Regional Water Strategy

Border Rivers – Executive Summary

November 2022

NSW GOVERNMENT

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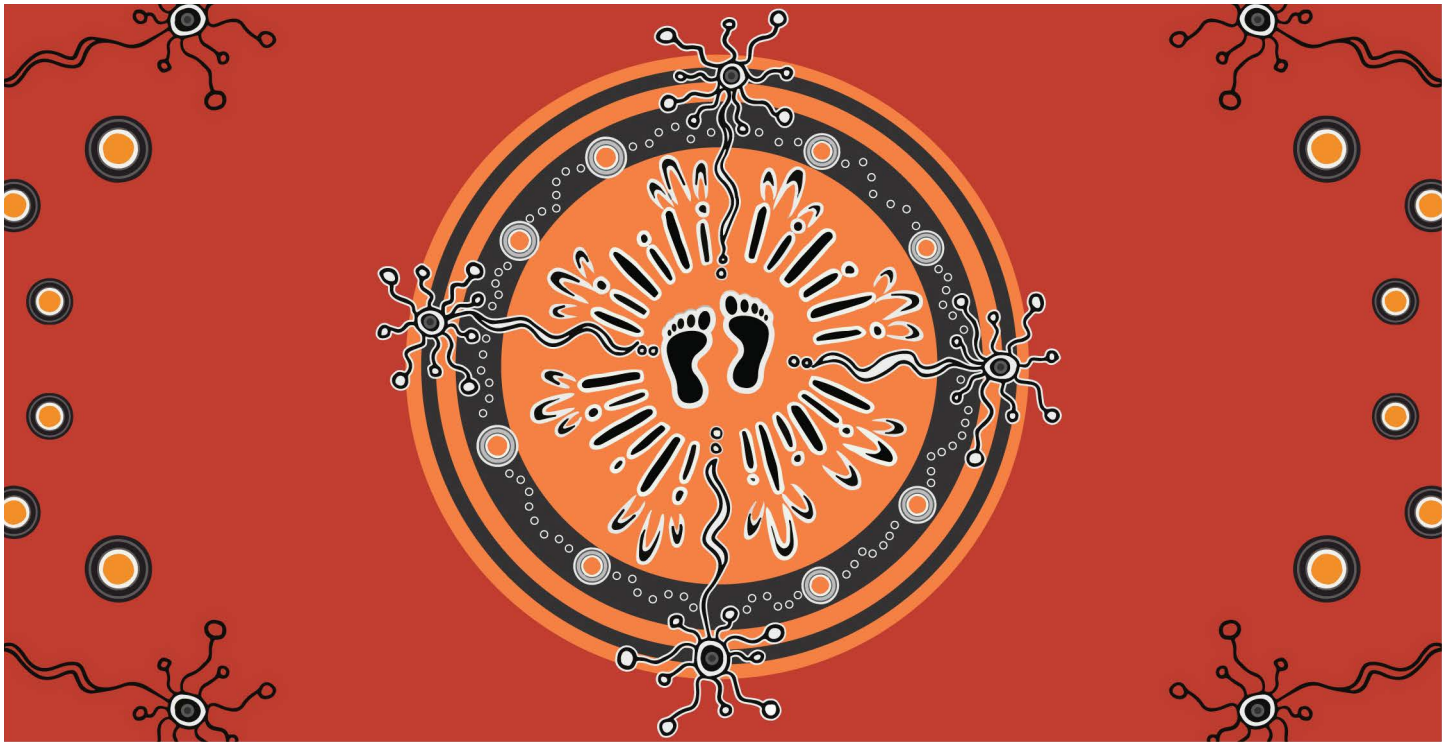
Cover image Image courtesy of Floodplain Harvesting Team, Department of Planning and Environment – Water.
Barwon River, Mungindi.

More information water.dpie.nsw.gov.au/plans-and-programs/regional-water-strategies



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 Bigambul, Githabul, Gomeroi, Kambuwal, Kwiambal and Ngarabal people as having an intrinsic connection with the lands and waters of the Border Rivers Regional Water Strategy area. The landscape and its waters provide First Nations 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 Indigenous/Aboriginal and non-Aboriginal communities.

Artwork courtesy of Nikita Ridgeway.

Water is our most precious resource. It supports the essential needs of communities in the Border Rivers 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 Border Rivers 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, changing industries, populations and water needs.

The Border Rivers is nestled in northern inland NSW, where the landscape changes from hills and mountains in the east to flat alluvial plains in the west. It sits at the headwaters of the Murray Darling Basin and lies within the traditional lands of the Bigambul, Githabul, Kambuwal, Gomeroi, Kwiambal and Ngarabal nations, who have been caretakers of the region for over 60,000 years.

The region relies heavily on surface water – for town water supply, cultural needs, environmental needs, agriculture and industry. Groundwater availability and quality varies across the region according to the geology and location, with some high yielding groundwater sources in the west of the catchment but patchy groundwater availability in the east.

The 2017–2020 drought had significant impacts on all parts of the region – some waterways in the Border Rivers stopped flowing, towns faced water security challenges and economic production in the region shrunk. These dry conditions were quickly followed by floods and wet years.

We know that droughts like this could happen again. Like all regions across Australia, the Border Rivers faces a more variable and changing climate. We need to prepare now for the transition to a scenario where we do more with less water, make smarter decisions about our water use and management armed with better knowledge and information, and protect our most critical water needs.

The regional water strategy will help set the region up so it is prepared for a changing climate. This will help keep the Border Rivers an attractive place where people are able to live, work and visit.

Image courtesy of Robert Cleary, Department of Planning and Environment. Ironbark Creek Campground, Kings Plains National Park.

Figure 1. Map of the Border Rivers region

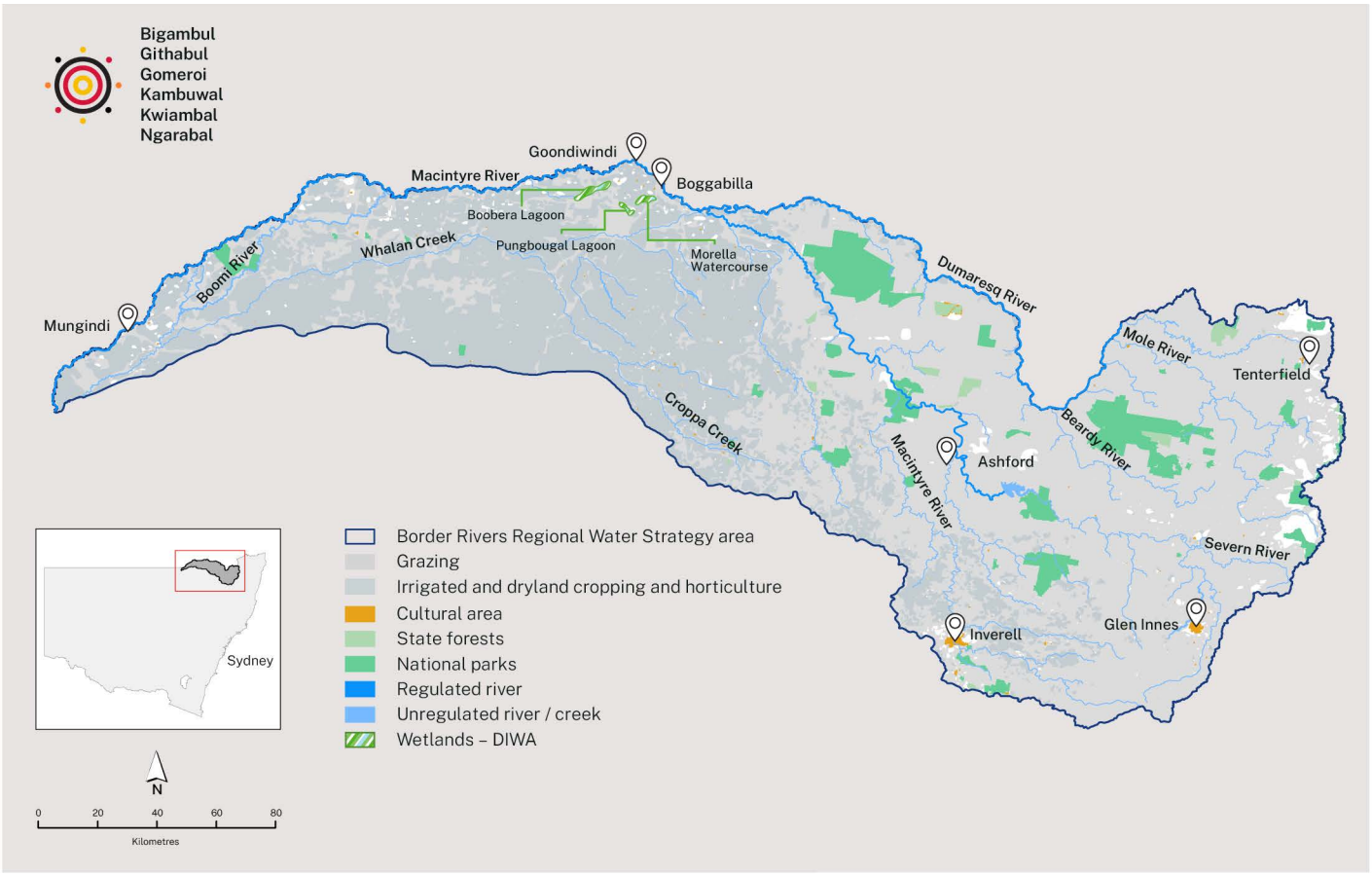


Image courtesy of Destination NSW. Townscape, Glen Innes.

Purpose of the Border Rivers 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 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 Border Rivers Regional Water Strategy identifies the critical strategic challenges that 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.

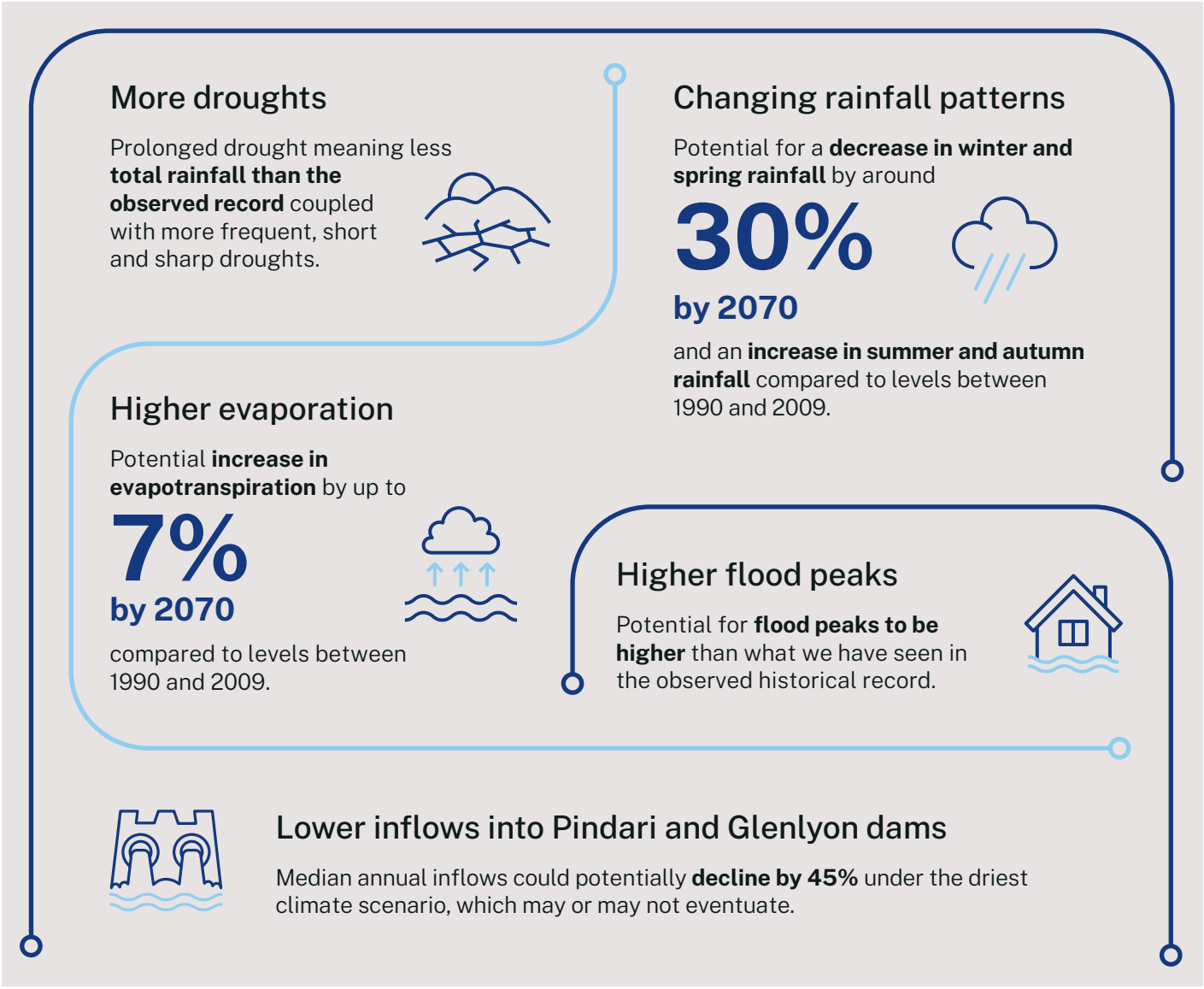
The actions outlined in the regional water strategy provide a foundation for building resilience and realising the benefits of working together to reach the vision for the region. Meaningful engagement and a collaborative approach to planning and decision making will achieve sustainable and equitable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

Image courtesy of Jane Humphries, Commonwealth Environmental Water Office.
Barwon River looking upstream just downstream of Mungindi Bridge.

What the future climate could look like in the Border Rivers 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 Border Rivers region



Key regional challenges – what we will focus on first

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

Increased surface water security risks for towns in the region

Less reliable flows in rivers and creeks will increase water security and water quality risks for towns and rural landholders that rely on these water sources.

Climate risks could increase the times when surface water is not available for towns in the region.

Towns in the western side of the catchment are likely to be able to meet shortfalls from groundwater backup supplies in extreme droughts, although with restrictions and additional costs for pumping and treatment of the groundwater. However, groundwater sources in the eastern side of the catchment have low yields and there is limited understanding about their reliability as an ongoing water source.

Risk of reduced water availability will impact the regional economy

The region's main economy of agriculture relies on water accessed through general security licences, which have low reliability. A drier future could increase the frequency and severity of droughts and further reduce the reliability of licences. This would have significant impacts on the regional economy.

The region's economy is driven by agriculture, which relies on water. Agriculture is the area's largest employer, contributes around one-fifth of the region's economic output and holds approximately 90% of the water licences in the region. The variable climate means that the amount of water available for agriculture varies significantly year to year. On average, general security licences, which make up the bulk of water licences in the region, receive 35% of their allocation by the end of the water year – making these some of the least reliable water licences in the state.

A possible dry future climate change scenario could result in general security licences receiving only 10% of their allocation by the end of the water year. If practices don't change, this could result in a reduction in economic profit generated by irrigated agriculture of up to 35%. This could put the viability of the Border Rivers regional economy at risk.

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)

'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 Border Rivers 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.

Sustaining 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, affecting the resilience of water-dependent ecosystems.

The Border Rivers supports a rich and diverse range of water-dependent plants, animals and ecosystems. This includes 16 native fish species, 5 of which are threatened, nationally and internationally significant waterbirds and alluvial floodplains that need variable flow regimes.

Under a dry climate change scenario, an increase in the frequency and duration of cease-to-flow events could dry out refuges (waterholes and small habitats that retain water) that are critical to keeping fish and native species alive during drought. In addition, physical structures, such as dams and weirs without fishways, restrict the ability of native fish to move. Coupled with drying of drought refuges and changes to water quality, this limits the ability of native fish and birds to survive and bounce back after periods of drought.

There could also be less frequent large flows that are needed to replenish drought refuges and water the floodplains of the western catchment. Over the last 50 years, development has modified how water moves through the region. This has had the greatest impact in the lower part of the Border Rivers where the frequency of large freshes and bankfull events at Mungindi could have reduced by approximately 50% compared to no development conditions.

A drier climate also means fewer opportunities to use water allocated for the environment to replenish floodplains and limit the drying-up of flowing water habitats.

The unconstrained growth in floodplain harvesting beyond sustainable diversion limits, which is the capturing of water flowing across the Border Rivers Valley 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 by 13% and is expected to deliver up to a 5.5 GL increase in average annual flood volume across the floodplain in years when floods occur.[1]

Improving connectivity to support downstream needs

Extended cease-to-flow and low flow periods create risks for towns, basic landholder rights and high priority environmental needs at the end of the Border Rivers system and further downstream. A drier future could increase the frequency and the severity of cease-to-flow and low flow periods.

The Border Rivers is part of a connected system. The catchment spans NSW and Queensland, and connects to the Barwon–Darling River, contributing on average approximately 20% of the inflows into the Barwon–Darling River. Low flow and cease-to-flow events occur naturally in the Border Rivers region. When the river stops flowing for extended periods, it can put critical human and environmental needs at risk. Development has likely increased the number of shorter cease-to-flow events, but at certain times dam releases have potentially helped the river keep running longer than would have occurred under natural flow conditions. Development is unlikely to have had an impact on extended cease-to-flow events, which are driven by climatic conditions.

Development has also likely reduced the size of flow events that follow dry periods and increased the duration between large fresh events. Along with changes to other aspects of the flow regime, this is expected to have impacted the resilience of water-dependent ecosystems in the Barwon–Darling and their ability to recover after extreme events such as extended cease-to-flow events.

Our modelling suggests that if the future climate in the Border Rivers is similar to the historical climate projections, the average amount of water flowing to the end of the system is likely to remain relatively stable. If a dry climate change scenario occurs, over the coming decades we could see up to a 40% reduction in mean annual inflows into the Barwon–Darling River from the Border Rivers catchment. This could place greater stress on critical needs in the Border Rivers and the Barwon–Darling.

1. Detailed technical reports, environmental analysis and hydrological analysis on the benefits of the floodplain harvesting reforms in the Border Rivers are available at: www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/water-sharing-plan-rules/border-rivers

Responding to these challenges

To rise to the challenges facing the Border Rivers region, we need to prepare now for a future where water sources and services may come under greater stress and take action to improve the health, reliability and resilience of our water resources. 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. Surface water resources in the Border Rivers are fully 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 for one group of water users will lead to some water being taken from another group. Because of this, the Mole River Dam Strategic Business Case assessment found that costs of dam construction and operation did not outweigh the benefits.[2] However, it did highlight the need to begin a conversation with the community on how to support and structure the future economic growth of the region.

There is also no economically feasible way of bringing 'new' water into the region. We have assessed multiple options around diverting water from NSW coastal regions to the Border Rivers region. The analyses show that the costs of such a scheme could be over $6 billion in some instances, with impacts on the environment, Aboriginal people and communities on the coast. The economic value and benefits that may be created from this water is significantly less than the costs and impacts.[3]

This strategy sets out 21 actions to address the regional challenges. The actions aim to address knowledge gaps and make information easily accessible, do more with less water, make the region more resilient to climate variability and share water differently to address critical needs of Border Rivers and downstream users (see Figure 3 to Figure 5). Collectively, the actions will help ensure the Border Rivers 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.

A range of robust economic, hydrological, environmental and qualitative assessments were used to prioritise the actions in the regional water strategy.[4]

Getting the balance of actions right means understanding the stresses on the region's water resources and natural environment and recognising the limits and trade-offs. 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.

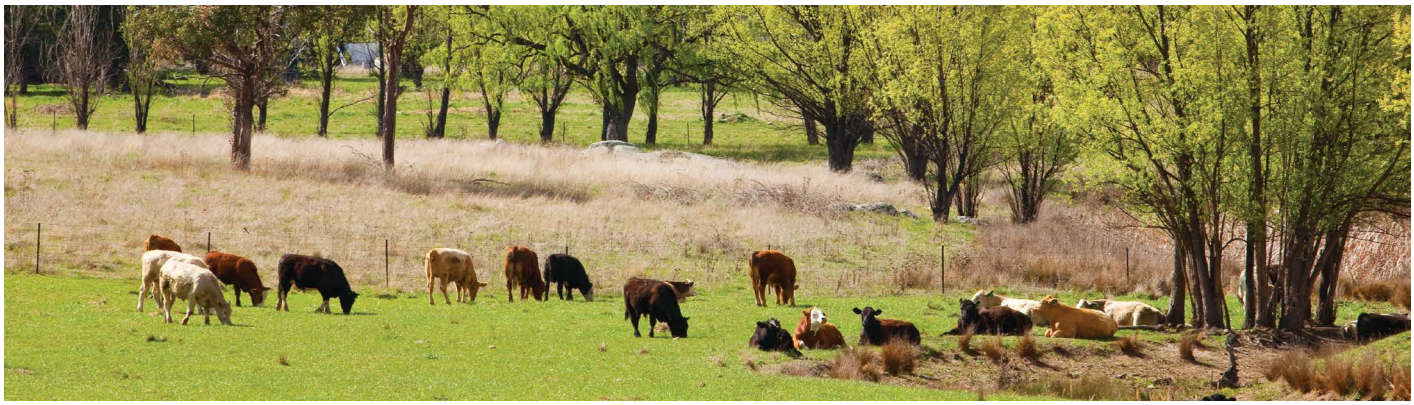


Image courtesy of Department of Planning and Environment. Cows graze on farmland near Glen Innes, NSW.

2. A summary of the analysis from the Mole River Dam Strategic Business Case is available in attachment 2 of the *Draft Regional Water Strategy: Border Rivers: Shortlisted Actions – Consultation Paper,* www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/public-exhibition/border-rivers
3. Analysis on the inland diversion scheme is available at www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/public-exhbitions/border-rivers
4. www.dpie.nsw.gov.au/water/plans-and-programs/regional-water-strategies/public-exhibition/border-rivers

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/border-rivers-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 Floodplain Harvesting Team, Department of Planning and Environment. Aerial view of Mungindi.

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

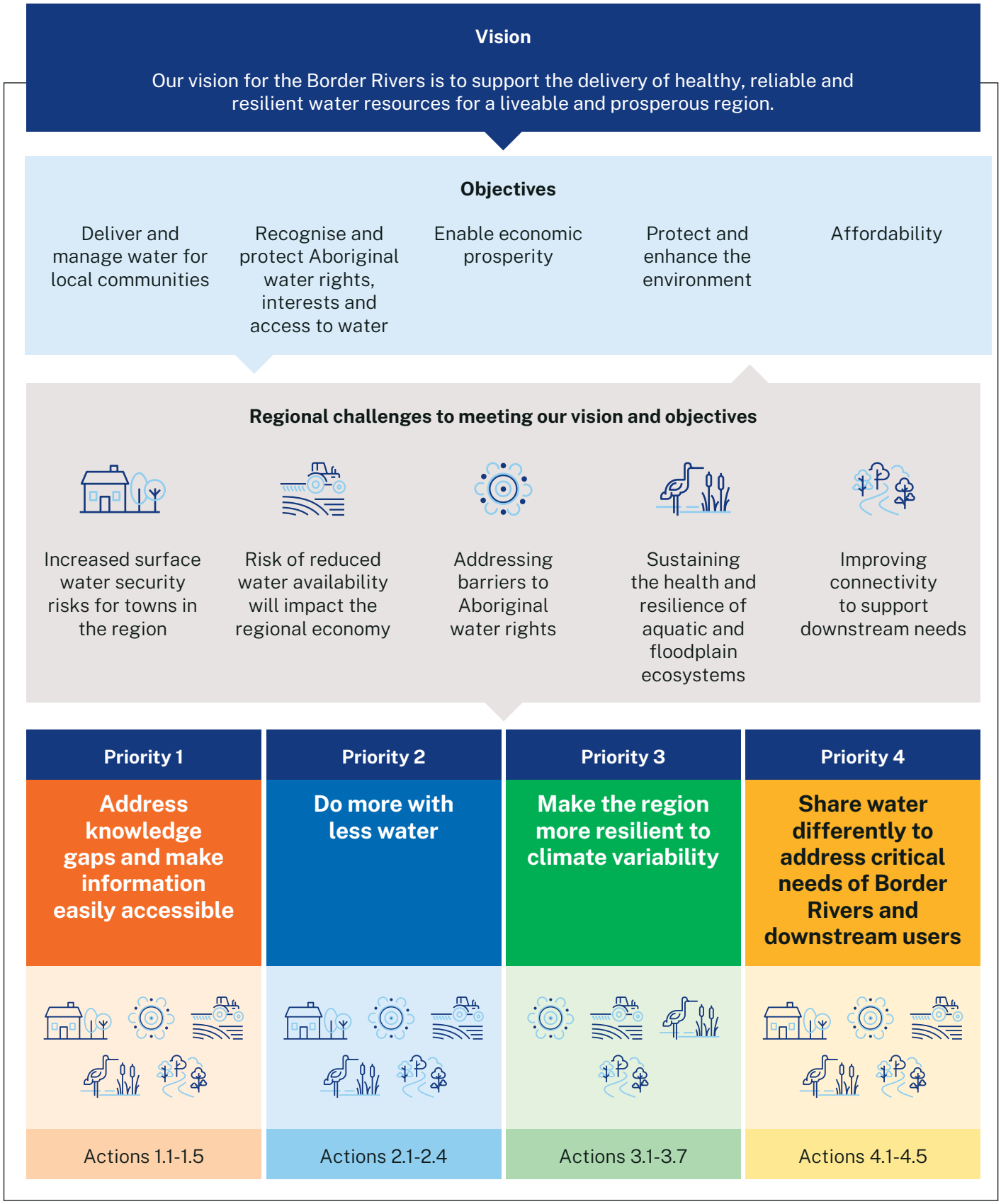


Figure 4. Summary of Border Rivers Regional Water Strategy actions

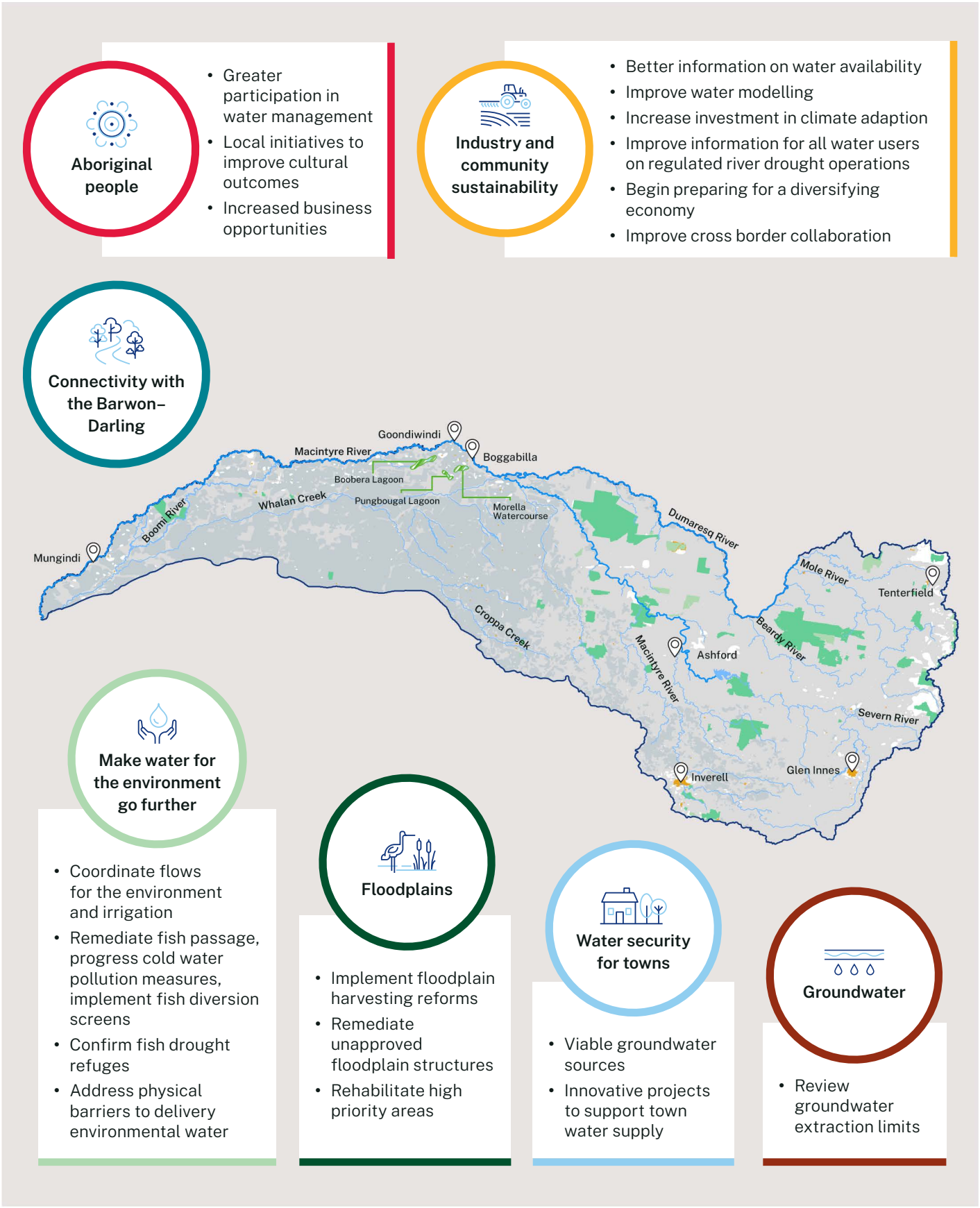


Figure 5. Priorities and actions identified to address the key regional challenges

Legend				
				
Increased surface water security risks for towns in the region	Risk of reduced water availability will impact the regional economy	Addressing barriers to Aboriginal water rights	Sustaining the health and resilience of aquatic and floodplain ecosystems	Improving connectivity to support downstream needs

Priority	Actions	Challenges addressed
Priority 1: **Address knowledge gaps and make information easily accessible**	**Action 1.1:** Improve public access to climate information and water availability forecasts	
	Action 1.2: Foster ongoing arrangements for participation of local Aboriginal people in water management	
	Action 1.3: Improve understanding of river flows, water use and water quality at priority locations in the Border Rivers	
	Action 1.4: Invest in continuous improvement to water modelling in the Border Rivers region	
	Action 1.5: Improve cross-border collaboration and information sharing	

Priority	Actions	Challenges addressed
Priority 2: **Do more with less water**	**Action 2.1:** Support farm climate adaptation and water efficiency measures	
	Action 2.2: Coordinate the management of irrigation water releases and water for the environment to improve ecological outcomes	
	Action 2.3: Identify and address physical barriers to the delivery of water for the environment	
	Action 2.4: Provide clarity and certainty for water users, landholders and environmental water managers during drought operations	
Priority 3: **Make the region more resilient to climate variability**	**Action 3.1:** Modernise the water management framework so it can continue to support sustainable economic diversification	
	Action 3.2: Support place-based initiatives to deliver cultural outcomes for Aboriginal people	
	Action 3.3: Support Aboriginal business opportunities in the Border Rivers region	
	Action 3.4: Mitigate the impact of infrastructure on native fish through infrastructure changes	
	Action 3.5: Fully implement the NSW Floodplain Harvesting Policy	
	Action 3.6: Remediate unapproved floodplain structures	
	Action 3.7: Rehabilitate regionally significant riparian, wetland or floodplain reaches	

Priority	Actions	Challenges addressed
Priority 4: **Share water differently to address critical needs of Border Rivers and downstream users**	**Action 4.1:** Map critical drought refugia	
	Action 4.2: Support towns to understand if groundwater can provide a reliable water supply when surface water availability is limited	
	Action 4.3: Investigate innovative water projects to support town water supplies	
	Action 4.4: Investigate sustainable levels of groundwater extraction in the Border Rivers Alluvial aquifer	
	Action 4.5: Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale	

Image courtesy of Bron Powell, Department of Primary Industries – Fisheries. Macintyre River.

Image courtesy of Floodplain Harvesting Team, Department of Planning and Environment. Barwon River at Mungindi, NSW.

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