

Regional Water Strategy

Western – Executive Summary

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Acknowledging First Nations people

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

Today, they practise the oldest living culture on earth.

The NSW Government acknowledges the First Nations people from the Western region as having an intrinsic connection with the lands and waters of the Western Regional Water Strategy area. The landscape and its waters provide the First Nations people with essential links to their history and help them to maintain and practise their traditional culture and lifestyle.

We recognise Traditional Owners as the first managers of Country. Incorporating their culture and knowledge into management of water in the region is a significant step towards 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 and present 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 helping support the health and wellbeing of waterways and Country by valuing, respecting and being guided by 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 hold a strong voice in shaping the future for their communities.

Artwork courtesy of Nikita Ridgeway.

Water is our most precious resource. Water supports the essential needs of communities in the Western region of New South Wales, and is vital for maintaining our aquatic environments and Aboriginal cultural heritage. It is central to liveability within the region and supports healthy rivers, healthy farms and healthy communities.

The NSW Government is committed to having healthy, reliable and resilient water resources. We want the Western region to remain a place where people want to live, work, play and invest, now and for future generations. This means doing more with the water we have and preparing for future uncertainties, such as a more variable and changing climate.

The Western region covers about one-third of New South Wales, spanning from the Queensland border in the north to Wentworth in the south, and the South Australian border to the west. The far west is vast, flat and low-lying, with extreme weather conditions and dispersed populations. The region is located within the traditional lands of 17 First Nations who have been caretakers of the region for over 60,000 years.

While covering such an extensive area, the region is home to a small and dispersed population. Most people live in the regional centres of Broken Hill (population 17,600), Cobar (population 4,600) and Bourke (population 2,600). These regional centres – and other smaller towns such as Mungindi, Walgett, Lightning Ridge, Brewarrina, Tibooburra, and Menindee – are important employment and service hubs for surrounding communities.

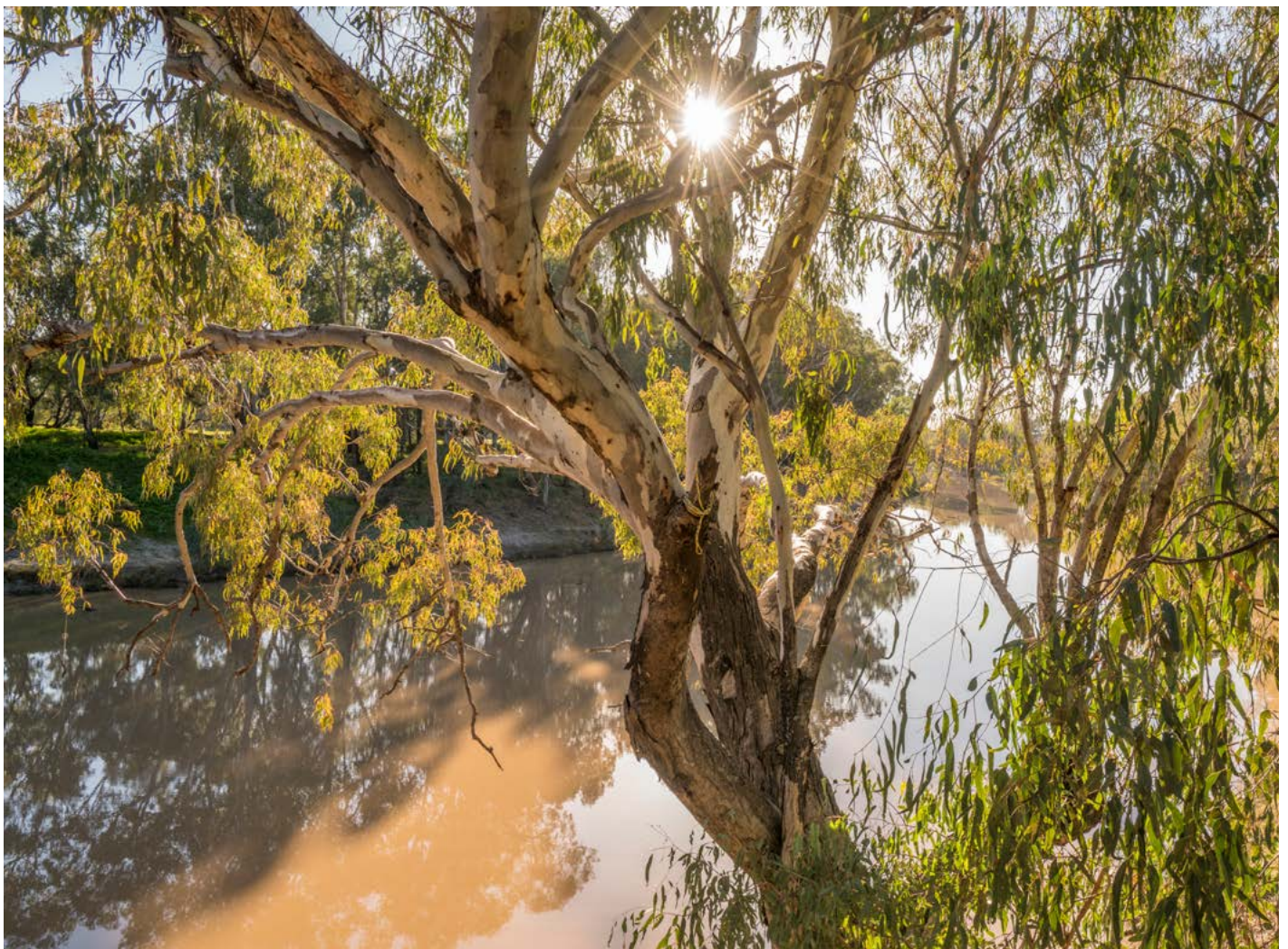


Image courtesy of Destination NSW. Darling River, Bourke.

Importance of agriculture in the Western region

Agriculture is a significant part of regional NSW. It drives employment, regional economies and supports towns. NSW crops, fodder and livestock provide food and fibre to NSW, Australia and abroad.

The Western region with its hot dry climate and diverse soil types supports a range of agricultural industries including irrigated cotton in the north, particularly in the Brewarrina and Bourke local government areas where there is access to surface water from the major rivers in the region. Extensive livestock grazing on predominantly native pastures is also an important industry in the region. Diversification into kangaroo or goat meat as a potential source of permanent income is being seen as important for many farmers.

Agriculture also supports downstream value-added industries in the region. It creates economic and employment opportunities in meat processing, agricultural tourism, farming supplies, technical support services as well as in transport industries and research facilities, such as the Fowlers Gap Research Station north of Broken Hill.

Agriculture in the Western region employs over 40% of the workforce in the Unincorporated Area and Central Darling local government areas, 30% of the workforce in the Brewarrina local government area and 27% of the workforce in the Walgett local government area contributing to the region's \$2.3 billion/year economy.

The Barwon–Darling river system is the main water source in the region and connects the northern and southern parts of the Murray–Darling Basin. The Barwon–Darling River relies heavily on water from NSW and Queensland tributaries: over 90% of the flows in the Barwon–Darling River originate from the major upstream valleys (Condamine–Balonne, Warrego, Border Rivers, Gwydir, Namoi and Macquarie–Castlereagh catchments). Most of these flow contributions occur during high-flow periods. This means that industries, communities, and ecological needs across the Western region rely on water flowing from upstream catchments.

Annual rainfall in the region is generally low, with mild winters, hot summers, high evaporation rates and long periods of low or no flows interspersed with small-to-medium and high-flow events. These conditions mean that agricultural industries, town weirs, and environmental assets along the unregulated rivers rely on the irregular small-to-medium and high-flow events to survive and prosper.

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

- no significant inflow from upstream catchments
- significant fish deaths – more than one million fish were estimated to have died during 3 events in the Lower Darling River
- zero or low water allocations in the Lower Darling River and limited access to unregulated river flows
- critically low town and stock water supplies, with some towns such as Pooncarie, Wilcannia, and White Cliffs requiring water carting.

We know that droughts like this could happen again. We need to be prepared so that critical human and environmental needs are protected, and regional businesses and lifestyles are maintained.

The regional water strategy provides an opportunity to set the region up so it is prepared for a more variable and changing climate.

Figure 1. Map of the Western region

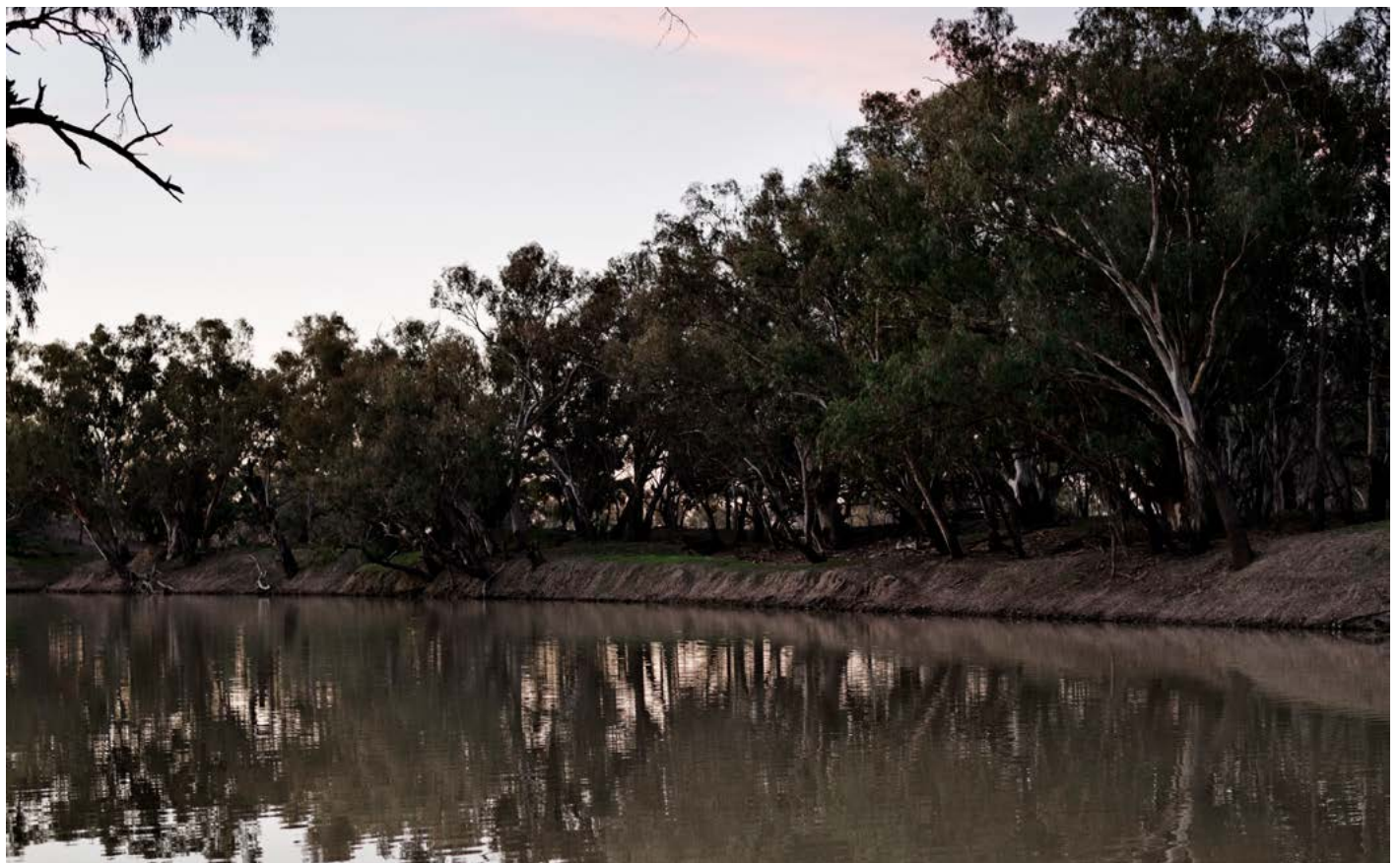
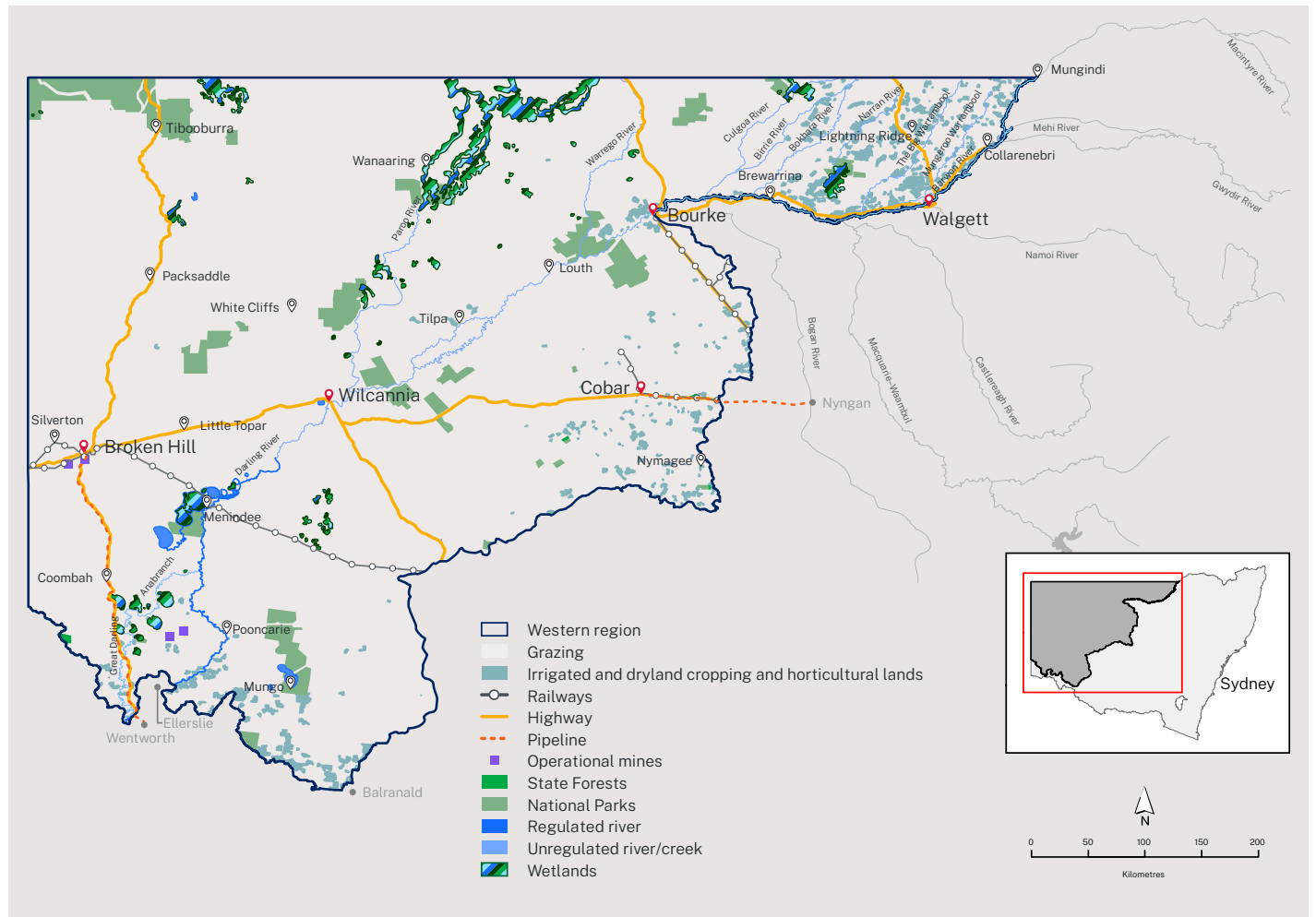


Image courtesy of Destination NSW. Barwon River, Brewarrina.

Purpose of the Western 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 and do more with the water we have.

The Western 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 Western 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.



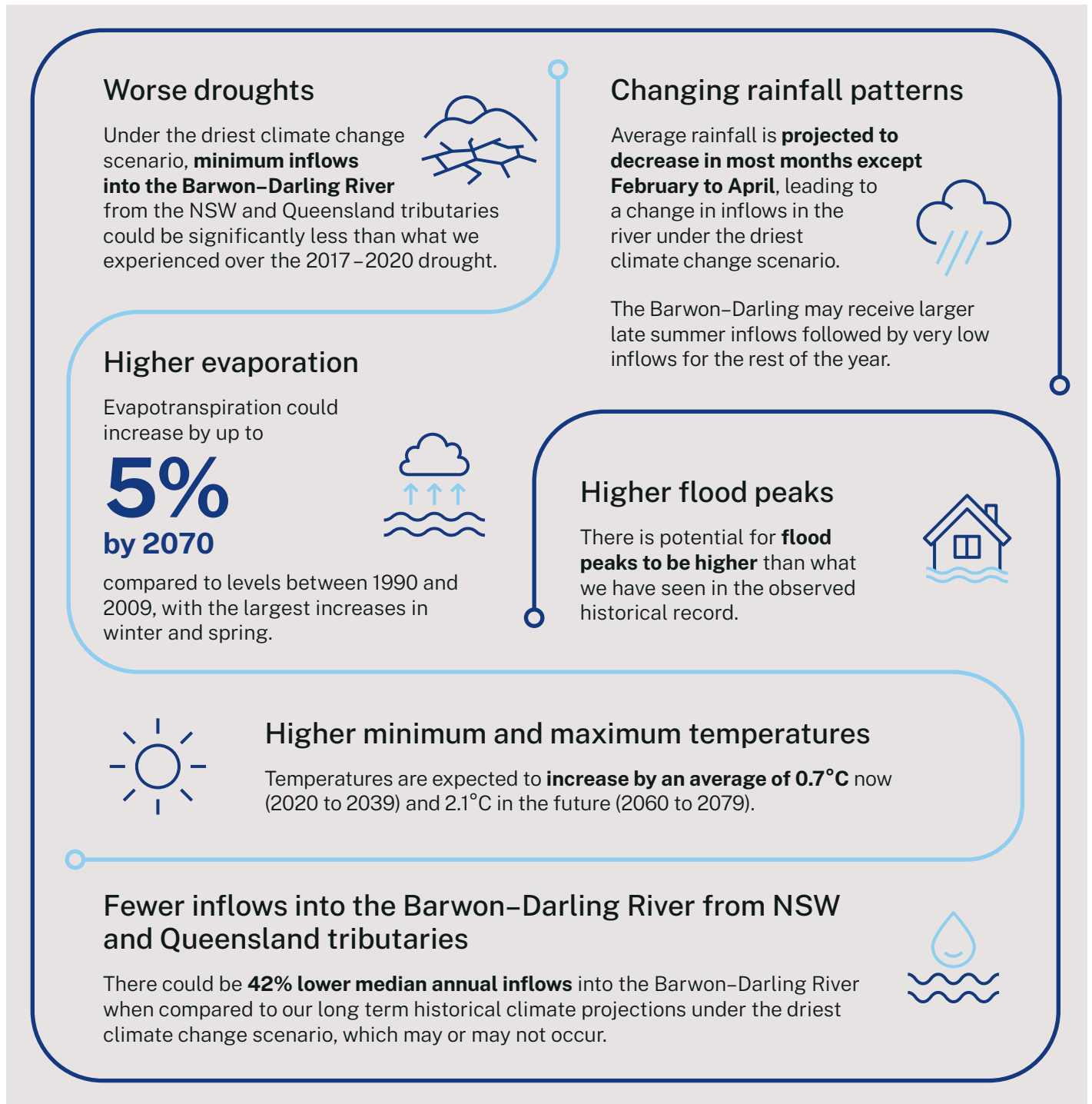
Image courtesy of Michael Scotland. Barwon River, Mungindi.

What the future climate could look like in the Western 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;

and that there could be more extreme wet periods, higher evaporation rates and more unpredictable rainfall and river flows. This long-term water strategy is helping to plan for this uncertainty and better understand the future risks we face.

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



The key challenges facing the Western region

There are 6 key challenges in the Western region which are the initial focus for the region. These challenges will be revisited in future reviews of the strategy.



Declining water security for towns and small communities

Many towns along the Barwon–Darling and Lower Darling rivers rely on surface water from a series of small weirs, supplemented in some cases by groundwater of variable quality and quantity. Extended no-flow periods and very high evaporation rates in summer can result in a rapid depletion of water in town weir pools, placing stress on town water supplies and affecting the quality of the water in the town weir pools. A more variable climate, higher evaporation rates and extended droughts may mean many towns in the region do not have a secure supply of water unless actions are taken to invest in diversified water sources.

The long-term water strategy for the region addresses this challenge by focusing on doing more with the water we have, additional water sources for towns and being prepared for the next drought.



Insecure water supplies affect the viability of businesses

Important regional industries such as mining, agriculture and tourism, rely on water to survive. Multi-year droughts impact the region's industries and economy. A dry climate change scenario could increase the frequency of dry periods, adversely affecting employment and business prosperity in the region.

Groundwater use is low across the Western region compared to some other regions and is often constrained because of the low water quality. Managing groundwater salinity and promoting groundwater desalination for industry and towns can help to address future water security challenges.

Improving water security and reliability is crucial for attracting people and businesses to the region and supporting the growing tourism industry.



Addressing barriers to Aboriginal people's water rights

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

Historical dispossession of land and water licences that are allocated to land parcels have continued to constrain First Nation people's access to water, restricting their ability to care for Country, practise and teach culture, and use traditional knowledge to care for and manage waterways.

The Government's water management framework has evolved over time, and there are legislative provisions to provide for cultural access licences. During the development of the strategy we heard from First Nations people in the Western region that the current provisions are not meeting their spiritual, cultural, social, and economic needs.

We will invest \$15 million over 3 years to 2025 to develop an Aboriginal Water Strategy that will identify a program of measures to deliver on First Nations' water rights and interests in water management. It is being informed by direct engagement and co-design with Aboriginal people and communities.



Declining health of natural systems

Regulation of upstream catchments, water extraction and land use change has modified how water moves naturally through the landscape. This affects the health of the river system and results in the loss of native vegetation and wetlands, and a decline in the condition of fish communities and waterbird habitat. These effects, and risks to ecosystems, are likely to be exacerbated under future climate change scenarios.

Concerted and coordinated efforts across the Barwon–Darling system and tributary valleys can support the region’s environmental assets and improve the resilience of ecosystems to withstand further climate extremes.



Reduced connectivity impacts critical needs

The Western region relies on water flowing from upstream valleys. Over 90% of flows in the Barwon–Darling system come from 5 NSW valleys (Border Rivers, Gwydir, Namoi, Waambal/Macquarie and the Intersecting Streams valleys) as well as a number of Queensland rivers. This means water in the region is influenced by the climate, water management and extractions in those catchments.

We heard that more water needs to flow from upstream valleys to support downstream needs. However, maintaining a constantly flowing river in the Barwon–Darling catchment is not possible. The Barwon–Darling and Lower Darling naturally go through wetting and drying cycles and it is not unusual for the Barwon–Darling to stop flowing for extended periods. Even at the turn of last century, when there was little agricultural development upstream, there were long periods when the river did not flow (Figure 3).

Enabling water to flow across connected systems and downstream during extreme dry periods is especially challenging. When most of the northern and western NSW catchments are experiencing a very dry period, it can be virtually impossible to deliver water for critical needs along the length of the system. Longer cease-to-flow events are more likely to be driven by the climate, rather than irrigation development because very little inflow occurs during these extended dry events. However, development has likely increased the frequency of shorter cease-to-flow periods and low flow periods in the Barwon–Darling.

The NSW Government has enacted rules to protect low flows in the Barwon–Darling that are projected to reduce the frequency of short (less than one month) cease-to-flow events by an average of 36%. However, a more variable or changing climate change could increase the frequency and duration of cease-to-flow periods, and result in less water flowing into the Barwon–Darling River from upstream catchments, putting critical needs at risk. Ensuring that water flows across connected systems at important times will be critical to the long-term equitable sharing of water.

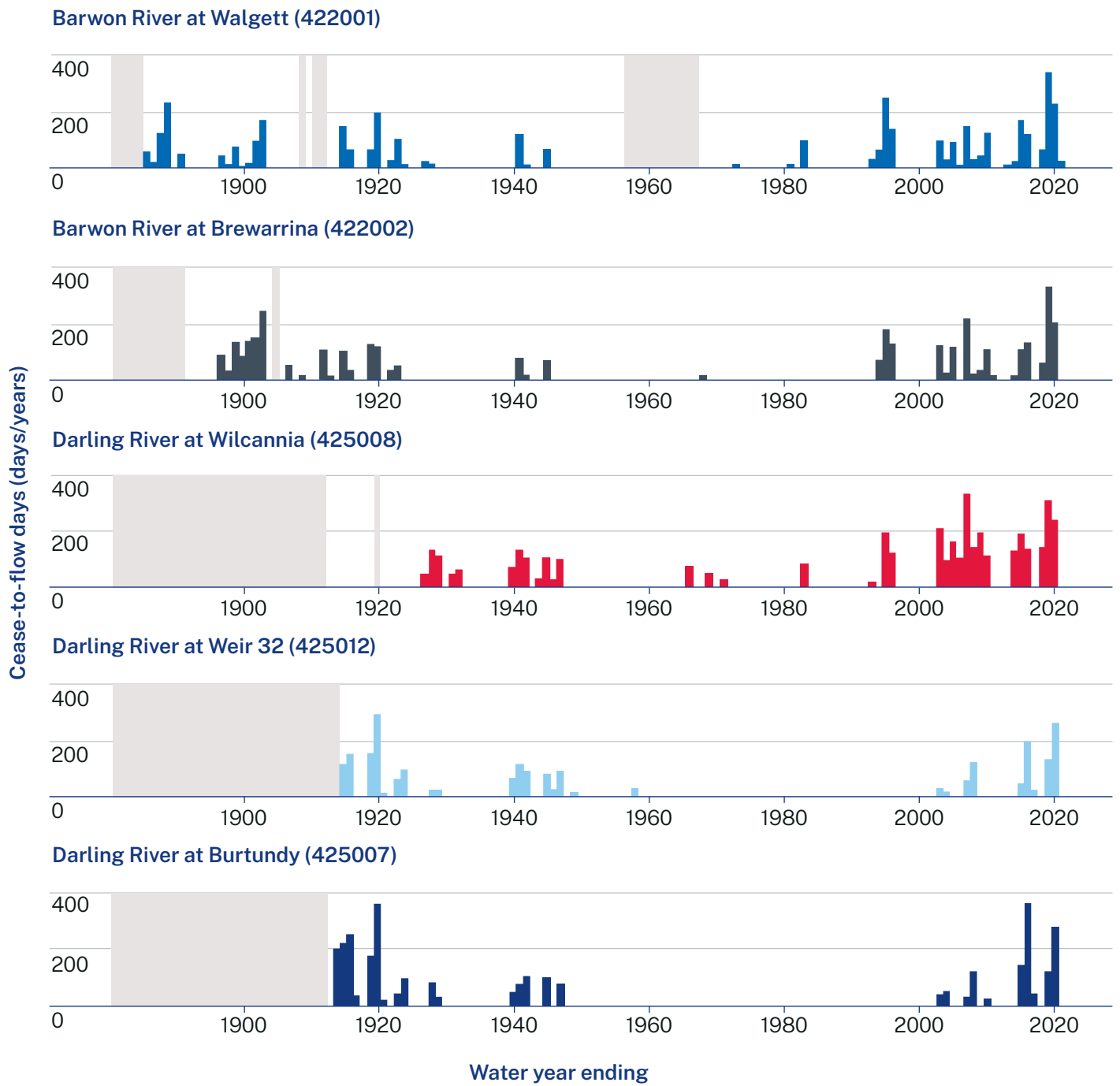


Poor water quality

Poor water quality has been a long-term concern for the region. Water quality is generally poor during periods of low or no flow in the Barwon–Darling and Lower Darling. Poor water quality also occurs after droughts when flows return and during floods – debris and dissolved material from previously dry river channels and floodplains then begin to accumulate.

Poor water quality affects aquatic organisms, is a risk to human health and stock, impacts the amenity of waterways and affects Aboriginal people’s ability to practice culture on or near waterways.

Figure 3. Number of cease-to-flow days per year at different locations on the Barwon–Darling



A plan to secure water for the Western region

To address the challenges in the Western region, we need to prepare now for a future where water sources and services may come under even greater stress. By using the knowledge we have gained during droughts, we can find smarter and better ways of making our water go further 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. Additionally, 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 may result in changes to the timing of water access for other groups or the environment.

Achieving the right balance 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 delivering on the water rights of First Nations people, improving town and on-farm water efficiency, using water more effectively, restoring aquatic and floodplain habitats, and developing alternative water supplies.

This strategy sets out 3 regional priorities to ensure the Western region is well-placed to meet future challenges. Each priority is supported by actions that government, local councils, industry and the community can take. These actions aim to ensure that our water systems can respond to growth, while also being resilient to future climatic extremes.

A range of robust economic, hydrological, environmental and qualitative assessments were used to prioritise the actions in the Western Regional Water Strategy.



Image courtesy of Michael Scotland. Barwon River, Mungindi.

Priority 2: Improving the resilience of natural systems

Future droughts and long-term dry climate change scenarios will increase the stresses on ecosystems and native species.

The actions in this strategy focus on improving the health and resilience of natural systems to withstand future extreme events, protect aquatic species and habitats and improve water quality. This includes actions to allow more water to flow across floodplains, reduce the impact of water infrastructure on ecosystems, and take long-term action to improve riparian habitats.



Image courtesy of Destination NSW. Barwon River, Brewarrina.

Priority 3: Improving connectivity across the northern Basin

Water flowing across connected catchments supports essential human and ecological needs in the Barwon-Darling and Lower Darling River. The NSW Government has implemented a range of connectivity reforms over recent years that will protect low flows and restrict floodplain harvesting until downstream targets have been met (Figure 5).

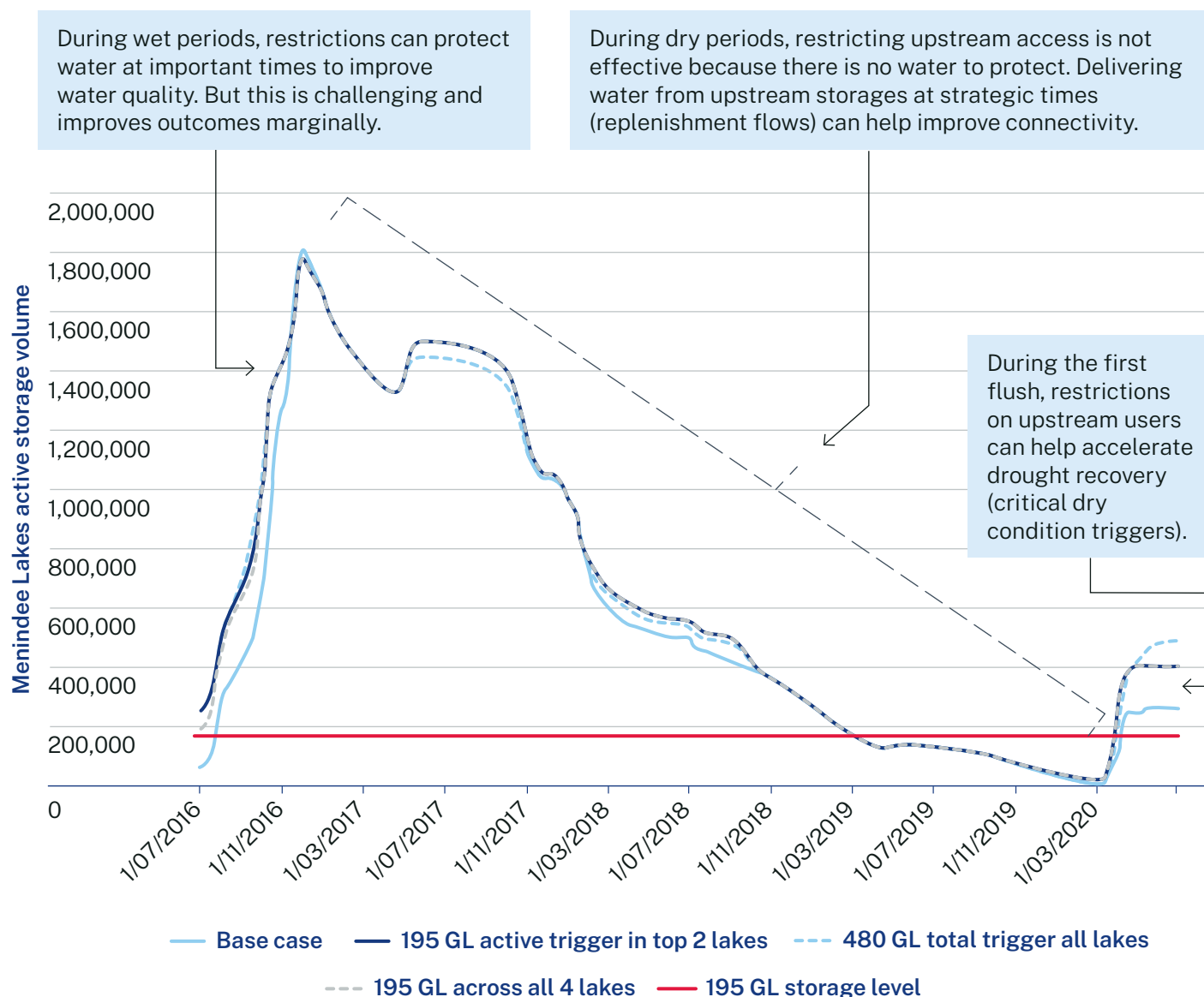
Further actions that seek to improve flows need to be targeted, realistic and build on existing reforms.

Our data tells us that there have always been extreme dry conditions and periods of no-flow in the Barwon-Darling. It is not possible to maintain a constantly flowing river through even the best management and we have limited ability to break up drought-induced extended cease-to-flow periods.

Significant analysis underpinning this strategy has demonstrated that:

- placing restrictions on low priority licences upstream – such as supplementary, floodplain harvesting, B Class and C Class licences – is unlikely to result in significant changes in flows downstream or at the end of the system during droughts and is unlikely to slow the depletion of water in Menindee Lakes during droughts. This is because these licences rely on large natural flows which often do not occur during droughts
- restricting upstream access and protecting the first flow of water after a drought can help accelerate drought recovery for towns and ecosystems
- it is possible to intervene during critically dry periods to break up acute cease-to-flow periods – primarily by accessing water from storages (such as dams) but this is a significant reform that requires more analysis and community consultation (Figure 5).

Figure 5. Modelled Menindee Lakes storage volumes during the 2017–2020 drought with and without restricting supplementary, B Class and C Class licences under different triggers



Protecting water across connected systems at important times is critical to the fair sharing of water. The strategy focuses on enabling water to flow across connected river valleys and downstream at important times for the following specific outcomes:

- **Protecting the first flow of water after extended droughts** to protect critical human and environmental needs and accelerate drought recovery.

Action 3.1 will progress work to restrict floodplain harvesting, supplementary, B Class and C Class licences when there is approximately 12 months of water remaining for critical human and environmental needs in the Lower Darling. This is expected to be when there is less than 195 GL¹ of active water in Menindee Lakes (primarily in Wetherell and Tandure lakes), or when extended cease-to-flow periods are forecast in upstream catchments.

These triggers will be supported by actions which will seek to implement the proposed restrictions through water sharing plan rules, allow water users to take water during non-critical times and work with licence holders to reduce the risk of large water orders drawing the lakes down to critical levels.

The strategy also prioritises actions to work with other jurisdictions to change the management of Menindee Lakes to allow water to be managed in a more efficient way and provide greater drought security when the lakes are in NSW control (Action 3.4). This includes preferentially releasing water from Lake Cawndilla during non-drought times via the Great Darling Anabranch. Combining this operational changes with restrictions to lower priority licences when Menindee Lakes are below 195 GL of accessible storage could reduce the time that the lakes are at critically low levels.

- **Identify the best way to support algal suppression and fish migration in the Barwon–Darling.**

Action 3.2 of the Western Regional Water Strategy has prioritised finalising a review on the best way to suppress algal blooms and support fish migration in the Barwon–Darling. This will confirm if restricting supplementary licences, B Class and C Class licences at important times should be progressed to suppress algal blooms and support fish migration.

Initial analysis has suggested that restrictions on lower priority licences upstream are likely to be more effective in suppressing algal blooms than meeting the flow targets needed to support fish migration.

The review will be considered in the remake of the Barwon–Darling Water Sharing Plan in 2024 and will be informed by independent advice from an expert panel, additional technical analysis and stakeholder feedback.

- **Reduce the impact of cease-to-flow periods.**

Addressing this objective will be challenging but it is an area of great impact and importance to communities and the environment and will become increasingly important in a future with a more variable or drier climate. The strategy has found that providing replenishment flows from the dams in the northern tributaries to the Barwon–Darling River could help break up cease-to-flow periods and merits further investigation.

There are a range of ways that replenishment flows could be delivered – including by using held environmental water; temporary purchase of, or trade of licences at certain times for critical needs, or through water being set aside in storages for connectivity purposes. Each implementation option has benefits, impacts and costs and will need to be thoroughly investigated.

Collectively, these actions merit further investigation and could help ensure water flows across connected systems at important times. Importantly, these actions are not intended to:

- maintain a constantly flowing river
- reduce the overall amount of water being taken out of rivers, consistent with the sustainable diversion limits set by the Basin Plan
- move productive use of water from one valley to another, nor from the northern to the southern Basin.

The actions could be progressed in a way where impacts on licences are offset by allowing water to be taken during non-critical times. They would also require working with the Murray–Darling Basin Authority to recognise any connectivity amendments in the review of the Basin Plan in 2026.

1. The current inlet regulator in Pamamaroo is in need of repair and requires additional water to be held in Menindee Lakes in order to meet the objective of providing up to 12 months of water for critical human and environmental needs in the Lower Darling. Until the inlet regulator has been repaired, 250 GL may be required to provide 12 months of critical needs in the Lower Darling. Funding for upgrading the inlet regulator has been secured and work will commence once water levels in the lakes drop to manageable levels.

Figure 6. Summary of the Western Regional Water Strategy actions

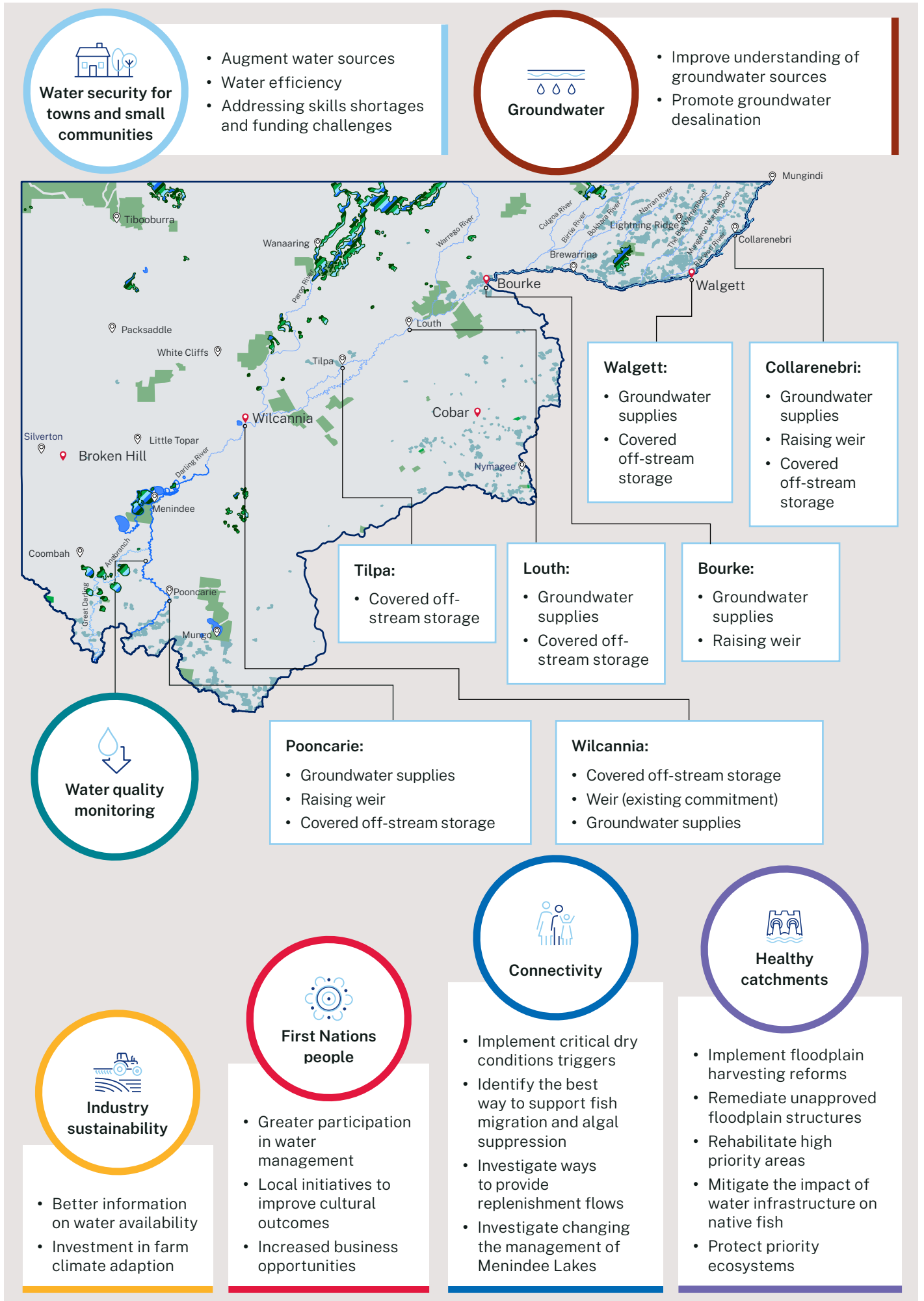







































Figure 7. Summary of actions in the Western Regional Water Strategy

Legend					
					
Declining water security for towns and small communities	Insecure water supplies affect the viability of businesses	Addressing barriers to Aboriginal people's water rights	Declining health of natural systems	Reduced connectivity impacts critical needs	Poor water quality

Priority	Actions	Challenges addressed
Priority 1: Improving water security for towns, industries and communities	Action 1.1: Augment water supply systems for towns and small communities	
	Action 1.2: Adopt a stronger focus on water efficiency and demand management for towns	 
	Action 1.3: Addressing water related skills shortages and funding challenges in small councils	 
	Action 1.4: Use groundwater more efficiently, innovatively and sustainably	 
	Action 1.5: Improve the collection, analysis and public access to data	    
	Action 1.6: Collect water quality data in the Lower Darling River	    
	Action 1.7: Develop ongoing arrangements for participation of local Aboriginal people in water management	
	Action 1.8: Support place-based initiatives to deliver cultural outcomes for Aboriginal people	

Priority	Actions	Challenges addressed
	Action 1.9: Improve cross-border collaboration and information sharing	
	Action 1.10: Support Aboriginal business opportunities in the Western region	
	Action 1.11: Support adoption of farm climate adaption and water efficiency measures	
Priority 2: Improving the resilience of natural systems	Action 2.1: Fully implement the NSW Floodplain Harvesting Policy	
	Action 2.2: Remediate unapproved floodwork structures or constraints	
	Action 2.3: Protect priority aquatic and groundwater dependent ecosystems	
	Action 2.4: Undertaking broadscale, long-term catchment management and better integrating land use and water management	
	Action 2.5: Mitigate the impact of water infrastructure on native fish	
Priority 3: Improving connectivity across the northern Basin	Action 3.1: Publish critical dry condition triggers and seek to implement them in water sharing plans	
	Action 3.2: Finalise the review of the North-West Flow Plan to identify the best way to support algal suppression and fish migration	
	Action 3.3: Further investigate ways to provide replenishment flows from the northern tributaries during dry periods	
	Action 3.4: Progress investigations into changing the management of Menindee Lakes	

Implementing the strategy

The strategy has a separate implementation plan that prioritises the delivery of actions throughout 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.

The water security actions in this strategy have a strong focus on drought security following the experience of the 2017–2020 drought. This drought has been closely followed by major flood events from 2020–2022.

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 Western Regional Water Strategy will be a key tool in seeking funding as future opportunities arise.

The implementation plan prioritises the actions for delivery over the next 20 years. It identifies work that can begin immediately. It also clarifies the dependencies of actions on each other.

The focus of the first stage of implementation will be on:

- **assessing the effectiveness of the shortlisted actions** by assessing how the actions perform under different climate scenarios based on extended 10,000-year climate datasets. The results of this analysis will be published in 2023
- **finalising connectivity actions and considering them in the review of the Barwon–Darling water sharing plan remake** in 2024. This will help make sure the tools are in place to support critical human and environmental needs in the next drought. This will include publishing critical dry conditions triggers and seeking to implement them in water sharing plans (Action 3.1), finalising the review of the North-West Flow Plan (Action 3.2) and progressing work with other basin jurisdictions and the Murray–Darling Basin Authority around changing the operational arrangements of releasing water from Lake Cawndilla down the Great Darling Anabranch (Action 3.4)
- **securing funding to progress actions to improve the security of water supplies for towns** and small communities in the Western region (Actions 1.1, 1.2 and 1.3)
- **remediating fish barriers and improving flows across catchments** by fully implementing the NSW Floodplain Harvesting Policy (Action 2.1), remediating unapproved floodwork structures (Action 2.2), and remediating fish barriers through the Northern Basin Toolkit (Action 2.5)
- progressing the development of an **Aboriginal Water Strategy** and setting up the framework to better engage with, and support place-based initiatives to **deliver cultural outcomes for Aboriginal people** (Action 1.7 and 1.8).



Image courtesy of Wentworth Shire Council. Darling and Murray River junction, NSW.



Image courtesy of Destination NSW. Menindee Lakes, Menindee.

