



Queensland  
Government

Department of Regional Development,  
Manufacturing and Water



# Minister's Performance Assessment Report

Water Plan (Border Rivers and Moonie) 2019

February 2024

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We respectfully acknowledge the Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and Custodians of this Country – the lands and seas on which we meet, live, learn, work and play. We acknowledge those of the past, the Ancestors whose strength has nurtured this land and its people, and we recognise their connection to land, sea and community. We pay our respects to them, their culture and to their Elders past and present.

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## Minister's foreword

I am pleased to publish this report which provides an overview of the implementation of the [Water Plan \(Border Rivers and Moonie\) 2019](#) (the water plan) over the past five years and summarises the findings from assessments undertaken since its commencement in 2019.

This water plan, developed under the Queensland *Water Act 2000*, is a key element of the [Border Rivers-Moonie Water Resource Plan](#). Water resource plans are a requirement of the [Murray-Darling Basin Plan 2012](#) (Basin Plan). The Border Rivers-Moonie Water Resource Plan was accredited by the Australian Government as being consistent with the Basin Plan and commenced on 24 September 2019. Queensland remains committed to implementing the Basin Plan and welcomes the opportunity to work with other jurisdictions to sustainably manage basin water resources into the future.

This report confirms the water plan continues to promote sustainable water management in the Border Rivers and Moonie catchments and that the implementation of the water plan has been effective in achieving most of the 22 general, economic, social, cultural and environmental outcomes set out in the water plan.

The water plan is effectively maintaining water flows to support river channels and river forming processes, native fish and water quality. These outcomes were supported by significant monitoring and research.

The Border Rivers and Moonie catchments are highly developed with rules limiting any increase in overall take of water from the catchments. The potential risks to water users, including the environment, were assessed as low for most water plan outcomes. Part of one environmental outcome and three other outcomes were identified as having a medium risk. These risks and possible treatment actions are detailed in this report.

In the meantime, my department will continue to implement the water plan. Ongoing monitoring will continue, enabling any new emerging risks or existing risks that are increasing in threat level to be identified to ensure the water plan continues to sustainably manage the water resources in the [Border Rivers and Moonie water plan area](#).

I encourage anyone with an interest in water resource management in the water plan area to read this report.

**Hon. Glenn Butcher MP**

Minister for Regional Development and Manufacturing

Minister for Water

# Executive summary

Under the [Water Act 2000 \(s49\)](#) (Water Act), a report on each water plan must be prepared at least every five years to assess the effectiveness of the water plan and its implementation. The [Water Regulation 2016](#) (Water Regulation) states the matters that must be addressed in this report.

This report provides an assessment of the performance of the Water Plan (Border Rivers and Moonie) 2019 (the water plan). A summary of the assessment is provided in Table 1.

The assessment showed that the water plan continued to advance the sustainable management of water resources and that the implementation of the water plan had been effective in achieving most of the water plan's outcomes. 18 of the 22 outcomes were assessed as low risk and fully achieved. Part of one environmental outcome and three other outcomes were assessed as medium risk and considered partially achieved, these are:

- Economic outcome '21(1)(g) To make water to which this plan applies available to support the economic and social aspirations of Aboriginal people', was assessed as medium risk and partially achieved. 300 megalitres of surface water and 1,100 megalitres of groundwater has been reserved in the water plan area for the purpose of helping an Aboriginal community achieve its economic and social aspirations. The processes for releasing unallocated water are stated in the Water Regulation. To date no requests to access water from these reserves have been received and no unallocated water these reserves have been released. The Department of Regional, Development, Manufacturing and Water (the department) will continue to engage with Aboriginal peoples and Torres Strait Islander peoples to support the implementation of this outcome.
- Part i of environmental outcome '24(1)(b), To maintain and, if possible, improve flows of water to which this water plan applies that support waterholes as refugia', was assessed as medium risk and partially achieved in the Moonie catchment'. The 2018 risk assessment rated waterholes low risk in the Moonie catchment; however, extreme dry periods during the drought of 2018-20 indicate that waterholes are at risk, particularly under a drying climate scenario. The risk to waterholes is partly due to factors outside the scope of the water plan such as sedimentation and infilling of waterholes largely due to landscape uses and practices. Further monitoring and research will be undertaken during the life of the water plan to better understand waterholes and their flow requirements.
- Environmental outcome '24(1)(g) To maintain an underground water regime in the water plan area that supports ecosystems dependent on underground water to which this plan applies', was assessed as medium risk and partially achieved. The water plan and supporting instruments include strategies and rules that seek to maintain the groundwater regime. However, there remains a high level of uncertainty about groundwater dependent ecosystems including springs in the water plan area. Further monitoring and research in the lead up to water plan review and replacement, including updated spring mapping and reporting of ecological status and values of springs, will support development of policies to reduce this risk.
- General outcome '20(d) To achieve a balance between the social, economic, cultural and environmental outcomes', was rated medium risk and partially achieved. The water plan is still being implemented and science gathered. Medium risk ratings and partial achievement for three other outcomes indicated the balance between social, economic, cultural and environmental outcomes is not yet fully realised.

More information and detail about each risk and associated strategies and rules are provided in Section 8 of this report.

In addition, the assessment identified emerging issues and matters for future consideration to ensure water management arrangements are fit for purpose beyond the next five-yearly review cycle. The main issue identified as potentially emerging in the near future, or beyond the next five-year review cycle, is climate change. Although climate change is a contemporary risk, there is significant uncertainty around

the impact climate change will have on the water plan area. Some of the key reasons climate change was considered a risk, include:

- Rainfall variability – the projected increase in summer months and decrease in winter months, with no projected annual change, leads to uncertainty around the impact of rainfall variability on streamflow.
- The extent to which increased evapotranspiration and temperature will impact water availability and groundwater recharge.
- The potential impact on the water market.

An assessment of the water plan outcomes is provided in Table 1. This shows the water plan remains fit for purpose and that the department will continue its implementation. Water plan performance will be assessed again as part of the review and replacement of the water plan. The water plan expires in 2029. The water plan is a key component of the Border Rivers-Moonie Water Resource Plan which has been accredited as being consistent with the Murray-Darling Basin Plan 2012 (Basin Plan) by the Australian Government. The Murray-Darling Basin Authority will review the Basin Plan in 2026. The replacement water plan will need to align with the Basin Plan.

**Table 1: Summary of the performance assessment of the Water Plan (Border Rivers and Moonie) 2019**

Matters to be addressed	Comment	Section of the report	Status
Effectiveness of the water plan in advancing the sustainable management of Queensland's water resources	Overall, this assessment indicates that the water plan is achieving the purposes of the Water Act.	Section 3	On track
Effectiveness of the implementation of the water plan in achieving the water plan outcomes	The water plan continues to provide for 22 economic, social, cultural and environmental outcomes. However, there are some matters that need to be considered further in order to fully achieve all outcomes. Part of one outcome and three other outcomes were considered a medium risk and partially achieved.	Section 4	Some issues
Summary of water usage and entitlements including those taken or interfered with under statutory authorisations	Water users have access to water which is taken under a water entitlement or under a statutory authorisation through the Water Act (e.g. low risk or prescribed activities), provided that the take complies with water plan requirements.	Section 5	On track
Summary of research and monitoring findings	The department conducts several monitoring programs across the catchment (in particular the Environmental Flows Assessment Program). Ecological assets (species and habitat) are the best indicators of water plan success.	Section 6	On track
Summary of amendments to the water plan since its commencement	Only one minor amendment was made to the water plan in September 2023 to reflect an amendment to the <i>Water Act 2000</i> .	Section 7	On track
Summary of identified risks and emerging issues to water plan outcomes	A risk assessment conducted in September 2023 found that generally water plan outcomes are being achieved. However, part of one outcome and three other outcomes were considered a medium risk and partially achieved. An emerging issue identified in the plan area was climate change and the associated uncertainty with how climate change will impact rainfall, evapotranspiration, temperature and the water market. This will be considered in the review and replacement of the water plan.	Sections 8 & 9	Some issues
Summary of non-compliances under a water entitlement or other authorisation in the water plan area	The department seeks to ensure all entities are operating within the rules of the water plan. Education and advice are the first response with compliance action escalated when necessary. As of January 2024, there have been 190 cases of non-compliance related to water entitlements or other matters since the water plan commenced in 2019.	Section 10	On track
Way forward for the water plan	While overall risks to water users and the environment remain low, this assessment of the water plan has highlighted some current and emerging issues with the water plan and the department will work to address these issues over the next five years.	Section 11	On track

**Colour legend:**

 Completed	 On track	 Some issues
 Some major issues	 Not achieved	 Insufficient information available

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**Appendix C    Appendix C: Water taken or interfered with under statutory authorisations**

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**Appendix D    Overview of non-compliance associated with the water plan**

# 1. Introduction and purpose of the report

Section [49 of the Water Act 2000](#) (Water Act) requires the Minister to prepare reports for each water plan. This is to ensure the implementation and effectiveness of each water plan is regularly reviewed and evaluated as part of an adaptive management cycle of planning, implementation, monitoring and reporting. The Water Regulation 2016 (Water Regulation) requires these reports to be prepared at five-year intervals and address a range of matters relevant to the ongoing sustainable management of Queensland's water resources including:

- whether the water plan is advancing the sustainable management of Queensland's water resources
- an assessment of the effectiveness of the implementation of the water plan in achieving the water plan's outcomes
- information on water use and authorisations in the water plan area, including:
  - water entitlements
  - water taken or interfered with under statutory authorisations
- a summary of the findings of research and monitoring for the water plan
- any identified risks to the water plan's outcomes
- what amendments, if any, have been made to the water plan since its commencement
- any non-compliance under a water entitlement or other authorisation in the water plan area.

This report provides an overview of the above matters for the Water Plan (Border Rivers and Moonie) 2019 (the water plan) since its commencement on 22 February 2019 and its implementation through its statutory instruments such as the Border Rivers and Moonie Water Management Protocol.

A range of data and information from various sources was collected, interrogated and assessed to support the findings of this report including:

- summary of monitoring and assessment of Environmental Management Rules
- socio-economic analysis
- assessment of current and potential future climate change in the Border Rivers and Moonie catchments.

A risk assessment was completed in September 2023, which identified potential risks to achieving the water plan's outcomes in full, as well as potential risks that could emerge within the current life of the water plan. The risk assessment approach used was consistent with the [Risk Management Guideline \(ISO 31000:2018\)](#). This approach ensures a consistent, repeatable, and defensible consideration of risks.

## 2. Water plan area

The water plan area covers the Queensland portion of the Border Rivers and Moonie catchments, covering approximately 41,000 square kilometres of southern Queensland, see Figure 1. The Border Rivers catchment lies over the Queensland and New South Wales state border. For management purposes, the catchment is divided along the state border with the northern portion managed by Queensland and the southern portion managed by New South Wales, as per the New South Wales – Queensland Border Rivers Agreement 2008. In Queensland, the Border Rivers catchment headwaters rise in the Stanthorpe region near the Great Dividing Range and the Moonie catchment has its headwaters north-east of the town of Moonie. The main river systems of the Border Rivers

include the Macintyre, Dumaresq, Severn, Moonie and Barwon rivers. The generalised direction of flow is to the south-west. Main urban centres located within the water plan area include Stanthorpe, Goondiwindi, Moonie and Thallon.

The water plan area experiences a semi-arid climate where droughts and floods are characteristic. Rainfall occurs mainly in the summer months. The annual average rainfall is variable ranging from 1,000mm on the eastern ranges to 500mm in the west. Annual evaporation is highly variable and increases significantly towards the western areas of the catchment (i.e. approximately 1,200mm in the east to more than 2,000mm in the west). Most river systems are ephemeral and as a consequence of the semi-arid climate, river flows are driven by the natural drought and flood regime. The Dumaresq-Macintyre River is regulated and experiences regular flows throughout the year.

Elevation in the east of the catchment reaches 1,200m above sea level, but quickly drops away to the west where extensive flat, semi-arid plains of around 200m above sea level dominate. Further west, the semi-arid Moonie River catchment has a low gradient, passing from an altitude of around 350m above sea level in the upper catchment to around 150m above sea level at the state border.

The Severn River begins near Stanthorpe and converges with Tenterfield Creek (originating in NSW) to form the Dumaresq River. The Dumaresq River follows the state border until it joins the Macintyre River, which also flows in from NSW. The Macintyre River continues along the state border before joining the Barwon River north-east of Mungindi. The Weir River also joins the Barwon River just downstream. The Moonie River is fed by several minor tributaries and converges with the Barwon River in NSW. The Barwon River ultimately flows into the Darling and Murray rivers.

The water plan manages supplemented and unsupplemented water, including water in a watercourse, lake or spring, overland flow water and groundwater.

There are eight water management areas for managing unsupplemented surface water as follows:

- Stanthorpe
- Border Rivers
- Macintyre Brook
- Callandoon Creek
- Northern Weir River
- Upper Weir River
- Lower Weir River
- Moonie.

There are two water supply schemes which are managed under a resource operations licence to store and supply supplemented surface water as follows:

- Border Rivers Water Supply Scheme, and
- Macintyre Brook water Supply Scheme

(Note: There are two distribution operations licence holder responsible for diverting supplemented water allocations from the Border Rivers water supply scheme and deliver water to holders on Callandoon and Yambocully Creeks).

There are six underground water units in the water plan area as follows:

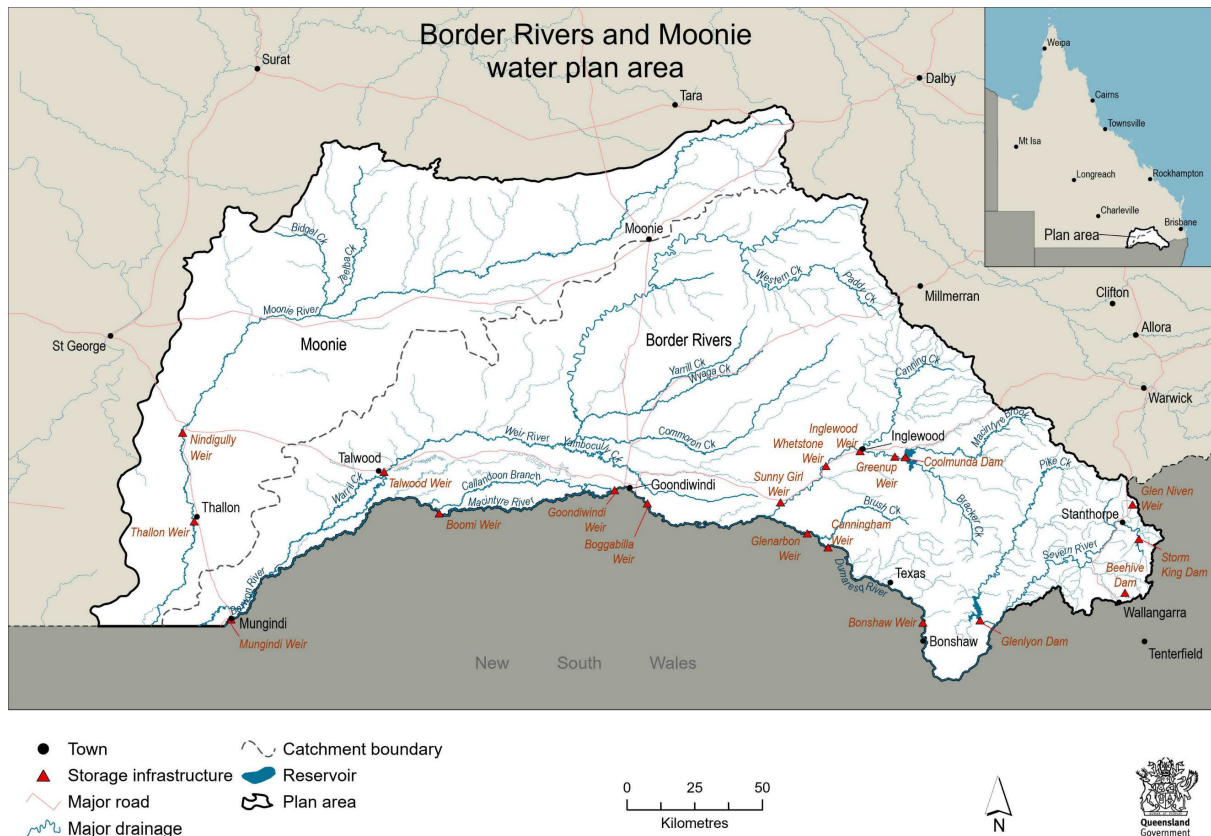
- Border Rivers Alluvium (comprising a shallow and deep underground water sub-unit)
- Border Rivers Fractured Rock
- St George Alluvium (shallow)
- St George Alluvium (deep)

- Queensland Murray-Darling deep
- Sediments above Great Artesian Basin.

(Note: Groundwater in the water plan area is predominantly found in alluvial aquifers associated with the major rivers and creeks. Shallow groundwater is also found in fractured rock in the east of the water plan area).

The population of the water plan area in 2021 was an estimated 20,700 people. Most of the population reside in Goondiwindi and surrounding localities and in Stanthorpe. Stanthorpe and the Granite Belt also has the highest population growth in the water plan area. Population growth in the remainder of the water plan area is in slight decline or remaining stable.

Land use within the water plan area is dominated by the grazing industry (64%), followed by non-irrigated cropping (21%) and irrigated cropping (2%).



**Figure 1: Map of the Border Rivers and Moonie water plan area**

The Dumaresq-Barwon Border Rivers Commission is responsible for the sharing the water resources of the Border Rivers between the States of Queensland and New South Wales and is also responsible for the construction and operation of water related infrastructure on the shared stream (including Glenlyon Dam and Boggabilla Weir).

The New South Wales – Queensland Border Rivers Intergovernmental Agreement 2008, aims to ensure both New South Wales and Queensland manage the water resources of Border Rivers Catchment in a way that maintains balance between social, economic and environmental values.

The Border Rivers and Moonie water plan area forms part of the northern extent of the Murray-Darling Basin. The Basin Plan is an adaptive management framework to provide a coordinated approach to managing water resources across the jurisdictions in the Murray-Darling Basin. The Border Rivers and Moonie water plan is a key component of the Border Rivers-Moonie Water Resource Plan which is a requirement of the Basin Plan.

### 3. How the water plan advances the sustainable management of Queensland's water resources

The water plan advances the sustainable management of Queensland's water resources by establishing a framework for the allocation and management of water resources in the water plan area for economic, physical and social wellbeing of the people of Queensland. The water plan provides outcomes and strategies to advance the sustainable management of ecosystems, water quality, water-dependent ecological processes and biological diversity associated with watercourses, lakes, springs, aquifers and other natural water systems. The allocation and management of water within the water plan area must be in accordance with the outcomes, measures, objectives and strategies of the water plan and with the rules in associated statutory instruments such as the water management protocol, operations manual and resource operations licences (ROLs). For a more detailed summary of the linkages between water plan outcomes, strategies and rules see Appendix A.

#### 3.1. Ecologically sustainable development

The water plan was developed with the support of hydrologic science and model with a long-term simulation period to better understand patterns of water use and availability for both consumptive (e.g. agricultural water uses) and non-consumptive (e.g. environmental) purposes. The hydrological model is also used as a tool to assess the consistency of future water management decisions made under the water plan to ensure its objectives and outcomes are met.

The plan is a 'no growth' plan, so water resources are protected at 2000 levels of take. This protects the share of water for the environment and existing users.

Targeted monitoring and research have improved our understanding and management of environmental flow requirements for aquatic ecosystems, particularly the Environmental Flows Assessment Program.

Ecological outcomes in the water plan identify key environmental assets and functions. The outcomes seek to minimise changes to the natural variability of flows of water that support aquatic ecosystems. They also seek to maintain flows to support key ecological assets, such as waterholes, river channels, migratory fish, floodplain ecosystems and lakes in the water plan area.

The water plan establishes environmental flow objectives for performance indicators which protect the key ecological assets and functions. Decisions made under the water plan must be consistent with these objectives.

The rules in the water management protocol, operations manuals, and ROLs implement the strategies to protect environmental flows and maintain the ecological integrity of the river systems.

#### 3.2. Allocation and use of water resources for economic, physical, and social wellbeing of the people of Queensland

The water plan has outcomes that provide a framework for the allocation and use of water resources in the water plan area for the economic, physical and social well-being of the people of Queensland.

Implementation of the water plan's strategies have provided certainty of water users, including improved specification of entitlements and water markets as well as defined volumes of unallocated water which can be made available for future development. These catchments are highly developed and are required to comply with sustainable diversion limits established under the Basin Plan.

Unallocated water volumes have been reserved from two water management areas (surface water) and three underground water units. There are four purposes prescribed under the Border Rivers and Moonie Water Management Protocol for the unallocated water. Unallocated water for the purposes 'Any', 'Coordinated project' and 'Town water supply' provide certainty for water users to promote economic development while also supporting population growth, as well as aesthetic and recreational

values. Unallocated water is also available for the purpose of 'helping an Aboriginal community achieve its economic and social aspirations'.

The water plan establishes a framework for water trading which provides access to water through the permanent trade or seasonal water assignment of water allocations. Section 5.4 of this report provides further information on the water market, including the number of permanent trades and seasonal water assignments that have occurred since the commencement of this water plan in 2019. The water plan also provides for interstate trading with New South Wales and Inter-scheme trading between the Border Rivers and Macintyre Brook water supply scheme.

Water can also be accessed for stock and domestic purposes or for prescribed activities, subject to limitations outlined in the Water Act, the Water Regulation or the water plan.

### 3.3. Sustain the health of ecosystems

The water plan contains ecological outcomes for catchments in the water plan area. These outcomes aim to support the ongoing protection of ecological assets and their habitats.

Ecological outcomes are pursued through the implementation of strategies relating to the environmental flow objectives. Decisions made under the water plan must not increase the volume of water taken in the water plan area and must be consistent with environmental flow objectives for the performance indicators that protect key environmental assets and functions.

Resource Operations Licence holders and Distribution Operations Licence holders are required, under conditions on their licences, to comply with environmental management requirements. These requirements strive to achieve a balance between consumptive water availability and the needs of the environment.

Section 6 of this report provides a summary of research and monitoring findings for the water plan area. This includes ecological monitoring and a summary of environmental management rules, supported by reports such as Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019 and Assessment of Environmental Management Rules Water Plan (Border Rivers and Moonie) 2019.

### 3.4. Recognise the interests of Aboriginal peoples and Torres Strait Islander peoples

The water plan contains outcomes that recognise the importance of the water resource to Aboriginal peoples and Torres Strait Islander peoples including their strong spiritual connection to water. The water plan includes a cultural outcome to maintain flows of water to which this water plan applies that support the water related cultural, spiritual, social and environmental values of Aboriginal people. Economic outcomes defined in the water plan include making water available to which this water plan applies to support the economic and social aspirations of Aboriginal people. General outcomes of the water plan strive for balance between economic, social, environmental, and cultural outcomes.

The Water Act provides for an Aboriginal party or Torres Strait Islander party to take or interfere with water for traditional activities or cultural purposes without an entitlement. The water plan in no way limits this right.

Unallocated water reserves have been made available to help an Indigenous community achieve their economic and social aspirations. Section 5.7 refers to unallocated water reserves in the water plan area.

Development and implementation of the Border Rivers and Moonie water plan has been informed by ongoing engagement with Aboriginal peoples and Torres Strait Islander peoples to develop a greater understanding of the water requirements for their cultural values and uses.

The department will continue to actively engage with Aboriginal and Torres Strait Islander peoples in implementing the water plan.

### 3.5. Enable water resources to be obtained through fair, transparent, and orderly processes

Water in the water plan area can be obtained through:

- the water market – tradable water entitlements
- unallocated water reserves
- purchase of land with an existing water licence.

The water plan and water management protocol reserves unallocated water volumes for the following purposes:

- Coordinated project
- Town water supply
- For helping an Aboriginal community achieve its economic and social aspirations
- Any.

Unallocated surface water is available from Stanthorpe water management area and Moonie water management area. Unallocated groundwater is available from Sediments above the Great Artesian Basin, Border Rivers Fractured Rock and Queensland Murray-Darling Basin deep underground water units. Since water plan commencement in 2019, 1,250ML of unallocated water has been released from the Stanthorpe water management area which included 250ML for the purpose of Town Water Supply and 1,000ML for the purpose of Any.

The Water Regulation provides the process for releasing unallocated water. The department will continue to engage with the community and Aboriginal peoples and Torres Strait Islander peoples to better understand the demand and requirements for the remaining unallocated water reserves.

A framework exists under the water plan and the water management protocol for the temporary and permanent trade of water. Section 5.4 provides further information on this framework, including the number of permanent trades and seasonal water assignments that have occurred since the water plan was developed.

### 3.6. Build confidence regarding availability, security and value of water entitlements and authorisations

The water plan prevents any decision being made regarding the allocation or management of water that would increase the average volume of water that may be taken, excluding unallocated water and groundwater not in a groundwater unit. This strategy provides the desired level of protection for existing water entitlements. The water plan also establishes water allocation security objectives to protect the share of water available to the holders of water allocations for taking both supplemented and unsupplemented water.

The water plan states outcomes which aim to provide and maintain access to available water resources. It provides for the continued use of existing water entitlements and other authorisations to take or interfere with water.

The water plan's defined volumes of unallocated water for future development, and water markets provide certainty and security for current water users while also making water available to support towns, communities and industrial and agricultural production.



### 3.7. Promote efficient use of water through water markets, allocation, risk assessments and community education

The water plan provides for water allocations to be traded permanently or to be transferred seasonally within and between certain zones. This allows users to value water as a secure asset, encourages water use efficiency, enables entitlement holders to sell water without selling land, enables users to increase water supplies and improve allocation reliability and provides for new industries to acquire water without jeopardising the environment or affecting other water users.

Section 5.4 of this report contains further information on water trading in the water plan area.

Water efficiency practices are considered when granting water entitlements from unallocated water reserves. When the state releases unallocated water, a price is set, encouraging the recognition of water as a valuable resource and promoting its highest value and efficient use.

### 3.8. Facilitate community involvement in planning for the management and allocation of water

The Water Act outlines the community consultation and engagement required for developing, amending and finalising a water plan. Community consultation will occur when the plan is reviewed and replaced prior to its expiry. The water plan expires in 2029. The department will invite interested parties to participate in future water planning activities including activities to implement the water plan.

The Border Rivers and Moonie Consultation Report provides detail on the consultation process followed during the development of this water plan, including submissions made on the draft water plan.

## 4. Assessment of the effectiveness of the implementation of the water plan in achieving its outcomes

The department monitors the implementation of each water plan to make sure it is achieving its outcomes. The outcomes of this water plan were developed from a risk assessment undertaken in 2018, with the water plan being released in February 2019. A risk assessment was undertaken in September 2023 to help assess the effectiveness of water plan implementation in achieving its outcomes for the five years since the water plan was released. The assessment identified the following strategies that support the achievement of the water plan's outcomes:

- conversion of water licences to water allocations in accordance with the water entitlement notice
- water dealing rules, water sharing rules and seasonal water assignment rules that allow for the management and trade of water
- [Queensland non-urban water measurement policy](#), interim standard and implementation plan
- increased regulatory presence and focus across high-risk areas based on the department's [Regulatory Strategy](#)
- contemporary surface water hydrological model (eSource)
- specific outcomes for the availability of water and maintenance of flows for the social and economic aspirations and cultural values of Aboriginal and Torres Strait Islander peoples
- environmental flow objectives and performance indicators that protect the key environment assets and functions

- water allocation security objectives and performance indicators that protect the share of water available to the holders of a water allocation
- criteria for dealing with water licence applications including for applications to interfere with water by impounding flow and licences for taking overland flow water
- unallocated water reserves
- Border Rivers and Moonie water management protocol, Resource Operations Licences, Distribution Operations Licences and Operations Manuals
- Monitoring, Evaluation and Reporting Strategy for the Border Rivers and Moonie water plan (meeting measure 25(6) of the water plan)
- publication of Assessment of Environmental Management Rules and Summary of Environmental Monitoring for Water Plan (Border Rivers and Moonie) 2019
- water plan is a key component of the Border Rivers-Moonie Water Resource Plan that is consistent with the Basin Plan
- publication of the [Border Rivers and Moonie long-term watering plan](#)
- publication of [water use reports](#) published for 2019-20, 2020-21, 2021-22 to meet measure 25(2) of the water plan.

The assessment reviewed the water plan outcomes and found most outcomes were being achieved and had a low-risk score. Outcomes that were found to be partially achieved or had a medium risk score are summarised in Table 2 below. Appendix A provides a comprehensive assessment of the effectiveness of the implementing the water plan and achieving its outcomes.

Further implementation, monitoring and assessment of the water plan will continue before the water plan expires in 2029. The risks to the water plan outcomes, emerging issues and potential treatment actions are further discussed in sections 8 and 9 of this report.

**Table 2: Water plan outcomes with medium to high risk scores**

Water plan outcome	Risk level	Uncertainty level	Outcome achieved	Comment
<b>Section 20 – general outcomes</b>				
(d) seek to achieve a balance between the social, economic, cultural and environmental outcomes	Medium	Medium	Partially	The department will continue to implement the plan together with proposed treatments for subsequent risks to achieve genuine balance.
<b>Section 21 – economic outcomes</b>				
(1)(g) to make water to which this plan applies available to support the economic and social aspirations of Aboriginal people	Medium	Medium	Partially	Unallocated water has been reserved for a purpose of helping an aboriginal community achieve its economic and social aspirations. The processes for releasing unallocated water are stated in the Water Regulation.  Further engagement with Aboriginal and Torres Strait Islander peoples in the plan area will be undertaken to better understand the demand and requirements of this water and to implement this outcome.  The cost of exploring unallocated water reserved as groundwater in

Water plan outcome	Risk level	Uncertainty level	Outcome achieved	Comment
				the sediments above the Great Artesian Basin underground water unit may pose a barrier to access and a risk to outcome 21(1)(g).
<b>Section 24 – environmental outcomes</b>				
(1)(b) to maintain and, if possible, improve flows of water to which this plan applies that support— (i) waterholes as refugia	Medium	Medium	Partially	<p>The 2018 risk assessment did not consider risk to waterholes in the Border Rivers catchment due to insufficient data. Risk to waterholes in the Moonie catchment was rated low in 2018. The 2023 risk assessment indicated a medium risk to waterholes in the Moonie catchment and a low risk to waterholes in the Border Rivers catchment.</p> <p>Extreme dry periods during the drought of 2018-20 indicate that waterholes are at risk, particularly under a drying climate scenario.</p> <p>Ongoing risk to waterholes in the plan area is partly due to factors outside the scope of the water plan such as sedimentation and infilling of waterholes largely due to landscape uses and practices. There is also new information relating to water level and quality and thresholds before which waterholes fail to act as a refuge, which also informs this risk rating.</p> <p>The water plan and supporting instruments include strategies and rules for the protection of waterholes that reduce residual risk. Strategies and rule include 'no growth' provisions, environmental flow objectives for waterholes, the use of waterholes rule, 'nil' flow condition rule, and passflow rules for Coolmunda Dam.</p> <p>The water plan will continue to be implemented and outcomes, environmental flow objectives and rules will be evaluated as part of the water plan review and replacement process. The replacement water plan will be informed by new science and modelling scenarios that will also consider held environmental water by the Commonwealth Environmental Water Holder and how this water is modelled.</p>

Water plan outcome	Risk level	Uncertainty level	Outcome achieved	Comment
<p>(1)(g) to maintain an underground water regime in the plan area that supports ecosystems dependent on underground water to which this plan applies</p>	<p>Medium</p>	<p>High</p>	<p>Partially</p>	<p>The 2018 environmental risk assessments identified medium risk to baseflows in the Border Rivers Fractured Rock and a medium risk to baseflows, terrestrial vegetation and non-riverine wetlands in the Border Rivers Alluvium. The 2023 risk assessment indicates that this risk rating has been maintained or reduced under the water plan.</p> <p>The water plan and supporting instruments include strategies and rules for 'no growth' provisions, environmental flow objectives for baseflow and productive base, trade zones with maximum zone volumes and water sharing rules.</p> <p>The water plan will continue to be implemented and outcomes, environmental flow objectives and rules will be evaluated as part of the water plan review and replacement process. The replacement water plan will be informed by new science and modelling scenarios.</p> <p>There is a high degree of uncertainty about groundwater dependent ecosystems in the water plan area. Further monitoring and research in the lead up to water plan review and replacement, including updated spring mapping and reporting of ecological status and values of springs, will support development of policies to reduce this risk.</p>

## 5. Information on water use and authorisations in the water plan area

Water users have access to water taken under a water entitlement (e.g. water allocation or water licence) or under a statutory authorisation through the Water Act (e.g. low risk or prescribed activities such as stock or domestic use). Unallocated water is reserved and can be made available for future use while giving consideration to existing entitlements and flows for the environment.

General information about water trading and pricing can be found on the [Business Queensland website](#). This information supports measure 26(a), (b) and (c) of the water plan.

### 5.1. Information on water entitlements

Entitlements within the water plan area consist of supplemented water allocations (with water supply schemes managed by a ROL holder), unsupplemented water allocations, and water licences.

There are two water supply schemes which are managed under a resource operations licence to store and supply supplemented surface water within the water plan area. Details in relation to the nominal volumes and the numbers of allocations are outlined in Table 4 (as of the end of the 2022/23 water year on 1 July 2023).

**Table 3: Supplemented water allocations (medium priority and high priority)**

Water supply scheme	Nominal volume (ML)	Number of water allocations
Border Rivers	84,414	211
Macintyre Brook	24,997	142

There are eight water management areas for managing unsupplemented surface water within the water plan area. Details in relation to the nominal volumes and the numbers of allocations are outlined in Table 5 (as of the end of the 2022/23 water year on 1 July 2023).

**Table 4: Unsupplemented surface water entitlements (water allocations and water licences)**

Water management area (WMA)	Nominal volume (ML)	Number of water entitlements
<b>Water Allocations</b>		
Stanthorpe WMA	14,176	380
Border Rivers WMA	99,386	121
Macintyre Brook WMA	960	10
Callandoon Creek WMA	5,598	17
Northern Weir River WMA	2,351	11
Upper Weir River WMA	21,082	29
Lower Weir River WMA	25,457	14
Moonie WMA	29,768	40
<b>Water Licences</b>		
Border Rivers catchment (watercourses)	3,377	165
Moonie River catchment (watercourse)	375	5
Border Rivers catchment (overland flow)	63,751	28

Moonie River catchment (overland flow)	15,475	2
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There are six underground water units for managing underground water in the water plan area. Details in relation to the nominal volumes and the numbers of allocations are outlined in Table 5 (as of the end of the 2022/23 water year on 1 July 2023).

**Table 5: Unsupplemented underground water entitlements (water allocations and water licences)**

Water management area (WMA)/underground water unit (UWU)	Nominal entitlement (ML)	Number of water licences
<b>Water Allocations</b>		
Border Rivers Alluvium WMA	14,421	31
<b>Water Licence</b>		
Border Rivers fractured rock UWU	756	20
Sediments above the GAB UWU	245	4
Border Rivers Alluvium UWU	4,605	72

## 5.2. Announced allocations and announced entitlements

Announced allocation provisions apply to supplemented water allocations in the Border Rivers and Macintyre Brook water supply schemes. The Border Rivers and Macintyre Brook water supply schemes contain high priority allocations. The announced allocation for all high priority allocations has remained at 100% from water plan commencement in 2019 to February 2024.

Announced allocation provisions apply to unsupplemented water allocations in the Border Rivers Alluvium (Deep) underground water sub-unit. Announced allocations have remained at 100% since water plan commencement.

## 5.3. Water use

Water use in the water plan area is provided in Table 7 and Table 8. Water use data has been sourced from reporting under section 71 of the *Water Act 2007* (Commonwealth), which is compiled in accordance with the Water Accounting Methods Report for the Border Rivers-Moonie Water Resource Plan. The reporting under section 71 submitted by Queensland demonstrates compliance with the sustainable diversion limits for the Border Rivers-Moonie Water Resource Plan. Annual actual take was less than the sustainable diversion limit in all years.

**Table 6: Water use supplemented and unsupplemented surface water**

Border Rivers and Moonie surface water (supplemented and unsupplemented)	2019/20	2020/21	2021/22	2022/23
No. of entitlements	1,126	1,128	1,169	1,191
Nominal volume/nominal entitlement (ML)	311,351	311,351	327,416	327,416
Annual permitted take (ML)*	306,133	611,309	675,785	545,736
Annual actual take (ML)*	274,811	499,995	326,329	219,103
Volume of held environmental water accounted (ML)	7,838	20,341	25,626	16,035

**Table 7: Water use unsupplemented groundwater**

<b>Border Rivers and Moonie unsupplemented groundwater</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>
No. of entitlements	125	127	128	127
Nominal volume/nominal entitlement (ML)	20,027	20,027	20,029	20,027
Annual permitted take (ML)*	72,090	72,090	72,090	72,090
Annual actual take (ML)*	22,970	20,450	18,390	19,640
Volume of held environmental water accounted (ML)	0	0	0	0

\* Includes assumed permitted and actual take from runoff dams, commercial plantations and from basic rights.

The department also publishes [water use reports](#) annually based on the section 71 reporting to the Murray-Darling Basin Authority which complies with the water plan measure 25(2) to achieve the outcome stated in section 20(b) to report water use annually in terms of complying with the sustainable diversion limits established by the Basin Plan.

## 5.4. Water trading

The water plan establishes a framework for the permanent and seasonal assignment (temporary trading) of supplemented and unsupplemented water allocations. Outcome 21(1)(c) of the water plan relates to the improvement and support of the effective and efficient operation of the water market. Measures that contribute to achieving this outcome are found under section 26(a), 26(b) and 26(c) of the water plan to collect, analyse and published information about the number, value and volume of water entitlement trades within five years of plan commencement. Trade data is shown in Appendix B with Table B6 and Table B7 summarising supplemented and unsupplemented surface water seasonal water assignments and permanent trades respectively. Table B8 and Table B9 summarise groundwater seasonal water assignments and permanent trades.

## 5.5. Water taken or interfered with under statutory authorisations

The take of water under the category of statutory authorisations – such as stock or domestic take and for water and for various prescribed activities – is typically not measured. However, by identifying broad trends in consumptive behaviour, it is possible to infer whether these trends are a risk to existing water users or to the environment.

An assessment of the risk posed to water users and the environment by activities under the Water Act sections 93 – 103 is presented in Appendix C. There has been no increase identified under most of these activities. However, an increase in water take was identified under section 101 of the Water Act – Authorisations that may be altered or limited by water planning instrument or regulation. This increase is attributed to the take of groundwater in peri-urban areas not connected to a town water supply. In these areas, particularly surrounding large urban centres such as Goondiwindi, there is an increase in population and subsequent demand for water. The water plan limits the increased take of underground water for stock or domestic purposes by only allowing take from existing underground water works, i.e. no new works for this purpose are authorised where the land is connected to a town water supply.

## 5.6. Measurement

The department published [Queensland's strengthened non-urban water measurement policy](#) in September 2022. The policy will strengthen the way that non-urban water take is measured and reported across Queensland.

The strengthened policy was developed through [extensive consultation](#) statewide with industry, water entitlement holders and the community on policy proposals (2019 -2021) and targeted engagement in 2022 with peak bodies and industry bodies, including the Queensland Murray-Darling Basin.

In September 2023, legislative amendments to *Water Act 2000* to establish the head of power for the strengthened measurement requirements were passed by the Queensland Parliament. Associated amendments to the Water Regulation to provide the operational detail for the strengthened measurement requirements are required to support full implementation of the policy and these amendments are in development. Measurement requirements in Queensland’s [interim water meter standard for non-urban metering](#) have been strengthened to align with the policy.

The policy is being implemented using a risk-based approach. This means that implementation in the Queensland Murray-Darling Basin for new metering and revalidation of existing meters is a priority.

Since the water was replaced in 2019, the following activity has been undertaken to strengthen measurement across the Border Rivers and Moonie catchments in accordance with the implementation plan based on the new measurement policy and interim standard:

- About 100 existing surface water meters have been or are in the process of being revalidated
- About 50 existing groundwater water meters have been or are in the process of being revalidated.

The strengthened policy also states the intent to require [telemetry on surface water meters in the Queensland Murray-Darling Basin](#). To offset the cost to water users to implement telemetry in these areas, the department secured funding from the Australian Government to subsidise the cost of installing telemetry devices.

## 5.7. Entitlements granted from the unallocated water reserves

The water plan reserves unallocated water volumes for purposes including ‘town water supply’, ‘coordinated projects’, ‘helping an Aboriginal community achieve its economic and social aspirations’ and for ‘any’ purpose. Unallocated water reserves of surface water are available from Stanthorpe water management area and Moonie water management area. Unallocated water reserves of groundwater are available from Sediments above the Great Artesian Basin, Border Rivers Fractured Rock and Queensland Murray-Darling Basin deep underground water units.

The water plan states the volume of unallocated water reserve to be dealt with under the Water Act and the water management protocol states the purposes for its release. The risk assessment identified issues relating to the release of unallocated water for a purpose of helping an Aboriginal community to achieve its economic and social aspirations such as the potential cost of exploring groundwater resources. Further engagement with Aboriginal people in the water plan area will be undertaken to better understand their requirements and how to release water from this reserve.

Availability of unallocated water is detailed in Table 9 and Table 10 below. Nominal entitlement is the volume available at water plan commencement in 2019. A total of 250ML has been released from Stanthorpe water management area strategic reserve for town water supply, leaving 1,250ML remaining for this purpose. An additional 1,000ML has been released from Stanthorpe water management area general reserve for ‘any’ purpose (contributing to measures 25(5) and 26(d) of the water plan), leaving 60ML remaining for this purpose.

**Table 8: Unallocated water reserves of surface water as at 2019**

Water management area	Nominal entitlement (ML)	Purpose
Stanthorpe	1,740	Coordinated project
	1,500	Town water supply
	1,060	Any



	200	For helping an Aboriginal community achieve its economic and social aspirations
Moonie	100	For helping an Aboriginal community achieve its economic and social aspirations

**Table 9: Unallocated water reserves of underground water as at 2019**

Catchment	Underground water unit	Nominal entitlement (ML)	Purpose
Border Rivers	Sediments above the GAB	620	For helping an Aboriginal community achieve its economic and social aspirations
	Sediments above the GAB	5580	Any
	Border Rivers fractured Rock	387	Any
Moonie	Sediments above the GAB	480	For helping an Aboriginal community achieve its economic and social aspirations
	Sediments above the GAB	4,320	Any
Border Rivers and Moonie	Queensland Murray-Darling Basin deep	500	Any

## 6. Research and monitoring findings for the water plan

The water planning framework is supported by water monitoring activities that include water quantity and quality of surface water and groundwater systems across Queensland. Together with targeted ecological monitoring for water plans, this information is vital for continued improvement of water planning.

The Environmental Flows Assessment Program (EFAP) undertakes ecological monitoring to assist in assessing the ecological performance of each water plan in meeting its stated ecological outcomes. Ecological assets with critical links to flow that represent the water plan's ecological outcomes and the various aspects of the flow regime, are selected as indicators of the broader ecosystem for monitoring.

The department manages, operates and maintains approximately 400 stream gauging stations across Queensland (20 and 3 stations across the Border Rivers and Moonie catchments respectively). Streamflow measurements are an integral part of producing volumetric data at gauging stations, and measurements are taken throughout a full range of low and high flow conditions to enable derivation of accurate streamflow volumes.

The department also manages, operates and maintains approximately 4,300 groundwater monitoring bores across Queensland. These bores provide data that assist in improving hydrological understanding within water plan area, including the understanding of surface water and groundwater interaction. Water monitoring data can be accessed at [water-monitoring.information.qld.gov.au](http://water-monitoring.information.qld.gov.au).

## 6.1. Summary of ecological monitoring

Monitoring and research projects have been conducted in, and adjacent to, the water plan area since water plan commencement. These projects include those implemented under the EFAP conducted by the department, and other monitoring and research conducted by other agencies, such as the Commonwealth Environmental Water Office, Department of Environment, Science and Innovation (Qld), Department of Planning and Environment (NSW) and research institutes like the University of Queensland. This collective monitoring and research is used to assess the ecological performance of water plans in meeting their stated ecological outcomes. The Summary of Environmental Monitoring Water Plan (Border & Moonie) 2019<sup>1</sup> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.

The Border Rivers hold significant ecological value with features including:

- breeding habitat for migratory and nationally significant bird species
- large wetlands and floodplain wetland complexes, e.g., the Morella Watercourse/Boobera Lagoon/Pungbougul Lagoon complex
- Sundown National Park, which has high biodiversity value
- species listed as (critically) endangered or vulnerable under the [Environment Protection and Biodiversity Conservation Act 1999](#) and/or the [Nature Conservation Act 1992](#), including Murray cod, Silver perch and the Australian painted snipe
- permanent refuge waterholes.

The Moonie catchment has several characteristics of ecological importance including:

- diverse flora including river red gum, coolabah, lignum and black box
- the Thallon waterholes - significant ecological sites supporting up to 20,000 waterbirds and acting as a refuge to aquatic and terrestrial fauna. The two waterholes fill from overbank flows and measure approximately 12ha and 21ha in area<sup>2</sup>
- extensive floodplain wetlands (over 100 wetlands of greater than 1 hectare each) - the wetlands provide habitat for waterbirds and contribute to high biodiversity and unique in-stream systems
- habitat for wetland dependent species
- the Southern Brigalow belt – a major bioregion typified by remnant Brigalow forests, poplar box, Wilga and white cypress pine
- protected species such as the Australian painted snipe and freckled duck
- diverse fish communities including olive perchlet, bony bream, gudgeons, golden perch and eel-tailed catfish.

Monitoring information has been collated on a range of assets in the water plan area including species and ecological functions. These include refugial waterholes, native fish, waterbirds, groundwater dependent ecosystems (GDEs) and water quality. This monitoring has been undertaken by multiple organisations including the department (EFAP), the Department of Environment, Science and Innovation (Q-catchments assessment) and multiple universities including Griffith University, University of Queensland, La Trobe University and University of Western Australia (Project and Research).

The summary of monitoring supports assessment that most of the seven environmental outcomes of the water plan are being met, however, there are ongoing issues with waterhole persistence from

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<sup>1</sup> Prior, A., Fawcett, J., Kerr, J., and Harding, D. (2024). Summary of Environmental Monitoring: Water Plan (Border Rivers & Moonie) 2019. Department of Regional Development, Manufacturing and Water, Queensland.

<sup>2</sup> CEWO, 2013

deposited sediments and the ability for aquatic fauna to move across barriers. The results of monitoring and research discussed in the summary of monitoring will be considered when reviewing the ecological outcomes at the next water plan review and replacement. While risk was assigned to assets at the last review, quantifying the risk was not always possible due to insufficient information around thresholds of concern. Knowledge gaps have been identified and further research is scheduled for the water plan area to inform the next water plan review. This work is consistent with the Monitoring, Evaluation and Reporting Strategy developed for the water plan area.

## 6.2. Summary of water monitoring

The stream monitoring network is operated by water monitoring staff within a quality management framework under [International Organisation for Standardisation ISO 9001:2015](#) accreditation.

Measurements taken at stream monitoring sites show that the water plan area is characterised by low annual discharge and sporadic flows that vary in magnitude both within and between years. Over the past ten years, higher flows have tended to occur in the warmer months. During the winter months, these rivers generally stop flowing and contract to a series of disconnected waterholes.

Stream water level is recorded at gauging stations throughout the water plan area, and water level is converted to discharge (ML/day) using a rating table. Over the five years since the new water plan was implemented in 2019, the system went from deep drought conditions, with no flow, to some of the highest flows recorded since the floods of 2011 and 2013. At the Dumaresq River at Farnbro gauging station there was zero flow for the last six months of 2018 and all of 2019. In 2020 moderate flows occurred in February, March and August but there were no flows at any other time. In 2021, there was a small flow in both January and February, and then high to moderate flows were sustained for the rest of that year. In December of 2021, the maximum daily inflow occurred at Farnbro (44,000ML/day), Booba Sands (96,000ML/day), Gunn Bridge (33,000ML/day) and Talwood (28,000ML/day). Maximum daily flows at Goondiwindi occurred in October 2022 (103,000ML/day), and at the Weir River at Jericho (33,000ML/day) and the Moonie River at Fenton (29,800ML/day) in May 2022. Examples of the annual flow range for sites across the basin are provided in Table 11.

Rainfall is recorded at 23 gauging stations throughout the water plan area. Since the beginning of 2019, rainfall across the catchment has been highly variable, especially during 2021 and 2022. The catchment generally experiences a summer rainfall maxima, from December through to March. However, in 2022 there were also significant rainfall events in May, August, September and October and the normal high summer rainfall did not occur in early 2023. Rainfall totals at the more westerly sites in the catchment are generally much lower than those to the east and at higher elevation, even when the rainfall events coincide between locations. Interestingly, despite this trend, the highest location in the catchment (Glenlyon Dam Tailwater) was influenced to a lesser extent by the unseasonal September and October rain in 2022 than sites at lower elevation and had relatively low rainfall across the following summer months.

**Table 10 Annual flow data from representative gauging stations across the basin (based on data in the Hydstra database).**

Gauging station	Year	Minimum annual flows ML/day	Maximum annual flows ML/day
Dumaresq River at Farnbro	2019	0	0
	2020	0	3,818
	2021	0	22,305
	2022	0.91	43,751
Macintyre Brook at Booba Sands	2019	0	262
	2020	0	8,044
	2021	0	13,487
	2022	0.69	96,172
Macintyre River at Goondiwindi Weir	2019	0	2,427
	2020	0	10,837
	2021	0	88,970
	2022	719	99,892
Weir River at Gunn Bridge	2019	0	818
	2020	0	21,753
	2021	0	13,743
	2022	0	33,371
Weir River at Talwood	2019	0	323
	2020	0	8,805
	2021	0	13,568
	2022	0	28,228
Weir River at Jericho	2019	0	967
	2020	0	6,449
	2021	0	8,028
	2022	0	32,676
Moonie River at Fenton	2019	0	0
	2020	0	5,562
	2021	0	7,989
	2022	0	29,767

## 6.3. Summary of groundwater monitoring

### 6.3.1. Groundwater dependent ecosystems

There is limited information available regarding groundwater dependent ecosystems in the Border Rivers and Moonie water plan area which means that it is difficult to adequately assess groundwater-related outcomes. The Springs values inventory project will collect crucial information on spring ecosystems to increase confidence in future water plan assessments. The project will result in updated spring mapping data and a report detailing the ecological status and values of non-GAB

springs in the project area. The Department of Environment, Science and Innovation will undertake this project during 2023/24.

### 6.3.2. Groundwater monitoring network review

A groundwater monitoring network review was undertaken in 2021 to assess the status of the groundwater monitoring network. As part of the monitoring network review, a resource risk assessment was undertaken. Two groundwater units were assigned a very high monitoring risk score where risk indicates the importance of continued and appropriate groundwater monitoring within the groundwater unit (Table 11). These scores were predominantly due to the following factors:

- Highly developed system with high demand.
- Basin Plan Baseline Diversion Limit (BDL) greater than Sustainable Diversion Limit (SDL).
- An increase in water use not considered sustainable/possible.
- High level management rules in place requiring monitoring bores.
- Monitoring bores required for hydrologic modelling purposes.
- Town water supply requirements.

**Table 11: Groundwater monitoring network review assessment results and number of monitoring bores**

Monitoring risk score	Groundwater unit	Number of monitoring bores
Very High	Border Rivers Alluvium	13
	Macintyre River Alluvium	13
Medium	Dumaresq River Alluvium	6
	Macintyre Brook Alluvium	4
<b>Total monitoring bores</b>		<b>36</b>

Note: The number of monitoring bores stated in Table 12 is for the Queensland section of the Border Rivers Alluvium and Macintyre River Alluvium. There are additional monitoring bores in New South Wales given both of these aquifer systems span the border between Queensland and New South Wales.

## 6.4. Summary of resource operations licence holder monitoring

The Border Rivers and Moonie water plan area includes two water supply schemes (WSS) managed under resource operations licences: Macintyre Brook Water Supply Scheme and Border Rivers Water Supply Scheme. ROL holders are required to monitor on a quarterly and annual basis. All quarterly and annual reports and associated data for the assessment period have been submitted. The department works with ROL holders to achieve continual improvement of data and report quality. Guidance for data collection and reporting is provided by the revised [Water Monitoring Data Collection Standards 2022](#) and the [Water Monitoring Data Reporting Standards for Water Infrastructure Licence Holders 2022](#).

The revised guide applies to those water infrastructure licence holders (ROL and DOL) who are required to collect and report water monitoring data and information to the department. The updated data collection and reporting standards were designed to improve public confidence in the information used for water resource management under the *Water Act 2000*, through greater direction and transparency. The guide now uses a risk assessment approach, which allows operators to meet the standards using updated monitoring practices and adaptive management to reduce water quality and flow management impacts, including the potential for bank slumping and fish stranding. Operators of water storages with a potential for medium to high risk to associated water quality, are required to have a monitoring program that demonstrates their adaptive storage management. This new framework encourages the reduction in potential for releasing poor water quality i.e., through

stratification, bank erosion or downstream impacts whilst being tailored to the operational needs of water storage management<sup>3</sup>. While the transition to the new guidelines is ongoing, Sunwater are currently following the new standards.

In addition, there are two distribution operations licences: for the Callandoon Water Supply Scheme and the Yambocully Water Supply Scheme.

## 6.5. Summary of existing environmental management rules

An assessment of the Environmental Management Rules (EMR) is required prior to next water plan review including minimum operation levels for storages, regulation of changes in the rate of release, releases to provide for environmental flows, requirements for monitoring of water quality, bank stability and fish stranding and waterhole management. These rules provide for waterhole management, connectivity for fish movement and general support for downstream ecology. Four management rules were assessed as part of this reporting and summaries are provided below. More detail is provided in the Assessment of Environmental Management Rules Water Plan (Border Rivers and Moonie) 2019<sup>4</sup>.

### 6.5.1. The waterholes rule

This rule applies in the Macintyre Brook WSS and is intended to protect waterholes by only allowing pumping to occur in a waterhole up to 0.5m below the cease-to-flow level that is replenished by releases made by the ROL holder in accordance with the water allocation holders water order. The rule is not likely to adversely impact on the waterholes within the water supply schemes, given that these waterholes are replenished within a short period of time, and drawdown is only 0.5m below CTF. A monitoring program for extraction of supplemented water from waterholes is being considered by Sunwater for the Macintyre Brook WSS.

### 6.5.2. The minimum operating level rule

This rule is intended to provide refuge to biota during extreme dry periods and applies only to storages capable of making releases through outlet works i.e. Coolmunda Dam (Macintyre Brook WSS), Glenlyon Dam (Border Rivers WSS) and Boggabilla Weir (Border Rivers WSS). The ROL holder must not release water from a storage when it is below its minimum operating level. Water levels are monitored in these storages and there were no breaches of this rule in the 2018-2023 reporting period.

### 6.5.3. The change in rate of release rule

This rule applies to Coolmunda Dam (Macintyre Brook WSS) and aims to mimic the natural hydrograph as closely as possible and maintain the natural variability of flows. The intent of this rule is to minimise the risk of adverse impacts to water quality, bed and bank stability and fish by making changes to the rate of release from storages in an incremental manner. The Operations Manual states that the ROL holder must measure and record the daily volume released, the release rate, the date and time of any change in the release rate, the new release rate and the reason for the release. For the years 2017 to 2023 the ROL holder reported that overtopping events and releases in the Macintyre Brook WSS had nil impacts to the aquatic ecosystems. No further information was provided to explain how the determination of nil impacts was made.

### 6.5.4. Passing flows at Coolmunda Dam (Macintyre Brook WSS)

This rule is intended to provide for the maintenance of natural riverine habitats and the connectivity of the river system, addressing water plan environmental outcomes in Section 24 (1)(b), to maintain, and if possible, improve flows of water that support waterholes as refugia, river channels and river forming

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<sup>3</sup> DRDMW 2022c

<sup>4</sup> Kerr, J. and Prior, A. (2024) Assessment of Environmental Management Rules: Water Plan (Border Rivers & Moonie) 2019, Department of Regional Development, Manufacturing & Water, Queensland.

processes. These pass flows have been demonstrated to significantly benefit recruitment of golden perch<sup>5</sup>. The rule states that the first 100ML of inflows each day must be released through the outlet works if the dam level is (a) less than full supply level and (b) more than 311.44m AHD. The total volume released under this rule must not exceed 6,000ML/year. While there have been issues with accounting for the volume of water to be passed in previous years, the department has been working with the ROL holder to refine the method for deriving inflows to the dam and determining the volume of water to be passed.

## 6.6. Climate assessment

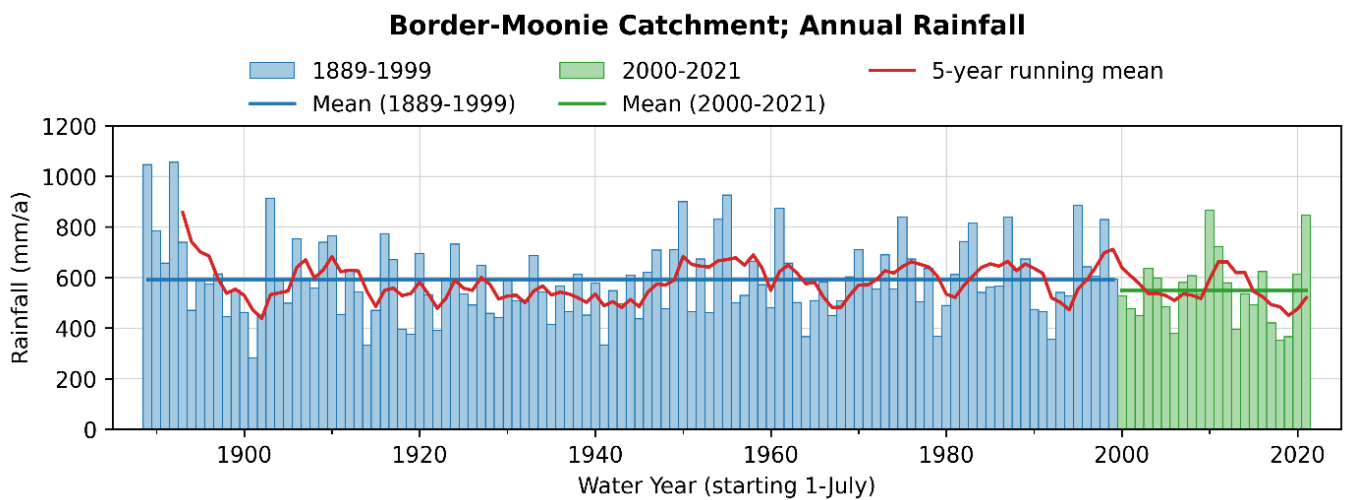
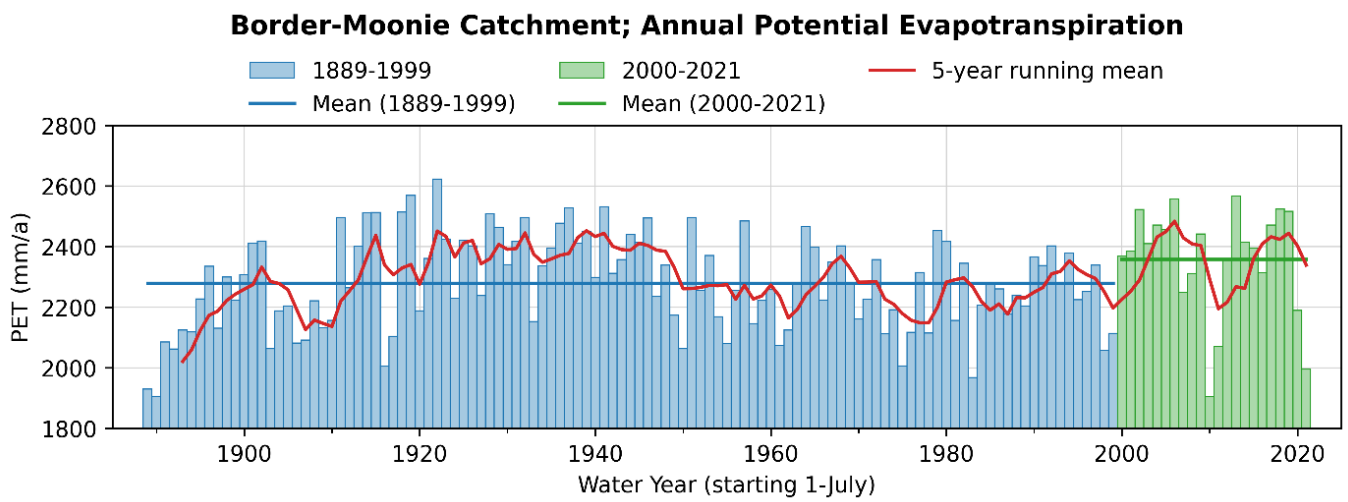
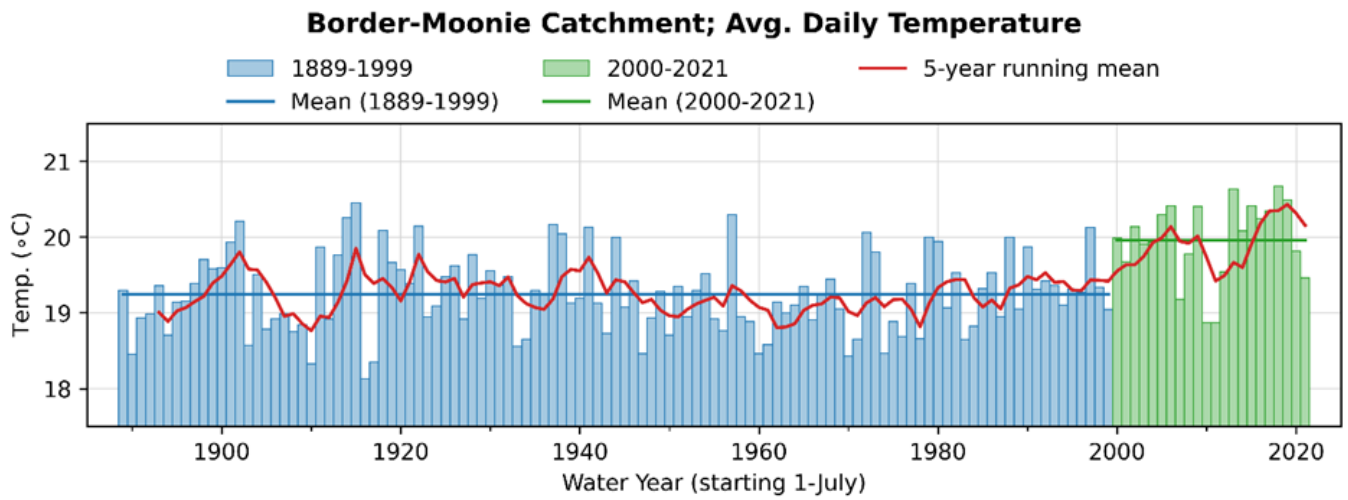
A review of climate predictions for the water plan was undertaken to determine if there has been a significant change that affects the water plan's ability to provide consumptive and non-consumptive water use for the remainder of its life. The assessment shows current and potential trends in average temperature, potential evapotranspiration and rainfall.

### 6.6.1. Recent climate variation

To assess recent climate variation, it is useful to first recount the historic climate. Temperature, rainfall and evapotranspiration data is available for the catchment for the period 01/07/1889 to 30/06/2020. Since 2013, average daily temperature is markedly higher than the average for the previous 123 years (Figure 2). The annual potential evaporation has also increased, but to a lesser extent. Average annual rainfall since 2013 is lower than the average for the period from 1889-2012. To identify the time when climate change may have caused local conditions to deviate from past conditions, a time-of-emergence analysis was undertaken, (Figure 3). A time-of-emergence analysis identifies when the signal of the variable emerges from the background "noise", thereby reflecting the onset of change. The results of the time-of-emergence analyses undertaken for the Border Rivers and Moonie water plan area indicate that a temperature increase emerges around the 2000s, as identified by the Signal-to-Noise Ratio (Figure 3). The orange shading represents the time the signal emerged by one standard deviation. There was no emergence for annual evapotranspiration or annual rainfall.

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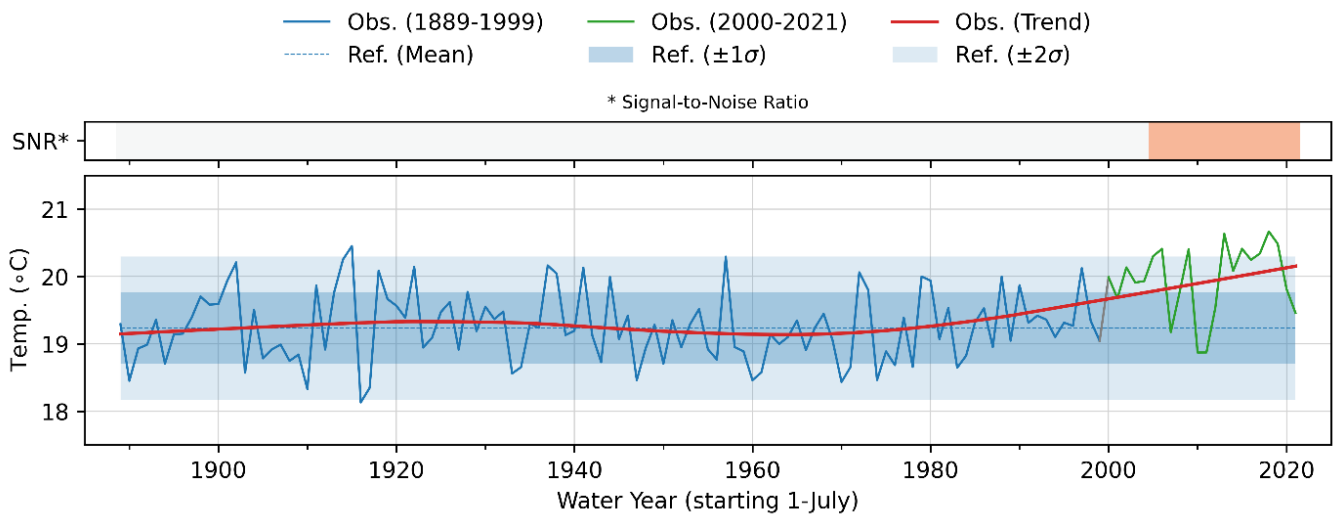
<sup>5</sup> Whiley 2021, "Understanding the flow-related early life history of golden perch (*Macquaria ambigua*) in the Condamine-Balonne River."



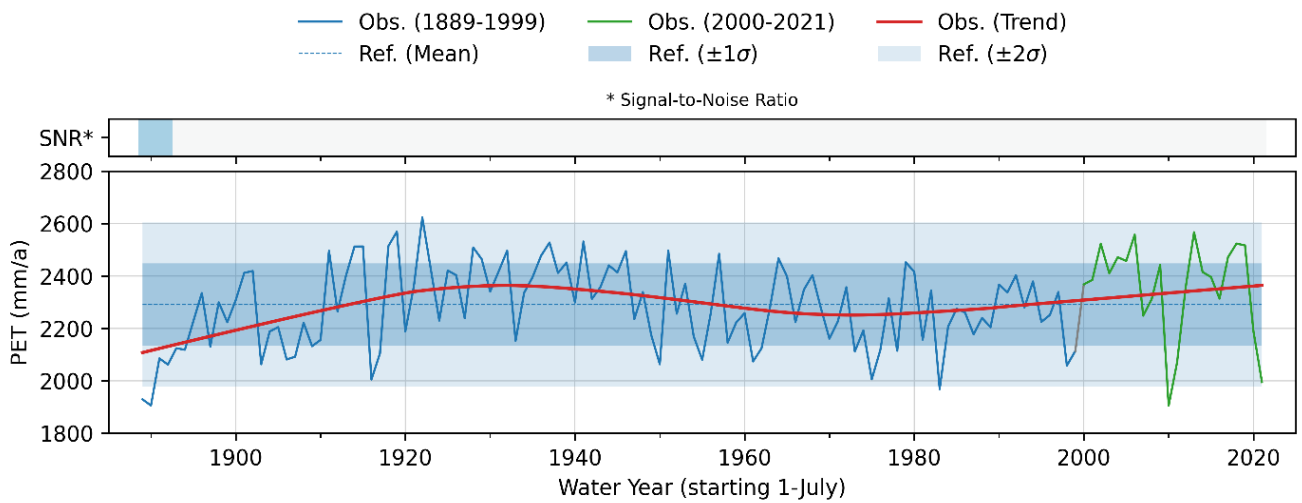
**Figure 2: Observed catchment average annual climate – temperature, potential evapotranspiration and rainfall**



### Border-Moonie Catchment; Avg. Daily Temperature



### Border-Moonie Catchment; Annual Potential Evapotranspiration



### Border-Moonie Catchment; Annual Rainfall

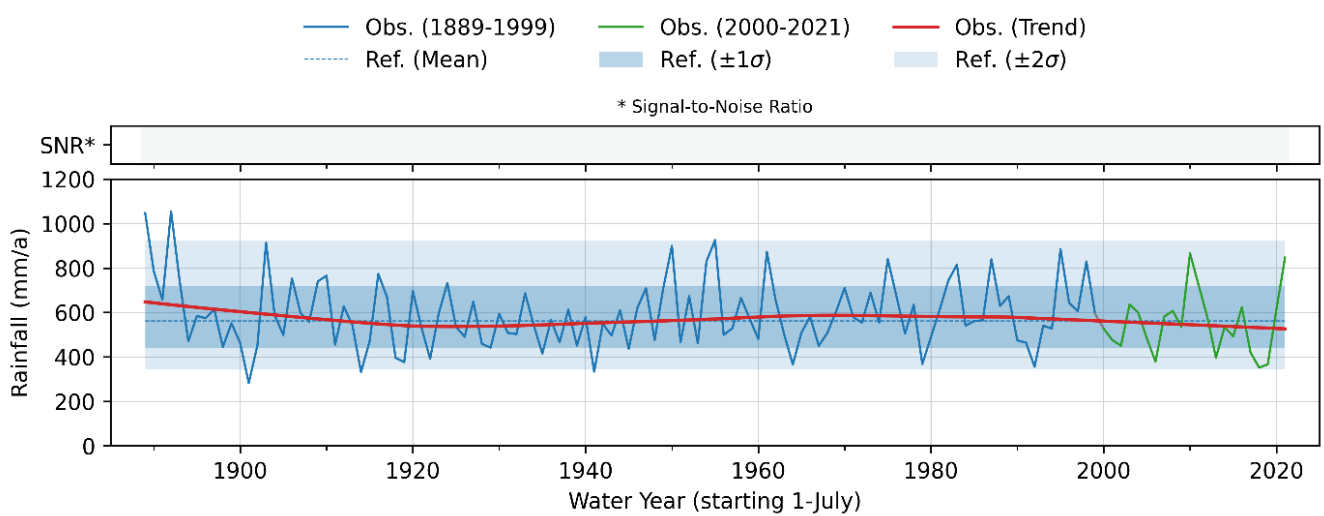


Figure 3: Observed trends in catchment average annual climate – temperature, potential evapotranspiration and rainfall

### 6.6.2. Climate change projection

Projected annual change in temperature, potential evapotranspiration and rainfall for the Border Rivers and Moonie Basin is shown in Figure 4. This projection uses RCP emissions scenarios 2.6, 4.5, 6.0 and 8.5. RCP is the Representative Concentration Pathway, a greenhouse gas concentration trajectory where RCP 8.5 represents a future with little reduction in emissions and RCP 2.6 represents the most ambitious mitigation scenario. All scenario projections show a temperature increase, with the scenarios diverging around 2040. This indicates an increase in temperature is now inevitable. There is an associated increase in potential evapotranspiration across the catchment, although recently the projections are slightly overestimating the observations. The projected rainfall has a large uncertainty, which is typical for Queensland. Consequently, there is no identifiable trend in predicted annual rainfall.

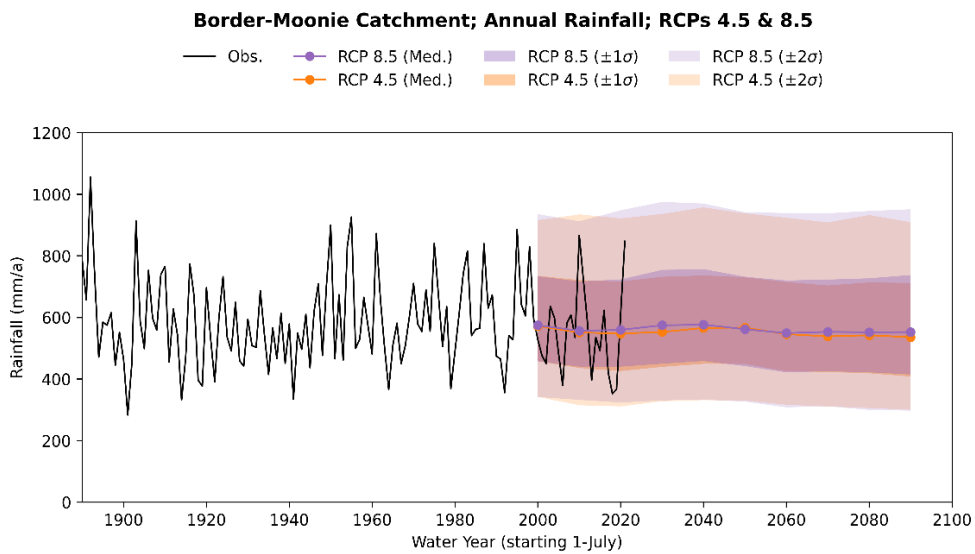
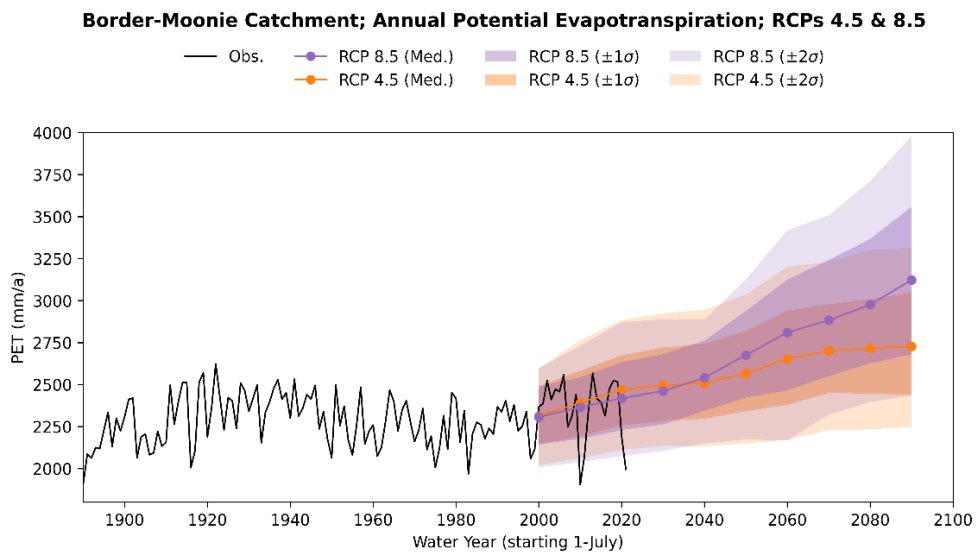
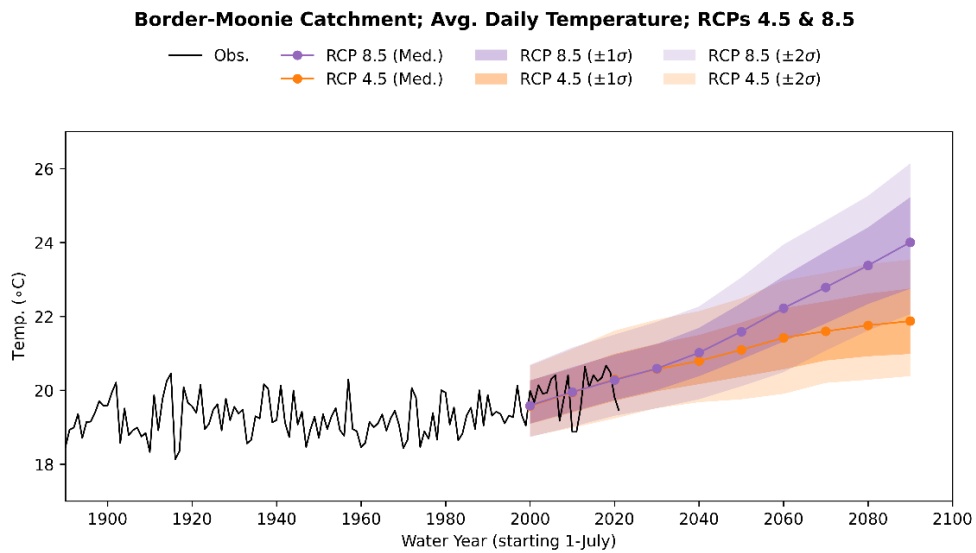
Projected monthly changes in climate for the Border Rivers and Moonie Basin is shown in Figure 5. The temperature and potential evapotranspiration projections broadly show increases for all months, with the evaporation showing high projected increases in the winter and spring months. The monthly rainfall has more variability, but it is trending towards an increase in the summer months and decreases in the winter and spring months. These monthly changes result in a similar annual rainfall, but a potentially drier catchment leading into the wet season. This may have some effect on streamflow generation.

### 6.6.3. Climate change conclusion

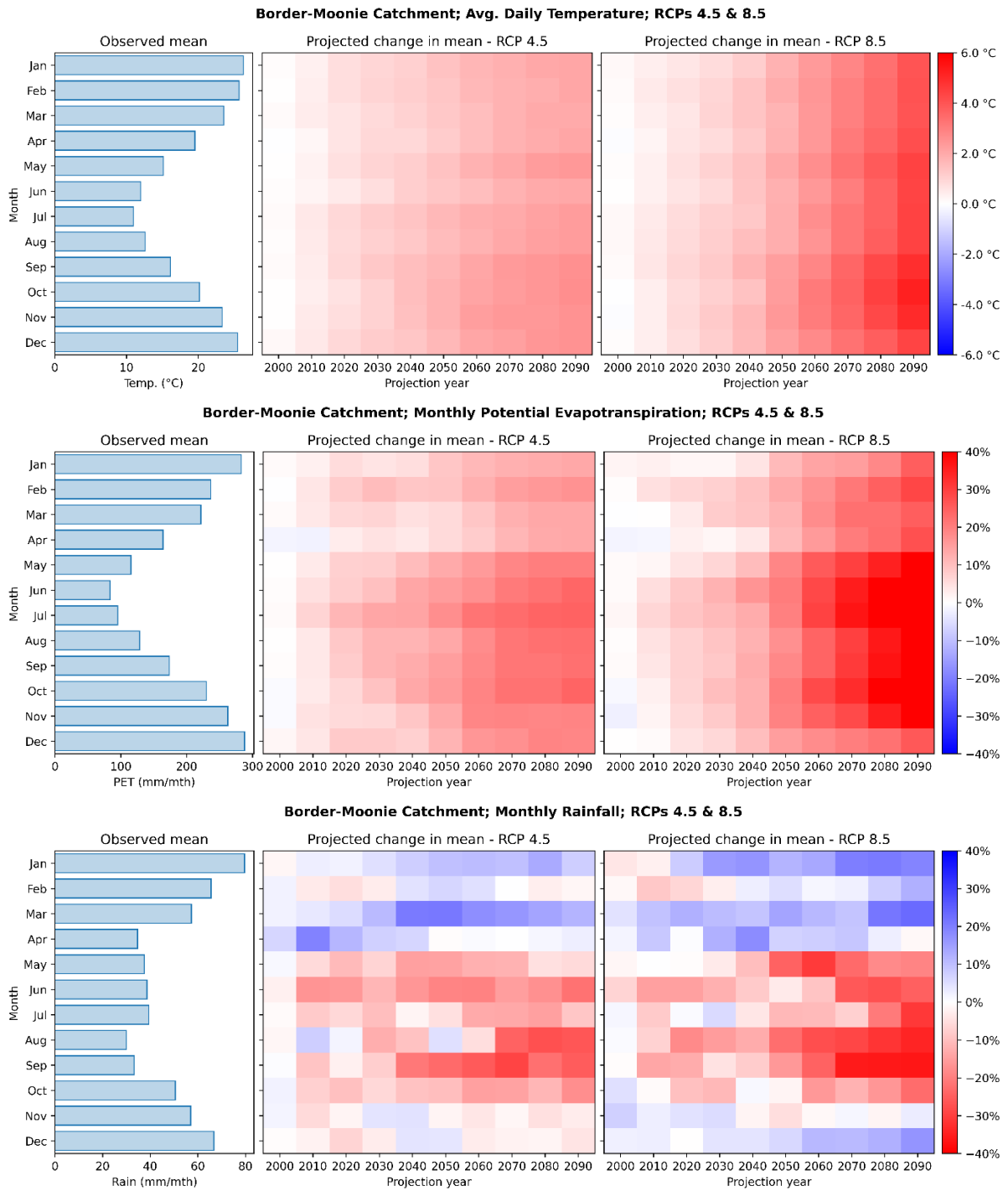
There is evidence that climate change is occurring in the Border Rivers and Moonie Basin. Future climate change projections show increases in temperature and evapotranspiration. Rainfall shows an increase in summer and decreases in winter and spring but no projected trend in annual rainfall. There is uncertainty in all climate change projections, in particular rainfall. The recent observed climate falls within the projections.

Climate change has been incorporated into the current Border Rivers and Moonie water plan's hydrological simulation models.

Climate change analysis is an evolving field with new understandings, models and syntheses published regularly. The information presented in this brief represent the best understanding at the time and are subject to change as new science becomes available.



**Figure 4: Observed and projected catchment average annual climate – temperature, potential evapotranspiration and rainfall**



**Figure 5: Observed and projected catchment average mean monthly climate – temperature, potential evapotranspiration and rainfall**

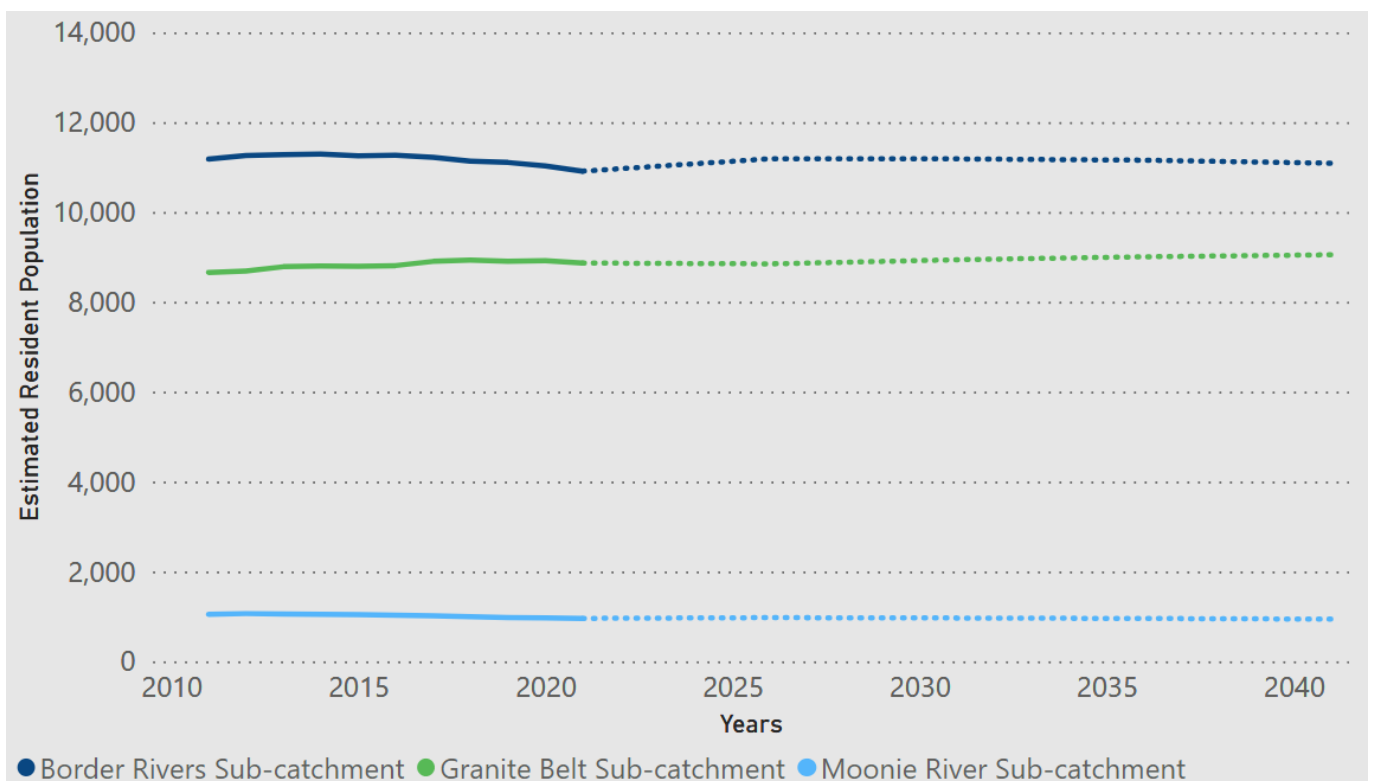
## 6.7. Social and economic assessment

The water plan supports growth in population and industries and aims to maintain flows that support water-related economic values in the water plan area. A socio-economic analysis for the Border Rivers and Moonie water plan area was undertaken. The analysis considered the socio-economic profile of the Border Rivers and Moonie water plan area, with a focus on changes since the last assessment in 2018. It drew together relevant socio-economic findings and other relevant water plan management information and assesses these against the water plan's economic and social outcomes.

The socio-economic analysis utilised data from a range of sources including the Australian Bureau of Statistics (ABS), Australian Trade and Investment Commission, Murray Darling Basin Authority and other Queensland Government agencies. For the purpose of the socio-economic assessment of the catchment, sub-catchments were identified including the Moonie River sub-catchment, Border Rivers sub-catchment and Granite Belt sub-catchment.

### 6.7.1. Population information

The population of the Border Rivers and Moonie water plan area in 2021 was an estimated 20,700. Most of this population was in Goondiwindi and the surrounding area (Border Rivers sub-catchment) and Stanthorpe (Granite Belt sub-catchment). All three sub-catchments have low populations (less than 15,000). Over the projection period to 2041, the population in the Border Rivers sub-catchment is expected to stay relatively stable, the Moonie River sub-catchment is expected to decline slightly and the Granite Belt sub-catchment is expected to have modest growth, see Figure 6.



**Figure 6: Total estimated population of the Border Rivers and Moonie water plan area by sub-catchment (forecasted population represented by dotted line). Source: NineSquared calculations, ABS Census Data.**

### 6.7.2. Employment

The agriculture, forestry and fishing industry group is the largest employer of people in the region and is highly reliant on water security, see Figure 7. Although this industry group encompasses

agriculture, forestry and fishing, forestry and fishing are not major employers in the region. This industry group employed 2,702 people in 2021, or approximately 26% of the total employed people in the water plan area, with beef cattle, cotton and grain farming being the major industries. The employment data is supported by land use data, with the largest proportion of land use being attributed to grazing pastures in 2023. Other industries dependent on water security, such as mining, saw reduced employment over the ten year period, having a negligible impact on employment in the region.

### 6.7.3. Land use change

Land use within the Border Rivers and Moonie water plan area is dominated by the grazing industry with 64% of the area associated with grazing native vegetation. A further 21% is associated with non-irrigated cropping and horticulture. Irrigated cropping and horticulture accounts for approximately 2% of land in the water plan area. Intensive uses including intensive animal production, residential and industrial land, transport, wastewater management and mining make up around 0.5%. The remaining 12% of the land area comprises conservation uses and forestry.

### 6.7.4. Agricultural production and water use

The Border Rivers and Moonie Socio-Economic Analysis considered agricultural production that shows the region is a major producer of livestock commodities and accounts for over 60% of Queensland’s cereal crop production. Vegetables (particularly lettuce, capsicum, onion and cauliflower) and fruit are also important commodities for the region. Southern downs (i.e. Granite Belt) produces nearly all of Queensland’s pears, apples and grapes for wine production. Cotton is another important commodity for the region, with high level of production in the Balonne, Goondiwindi and Western Downs LGAs. Cotton production has the highest water demand of all agricultural commodities in the region. Table 13 summarises agricultural production by LGAs intersecting the water plan area

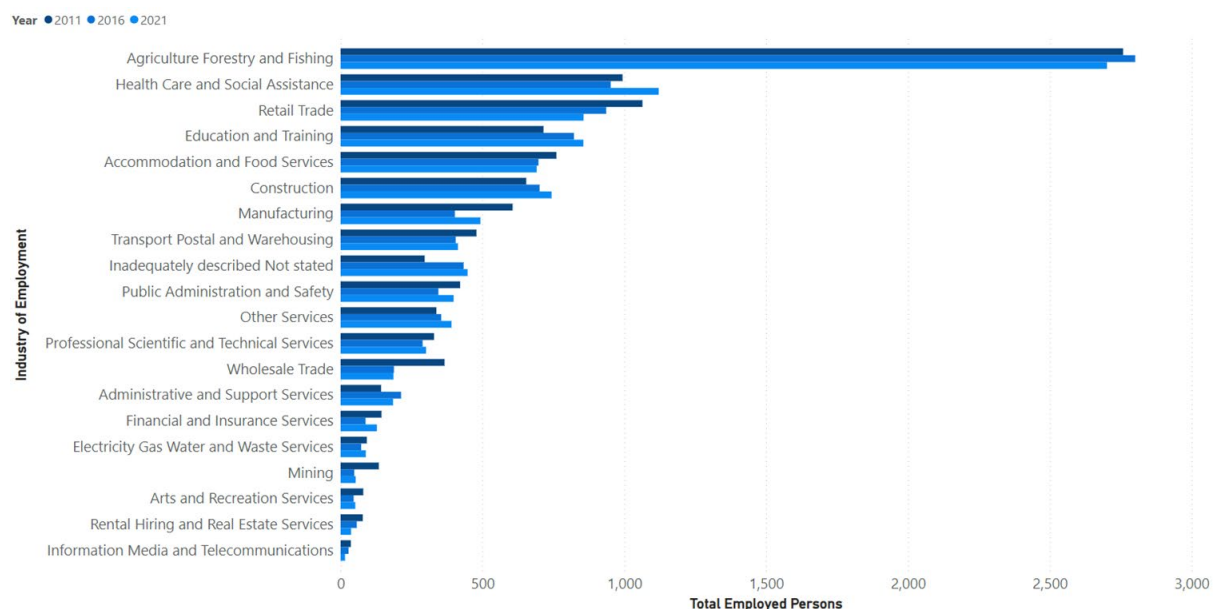


Figure 7: Total number of employed persons in the water plan area by industry and year. Source: NineSquared calculations, ABS Census Data.

**Table 12: Top agricultural commodities production in LGAs intersecting the water plan area as proportion of total Queensland production**

Commodity production	Balonne	Goondiwindi	Maranoa	Southern Downs	Toowoomba	Western Downs	All LGAs production as % of Queensland production
Proportion of LGA area within water plan area	21%	100%	1%	38%	21%	17%	n/a
Livestock - total cattle	122,608	200,217	588,958	76,660	398,717	611,089	19%
Livestock - pigs	17	133,096	8	46,759	137,829	252,925	76%
Livestock - Sheep & lambs	396,005	177,091	127,727	54,829	23,972	54,333	40%
Livestock - live chickens	-	-	-	131,282	3,971,352	-	80%
Cereal crops (t)	463,982	552,431	182,259	53,945	578,519	737,131	79%
Vegetables (t)	6,468	3,772	1	16,855	23,081	4,924	9%
Fruit and nuts	1,624	2,000	-	13,714	1,734	-	3%
Cotton - lint production (kg)	63,398,137	50,884,566	3,633,722	140,206	32,572,900	27,027,094	85%

## 6.8. Cultural assessment

### 6.8.1. Legislative Background

A main purpose of the Water Act is providing a framework for the sustainable management of Queensland's water resources. A key objective under this purpose is recognising the interests of Aboriginal peoples and Torres Strait Islanders and their connection to water resources. A key provision in recognising these interests is understanding cultural outcomes in relation to water.

In October 2018, the Water Act was amended ensuring that cultural outcomes are now to be specified separately from economic, social and environmental outcomes in all new and replaced Queensland water plans. Furthermore, the water-related interests of any Aboriginal parties or Torres Strait Islander parties must be considered in making new Queensland water plans.

Specifying cultural outcomes in water plans recognises that Aboriginal and Torres Strait Islander peoples hold a wealth of traditional knowledge about water and water-dependent ecosystems, and also hold strong spiritual and cultural connections to water and the natural features they support. This knowledge and connection to water is of critical assistance to the water planning process.

#### 6.8.1.1. Important legislative definitions

Under the Water Act Schedule 4 Dictionary, a cultural outcome means 'a beneficial consequence to an *Aboriginal party* or *Torres Strait Islander party* relating to aquifers, drainage basins, catchments, subcatchments or watercourses.' The definition of *Aboriginal party* under the Water Act refers to the

definition of [Aboriginal party under the Aboriginal Cultural Heritage Act 2003 \(ACH Act\)](#), which is Queensland's primary legislation to recognise, protect and conserve Aboriginal cultural heritage.

The definition of *Aboriginal party* under the Water Act uses a hierarchical approach to identify the appropriate Aboriginal persons to speak for an area of land and waters, in the traditional sense. An initial consideration is whether there is, or was, any *native title party* for the relevant area. This process requires further reference to legislative definitions under the ACH Act and Commonwealth Native Title Act, and researching land tenure and registration status of a native title claimant or of a native title holder. If there is no *native title party* for an area, then an *Aboriginal party* may be a person with recognised responsibility under Aboriginal tradition for the area.

#### 6.8.1.2. Existing protections – taking water for traditional activities and cultural purposes

The Water Act s 95(1) provides that: An Aboriginal party or Torres Strait Islander party may, in the area of the State for which the person is an Aboriginal or Torres Strait Islander party, take or interfere with water for traditional activities or cultural purposes. This provision recognises the rights and interests of native title holders under the Commonwealth Native Title Act; and recognises and allows taking water by an *Aboriginal party* for an area for the maintenance and protection of *Aboriginal cultural heritage* in Queensland. This approach is consistent with the recognition and protection of the cultural rights of Aboriginal peoples and Torres Strait Islander peoples under the *Human Rights Act 2019* (Qld) (HR Act) s 28.

#### 6.8.1.3. Benefits of specifying cultural outcomes

The cultural outcomes provisions under the Water Act extend further than recognition of existing native title rights and cultural rights. An aim is to ensure that adequate consultation is undertaken to identify cultural outcomes for a water plan area, and that cultural outcomes will be achieved through measures and strategies within the water plan. Community consultation will inform the selection of appropriate measures and strategies and it is intended that environmental flow objectives may be used to deliver cultural outcomes where appropriate.

Specifying cultural outcomes in water plans is not intended to remove the ability for the water plan to also consider economic opportunities for Aboriginal peoples, through the use of or access to water, e.g., through setting unallocated water reserves. Water plans will continue to be tailored, on a catchment-by-catchment basis, to provide flexibility to support economic development opportunities for Aboriginal peoples informed by consultation.

#### 6.8.1.4. Water Plan (Border Rivers and Moonie) 2019 – general outcomes

[Section 18\(e\)\(iii\)](#) of the *Water Plan (Border Rivers and Moonie) 2019* (Qld) states: A water plan outcome for this water plan is that water to which this water plan applies is to be allocated and managed in a way that promotes the improved understanding of the water required for social, spiritual, economic, environmental and cultural uses of water by Aboriginal people.

#### 6.8.1.5. Water Plan (Border Rivers and Moonie) 2019 – cultural outcomes

[Section 21](#) of the *Water Plan (Border Rivers and Moonie) 2019* (Qld) states: The cultural water plan outcomes for this water plan are to maintain flows of water to which this water plan applies that support the water-related cultural, spiritual, social and environmental values of Aboriginal people.

#### 6.8.1.6. Water Plan (Border Rivers and Moonie) 2019 – measure to achieve cultural outcomes

[Section 25](#) of the *Water Plan (Border Rivers and Moonie) 2019* (Qld) states: A measure that contributes to achieving the water plan outcomes stated in sections 18(e)(iii) and 21 is the publishing by the chief executive, within 5 years of the commencement, of a report on the flow requirements to



support cultural values and uses, informed by engagement with Aboriginal people. This report satisfies this measure.

## 6.8.2. Flow requirements to support cultural values and uses

### 6.8.2.1. Consultation history

Consultation to inform the development and implementation of the Water Plan (Border Rivers and Moonie) 2019 has been ongoing since August 2016 with a workshop held in Boggabilla between the Northern Basin Aboriginal Nations (NBAN) Delegates from the Nations in the Queensland Murray Darling Basin catchment areas. The workshop outlined options for the Aboriginal Nation Delegates to consider how they wished to be engaged. From August 2016 to August 2017, people from the Aboriginal Nations across the water plan area were engaged through a series of workshops on a Nation-by-Nation basis. In addition to the Nation workshops, individual Traditional Owners from each basin area were also consulted and input sought.

By April 2018 a draft version of the [2019 Healthy Waters Management Plan for the Queensland Border Rivers and Moonie River Basins](#) (HWMP) and a draft version of the Water Plan (Border Rivers and Moonie) 2019 had been made available to Traditional Owners. People from Aboriginal Nations across the water plan area were engaged again during May and June of 2018 to discuss the draft water plans and review the way in which their values and uses of water were included. Overall, 180 submissions on the Condamine and Balonne and Border Rivers and Moonie water plans and HWMPs were received from the Aboriginal community.

### 6.8.2.2. The Water Connections report

The 2019 Queensland Government publication *Water Connections: Aboriginal People's Water Needs in the Queensland Murray-Darling Basin (2019)* is a comprehensive record of the consultation over the period 2016-2019. A copy of this report is available via the department's Library at the link [here](#). The Aboriginal Nations that have been involved in consultation for the *Water Plan (Border Rivers and Moonie) 2019* include: Bigambul, Euahlayi; Githabul; Gomeroi/Kamilaroi; Kambuwal; Mandandanji.

### 6.8.2.3. Methods of consultation

The engagement process during preparations for the Condamine–Balonne and the Border Rivers–Moonie Water Plans from 2016 to 2018 included 38 Aboriginal Nation workshops, 500+ face-to-face consultations, 30 Country visits, 2000+ phone calls and emails; 180 submissions on the water plans and HWMPs were received from the Aboriginal community. The *Water Plan (Border Rivers and Moonie) 2019* became effective upon Governor in Council approval on 22 February 2019.

From 2019 to 2023 further water planning consultation meetings were held in St George, Cherbourg, Mitchell, Mungindi, Roma, Toomelah, Warwick, Crow's Nest, Boggabilla. Various online and telephone engagements with Aboriginal Nations also continued throughout this time period. A significant part of this consultation specifically targeted achieving General Outcome 18(e)(iii) and Cultural Outcome 21 to improved and strengthen the understanding of the water-related cultural values and uses of Aboriginal people in the Queensland Murray Darling Basin. Consultation with Aboriginal Nations is an ongoing process, aligned with the department's strategic and legislative objectives of building effective partnerships, recognising First Nations interests in water management, and identifying and delivering cultural outcomes.

### 6.8.2.4. Aims of consultation

The consultation process aimed to identify values and uses of water, risks to the values and uses of water, objectives and outcomes desired for the water, and opportunities to strengthen the protection of Aboriginal values and uses, for planning purposes. During consultation, careful consideration is given towards ensuring this information was documented in the participants' own words.

#### 6.8.2.5. Risks raised about insufficient water available

The risks raised at the consultation workshops and during discussions were largely consequential risks that have occurred as a result of insufficient water available for the environment and water being of a quality unsuitable for use or the poor health of water-dependent ecosystems. In the discussions, Aboriginal people often relayed the risks in the form of stories about impacts to important social, spiritual and cultural aspects related to land and water. Participants also drew comparisons between the current state of the river systems and how they remembered using and valuing the river systems when they were children or from stories passed on from earlier generations.

#### 6.8.2.6. Flow requirements

The flow requirements to support cultural values and uses in the Border Rivers and Moonie water plan area that have been identified from consultation from 2016 to 2023 include:

- Maintain and, if possible, improve the occurrence of natural flows and therefore a variety of flows (low, medium, high/overbank) throughout the water plan area, to support a high variety of ecological assets and high levels of endemic biodiversity.
- Maintain and, if possible, improve flows that support waterholes as refugia, river channels, river-forming processes and floodplain wetlands.
- Maintain and, if possible, improve flows that support a healthy and sustainable population of key animal taxa including yellowbelly, Murray Cod, waterbirds, turtles, mussels, yabbies, witchetty grubs, prawns, catfish, dewfish (eel tailed catfish), crabs, eel, insects.
- Maintain and, if possible, improve flows that support a healthy and sustainable population of key plant taxa including river red gums, bulrushes, lime trees, bumbletrees, wildflowers, reeds, lomandra, floodplain vegetation, bush tucker species.
- Maintain and, if possible, improve flows that support swimming and fishing at accessible recreation and cultural sites.
- Maintain and, if possible, improve natural flows to prolong connectivity between springs, creeks, rivers, waterholes, billabongs and wetlands.
- Refer to Table A.4: Cultural outcomes for the plan area below for more detail on water plan strategies that provide for cultural outcomes.

#### 6.8.2.7. Future directions

The department acknowledges that the work of mapping cultural values and uses (tangible and intangible), is ongoing in many areas and is not complete, including the Border Rivers and Moonie water plan area. More work is needed to understand the concept of cultural flows and how it applies to the Queensland water planning framework, particularly in light of recent research from the National Cultural Flows Research Project. While the more recent consultation resulted in improved understanding of Cultural values and uses of Aboriginal people and their water requirements, the department is committed to working with Aboriginal people for continued learning, and to look for opportunities to incorporate cultural outcomes in future water plans that is informed by this improved understanding.

#### 6.8.2.8. Human rights considerations

Under the Water Act, there is a focus on consulting and working with *Aboriginal parties* for an area for water plan purposes. However, the department is mindful of its broader obligations under the *Human Rights Act 2019* (Qld) (HR Act) in making all decisions in a way that properly considers, and is compatible with, the cultural rights of Aboriginal peoples and Torres Strait Islander peoples, broadly. Cultural rights under the HR Act s 28 are not limited to native title holders or claimants or *Aboriginal parties* under the ACH Act. The department is able to consult and understand broader First Nations cultural connections and cultural rights through targeted and public consultation.

The department understands that a human rights-based approach applied to water management will not only help build relationships with Aboriginal peoples and Torres Strait Islander peoples but will also

support the ongoing work of the department to understand and recognise the cultural values, rights and interests of Aboriginal peoples and Torres Strait Islander peoples in the sustainable management of water under the Water Act.

## 7. Water plan amendments and previous reports

The Water Plan (Border Rivers and Moonie) 2019 commenced on February 2019. One amendment has been made to the water plan on 20 September 2023. This was to align the water plan with the Water Legislation Amendment Act 2023. There have been no other significant amendments to the water plan or supporting instruments.

Since water plan commencement, this is the first performance assessment report.

The Water Plan (Border Rivers and Moonie) 2019 was a key document included in the package of documents to support the Water Resource Plan that was submitted to the Murray Darling Basin Authority and accredited by the Australian Government as being consistent with the Basin Plan 2012 in September 2019. Other significant milestones since commencement of the water plan are summarised in Table 13 below.

**Table 13: Significant milestones since water plan commencement**

Effective date	Milestone
22-February-2019	The Water Plan (Border Rivers and Moonie) 2019 commenced.
24-September-2019	The Water Plan (Border Rivers and Moonie) 2019 plan was a key document that supported the Water Resource Plan for the Border Rivers and Moonie River SDL Resource Units accredited by the Australian Government as being consistent with the Basin Plan 2012.
2020	Measure 25(6)-Monitoring, Evaluation and Reporting Strategy developed.
12-December-2022	The Border Rivers and Moonie long-term watering plan published.
7-June-2021	Release of unallocated water from strategic reserve.
7-September-2021	Measure 25(5) - Release of unallocated water from general reserve.
20-September-2023	Measure 25(3) -Granite Belt underground water sub-area notification of existing works that take or interfere with shallow groundwater.
2019-20, 2020-21 and 2021-22	Measure 25(2) - Water use reports published
Ongoing	Measure 25(1)(c) - Overland flow engagement, assessment and modelling.

## 8. Identification of potential risks to the water plan's outcomes

A risk assessment was completed in September 2023 to identify potential risks to the water plan's outcomes that could emerge within the next five years. A risk score was attributed to each water plan outcome after data and expert opinion were used to rank the likelihood and consequence of threats identified from a standardised list of threats. The risk level and rationale for this ranking were documented (see Appendix A). Under this assessment framework, the level of risk, along with other factors such as the water plan's ability to achieve its outcomes were considered in proposing appropriate actions to mitigate the risks.

Of the 22 water plan outcomes assessed, 18 were assessed as low risk and fully achieved. Four water plan outcomes were assessed at medium risk and partially achieved.

Each part of environmental outcome 24(1)(b) to maintain and, if possible, improve flows of water to which this plan applies that support (i) waterholes as refugia; (ii) river channels; and (iii) river forming processes was assessed separately. The assessment identified a medium risk for (i) waterholes as refugia only in the Moonie River catchment area. The remainder of the outcome was assessed as low risk.

The outcomes assessed at medium risk are summarised in Table 15 below.

**Table 14: Outcomes assessed as medium risk**

Outcomes assessed as medium risk	Summary of assessment	Recommended approach
<p><b>20(d)</b> seek to achieve a balance between the social, economic, cultural and environmental outcomes</p>	<p>Medium risk scores for some environmental and cultural outcomes indicate balance between social, economic, cultural and environmental outcomes not yet fully realised.</p>	<p>Refer to treatment for other outcomes.</p>
<p><b>21(1)(g)</b> making water available to support the economic and social aspiration of Aboriginal people</p>	<p>300ML of surface water in the Stanthorpe and Moonie water management areas and 1,100ML of groundwater in the sediments above the Great Artesian Basin reserved under the water plan for a purpose of ‘helping an Aboriginal community achieve its economic and social aspirations’.</p> <p>Awareness of water reserved for this purpose has been made through the Water Connections report and ongoing engagement with Aboriginal parties.</p> <p>The processes for releasing unallocated water are stated in the Water Regulation.</p> <p>The department will work with Aboriginal and Torres Strait Islander people to support the implementation of this outcome.</p> <p>There has been limited interest in accessing these reserves, potentially influenced by the cost associated with exploring these groundwater reserves.</p> <p>Likelihood: Possible Consequence: Moderate</p>	<p>Continue to engage with Aboriginal and Torres Strait Islander peoples, build relationships and better understand demand and requirements for this water and how unallocated water can best meet the economic and social aspirations of Aboriginal people in the water plan area.</p> <p>Continue to engage with Aboriginal people to implement this outcome.</p>
<p><b>24 (1)(b)(i)</b> to maintain and, if possible, improve flows of water to which this plan applies that support waterholes as refugia (Moonie catchment)</p>	<p>Risk to waterholes in the Moonie catchment was assessed as low in the 2018 risk assessment.</p> <p>In 2023, risk to waterholes in the Moonie catchment has been rated as medium (risks to waterholes in the Border Rivers catchment are rated as low).</p> <p>Drought conditions in 2018-20 indicated that waterhole risk present, particularly under a drying climate scenario.</p> <p>New monitoring and research relating to sedimentation and the relationship between water level and water quality and the minimum threshold before waterholes fail to act as refuge supports increased risk.</p> <p>Assessment informed by full entitlement modelling that treats HEW as being taken indicating level of risk could be lower.</p> <p>Water plan includes strategies and rules that manage risk including ecological outcomes, environmental flow objectives and water sharing rules.</p> <p>Rules and strategies will continue to be refined, based on new monitoring and research for water plan review and replacement.</p> <p>Risk attributed to possible increase in demand for surface water and connected groundwater, climate change/variability, increased urban demand, insufficient knowledge or monitoring data, new knowledge regarding sedimentation/infilling and waterhole drawdown thresholds and impacts of dam releases.</p> <p>High level of uncertainty around the consequences to environmental values and water requirements.</p>	<p>Continue to implement, monitor and assess outcomes, objectives and rules in preparation of the plan review and replacement. The water plan expires in 2029.</p> <p>Further monitoring and research to better understand critical thresholds and risks.</p>

	Likelihood: Possible Consequence: Moderate	
<b>24(1)(g)</b> to maintain an underground water regime in the plan area that supports ecosystems dependent on underground water to which this plan applies	<p>2018 risk assessment identified medium and high risks to baseflows in the Border Rivers Fractured Rock and medium risk to baseflows, terrestrial vegetation, non-riverine wetlands in the Border Rivers alluvium.</p> <p>2023 risk assessment identified a medium risk to groundwater regime that supports groundwater dependent ecosystems in the water plan area.</p> <p>Risk attributed to potential increase demand of groundwater entitlement and basic rights, climate change/variability, increase in urban demand, and knowledge gaps about the groundwater resources and dependent ecosystems.</p> <p>High level of uncertainty around the consequences to environmental values and water requirements.</p> <p>Likelihood: Unlikely Consequence: Major</p>	<p>Continue to implement, monitor and assess outcomes, objectives and rules including, rules that support groundwater dependent ecosystems in preparation for water plan review and replacement in 2029.</p> <p>Further monitoring and research collecting crucial information about springs ecosystems in the water plan area including updated spring mapping data and reporting of ecological status and values of springs.</p>

## 9. Emerging issues

The predominant issue identified as potentially emerging in the near future or beyond the next five-year review cycle is climate change. Although climate change is a contemporary risk, there is significant uncertainty around the impact climate change will have on the water plan area. Some of the key reasons climate change was considered an emerging risk, as well as a contemporary risk, include:

- rainfall variability – the projected increase in summer months and decrease in winter months, with no projected annual change, leads to uncertainty around the impact of rainfall variability on streamflow
- the extent increased evapotranspiration and temperature will impact water availability and groundwater recharge
- the potential impact on the water market.

Another emerging risk identified was the increased groundwater take under basic water rights in peri-urban areas not connected to a town water supply. In these areas, particularly surrounding large urban centres such as Goondiwindi and Stanthorpe, there is an increase in population and subsequent demand for stock and domestic supplies. On land that is connected to a town water supply, underground water for stock or domestic purposes from Border Rivers Alluvium and Border Rivers Fractured Rock underground water units can only be taken from existing underground works.

The risk assessment identified these emerging risks may have an impact on economic, social, cultural and environmental outcomes.

It is proposed that these matters will be considered as part of the next water plan review and replacement process. The learnings gained from implementing the existing water plan to date will be used to make improvements to the new water plan as part of an adaptive management cycle based on revised future water needs, enhanced scientific information and targeted stakeholder consultation.

## 10. Any non-compliance under a water entitlement or other authorisation in the water plan area

Over the past five years, there were 190 non-compliance incidents, 114 of which were resolved without taking any compliance action and 76 required compliance action. Most incidents related to either late or failure to supply a meter reading. Appendix D provides details on the number and type of alleged non-compliance incidents and the outcome of departmental investigations and compliance response that occurred over the reporting period (2019 to 2022/23 water years).

The department uses a range of methods to monitor for compliance against entitlements including field and desktop audits, metering, and third-party notification. Further to this the department continues to invest in building our capability in intelligence tools, such as remote sensing, using satellite imagery for water storages across the state, and improved data analytics to support compliance monitoring and decision making. These activities support public confidence in how water is managed and protects the rights of all entitlement holders and the broader community.

To ensure our water resources are managed fairly and responsibly the department has developed a [Regulatory Strategy Water Resource Management – Water 2022 – 2024](#) that establishes our regulatory approach for the delivery of our regulatory functions and activities. The strategy explains the principles underlying our regulatory approach, the tools we utilise and our compliance and enforcement pathway. The objectives and principles set out in the Regulatory Strategy sets the foundation for our annual compliance planning.

The department's [Annual Compliance Plan 2023-2024](#) identifies activities that support department's compliance approach, including compliance outcomes, performance measures, focus areas, activities, targets and measures. The water plan supports the department to take a risk-based, transparent and consistent approach to how we regulate Queensland's water resources.

In addition, the work being done under the Rural Water Futures Program will support improved compliance outcomes. Further information on the Rural Water Futures program and its initiatives can be found on the department's [website](#).

## 11. Way forward

This five-year assessment of the water plan has highlighted the majority of water plan outcomes have been achieved, however there are some existing and emerging issues that may impact the water plan's implementation and effectiveness. Possible treatment options have been provided for water plan outcomes that were assessed to have a medium risk (section 8). Identified emerging issues will be reassessed and addressed as part of the next water plan review. The water plan expires in 2029 and must be review and replaced prior to expiry.

Overall, the current implementation of the water plan continues to advance the sustainable management of water resources.

# Appendix A Assessment of water plan outcomes

Table A.1: General outcomes for the water plan area

Water plan outcome (as per Section 20 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>20 The outcomes include the allocation and management of water in a way that–</b>			
<p>(a) recognises the natural state of watercourse, lakes, springs and aquifers has changed because of the taking of, and interfering with, water; and</p>	<p>The water plan establishes a framework for managing and allocating water to protect the share of water available to entitlement holders and the environment.</p> <p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and environmental flow objectives and associated performance indicators to protect the share of water available to water allocation holders and the environment.</p> <p>Any decision made under the water plan must be consistent with the water allocation security objectives and the environmental flow objectives.</p>	<p>The Water Management Protocol (WMP) and Operations Plans implement water plan outcomes and strategies in a way that is consistent with the Basin Plan and water sharing agreements/commitments between Queensland and New South Wales.</p> <p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment and relocation of water licences</p> <p>The Operations manuals (OM) for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p>
<p>(b) is consistent with the relevant Basin Plan; and</p>	<p>The water plan identifies the catchment areas, the groundwater management area and units and the water to which the water plan applies.</p> <p>No decision may be made under the water plan that would increase the</p>		<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>The water plan is consistent with the Basin Plan 2012 as demonstrated through the accreditation of the water plan and its instruments as part of the</p>



Water plan outcome (as per Section 20 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>20 The outcomes include the allocation and management of water in a way that–</b>			
	<p>amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan includes outcomes for the protection of Aboriginal values and uses of water through strategies and objectives that protect flows.</p> <p>The water plan establishes strategies to meet its outcomes including requiring an entitlement to take water except for defined low risk activities.</p> <p>The water plan defines unallocated water reserves for helping an Aboriginal community achieve its economic and social aspirations and any purpose. The processes for releasing unallocated water are stated in the Water Regulation.</p> <p>The water plan establishes water allocation security objectives and environmental flow objectives and associated performance indicators to protect the share of water available to water allocation holders and the environment.</p> <p>Any decision made under the water plan must be consistent with the water allocation security objectives and the environmental flow objectives.</p>	<p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation.</p>	<p>water resource plan package and ongoing reporting required as per the Basin Plan 2012 and <i>Water Act 2007</i> (Cth).</p>
(c) is consistent with water sharing agreements and commitments between Queensland and New South Wales; and	<p>The water plan was prepared having regard to the water resources in the Intersecting Streams water resource plan area, located downstream in New South Wales, and in consultation with key stakeholders and regional communities.</p>		<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Queensland is a signatory of the New South Wales-Queensland Border Rivers Intergovernmental Agreement 2008 and the Intergovernmental Agreement on</p>

Water plan outcome (as per Section 20 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>20 The outcomes include the allocation and management of water in a way that–</b>			
	<p>The water plan establishes environmental flow objectives, including a specific mean annual flow objective that provides protection to flows into New South Wales receiving waters.</p> <p>The water plan prohibits any decision that would increase the average volume of water taken or the total nominal entitlement for taking groundwater under the water plan, effectively protecting existing entitlements and water for the environment from incremental increase in the amount of water taken.</p>		Implementing Water Reform in the Murray-Darling Basin 2013.
<p>(d) achieves a balance between–</p> <p>(i) the ecological outcomes in section 21; and</p> <p>(ii) the economic outcomes in section 22; and</p> <p>(iii) the Indigenous outcomes in section 23; and</p> <p>(iv) the social outcomes in section 24.</p>	<p>The water plan outcomes recognise the need to balance environmental water needs with other consumptive water users. Plan development was informed through consultation with stakeholders and collection of scientific data and information.</p>		<p><b>MEDIUM risk</b></p> <p>The outcome is being partially achieved. Four outcomes are being partially achieved indicating that this balance has not yet been fully achieved.</p>
<p>(e) promotes improved understanding of-</p> <p>(i) matter affecting flow related and health of underground water dependent ecosystems including springs, in the plan area; and</p>	<p>The water plan includes measures that promote the improved understanding of these matters including:</p> <p>The annual publication of a water use report that includes information about compliance with the sustainable diversion limits.</p>	<p>The WMP includes requirement to: measure or collect and keep available records of water quality, water taken, prices for permanent trades, the number and volume of permanent trades and seasonal water assignments.</p>	<p><b>LOW risk</b></p> <p>This outcome is being achieved.</p>

Water plan outcome (as per Section 20 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>20 The outcomes include the allocation and management of water in a way that–</b>			
<p>(ii) flow requirements of ecosystems in the plan area; and</p> <p>(iii) the water required for social, spiritual, economic, environmental and cultural uses of water by Aboriginal people; and</p> <p>(iv) the water required to deliver social and economic benefits to communities in the plan area; and</p> <p>(v) the impact of climate change on water availability; and</p> <p>(vi) the actions required to reverse the degradation of natural ecosystems caused by the taking of, or interference with, water to which this plan applies.</p>	<p>Each determination of environmental share made is recorded and published at least annually.</p> <p>Information about the number, value and volume of water entitlement trades; and opportunities to improve the effectiveness and efficiency of the water market is to be published within five years of plan commencement.</p> <p>A report about the flow requirements to support cultural values and uses, informed by engagement with Aboriginal people is to be published within five years of plan commencement</p>	<p>Prepare flow event reports for public release within three months after the end of each flow event.</p> <p>Collect information on ecological assets linked to the environmental outcomes of the water plan and the critical water requirements of ecological assets in the water plan area.</p> <p>The ROLs, DOLs and OMs include requirement for monitoring and reporting by infrastructure operators.</p>	

Table A.2: Economic outcomes for the water plan area

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
<p>(a) to maintain the probability of being able to take water to which this plan applies under a water entitlement</p>	<p>The water plan provides for the take of surface water, groundwater, overland flow water under a water licence, water allocation or authorisation for defined purposes within defined limits.</p> <p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan provides for the granting of a licence to replace an overland flow authority.</p> <p>The water plan establishes the framework for permanent and temporary trade of water allocations in the water plan area.</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the probability of obtaining supplemented and unsupplemented water under a water allocation.</p> <p>Decisions made under the water plan must be consistent with the water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment and relocation of water licences</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p> <p>Strategic climate change policy development.</p>

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
<p>(b) to maintain and, if possible, improve the productive base of underground water</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan outlines environmental flow objectives and performance indicators to protect flows to environmental assets including the productive base of groundwater.</p> <p>Decisions made under the water plan must be consistent with the environmental flow objectives stated in the water plan.</p> <p>The water plan limits the take of groundwater for stock and domestic purpose in reticulated areas works existing at plan commencement.</p> <p>The water plan limits the total volume that may be taken for prescribed activities to 2ML using works existing at plan commencement.</p>	<p>The WMP defines:</p> <p>Water sharing rules for taking water under an unsupplemented groundwater allocations and water licences including announced entitlement/allocation rules that manage take in consideration of sustainable diversion limits and the agreed share of the resource with New South Wales.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a unsupplemented groundwater allocations including maximum zone volumes and third party impact assessment.</p> <p>Seasonal water assignment rules for unsupplemented groundwater allocation and water licences including limits on the volume that may be seasonally assigned, maximum zones volumes and third party impacts assessment.</p> <p>Monitoring and reporting requirements</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p> <p>Strategic climate change policy development.</p>

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
(c) to improve and support the effective and efficient operation of the market in water allocations and relocatable water licences	The water plan establishes the framework for the permanent and temporary trade of supplemented and unsupplemented water allocations within the water plan area.	<p>The WMP defines the following:</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment of water licences and</p> <p>Requirement to measure or collect information on the number and nominal volume of permanent and seasonal assignments and associated pricing information for permanent trades.</p> <p>The OMs for water supply schemes define the following:</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p> <p>Strategic climate change policy development.</p>

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
<p>(d) to maintain the availability of water to which this plan applies for stock purposes and tourism in the plan area</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes strategies to meet its outcomes including requiring an entitlement to take water except for defined low risk activities (stock or domestic purposes, prescribed activities).</p> <p>The water plan establishes water allocation security objectives and environmental flow objectives and associated performance indicators to protect the share of water available to water allocation holders and the environment.</p> <p>Any decision made under the water plan must be consistent with the water allocation security objectives and the environmental flow objectives.</p> <p>The water plan establishes unallocated water reserves for any purpose. The processes for releasing unallocated water are stated in the Water Regulation.</p> <p>The water plan provides for the take of surface water for prescribed activities.</p> <p>The water plan provides for the take of overland flow water for stock or domestic purposes, for prescribed activities, to comply with an environmental authority or development permit or for contaminated runoff.</p> <p>The water plan provides for the take of groundwater for stock or domestic purposes or for prescribed activities.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment water licences</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the store and release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p>

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
<p>(e) to maintain the availability of water to which this plan applies for industries dependent on water resources</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes strategies to meet its outcomes including requiring an entitlement to take water except for defined low risk activities.</p> <p>The water plan establishes water allocation security objectives and environmental flow objectives and associated performance indicators to protect the share of water available to water allocation holders and the environment.</p> <p>Any decision made under the water plan must be consistent with the water allocation security objectives and the environmental flow objectives.</p> <p>The water plan establishes unallocated water reserves for any purpose. The processes for releasing unallocated water are stated in the Water Regulation</p> <p>The water plan provides for the take of surface water for prescribed activities, limiting take to 2ML using existing works.</p> <p>The water plan provides for the take of overland flow water for prescribed activities, to comply with an environmental authority or development permit or for contaminated runoff.</p> <p>The water plan provides for the take of groundwater for prescribed activities limiting take to 2ML using existing works.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment and relocation of water licences</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the store and release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>There are reserves of unallocated water for any purpose.</p> <p>The water plan provides for the permanent and temporary trade of water.</p> <p>The water plan provides for the take of surface water including overland flow water, and groundwater for prescribed activities.</p>



Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
(f) to maintain and, if possible, improve flood flows to support grazing activities	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and environmental flow objectives and associated performance indicators to protect the share of water available to water allocation holders and the environment.</p> <p>Any decision made under the water plan must be consistent with the water allocation security objectives and the environmental flow objectives.</p> <p>The water plan limits the take of overland flow water to existing take or for specified low risk activities including stock purposes.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>The ROLs, DOLs, and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p>

Water plan outcome (as per Section 21 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>21) The economic outcomes for water in the water plan area are–</b>			
<p>(g) to make water to which this plan applies available to support the economic and social aspirations of Aboriginal people</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes unallocated water reserves for helping an Aboriginal community achieve its economic and social aspirations and any purpose.</p> <p>The processes for releasing unallocated water are stated in the Water Regulation.</p> <p>The water plan provides for the take of surface water for prescribed activities.</p> <p>The water plan provides for the take of overland flow water for stock or domestic purposes, for prescribed activities, to comply with an environmental authority or development permit or for contaminated runoff.</p> <p>The water plan provides for the take of groundwater for stock or domestic purposes or for prescribed activities.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment of water licences</p> <p>The OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>Medium risk</b></p> <p>The outcome is being partially achieved.</p> <p>The water plan reserves unallocated water for helping an aboriginal community achieve its economic and social aspirations.</p> <p>Availability of unallocated water reserves promoted through Water Connections report and ongoing engagement with Aboriginal people.</p> <p>Continued engagement with local Aboriginal and Torres Strait Islander peoples will be undertaken to better understand the demand and implement this outcome.</p>

Table A.3: Social outcomes for the water plan area

Water plan outcome (as per Section 22 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>22) The social outcomes for water in the water plan area are–</b>			
<p>(a) to maintain— (i) the availability of water to which this plan applies for the supply of urban water to towns and communities dependent on the water resources</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes unallocated water reserves for any purpose. The processes for releasing unallocated water are stated in the Water Regulation</p> <p>The water plan establishes the framework for the permanent and temporary trade of water allocations.</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Any decision made under the water plan must be consistent with these security objectives.</p> <p>The water plan authorises the take of groundwater and overland flow water without an entitlement for stock domestic purpose, limiting take of groundwater to existing works in reticulated areas.</p> <p>The water plan authorises the take of groundwater, surface water and overland flow water for prescribed activities, limited to 2ML using existing works.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment of water licences</p> <p>The ROL, DOL and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p> <p>Urban Water Security Assessments.</p>

Water plan outcome (as per Section 22 of plan)	Water plan strategies that provide for outcomes	Water Management Protocol and Operations Manual rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
(a) to maintain— (ii) the flows of water to which this plan applies that support water-related aesthetic, cultural and recreational values	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit).</p> <p>The water plan establishes environmental flow objectives and performance indicators that protect the share of water available to the environment.</p> <p>Any decision made under the water plan must be consistent with defined environmental flow objectives for mean annual flow as well waterhole persistence, fish migration events, floodplain inundation and river forming flows.</p> <p>The take of water for prescribed activities is limited to 2ML using existing works.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Monitoring and reporting requirements</p> <p>The ROL, DOL and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p>
(b) to provide water to which this plan applies for domestic purposes in the plan area.	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Any decision made under the water plan must be consistent with these security objectives.</p> <p>The water plan authorises the take of groundwater and overland flow water without an entitlement for stock domestic purpose, limiting take of groundwater to existing works in reticulated areas.</p> <p>The water plan authorises the take of groundwater, surface water and overland flow water for prescribed activities, limited to 2ML using existing works.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of an unsupplemented water allocation.</p> <p>Rules for seasonal assignment of water licences</p> <p>The ROL, DOL and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Seasonal water assignment rules for the temporary trade of all or part of a supplemented water allocation</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p>

**Table A.4: Cultural outcomes for the water plan area**

Water plan outcome (as per Section 23 of plan)	Water plan strategies that provide for outcomes	Resource operations plan (ROP) management rules that provide for outcome	Qualitative risk ranking and preliminary assessment of outcome
<b>23) The cultural outcomes for water in the water plan area are–</b>			
<p>Maintain flows of water to which this plan applies that support the water-related cultural, spiritual, social and environmental values of Aboriginal people</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit).</p> <p>The water plan establishes unallocated water reserves for helping an Aboriginal community achieve its economic and social aspirations and any purpose.</p> <p>The processes for releasing unallocated water are stated in the Water Regulation.</p> <p>The water plan establishes environmental flow objectives and performance indicators that protect the share of water available to environmental assets linked to cultural values and uses including:</p> <p>Yellow Belly (Golden Perch) and stable flow spawning fish</p> <p>Waterholes as refugia</p> <p>Floodplain wetlands including Macintyre River Floodplain and associated channel-connected wetlands and eastern snake-necked turtle.</p> <p>Fluvial geomorphology and river forming processes</p> <p>Any decision made under the water plan must be consistent with defined environmental flow objectives for mean annual flow as well waterhole persistence, fish migration flow events, floodplain inundation and river forming flows.</p> <p>Held environmental water is given the same protection as any other water entitlement. Decisions about how HEW is traded or managed must be consistent with environmental flow objectives and performance indicators. Protection of HEW supports achieving cultural values and uses.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROL, DOL and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p><b>Low risk</b></p> <p>The outcome is being achieved. Significant consultation and engagement are being undertaken to better understand the water related cultural, spiritual, social and environmental values of Aboriginal people.</p> <p>Further engagement and relationship building is required in the lead up to the review and replacement of the water plan to increase certainty in knowledge of these values and their water requirements and to implement this outcome.</p>

Table A.5: Ecological outcomes for the water plan area

Water plan outcome (as per Section 24 of plan)	Water plan strategies that provide for outcomes	Management rules that provide for outcome	Related ecological assets	Summary of monitoring and assessment	Qualitative risk ranking and preliminary assessment of outcome
<b>24) The ecological outcomes for water in the water plan area are–</b>					
<p>(a) to maintain the probability of being able to take surface water to which this plan applies under a water entitlement held only for providing benefit to the environment;</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)                      The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.                      Any decision made under the water plan must be consistent with these security objectives.                      The water plan limits the take of water for prescribed activities to 2ML using existing works.</p>	<p>The WMP defines the following:                      Water sharing rules for taking water under an unsupplemented water allocations and water licences.                      Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.                      Monitoring and reporting requirements                      The ROLs, DOLs and OMs for water supply schemes define the following:                      Operating rules for supplemented water including for the release of water for environmental purposes including 'waterhole drawdown rule'.                      Water sharing rules for taking water under a supplemented water allocation.                      Monitoring and reporting requirements</p>	<p>All:                      Waterholes                      River-forming processes                      Macintyre Billabongs                      Floodplain wetlands                      Floodplain vegetation                      Stable flow spawning fish                      Groundwater dependent ecosystems</p>	<p>All monitoring referred to below.</p>	<p><b>LOW risk</b>                      The outcome is being achieved.                      Strategies and rules in water plan and supporting instruments supported by:                      The conversion of licences to tradeable water allocations at plan commencement.                      Commonwealth recovery surface water in the Border Rivers and Moonie catchments now held as water for the environment.                      Enhanced measurement and monitoring being promoted under the Rural Water Futures program.                      Queensland non-urban measurement policy, standard and implementation plan.                      Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.                      Surface water and groundwater monitoring networks.                      Contemporary hydrologic modelling.</p>

<p>(b) to maintain and, if possible, improve flows of water to which this plan applies that support—</p> <p>(i) waterholes as refugia; and</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets including waterholes.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p> <p>The water plan limits the take of water for prescribed activities to 2ML using existing works.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations including 'nil passflow rule'.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes and 'waterhole drawdown in the Macintyre Brook WSS.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>Waterholes</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including refugial waterholes persistence and sediment deposition.</p>	<p><b>MEDIUM risk (Moonie catchment)</b></p> <p><b>LOW risk (Border Rivers catchment)</b></p> <p>The outcome is being partially achieved.</p> <p>Risk level due to new monitoring and research relating to sedimentation and the relationship between water level and water quality and minimum thresholds before which waterholes fail to act as refuge.</p> <p>Drought conditions in 2018-20 indicated that waterhole risk present, particularly in a drying climate scenario.</p> <p>The strategies in place to manage this risk including ecological outcomes, environmental flow objectives and rules will continue to be assessed based on further monitoring and research for plan review and replacement in 2029.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Commonwealth recovery surface water in the Border Rivers and Moonie catchments now held as water for the environment.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic modelling.</p>
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<p>(b)(ii) river channels; and</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets including river channels.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>River forming processes</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including refugial waterholes persistence and sediment deposition.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>The water plan and supporting instruments implement rules and strategies to provide protection to river channels and river forming flows e.g. 'no growth' plan; EFO for river forming flows</p>
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<p>(b)(iii) river-forming processes</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets including river channels.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>River forming processes</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including river forming processes such as sediment movement through erosion, transport and deposition.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>The water plan and supporting instruments implement rules and strategies to provide protection to river channels and river forming flows e.g. 'no growth' plan; EFO for river forming flows</p>
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<p>(c) to maintain and, if possible, improve flows of water to which this plan applies that support floodplain ecosystems within and downstream of the water plan area, including—</p> <p>(i) the Macintyre River floodplain downstream of Goondiwindi; and</p> <p>(ii) channel connected wetlands associated with that floodplain.</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets including Macintyre Billabongs and floodplain wetlands.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>Macintyre Billabongs</p> <p>Floodplain wetlands</p> <p>Floodplain vegetation</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including the Macintyre Billabongs and floodplain wetlands.</p>	<p><b>MEDIUM risk</b></p> <p>The outcome is being partially achieved.</p> <p>The water plan and supporting instruments implement rules and strategies that floodplain ecosystems within and downstream of the water plan area e.g. 'no growth' plan; EFOs, water sharing rules.</p> <p>The strategies in place to manage this risk including ecological outcomes, environmental flow objectives and rules will continue to be assessed based on new knowledge for plan review and replacement in 2029.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Commonwealth recovery surface water in the Border Rivers and Moonie catchments now held as water for the environment.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Surface water and groundwater monitoring networks.</p> <p>Contemporary hydrologic modelling.</p>
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<p>(d) to minimise changes to flows of water in the plan area that support fish movement and fish recruitment</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>Stable flow spawning fish</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including small bodied fish requiring low to medium flows and water level stability for spawning and recruitment and Golden Perch, an indicator species for flow spawning fish with spawning and recruitment that is responsive to elevated river flow and floodplain inundation.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>The water plan and supporting instruments implement rules and strategies to provide protection to migratory fish e.g. 'no growth' plan; EFO for fish migration flow events.</p>
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<p>(e) to minimise adverse environmental impacts, relating to water to which this plan applies, caused by the operation of infrastructure in the plan area</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The ROLs, DOLs and OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>Stable flow spawning fish</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Monitoring information has been collated on a range of assets including small bodied fish requiring low to medium flows and water level stability for spawning and recruitment and Golden Perch, an indicator species for flow spawning fish with spawning and recruitment that is responsive to elevated river flow and floodplain inundation.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p>
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<p>(f) to minimise water quality degradation in relation to—</p> <p>(i) for surface water to which this plan applies—flow; and</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines the following:</p> <p>Water sharing rules for taking water under an unsupplemented water allocations and water licences.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a supplemented and unsupplemented water allocations.</p> <p>Monitoring and reporting requirements</p> <p>The OMs for water supply schemes define the following:</p> <p>Operating rules for supplemented water including for the release of water for environmental, stock and domestic purposes.</p> <p>Water sharing rules for taking water under a supplemented water allocation.</p> <p>Monitoring and reporting requirements</p>	<p>All surface water assets</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Assessment of risk to water quality under different flow regimes is complicated by relationships between factors such as soils, temperature, primary productivity, and flow.</p> <p>To better understand these dynamics to that water quality outcomes can be adequately assessed at plan review. Future projects will review water quality sensitivity to flow regime changes allow better understanding of these dynamics so that water quality outcomes may be adequately assessed, and appropriate strategies be developed at plan review and replacement.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>There is a high level of uncertainty around the interaction of the flow regime and water quality, compounded by limited spatial and temporal monitoring of water quality.</p> <p>However, given the water plan precludes any decision that would increase the amount of water taken, and strategies are in place to manage the take of water and its relocation, likelihood and consequence of this risk are rare and minor.</p>
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<p>(ii) for underground water to which this plan applies— flow and pressure</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets and functions.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines:</p> <p>Water sharing rules for taking water under an unsupplemented groundwater allocations and water licences including announced entitlement/allocation rules that manage take in consideration of sustainable diversion limits and agreed share of the resource with New South Wales.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a unsupplemented groundwater allocations including maximum zone volumes and third party impact assessment.</p> <p>Seasonal water assignment rules for unsupplemented groundwater allocation and water licences including limits on the volume that may be seasonally assigned, maximum zones volumes and third party impacts assessment</p> <p>Monitoring and reporting requirements</p>	<p>Groundwater dependent ecosystems</p>	<p>The <i>Summary of Environmental Monitoring Water Plan (Border Rivers and Moonie) 2019</i> provides a summary of key findings of projects as they relate to the assessment of the water plan's ecological outcomes.</p> <p>Limited information about groundwater dependent ecosystems in the Border Rivers and Moonie water plan areas makes it difficult to adequately assess groundwater-related outcomes. Future projects will collect crucial information on spring ecosystems to increase confidence in future water plan assessments.</p>	<p><b>LOW risk</b></p> <p>The outcome is being achieved.</p> <p>There is a high level of uncertainty around the interaction of groundwater flow and pressure and water quality in the water plan area, compounded by limited spatial and temporal monitoring of water quality.</p> <p>However, given the water plan precludes any decision that would increase the amount of water taken, and strategies are in place to manage the take of water and its relocation, likelihood and consequence of this risk are rare and minor.</p>
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<p>(g) to maintain an underground water regime in the plan area that supports ecosystems dependent on underground water to which this plan applies</p>	<p>No decision may be made under the water plan that would increase the amount of water taken (other than a decision about unallocated water or groundwater not in a groundwater unit)</p> <p>The water plan establishes water allocation security objectives and performance indicators to protect the share of water available to the holder of a water allocation. Held environmental water is given the same protection as any other water entitlement.</p> <p>Environmental flow objectives and performance indicators are specified to protect environmental assets.</p> <p>Decisions made under the water plan must be consistent with the environmental flow and water allocation security objectives stated in the water plan.</p>	<p>The WMP defines:</p> <p>Water sharing rules for taking water under an unsupplemented groundwater allocations and water licences including announced entitlement/allocation rules that manage take in consideration of sustainable diversion limits agreed share of the resource with New South Wales.</p> <p>Water allocation dealing rules for the subdivision, amalgamation and change (including for permanent relocation/trade) of a unsupplemented groundwater allocations including maximum zone volumes and third-party impact assessment.</p> <p>Seasonal water assignment rules for unsupplemented groundwater allocation and water licences including limits on the volume that may be seasonally assigned, maximum zones volumes and third party impacts assessment</p> <p>Monitoring and reporting requirements</p>	<p>Groundwater dependent ecosystems</p>		<p><b>MEDIUM risk</b></p> <p>The outcome is being partially achieved.</p> <p>A high level of uncertainty about consequences to environmental values and water requirements affects confidence of assessment.</p> <p>The water plan and supporting instruments implement rules and strategies that support ecosystems dependent on groundwater e.g. 'no growth' plan; EFOs for baseflow and productive base of groundwater; and water sharing and dealing rules for groundwater entitlements.</p> <p>The strategies in place to manage this risk will continue to be assessed based on new knowledge for plan review and replacement in 2029.</p> <p>Strategies and rules in water plan and supporting instruments supported by:</p> <p>The conversion of licences to tradeable water allocations at plan commencement.</p> <p>Enhanced measurement and monitoring being promoted under the Rural Water Futures program.</p> <p>Queensland non-urban measurement policy, standard and implementation plan.</p> <p>Increased regulatory presence and focus across high-risk areas under the department's Compliance Strategy and Plan.</p> <p>Groundwater monitoring networks.</p> <p>Contemporary hydrologic assessment and modelling.</p>
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## Appendix B Water trade data

Table B.6: Seasonal Water Assignment summary (supplemented and unsupplemented surface water)

Water Supply Scheme (WSS) or Water Management Area (WMA)	Water year	Number of SWA	Volume (ML)
Border Rivers WSS	2017/18	103	14,685
	2018/19	115	17,864
	2019/20	2	8
	2020/21	19	1,105
	2021/22	7	352
	2022/23	26	5,030
Macintyre Brook WSS	2017/18	29	1,492
	2018/19	78	4,590
	2019/20	12	1,315
	2020/21	40	2,642
	2021/22	7	480
	2022/23	0	0
Border Rivers WMA	2017/18	11	23,378
	2018/19	3	4,205
	2019/20	14	4,286
	2020/21	32	6,533
	2021/22	9	4,083
	2022/23	4	565.8
Macintyre Brook WMA	2017 to 2023	0	0
Callandoon Creek WMA	2017 to 2023	0	0
Northern Weir WMA	2017 to 2023	0	0
Upper Weir WMA	2017 to 2023	0	0
Lower Weir WMA	2017/18	2	16,577
	2018/19	2	16,577
	2019/20	0	0
	2020/21	0	0
	2021/22	0	0
	2022/23	0	0
Stanthorpe WMA	2017/18	0	0



	2018/19	0	0
	2019/20	0	0
	2020/21	2	38
	2021/22	0	0
	2022/23	0	0
Moonie WMA	2017 to 2023	0	0

**Table B.7:: Permanent water trade summary (supplemented and unsupplemented surface water)**

Water Supply Scheme (WSS) or Water Management Area (WMA)	Water year	Permanent trade water (no.)	Permanent trade water (ML)	Permanent trade water & land (no.)	Permanent trade water & land (ML)	Total permanent trade (ML)
Border Rivers WSS	2017/18	12	7,942	4	1,276	9,218
	2018/19	8	1,968	2	666	2,634
	2019/20	7	2,715	2	310	3,025
	2020/21	6	1,858	5	145	2,003
	2021/22	12	938	11	8,269	9,207
	2022/23	7	7,466	3	251	7,717
Macintyre Brook WSS	2017/18	4	151	2	617	768
	2018/19	5	50	1	50	100
	2019/20	4	112	7	942	1,054
	2020/21	1	92	2	254	346
	2021/22	5	709	2	55	764
	2022/23	3	100	6	629	729
Border Rivers WMA	2017/18	11	18,974	2	2,265	21,239
	2018/19	6	6,130	1	1,300	7,430
	2019/20	2	83	0	0	83
	2020/21	5	1,458	1	107	1,565
	2021/22	7	6,219	3	3,123	9,342
	2022/23	5	5,819	3	1,640	7,459
Macintyre Brook WMA	2017/18	0	0	1	308	308
	2018-20	0	0	0	0	0
	2020/21	0	0	3	368	368
	2021-23	0	0	0	0	0
Stanthorpe WMA	2017/18	1	10	0	0	10
	2018/19	2	12.5	0	0	12.5
	2019/20	6	215	9	627.5	842.5
	2020/21	7	151	5	148	299
	2021/22	6	171	13	794	965
	2022/23	10	159	14	328	487
Callandoon Creek WMA	2017/18	2	973	2	938	1,911

	2018/19	4	1,613	0	0	1,613
	2019-21	0	0	0	0	0
	2021/22	2	640	0	0	640
	2022/23	2	938	0	0	938
Northern Weir WMA	2017/18	0	0	0	0	0
	2018/19	6	537	0	0	537
	2019/20	1	100	0	0	100
	2020/21	2	2,764	0	0	2,764
	2021/22	1	82	0	0	82
	2022/23	0	0	0	0	0
Upper Weir WMA	2017/18	0	0	0	0	0
	2018/19	4	6,065	0	0	6,065
	2019-21	0	0	0	0	0
	2021/22	0	0	1	73	73
	2022/23	0	0	0	0	0
Lower Weir WMA	2017/18	1	2,933	1	618	3,551
	2018/19	0	0	1	618	618
	2019-23	0	0	0	0	0

**Table B.8: Seasonal Water Assignment summary (groundwater)**

Underground water unit	Water Year	Number of SWA	Volume (ML)
Border Rivers Alluvium	2019/20	10	1,072
	2020/21	2	242
	2021/22	1	2
	2022/23	1	92

**Table B.9: Permanent water trade summary (groundwater)**

Underground water unit	Water Year	Number of permanent trades	Volume (ML)
Border Rivers Alluvium	2019/20	2	359
	2020/21	1	32
	2021/22	1	146
	2022/23	0	0

**Table B.10: Average value of permanent water entitlement trades separate from land (2018/19 to 2022/23 water years)<sup>6</sup>**

Management Area	Average \$/ML
Border Rivers Water Supply Scheme	900-3,400
Macintyre Brook Water Supply Scheme	2,000-5,000
Border Rivers Water Management Area	2,500-5,200
Macintyre Brook Water Management Area	600-4,000

<sup>6</sup> Permanent water trading and relocatable licence data available on Business Queensland. Average value of permanent water trades rounded to nearest \$100.

Northern Weir River Water Management Area	900-1,200
Stanthorpe Water Management Area	1,000-6,700
Moonie Water Management Area	1,600-3,300
Queensland Border Rivers Alluvium underground water unit (Border Rivers Alluvium (Deep) sub-area)	3,800-5,700

# Appendix C Appendix C: Water taken or interfered with under statutory authorisations

Table C.11:: Water taken or interfered with under statutory authorisations

Water Act 2000 (section)	Current level of utilisation of statutory authorisations
<b>Authorisations that may <u>not</u> be limited by water planning instrument</b>	
S93 General authorisations to take water (e.g., firefighting, watering travelling stock)	No major change in water taken under this general authorisation.  There is no evidence to suggest major increases in take of water for incidences of firefighting, camping or travelling stock.
S94 General authorisations to interfere with water. (e.g., overland flow, impoundments on a watercourse for state monitoring purposes)	No new impoundments or interference identified under this general authorisation.
S95 Aboriginal and Torres Strait Islander parties (the take or interference with water for traditional activities or cultural purposes)	No identified change in water take take under this general authorisation  There is no evidence to suggest an increases in the take or interference with water for traditional activities or cultural purposes.
S96 Landowners may take water for stock or domestic purposes	No impacts identified under this general authorisation.  A landholder may take water from an overland flow dam or from a watercourse adjoining their land. Stock and domestic dams are self-assessable development and must be notified.
S97 Environmental authorities to take or interfere with overland flow	No identified change in water taken under this general authorisation.  Notification for the construction of overland flow storages to satisfy an environmental authority or a development permit for carrying out an environmentally relevant activity is required under the Planning Regulation 2017 and Water Regulation 2016.  No overland flow dams constructed for these purposes have been notified and recorded in the department's database.
S98 Resource activities that interfere with the flow of water by diversion of a watercourse	No identified change in interference with watercourses under this general authorisation.  The impacts of interference by diversion are assessed through requirements of the <i>Environmental Protection Act 1994</i> .  Satellite imagery is assessed annually when collection water use data for the department's annual report to the Murray-Darling Basin Authority. There is no evidence of increased resource activity on satellite imagery.
S99 Constructing authorities and water service providers	No identified change in water taken under these authorisations.  Limited volumes of water are permitted to be taken for road and rail construction and maintenance and public amenities.
<b>Authorisation that <u>may</u> be limited by water planning instrument or regulation</b>	

<p>s101 Authorisation that may be altered or limited by water planning instrument or regulation.</p>	<p>An increase has been identified under this general authorisation due to increased take of groundwater in peri-urban areas not connected to a town water supply. In these areas, particularly surrounding large urban centres such as Goondiwindi, there is an increase in population and subsequent demand for water. No significant increase in surface water has been identified.</p> <p>The water plan limits the total amount of water to which this plan applies that may be taken for all prescribed activities under section 101(1)(a) of the Act is 2 ML and, can only be taken using existing works.</p> <p>Take of overland flow is only permitted if the water is taken under a water entitlement or permit, taken for stock or domestic purposes, or taken using notified existing overland flow works.</p> <p>Take of underground water is only permitted if the water is taken under a water entitlement or water permit, under a seasonal water assignment, for stock or domestic purposes.</p> <p>On land that is connected to a town water supply, underground water for stock or domestic purposes from underground water units Border Rivers Alluvium, Macintyre River alluvium, Border Rivers and Moonie Fractured Rock and Macintyre Brook Alluvium can only be taken from existing underground works.</p>
<p>s102 Authorisations under water plans or regulation</p>	<p>There are no section 102 authorisations under the water plan relevant to this plan area.</p>
<p>s103 Authorisations to take water for stock or domestic purposes may be limited</p>	<p>There are no section 103 authorisations under the water plan relevant to this plan area.</p>

## Appendix D Overview of non-compliance associated with the water plan

Table D.12:: Non-compliance associated with the water plan\*

Type of alleged non compliances	Number of alleged non compliances	Outcome
<b>Contravene licence conditions</b>	1	<ul style="list-style-type: none"> <li>• One formal warning issued</li> </ul>
<b>Excess take under entitlement</b>	9	<ul style="list-style-type: none"> <li>• Three formal warnings issued</li> <li>• Six advisory letters sent</li> </ul>
<b>Late and non-supplied meter readings</b>	152	<ul style="list-style-type: none"> <li>• Five penalty infringement notices issued</li> <li>• 34 formal warnings issued</li> <li>• Three advisory letters sent</li> <li>• Four meter reads were acquired through an audit, no further action required</li> <li>• 85 non-supply of meter reading' were resolved and meter readings were subsequently supplied, where required</li> <li>• 20 incidents finalised with no compliance action taken based on a data quality review</li> <li>• In one incident prior to resolution the limitation period expired</li> </ul>
<b>Take of water without an approved meter</b>	2	<ul style="list-style-type: none"> <li>• One advisory letter sent</li> <li>• One incident resolved and meter installation occurred</li> </ul>
<b>Unauthorised take</b>	11	<ul style="list-style-type: none"> <li>• One formal warning issued</li> <li>• Six advisory letters sent</li> <li>• Two incidents addressed with verbal education</li> <li>• Two incidents with no action taken due to insufficient evidence or no identified/servable party</li> </ul>
<b>Unauthorised interference / overland flow construction</b>	15	<ul style="list-style-type: none"> <li>• One compliance notice issued</li> <li>• Three enforcement notices issued</li> <li>• Two show cause notices issued</li> <li>• One formal warning issued</li> <li>• Three advisory letters were sent</li> <li>• Two incidents addressed with verbal education</li> <li>• One incident resolved and authorisation applied for and granted</li> <li>• One incident had no action taken and follow-up audit planned</li> <li>• One incident with no action taken due to insufficient evidence or no identified/servable party</li> </ul>

\*Data includes compliance cases received with the 2018/19 water plan year to cases within the 2022/23 water plan year.

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