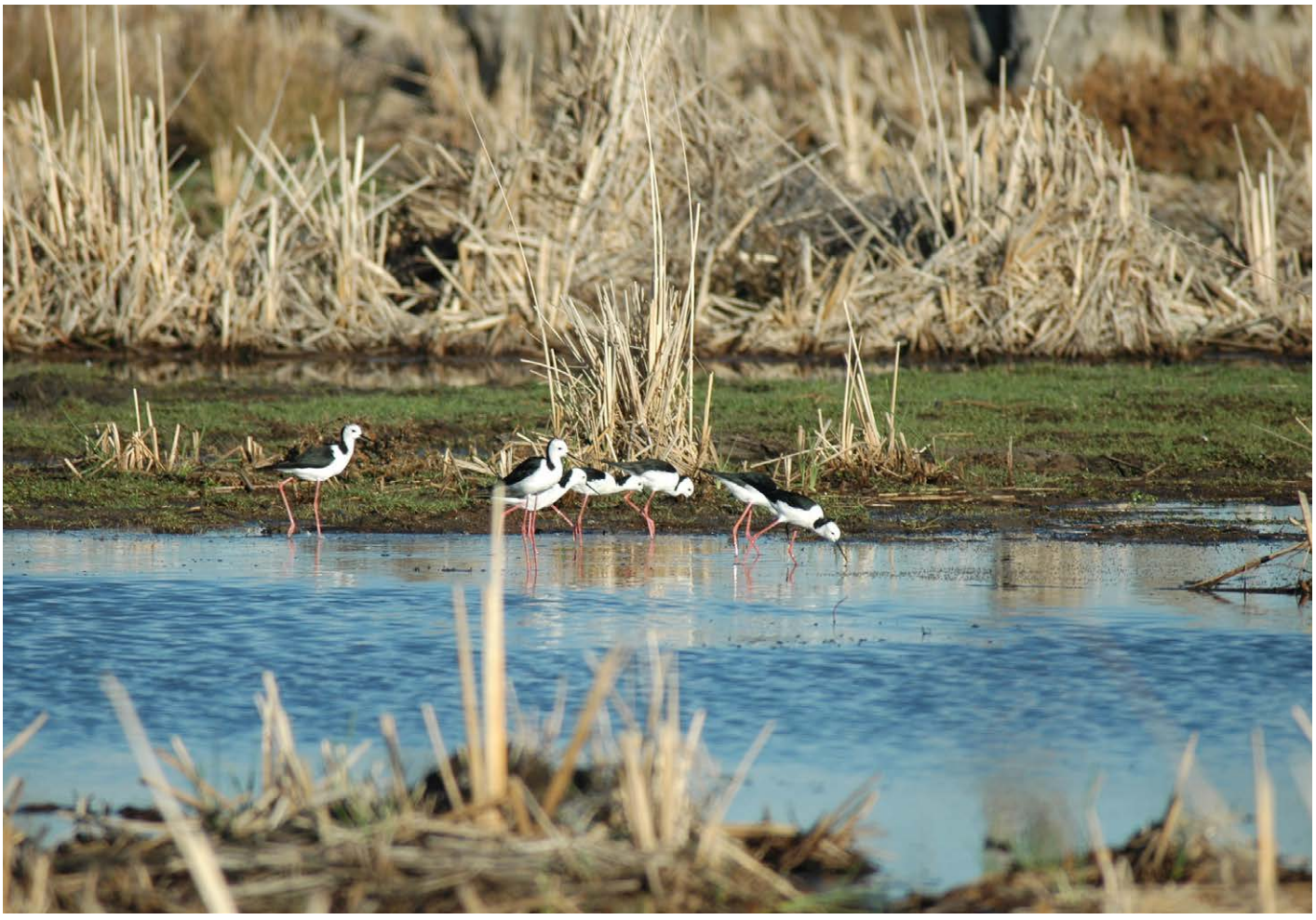


Image courtesy of Daryl Albertson, Department of Planning and Environment. Black winged stilt Gwydir Wetlands, Moree.

4. Detailed technical reports, environmental analysis and hydrological analysis on the benefits of the floodplain harvesting reforms in the Gwydir is available at: www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules/gwydir-valley

Responding to these challenges

To rise to the challenges facing the Gwydir region we need to prepare now for a future where water may come under even greater stress. By using the knowledge we have gained during drought, we can find smarter and better ways of managing our water resources so that our communities, industries, and environmental and cultural assets can thrive.

There are limits on how much water can be taken from rivers and groundwater sources without causing short- and long-term impacts – such as depriving other users of reasonable access to water and permanently damaging ecosystems. In identifying the actions, we have considered the Murray–Darling Basin Plan rules, including those rules relating to sustainable level of water take and the risks posed by the future climate.

This strategy sets out 22 actions to ensure the Gwydir region is well-placed to meet future challenges that focus on water for critical human and environmental needs, sustainable water resources for new and existing users and best use of water for the environment (see Figure 3 to Figure 5). Collectively, the actions will help ensure the Gwydir region is well-placed 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.

Getting the balance of actions right means understanding the stresses on the region's water resources and natural environment and recognising limits and trade-offs. A range of economic, hydrological, environmental and qualitative assessments were used to prioritise the actions in the regional water strategy.[5] While we may have to make some difficult choices, there are also opportunities for the region. These include supporting the economic diversification of the region, delivering on the water rights of Aboriginal people, enhancing town and on-farm water efficiency, using water more effectively, restoring aquatic and floodplain habitats, and developing alternative water supplies that do not add further pressure on finite resources.

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

5. www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/what-we-heard/gwydir-regional-water-strategy

Implementing the strategy

The strategy has a separate implementation plan that prioritises the delivery of actions over the life of the strategy. The implementation plan also outlines responsibilities and timeframes for delivery, so that we can monitor the progress of the actions, assess the effectiveness of the strategy and identify areas where we need to adapt.

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 seeking funding as future opportunities arise.

The implementation plan sets out priorities over the next 3 years and is located at www.dpie.nsw.gov.au/gwydir-regional-water-strategy

The implementation plan also identifies the key partners who will be involved in the implementation plan.

- NSW Government agencies will lead implementation of actions that will develop and review policies and regulatory arrangements in consultation with the community, undertake research; deliver regional programs and take action where there is a market failure or other need for government intervention.
- Local councils will be involved in actions that influence town water supply at the local level and lead actions directly related to local level strategic planning.
- State owned corporations, such as WaterNSW will be involved in actions that result in changes to design, operation and management of major infrastructure and the way water is delivered in regulated rivers.
- Community and industry groups and research organisations: will be engaged in the implementation process for actions and may partner with different levels of government to progress or deliver certain actions.

We will report every year against actions in the implementation plan, so that the community can track our progress and we can demonstrate which actions have been delivered, or continue to be delivered, in that year.

Image courtesy of Department of Planning and Environment. New England Highway, Uralla.

Figure 3. Gwydir Regional Water Strategy: overview of strategy vision, objectives, water security challenges and priorities

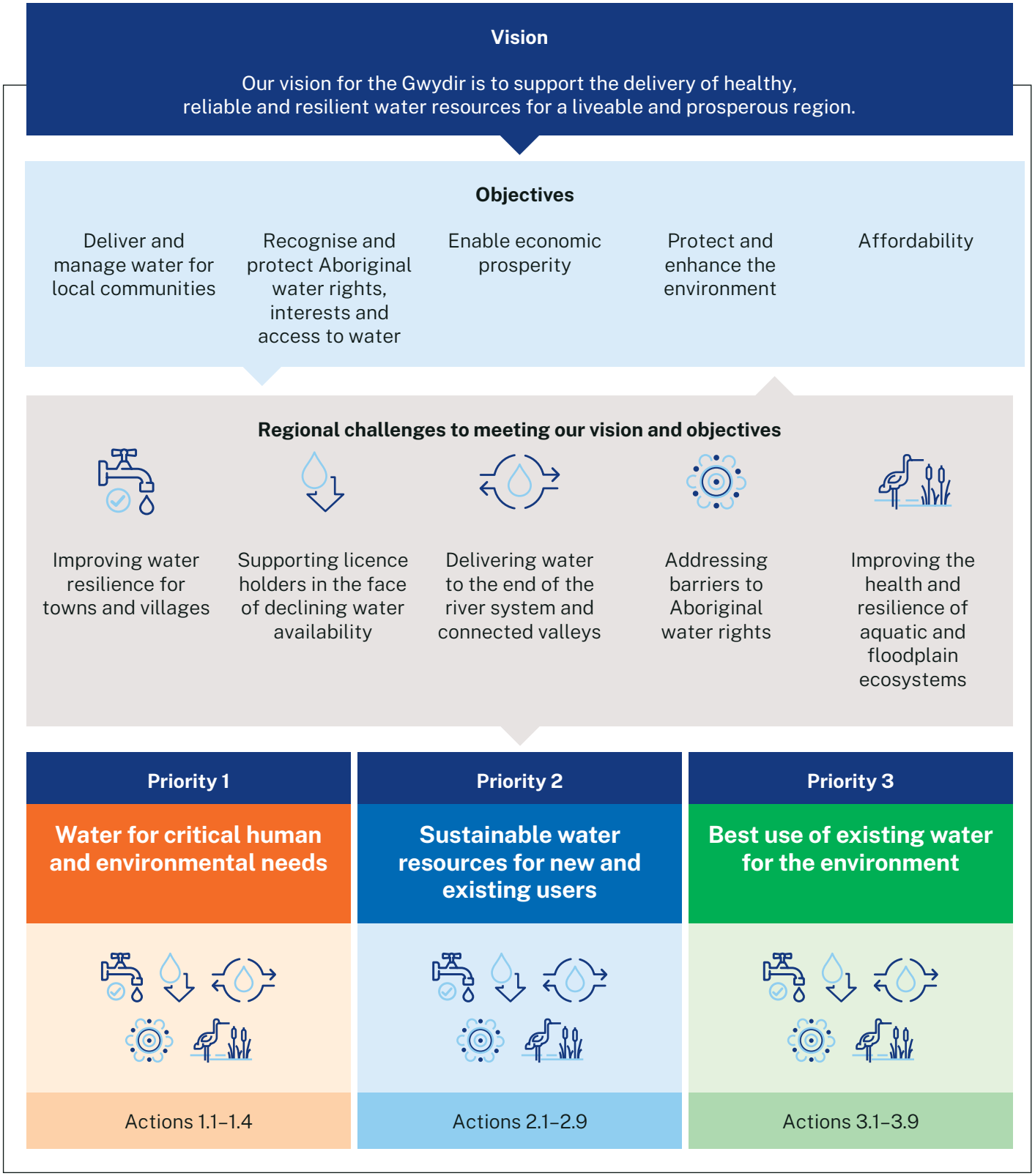


Figure 4. Summary of Gwydir Regional Water Strategy actions

- Improving access certainty for high priority needs

Groundwater

- Investigate innovative water solutions for Uralla
- Implement urban water use efficiency measure in Moree

Water security for towns

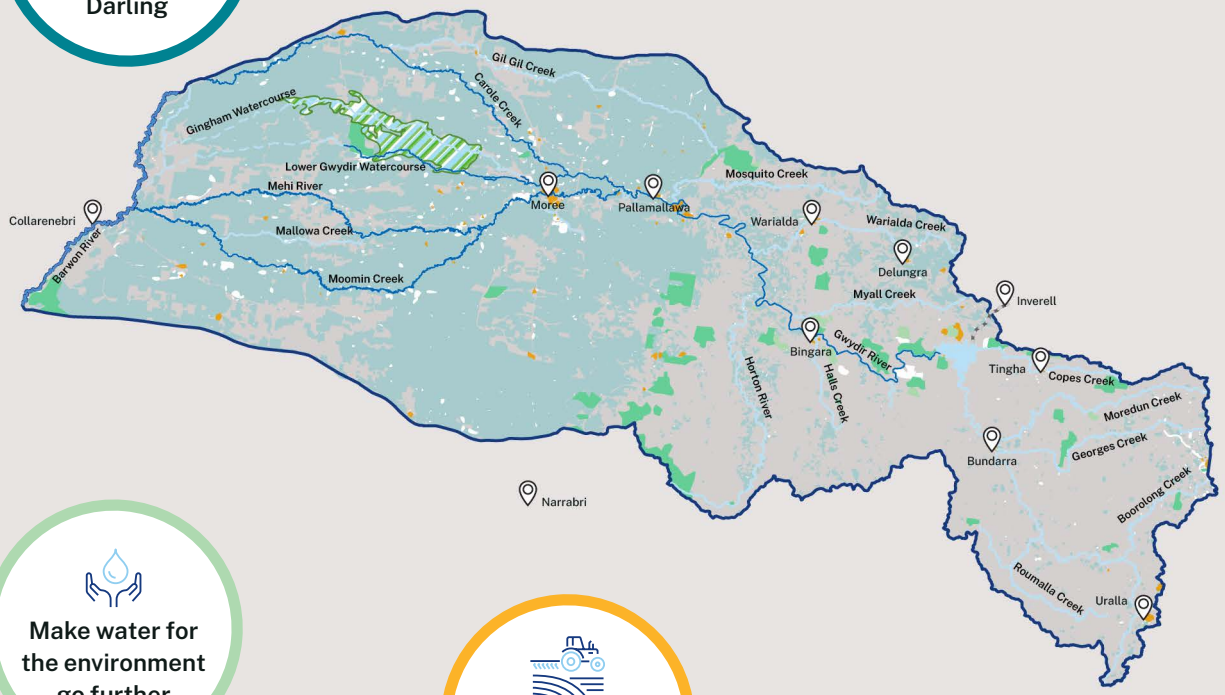
- Greater participation in water management
- Local initiatives to deliver cultural outcomes
- Increased business opportunities

Aboriginal people

- Enable public access to the Gwydir Wetlands

Community benefit

Connectivity with the Barwon–Darling



Make water for the environment go further

- Coordinate flows for the environment and irrigation
- Remediate fish passage, progress cold water pollution measures, implement fish diversion screens
- Address physical barriers to delivery environmental water

Industry and community sustainability

- Better information on water availability
- Improve water modelling
- Increase investment in climate adaptation
- Improve information on regulated river drought operation
- Begin preparing for a diversified economy
- Assess the potential for events-based trade
- Investigate managed aquifer recharge

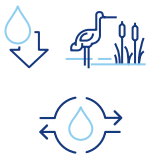
Floodplains

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

Figure 5. Priorities and actions identified to address the key regional challenges

Legend				
Improving water resilience for 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	Addressing barriers to Aboriginal water rights	Improving the health and resilience of aquatic and floodplain ecosystems

Priority	Actions	Challenges addressed
Priority 1: **Water for critical human and environmental needs**	**Action 1.1:** Investigate innovative water solutions for Uralla	
	Action 1.2: Implement urban water efficiency measures in Moree	
	Action 1.3: Publish guidance on accessing groundwater for high-priority needs	
	Action 1.4: Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale	
Priority 2: **Sustainable water resources for new and existing users**	**Action 2.1:** Improve public access to climate information and water availability forecasts	
	Action 2.2: Support farm climate adaptation and water efficiency measures	
	Action 2.3: Assess the potential costs and benefits of event-based trade of supplementary flows	
	Action 2.4: Modernise the water management framework so it can continue to support changing water needs	
	Action 2.5: Investigate managed aquifer recharge in the Gwydir region	

Priority	Actions	Challenges addressed
	Action 2.6: Foster ongoing arrangements for participation of local Aboriginal people in water management	
	Action 2.7: Support place-based initiatives to deliver cultural outcomes for Aboriginal people	
	Action 2.8: Support Aboriginal business opportunities in the Gwydir region	
	Action 2.9: Help enable public access to the Gwydir Wetlands	
Priority 3: **Best use of existing water for the environment**	**Action 3.1:** Fully implement the NSW Floodplain Harvesting Policy	
	Action 3.2: Invest in continuous improvement to water modelling in the Gwydir region	
	Action 3.3: Provide clarity and certainty for water users, landholders and environmental water managers during drought operations	
	Action 3.4: Mitigate the impact of water infrastructure on native fish through infrastructure changes	
	Action 3.5: Rehabilitate regionally significant riparian, wetland, and floodplain areas	
	Action 3.6: Remediate unapproved floodplain structures	
	Action 3.7: Modify or remove physical and operational barriers to delivering water for the environment in the western Gwydir catchment	
	Action 3.8: Protect ecosystems that depend on groundwater	
	Action 3.9: Assess gaps in the flow regime that are preventing achievement of environmental water requirements and identify actions to improve ecological outcomes	

Department of Planning and Environment

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