



Natural Resources Commission

Final report

**Review of Water Sharing Plan for the
Lachlan Unregulated River Water
Sources 2012 and
Water Sharing Plan for the Belubula
Regulated River Water Source 2012**

June 2023



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Acknowledgement of Country

The Natural Resources Commission acknowledges and pays respect to Traditional Owners and Aboriginal peoples. The Commission recognises and acknowledges that traditional owners have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. We value and respect their knowledge in natural resource management and the contributions of many generations, including Elders, to this understanding and connection.

The Commission acknowledges the Traditional Owners and Local Aboriginal Land Council representing several Aboriginal nations in the Lachlan and Belubula catchments and pays its respect to Elders past, present and future, as well as all Aboriginal peoples for whom the waterways of the Lachlan and Belubula catchment are significant. The Commission also pays respect to the Barkandji Traditional Owners and the active Native Title claimant in the Lachlan catchment, namely the Ngemba, Ngiyampaa, Wangaapuwan and Wayilwan people.

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Cover image: Lower Lachlan floodplain, January 2023. Kaleana Reyland, NSW Department of Planning and Environment – Environment and Heritage Group.

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Acronyms and units of measurement

Act	the <i>Water Management Act 2000</i> (NSW)
AWD	Available water determination
Basin Plan	<i>Murray-Darling Basin Plan 2012</i>
BDL	Baseline diversion limit
CEWO	Commonwealth Environmental Water Office
Commission	the Natural Resources Commission
DPI-Fisheries	Department of Primary Industries – Fisheries
DPE-EHG	Department of Planning and Environment – Environment and Heritage Group (the former Office of Environment and Heritage, subsequently Energy, Environment and Science)
DPE-Water	Department of Planning and Environment – Water
DPIE	Former Department of Planning, Industry and Environment
EMU	Extraction management unit
HEVAE	High Ecological Values Aquatic Ecosystems
IRP	Interagency Regional Panel
IWCM	Integrated water cycle management
Lachlan Groundwater Plan	<i>The Water Sharing Plan for the Lachlan Alluvial Groundwater Sources Order 2020</i>
LALC	Local Aboriginal Land Council
LGA	Local government area
LTADEL	Long-term annual average extraction limit
LWU	Local Water Utility
MER	Monitoring, evaluation and reporting
MDBA	Murray-Darling Basin Authority
ML	Megalitre (unit of volume equivalent to one million (1×10 ⁶) litres)
Belubula Regulated Plan	<i>The Water Sharing Plan for the Belubula Regulated River Water Source 2012</i>
Lachlan Unregulated Plan	<i>The Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012</i>
Lachlan Regulated Plan	<i>The Water Sharing Plan for the Lachlan Regulated River Water Source 2016</i>
NRAR	The Natural Resources Access Regulator

NSW	New South Wales
SDL	Sustainable Diversion Limit
R	Recommendation

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Executive summary

The Natural Resources Commission (the Commission) has undertaken a review of the *Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012* (the Lachlan Unregulated Plan) and the *Water Sharing Plan for the Belubula Regulated River Water Source 2012* (the Belubula Regulated Plan) as required under Section 43A of the *Water Management Act 2000* (the Act).

The Commission has assessed the extent to which the Plans' provisions have contributed to achieving environmental, social, cultural, and economic outcomes, and identified where changes to provisions are warranted. The issues identified in this combined review indicate a material risk that the Plans do not adequately contribute to the achievement of the Plans' outcomes. The Commission is of the view that changes to both Plans are needed. To support the Plan replacement process, the Plans should be extended for up to two years to allow for further research, analysis and stakeholder engagement.

A combined review of the Lachlan Unregulated Plan and the Belubula Regulated Plan provides a unique opportunity to have a fundamental rethink of how all surface water resources in the Belubula catchment are managed. In particular, to set sustainable measurable extraction limits that are appropriate given the unique features of the Belubula catchment and develop updated Plan rules that better reflect the interactions between unregulated and regulated water sources.

Across the broader Lachlan catchment, the Commission reiterates the need to urgently develop sustainable, numeric extraction limits for the Lachlan Unregulated Plan at the appropriate scale. As highlighted in the Commission's recently released issues papers,¹ the development of sustainable measurable long-term annual average extraction limits (LTAAELs) for each NSW water sharing plan is critical to ensure compliance with the extraction limits and to ensure the protection of the environment, basic landholder rights and downstream users.

The unregulated water sources of the Lachlan catchment have significant environmental value, including nine nationally significant wetlands and a diverse range of threatened species. The Commission suggests several amendments to the Lachlan Unregulated Plan to better protect wetlands that have experienced significant hydrological changes, and to refine current access rules to protect flows and water-dependent environmental assets.

The Commission continues to identify critical state-wide issues in water sharing plans relating to Native Title Aboriginal water rights and the protection of cultural water. In the Lachlan Unregulated Plan and the Belubula Regulated Plan, the Commission does not see evidence that the Plans have adequately protected or provided for Aboriginal water values and uses or provided for tangible access to water (including via controlled allocations).

The review also identified many issues common to most unregulated water sharing plans, including highly restrictive trading provisions, access rules and flow classes that may not adequately protect town water supply in the upper Lachlan catchment, and issues associated with water extraction from the Lower Lachlan floodplain areas.

Despite these risks, considerable work has been undertaken in the Lachlan and Belubula catchments, including work done as part of the water resource planning process. This

¹ NSW Natural Resources Commission (n.d.) [Recurring issues from recent review of inland unregulated water sharing plans](#)

information can be drawn upon to quantify sustainable extractions and strengthen rules in replacement Plans.



Overall finding on Lachlan Unregulated Plan and the Belubula Regulated Plan extension and replacement

The Commission has identified several opportunities to improve outcomes that justify replacing the Lachlan Unregulated Plan and the Belubula Regulated Plan.

The Commission recommends an extension of the Plans for up to two years to allow time to undertake required data collection and analysis, consultation, and develop amended provisions (see **Table 1**).

A summary of key areas to improve the Lachlan Unregulated Plan and the Belubula Regulated Plan are outlined in **Figure 1**. The Commission has also developed a detailed set of 17 recommendations (**Table 1**):

Figure 1: Summary



Establishing sustainable extraction

The Commission continues to identify significant issues related to the establishment and management of extraction through LTAAELs. The Lachlan Unregulated Plan lacks a numeric LTAAEL that is based on an assessment of sustainability. In addition, there is limited data available on current water use in the Lachlan Unregulated Plan area. As a result, no assessment of compliance with the Lachlan Unregulated Plan's LTAAEL has been undertaken.

There is a risk that extraction exceeds the LTAAEL in the Lachlan Unregulated Plan given that the unregulated river access licence share component in the plan area is nearly three times greater than the Basin Plan's baseline diversion limit (BDL), which is defined as broadly equivalent to the LTAAEL. Despite this and the absence of LTAAEL compliance, available water determinations (AWDs) have continued to be set at 100 percent for all users in the Lachlan Unregulated Plan area.

The Lachlan Unregulated Plan currently has a single non-numeric LTAAEL definition corresponding to its single extraction management unit (EMU). This limits the ability to manage different risks across the Lachlan Unregulated Plan area. This is particularly important given the different drivers for water extraction in the Belubula catchment and the Lachlan catchment.



Managing water sources in the Belubula catchment

The Belubula catchment has some unique features that make it different to other inland regulated river NSW systems. Specifically, the Belubula catchment behaves in many ways more like an unregulated system than a typical regulated system. Around 90 percent of inflows into the Belubula Regulated River occur downstream of Carcoar Dam through unregulated tributary flows. This interdependence has led to complex water management rules in the Belubula Regulated Plan (uncontrolled flow and supplementary rules) that need to be simplified and updated to ensure all take is appropriately accounted for.

Limited metering and lack of LTAAEL compliance assessment makes it difficult to assess the risk to unregulated water sources in the Belubula catchment. Appropriate access rules are needed to protect all surface

water sources in the catchment and effectively meet the end-of-system flow target in the Belubula Regulated River, which has not always been met over the life of the Belubula Regulated Plan.

The lack of detailed reporting on water extraction and the exemptions provided for harvestable rights take under the *Water Management (General) Regulation 2018* masks the significant water take by mining operations in the Belubula catchment. Take under harvestable rights (including exempted take under regulation) by Cadia-Newcrest mine was close to 30,000 ML in 2016/17, which is more than half the estimated annual harvestable right take under the Basin Plan for the combined Lachlan and Belubula catchments.

It is also not currently possible to determine the true LTAAEL value for the Belubula Regulated Plan as hydrologic modelling for the two different LTAAEL definitions in the Belubula Regulated Plan remain incomplete.



Strengthening environmental protections

Alteration of the flow regime associated with water resource development in the Lachlan catchment has significantly impacted on important environmental assets, most notably floodplain habitats and the nationally significant Lake Cowal. Plan provisions do not adequately protect significant wetlands.

The Commission also identified that access rules in several water sources in the Lachlan Unregulated Plan do not adequately protect low flows and freshes and are not based on best-available information. In addition, there are several environmental and equity issues in the provisions of flows in effluent creeks that are long-standing and remain unaddressed.



Delivering benefits for Aboriginal people

Critical state-wide barriers to Aboriginal water rights, and the protection of cultural values remain. There was limited engagement and collaboration with Aboriginal stakeholders during the development and implementation of the Lachlan Unregulated Plan and the Belubula Regulated Plan. As a result, Aboriginal water-dependent cultural assets are not adequately identified and protected and there is limited tangible water access and uses for Aboriginal peoples. In particular, Traditional Owners raised concerns about adequate water regulation measures to ensure that culturally significant values and sites received water.

The Commission recognises one Native Title determination for Barkandji Traditional owners is listed in the Plan and there is another active Native Title claim submitted by the Ngemba, Ngiyampaa, Wangaaypuwan and Wayilwan peoples. The Commission encourages further engagement with Traditional Owners and knowledge holders who have connection to Country in the Plan areas, and recognition of Native Title determinations in the water sharing plans.

Further, additional shares have been offered under controlled allocations without evidence that Aboriginal water rights were considered before this took place.

The Commission's recommendations are consistent with the *NSW Water Strategy's* priority to 'recognise First nations/Aboriginal People's rights and values and increase access to and ownership of water for cultural and economic purposes', particularly regarding ownership of water.



Securing town water supply to meet future needs

Most of the larger towns in the Lachlan catchment rely on water supply from the regulated Lachlan River and from the region's groundwater sources. However, some smaller communities in the Upper Lachlan catchment (including Crookwell, Gunning and Boorowa) and towns supplied by Central Tablelands Water rely partially or fully on unregulated water sources governed by the Lachlan Unregulated Plan. No town relies directly on water supplies from the Belubula Regulated River, although future infrastructure business cases could change this.

Town water needs have mostly been met during the life of the Lachlan Unregulated Plan, but risks remain due to extreme weather events caused by a changing climate. Preliminary climate risk assessments for the *Lachlan Regional Water Strategy* indicates that towns reliant exclusively on unregulated water supplies could be more exposed to water security risks under a drier future climate due to more variable river flows and more frequent cease-to-flow events in unregulated rivers.

In addition, access rules contained in the Lachlan Unregulated Plan may not adequately protect town water needs in the Upper Lachlan catchment, particularly considering the growth in take through unregulated water access licences and basic landholder rights over the life of the Plan.



Improving outcomes through trade

Current trading rules in the Lachlan Unregulated Plan are complicated, ambiguous and restrictive. When the Lachlan Unregulated Plan was made, most of its water sources were categorised as having a 'high' instream value, meaning trade into these sources was restricted. New data indicates that some of these water sources may have a lower risk profile, which could allow for trade to be expanded, provided environmental and other socio-economic values are protected.

The Commission did not find evidence that amendments to the trade rules in the Belubula Regulated Plan are required. However, it will be prudent to review the Belubula Regulated Plan's dealing provisions in the context of reviewing other Plan provisions to ensure there are no unintended consequences.

Table 1: Recommendations (R)
Lachlan Unregulated Plan and Belubula Regulated Plan

Overall recommendation	
R 1	<p>The Belubula Regulated Plan and the Lachlan Unregulated Plan should be:</p> <ul style="list-style-type: none"> a) extended for up to two years until 30 June 2025, to allow time to complete data collection and analysis, consultation, and the development of amended provisions b) replaced by 1 July 2025 at the latest, supported by the completion of the recommendations of this review.
Establishing sustainable extraction	
R 2	<p>For the Lachlan Unregulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) establish and include accurate numeric values for LTAAELs in the replacement Plan based on up-to-date information on all forms of extraction. These LTAAELs should be established at the appropriate scale b) consider utilising clause 80(1)(a) of the Lachlan Unregulated Plan to develop appropriate Plan provisions to effectively manage impacts of take and diversions on the floodplain areas in the Plan area. These rules should be informed by the work being progressed by DPE-Water for the replacement of the southern floodplain management plans c) undertake LTAAEL compliance assessment using best available estimates of extraction and make this assessment publicly available. The LTAAEL assessment should not be delayed until better information is available, rather it should be done immediately based on information available and continually improved over time d) include a provision in the replacement Plan requiring DPE-Water to determine the sustainable level of extraction by Year 5 based on best available ecological requirements, hydrological and climate information. This information should be used to define and amend the Plan's LTAAEL for each EMU.
R 3	<p>DPE-Water should ensure the replacement of the Lachlan Unregulated Plan includes requirements for:</p> <ul style="list-style-type: none"> a) AWDs to be set adequately to protect the priorities under the <i>Water Management Act 2000</i>, if DPE-Water does not make and publish a reasonable estimate of annual extraction and assess compliance with the LTAAELs b) proactive AWDs to support sustainable numeric LTAAELs and revise account management rules (carryover and account limits) to support any AWD changes. These proactive AWDs should be developed in consultation with stakeholders by Year 5 of the Plan.
R 4	<p>For the Lachlan Unregulated Plan and the Belubula Regulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) review and update the replacement Plans with the estimated entitlement shares and basic landholder rights volumes based on best available information b) continue to update these figures whenever the Plans are amended, or at a minimum every five years

	<p>c) undertake a risk assessment if the entitlement shares and basic landholder rights estimates change by more than 5 percent in any water source to determine whether the Plans' provisions remain adequate to protect the water source, the environment, basic landholder rights and town water supplies</p> <p>d) include provisions to account for the establishment of Native Title rights, water entitlements beneficially owned by First Nations and cultural flows.</p>
Managing water sources in the Belubula catchment	
R 5	<p>The Commission recommends DPE-Water considers merging the Belubula Regulated Plan into the Lachlan Unregulated Plan and setting up a separate EMU for all surface water resources in the Belubula catchment as part of the Lachlan Unregulated Plan.</p> <p>This would require a fundamental review of all provisions in the Belubula Regulated Plan and the Lachlan Unregulated Plan that relate to the management and accounting of surface water sources in the Belubula catchment, but would allow for more simplified, targeted and equitable access provisions.</p>
R 6	<p>DPE-Water should complete the hydrological modelling for clause 33(2)(b) of the Belubula Regulated Plan and determine which of the Plan's two LTAAEL definitions generate a lower value.</p> <p>Once the hydrologic modelling is complete, DPE-Water should:</p> <ol style="list-style-type: none"> a) determine and publish numeric estimates of the LTAAEL for the Belubula Regulated River Water Source b) consider the feasibility of establishing one LTAAEL definition to improve efficiency and transparency and ensure that definition does not reduce environmental protections c) undertake LTAAEL compliance assessments against the LTAAEL d) include a provision requiring DPE-Water to determine the sustainable level of extraction by Year 5 of the replacement Plan, based on best available ecological requirements, hydrological and climate information.
R 7	<p>In the Lachlan Unregulated Plan, to improve outcomes in the Belubula catchment, DPE-Water should introduce more appropriate access rules for the Belubula Tributaries Below Carcoar Dam Water Source to protect the unregulated water source, support connectivity and improve its contribution to end-of-system flow targets in the Belubula Regulated River.</p>
R 8	<p>To inform the mid-term review of clause 26 of the Belubula Regulated Plan, DPE-Water should assess extractions upstream of Beneree gauge (Flyers Creek) and determine whether extractions in Flyers Creek risk triggering the relaxation of clause 26 of the Belubula Regulated Plan more frequently.</p>
R 9	<p>In the next two years, DPE-Water should undertake a detailed review of the following clauses in the Belubula Regulated Plan:</p> <ul style="list-style-type: none"> ▪ clauses 47 and 48 to simplify these provisions, and ensure take from uncontrolled flows can be appropriately accounted for consistent with the objects and principles of the Act and to ensure transparent and equitable water sharing ▪ clause 49 to ensure access to supplementary flows and uncontrolled flows are equitable and transparent to all water users.

Strengthening environmental protection	
R 10	<p>As part of the Lachlan Unregulated Plan replacement, to address the inadequacy of the environmental protection provided by current access rules, DPE-Water should:</p> <ul style="list-style-type: none"> a) review the current hydrometric network to identify where the Plan can reference operational gauges for establishing flow classes and flow-based access rules b) ensure as a priority that high environmental value water sources at medium to high risk from extraction have flow-based access rules that support connectivity and adequately protect water sources and their dependent ecosystems (this should include Mandagery Creek as a priority) c) review if conditions attached to current water access licences and works approvals are appropriate to protect high priority needs, and ensure any changes to access rules from (a) and (b) are reflected in water access licence/water supply works approval conditions.
R 11	<p>To ensure that nationally and regionally significant wetlands are protected in the Lachlan Unregulated Plan replacement, DPE-Water should:</p> <ul style="list-style-type: none"> a) update the Plan schedules to include all significant wetlands in the Plan area b) ensure that access rules and trade rules for tributaries of significant wetlands are adequately protective and contribute to inflows to maintain the ecological character of these wetlands c) determine if drawdown provisions for Lake Waljeers and Lake Forbes are adequately protective of environmental and Aboriginal cultural values, and include provisions to phase out pool drawdown where appropriate.
R 12	<p>In the Lachlan Unregulated Plan to improve the outcomes associated with provision of flows in effluent creeks of the Lachlan, DPE-Water should:</p> <ul style="list-style-type: none"> a) clarify that replenishment flows provide stock and domestic needs and environmental benefits in unregulated river water sources b) codify operating rules for regulating structures along effluent creeks in the replacement Plan c) establish end-of-system flow targets for effluent creeks with significant environmental values to ensure that flows are provided downstream of Trust districts (in addition to environmental water deliveries).
R 13	<p>To ensure environmental water deliveries from the regulated Lachlan River can achieve their intended outcomes in the unregulated river water sources, the replacement Lachlan Unregulated Plan must include provisions that:</p> <ul style="list-style-type: none"> a) protect these flows from unauthorised extraction, obstruction and diversion in unregulated river water sources b) require that private structures along unregulated river water sources are operated (e.g., boards removed) to allow for environmental water deliveries to pass through.

Delivering benefits for Aboriginal people	
R 14	<p>As part of the replacement of the Lachlan Unregulated Plan and Belubula Regulated Plan, to deliver better outcomes for Aboriginal peoples through water management, DPE-Water must:</p> <ul style="list-style-type: none"> a) undertake culturally appropriate engagement with Traditional Owners and knowledge holders who have connection to Country in the Plan areas b) include registered Native Title claims and identify and include water-dependent cultural values and uses in the Plans c) co-design Plan objectives and rules to protect Aboriginal values and uses of water d) ensure that the definition of ‘cultural practice’ in the Plans includes trade activities and does not restrict cultural access licences to 10 ML per application e) ensure the Plans’ objectives and corresponding provisions are consistent with the <i>NSW Water Strategy</i> and Closing the Gap targets f) when making controlled allocations ensure Aboriginal rights and access including Native Title are prioritised consistent with giving effect to the principles of the Act g) improve reporting on key performance indicators that increase Aboriginal benefit including external influences (including regulatory action outcomes).
Securing town water supply to meet future needs	
R 15	<p>As part of the replacement of the Lachlan Unregulated Plan and the Belubula Regulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) review the adequacy of relevant flow classes and access rules in the Lachlan Unregulated Plan for the Boorowa River and Hovells Creek Water Source, the Crookwell River Water Source, the Lachlan River above Reids Flat Water Source, the Goobang and Billabong Creeks Water Source, the Unregulated Effluent Creeks Water Source and the Belubula Tributaries below Carcoar Water Source (particularly Coombing Creek), to ensure the provisions are adequate to protect town water supplies without impeding on, or compromising the principles and priorities of the Act b) insert a clause in Part 12 of the Lachlan Unregulated Plan and the Belubula Regulated Plan that enables the Plans to be amended in the event that the Belubula Water Security Project is progressed during the term of the replacement Plans.
Improving outcomes through trade	
R 16	<p>To improve outcomes through trade, DPE-Water should review and revise existing water access licence dealings provisions in the Lachlan Unregulated Plan at an appropriate scale.</p> <p>This review should be based on the latest information on hydrologic stress, entitlement and basic landholder rights’ volumes, connectivity, HEVAE mapping and cultural assets and values, and be supported by an accompanying explanatory document.</p>

Monitoring, Evaluation and Reporting

<p>R 17</p>	<p>To inform the replacement of the Lachlan Unregulated Plan and Belubula Regulated Plan and improve Plan-specific MER, DPE-Water should, in consultation with other agencies:</p> <ul style="list-style-type: none">a) identify and address critical knowledge gapsb) specify what MER activities will be undertaken to address critical knowledge gaps, support transparency and adaptive management of the Belubula Regulated and Lachlan Unregulated Plans in line with the NSW Water Sharing Plan Evaluation Framework and Prioritisation Tool (i.e., prioritise MER activities based on value and risk)c) strengthen stakeholder engagement in the lead up to and during the Plans' replacement processd) includes equity objectives and co-designed Aboriginal objectives and corresponding performance indicatorse) specifies timely reporting requirements of the results of MER activities to support transparency and adaptive management. This should include but is not limited to reporting on:<ul style="list-style-type: none">▪ includes reporting on environmental outcomes▪ water management during extreme events that occur in the Plan areas▪ benefits for Aboriginal people arising from the Plan provisions.
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1 Review background

1.1 Water sharing plans and the Commission's role

Water sharing plans are statutory instruments under the NSW *Water Management Act 2000* (the Act). They prescribe how water is managed to support sustainable environmental, social, cultural and economic outcomes. They intend to provide certainty for water users regarding how available water will be shared over the life of the water sharing plan, which is typically 10 years, unless extended.

This report covers the Commission's review of two water sharing plans:

- the *Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012* (Lachlan Unregulated Plan) which commenced on 14 September 2012 and is due for extension or replacement on 1 July 2023. This Plan was amended five times, including in 2016 when the Mandagery Creek Water Source was included into the Lachlan Unregulated Plan, and in 2020² when the alluvial water sources were removed as part of Basin Plan processes.
- the *Water Sharing Plan for the Belubula Regulated River Water Source 2012* (Belubula Regulated Plan) which commenced on 4 October 2012 and is due for extension or replacement on 1 July 2023. This Plan was amended four times, including in 2022 when amendments were made to the end-of-system environmental flow rules (clause 26).

The Commission has a role under Section 43A of the Act to review water sharing plans within five years of expiry and report to the Minister on:

- the extent that a plan's water sharing provisions have materially contributed to the achievement of, or failure to achieve, environmental, social, and economic outcomes
- if changes to plan provisions are warranted.

The Commission may recommend extending or replacing plans depending on its review findings. Section 43A(3A) of the Act requires the Commission to consider potential compensation requirements resulting from recommended changes to a plan. Under the Act, compensation is payable by the state to access licence holders only in certain circumstances where water allocations under a water sharing plan are reduced.

The Commission must also consider the water management principles, including the water sharing principles, when reviewing plans.³ The Act is clear that water sharing is not about balancing uses and values – it is about first providing for the environment and second recognising basic landholder rights above other uses. It specifies that the:

- a) sharing of water from a water source must protect the water source and its dependent ecosystems, and
- b) sharing of water from a water source must protect basic landholder rights, and
- c) sharing or extraction of water under any other right must not prejudice the principles set out in paragraphs (a) and (b).⁴

Further, the water management principles should be prioritised in the order that they are set out above.⁵ Water sharing plans must be evidence-based to achieve these outcomes.

² The Commission notes that this is the first time the Mandagery Creek Water Source is being reviewed.

³ Section 5 of the Act.

⁴ Section 5(3) of the Act.

⁵ Section 9(1) of the Act.

1.2 Review approach

The Commission's review approach for water sharing plans is outlined on its website.⁶ The Commission's review was informed by a range of evidence, including:

- **Consultation** – targeted engagement with government agencies, landholders, local councils and Aboriginal peoples, as well as industry, environmental and community organisations.
- **Document review** – the Commission reviewed the Plans, their background documents, public reports and unpublished information from water management agencies, including DPE-Water and Water NSW. As required, the Commission considered other relevant state-wide and regional government policies and agreements.
- **Technical advice** – consultants provided expert advice and peer review.
- **Submissions** – the Commission called for and considered public submissions via letters and calls to key stakeholders and advertising on the Commission's website. Stakeholders were asked to respond to the following five questions to assess the contribution of each Plan to environmental, social, cultural and economic outcomes:
 - To what extent do you feel the Plan has contributed to social outcomes?
 - To what extent do you feel the Plan has contributed to environmental outcomes?
 - To what extent do you feel the Plan has contributed to economic outcomes?
 - To what extent do you feel the Plan has contributed to meeting its objectives?
 - What changes do you feel are needed to the Plan to improve outcomes?

The Commission received 6 submissions for the Lachlan Unregulated Plan, and 5 submissions for the Belubula Regulated Plan, which are published on the Commission's website.

The Commission evaluated both Plans' performance against their stated objectives, strategies, and performance indicators. These were linked to environmental, social, cultural, and economic outcomes as required for this review.

The Commission would like to thank the community members from the Plan areas who gave up their valuable time to provide input to this review. We suggest DPE-Water engage with depth and intent to further understand issues facing communities, particularly Aboriginal peoples, in the Plan areas.

1.3 Relevant regional plans, policies and agreements

In reviewing the Plans, the project team considered the following plans, policies and agreements in accordance with Clause 43A(4)(b) of the Act:

- *NSW Water Strategy* – priority areas 1 to 6 under the strategy that are relevant to the Lachlan and Belubula Plan areas
- *Draft Lachlan Regional Water Strategy* documents
- *Aboriginal Water Strategy* – currently under development, noting the Commission did not have access to the draft strategy.

⁶ NSW Natural Resources Commission (2022) [Water Sharing Plan reviews](#)

The Commission has also considered the *Murray-Darling Basin Plan 2012* (the Basin Plan) and the requirement under this plan to develop the *Lachlan Surface Water Resource Plan*.⁷ Portions of the water sharing plans form components of the water resource plan.

The Lachlan catchment is covered by two regulated water sharing plans (the Regulated Lachlan Plan (not covered in this review) and Belubula Regulated Plan (covered in this review)), and one unregulated water sharing plan (the Lachlan Unregulated Plan (covered in this review)). The Commission has also considered and aligned (where relevant) recommendations in the review of the *Water Sharing Plan for the Macquarie-Bogan Unregulated River Water Source 2012* recognising the linkages between the two catchments and the transfer of water across catchments for town water supply purposes.

1.4 Parallel processes

The Commission notes that, in parallel with its water sharing plan reviews, DPE-Water is working towards accreditation of the *Lachlan Surface Water Resource Plan* to the Murray-Darling Basin Authority (MDBA).⁸ Findings from the Commission's review may have implications for the water resource plan when the replacement water sharing plans are developed.⁹

⁷ DPE-Water (n.d.) [Lachlan Surface Water Resource Plan](#)

⁸ The Commission notes that DPE-Water has submitted additional amendments to the catchment's water sharing plans which have not been considered for this review.

⁹ NSW Natural Resources Commission (2022) [Review approach](#)

2 The plan areas

This report covers the Commission's review of the following plans both due to expire on 1 July 2023.

- *Water Sharing Plan for the Lachlan Unregulated Water Sources 2012 (Lachlan Unregulated Plan)* – which covers 23 unregulated water sources across the Lachlan and Belubula catchments.¹⁰
- *Water Sharing Plan for the Belubula Regulated River Water Source 2012 (Belubula Regulated Plan)* - which covers only the Belubula Regulated River in the Belubula catchment from its headwater storage (Carcoar Dam) to the river's junction with the regulated Lachlan River.¹¹

A third surface water sharing plan - *the Water Sharing Plan for the Lachlan Regulated River Water Source 2016 (Regulated Lachlan Plan)* is within the Lachlan catchment but is not part of this review. The Regulated Lachlan Plan covers only the regulated Lachlan River in the Lachlan catchment from its headwater storage (Wyangala Dam¹²) to the river's junction with the Murrumbidgee catchment.

Although the Commission acknowledges the close connection between the two Plans under review and the Regulated Lachlan Plan, the Regulated Lachlan Plan is not due to expire until 1 July 2026. The Commission will review the Regulated Lachlan Plan before it expires and will draw on recommendations made in this report.

The benefit of preparing a joint report¹³ for the Lachlan Unregulated Plan and Belubula Regulated Plan is to highlight the close connections between unregulated and regulated water sources in the Belubula catchment (see **Chapter 4**).

Likewise, the Commission recognises that there are strong connections between the regulated Lachlan River and the unregulated water sources in the lower Lachlan catchment (downstream of Hillston), which are governed by the Lachlan Unregulated Plan. Where relevant the Commission has highlighted these linkages but has refrained from making recommendations to the Regulated Lachlan Plan.¹⁴

The broader Lachlan catchment, of which the Belubula catchment is a sub-catchment (see **Figure 2**), has a diverse geography and variable climate conditions.

¹⁰ Part 4 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹¹ Part 4 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹² Wyangala Dam is the main water storage in the Lachlan River catchment with a capacity of 1,217,000 ML

¹³ The Commission make it clear in the report where recommendations relate to the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) or the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹⁴ The Commission will draw on the recommendations made in this report when it reviews the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) ahead of its expiry on 1 July 2026. See [Review schedule](#)

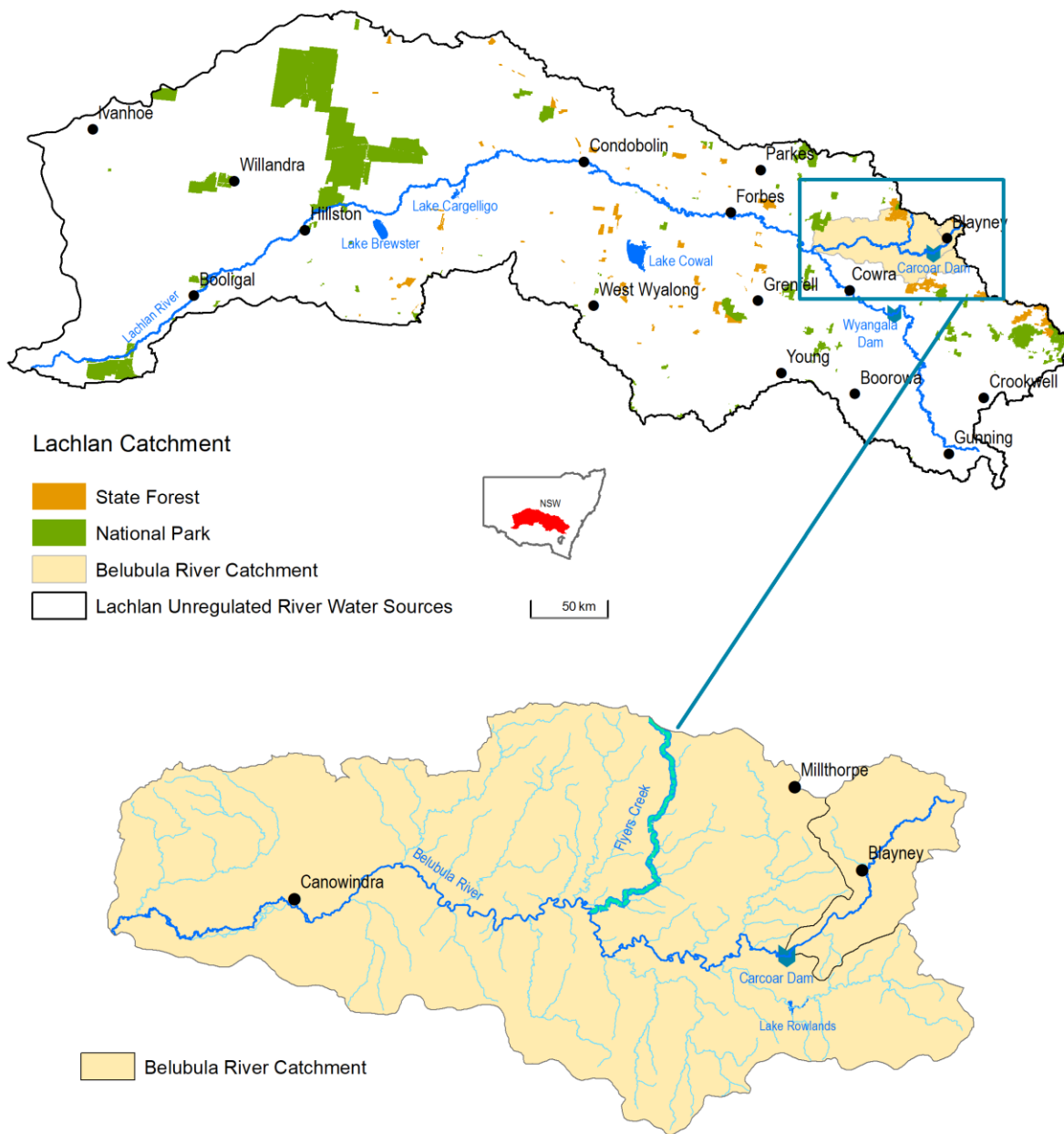


Figure 2: Plan areas

The Lachlan Unregulated Plan and Belubula Regulated Plan areas include Traditional Owners representing several Aboriginal nations, two Native Title groups and 13 Local Aboriginal Land Councils (LALCs) (see **Figure 3**). These nations have longstanding and continuing ties to Country, and hold the rivers, wetlands and waterways including its many billabongs in this catchment in high regard.

Water is essential to Aboriginal peoples' identity:

*'For First Nations People, water is a sacred source of life. The natural flow of water sustains aquatic ecosystems that are central to their spirituality, culture and wellbeing. Rivers are described as 'the veins of Country', carrying water to sustain all parts of their sacred landscape, and the wetlands described as the 'kidneys', filtering the water as it passes through the land (National Cultural Flows Research Project, 2019).'*¹⁵

As of April 2023, there was one Native Title determination granted in the Lachlan Unregulated Plan area in 2015 for the Barkandji Traditional Owners¹⁶ and there is an active Native Title claim for the Ngemba, Ngiyampaa, Wangaaypuwan and Wayilwan peoples (filed in April 2012) for the same (Lachlan Unregulated) Plan.¹⁷

Examples of known water-dependent culturally significant assets in the Plan areas many water sources include:

- Willandra Lakes World Heritage Lakes region, which is home to the oldest ritual human burials in the world¹⁸
- lakes located in the Lower Lachlan reaches that hold special meaning to Aboriginal people for ceremonies and food gathering¹⁹
- Box Creek in the Lachlan Plan area, which has significant environmental and cultural meaning for the Muthi Muthi peoples²⁰
- numerous sites identified in the *Lachlan Shire Aboriginal Cultural Heritage Study*²¹
- lagoons, billabongs and off-river natural pools that have significant Aboriginal cultural value. These provide important drought refugia for many native species and are not fully protected from water extraction in dry times.²²

In 2021, Aboriginal and Torres Strait Islanders comprised 37 percent of residents in the Central Darling Shire and 18 percent in the Lachlan Shire.²³ The proportion of Aboriginal and Torres Strait Islander peoples in the two Plan areas is significantly larger compared to the average NSW population (i.e., 2.9 percent and 3.7 percent for regional NSW) in all but two local government areas (LGAs), and the proportions of Aboriginal and Torres Strait Islander in the two Plan areas have risen steadily since 2011.²⁴

¹⁵ DPIE (2020) [Lachlan Long-Term Water Plan Part A: Lachlan catchment](#)

¹⁶ See Clause 20 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and National Native Title Tribunal (2015) [Native Title Determination Details NCD2015/001 - Barkandji Traditional Owners #8 \(Part A\)](#)

¹⁷ National Native Title Tribunal (2019) [Register of Native Title Claims Details Ngemba, Ngiyampaa, Wangaaypuwan and Wayilwan native title determination application \(NC2012/001\)](#)

¹⁸ National Indigenous Australians Agency (2023) [Willandra lakes World Heritage Area Ranges](#)

¹⁹ Interview: Traditional Owner, 23 March 2023.

²⁰ Interview: Traditional Owner, 6 April 2023.

²¹ OzArk Environment and Heritage (2021) [Lachlan Aboriginal Cultural Heritage Study Lachlan Shire Council](#)

²² Submission: Inland Rivers Network, received 29 April 2022.

²³ ABS (2023) [Data by region \(map\) by LGAs](#)

²⁴ Australian Bureau of Statistics (2021) [Regional Summaries by LGA](#)

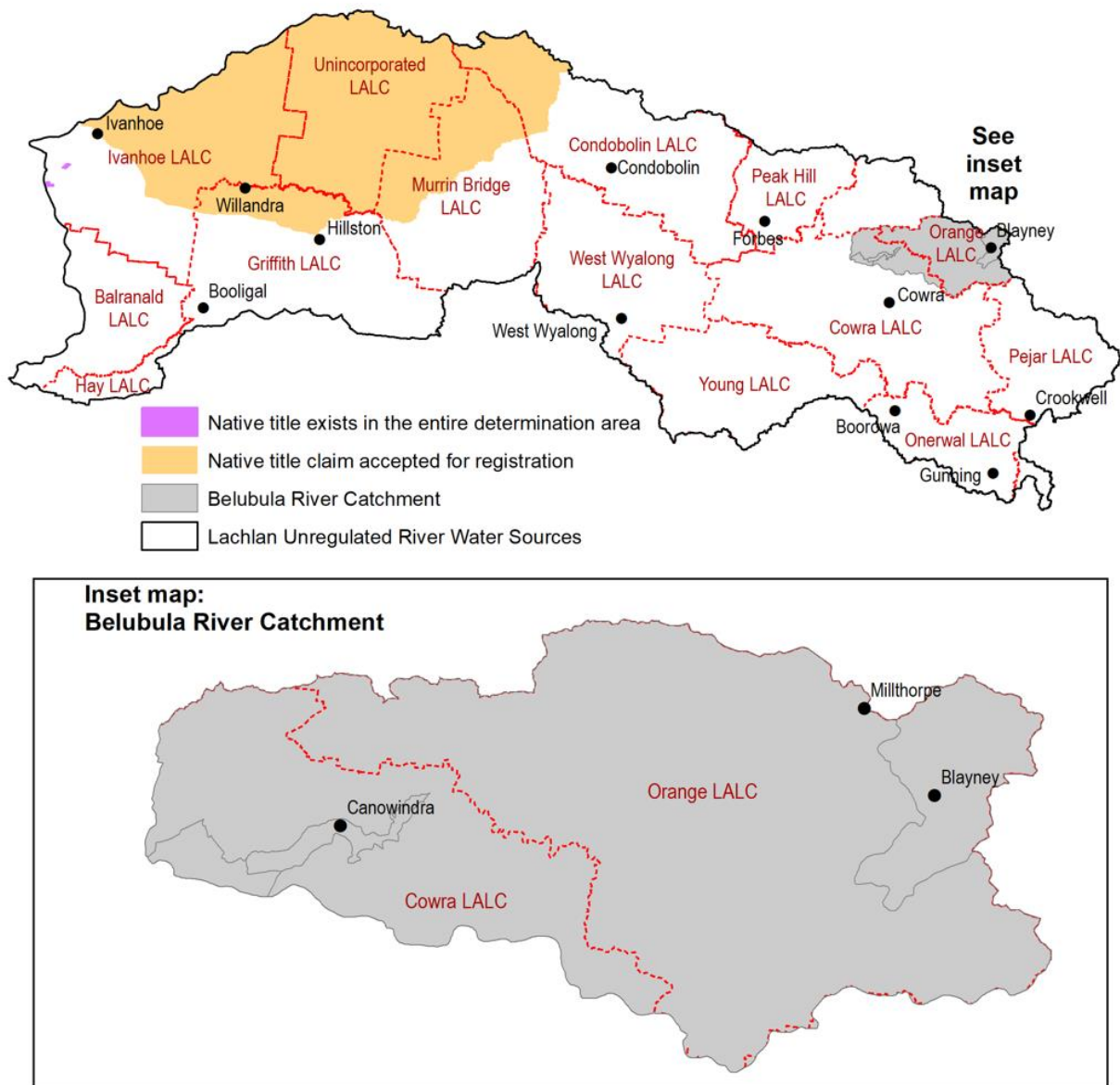


Figure 3: Native Title applications in the Plan area

The Belubula Regulated River flows approximately 165 km from its headwater storage (Carcoar Dam) to the river’s junction with the regulated Lachlan River.²⁵ Other important unregulated rivers in the Belubula catchment (**Figure 2**) that flow into the Belubula Regulated River include Candomine Creek, Cadiangully Creek, Flyers Creek, Cowriga Creek, Coombing Creek, Mandurama Ponds, Limestone Creek, Licking Hole Creek and Jacks Creeks.²⁶ These unregulated rivers are managed under the Lachlan Unregulated Plan.

The Belubula catchment includes one major state-owned water storage, Carcoar Dam, which has a capacity of 38,500 ML.²⁷ Lake Rowlands is another important water storage in

²⁵ DPI-Office of Water (2013) [Water sharing plan for the Belubula Regulated River Water Source background document](#)

²⁶ In the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#), these unregulated rivers are aggregated into the Belubula River above Carcoar Dam Water Source and the Belubula Tributaries below Carcoar Dam Water Source.

²⁷ WaterNSW (n.d.) [Carcoar Dam](#)

the Belubula catchment and is situated on an unregulated river (Coombing Creek) approximately 10km from Carcoar Dam. Lake Rowlands has a capacity of 4,500 ML and is owned and operated by Central Tablelands Water who uses the lake to provide town water supplies to approximately 15,000 customers in the Blayney, Weddin and Cabonne LGAs.²⁸ Central Tablelands Water is the main water supply authority in the Belubula catchment and predominantly relies on unregulated water sources governed by the Lachlan Unregulated Plan. There is no local water utility share component in the Belubula Regulated Plan.²⁹

In addition to the unregulated rivers in the Belubula catchment, the Lachlan Unregulated Plan also covers several important unregulated rivers and creeks in the broader Lachlan catchment. These include the Abercrombie River, the Boorowa River and the Crookwell River, which are located upstream of Wyangala Dam.³⁰ Downstream of Wyangala Dam, the Lachlan River is regulated until Oxley. However, the Lachlan River diverges into a number of unregulated creeks downstream of Forbes, including Wallaroi Creek and Booberoi Creek which re-join the regulated Lachlan River upstream of Lake Brewster. These creeks are managed under the Lachlan Unregulated Plan. Downstream of Lake Brewster, the Lachlan River branches off into a series of effluent creeks, including Willandra Creek, Merrowie Creek and Merrimajeel Creek, which are also governed by the Lachlan Unregulated Plan.

The Plan areas make up around 8 percent of the Murray-Darling Basin. Under normal conditions, the Lachlan River is considered a terminal system with little water flowing past the Booligal Wetlands and the Great Cumbung Swamp, which are located in the lower Lachlan catchment area. In times of high flow and during recent flooding events, water will continue to flow south-west into the Murrumbidgee catchment.

The catchment supports a wide range of vegetation communities reflecting a diverse geography and climate. This includes extensive forest areas in the upper reaches of the Lachlan catchment, transitioning to open grassy woodlands in the lower slopes and plains, and extensive areas of floodplain woodlands and wetlands in the western end of the catchment.

The Lachlan catchment includes several significant environmental sites, including Lake Cowal, Lake Cargelligo, the Booligal Wetlands and the Great Cumbung Swamp.³¹ These sites, together with other important wetlands, provide important feeding and breeding habitat for a range of waterbird species, including straw-necked, white and glossy ibis (*Threskiornis spinicollis*, *Eudocimus albus* and *Plegadis falcinellus* respectively) when the area is flooded.³² The Great Cumbung Swamp also features one of the largest stands of river red gums in New South Wales.

Other environmental values in the Plan areas include threatened fish species and endangered ecological communities, including the Macquarie perch (*Macquaria australasica*), Silver perch (*Bidyanus bidyanus*), southern pygmy perch (*Nannoperca australis*), Murray cod (*Maccullochella peelii*), eel-tailed catfish (*Tandanus tandanus*) and southern bell frog (*Litoria raniformis*). The Plan areas also provide habitat for threatened species such as the Australian painted snipe (*Rostratula australis*), osprey (*Pandion haliaetus*), blue-billed duck (*Oxyura australis*) and the fishing bat (*Myotis moluccarum*).

Information about the ecological features of the Belubula Regulated River is less extensive. However, several threatened or endangered species occur, or have occurred in

²⁸ Central Tablelands Water (n.d.) [Lake Rowlands](#)

²⁹ Clause 21 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

³⁰ DPI-Office of Water (2016) [Water sharing plan for the Lachlan Unregulated and Alluvial Water Sources - Background document](#)

³¹ Many of these sites rely on water supplies from the regulated Lachlan River.

³² DPIE (2020) [Draft Regional Water Strategy - Lachlan](#)

the Belubula catchment. These include the Murray cod (*Maccullochella peelii*), Macquarie perch (*Macquaria australasica*), Silver perch (*Bidyanus bidyanus*), southern pygmy perch (*Nannoperca australis*), Booroolong frog (*Litoria booroolongensis*), southern bell frog (*Litoria raniformis*) and Sloane's froglet (*Crinia sloanei*),³³ as well as platypus (*Ornithorhynchus anatinus*), little pied bat (*Chalinolobus picatus*), eastern bentwing-bat (*Miniopterus schreibersii*) and southern myotis (*Myotis aelleni*).

Just over 111,000 people live in the Lachlan and Belubula catchments, which include the main regional centres of Cowra, Forbes, Parkes and Young, and smaller towns like Condobolin, Lake Cargelligo, Temora, West Wyalong, Crookwell, Gunning, Boorowa, Blayney and Canowindra. Most of these towns do not rely on water sources that are subject to the Commission's current review.³⁴ The notable exceptions are communities in the Blayney, Cabonne, and Weddin LGAs, which are serviced by Central Tablelands Water. Towns in the Upper Lachlan Shire Council area, and parts of Hilltops Council and Parkes Shire Council, are partially or fully reliant on unregulated water sources.

Positive population growth is predicted for eight of the 15 LGAs overlaying the Plan areas. However, growth is estimated to be below the NSW average of 0.95 percent. A decline in population is predicted for the other seven LGAs, with Cobar and Lachlan Shire Council being the most significant at -2.6 percent and -1.18 percent annual change respectively.³⁵

The Lachlan region has a diverse regional economy contributing \$6.73 billion to the state's gross regional product in 2020-2021.³⁶ The key industries are agriculture and mining.³⁷

In terms of agriculture, annual crops, including cereals and stock feed, are grown throughout the Plan areas. Cotton is also grown downstream of Wyangala Dam. In addition, significant areas of the catchment are used for livestock production (beef cattle and sheep/lamb) and there are areas of fruit and nut production in the Plan areas, particularly in the Hilltops and the Carrathool LGAs but also in small pockets around Canowindra and the Upper Lachlan areas.

Several active mine operations are situated in the Plan areas, including the Cadia-Newcrest mine, North Parkes mine and Evolution mining. Additional exploration and mining activities will likely emerge in the Plan areas with several advanced investment ready projects in the catchment (**Figure 4**).

³³ DPI Water (2013) [Water sharing plan for the Belubula Regulated River Water Source background document](#)

³⁴ Most towns in the Lachlan catchment rely on the regulated Lachlan River and groundwater sources for their town water supply.

³⁵ NSW Government (2023) [NSW Projections Explorer](#)

³⁶ DPE (2022) [Draft Regional Water Strategy: Lachlan - Shortlisted Actions – Consultation Paper](#)

³⁷ ABS (2023) [Data by region \(map\) by LGAs](#)

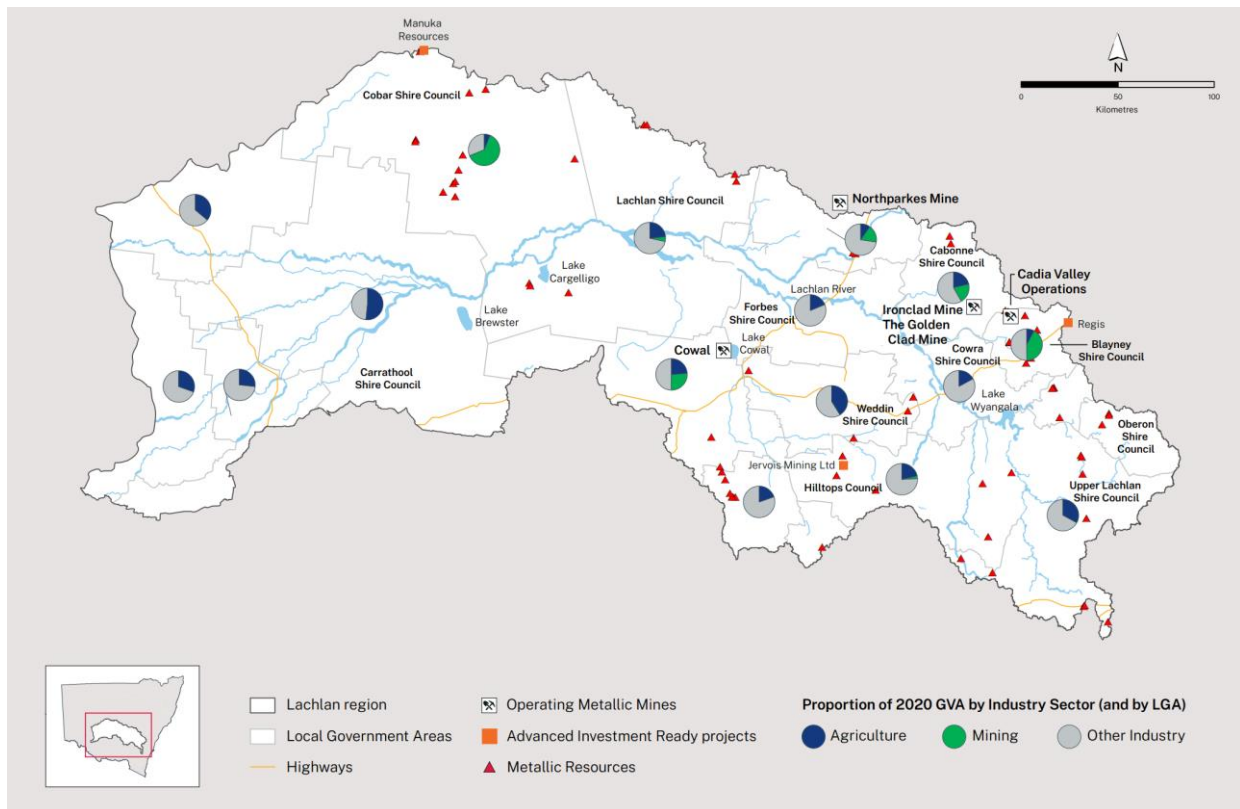


Figure 4: Industry sector contribution to the Lachlan economy (GVA, 2020-2021), including proposed mine expansion³⁸

Water underpins key industries and local employment in the Lachlan region. Given the variable climate, many industries, including agriculture and mining, have adapted to the changes in water availability by holding a diverse portfolio of water entitlements from a range of water sources. In addition, mining operations also frequently access treated effluent water, recycle water on site and intercepts water on their operating areas (harvestable rights) to meet their water demands (see **Chapter 3.2**).

The Lachlan region has a highly variable climate, ranging from temperate conditions in the east to semi-arid conditions in the west. The significant elevation difference between the upper and lower parts of the catchment partially accounts for differences in average seasonal temperatures and rainfall.³⁹

The region’s variable climate can lead to severe and extended droughts, and large and widescale floods. The Millennium Drought (2000-2010) was the worst on record for the region – a period without significant rainfall or inflows into the region’s main storages. The drought was followed by significant floods in 2012, 2016 and 2021, which refilled storages and rejuvenated environmental assets and habitats for native fish and bird species but caused significant damage to town, industry and private infrastructure, including roads and railway tracks.⁴⁰

The region is expected to experience further changes in rainfall patterns and increases in temperature.⁴¹ DPE’s climate analysis, developed for the regional water strategies, indicates that average annual rainfall in the area could decrease over the next 40 years, with potential decreases in critical winter/spring rainfall and increases in summer/autumn

³⁸ DPIE-Water (2022) [Lachlan Regional Water Strategy](#)

³⁹ DPIE (2020) [Draft Regional Water Strategy. Lachlan](#)

⁴⁰ *Ibid.*

⁴¹ DPE (2022) [Draft Regional Water Strategy: Lachlan - Shortlisted Actions – Consultation Paper](#)

rainfall. However, the area may also experience high-intensity rainfall events.⁴² In general, droughts may become more frequent, with temperatures and evapotranspiration expected to increase. This will influence rainfall runoff and inflows into storages and flows into unregulated rivers.⁴³

⁴² *Ibid.*
⁴³ *Ibid.*

3 Establishing sustainable extraction

A fundamental role of water sharing plans is to define how much water can be extracted by licensed users, while the remaining water must protect the water sources, their dependent ecosystems and basic landholder rights. Ensuring extraction remains within the LTAAELs is critical for protecting environmental values. The water sharing plans establish rules to manage extraction at three scales:

- **Long term:** LTAAELs control the amount of water that can be extracted over the long term in each EMU. Setting these limits is critical; a limit that is too high will reduce the amount of water remaining for the environment and downstream water users, while a limit that is too low reduces economic and social opportunities. LTAAEL assessment should include all extraction for consumptive (non-environmental) use, including basic landholder rights. The water sharing plans also include provisions referring to the Basin Plan for calculating the ‘sustainable diversion limit’ (SDL) and assessing SDL compliance in the Plan area (see **Box 1**).⁴⁴
- **Medium term:** AWDs allocate the volume of water that can be extracted under access licences each year. Unregulated water sharing plans currently use AWDs retrospectively to reduce extraction if the LTAAEL is exceeded, while the regulated water sharing plans use AWDs more proactively based on considerations such as water held in storage, carryover volumes, and minimum estimated inflows. To date, AWDs have not been used effectively to reduce risks to the unregulated water sources.
- **Short term:** daily access rules in unregulated plans define when licensees can extract water (e.g., cease to pump requirements and establishment of flow classes). These rules are intended to protect the needs of the environment, basic landholder rights and water utilities, on a daily basis. Reactive Section 324 orders can also be used in extreme situations such as drought to protect flows, but as discussed in previous inland unregulated plan reviews, their use is sub-optimal and not regulated by the water sharing plan itself.

The Commission continues to identify significant issues with the establishment and management of extraction and interception activities through LTAAELs in (inland) unregulated water sharing plans (**Section 0**).⁴⁵

Other specific issues that need to be addressed in the **Lachlan Unregulated Plan** include:

- uncertainty about the level of extraction and interception in the Plan area and the lack of setting LTAAELs at the appropriate scale (**Section 3.2**)
- AWDs in the Lachlan Unregulated Plan area are not adjusted, despite a risk of overextraction and the lack of LTAAEL assessment (**Section 3.3**) and are not set proactively (**Section 3.4**).

The Commission also identified issues with the LTAAEL in the **Belubula Regulated Plan**, which are covered in **Chapter 4**.

Specific issues that need to be addressed in both the **Lachlan Unregulated Plan** and the **Belubula Regulated Plan** include:

- estimated entitlements need to be updated regularly (**Section 3.5**)

⁴⁴ Divisions 3, Part 6 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Division 3 of Part 6 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

⁴⁵ NSW Natural Resources Commission (2022) [Issues briefs](#)

- cultural flows should be considered in sustainable extraction limits (**Section 3.6**).

The chapter concludes with a set of recommendations that relate to both the **Lachlan Unregulated Plan** and the **Belubula Regulated Plan**.

Box 1: Baseline diversion limits and long-term average annual extraction limits

The Basin Plan provides an additional framework that sets limits on the amount of all surface water and groundwater that can be sustainably taken from a particular area (for example, an SDL resource unit) within NSW's Murray-Darling Basin catchments. These limits are referred to as sustainable diversion limits (SDLs).⁴⁶ To establish the SDL in each SDL resource unit, authorities had to determine how much water was extracted and intercepted (on an average annual basis) from each water resource unit prior to the development of the Basin Plan.⁴⁷ This is referred to as the baseline diversion limit (BDL).⁴⁸ NSW interprets the BDL definition as being the long-term average annual extraction limit (LTAAEL) provided for in the water sharing plan in place, as at 30 June 2009.

Since 2021, the Inspector General of Water Compliance is responsible for monitoring Basin states' compliance with SDLs.⁴⁹ Basin states, including NSW, are required to report on water take in SDL resource units within inland NSW areas in accordance with Section 71 of the *Water Act 2007*. The *Water Act 2007* and Basin Plan have not only added an additional layer of reporting and assessment, but compliance with SDLs is based on a broader definition of all forms of water take and interception activities, including take from watercourses, run-off dams, floodplain harvesting, commercial plantation (net take) and basic landholder rights. This would also include interception activities arising from mining activities, which is relevant for this review.

For the review, the above reference to the *Water Act 2007* and Basin Plan requirements is relevant given that:

- the Lachlan Unregulated Plan references the SDL in Part 6, Division 3, and the Belubula Regulated Plan references SDLs in Part 7, Division 3
- the definition of the Lachlan Unregulated Plan's LTAAEL and the definition of the Basin Plan's BDL are broadly equivalent⁵⁰
- the MDBA has defined numerical estimates of BDLs for unregulated water sources in the Lachlan catchment.⁵¹

In addition, previous iterations of the Belubula Regulated Plan provided numeric estimates for the LTAAEL definitions, including one based on the definition in Schedule 1 of the *Water Act 2007* and with reference to the Department's previous hydrologic models.

⁴⁶ MDBA (2022) [Current diversion limits for the Basin](#)

⁴⁷ Under the [Water Act 2007](#) and [Basin Plan 2012](#), the SDL applies to 'consumptive', non-environmental take only.

⁴⁸ The SDL for a resource unit is the BDL minus the water recovery target. The recovery target has been set at 2,750,000 ML (or 2,750 gigalitres) for the entire basin, and the recovery target for each water resource unit, along with the BDL, is specified in Schedule 2 of the [Basin Plan 2012](#)

⁴⁹ Clause 215C of the [Water Act 2007](#)

⁵⁰ Schedule 2 of the [Basin Plan 2012](#) and Clause 28 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Clause 33 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

⁵¹ MDBA (n.d.) [Current Baseline and Sustainable Diversion Limits](#)

3.1 Common issues across inland unregulated water sharing plans

In line with past inland unregulated water sharing plan reviews, the Commission continues to identify significant issues related to the LTAAELs in the inland unregulated water sharing plans. These recurring issues are discussed in detail, along with associated recommendations to address them, in issues briefs on the Commission's website:

- [Issue brief 1 – The need to set numeric extraction limits and assess compliance](#)
- [Issue brief 2 – Ensuring LTAAELs are sustainable.](#)

In the **Lachlan Unregulated Plan**, the following common issues were identified:

- **The plan lacks a numeric LTAAEL:** the Lachlan Unregulated Plan's LTAAEL is not expressed in numeric form, rather it is expressed descriptively as the sum of various types of historic water usage across the Plan's 23 water sources, averaged over certain periods of time. The associated numeric value (e.g., a volumetric value in ML) of this LTAAEL definition is not included in the Lachlan Unregulated Plan. Based on data available in the Basin Plan, the Commission determined that the combined unregulated water access licence entitlements in the Lachlan Unregulated Plan are nearly three times the Plan's estimated unregulated BDL component, which should be roughly comparable to the LTAAEL.⁵² This creates a risk that the current water extraction levels in the unregulated system are higher than the current extraction limits, and that water that is meant to be reserved for the environment and basic landholder rights is being extracted.
- **LTAAEL compliance assessment has not been undertaken in the Lachlan Unregulated Plan area:** in the absence of numeric LTAAELs, DPE-Water has not assessed how much water is extracted from these unregulated sources each year, nor compared actual usage to the extraction limits to assess compliance with the Lachlan Unregulated Plan. The Plan's ability to achieve its objective is dependent upon compliance with its extraction limit. The lack of a numeric LTAAEL and compliance assessments create a material risk that many of the inland unregulated water sharing plans, including the Lachlan Unregulated Plan, are not achieving their intended outcomes.
- **The LTAAEL is not based on a sustainability assessment:** there is no evidence that the Lachlan Unregulated Plan's LTAAEL definition has been assessed for its sustainability. Although difficult to determine, the Commission considers there to be a high probability that the Plan's current LTAAEL is not sustainable. Specifically, the LTAAEL is not based on environmental or ecological needs, and it does not adequately consider climate variability and climate change. Since the Lachlan Unregulated Plan was implemented, there have been significant improvements in understanding both these factors (including via the *Lachlan Water Resource Plan* risk assessment), which could be used to inform a sustainable numeric LTAAEL.
- **The LTAAEL should consider climate change risk:** the Lachlan Unregulated Plan's non-numeric LTAAEL definition is fixed at a level of extraction from during the 1990s. Using this period to define the LTAAEL is inadequate as it does not consider the full climate record or the projected streamflow changes that may occur over the next 10 years and beyond. Over the last few years DPE-Water has significantly expanded its understanding of the area's climate – both historically via the paleoclimate dataset,

⁵² No significant updates to the Basin Plan's numeric estimates have been released over the life of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#). It is likely that the current Basin Plan estimate understate actual take in the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

and with respect to climate change. Defining a sustainable LTAAEL must factor in the full suite of climate scenarios. This should be part of adaptive management.⁵³

The Commission considers that the issues around numeric and sustainable LTAAELs must be addressed as a matter of priority for the **Lachlan Unregulated Plan** and recommends:

- DPE-Water establish accurate numeric LTAAELs for the Lachlan Unregulated Plan⁵⁴ to provide clarity around the amount of water that can be extracted or diverted under the Plan and enable regular and ongoing compliance assessment
- DPE-Water undertake LTAAEL compliance assessment based on the best available information beginning with EMUs at high risk for LTAAEL exceedance. This assessment should not be delayed until better information is available, rather it should be done immediately based on information available and continually improved over time
- AWDs be set conservatively in the Lachlan Unregulated Plan area until DPE-Water conducts appropriate LTAAEL compliance assessments. Once these assessments are completed, AWDs should be made flexibly and adaptively based on a range of considerations, including (but not limited to) historic and predicted climate conditions and risks to basic landholder rights, the environment and urban water supplies
- where there is no better information, conservative AWDs be based on the ratio of the Lachlan Unregulated Plan's LTAAEL to the entitlement to ensure planned environmental water is not extracted. This is not the Commission's preferred outcome, but in the absence of any other estimate of LTAAEL compliance it is necessary to provide accountability and assurance that the environmental water is protected as a priority consistent with the Act requirements
- the Lachlan Unregulated Plan should include a provision requiring DPE-Water to determine the sustainable level of extraction by Year 5 of the replacement Lachlan Unregulated Plan based on best available ecological requirements, hydrological and climate information. This determination should be used to define and amend the Lachlan Unregulated Plan's LTAAEL for each extraction unit.

The next section outlines some of the reasons why a numeric LTAAEL may not have been established in the **Lachlan Unregulated Plan**.

3.2 Uncertainty about the level of extraction and interception activities in the Lachlan Unregulated Plan area

One of the reasons a numerical LTAAEL has not been established for the Lachlan Unregulated Plan is the uncertainty about the level of extraction in the Plan area due to limited metering, the exclusion of some mining interception from the LTAAEL calculations, insufficient understanding and assessment of the take and diversions on the lower Lachlan floodplains, and the growth in basic landholder rights take.

During an interview for this review, the Commission heard evidence that stakeholders thought there was limited understanding of take in the Lachlan Unregulated Plan area:

⁵³ The Plan maintains the water above the LTAAEL for the environment and basic landholder rights, but if the LTAAEL is based on extraction from a period with greater water availability than is likely in the future, there is a risk that less water will be available for the environment and basic landholder rights.

⁵⁴ These numeric LTAAELs should be based on all forms of take in the Unregulated Lachlan Plan area, including accurate estimates of basic landholder rights take. The Commission has found evidence that there has been growth in basic landholder rights take over the life of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

*'There is an issue that no one knows what the extractions are in the unregulated river system. More analysis is needed.'*⁵⁵

Since the commencement of the Lachlan Unregulated Plan, there have been changes in the catchments that have impacted on water extraction and interception activities.⁵⁶ The region has a modestly growing population and is home to diverse industries, including large-scale mining operations and an expanding agricultural sector - both experiencing growth over the life of the Lachlan Unregulated Plan.⁵⁷ The NSW Government has also made investments in the region that may drive future water demands in the catchment.⁵⁸

Key uncertainties around current extraction include:

- **basic landholder rights:**⁵⁹ the Lachlan Unregulated Plan includes numeric estimates for domestic and stock rights take in each of the Plan's unregulated water sources. However, updated estimates provided by DPE-Water indicate that basic landholder rights take has grown from estimated 4,248 ML/year in the Lachlan Unregulated Plan to 11,975 ML/year.⁶⁰ This is a growth in basic landholder rights of 282 percent (or close to 8000 ML/year) from when the Plan was first made.⁶¹ Areas of concern include the unregulated water sources above Wyangala Dam, where the estimated take via basic landholder rights has doubled. These water sources are not only important to meet town water needs and ecosystem services in the upper catchment area, but these sources also contribute to inflows into Wyangala Dam.

Another area of concern is the Belubula catchment. Updated estimates provided by DPE-Water suggest that stock and domestic take in the two unBelubula Regulated water sources (e.g., the Belubula River Above Carcoar Dam and the Belubula Tributaries Below Carcoar Dam Water Source) has grown by 729 ML/year, placing additional pressure on these water sources that are also critical to provide inflows into the Belubula Regulated River and contribute to end-of-system flows (see **Chapter 4**).⁶²

- **industry:** the Lachlan Unregulated Plan area is home to many diverse industries, including agriculture and mining.

Livestock grazing and annual crop production occur throughout the catchment. Other key crops that rely on unregulated water sources include cherries and stone fruit around Young.⁶³ Mining is also an important industry in the catchment. Cadia Valley operation, one of the largest gold mines in Australia, is located in the Belubula catchment. Other significant mining operations in the Lachlan catchment include the

⁵⁵ Interview: Lachlan Valley Water, 15 February 2023.

⁵⁶ DPE-Water (2022) [Draft Lachlan Regional Water Strategy](#)

⁵⁷ Some of the region's mining operations were established, or achieve full operational levels after the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) were first made and hence their harvestable rights take and other interception activities have not been accounted for in the water sharing plans.

⁵⁸ NSW Government (n.d.) [Parkes Special Activation Precinct](#)

⁵⁹ Basic landholder rights (domestic and stock rights, harvestable rights and Native Title rights) do not require a water access licence under the Act. These rights fall outside the remit of the NSW non-urban metering reforms and no reasonable use guidelines for basic landholder rights currently exist. It is therefore difficult to determine the actual annual take from basic landholder rights in the Plan area.

⁶⁰ Based on updated basic landholder rights estimate provided by DPE-Water to the Commission (March 2023)

⁶¹ The Commission acknowledges the methodology to estimate take under basic landholder rights has changed.

⁶² DPE-Water (2018) [Lachlan Water Resource Plan risk assessment](#)

⁶³ The Commission notes that the majority of irrigated crops in the Lachlan rely on water from the regulated Lachlan River and groundwater sources. In many cases, growers have access to more than one water source to meet their water needs.

Cowal – Evolution Mining and North Parkes Mines, which are located downstream of Wyangala Dam.

It is important to note that water-dependent industries are required to hold a water access licence to take water for commercial production unless these industries have alternative contractual arrangements through existing town water supply systems.

Although annual water extractions for commercial agricultural production varies and depends on water availability, the Lachlan Unregulated Plan's estimate of take by licensed entitlement holders, which is based on historical average use over the period 1 July 1993 to 30 June 1999, is likely outdated.⁶⁴

The Commission also has found evidence that there has been growth in harvestable rights take in the Lachlan Unregulated Plan area. Partially, this has been driven by the establishment and expansion of mining operations whose harvestable rights were not previously accounted for.⁶⁵ Mining operations are also able to take more than the 10 percent harvestable rights limit in certain circumstances.⁶⁶ For example, exemptions provided for under the *Water Management (General) Regulation 2018 - Schedule 1* allows mining operations to take rainfall runoff that exceeds the harvestable right take limit if the runoff water has come into contact with mining processes or if the water has been contaminated.

Some of the region's mines⁶⁷ have reported on their aggregate annual water take, illustrating that their water extraction can be significant in some years. In the 2020-2021 water years, the Cadia-Newcrest mine for example extracted 14,600 ML from its licenced entitlement and also took 29,000 ML in rainfall runoff harvesting (i.e., harvestable rights). This basic landholder rights take volume by the Cadia-Newcrest mine is significant in the context of the previous (Basin Plan) annual basic landholder rights take estimates for the whole Lachlan Unregulated Plan (i.e., all 23 unregulated water sources) which was 57,000 ML/year. Clearer reporting and itemising all forms of water take by mining operations in the Lachlan Unregulated Plan is important to ensure DPE-Water can conduct appropriate LTAAEL compliance assessments.

- **activities on the lower Lachlan floodplains:** the extent of take and diversion in the lower Lachlan catchment, in particular the lower Lachlan floodplains, is currently not well understood.⁶⁸ The Lachlan Unregulated Plan does not directly consider floodplain harvesting as part of the LTAAEL⁶⁹ and DPE-Water has not indicated whether floodplain harvesting licences will be issued in the Lachlan catchment (in either regulated or unregulated water sources). DPE-Water has noted that a decision on how to implement the Floodplain Harvesting Policy in the Lachlan catchment should be informed by the work on the southern Floodplain Management Plans, which is currently underway.⁷⁰

⁶⁴ Despite the absence of comprehensive and broad-scale metering requirements in the Unregulated Lachlan Plan area, the roll out of the non-urban metering reform will provide an important indication of water extraction by industry in the Unregulated Lachlan Plan area. New technologies like remote sensing could also help fill some gaps in the meter roll out. DPE-Water (2022) [Non-urban metering](#)

⁶⁵ For example, the Cadia-Newcrest mine commenced operation in the Belubula catchment in 1998 and its current water use would have not been included in the water use estimate from 1993/94 Cap, consistent with the exclusion of water use by mining in the Cap implementation report.

⁶⁶ The Harvestable rights orders refer to the [Water Management Act \(General\) Regulations 2018 – Schedule 1](#)

⁶⁷ For example, the Cadia-Newcrest mine has released an annual environmental report highlighting the aggregate take of the mine operation. Other mines, including the Evolution mining and Northparkes mines also publish some data on their water take.

⁶⁸ The Commission acknowledges that take from the Unregulated Effluent Creeks that are governed by the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) are licensed. However, it is unclear whether take and diversion occur outside the current licence framework in the Unregulated Effluent Creeks.

⁶⁹ Clause 28 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

⁷⁰ DPE-Water (n.d.) [Southern floodplain management plans](#)

In addition, the Commission understands that the Lachlan Unregulated Plan contains areas with flood works which have not yet been reviewed or assessed. DPE-Water conducted a section 43 review of 10 southern floodplain management plans in 2021, which highlighted that ‘existing works [in the southern catchments] have not been mapped in the floodplain management plans and existing flood works in the floodplain management areas have not been identified as required under the provisions of the [Water Management] Act.’⁷¹

The lack of assessment and regulation of works in the Lachlan catchment capable of floodplain harvesting and changing the course of flows was also confirmed by the Commission in its audit of southern floodplain management plans.⁷² The audit found that there is an ‘increased likelihood of unauthorised or non-compliant flood works, and uncoordinated floodplain development in the southern NSW regions.’⁷³ In this context, it is unclear how take and flow diversions associated with flood works in the Lachlan catchment are currently managed and accounted for in the Lachlan Unregulated Plan area.

In addition, while provision 80(1)(a) of the Lachlan Unregulated Plan outlines that the Plan may be amended to manage floodplain harvesting, no rules have been considered to date to govern take and diversions on the floodplain areas in the Lachlan catchment.

- **plantation forestry interception:** the take of plantation forestry is considered as part of the LTAAEL calculations for the Lachlan Unregulated Plan area.⁷⁴ However, the LTAAEL only considers the estimated annual take by plantation forestry as of 30 June 2009. This estimate forms a base that needs to be verified. In addition, it also does not capture the potential growth in plantation forestry over the life of the Plan or the intentions to increase areas of plantation forestry in the upper Lachlan and Belubula areas in the future.⁷⁵ Further work is required to better understand the extent of interception activities by commercial plantations and their contribution to overall extraction in the Lachlan Unregulated Plan area.⁷⁶
- **town water:** although most of the major towns in the Lachlan catchment rely on the regulated Lachlan River and groundwater, Central Tablelands Water is a key water supply authority in the Belubula catchment that relies on unregulated water sources governed by the Lachlan Unregulated Plan. Central Tablelands Water supplies communities in the Cabonne, Blayney and Weddin LGAs, and is also able to supply Orange City Council outside the Plan area during emergencies see **Chapter 7**).⁷⁷ The NSW Government population projections forecast that Blayney, Cabonne and Orange are expected to grow over the life of the replacement plan.⁷⁸ In addition, towns in the area above Wyangala Dam rely on unregulated water sources, including Gunning and Crookwell.

DPE-Water has removed two groundwater sources from the Lachlan Unregulated Plan in 2020 for the purpose of developing the *Lachlan Water Resource Plans*. This occurred despite the known (but not well researched) connectivity between surface water and

⁷¹ DPE-Water (n.d.) [Review process](#)

⁷² NSW Natural Resources Commission (2020) [Completed audits](#)

⁷³ The Commission acknowledges that DPE-Water has commenced work on replacing floodplain management plans in the southern NSW catchment and intends to replace the currently three localised plans and one declared floodplain with one single floodplain management plan and associated declared floodplain. DPE-Water (n.d.) [Southern floodplain management plans](#)

⁷⁴ Clause 28 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

⁷⁵ DPI (2021) [NSW Plantations authorisations snapshot 2020-2021](#)

⁷⁶ The [Basin Plan 2012](#) requires extraction from interception activities such as commercial plantation forestry to be determined.

⁷⁷ Central Tablelands Water is also involved in several investigations to improve town water security in the Belubula catchment.

⁷⁸ NSW Treasury (2020) [NSW Common Planning Assumptions Population Projections](#)

groundwater resources in the Belubula catchment.⁷⁹ Although a review of the *Lachlan Alluvial Groundwater Plan* is beyond the scope of this review, it is important that the interaction between these surface water and groundwater sources are better understood to ensure water take in the Lachlan and Belubula catchments can be better accounted for under the relevant plans and revisions of plan provisions do not lead to unintended impacts on groundwater sources (see **Chapter 4**).

3.2.1 There are risks with a growth in extraction or interception activities

The risks associated with potential growth in extraction or interception activities due to the factors described above are high, given the large volume of entitlements on issue in the Lachlan Unregulated Plan relative to the estimated LTAAEL, and the fact that a large proportion of the extraction is currently exempted from, or not factored into, the LTAAEL. With respect to the share volume of unregulated river access entitlements, there are 46,671 unit shares⁸⁰ currently on issue. In the absence of a numerical LTAAEL for the Lachlan Unregulated Plan, the Commission cannot directly assess the implications of this level of entitlement compared to the LTAAEL. However, as the Basin Plan's definition of the BDL for unregulated water sources is broadly consistent with the definition of the Plan's LTAAEL⁸¹ the Commission is of the view that the BDL for the unregulated water sources in the Lachlan area should be roughly equivalent to the LTAAEL in the Lachlan Unregulated Plan.

The current Basin Plan estimate of the unregulated BDL in the Lachlan catchment is 16,000 ML,⁸² which means that the entitlement on issue across the Lachlan Unregulated Plan is nearly three times the Basin Plan's BDL for the area. The level of entitlement raises the risk that water extraction could exceed the Plan's extraction limit. The Commission acknowledges that given the lack of information about actual water extraction and interception activities in the Plan area, it is not possible to say with certainty whether there has been an exceedance of the LTAAEL. However, the ratio of entitlement volume to the BDL creates a significant risk and increases the likelihood that current extraction may have exceeded the Plan and Basin Plan limits.

DPE-Water should ensure the numeric LTAAEL (or LTAAELs) and an assessment of current extraction are based on the most up to date information on all forms of extraction and interception activities in the Lachlan Unregulated Plan area. In addition, DPE-Water should also consider the appropriate scale to set LTAAELs for the Plan area.

3.2.2 There are benefits in developing separate extraction management units

The Lachlan Unregulated Plan area currently includes one LTAAEL for its single EMU, which covers all 23 unregulated water sources in the Lachlan and Belubula catchments. Combining all 23 water sources into a single EMU limits the ability to manage different extraction risks in different areas in a targeted way, as LTAAEL compliance and AWDs apply at the EMU-scale.⁸³ A major consequence of a single EMU is that any impacts from an LTAAEL exceedance is spread across all license holders, regardless of whether or not

⁷⁹ The Commission acknowledges that there is strong connectivity between the regulated Belubula and the Belubula Valley Alluvial Groundwater water sources. These two water sources were never part of the same water sharing plan, despite their close connectivity.

⁸⁰ Clause 24 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

⁸¹ For unregulated water sources, the [Basin Plan 2012](#) requires that the long-term annual average extraction of water is limited to the historic extraction averaged over the period from July 1993 to June 1999, plus basic landholder rights at 2009 and commercial plantation forestry interception at 30 June 2009.

⁸² MDBA (2022) [Current Baseline and Sustainable Diversion Limits](#)

⁸³ There is currently only a single EMU covering the whole plan area, with LTAAEL compliance and AWDs applied at the EMU scale.

extraction exceedances are driven by localised activities. This could create potential inequities between licensees.

The risk assessment developed for the *Lachlan Surface Water Resource Plan*⁸⁴ identified several water sources, or groups of water sources, in the Lachlan Unregulated Plan area that are at high risk of having insufficient water being available for the environment. This suggests that there may be benefits to establish separate EMUs with separate LTAAELs for the following water sources:

- **Lachlan River above Reids Flat Water Source, Crookwell River Water Source and Boorowa River and Hovells Creek water Source:** the risk assessment has identified that all three water sources are at risk of insufficient water being available for the environment across base flow and low flow periods. These water sources are also important to meet town water supply needs (see **Chapter 7**) and for providing inflows into the Lachlan catchment's main storage, Wyangala Dam.
- **Unregulated Effluent Creeks Water Source:** the risk assessment has identified that this water source is at risk of insufficient water being available for the environment across a range of flow regimes. This water source supports a range of important environmental assets in the lower Lachlan effluent creeks (see **Chapter 5**).
- **Belubula River Above Carcoar Dam Water Source, Belubula Tributaries Below Carcoar Dam Water Source and the Belubula Regulated River Water Sources:** DPE-Water should consider whether there is merit in establishing a separate management unit and LTAAEL for the Belubula catchment (both unregulated and regulated water sources) to simplify the management of these water sources (see **Chapter 4**). Additional reasons for why a separate management unit should be considered for the Belubula catchment include:
 - the risk of insufficient water being available for the environment across a range of flow regimes in the Belubula Tributaries below Carcoar Dam Water Source
 - the importance of unregulated water sources for flows in the Belubula Regulated River
 - the importance of unregulated water sources in the Belubula catchment to meet town water supplies in the Lachlan and Upper Macquarie catchments
 - the size of the catchment compared to the significant interception activities.

Having more than one EMU allows management actions and water sharing plan rules to be targeted to the risks in the area where the extraction impacts are occurring. In addition, splitting the Lachlan Unregulated Plan area into more than one EMU would reduce risks and improve equity and environmental outcomes, allowing accounting rules to consider geographic-specific objectives and extraction patterns. As part of the replacement Plan, DPE-Water should review the appropriateness of establishing a single numeric LTAAEL for the Lachlan Unregulated Plan versus establishing separate LTAAELs for different parts (i.e., different EMUs) of the Lachlan Unregulated Plan area.

3.3 Unregulated AWDs should be adjusted in the absence of LTAAEL assessment

Continuing to have unregulated water sharing plans that rely on an LTAAEL without adequately defining the LTAAEL or assessing compliance against it, does not protect the Act's priorities – including protecting the environment and basic landholder rights. As

⁸⁴ DPE-Water (2020) [Lachlan Surface Water Resource Plan](#), Schedule D.

discussed in **Section 3.1**, it is essential that DPE-Water rectifies these issues before remaking the Lachlan Unregulated Plan.

The Commission strongly recommends that DPE-Water undertakes LTAAEL assessments as required by the Lachlan Unregulated Plan as an immediate priority. Until this occurs, the Lachlan Unregulated Plan should require other mechanisms to provide accountability for protecting the environment, basic landholder rights and town water requirements. Risks to the environment and other priority water users are exacerbated by the uncertainty around current extraction and interception activities in the Plan area and the presence of significant entitlement above the estimated historic extraction on which the LTAAEL is based (see **Section 3.2**).

Despite these risks, DPE-Water has continued to make AWDs equivalent to 100 percent of the licensed unregulated water entitlements at the beginning of each water year. This allocation approach creates considerable risks that the LTAAEL is being exceeded as licence holders are legally entitled to take all water allocated to them and have carryover rules that potentially enable the accumulation up to 300 percent of entitlement.⁸⁵

To mitigate this risk, the Commission has made suggestions in other inland unregulated water sharing plan reviews that DPE-Water include a requirement in the replacement Plan for AWDs to be set adequately to protect the priorities under the *Water Management Act 2000*, if DPE-Water does not make and publish a reasonable estimate of annual extraction and assess compliance with the LTAAELs. The Commission reiterates the importance of this recommendation in the current review. DPE-Water should utilise all available and relevant information to inform the setting of appropriate AWDs.

The Commission is of the view that there is sufficient data to make a reasonable estimate of take in the Plan area and undertake LTAAEL compliance assessments. However, in the absence of LTAAEL compliance assessments, the Commission encourages DPE-Water to set AWDs at a ratio of the updated BDL to the unregulated river access entitlements, in line with the precautionary principles.⁸⁶ This will provide a tangible figure for stakeholders and will highlight the risks of the current AWD approach to the Lachlan Unregulated Plan's water sources. It also provides an incentive to landholders to report their actual take, and it could encourage DPE-Water to expedite the development of numeric LTAAELs and conduct LTAAEL assessments in the Plan area.

The Commission acknowledges that an AWD reduction based on the ratio of the updated BDL to the unregulated river access entitlements would have a significant impact on licence holders and the regional economy.⁸⁷ The Commission stresses that such a method should only be applied where DPE-Water has not implemented an alternative approach to conducting LTAAEL compliance to ensure the Plan's environmental water and basic landholder rights are appropriately protected.

The roll-out of the non-urban metering reform allows DPE-Water to develop a more refined AWD approach. The Commission supports DPE-Water implementing a risk-based approach and using best available data to set AWDs in line with the precautionary principles. However, it is the Commission's view that there is a requirement under the Act to protect environmental water and basic landholder rights if DPE-Water does not implement the LTAAEL compliance required by the Plan.

⁸⁵ Water take is governed by the Plan rules and rules associated with any relevant works approvals.

⁸⁶ The Commission notes that compliance assessment will be critical to ensure the AWDs are being adhered to.

⁸⁷ The Commission notes that allowing growth to occur unchecked will have an even greater and inequitable impact in the future.

In the meantime, the risk that AWDs may need to be significantly reduced to comply with the LTAAEL under the current Lachlan Unregulated Plan is not transparent to water licence holders. DPE-Water must engage with licensees as soon as possible to communicate the risks of exceeding the current LTAAEL, and potential future reductions in AWDs. Engaging with stakeholders would allow DPE-Water to better understand potential impacts on licensees and areas of risk and may help develop more nuanced AWD adjustments to adequately protect the environment with the least impact on licensees.⁸⁸ Consultation with licence holders on potential future AWD adjustments is also important to provide reasonable notice to affected licensees. This conservative approach is recommended as a Plan safeguard and should only apply if DPE-Water does not take reasonable steps to estimate the level of extraction in the Plan area and undertake LTAAEL compliance assessments.

3.4 Future AWDs need to be proactive

The Lachlan Unregulated Plan could be improved to ensure the efficient use of available water. The current process of setting AWDs equivalent to 100 per cent of licensed entitlements in unregulated water sources independent of catchment conditions, and then relying on temporary water restrictions under Section 324 of the Act is leading to poor outcomes across NSW. Managing to numeric, sustainable long-term limits should allow for AWDs to vary between years based on a range of conditions. To improve outcomes for the Lachlan Unregulated Plan, a shift is required to move to proactive AWDs and Plan provisions that enable quicker responses to changes in conditions.

In contrast to the Lachlan Unregulated Plan, AWDs for the Belubula Regulated Plan are more proactive and based on considerations such as water held in storage, carryover volumes, and estimated inflows. The Lachlan Unregulated Plan's LTAAEL is based on the historical average extraction between July 1993 and June 1999. This historical data is no longer current, sufficient or appropriate. This level of extraction was affected by both the level of activation and climate during that time. The LTAAEL and AWDs need to be able to accommodate different climatic conditions and levels of activation to address risk and achieve good outcomes.

At the start of each water year the following should be considered as part of the Lachlan Unregulated Plan AWD announcements:

- **the level of activation:** Water can only be extracted from an access licence if it is attached to a water supply work approval (work approval). DPE-Water should consider the level of activation in the Plan area when determining short-term water management decisions, including annual AWD announcements to manage the hydrologic stress to the Plan's unregulated water sources during droughts. However, this consideration should take into account the risk of additional activation, such as any pending work approvals.
- **the amount of carryover:** the AWDs for the Belubula Regulated River consider carryover before allocating additional water. The current unregulated carryover rules have been applied across all NSW unregulated plans without consideration of climate variability and seasonality or risks and outcomes.

Allowing large amounts of carryover renders LTAAEL compliance less effective as it can take many years for water held in accounts to be reduced before extraction drops to that required to meet the LTAAEL. Responses to exceedances above the average

⁸⁸ Any potential AWD adjustment should be subject to a regulatory best practice approach and follow procedural fairness.

can occur years after the exceedance, often at times climatic conditions are such that no reductions are required.

- **historical and predicted climatic conditions:** the Plan requires the same volume to be allocated irrespective of the prevalent climatic conditions. The Plan notes that the effects of climate variability are recognised by having provisions that limit water availability on a long-term average basis.⁸⁹ Using a long-term average, which is a fixed number, does not recognise or allow for adjustments for climate variability between years. Having AWDs that are based on the actual volume of water available would seem logical and should be a goal of the Plan.

Comparing current and predicted climatic conditions to those experienced between 1993 and 1999 should highlight the duration and intensity of droughts that may occur and the Plan's ability to manage those droughts. Past climate and future climate change both indicate the likelihood of drier periods of higher frequency, duration and scale. The paleoclimate work for the regional water strategies has shown the climate has greater extremes, with longer periods of drought than recent recorded history. Climate change is projected to cause changes in monthly rainfall patterns and lower average annual rainfall in most NSW inland catchments, higher temperatures, and lower evapotranspiration leading to lower runoff and inflows. This magnifies the risks that the water sharing plan cannot meet the Act's water management and water sharing principles.

DPE-Water should develop and implement a proactive AWD approach to address climate variability. A risk-based AWD process can be used to better manage variability. The current practice of allowing large carryovers to manage variability only considers extraction during wetter years and does not reflect the risk in drier years. Any such proactive AWD approach should be clear and transparent in the Plan rules and should provide licensees adequate certainty to assess their inter-annual risks, but be responsive to annual weather systems.

By Year 5 of the Plan, DPE-Water should, in consultation with stakeholders, develop and implement the use of proactive AWDs and revise account management rules (carryover and account limits) to support any AWD changes.

The next two sections suggest improvements that could be made to both the Belubula Regulated Plan and the Lachlan Unregulated Plan.

3.5 Estimated entitlements need to be updated regularly in both plans

The entitlement shares and basic landholder rights volumes in the water sharing plan areas have changed since the Plans were first made. Although there are several possible reasons for the difference between actual and estimated shares, the Commission continues to hold the view that DPE-Water should update all water sharing plans' estimated entitlement shares and basic landholder rights whenever plan provisions are reviewed and updated.

Updating these figures is important to:

- provide transparency and clarity to licence holders, including information as to the potential risk of future water allocation reductions once DPE-Water has established a numeric LTAAEL (or LTAAELs) for the Plans and undertakes appropriate LTAAEL compliance assessment

⁸⁹ i.e., Clauses 14(1) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) set out how the effects of climatic variability on river flow in the Plan area are recognised.

- indicate if there are emerging risks in a water source that need to be reviewed and assessed
- provide a trigger that could be used by DPE-Water to initiate a review of the adequacy of the Plan provisions necessary to manage risk in the Plan area.

As highlighted in previous water sharing plan reviews, the discrepancies between actual and estimated entitlement shares and basic landholder rights volumes in the Plan could impact the Plan's water sources, the environment and water users. This is because the adequacy of current Plan provisions, including daily access rules, are based on an understanding of hydrological stress, which is closely linked to the level of entitlements. In addition, changes in entitlement shares and basic landholder rights could impact on the connectivity between the unregulated and regulated river systems, an issue that is highlighted further in **Chapter 4**.

If actual entitlement shares and basic landholder rights volumes are higher than the Plans' estimates, there is greater risk that access rules and other Plan provisions may not be adequate to protect the ecological needs of these water sources, their water-dependent ecosystems and basic landholder rights' needs, and also impact downstream water users.

The Commission recommends that DPE-Water reviews and updates the Plans' estimated entitlement shares and basic landholder rights volume based on best available information and continues to update these figures whenever the Plans are amended, or at a minimum every five years. In addition, DPE-Water should undertake a risk assessment if the entitlement shares and basic landholder rights volume changes by more than 5 percent in any water source to determine whether the current provisions of the Plans remain adequate to protect the water source, the environment and basic landholder rights.

3.6 Cultural flows should be considered in sustainable extraction limits in both plans

Cultural water entitlements and cultural flows are expected to become an increasingly important component in water planning and management.⁹⁰ This is evident by DPE-Water's commitments to develop an Aboriginal Water Strategy and Cultural Watering Plans (CWP) that seek to inform the DPE-Water's review of existing policy frameworks to identify opportunities for greater Aboriginal access and ownership of water.⁹¹ As this work progresses, it is likely that water entitlements beneficially owned by First Nations will be established (or acquired) as well as cultural flows implemented in particular plan areas.

To meet the spiritual, cultural, environmental, social and economic needs of First Nations, entitlements and flows may have variable consumptive and non-consumptive components. In this context, DPE-Water should consider how to support First Nations holding these entitlements and account for cultural flows.⁹²

DPE-Water should make provisions in both replacement Plans to account for these water entitlements beneficially owned by First Nations, as well as for cultural flows. It will be important to explicitly integrate reporting of cultural water into water accounting. This would include the development of a conceptual framework to correctly account for cultural flows that will be used for consumptive and non-consumptive purposes. The establishment

⁹⁰ Cultural flows are defined as 'water entitlements that are legally and beneficially owned by the (First) Nations and are of a sufficient and adequate quantity and quality to improve the spiritual, cultural, environmental, social and economic conditions of those Nations'.

⁹¹ DPE (n.d.) [Water About Cultural Watering Plans](#)

⁹² MDBA (2020) [Sustainable diversion limit \(SDL\) accounting improvements strategy 2020 – 2025](#)

of sustainable LTAAELs should also consider these new and emerging issues to ensure future LTAAELs and their compliance can account for cultural water uses.

In addition, Australia’s Native Title laws recognise the traditional rights and interests to land and water for Aboriginal people. The *Native Title Act 1993* specifically recognises Native Title water rights, stating that ‘a Native Title holder is entitled, without the need for an access licence, water supply works approval or water use approval, to take and use water in the exercise of Native Title rights’ (Section 55(1)).

Anyone holding Native Title rights with respect to water can take and use water in accordance with the laws and customs by which the title is held.⁹³ There are several Native Title applications in the Plan area⁹⁴ and it will be important that the development of a sustainable LTAAEL accounts for any future Native Title rights in the Plan area. It will also be important that DPE-Water engages with Native Title holders or registered claimants in remaking the Plans and developing sustainable LTAAELs.

3.7 Recommendations

R 2	<p>For the Lachlan Unregulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) establish and include accurate numeric values for LTAAELs in the replacement Plan based on up-to-date information on all forms of extraction. These LTAAELs should be established at the appropriate scale b) consider utilising clause 80(1)(a) of the Lachlan Unregulated Plan to develop appropriate Plan provisions to effectively manage impacts of take and diversions on the floodplain areas in the Plan area. These rules should be informed by the work being progressed by DPE-Water for the replacement of the southern floodplain management plans c) undertake LTAAEL compliance assessment using best available estimates of extraction and make this assessment publicly available. The LTAAEL assessment should not be delayed until better information is available, rather it should be done immediately based on information available and continually improved over time d) include a provision in the replacement Plan requiring DPE-Water to determine the sustainable level of extraction by Year 5 based on best available ecological requirements, hydrological and climate information. This information should be used to define and amend the Plan’s LTAAEL for each EMU.
R 3	<p>DPE-Water should ensure the replacement of the Lachlan Unregulated Plan includes requirements for:</p> <ul style="list-style-type: none"> a) AWDs to be set adequately to protect the priorities under the <i>Water Management Act 2000</i>, if DPE-Water does not make and publish a reasonable estimate of annual extraction and assess compliance with the LTAAELs

⁹³ As stated in Section 211(2) of the *Native Title Act 1993* ‘... the law does not prohibit or restrict the Native Title holders from carrying on the class of activity, or from gaining access to the land or waters for the purpose of carrying on the class of activity, where they do so for a) the purpose of satisfying their personal, domestic or non-commercial communal needs; and b) in exercise or enjoyment of their native title rights and interest’.

⁹⁴ National Native Title Tribunal (2022) [Search Application and Determinations](#)

	<p>b) proactive AWDs to support sustainable numeric LTAAELs and revise account management rules (carryover and account limits) to support any AWD changes. These proactive AWDs should be developed in consultation with stakeholders by Year 5 of the Plan.</p>
<p>R 4</p>	<p>For the Lachlan Unregulated Plan and the Belubula Regulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) review and update the replacement Plans with the estimated entitlement shares and basic landholder rights volumes based on best available information b) continue to update these figures whenever the Plans are amended or at a minimum every five years c) undertake a risk assessment if the entitlement shares and basic landholder rights estimates change by more than 5 percent in any water source to determine whether the Plans’ provisions remain adequate to protect the water source, the environment, basic landholder rights and town water supplies d) include provisions to account for the establishment of Native Title rights, water entitlements beneficially owned by First Nations, and cultural flows.

4 Managing water sources in the Belubula catchment

The combined review of the Belubula Regulated Plan and the Lachlan Unregulated Plan allows the Commission to review all surface water sources in the Belubula catchment (**Figure 5**) and assess how the provisions between the two water sharing Plans interact and influence water management in the Belubula catchment, including end-of-system flows.

Currently, surface water sources in the Belubula catchment are managed under two separate water sharing plans (**Table 2**).

Table 2: Water Sources and Share Components in the Lachlan Unregulated and Belubula Regulated Plans

Water Sharing Plans	Water Sources	Share component
<p><i>Water Sharing Plan for the Belubula Regulated River Water Source 2012</i></p> <p>(Belubula Regulated Plan)</p>	<ul style="list-style-type: none"> Belubula Regulated River Water Sources (covering the Belubula Regulated River from Carcoar Dam to the river's confluence with the regulated Lachlan River) 	<ul style="list-style-type: none"> Stock and Domestic: 228 ML High security: 1095 ML General security: 22,589 ML Supplementary: 3,125 ML
<p><i>Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012</i></p> <p>(Lachlan Unregulated Plan)</p>	<ul style="list-style-type: none"> Belubula River Above Carcoar Dam Water Source (covering unregulated rivers upstream of Carcoar Dam) Belubula Tributaries below Carcoar Dam water source (covering unregulated rivers downstream of Carcoar Dam) 	<p>Belubula River Above Carcoar Dam Water Source:</p> <ul style="list-style-type: none"> Unregulated river: 264 ML <p>Belubula Tributaries below Carcoar Dam Water Source</p> <ul style="list-style-type: none"> Stock and Domestic: 48 ML Local Water utility: 3,150 ML Unregulated River: 6,380 ML⁹⁵

⁹⁵ The Cadia-Newcrest mine holds 4,200 ML of these unregulated river water access entitlements, illustrating the importance of mining water take in the Belubula catchment.

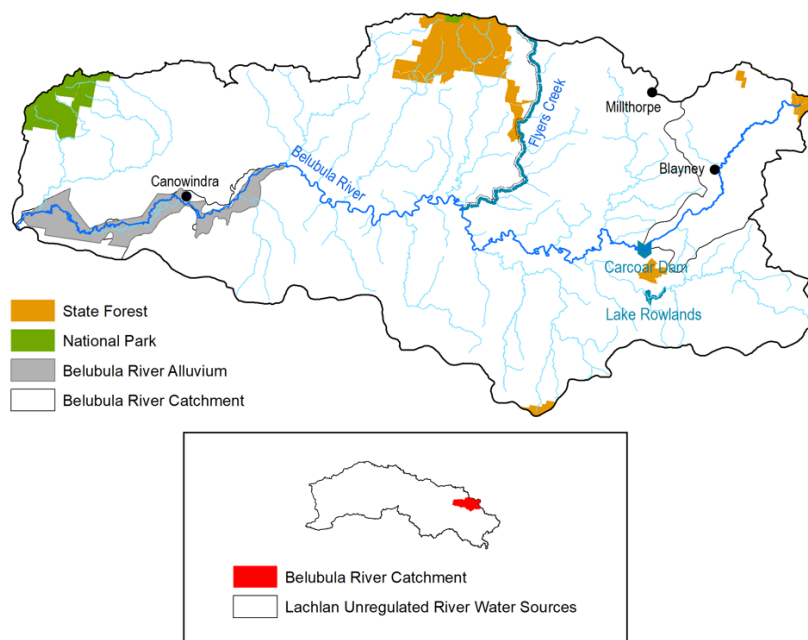


Figure 5: Belubula catchment

The Commission’s analysis has highlighted that the Belubula catchment has some unique features that make it different to other inland NSW systems. Specifically, the Belubula catchment behaves in many ways more like an unregulated system than a typical regulated system.

The following points are important to highlight for the Belubula Regulated River:

- **Small headwater storage prevents effective flow regulation** – compared to other inland NSW state-owned dams, Carcoar Dam is a small headwater storage with a capacity of 35,800 ML⁹⁶ and a small catchment area. Inflows into Carcoar Dam can be highly variable⁹⁷ and storage levels can fluctuate widely depending on climate and rainfall conditions. Consequently, Carcoar Dam is not very effective in regulating flows downstream in the Belubula Regulated River and meeting end-of-system flow targets.⁹⁸
- **Carcoar dam does not have regular inflow patterns** – the operation of Carcoar Dam frequently switches between ‘normal operations’ and ‘severe drought operations’, due to the size of the dam and the catchment’s variable climate.⁹⁹ The volatility in storage level (and associated dam operation) has implications for drought management¹⁰⁰ and the reliability of regulated river water access for licence holders.
- **The Belubula Regulated River relies on unregulated tributary flows** - around 90 percent of inflows into the Belubula Regulated River occur downstream of Carcoar

⁹⁶ WaterNSW (n.d.) [Carcoar Dam](#). In comparison, Wyangala Dam has a storage capacity of 1,217,000 ML.

⁹⁷ NSW Office of Water (2013) [Water sharing plan for the Belubula Regulated River Water Source background document](#)

⁹⁸ DPE-Water (n.d.) [Suspension to Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

⁹⁹ The regulated Belubula system switched from stage 1 (normal operation) to stage 3 (severe drought) in the span of approximately 7 months. DPE-Water (n.d.) [Belubula Valley Snapshot \(2017 -2020\)](#)

¹⁰⁰ The regulated Belubula River cannot easily guarantee supply through multi-year drought periods (greater than 2 years), despite the fact that the Belubula catchment has experienced three multi-year drought periods over the last 15 years. Recent amendments to clause 31 mean WaterNSW now only has to set aside water to enable at least two years of supply (based on a repeat of the period of lowest accumulated inflows to the water source).

Dam through unregulated tributary flows.¹⁰¹ Stakeholders confirmed the reliance of the Belubula Regulated River on unregulated tributary flows: “the majority of flows into the Belubula Regulated River cannot be controlled [by Carcoar Dam], which makes the Belubula Regulated River effectively an inferior regulated river”.¹⁰² This high interdependency has led to complex water management rules (e.g., uncontrolled flow rules and supplementary flow rules) in the Belubula Regulated Plan. Setting appropriate access rules in the regulated river and unregulated tributaries is important to protect water sources and effectively meet end-of-system targets in the Belubula catchment.

- **There is a high rate of seepage to groundwater** - the Belubula Regulated River is highly connected to the underlying Belubula Valley Alluvial Groundwater Source.¹⁰³ Downstream of Canowindra, the Belubula Regulated River is a ‘losing stream’ with significant seepage into the underlying groundwater source, particularly during dry times. This geomorphic feature impacts on water delivery along the system, contributes to cease to flow periods in the Belubula Regulated River, and makes meeting end-of-system flow targets in the Belubula Regulated Plan more challenging during dry times.

The following points are important for the unregulated rivers in the Belubula catchment:

- **Uncertainty about level of extraction** – limited metering and lack of LTAAEL compliance assessment makes it difficult to assess the risk to unregulated water sources in the Belubula and increases the risks of LTAAEL exceedance (see **Chapter 3**).
- **Mining and town water needs drive water use in the unregulated rivers** – reporting on water extraction by mining operations is limited and suggests large volumes of water are being extracted under harvestable rights exemption that are not accounted for in the LTAAEL.

The Commission is of the view that the remake of the two surface water Plans provides a unique opportunity to undertake a fundamental review of the management arrangements of all surface water resources in the Belubula catchment. In particular, DPE-Water should consider whether there is merit in merging the Belubula Regulated Plan into the Lachlan Unregulated Plan and set up a separate EMU for all surface water resources in the Belubula catchment, as part of the Lachlan Unregulated Plan.

The benefits of merging the Belubula Regulated Plan into the Lachlan Unregulated Plan include an opportunity to:

- develop more targeted Plan provisions that better account for the close relationship between the existing unregulated and regulated water sources in the Belubula catchment (see **Section 3.2.2**)
- design simpler and more equitable access rules in the unregulated tributaries and the Belubula Regulated River in the Belubula catchment to effectively meet end-of-system targets (see **Section 4.5** and **4.6**)
- review trade arrangements in the Belubula catchment to enhance economic opportunities for licence holders without compromising high-priority environmental and basic landholder rights’ needs (see **Chapter 8**)

¹⁰¹ NSW Office of Water (2013) [Water sharing plan for the Belubula Regulated River Water Source background document](#)

¹⁰² Interview: Lachlan Valley Water and Belubula landholders, 20 February 2023.

¹⁰³ NSW Office of Water (2013) [Water sharing plan for the Belubula Regulated River Water Source background document](#)

- develop a sustainable, numeric LTAAEL for the Belubula catchment (for a separate EMU as part of the Lachlan Unregulated Plan) and conduct regular LTAAEL compliance assessments in the catchment (see **Chapter 3**). This could further assist in better managing and reporting on water take and interception activities by large mining operations in the Belubula catchment (see **Section 4.4**)
- enhance town water security if large infrastructure projects (i.e., the Belubula Water Security Project) are being progressed that would connect currently unregulated and regulated water sources in the Belubula catchment (see **Section 7.4**).

The Commission understands that merging the Belubula Regulated Plan with the Lachlan Unregulated Plan would constitute a fundamental shift in water management arrangements in the Belubula catchment and would require administrative effort as well as legislative changes. Several issues would need to be considered, including (but not limited to) the implications to licence holders in the Belubula Regulated River system and the future operation of Carcoar Dam. However, the Commission is of the view that substantial changes are likely to be required to the Plans regardless of whether they are merged, and this may be an efficient means of addressing a range of concerns.

Irrespective of whether this recommendation (R 5) is progressed, the Commission has identified the following range of issues that require further work as part of the replacement process of the two Plans.

4.1 Lack of unregulated LTAAEL compliance in the Belubula catchment

Given the reliance of the Belubula Regulated River on unregulated tributary flows, extraction in these unregulated tributaries can have an impact on flows in the Belubula Regulated River and the ability to meet end-of-system flow targets (see **Section 4.5**).

At present, there is uncertainty about the level of extraction in the unregulated rivers in the Belubula catchment. As discussed in **Chapter 3**, limited metering and a lack of LTAAEL compliance assessment across the Lachlan Unregulated Plan area, which includes the unregulated rivers in the Belubula catchment, makes it difficult to assess the risk to unregulated and regulated water sources in the Belubula catchment and increases the risk of LTAAEL exceedance.¹⁰⁴

It is critical that DPE-Water improves its understanding of extractions in the unregulated water sources in the Belubula catchment and undertakes regular LTAAEL compliance assessment.

4.1.1 Growth in use has occurred in the unregulated rivers in the Belubula

The Commission has found evidence that growth in use has occurred in the unregulated water sources in the Belubula catchment:

- updated estimates provided by DPE-Water show that stock and domestic take in the unregulated water sources in the Belubula catchment has grown by 729 ML/year
- growth in harvestable rights take has occurred due to the establishment of the Cadia-Newcrest mine in 1998 (see **Section 4.4**).

¹⁰⁴ The [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) includes one EMU for its 23 unregulated water sources. LTAAEL compliance would currently need to be assessed against take in all 23 unregulated water sources and not just in the Belubula catchment.

Limited metering and a lack of LTAAEL compliance assessments prevents the Commission from definitively concluding that extraction by unregulated water access licences has also grown over the life of the Lachlan Unregulated Plan. However, the Commission notes the large unregulated licensed entitlement share component (6,644 unit shares)¹⁰⁵ in the Belubula catchment and the ongoing practice by DPE-Water to provide a 100 percent allocation (see **Chapter 3**), which allows extraction via unregulated licences to be equal to the combined share component plus carryover provisions.¹⁰⁶

To better understand the severity of the risk to unregulated water access licence holders in the Belubula catchment, it is important that DPE-Water undertakes further assessment about the level of take in the unregulated rivers in the Belubula catchment and determine where there has been growth in use.¹⁰⁷

4.2 Issues with the LTAAEL in the Belubula Regulated Plan

The Commission notes that the basis (including reference period) for the LTAAELs in the Lachlan Unregulated Plan and the Belubula Regulated Plan are not identical.

While the LTAAEL for the Lachlan Unregulated Plan is based on historic use (averaged over the period 1 July 1993 to 30 June 1999), plus annual water requirements pursuant to basic landholder rights at the commencement of the Plan,¹⁰⁸ and the estimated annual take by plantation forestry on 30 June 2009, the LTAAEL for the Belubula Regulated Plan is defined differently. Specifically, the LTAAEL for the Belubula Regulated Plan is defined (clause 33(2)) as the lesser of:

- a) long-term average annual extraction calculated based on:
 - i) the water storages and water use development that existed in 2009/2010
 - ii) the basic landholder rights and access licence share components that existed at the commencement of this Plan
 - iii) the rules defined in this Plan, at the commencement of this Plan
 - iv) the level of development of plantation forestry that existed on 1 July 2009.
- b) long-term average annual extraction calculated under Cap baseline conditions as agreed under the Murray-Darling Basin Agreement that was put in place at the commencement of this Plan.

The Commission notes that previous iterations of the Belubula Regulated Plan¹⁰⁹ included a numeric estimate for the LTAAEL (based on modelled results) but this value has since been removed.¹¹⁰ The Commission reiterates the importance of establishing a numeric LTAAEL for all water sharing plans, including the Belubula Regulated Plan, to ensure extraction limits are clear and measurable and can be reported against.

Further, the Commission stresses that the discrepancies in the methodology used to define the LTAAELs in the Lachlan Unregulated Plan and the Belubula Regulated Plan show the non-numerical LTAAELs definitions are arbitrary. It is important that DPE-Water reviews the LTAAEL methodologies and considers some alignment between the basis of the

¹⁰⁶ Unregulated water access licence holders have a 300 percent account limit.

¹⁰⁷ The Commission also notes that some form of take is exempted from the harvestable rights take limit.

¹⁰⁸ This includes the annual water requirements pursuant to basic landholder rights from the Mandagery Creek Water Source at the commencement of the [Water Sharing Plan for the Mandagery Creek Water Source 2003](#)

¹⁰⁹ Including the 2018 version of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹¹⁰ The Commission also acknowledges that this value would also be out of date.

LTADEL calculations (including the reference period) in the Plans in order to establish appropriate numeric (and sustainable) LTADELs for both the Belubula Regulated Plan and the Lachlan Unregulated Plan.¹¹¹

4.3 Modelling of the regulated LTADEL remains incomplete

It is not currently possible to determine the true LTADEL value for the Belubula Regulated Plan as DPE-Water has not modelled both LTADEL scenarios included in the Plan under clause 33(2). This clause lays out two definitions for the LTADEL and indicates that the LTADEL is the lesser of the two. The Commission believes that the LTADEL value under clause 33(2)(b), which has not been modelled to date,¹¹² would be lower than under clause 33(2)(a) because it would not include significant mining extraction. Without modelling of the LTADEL under both definitions, it is not possible to ascertain definitively which of the two model runs would be “the lesser” of the long-term average annual extractions.¹¹³

4.3.1 High likelihood that the regulated LTADEL under clause 33(2)(b) is lower than under clause 33(2)(a)

Evidence considered by the Commission indicates that the LTADEL under clause 33(2)(b) is likely to be lower than under clause 33(2)(a).

The *Baseline Diversion Limit Scenario Model - Belubula Regulated River System* report¹¹⁴ notes that the water demand for the Cadia-Newcrest mine has been included into the new e-Water Source model. This has resulted in a modelled average annual water use for the Belubula Regulated River Water Source of approximately 6,000 ML/year¹¹⁵ (clause 33(2)(a)). The report also shows that this is over double the previous LTADEL from the IQQM model version used by the MDBA, mostly due to the exclusion of mining use in the MDBA modelled BDL.

The Commission notes there is less information available to model the LTADEL under clause 33(2)(b), except for information contained in the *1993/94 Cap levels of extraction - IQQM Cap implementation summary report*.¹¹⁶ This report provides information on Cap figures for the whole Lachlan catchment (including the Belubula catchment) and was prepared by NSW government in 2001.¹¹⁷ The results for the Belubula Regulated River were not reported separately, although it was noted that water use by mining in the valley was “small” and hence not included in the model.¹¹⁸ The Cadia-Newcrest mine commenced operation in the Belubula catchment in 1998 and its current water use would not have been included in the water use estimates from 1993/94, consistent with the exclusion of water use by mining in the Cap implementation report.

¹¹¹ The development of water resource plans, regional water strategies and the [Water Reform Action Plan](#), has seen significant work being progressed to inform the establishment of a sustainable LTADEL or LTADELs in the Plan areas. In particular, understanding the ecological processes and tolerance limits in the systems will be critical to develop sustainable numeric LTADELs.

¹¹² The Commission understands that the LTADEL for the Regulated Belubula River Water Source has previously been estimated using the Integrated Quantity Quality Model (IQQM) and more recently using the eWater Source model platform. The new eWater Source model is used to determine whether take in the regulated Belubula River is compliant with the regulated LTADEL.

¹¹³ NSW has also developed a report describing the BDL model for the Belubula Regulated River Water Source that is attached to the [Lachlan Surface Water Resource Plan](#). This report outlines that NSW’s BDL for this system has been modelled for clause 33(2)(a) but not for clause 33(2)(b).

¹¹⁴ DPE-Water (2020) [Baseline Diversion Limit Scenario Model – Belubula Regulated River System](#)

¹¹⁵ *Ibid.*

¹¹⁶ NSW Department of Land and Water Conservation (2001) [IQQM CAP implementation summary report \(Issue 3\)](#)

¹¹⁷ *Ibid.*

¹¹⁸ *Ibid.*

The Commission is of the view that the inclusion of water use by mining operations would have unequivocally increased the modelled extraction limit under clause 33(2)(a) compared to clause 33(2)(b).

This conclusion would hold true even though clause 33(2)(a) also considers the effect of the rules of the Belubula Regulated Plan. The main changes to water management rules in 1993/94 compared to the current Belubula Regulated Plan are the inclusion of an end-of-system flow target and the restrictions to supplementary and uncontrolled flow access. In general, these rules would have not significantly reduced water use or counteracted the doubling in catchment water use due to mining water extraction.

The Commission recommends DPE-Water expedite the modelling for clause 33(2)(b) and repeat an LTAAEL compliance assessment for the Belubula Regulated Plan area. Once complete, DPE-Water should determine which of the two LTAAEL definitions generates a lower value and then publish this LTAAEL as a numeric figure.¹¹⁹

4.3.2 The LTAAEL limits water use in the Belubula Regulated Plan area

The Commission notes that regulated LTAAEL for the Belubula Regulated Plan is a constraint for water use in the Belubula Regulated River system.

The modelled LTAAEL under clause 33(2)(a) of the Belubula Regulated Plan equates to approximately 6,000 ML/year.¹²⁰ Noting that the LTAAEL under clause 33(2)(b) will be lower than under 33(2)(a), overall extractions in the Belubula Regulated River system are limited to less than 6,000 ML/year (long-term average). In contrast, the licensed share component in the Belubula Regulated Plan is 4.5 times greater than the estimated LTAAEL under clause 33(2)(a).

This difference between the licensed share component in the Belubula Regulated Plan and the modelled LTAAEL under clause 33(2)(a) highlights that reporting on utilisation of regulated river water access licences as part of DPE-Water's General Purpose Water Accounts is not meaningful. This is because the LTAAEL limits extraction in the Belubula Regulated system to a much lower level than that of the full entitlement share component.¹²¹ Utilisation of regulated water access licences looks at the percentage of total entitlement that is taken, which is misleading as it is not all available to be taken. The Commission is of the view that a more appropriate reporting measure would be to examine the percentage of the extraction allowed under the LTAAEL that is utilised.

The Commission notes that over the life of the Belubula Regulated Plan, average usage (of all categories of regulated water access licences plus uncontrolled flow take in the Belubula Regulated system) has been 5,625 ML/year.¹²² This value is broadly consistent with the modelled LTAAEL (clause 33(2)(a)). As such, utilisation would already appear to be at, or near, the modelled LTAAEL under clause 33(2)(a). Considering that the modelled LTAAEL under clause 33(2)(b) is likely lower than under clause 33(2)(a), there is a risk that the current regulated LTAAEL is already exceeded.

¹¹⁹ The Commission notes that previous iterations of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) included numeric (modelled) estimates for the two LTAAEL definitions, which have been removed.

¹²⁰ DPE-Water (2020) [Baseline Diversion Limit Scenario Model – Belubula Regulated River System](#)

¹²¹ DPE-Water (2020-2021) [NSW General Purpose Water Accounting Reports \(2020-2021\), Lachlan and Belubula Catchments](#)

¹²² *Ibid.*

4.4 Interception by mining operations in the Belubula catchment remains unaccounted for

Public reporting on water extraction by the Belubula catchment's largest user (Cadia-Newcrest mine) is not transparent. Further, exemptions provided for under the *Water Management (General) Regulation 2018*¹²³ enables the Cadia-Newcrest mine to intercept large volumes of water under harvestable rights that are not subject to the 10 percent harvestable rights limit in inland NSW catchments.¹²⁴

Cadia-Newcrest mine¹²⁵ is the single largest water user in the Belubula catchment with access to regulated¹²⁶ and unregulated river sources,¹²⁷ basic landholder rights take and other alternative water sources.¹²⁸ The mine is located along Cadiangullong Creek (between Flyers Creek and Swallow Creek),¹²⁹ which are unregulated tributaries to the Belubula Regulated River and governed by the Lachlan Unregulated Plan.

Cadia-Newcrest reported on its aggregate annual water extraction in its annual environmental management reports during 2016 – 2021.¹³⁰ The reports include lumped annual extraction from regulated and unregulated water sources (**Table 3**) that illustrate that water extraction by the mine has been highly variable over the life of the Belubula Regulated Plan and Lachlan Unregulated Plan.

Between 2016 and 2021, average annual extraction from licensed entitlements by the Cadia-Newcrest mine was approximately 5,000 ML/year, with a maximum take of 14,600 ML in 2020/21. Water extraction via basic landholder rights (e.g., harvestable rights take) over the same period has averaged 10,000 ML/year, with a maximum take of approximately 29,000 ML in 2016/17.¹³¹ The basic landholder rights take volumes is significant in the context of the previous (Basin Plan) estimates for the whole of the Lachlan catchment of 57,000 ML/year (see **Chapter 3**).

¹²³ Schedule 1, [Water Management \(General\) Regulation 2018](#)

¹²⁴ DPE-Water (n.d.) [Harvestable rights](#)

¹²⁵ There are three stages to the Cadia mining operation: Cadia Hill commenced in 1998 (ceased in 2012), the Ridgeway/Deeps commenced in 2003, and the Cadia East development commenced in 2010.

¹²⁶ 4,080 unit shares in regulated river water access licences and 3,125 unit shares in a supplementary licence. The mine also has pumping infrastructure along the regulated Belubula River.

¹²⁷ 4,200 unit shares in unregulated river access licences that Cadia can extract from four separate unregulated rivers adjacent to the mine.

¹²⁸ This includes treated effluent water from local water utilities.

¹²⁹ Cadia Holdings Pty Ltd (2018) [Cadia Valley Operations Annual Environmental Management Report 2016/17](#), p.114.

¹³⁰ Cadia Holdings Pty Ltd (various dates) [Cadia Valley Operations Annual Environmental Management Reports 2016/17, 2017/18, 2018/19, 2019/20 and 2020/21](#)

¹³¹ Cadia Holdings Pty Ltd (2018) [Cadia Valley Operations Annual Environmental Management Report 2016/17](#), p.85.

Table 3: Annual water use by Cadia Valley Mining reporting in relevant Annual Environmental Management reports

Input Sources	2016/17	2017/18	2018/19	2019/20	2020/21
Total River extraction*	692	2,996	2,537	4,381	14,596
Rainfall & Run-off**	28,843	4,650	3,900	4,295	9,666
Total STP effluent***	1,137	2,538	3,711	3,110	2,992
Aquifer drainage to pits	470	440	741	594	441
GW bore extractions	41	28	0	167	46
GW Ore Entrainment	572	546	598	nr	nr
Entitlement carryover	nr	nr	1878	nr	nr
3rd Party trading (trade)	nr	nr	0	1,766	nr
Total inputs	31,755	11,198	13,421	14,314	27,742
Total Water Withdrawn ****	nr	16,409	nr	nr	nr
Total Water Take *****	nr	nr	5,427.5	4,614.9	12,761

* Total River extraction is the sum of the licensed extraction from regulated and unregulated watercourses

** 'Rainfall and runoff' consists of basic landholder rights (harvestable rights take)

*** Total STP is treated effluent water

**** 'Total Water Withdrawn' is "sum of all water drawn from surface water, groundwater, or a third party for any use over the course of the reporting period"

***** 'Total Water Take' is water extracted in accordance with Water Access Licences and conditions of Approval

nr = not reported.

The Commission notes that the Cadia-Newcrest mine only reports on aggregate surface water extraction, which makes it difficult to determine what the individual extraction volumes were in the regulated and unregulated rivers in the Belubula.

In addition, the Commission notes that Cadia-Newcrest's reports suggest that the mine takes significant volumes of water via harvestable rights (e.g., averaging approximately 10,000 ML/year over the period from 2016–2021).¹³² However, it is unclear how much of this harvestable rights take is accounted for under the harvestable right limit or under an exemption provided for in the *Water Management (General) Regulated 2018* (regulation).¹³³

Take under harvestable rights in inland NSW catchments is generally capped to 10 percent.¹³⁴ However, Schedule 1 of the regulation provides for exemptions to exceed this 10 percent limit if runoff water is (or may be) contaminated. For mining operations, where water frequently comes in contact with mining processes, this often means the harvestable rights limit can be exceeded.

The intent of this exemption is to allow mines to retain contaminated water and avoid pollution. This is consistent with the objects and principles of the Act and an obligation under EPA legislation (the *NSW Protection of the Environment Operations Act 1997*). However, the take must still be adequately accounted for to support LTAAEL compliance

¹³² Cadia Holdings Pty Ltd (various dates) [Cadia Valley Operations Annual Environmental Management Reports 2016/17, 2017/18, 2018/19, 2019/20 and 2020/21](#)

¹³³ Schedule 1 of the [Water Management \(General\) Regulation 2018](#)

¹³⁴ DPE-Water (n.d.) [Harvestable rights](#)

and understanding of the water balance, security and reliability for the environment, basic landholder rights and water licence holders downstream.

Given the volume of take by Cadia-Newcrest (both licensed extraction and take via harvestable rights), clearer reporting itemising all forms of water take by mining operations in the Belubula catchment (including separate reporting on take from regulated and unregulated water sources as well as harvestable rights take) would help to analyse the mine's effect on water sources in the Belubula catchment and improve LTAAEL compliance assessments.

The Commission also notes the regulatory complexities associated with mining operations,¹³⁵ which can lead to discrepancies in licensing and development consent conditions. These discrepancies (e.g., conditions that are not mirrored on a water access licence and the consent conditions) raise the question as to which agency is responsible for monitoring and ensuring compliance with all of the mine's water-related take and flow conditions. The Commission considers it important that there is adequate regulatory oversight of all the mine's water-related take and flow conditions to ensure the effectiveness of the water sharing plan provisions in the catchment.¹³⁶

4.5 End of system flows have not been met in the Belubula Regulated River Water Source

The Belubula Regulated Plan includes an end-of-system flow target.¹³⁷ This target was intended to ensure that the Plan contributed flows to meet the environmental needs of the Belubula River downstream of Carcoar Dam and inflows to the Lachlan River. When the Belubula Regulated Plan commenced, this flow target was 10 ML/day at Helensholme gauge (412033). Submissions to the draft *Lachlan Water Resource Plans* raised concerns that the model for the Belubula Regulated River over-represented end-of-system flows.¹³⁸ Subsequently a new *eWater Source* model was developed.

In 2019, clause 26 of the Belubula Regulated Plan was suspended as severe drought conditions made it difficult to achieve the end-of-system flow target without significantly drawing down Carcoar Dam and impacting reliability. Clause 26 was suspended from 1 October 2019 – 30 June 2020.¹³⁹ In its submission to the draft *Lachlan Surface Water Resource Plan* the Inland Rivers Network acknowledged '*a more flexible approach to the flow rule may be appropriate to mimic natural variability, however, this should also include a higher flow target outside dry times*'.¹⁴⁰

Subsequently, the Belubula Regulated Plan was amended to relax the end-of-system flow rule by using a gauge on Flyers Creek,¹⁴¹ a tributary of the Belubula Regulated River. Under

¹³⁵ Mining operations are regulated by multiple agencies. DPE-Planning and the Environmental Protection Agency are responsible for ensuring mining operations comply with development consent provisions. The Natural Resources Access Regulator is responsible for ensuring that the mine is compliant with the conditions and take limits of the water access licence and other provisions in the [Water Management Act 2000](#) and relevant subordinate regulation.

¹³⁶ Although individual licence compliance issues fall outside the remit of the Commission's water sharing plan review role, the Commission stresses that the inconsistencies between the development consent conditions and WAL conditions pose the risk that there are gaps in regulatory oversight which could have an impact on the water sharing plan provisions and LTAAEL compliance assessment.

¹³⁷ Clause 26 of the original Water Sharing Plan for the Belubula Regulated River Water Source 2013.

¹³⁸ [NSW Irrigators Council submission to the Lachlan Surface Water Resource Plan](#), February 2019.

¹³⁹ DPE-Water (2020) [Temporary water restrictions: Belubula Regulated River Water Source](#)

¹⁴⁰ Inland River Network (2019), [Submissions](#)

¹⁴¹ Flyers Creek was used as an indicator because the site has a long flow record, and it was assumed that limited take occurs upstream of the gauge. In addition, hydrologic modelling indicated that there was a high correlation between in-stream losses in the regulated Belubula River between Lyndon and Helensholme and the flows at the Flyers Creek gauge.

the amended rules, end-of-system flow at the Helensholme flow gauge does not apply between:

- the date on which the average flow in Flyers Creek at Beneree (412080) over 120 consecutive days falls to 10 ML/day or less
- the date on which the average flow in Flyers Creek at Beneree (412080) over 90 consecutive days subsequently exceeds 40 ML/day.

Changes were not made to the access rules in the Belubula Tributaries Below Carcoar Dam Water Source in the Lachlan Unregulated Plan in response to this issue, despite the risks to water available for the environment associated with altered cease to flow, base flow and freshes deemed 'high' and 'not tolerable' in DPE-Water's *Lachlan Surface Water Resource Plan Risk Assessment*.¹⁴²

The *Lachlan Long-Term Water Plan* sets out the environmental water requirements for the Belubula Regulated River and the Belubula Tributaries Below Carcoar Dam Water Source.¹⁴³ It acknowledges the importance of protecting flows from the Belubula Tributaries Below Carcoar Dam Water Source given they contribute to meeting the environmental water requirements of the Belubula Regulated River.¹⁴⁴ It does not refer to the Flyers Creek at Beneree gauge that the amended end-of-system flow rule references, but recommends setting cease to pump rules based on 30 ML/day at Belubula River at Helenshome gauge (412033), or 40 ML/day at Belubula River at Lyndon gauge (412195) to protect baseflows and contributions to the Belubula Regulated River. The *Lachlan Long-Term Water Plan* also recommends establishing a commence to pump rule to help protect freshes. These recommendations do not appear to have been considered to date by DPE-Water.

In addition, the Commission highlighted that significant volumes of water are being extracted in the unregulated rivers in the Belubula catchment (see **Chapter 3**). Clearer reporting itemising all forms of water take¹⁴⁵ by water users, including mining operations in the Belubula catchment, would assist DPE-Water to revise the access rules in the unregulated tributaries in the Belubula catchment to ensure the rules can adequately protect the unregulated water source and contribute to end-of-system flows.

The Commission also notes that a weir was constructed in 2004 just above Flyers Creek at Beneree to facilitate the extraction of water for the Cadia-Newcrest mine.¹⁴⁶ The weir construction was based on an approval granted via the original Environmental Impact Statement for the mine in 1995.¹⁴⁷ The Commission understands that the location and extraction points of the Cadia-Newcrest mine were not explicitly considered prior to the amendment of clause 26 of the Belubula Regulated Plan. The Commission therefore recommends DPE-Water conduct further assessment of any extractions upstream of Flyers Creek at Beneree to understand whether these extractions could risk triggering a relaxation of the amended clause 26 more frequently.

Considering this information will assist DPE-Water to conduct a mid-term review of the amended end-of-system rule to determine if any further changes to the Belubula Regulated River end-of-system flow rule and its ability to contribute to environmental water requirement is required. The mid-term review should also consider habitat mapping undertaken along the Belubula River below Carcoar Dam to the confluence with the Lachlan River. This mapping could help to determine anticipated environmental outcomes

¹⁴² DPIE (2019) [Risk assessment for the Lachlan Surface Water Resource Plan Area \(SW14\)](#)

¹⁴³ DPE-EHG (2020) [Lachlan Long-Term Water Plan: Part B](#)

¹⁴⁴ *Ibid.*

¹⁴⁵ This would include separate reporting on take from regulated and unregulated water sources in the Belubula catchment.

¹⁴⁶ Newcrest Mining Ltd (2020) [Cadia Operations New South Wales NI 43-101 Technical Report](#)

¹⁴⁷ SEED (n.d.) [Environmental Impact Statement 1343 Vol 1](#)

from different flow events and inform future water management, including possible changes to Plan provisions.¹⁴⁸

4.6 Review of uncontrolled flow and supplementary access

Due to the limitation of Carcoar Dam to regulate flows in the Belubula River and the strong reliance of the Belubula Regulated River on unregulated tributary flows, the Belubula Regulated Plan includes access provisions for supplementary and uncontrolled flow events.¹⁴⁹ Uncontrolled flows are flows that enter the Belubula regulated system from the unregulated tributaries below the dam. Following a detailed review of the Belubula Regulated Plan, the Commission has concluded that the current uncontrolled flow rules are complex and lack transparency.

4.6.1 Complexity of existing uncontrolled flow rules

Access to uncontrolled flow rules is specified in clauses 47 and 48 of the Belubula Regulated Plan. Clause 47(2) specifies that **high security water access licence holders** are permitted to take uncontrolled flows when:

- the sum of AWDs in any water year is less than or equal to 0.2 ML/unit share for regulated river (high security) access licences, and the uncontrolled flows in the Belubula Regulated River are greater than or equal to 13 ML/day at the Helensholme gauge
- the sum of AWDs in any water year is less than or equal to 0.5 ML/unit share and greater than 0.2 ML/unit share for regulated river (high security) access licences, and the uncontrolled flows in the Belubula Regulated River are greater than or equal to 20 ML/day at the Helensholme gauge.

The taking of uncontrolled flow by high security water access licence holders is not permitted when AWDs are greater than 0.5 ML/unit share (clause 47(2)(c)).

In contrast, clause 48(2) specifies that **general security water access licence holders** are not permitted to take uncontrolled flows:

- when flows at the Helensholme gauge are less than 10 ML/day
- when the average flow at the Helensholme gauge over 120 consecutive days falls to 10 ML/day or less, and the average flow at the Helensholme gauge over 10 consecutive days subsequently reaches 70 ML/day or more
- if the effective available water is less than or equal to 0.2 ML/unit shares, unless flows at the Helensholme gauge are greater than or equal to 13 ML/day
- if the effective available water is less than or equal to 0.5 ML/unit share and greater than 0.2 ML/unit share, unless flows at the Helensholme gauge are greater than or equal to 20 ML/day

¹⁴⁸ NSW DPI (2019) *Inundation heights for key habitat features and management recommendations for the Belubula River between Carcoar Dam and the confluence with the Lachlan River*. Report prepared for Central Tablelands LLS, unpublished.

¹⁴⁹ Uncontrolled flow rules (previously called off-allocation flows) were introduced during the drought in 2006 when storage levels in Carcoar Dam were low. These uncontrolled flow rules provided access to licence holders in the regulated Belubula system when there were flows in the tributaries below Carcoar Dam were available.

- if the effective available water is greater than 0.5 ML/unit share and the volume of water in Carcoar Dam storage is less than 21,000 ML, unless flows at the Helensholme gauge are equal to or greater than 20 ML/day
- if the total amount of uncontrolled flow taken in the water year exceeds the lesser of either the A sub-account limitation, or 0.5 ML multiplied by the share component for the regulated river (general security) access licence at the beginning of the water year
- if it would cause the volume of water in the A sub-account to be less than zero.

The Commission finds the current wording of clauses 47 and 48 of the Belubula Regulated Plan unnecessarily complex. For example, it is confusing that one set of rules relates to when users can take flow and the other set refers to when a different user cannot take flow.

DPE-Water should look for opportunities to simplify these provisions to ensure they achieve their intended purpose, including protecting a portion of the tributary flows so they can contribute to end-of-system flows.

In addition, the Commission notes that high security licence holders are not permitted to take uncontrolled flows of more than 0.5 ML/unit share of their licensed entitlements (clause 47(3)). Yet, if the total amount taken by high security entitlement holders under uncontrolled flows exceeds the limits specified in clause 47(3), then a volume equivalent to the exceedance will be debited from the AWDs credited to the high security access licence water allocation account in that water year (clause 47(6)). The Commission notes that clause 47(6) appears to negate clause 47(3) as there is no effective penalty for high security licence holders taking volumes greater than 0.5 ML/unit share of uncontrolled flows.

4.6.2 There may be gaps in the accounting of uncontrolled flows

The Commission is concerned that the actual debiting of the take via uncontrolled flows only occurs if an AWD is made in the specific water year. The Commission understands that this is due to the structure of water accounts in that water can only be deducted from an account when there is water in an account (i.e., to ensure no negative account balance).¹⁵⁰ As uncontrolled flow access explicitly allows for the take of water when there is no or insufficient water in water accounts, the formal 'debiting' process only occurs if and when there is sufficient AWDs announced at a later time.

There does not appear to be any concept of uncontrolled flow access in the *Water Management Act 2000*, although the concept exists in water sharing plans, including the Belubula Regulated Plan.¹⁵¹ The Commission heard that WaterNSW keeps a record of the take from uncontrolled flow events¹⁵² but WaterNSW can often not debit the take from a licence holder's account without causing the account to go negative (e.g., especially if there has been no subsequent AWD). Therefore, some uncontrolled flow take may never be accounted for in the user's account, which would be inconsistent with the objects and principles of the Act.

¹⁵⁰ Interview: WaterNSW, 13 March 2023.

¹⁵¹ Clause 47 and 48 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹⁵² Clause 47(5) of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#). Licence holders are required to provide the river operator with meter readings taken immediately prior to and after the taking of uncontrolled flow within 7 days of ceasing to take uncontrolled flows – clause 47(5).

The Commission has concerns about the accurate accounting for uncontrolled flows in the Belubula Regulated system, particularly during times when no further AWDs are made in the water year. DPE-Water should review the process to account for take via uncontrolled flows, and ensure that all take is accurately and transparently accounted for and consistent with Plan rules.

4.6.3 Overlap between commence to take thresholds

There appears to be an overlap between when access to supplementary flows and uncontrolled flows is permissible, which may create confusion for stakeholders.

The Commission understands that the pre-conditions for triggering uncontrolled and supplementary access are different. However, the Commission considers it important to provide clarity and transparency to licence holders when these different flows can be accessed¹⁵³ – particularly following periods of extended and severe drought conditions.

Clause 49 of the Belubula Regulated Plan outlines that the taking of water under supplementary water access licences is only allowed if an order under section 70 of the *Water Management Act 2000* is made. Clause 70(2) of the Belubula Regulated Plan outlines that the taking of water under a supplementary water access licence:

- a) should, as far as possible, be managed to evenly share access opportunity between all supplementary water access licence holders
- b) be the maximum volume of water that may be taken under the supplementary access licence during each period of time to which an announcement applies may be expressed as a percentage of the supplementary water account limit specified on the water allocation account statement
- c) allow the taking of water under the supplementary water access licence only when flows in the Belubula River at the Helensholme gauge are equal to or greater than 20 ML/day.

The Commission notes that the threshold for taking supplementary flows and for taking uncontrolled flow overlaps when flows at Helensholme gauge equals 20 ML/day.¹⁵⁴

Given the large supplementary licence within the Plan area, the Commission recommends DPE-Water reviews clause 49 to ensure that there is transparent and equitable access to flows for both supplementary licences and other licence holders with access to uncontrolled flows.

In addition, as there is a high degree of surface-groundwater connectivity in the Belubula Regulated River¹⁵⁵ and the unregulated tributaries that flow into the Belubula Regulated River, any review of the access rules in the Lachlan Unregulated Plan or the Belubula Regulated Plan should also consider interactions with groundwater and impacts of groundwater extraction.

¹⁵³ The Commission notes that the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) does not specify an order of priority for these two forms of take. This is likely due to the fact that uncontrolled flow events and supplementary flow events are independent of releases from Carcoar Dam.

¹⁵⁴ Clause 49(2)(c) of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹⁵⁵ The Commission notes that the [Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020](#) has linked AWDs between the Belubula Valley Alluvial Groundwater Source and high security AWDs in the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) (clause 34 of the [Water Sharing Plan for the Lachlan Alluvial Groundwater Sources Order 2020](#)).

4.7 Recommendations

<p>R 5</p>	<p>The Commission recommends DPE-Water considers merging the Belubula Regulated Plan into the Lachlan Unregulated Plan and setting up a separate EMU for all surface water resources in the Belubula catchment as part of the Lachlan Unregulated Plan.</p> <p>This would require a fundamental review of all provisions in the Belubula Regulated Plan and the Lachlan Unregulated Plan that relate to the management and accounting of surface water sources in the Belubula catchment, but would allow for more simplified, targeted and equitable access provisions.</p>
<p>R 6</p>	<p>DPE-Water should complete the hydrological modelling for clause 33(2)(b) of the Belubula Regulated Plan and determine which of the plan’s two LTAAEL definitions generate a lower value.</p> <p>Once the hydrologic modelling is complete, DPE-Water should:</p> <ol style="list-style-type: none"> a) determine and publish numeric estimates of the LTAAEL for the Belubula Regulated River Water Source b) consider the feasibility of establishing one LTAAEL definition to improve efficiency and transparency and ensure that definition does not reduce environmental protections c) undertake LTAAEL compliance assessments against the LTAAEL d) include a provision requiring DPE-Water to determine the sustainable level of extraction by Year 5 of the replacement Plan, based on best available ecological requirements, hydrological and climate information.
<p>R 7</p>	<p>In the Lachlan Unregulated plan, to improve outcomes in the Belubula catchment, DPE-Water should introduce more appropriate access rules for the Belubula Tributaries Below Carcoar Dam Water Source to protect the unregulated water source, support connectivity and improve its contribution to end-of-system flow targets in the Belubula Regulated River.</p>
<p>R 8</p>	<p>To inform the mid-term review of clause 26 of the Belubula Regulated Plan, DPE-Water should assess extractions upstream of Beneree gauge (Flyers Creek) and determine whether extractions in Flyers Creek risk triggering the relaxation of clause 26 of the Belubula Regulated Plan more frequently.</p>
<p>R 9</p>	<p>In the next two years, DPE-Water should undertake a detailed review of the following clauses in the Belubula Regulated Plan:</p> <ul style="list-style-type: none"> ▪ clauses 47 and 48 to simplify these provisions, and ensure take from uncontrolled flows can be appropriately accounted for consistent with the objects and principles of the Act and to ensure transparent and equitable water sharing ▪ clause 49 to ensure access to supplementary flows and uncontrolled flows are equitable and transparent to all water users.

5 Strengthening environmental protections

This chapter largely focuses on the environmental values of the Lachlan Unregulated Plan area, where these values can be better protected, and the interactions between the Lachlan Unregulated Plan and the Regulated Lachlan Plan. There is limited information regarding environmental values in the Belubula Regulated River. Protection of tributary flows to the Belubula Regulated River and end-of-system flows are explored in **Chapter 4**.

The unregulated river water sources of the Lachlan catchment have significant environmental values, including:

- an endangered ecological community listed under the *Fisheries Management Act (1994)* – Lowland Catchment of the Lachlan River Endangered Ecological Community
- threatened bird, fish, frog and river snail species
- nationally significant wetlands including Booligal Wetlands, Murrumbidgee Swamp/Lake Merrimajeel, Cuba Dam, Merrowie Creek to Chillichin Swamp, Great Cumbung Swamp,¹⁵⁶ Lachlan Swamp, Lower Mirrool Creek Floodplain, and Lake Cowal/Wilbertroy wetlands¹⁵⁷
- regionally significant wetlands, for example, Lake Waljeers.

Alteration of the flow regime associated with water resource development in the Lachlan valley has significantly impacted on these environmental assets, most notably floodplain habitats.¹⁵⁸ The implications of this hydrological change are significant, particularly for the environmental values that these floodplain habitats support.

Several wetlands are the focus of targeted environmental watering, with ‘held’ and ‘planned’ environmental water from the regulated system delivered to support environmental values. The Lachlan Unregulated Plan does not currently adequately protect these flows.¹⁵⁹

The Commission notes there have been several changes to both the Belubula Regulated and Lachlan Unregulated Plans during their term, including relaxation of end-of-system flow rules for the Belubula (see **Chapter 4**). These changes include refinement of Plan objectives including more targeted environmental objectives.

The *Lachlan Long-Term Water Plan* highlighted that ‘restoring lateral and longitudinal connectivity... is fundamental to supporting many of the priority ecosystem functions in the Lachlan’.¹⁶⁰ When water sharing plan objectives were amended in 2020, an objective to provide for ‘the longitudinal and lateral connectivity within and between water sources to support targeted ecological processes’ was included.¹⁶¹ However, the adequacy and appropriateness of Plan rules for achieving this objective requires further assessment and should be a focus of Plan replacement to ensure Plan provisions support connectivity.

¹⁵⁶ The Great Cumbung Swamp is located at the end of the regulated Lachlan River and largely reliant on flows from this water source.

¹⁵⁷ Lake Brewster is also a nationally significant wetland of the Lachlan catchment but is located along the regulated Lachlan River.

¹⁵⁸ Higginson, W., Higginson, B., Powell, M., Driver, P.D. and Dyer, F. (2019) Impacts of water resource development on hydrological connectivity of different habitats in a highly variable system: impacts of water resource development on floodplain-river connectivity. [River Research and Applications, 36\(4\)](#)

¹⁵⁹ The Commission will examine the ‘planned’ environmental water provisions in the [Water Sharing Plan for the Lachlan Regulated Plan Water Source 2016](#) when that review occurs.

¹⁶⁰ NSW DPIE (2020) [Long Term Water Plan – Part A: Lachlan catchment](#), p.36.

¹⁶¹ Clause 10(2)(b) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

In this chapter the Commission considers the Plan's environmental objectives and what is required to align strategies in the Lachlan Unregulated Plan and Belubula Regulated Plan with these objectives. Several issues identified during the development of the Lachlan Surface Water Resource Plan are still to be addressed to improve environmental outcomes.¹⁶²

In parallel with this water sharing plan review, the Commonwealth government announced in February 2023 that it would focus on strategic water purchasing as part of the Bridging the Gap 2023 initiative.¹⁶³ This includes 0.9 GL of surface water in the Lachlan catchment. However, this is dependent on finalisation and accreditation of the *Lachlan Surface Water Resource Plan*.

The NSW and Commonwealth governments are also developing a *Greater Cumbung Region Water Management Plan* to develop environmental water requirements and strategies and actions for protecting the wetlands.¹⁶⁴ These initiatives may warrant changes to water sharing provisions but have not been explored in detail as part of this review as they are still underway.

Key issues examined in this chapter include:

- significant wetlands in the Lachlan Unregulated Plan area are not adequately protected and have experienced significant hydrological change (**Section 5.1**)
- access rules in several water sources in the Lachlan Unregulated Plan area do not adequately protect low flows or freshes and are not based on the latest information (**Section 5.2**)
- environmental and equity issues in the provision of flows in effluent creeks in the Lachlan Unregulated Plan area, including Trust districts (**Section 5.3**).

5.1 Significant wetlands require greater protection

The mid and lower Lachlan floodplain comprises an extensive network of wetlands, several of national and regional significance. For example, Lake Cowal, the 15,000 ha Booligal Wetlands on the Muggabah-Merrimajeel Creek floodplain, and the 16,000 ha Great Cumbung Swamp – a terminal drainage swamp of the Lachlan River. The hydrology of these wetlands is affected both by upstream water resource development and local flow control structures. During major floods, the Lachlan and Murrumbidgee episodically connect, contributing to wetland inundation.

The condition of some floodplain wetlands is well documented, but for others very limited information is available. Around the time the Plan commenced, the *Sustainable Rivers Audit II* rated the hydrological condition of the floodplain as poor.¹⁶⁵ This was mostly due to significant increases in the duration of low flows and altered flow seasonality. The overbank flow regime was also altered with reductions in overbank flood durations. The *Sustainable Rivers Audit II* also rated the ecosystem health of the lower Lachlan River floodplain as 'very poor'. This reflected component ratings for fish, macroinvertebrates and vegetation conditions as 'extremely poor', 'moderate' and 'good' respectively.

¹⁶² NSW planning principles of minimal change for water sharing plans within their initial ten-year period were adopted for the development of Water Resource Plans.

¹⁶³ Department of Climate Change, Energy, the Environment and Water (2023) [Strategic water purchasing – Bridging the Gap 2023](#)

¹⁶⁴ NSW DPE (2023) [Plan to protect the Great Cumbung Swamp](#)

¹⁶⁵ Davies, P., Stewardson, M., Hillman, T., Roberts, J. and Thoms, M. (2012) [Sustainable Rivers Audit 2: The ecological health of rivers in the Murray– Darling Basin at the end of the Millennium Drought \(2008–2010\)](#). Volume 1. Canberra, Australia: Murray Darling Basin Commission.

A recent study found that the river-floodplain connectivity is highly altered in the lower Lachlan, with water resource development significantly impacting floodplain habitats. Floodplain-river connection events are estimated to have reduced by 60 percent for temporary floodplain lakes of the lower Lachlan,¹⁶⁶ while terminal wetlands, such as the Great Cumbung Swamp, have experienced a lesser reduction in connecting events of 35 percent. The implications of this hydrological change are significant, particularly for the environmental values that these floodplain habitats support.

The Lachlan Unregulated Plan explicitly states under Part 2, clause 10: environmental objectives that *'significant wetlands in these water sources, and the associated ecological communities such as waterbirds and lignum shrublands, are primarily managed by the NSW Environmental Water Manager according to the rules of the Water Sharing Plan for the Lachlan Regulated River Water Source 2016.'* Environmental flows have been delivered along the lower Lachlan River in recent years inundating portions of the floodplain and delivering some improvement in baseflows and freshes.¹⁶⁷ This comprises both 'planned' and 'held' environmental water from the regulated Lachlan River.

While these environmental watering actions have benefited wetlands in the Lachlan Unregulated Plan area, the Plan can also contribute to protecting these significant water dependent environmental assets. In doing so, realising the Lachlan Unregulated Plan's broad environmental objective *'to protect, and contribute to the enhancement of, the ecological condition of these water sources and their water-dependent ecosystem'*.¹⁶⁸

Given several wetlands in the Lachlan Unregulated Plan area are the focus of environmental watering actions, the Plan should, as a minimum, ensure that the environmental water originating from the regulated Lachlan River (both 'planned' and 'held') is protected in the unregulated river water sources to achieve intended environmental outcomes. Water sources where this is important, include, but are not limited to, the Unregulated Effluent Creeks Water Source and Mid Lachlan Unregulated Water Source (including Booberoi Creek). Current Plan rules do afford some protection of 'planned' environmental water in Booberoi Creek.¹⁶⁹ The unregulated river share component in these water sources is 2,762 ML and 12,765 ML respectively, with the entitlement increasing in the Unregulated Effluent Creeks Water Source by over 300 ML for town water supply purposes since the Lachlan Unregulated Plan commenced.

The Lachlan Unregulated Plan includes some provisions that can help to protect significant wetlands, for example, by restricting pool drawdown in the majority of off-river pools and restricting new water supply work approvals in specific water sources.¹⁷⁰ However, the Lachlan Unregulated Plan does not explicitly state which significant wetlands it seeks to protect. Unlike other unregulated water sharing plans reviewed by the Commission, the Lachlan Unregulated Plan lacks a schedule that lists the significant wetlands in the Plan area and their corresponding water sources. This should be addressed as part of Lachlan Unregulated Plan replacement process to provide clarity regarding which wetlands the Plan seeks to protect.

¹⁶⁶ Higginson, W., Higginson, B., Powell, M., Driver, P.D. and Dyer, F. (2019) Impacts of water resource development on hydrological connectivity of different habitats in a highly variable system: impacts of water resource development on floodplain-river connectivity. [River Research and Applications, 36\(4\)](#)

¹⁶⁷ Guarino, F. and Sengupta, G. (2021). [Basin-scale evaluation of 2019-20 Commonwealth environmental water: Hydrology. Flow-MER Program](#). Commonwealth Environmental Water Office (CEWO): Monitoring, Evaluation and Research Program, Department of Agriculture, Water and the Environment, Australia.

¹⁶⁸ Clause 10(1) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁶⁹ Noting that Clause 48(h) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) does provide for protection of releases made from the environmental water allowance held in Wyangala Dam water storage and the water quality allowance established under the [Water Sharing Plan for the Lachlan Regulated Plan Water Source 2016](#)

¹⁷⁰ Clause 53(2)(a) – (c) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

The Plan should also:

- protect tributary inflows to significant wetlands e.g., Lake Cowal
- ensure that pool drawdown provisions are adequately protective of environmental and cultural values, particularly if climate change will further impact inflow sequences already altered by water resource development and exacerbate evaporative losses
- ensure that environmental water deliveries originating from the Lachlan Regulated River Water Source are protected from extraction and not obstructed by infrastructure along effluent creeks (**Section 5.3**).

5.1.1 Tributary inflows to Lake Cowal

The nationally significant Lake Cowal, situated in the Bogandillon and Manna Creek Water Source, is reliant on inflows from Bland Creek and the regulated Lachlan River via the Lachlan – Lake Cowal floodway for environmental water requirements. More than 20 unregulated river access licences exist in the Western Bland Creek Water Source. The majority have entitlements less than 250 ML. However, there are two licences in the lower catchment that have entitlement between 1,000 – 2,500 ML, which the *Lachlan Long-Term Water Plan* indicates could impact on ‘floodplain assets and values in the Bogandillon and Manna Creek Water Source’.¹⁷¹

Further pressure on inflows to Lake Cowal may also be created by the Lachlan Unregulated Plan allowing trade into the Western Bland Water Source (see **Chapter 8**).¹⁷² The risks posed by trade into the water source should be investigated as part of Plan replacement.

A PhD study of the Lake Cowal also indicates that levee banks in Bland Creek catchment may also be impacting the hydrology of Lake Cowal.¹⁷³ Further work is required to determine the impacts of the altered flow regime of Bland Creek on inflows to Lake Cowal, and whether changes to access rules are warranted to mitigate a decline in the ecological character of the lake, noting other factors are also impacting the lake’s condition including salinity, surrounding land use (including mining) and vegetation clearing.

Cowal Gold/Evolution Mine is a significant industry in the Lake Cowal catchment, drawing on both surface and groundwater. The mine has a regulated river (high security) licence and an unregulated river access licence of 41 ML per year to extract from the Burrangong Creek Water Source, a tributary of Bland Creek.

There is a lack of transparency in the water accounting for the mine. There appears to be significant volumes of annual water use by the mine (up to 356,500 ML/year).¹⁷⁴ However, there is limited information in public reporting on the different sources that comprise the annual water use. Only reporting on the percentage of annual water use that is extracted from the Lachlan River is available, which ranges from 0 to 3.5 percent (based on the period 2012/13 to 2019/20) and appears to be a small percentage of annual water use. Other sources e.g., surface runoff, unregulated river take should be made clearer.

¹⁷¹ DPE-EHG (2020) [Lachlan Long-Term Water Plan: Part B](#), p.118.

¹⁷² Clauses 63(2)(b) and 64(1)(a) and (b) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) allow for trades into the Western Bland Water source located upstream of Lake Cowal.

¹⁷³ Liu, X. (2016) [Applying an interdisciplinary approach to improve the understanding of current and future states of inland ephemeral wetlands: an Australian case study](#). PhD thesis. School of Environmental Sciences, Faculty of Science, Charles Sturt University, Australia.

¹⁷⁴ Hydro Engineering and Consulting (2020) [Environmental Impact Assessment for Cowal Gold Operations Underground Mine, Appendix G](#), p.41.

Furthermore, it appears that the mine's groundwater extraction may not be sustainable. Testing indicates that sustainable yields from bores in the mine lease area would be in the order of 0.7 ML/day for approximately five years. In 2021, this borefield continues to supply the mine with 1 ML/day of saline groundwater. The cumulative impacts of groundwater and surface water take by the mine on Lake Cowal, potential compliance issues and accounting anomalies require further investigation.

5.1.2 Risks associated with pool drawdown require further investigation

The current Lachlan Unregulated Plan affords a level of protection for the majority of in-river and off-river pools by not allowing pool drawdown below full capacity.¹⁷⁵ However, the Plan allows for drawdown to 80 percent capacity of Lake Waljeers in the Effluent Creeks Water Source¹⁷⁶ and 50 percent capacity of Lake Forbes in the Lake Forbes and Back Yamma Creek Water Source. These rules would also be difficult to enforce.

The Commission understands that Lake Waljeers has significant environmental and Aboriginal cultural value, and the lake only receives intermittent inflows, which have been impacted by upstream water resource development. There is currently a 1,200 ML licence on Lake Waljeers. While the Commission understands this licence is not currently active, the risk of it activating in the future is unclear and should be assessed in consultation with the licence holder to ascertain the risks to the values associated with Lake Waljeers. There is limited information available on the environmental value of Lake Forbes, implications of drawdown, and active users.

In the context of climate change and the highly altered flow regime of floodplain lakes of the lower Lachlan valley, there is a need, as part of Lachlan Unregulated Plan replacement, to determine if the drawdown provisions are adequately protective of environmental and cultural values. Ideally pool drawdown would be phased out in the replacement Plan to protect these lakes. As part of Plan replacement, DPE-Water is encouraged to assess the risks of current drawdown rules to environmental and cultural values.

5.2 Daily access rules do not adequately protect environmental values

The key mechanisms to protect the environment on a daily basis in unregulated river water sources are access rules (e.g. cease-to-pump and commence-to-pump) that are intended to afford a level of protection of low flows and freshes. However, as there are limited gauges in the Lachlan Unregulated Plan area there are subsequently few water sources with flow-based access rules that reference a gauge.

The protection of flows afforded by current access rules is not sufficient for key ecological functions in a number of water sources. This was highlighted in DPE-Water's *Lachlan Water Resource Plan* risk assessment where many of the Lachlan Unregulated Plan's water sources were found to have highly altered cease-to-flow periods, low flows and in some cases freshes.¹⁷⁷

Associated risks to the environment and capacity to meet environmental water requirements were categorised as 'not tolerable' for nine water sources including:

- Belubula Tributaries below Carcoar

¹⁷⁵ Clauses 47(7) and 47(8) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁷⁶ Clause 47(9) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁷⁷ DPIE (2019) [Risk assessment for the Lachlan Surface Water Resource Plan Area \(SW14\)](#)

- Boorowa River and Howells Creek
- Burragong Creek
- Crookwell River
- Lachlan River Above Reids Flat
- Mandagery Creek
- Mid Lachlan Unregulated
- Unregulated Effluent Creeks
- Western Bland Creek.

Several of these water sources have ‘high’ to ‘very high’ High Ecological Value Aquatic Ecosystem (HEVAE) consequence scores based on an assessment of ecological values and functions, and extraction pressure,¹⁷⁸ most notably the Crookwell River, Lachlan River above Reids Flat, Mandagery Creek and Mid Lachlan Unregulated water sources.¹⁷⁹ The Abercrombie River above Wyangala Water Source, which is not listed above, also had a ‘high’ HEVAE consequence score. The risks to the environment in this water source across the flow regime were assessed as ‘low’. However, there has been a significant increase in the estimated domestic and stock use in this water source, which should be taken into consideration in terms of pressure on environmental values given this take is not subject to current cease-to-pump rules.¹⁸⁰

The risk ratings for Mandagery Creek and ‘high’ HEVAE consequence score are particularly notable given this water source has had a water sharing plan in place for two decades (see **Section 5.2.1**).

Further, access rules do not currently account for recent climatic conditions. Given that the last few years (2017-2020) have contained some of the driest on record in the Lachlan catchment (followed by the wettest), any analysis must consider these more recent conditions where flows and habitat persistence and viability were very low. Modelling with information from this dry period, combined with improved understanding of environmental water requirements should be considered in refining daily access rules for the replacement Plan as this will help to set more relevant environmental protections.

The role of unregulated river water sources in providing refugia during extreme events should also be a focus of the Plan replacement process, including the identification of the location of these important features within the Plan area, ensuring rules protect them and identifying other management interventions that may be needed to support drought refugia.

Furthermore, noting that the water resource plan risk assessment referred to in this chapter is now a few years old and extreme events have occurred since this assessment was undertaken, there is value in revising the risk ratings for the Lachlan catchment’s water sources based on latest information. Updated risk ratings should inform the replacement Plan process or at least future Plan amendments.

¹⁷⁸ *Ibid.*

¹⁷⁹ Crookwell River Water Source and Lachlan River Above Reids Flat Water Source are important for town water supply of Crookwell and Gunning, and the Upper Lachlan Shire respectively.

¹⁸⁰ Flow classes and flow-based cease-to-pump rules that apply to the Abercrombie River Above Wyangala Water Source are set out in Table B, Clause 46(6) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#). More stringent rules applied from Year 6 of the Plan.

5.2.1 Mandagery Creek Water Source

The Mandagery Creek Water Source was included in the first batch of water sharing plans to be created in NSW under the *Water Management Act 2000*, due to high hydrological stress in the catchment.¹⁸¹ The majority of larger water licences (>500 ML) are located downstream of the village of Eugowra. The water source has significant environmental values with several threatened species recorded or predicted to occur, including Eel-tailed Catfish and Booroolong Frog.¹⁸²

The Mandagery Creek Water Source was included in the Plan in 2016 when the *Water Sharing Plan for Mandagery Creek Water Source 2003* expired. The original plan was reviewed in 2012-2013 when the Commission reviewed 31 water sharing plans.¹⁸³ The Commission notes that trade rules for the water source were modified when Mandagery Creek Water Source was included in the Lachlan Unregulated Plan. Trade into the water source was restricted but trade within the water source was allowed.¹⁸⁴ Cease-to-pump rules and existing management zones were also incorporated into the Lachlan Unregulated Plan.

Despite cease-to-pump conditions being in place for this water source and being triggered during the term of the Lachlan Unregulated Plan, DPE-Water's *Lachlan Surface Water Resource Plan* risk assessment indicates that base flows / low flows are highly altered and pose a high risk to the environment.¹⁸⁵ This risk was deemed 'not tolerable'. The Commission considers this issue a priority to address in the replacement Plan given the access rules for Mandagery Creek have been in place for nearly two decades and the risk to the water source and its water dependent ecosystems during periods of low flow do not appear to be adequately mitigated. Freshes also appear to be moderately impacted.

The *Lachlan Long-Term Water Plan* indicates that it is important to protect flows in Mandagery Creek given it is a tributary of the Lachlan River and inflows from Mandagery Creek are important for meeting environmental water requirements in the Lachlan River.¹⁸⁶ It recommends increasing the cease-to-pump rule to 25 ML/day, based on the upstream Eugowra gauge (412030), and introducing commence-to-pump rules to provide some protection of freshes. The Commission supports further investigation and consultation on possible rules changes, recognising that the community was significantly impacted by flooding in this catchment in 2022 and any engagement must be respectful of flood-affected communities.

The Commission understands that DPE-Water proposed changes to the access rules and management zones for Mandagery Creek during the development of the *Lachlan Surface Water Resource Plan*. This includes consolidation of lower management zones and changes to access rules. The Commission understands that part of the rationale for these proposed changes is that gauges intended to be installed during the term of the original Mandagery Creek plan did not progress. Stakeholders that made submissions to the draft *Lachlan Surface Water Resource Plan* and the Commission's water sharing plan review raised concerns about the proposed changes and lack of progress in installing new gauges.

¹⁸¹ [Water Sharing Plan for the Mandagery Creek Water Source 2003](#)

¹⁸² DPE (2020) [Lachlan Long term Water Plan: Part B](#), p.108.

¹⁸³ The scope of the first water sharing plan review differs from the current review.

¹⁸⁴ Clause 61(2) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁸⁵ DPIE (2019) [Risk assessment for the Lachlan Surface Water Resource Plan Area \(SW14\)](#)

¹⁸⁶ DPE (2020) [Lachlan Long-Term Water Plan: Part B](#), p.108.

“The NSW Government failed to protect PEW [planned environmental water] in the implementation of the current water sharing plan because it failed to install the necessary gauges needed to regulate cease-to pump rules.”¹⁸⁷

The current Lachlan Unregulated Plan in force specifies flow classes for five of the six management zones with flow reference points at the downstream end of each management zone. Most of these zones have cease-to-pump rules below the 10 ML/day condition proposed by DPE-Water.

The Commission understands that further modelling is being undertaken by DPE-Water to examine different cease-to-pump options. This analysis should also include commence-to-pump rules to provide for the protection of freshes. The *Lachlan Long-Term Water Plan* proposes a commence-to-pump of 130 ML/day at the Mandagery Creek upstream Eugowra gauge (412030).¹⁸⁸ Such changes should consider and clearly report socio-economic impacts that may arise from the adoption of more stringent cease-to-pump and commence-to-pump rules.

Improvements to the gauging network in this water source remain an important issue to be resolved, not just for monitoring flows and the response of the river to extraction and access rules, but also for future flood monitoring.

5.3 Provision of flows in effluent creeks of the Lachlan

There are two Trust districts in the Plan area:

- Merrowie Creek Trust District spans Ganowlia Weir to Cuba dam
- Torriganny, Muggabah and Merrimajeel Creeks Trust District.

During the Commission’s review, stakeholders raised concerns regarding the delivery of water down effluent creeks. This includes water entering and passing through Trust districts in the Lachlan Unregulated Plan area. Stakeholders raised concerns regarding the roles of Trusts, a lack of transparency regarding operating rules for infrastructure used to deliver water to and within the Trust districts, other structures built on the effluent creeks, and water not reaching the end of the system.

“The Merrowie Creek Trust still appears to retain a disproportionate interest in water management decisions despite holding no statutory authority or public reporting obligations. This is of concern in instances where downstream users are unable to fulfil their stock and domestic water requirements.”¹⁸⁹

The Trusts are long standing. They were constituted under Part 3 of the *Water Act 1912*¹⁹⁰ and established well before the Plan came into effect. Replenishment flows for stock and domestic use have been supplied to the Trust districts for many years. Replenishment flows have been provided to Merrowie Creek Trust District since 1952, while Torriganny, Muggabah and Merrimajeel Creeks Water Trust was established in 1907.¹⁹¹ Structures involved in the delivery of water to the Trust districts were vested to WaterNSW (when it was formerly State Water), but private weirs still operate within the Trust districts.

¹⁸⁷ Inland Rivers Network (2019) [Comments on Draft Lachlan Surface Water Resource Plan. In consolidated submissions to the draft Lachlan Surface Water Resource Plan](#), 1 February 2019.

¹⁸⁸ DPE (2020) [Lachlan Long-Term Water Plan: Part B](#), p.108.

¹⁸⁹ Beatty-Hughes and Associates (2022) [Submissions to the draft evaluation framework for the review of water sharing plans and the Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁹⁰ Clause 20V of the [Water Act 1912](#)

¹⁹¹ Driver, P. (1999) [A history of the ecology and flows of the lower Lachlan River and its distributaries](#), Department of Land and Water Conservation.

The rules for providing replenishment flows are set out in Clauses 59(b) and (c) of the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016* but result in flows being delivered to the unregulated river water sources where the Trust districts are located (Unregulated Effluent Creeks Water Source). It is unclear if these volumes are adequate or appropriate for their intended purpose.

The definition of replenishment flows and how they can deliver environmental benefits should be revisited. DPE-EHG indicated that the benefits from replenishment flows in effluent creeks can be enhanced, with replenishment flows already helping to support the ecological character of significant features and sites within the Unregulated Effluent Creeks Water Source.¹⁹² For example, replenishment flows down Merrowie Creek have helped to maintain waterbird habitat and breeding in Cuba Dam and Mutherumbung Weir pool and efficiently deliver held environmental water to Lake Tarwong. Landholders downstream of Cuba Dam have been trying for some years to have the Merrowie Trust District extended downstream to provide for flows to the end of the system.¹⁹³ This issue remains unresolved. It seems to be an equity issue but also an environmental issue given replenishment flows could also provide some environmental benefit. Below Cuba Dam, the creek flows into the Lake Tarwong system. Downstream of Lake Tarwong, the creek becomes Box Creek, which is of cultural significance to the Wiradjuri people (see **Chapter 6**).

Based on issues raised by stakeholders and given the significance of Box Creek it would be appropriate to include end-of-system flow targets so that environmental and Aboriginal cultural values and landholders in the lower reaches of the effluent creeks (downstream of existing Trust districts) receive flows at appropriate times. This would warrant changes to the Lachlan Regulated Plan (which the Commission will review in the near future), but also changes to the Lachlan Unregulated Plan so that these flows are protected to the end of the system.

Effluent creeks and the wetlands situated along them (e.g., Merrowie Creek and Lake Tarwong) are the focus of environmental watering actions. As noted earlier in this chapter, it is important to include provisions in the Lachlan Unregulated Plan to provide for the protection of these water deliveries from the regulated Lachlan River to achieve their intended environmental outcomes.

It is also important that structures (e.g., weirs) do not impede these flows. This could be achieved by including a provision in the replacement Plan that requires, for example, that drop boards are removed when environmental water deliveries are being made. However, codifying such requirements in the replacement Plan rules cannot occur in isolation. It also requires effective coordination and communication with landholders to ensure they are aware of environmental water deliveries and when they need to remove drop boards to allow for flows to pass. There should also be operating plans associated with these structures developed in collaboration with relevant agencies.

¹⁹² Personal communications, J. Lenehan, NSW DPE Environment and Heritage Group, 22 February 2023.

¹⁹³ Driver, P. (1999) [A history of the ecology and flows of the lower Lachlan River and its distributaries](#), Department of Land and Water add a list of nationally and regionally significant wetlands that the Plan seeks to protect to the Plan schedules Conservation.

5.4 Recommendations

<p>R 10</p>	<p>As part of the Lachlan Unregulated Plan replacement, to address the inadequacy of the environmental protection provided by current access rules, DPE-Water should:</p> <ul style="list-style-type: none"> a) review the current hydrometric network to identify where the Plan can reference operational gauges for establishing flow classes and flow-based access rules b) ensure as a priority that high environmental value water sources at medium to high risk from extraction have flow-based access rules that support connectivity and adequately protect water sources and their dependent ecosystems (this should include Mandagery Creek as a priority) c) review if conditions attached to current water access licences and works approvals are appropriate to protect high priority needs, and ensure any changes to access rules from (a) and (b) are reflected in water access licence/work approval conditions.
<p>R 11</p>	<p>To ensure that nationally and regionally significant wetlands are protected in the Lachlan Unregulated Plan replacement, DPE-Water should:</p> <ul style="list-style-type: none"> a) update the Plan schedules to include all significant wetlands in the Plan area b) ensure that access rules and trade rules for tributaries of significant wetlands are adequately protective and contribute to inflows to maintain the ecological character of these wetlands c) determine if drawdown provisions for Lake Waljeers and Lake Forbes are adequately protective of environmental and Aboriginal cultural values, and include provisions to phase out pool drawdown where appropriate.
<p>R 12</p>	<p>In the Lachlan Unregulated Plan to improve the outcomes associated with provision of flows in effluent creeks of the Lachlan, DPE-Water should:</p> <ul style="list-style-type: none"> a) clarify that replenishment flows provide stock and domestic needs and environmental benefits in unregulated river water sources b) codify operating rules for regulating structures along effluent creeks in the replacement Plan c) establish end-of-system flow targets for effluent creeks with significant environmental values to ensure that flows are provided downstream of Trust districts (in addition to environmental water deliveries).
<p>R 13</p>	<p>To ensure environmental water deliveries from the regulated Lachlan River can achieve their intended outcomes in the unregulated river water sources, the replacement Lachlan Unregulated Plan must include provisions that:</p> <ul style="list-style-type: none"> a) protect these flows from unauthorised extraction, obstruction and diversion in unregulated river water sources b) require that private structures along unregulated river water sources are operated (e.g., boards removed) to allow for environmental water deliveries to pass through.

6 Delivering benefits for Aboriginal people

The purpose of this chapter is to understand the extent that the Plans benefit Aboriginal people, and their spiritual, social, customary and economic values and use of water. The Commission notes the Plans have been in place for nearly 10 years and are intended to provide benefit to Aboriginal people, with several amendments over their term.

The Commission acknowledges the Plans' Aboriginal nations have an intrinsic connection with the lands and water of the Plan areas. The landscape and its waters provide Aboriginal people with important links to their history and help them maintain and practice their traditional culture and lifestyle.

The Commission acknowledges the valuable contribution of key Aboriginal stakeholders to this review, particularly given there was extensive flooding in the Plans' areas. The Commission recognises the importance of engaging with Native Title claimants and Aboriginal people for the Plan reviews and supports DPE-Water undertaking further detailed engagement with Aboriginal communities as part of any Plan replacement processes.

The Commission continues to identify critical state-wide issues in water sharing plans relating to Native Title, Aboriginal water rights, and the protection of cultural values. This review highlights several specific issues in the Plans, including:

- whilst there is one Native Title determination listed in the Lachlan Unregulated Plan, there is limited recognition of an additional registered claim (**Section 6.1**)
- the Plans do not effectively protect Aboriginal water values and uses or provide for tangible access to water (**Section 6.26.2**)
- there are inconsistencies with the *NSW Water Strategy* (**Section 6.3**) and the Aboriginal Water Strategy, which remains in development
- additional shares have been offered under controlled allocations in culturally significant water sources without evidence that Aboriginal water rights were considered before this took place (**Section 6.4**)
- the need to improve compliance to support Aboriginal cultural values (**Section 6.5**).

6.1 The plans' recognition of Native Title rights

In line with other updated inland water sharing plans, the Lachlan Unregulated Plan includes a requirement to provide water to satisfy Native Title rights where a determination or ILUA is made.¹⁹⁴ Under the claim registration test, registered Native Title claimants have proven their connection to Country (including connection to water-dependent sites) to an extent where government departments must consult with them regarding development of land and water management plans.

The Lachlan Unregulated Plan and Belubula Regulated Plan also include relevant objectives, strategies, and performance indicators to monitor the extent to which Native Title requirements have been met and a provision to support amendments where Native Title rights may change under the Commonwealth *Native Title Act 1993*.¹⁹⁵ The amended

¹⁹⁴ Clause 20 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

¹⁹⁵ Clause 12 of the Plan.

Plans include targeted objectives to “provide access to water in the exercise of Native Title rights.”¹⁹⁶

Under Clause 20 of the amended Lachlan Unregulated Plan, the Native Title Determination for the Barkandji Traditional Owners is listed. However, this clause of the Plan does not recognise the volume required for exercise of Native Title.¹⁹⁷ There is one registered Native Title claim filed by the Ngemba, Ngiyampaa, Wangaaypuwan and Wayilwan peoples (filed in April 2012)¹⁹⁸ that covers a significant part of the Lachlan Plan area, which has a large and strongly connected Aboriginal population.¹⁹⁹

There are no Native Title claims or determinations listed under the Belubula Regulated Plan.

The Lachlan Aboriginal Cultural and Heritage Study²⁰⁰ describes extensive Aboriginal habitation and occupation within the Plans’ areas and supports continued engagement of Native Title holders to determine specific values and uses under the Plans.

It is important that DPE-Water engages these nations as a priority in the replacement process of both Plans:

- to further understand potential consequences of a Native Title
- ensure the replacement Plans provide the volumetric requirements for Native Title that must be met (along with requirements for other Basic Landholder Rights) before available water determinations (allocations) can be made.

6.2 Existing provisions had limited Aboriginal benefits

Both Plans include an ‘Aboriginal cultural’ licence category to provide access to water. However, it can only be used for traditional cultural purposes (not commercial or trading activities)²⁰¹ and allocations are capped at up to 10 ML per licence per year.²⁰² DPE-Water advised that *‘the ability to apply for Aboriginal cultural water access licences in water sources throughout NSW has been embedded in water sharing plans for 20 years since the first plan was released in 2002. Yet in that time only seven cultural access licences have ever been issued, with only one remaining in use today.’*²⁰³

The Commission notes that 10 ML may be limiting as a single licence, but stakeholders’ insights suggested if these single licences were coordinated or combined they may progress toward achieving a better cultural outcome.

¹⁹⁶ Clause 12(2)(A) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Clause 10(2)(A) of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

¹⁹⁷ See Clause 20 of the Plan and National Native Title Tribunal Native Title Determination Details [NCD2015/001 - Barkandji Traditional Owners #8 \(Part A\)](#)

¹⁹⁸ National Native Title Tribunal (2019) Register of Native Title claims details - [Ngemba, Ngiyampaa, Wangaaypuwan and Wayilwan native title determination application \(NC2012/001\)](#)

¹⁹⁹ Tribunal file NC2011/006

²⁰⁰ OzArk (2021) [Lachlan Aboriginal Cultural Heritage Study: Lachlan Shire Council](#) p.45.

²⁰¹ Clause 40 (3) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Clause 44(3) of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) state that ‘An access licence of the subcategory “Aboriginal cultural” may only be granted for the taking of water by an Aboriginal person or Aboriginal community for any personal, domestic or communal purpose, including drinking, food preparation, washing, manufacturing traditional artefacts, watering domestic gardens, cultural teaching, hunting, fishing, gathering and for recreational, cultural and ceremonial purposes.’

²⁰² Clause 40(1) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Clause 44(2) of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#).

²⁰³ Personal communications: DPE-Water, 4 April 2023.

There is no water assigned for the volumetric requirements of Native Title and no Aboriginal cultural licences have been issued under the Plans based on the WaterNSW Water licensing system. Further, there is no allowance for issuing 'Aboriginal community development' licences under these Plans.

There is a long history of trade and sharing of resources as a cultural practice, which saw Aboriginal people grow resources on their Country and often venture outside of their own Country for trade and ceremony.²⁰⁴ However, trade is not recognised in the purpose for which cultural access licences may be granted. A review process needs to consider how to better balance economic opportunity (including those provided under a basic landholder right – stock watering) with that of a cultural purpose.

*'Maintaining spiritual and cultural relationships with land, water and Country are intertwined for Aboriginal peoples. The right to economically develop natural resources, consistent with cultural obligations, is also of significant importance.'*²⁰⁵

The Commission has highlighted in previous review reports²⁰⁶ that the limitations placed on Aboriginal cultural licences are inequitable, including that they are highly restrictive, inherently limiting by excluding economic uses²⁰⁷ and unable to be easily accessed and applied for. These concerns were reflected in stakeholder interviews to this review:

*'We note that Water Sharing Plans may provide for Aboriginal Cultural Access Licences, Aboriginal Community Development Water Access Licences, and Aboriginal commercial licences however with a range of constraining parameters. We ask that the NSW Government remove constraints on these licences and provide support to Aboriginal communities and Aboriginal Land Councils to access these licences. These provisions must be improved to better meet the needs of Aboriginal water users, ensure the health of our communities, and protect our cultural sites.'*²⁰⁸

Clause 12 (2)(d) of both Plans requires that the Plans contribute to the maintenance of water quality within target ranges to ensure suitability of water for Aboriginal cultural uses. However, the Plans have no clear provisions to specifically protect water quality for this purpose. The Commission recognises that the Aboriginal Water Strategy may consider these issues including aligning key performance indicators and reporting of regulatory action outcomes. However, the Aboriginal Water Strategy remains unpublished with benefits for Aboriginal people delayed.

The Plans align with the updated inland plans to include common objectives, vision, strategies, and performance indicators to maintain and improve values and uses of water by Aboriginal people.²⁰⁹ Aboriginal and social and cultural objectives were updated in the 2020 Plan revisions, but it is unclear how Aboriginal representatives were included in the process to make these amendments. Both the LALC submission and a traditional owner advised their nation was not consulted on the changes for the Plan objectives:

'The current Plans for the Lachlan and Macquarie Bogan Unregulated River Water Sources 2012, at Part 2, 12 Aboriginal cultural objectives, attempt to reflect DPE's commitment to work with Aboriginal communities. However, they do not reflect DPE's

²⁰⁴ Robert S. Fuller, Michelle Trudgett, Ray P. Norris, Michael G. Anderson (2014) [Star Maps and Travelling to Ceremonies -- the Euahlayi People and Their Use of the Night Sky](#)

²⁰⁵ .. Submission: NSW Aboriginal Land Council, received 3 May 2022.

²⁰⁶ See previous reports at Natural Resources Commission (n.d.) [Water Sharing Plan Reviews](#)

²⁰⁷ Part 2, Section 12(1) of the Plans.

²⁰⁸ .. Submission: NSW Aboriginal Land Council, received 3 May 2022.

²⁰⁹ Clause 12 of the Plans.

priority in the NSW Water Strategy to “Recognise First Nations/Aboriginal People’s rights and values and increase access to and ownership of water for cultural and economic purposes”, particularly regarding ownership of water.’²¹⁰

Making changes without adequate consultation may present a risk to the Plans’ objectives and Aboriginal peoples’ aspirations. The Plans provide very limited information on the water-dependent Aboriginal cultural values. For example, the Lachlan Unregulated Plan does not recognise or protect known values or places such as the Lower Lakes in the Lachlan or Box Creek.^{211, 212}

Such provisions do not effectively support Aboriginal cultural values. This was raised in submissions:

‘It is unclear how First Nation peoples’ views about cultural flows have been incorporated into the WSP and where this has been defined in the WSP. Cultural objectives should not be conflated with environmental objectives. There is need for greater regard of the views of First Nations in the management of cultural flows within all the Lachlan waters. Better management of unregulated waters is important to protect and maintain cultural flows for the social benefit of First Nation peoples.’²¹³

As part of replacement of the Plans, DPE-Water needs to co-design Plan provisions with Aboriginal people to protect cultural values and ensure that the Plans’ objectives (including economic opportunities) and Closing the Gap targets are realised. Co-design will further ensure the Plans’ objectives are aligned with current aspirations and needs (contemporary and traditional).

6.3 Commitments under the NSW Water Strategy must be met

The Commission’s recent water sharing plan reviews have acknowledged DPE-Water’s focus on improving stakeholder engagement with Aboriginal peoples and commitments made under the *NSW Water Strategy* to address inequity in Aboriginal water rights and access. Historically the outcomes of effective policy have been limited by their ability to be adopted within the plans.

The Commission notes that previous initiatives such as the Aboriginal Water Initiative and *State Water Management Outcomes Plan* were designed to progress towards improving Aboriginal water outcomes. The dissolution of the Aboriginal Water Initiative and move away from the *State Water Management Outcomes Plan* delayed the realisation of outcomes for Aboriginal people. The implementation of the *NSW Water Strategy* and Aboriginal Water Strategy need to be seen through to their end for their full benefits to be realised. Further, remaking the *State Water Management Outcomes Plan*, which is intended to be kept up to date under the Act, would provide an opportunity to specify clear outcomes for Aboriginal people.

Priority 2 of the *NSW Water Strategy* is to ‘recognise First Nations / Aboriginal people’s rights and values and increase access to, and ownership of, water for cultural and economic purposes’ and includes the following actions:²¹⁴

²¹⁰ ... Submission: NSW Aboriginal Land Council, received 3 May 2022.

²¹¹ Interview: Traditional Owner, 6 April 2023.

²¹² Interview: Traditional Owner, 23 March 2023.

²¹³ Submission: Inland Rivers Network, 29 April 2022.

²¹⁴ DPIE-Water (2021) [NSW State Water Strategy](#)

- strengthening the role of Aboriginal peoples in water planning and management
- developing a state-wide Aboriginal water strategy and a separate groundwater strategy
- providing Aboriginal ownership of and access to water for cultural and economic purposes
- working with Aboriginal peoples to improve shared water knowledge
- working with Aboriginal peoples to maintain and preserve water-related cultural sites and landscapes.

If implemented in a culturally appropriate manner, these commitments will lead to better outcomes for Aboriginal peoples, be consistent with commitments Australia has made as a signatory to the United Nations Declaration on the Rights of Indigenous People,²¹⁵ and contribute to Closing the Gap targets. In its submission, the NSW Aboriginal Land Council emphasised the need for the NSW Government to contribute towards meeting these targets:²¹⁶

*'NSWALC seeks to ensure that the NSW Government meets its commitments outlined in the National Agreement on Closing the Gap (CtG). The CtG provides an important framework for governments to work in partnership with Aboriginal people to ensure we maintain distinctive cultural, spiritual, physical and economic relationships with water, and advance our rights and interests in water.'*²¹⁷

However, as highlighted by the Productivity Commission inquiry on national water reform, there is still much work to do to secure Aboriginal peoples' interests in water.²¹⁸ Collaborations between agencies and First Nations/Aboriginal peoples to explore ways to integrate cultural flows into contemporary water management, or providing funding to help First Nations communities invest in water for cultural and economic activities, are some of the steps to deliver outcomes for Aboriginal peoples.²¹⁹ The challenge now is to embed these commitments and actions in the NSW water planning and water licensing framework so that Aboriginal rights and interest in water can be recognised, quantified and actioned in ways that support cultural and economic needs.

Key issues that need to be addressed include alignment of the Plans and the *NSW Water Strategy* and the *Aboriginal Water Strategy* – the Commission notes that the *Aboriginal Water Strategy* has been in development during the review of these Plans but is yet to be finalised. With no clear finalisation date, the Plans' ability to improve equity in water sharing for Aboriginal people are restricted to current processes, which to date have had a limited positive outcome for Aboriginal people within the Plans' areas. The second *Draft Lachlan Regional Water Strategy* proposed several actions to address barriers to Aboriginal water rights in the broader Lachlan catchment.²²⁰ DPE-Water needs to ensure the

²¹⁵ See for example, 'Article 25 Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.' In: United Nations (2007) [United Nations Declaration on the Rights of Indigenous Peoples](#)

²¹⁶ Submission: NSW Aboriginal Land Council, received 3 May 2022.

²¹⁷ *Ibid.*

²¹⁸ Productivity Commission (2021) [National Water Reform 2020, Productivity Commission Inquiry Report No. 96](#)

²¹⁹ MDBA (2022) [Water for First Nations](#)

Actions include:

- developing ongoing arrangements for participation of local Aboriginal people in water management – this would include investigating ways to improve the participation of Aboriginal peoples in water management through new approaches, programs, partnerships and funding.

replacement Plans align and support these actions and the objectives proposed in the *Lachlan Regional Water Strategy*.

The Commission acknowledges that DPE-Water recently called for registrations of interest to develop *Cultural Watering Plan* pilots to inform their review of existing policy frameworks and identify opportunities for greater Aboriginal access and ownership of water.²²¹ This is a welcomed initiative. Other initiatives include the *Healing Country Program* run by DPE-EHG.²²²

6.4 Aboriginal water rights must be prioritised when delivering controlled allocations

Controlled allocations can occur where a water source is not fully committed and there is unassigned water.²²³ The Commission understands that this can occur in circumstances where a licence holder surrenders their licence or entitlement to the Minister for Lands and Water, such as where they no longer intend to use the water for irrigation. The licence or entitlement may be cancelled or held by the Minister. Licences that are retained can be reissued to other licence holders via controlled allocation. However, before this occurs risks associated with this action and a prioritisation of needs must be considered, consistent with the principles of the Act.²²⁴

In previous reviews, the Commission has recommended that DPE-Water considers Aboriginal peoples' needs before announcing controlled allocations.²²⁵ However, in March 2022, the NSW Government published controlled allocations in three unregulated river water sources in the Lachlan Unregulated Plan area. The Water sources were Belubula River Above Carcoar Dam (with an entitlement of 192 ML at \$5,000/ML), Goonigal and Kangaroo Creek Water Source, and Ooma Creek and Tributaries water source.²²⁶

It is unclear if and how Aboriginal water rights and values were considered when making this controlled allocation order. The Minister is encouraged to codify this process and ensure there is greater transparency around what is considered as part of the risk assessment, giving effect to the water management principles and assessment of high priority needs before making any future controlled allocations during the term of the replacement Plan. This is particularly important given benefits for Aboriginal people have not been realised in the Lachlan Unregulated Plan area and current provisions to improve Aboriginal outcomes have significant limitations.

The process of making controlled allocations needs to be brought into line with the principles of the *Water Management Act 2000* where Native Title is prioritised and Aboriginal cultural values and heritage must be considered.

- Support place-based initiatives to deliver cultural outcomes for Aboriginal people – this would support Aboriginal organisations and communities to develop tailored projects for their communities. This action would aim to move away from centralised decision-making and develop a flexible program that can be adapted and is driven by the principle of self-determination
- Support employment and business opportunities for Aboriginal people in the Lachlan region – this would support Aboriginal business development opportunities in the Lachlan region, some of which may require access to water resources. This action would also investigate ways to expand water-related employment opportunities for Aboriginal people in the Lachlan region, including by establishing cultural water officers and/or river rangers.

²²⁰ DPE-Water (2022) [Draft Regional Water Strategy: Consultation Paper](#)

²²¹ DPE-Water (n.d.) [About Cultural Watering Plans](#)

²²² Interview: Traditional owner and EHG, 6 April 2023.

²²³ DPE-Water (2022) [Controlled allocations](#)

²²⁴ Section 5 and Section 9 of the Act.

²²⁵ NSW Natural Resources Commission (2021) [Review of water sharing plans for the Bega and Brogo Rivers Area, Murrah-Wallaga Area, and Towamba River water sources](#)

²²⁶ NSW Government (2022) [Government Gazette of the State of NSW, Number 83 - Electricity and Water](#)

6.5 Improving compliance to support Aboriginal values

Traditional owners raised concerns about adequate water regulation measures to ensure that culturally significant values and sites received water. Traditional owners expressed the importance of their active involvement in regulation measures to ensure caring for country values are upheld going forward.

The Natural Resources Access Regulator (NRAR) is responsible for compliance, yet to date, there have been a limited number of breaches prosecuted within the Plan areas.²²⁷ During the review of the Plans, the Commission noted community concern and desire to see a greater presence of regulation and deterrence.

6.6 Recommendations

R 14	<p>As part of the replacement Lachlan Unregulated Plan and Belubula Regulated Plan, to deliver better outcomes for Aboriginal peoples through water management, DPE-Water must:</p> <ul style="list-style-type: none"> a) undertake culturally appropriate engagement with Traditional Owners and knowledge holders who have connection to Country in the Plan areas b) include registered Native Title claims and identify and include water-dependent cultural values and uses in the Plans c) co-design Plan objectives and rules to protect Aboriginal values and uses of water d) ensure that the definition of ‘cultural practice’ in the Plans includes trade activities and does not restrict cultural access licences to 10 ML per application e) ensure the Plans’ objectives and corresponding provisions are consistent with the <i>NSW Water Strategy</i> and Closing the Gap targets f) when making controlled allocations ensure Aboriginal rights and access including Native Title are prioritised consistent with giving effect to the principles of the Act g) improve reporting on key performance indicators that increase Aboriginal benefit including external influences (including regulatory action outcomes).
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²²⁷ NRAR (2023) [Public Register](#)

7 Securing town water supply to meet future needs

Most of the major towns in the Lachlan catchment, including Cowra, Forbes, Parkes,²²⁸ Condobolin, Lake Cargelligo and Hillston rely on the regulated Lachlan River²²⁹ and alluvial groundwater sources²³⁰ to meet their water needs. In addition, Young, Temora, West Wyalong and Goolgowi are supplied by water sources from the Murrumbidgee catchment via existing distribution networks (see **Figure 6**).

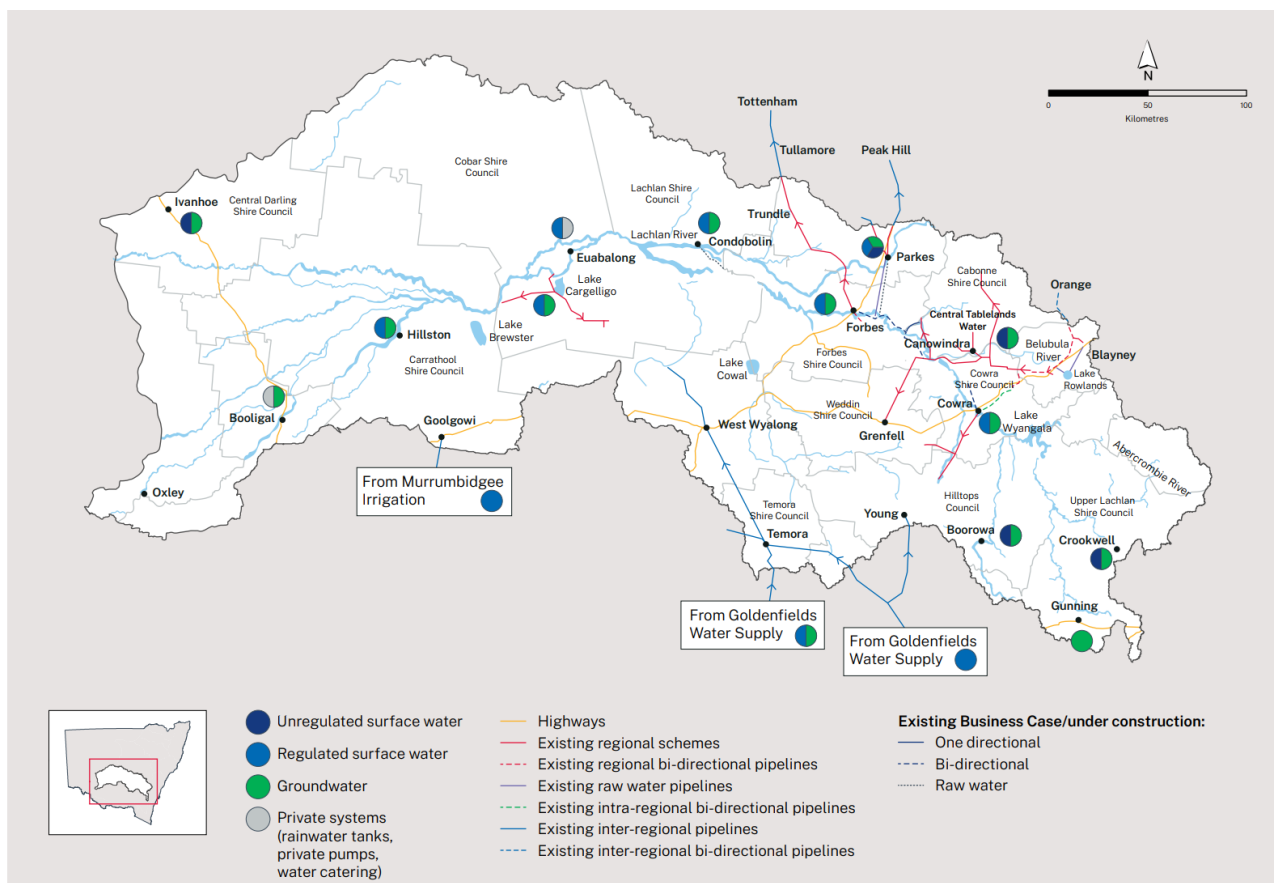


Figure 6: Existing water supply sources and pipeline connections²³¹

Some smaller towns in the Lachlan and Belubula catchments are reliant on unregulated water sources,²³² as are many rural properties that require water for domestic and stock purposes. In terms of dependency on unregulated water sources governed by the Lachlan Unregulated Plan:

²²⁸ Parkes has access to unregulated water sources covered by the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) (1,502 ML). However, Parkes primary water supply is the regulated Lachlan River (3,225 ML) and groundwater (5,050 ML). Parkes also supplies Peak Hill, Alectown and Cookamidgera via the B-Section pipeline.

²²⁹ The LWU share component in the [Water Sharing Plan for the Lachlan Regulated Plan Water Source 2016](#) is 15,545 ML/year.

²³⁰ The LWU share component in the [Water Sharing Plan for the Lachlan Alluvial Groundwater Sources Order 2020](#) is 10,770 ML/year.

²³¹ DPIE-Water (2022) [Lachlan Regional Water Strategy](#)

²³² There is an additional LWU share component of 119 ML/year across the Mid Lachlan Unregulated Water Source, the Ooma Creek and Tributaries Water Source, the Gunningbland and Yarrabandai Water Source, and the Western Bland Creek Water Source. These LWU share components are minor and function as a supplement to other town water supply sources.

- Central Tablelands Water captures water in Lake Rowlands from Coombing Creek,²³³ an unregulated river in the Belubula Tributaries below Carcoar Dam Water Source. The Local Water Utility (LWU) share component in this water source is 3,150 ML/year (53 percent of the total LWU share component in the Lachlan Unregulated Plan).
- Hilltops Council relies on the Boorowa River and Hovells Creek Water Source, and the Upper Lachlan Shire Council relies on the Lachlan River above Reids Flat Water Source and the Crookwell River Water Source to supply Crookwell and Gunning. The combined LWU share component in these three unregulated water sources is 850 ML/year (14 percent of the total LWU share component in the Lachlan Unregulated Plan).
- In the mid and lower Lachlan catchment, Parkes and Ivanhoe have access to unregulated water sources – namely the Goobang and Billabong Creeks Water Source and the Unregulated Effluent Creeks Water Source. The combined LWU share component in these two water sources is 1,804 ML/year (30 percent of the total LWU share component).

The total LWU share component in the Lachlan Unregulated Plan is 5,923 ML/year distributed across 10 water sources (approximately 11 percent of the total licensed share component in the Lachlan Unregulated Plan). There is no LWU share component in the Belubula Regulated Plan.

Over the life of the Lachlan Unregulated Plan, town water needs have broadly been met (see **Section 7.1**). However, challenges remain regarding water access and availability during times of drought. Some councils had to impose restrictions during the recent drought (2017-2020). Climate change triggering more extreme events could increase the risk that future restrictions may be needed to protect critical town water needs. However, only modest population growth is expected for those communities reliant on water supply governed by the Lachlan Unregulated Plan (See **Section 7.2**).

The findings and recommendations in this report focus predominantly on the issues in the existing Lachlan Unregulated Plan (see **Section 7.3**). However, the Commission has identified possible emerging issues that DPE-Water may need to consider in the Plan replacement process for the Belubula Regulated Plan (see **Section 7.4**).

7.1 Town water needs have mostly been met during the life of the Lachlan Unregulated Plan but risks remain

Based on the LWU share component in the Lachlan Unregulated Plan and information on historic town water demand,²³⁴ there appear to be adequate entitlements available to meet town water needs in the Lachlan Unregulated Plan area (assuming that 100 percent of the licensed entitlement volume is available every year over the life of the Lachlan Unregulated Plan). This is the case even when considering modest population growth in towns and communities reliant on unregulated water sources.²³⁵

However, over the life of the Lachlan Unregulated Plan and particularly during the most recent drought (2017-2020), it was evident that the lack of water availability posed some

²³³ Central Tablelands Water supplies 14 towns and villages in the Blayney, Cabonne and Weddin LGAs through an extensive water supply pipeline network.

²³⁴ For example, Central Tablelands Water average annual demand between 2015/16 – 2019/20 was 1,967 ML/year compared to their LWU share component of 3,150 ML/year.

²³⁵ According to the [NSW Common Planning Assumption Population Projections](#), the Upper Lachlan Shire Council, Hilltops, Blayney and Cabonne Councils are expected to grow by 0.76 percent, 0.15 percent, 0.35 percent and 0.64 percent annually, respectively. Weddin Shire Council and Central Darling Shire Council are projected to decline moderately.

risk to town water security in the Lachlan and Belubula catchments. The lack of water availability led to town water restrictions in several LGAs and in Central Tablelands Water distribution area. For example, Central Tablelands Water imposed Level 4 restrictions in April 2020 across its entire supply network due to low river flows and low storage levels in Lake Rowlands - the storage level in Lake Rowlands during April 2020 was only 32.5 percent.²³⁶ In addition, Upper Lachlan Shire Council placed Crookwell on Level 2 restrictions in January 2020 and Hilltops Council placed Boorowa on water restrictions during several years, including in 2016 (Level 4) and 2019 (Level 3). In the interview with Central Tablelands Water, the Commission heard the challenges for LWUs associated with droughts in the unregulated water sources in the Belubula catchment:²³⁷

*'We were hit severely by the drought in 2018/19. We were praying for rain. Restrictions got to Level 5 again. If Lake Rowlands had fallen below 30 percent storage capacity, we would have had to impose Level 6 restrictions, which would have major implications for businesses.'*²³⁸

Although town water restrictions are the responsibility of the relevant LWU servicing towns and communities within a particular area, they are often associated with water availability and access issues during extreme events, which can be influenced by water sharing plan provisions.

Since the Lachlan Unregulated Plan commenced, the Lachlan and Belubula catchments have experienced several extreme events, including:

- widescale flooding in 2016, which caused water quality incidence and damage to town water infrastructure²³⁹
- drought conditions between 2017-2020, which led to low river flows and reduced town water storage levels
- consecutive La Niña events since 2020 have brought significant rainfall, which led to renewed flooding and spills from town water storages, including Lake Rowlands.

Each of these extreme events has provided new and valuable information about the region's climate and the risk to town water supplies. It is noteworthy that droughts in the broader Lachlan catchment have become more persistent since the Millennium Drought (early 2000s), which has heightened the potential risks to town water security in the Lachlan Unregulated Plan area.²⁴⁰

As outlined in the Central NSW Joint Organisation's submission, the Lachlan Unregulated Plan review should *'review the lessons from the drought of record'* and consider the improved *'knowledge of the impacts of climate change where [...] there will be increasingly serious droughts and floods and water sharing needs [have] to be updated to optimise outcomes'*.²⁴¹

Recent climate risk analysis completed by DPE-Water suggests that the broader Lachlan region could experience more frequent and severe extreme events in the future, which

²³⁶ Central Tablelands Water (n.d.) [Water Restrictions](#)

²³⁷ Unregulated water sources in the Belubula catchment are governed by the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

²³⁸ Interview: Central Tablelands Water, 24 February 2023.

²³⁹ Bureau of Meteorology (2016) [New South Wales in 2016, Wet in the west with record-warm nights](#)

²⁴⁰ DPE-Water (2019) [Lachlan Regional Water Strategy](#)

²⁴¹ Submission: Central NSW Joint Organisation, May 2022.

would heighten the water security risks to towns reliant on unregulated water sources.²⁴² In particular, the Lachlan region could experience:

- changing rainfall patterns and a potential overall decrease in winter/spring rainfall and increases in summer/autumn rainfall. There is a potential for less overall average annual rainfall
- more frequent, intense, and persistent droughts, yet also more intense rainfall events
- higher minimum and maximum temperatures with an average temperature increase of between 0.4°C and 1°C by 2039
- 5 percent higher evapotranspiration compared to levels between 1990s and 2009.

The Commission notes that there are limitations to utilising the new climate datasets to assess water security risks for towns reliant on unregulated water sources in the Lachlan and Belubula catchments, as the Department currently does not have a dedicated hydrologic model for the Lachlan Unregulated Plan area.²⁴³ However, preliminary climate risk assessments for the Lachlan regional water strategy indicates that towns could be more exposed to water security risks under a drier future climate scenario due to more variable river flows and more frequent cease-to-flow events in unregulated rivers. This result is of particular importance to towns whose primary water supply are unregulated rivers, which includes towns supplied by Central Tablelands Water, Boorowa, Crookwell and Gunning.

The Commission recognises DPE-Water Utilities is working closely with local councils to develop integrated water cycle management (IWCM) plans for drought management planning and to support future town water supply security. As stated in the DPE-Water *Water Utilities Best Practice Management Guidelines*:

'Local water utilities are responsible for undertaking long-term strategic town water services planning, including setting of service and investment priorities, revenue and pricing requirements. This planning includes the consideration of the local water utilities longer term and emerging risks to their water services.'

*An Integrated Water Cycle Management Strategy is a 30-year plan developed by local water utilities that identifies an integrated water, sewerage and stormwater supply scenario that provides the best value for money on the basis of social, environmental and economic considerations. This encourages less reliance on limited natural water sources, less production of pollutant loads to the environment through stormwater and sewerage and involves efficient pricing and water management.'*²⁴⁴

The IWCM plans will provide important information on LWU requirements for town water in the future and should be considered in the Lachlan Unregulated Plan remake. Adequate resourcing for DPE-Water and DPE-Water Utilities to collaborate in the development of IWCM and replacement water sharing plans will be critical going forward.

In addition, the Commission also notes DPE-Water manages the *Safe and Secure Water Program*, which is a \$1 billion regional infrastructure co-funding program established in 2017. The program co-funds eligible water and sewerage projects in regional NSW based on risks. Relevant for the Lachlan Unregulated Plan area, the *Safe and Secure Water Program* is currently funding the development of several IWCM strategies, a scoping study for the Boorowa Drought Security Project and the replacement of Ivanhoe's water treatment plant.

²⁴² DPE-Water (2022) [Lachlan Regional Water Strategy](#)

²⁴³ DPE-Water (2022) [Lachlan Regional Water Strategy](#)

²⁴⁴ DPIE-Water (n.d.) [Water Utilities Best Practice Management – Integrated Water Cycle Management](#)

While these programs are important for ensuring that town water needs are understood and necessary infrastructure is provided, the water sharing plans play an important role in ensuring that water meant for town water supply is protected consistent with the principles and priorities under the Act.

7.2 Licensed access rules may not adequately protect town water needs in the Upper Lachlan

The Act prioritises the protection of the water source and its dependent ecosystems over licensed extraction. Within licensed usage, the Act prioritises LWU access (which provides town water supply) over other licence classes. **Table 4** summarises the Lachlan Unregulated Plan provisions relevant to town water supply in the Upper Lachlan catchment area. The Commission notes that the flow access rules have become more stringent in some water sources on which towns in the Lachlan Unregulated Plan area rely.

Table 4: Summary of Plan provisions relevant to town water supply

Local Council	Plan provisions to protect flows ²⁴⁵
Upper Lachlan Council	Crookwell River Water Source and Lachlan River above Reids Flat Water Source: <ul style="list-style-type: none"> ▪ Very low flow class: <ul style="list-style-type: none"> - Year 1 to Year 5 of this Plan – 0 ML/day - Year 6 to the end of this Plan – less than or equal to 2 ML/day
Hilltops Council	Boorowa River and Hovells Creek Water Source <ul style="list-style-type: none"> ▪ Very low flow class: <ul style="list-style-type: none"> - Year 1 to Year 5 of this Plan – 0 ML/day

Clauses 46 and 47 of the Lachlan Unregulated Plan set out the operation of these flow rules in the Plan area:

- clause 46(3) outlines that these flow classes apply in the water source when the flow (ML/day) measured at the flow reference point²⁴⁶ is equal to the flows specified in **Table 4** above²⁴⁷, unless the Minister is of the opinion that accurate flow data is not available on a particular day from the flow measuring gauge used to determine a flow clause

²⁴⁵ Part 8, Division 2 clause 46 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

²⁴⁶ In the case of Crookwell River Water Source and the Lachlan River above Reids Flat Water Source this would be Narrawa North gauge (412050) and Narrawa gauge (412065).

²⁴⁷ Part 8, Division 2, Table B of clause 46 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#). Clause 46(3) is subject to subclause 46(15) of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) which specifies that clause 46(3) does not apply to the following (a) the taking of water under an access licence or an access licence, which replaces a *Water Act 1912* entitlement to which clause 1 of Schedule 2 applies, for any of the follow purposes, provided that the volume of water taken does not exceed 20 kilolitres per day per access licence or such lower amount specified in accordance with subclause 16 – (i) fruit washing, (ii) cleaning of dairy and equipment for purpose of hygiene, (iii) poultry watering and misting, or (iv) cleaning of enclosures used for intensive animal production for hygiene purposes, and other matters specified in subclause 46(15(b) – (f)).

- clause 47(2) sets out that water must not be taken under an unregulated access licence with a share component that specifies the water source when a very low flow class has commenced.

These flow rules or ‘cease-to-pump’ rules provide some protection of low/baseflows in the Lachlan Unregulated Plan area and the Commission acknowledges that the flow classes have become slightly more stringent in some water sources over the life of the Plan. However, the Commission questions where the 2ML/day cease to pump rules are sufficient to protect town water supplies, particularly given that the flow reference points (gauges) are generally downstream of the town water off-take points. Without further information, it is difficult to determine whether the flow classes and associated access restrictions are adequate to appropriately protect the environment, basic landholder rights and town water supplies.

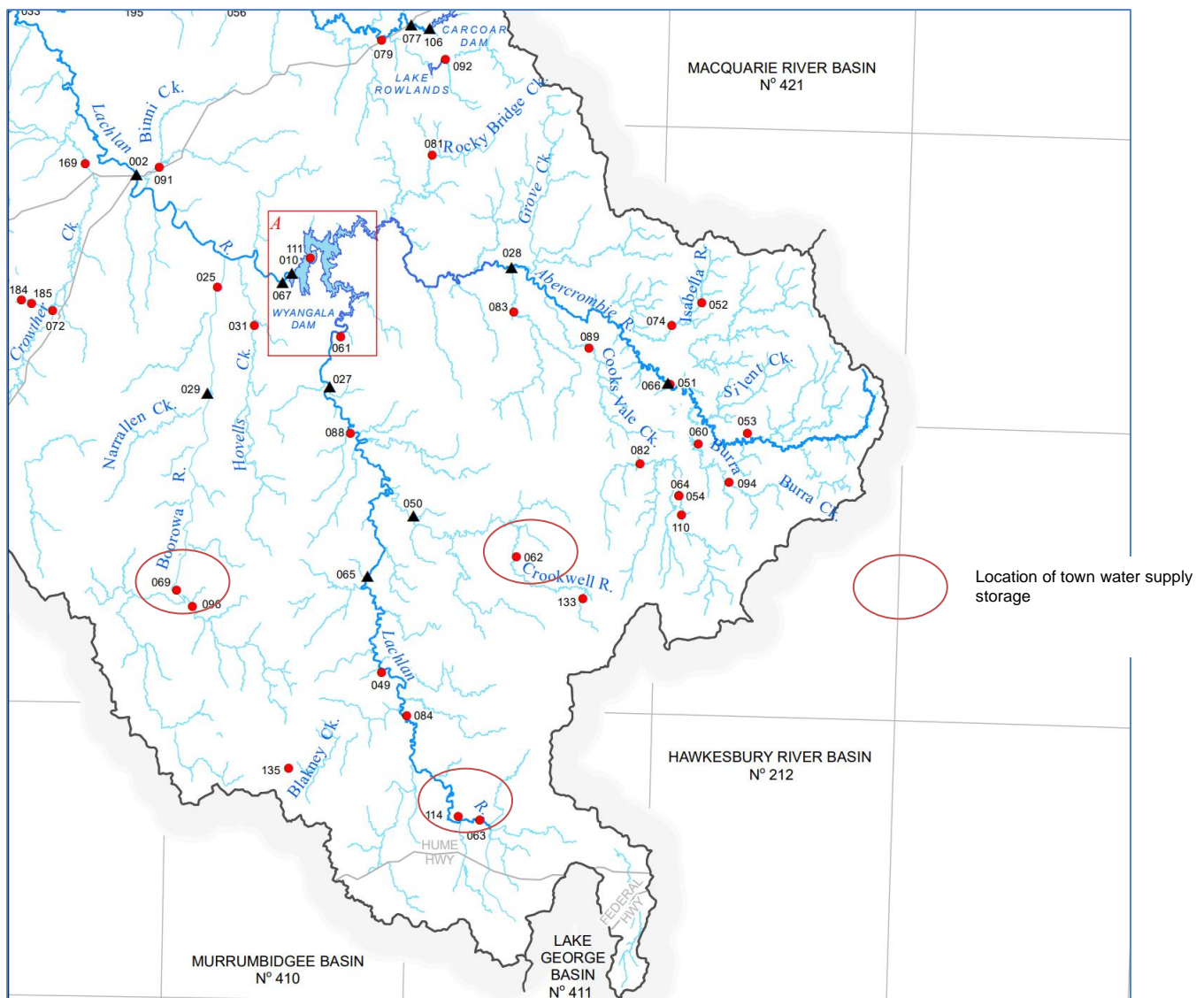


Figure 7: Gauging station in upper Lachlan catchment area²⁴⁸

7.2.1 Crookwell and Boorowa

The Commission notes that the background document to the Lachlan Unregulated Plan outlines that cease to pump rules in the Plan were informed by recommendations of the Interagency Regional Panel (IRP). For the Lachlan River Above Reids Flat and the Crookwell

²⁴⁸ DPE-Water (n.d.) [Water Monitoring Station](#)

River Water Source, the IRP suggested that the hydrologic stress associated with extraction was ‘medium’ rather than ‘high’ and therefore recommended access rules that aligned with a medium level of hydrologic stress (2ML/day). To allow water users time to plan for the new access arrangements, the IRP recommended a staged implementation of cease to pump rules. In the context of a growth in basic landholder rights and licensed entitlements in these water sources since the original Lachlan Unregulated Plan was made, the Commission recommends a review of the cease to pump rules in unregulated water sources critical for town water supply.

The risks to the Upper Lachlan unregulated water sources are highlighted in the *Lachlan Water Resource Plan* risk assessment document.²⁴⁹ The risk assessment outlines that there are high risks of insufficient water being available for the environment under base flow and low flow periods for the Crookwell River Water Source (6th year cease to pump). In addition, there is a high to medium risk under all flow regimes of insufficient water being available in the Lachlan River above Reids Flat Water Source (6th year cease to pump).

In the case of Boorowa, which has been subject to several restrictions over the life of the Lachlan Unregulated Plan,²⁵⁰ the Commission notes that the specified ‘very low flow class’ for the Boorowa River and Hovells Creek Water Source is 0 ML/day – effectively being equivalent to ‘no visible flow’ rule at the flow reference point (i.e., Possers Crossing Gauge (412029)), which is located downstream of Boorowa.

It is unclear whether the existing 0 ML/day flow rule is adequate to protect Boorowa’s town water supply. However, the Commission has continuously recommended that a ‘no visible flow’ rule is generally not sufficient and does not give effect to the principles and objects of the Act, and hence should be reviewed.

In addition, the *Lachlan Water Resource Plan* risk assessment document also outlines that there is a high risk that insufficient water is available for the environment under base flow and low flow periods in the Boorowa River and Hovells Creek Water Source, further strengthening the argument to review the current flow classes and daily access rules.

The preliminary climate risk modelling for the *Lachlan Regional Water Strategy* also indicates that the percentage of years with cease to flow events at Possers Crossing Gauge (i.e., the reference point for the ‘no visible flow rule’ in the Boorowa River and Hovells Creek Water Source) could increase from approximately 65 percent to over 80 percent under a dry future climate change scenario.

7.2.2 Ivanhoe

The Commission notes that Ivanhoe relies on an unregulated stream governed by the Lachlan Unregulated Plan as a secondary water source (i.e., Waverley Creek, which merges with Willandra Creek). Flows in this unregulated creek are dependent on replenishment flows provided for by releases from the regulated Lachlan River system.

Although the Commission acknowledges that the Regulated Lachlan Plan is outside the remit of this review, clause 49(3) of the Regulated Lachlan Plan states that ‘*if the Minister permits the taking of water (in the unregulated effluent creeks), the Minister must include the following requirements in the notice to the access licence holders (a) water must not be taken when there is no visible flow at the location at which water is proposed to be taken.*’ As outlined in previous reviews, the Commission is concerned that a ‘no visible flow’ rule may

²⁴⁹ DPE-Water (2018) [Lachlan Water Resource Plan risk assessment](#)

²⁵⁰ Boorowa experienced town water security risks, with the Council quoting that Boorowa has been on water restrictions for more than five years between 2014 and 2019. [Hilltops Council push for water pipeline to Boorowa](#)

not be adequate to protect high priority needs, including town water supply. As such, when reviewing the Lachlan Unregulated Plan flow rules, DPE-Water should consider the adequacy of the rules and the interaction between the regulated and unregulated river systems in the Lachlan catchment (see **Chapter 5**).

During the Lachlan Unregulated Plan replacement process, DPE-Water should review the adequacy of the existing flow classes and daily access rules to ensure they protect environmental, basic landholder rights and town water needs. In this review, DPE-Water should ensure that town water is given priority over other unregulated river licensed use in establishing flow rules and daily access rules, consistent with the priorities under the Act, and rules should support LWU access licences to continue to extract where environmental outcomes are not compromised.

7.3 Growth in unregulated licenses and basic rights warrants review

Over the life of the Lachlan Unregulated Plan, there has been growth in basic landholder rights volumes²⁵¹ and licensed entitlement shares – particularly in the upper Lachlan catchment area (above Wyangala Dam), which is important for towns such as Crookwell, Gunning and Boorowa.²⁵²

The Commission has observed the following changes in the licensed entitlement volumes and basic landholder rights:

- **Lachlan River above Reids Flat Water Source** – the licensed share component of unregulated river access licences has increased significantly from 685 unit shares to 1,872 unit shares, and the basic landholder rights estimate has increased from 723 ML/year to 1,223 ML/year
- **Crookwell River Water Source** – the licensed share component of unregulated river access licences has increased modestly from 1,133 unit shares to 1,289 unit shares, and the basic landholder rights estimate has increased from 177 ML/year to 345 ML/year
- **Boorowa River and Hovells Creek Water Source** – the licensed share component has decreased from 1,387 unit shares to 1,128 unit shares and the basic landholder rights estimate has increased from 431 ML/year to 754 ML/year.

Growth in extraction via basic landholder rights or unregulated water access licences may have implications for the environment and the security of town water supplies as basic rights extraction has priority access under the Act and DPE-Water currently does not undertake LTAAEL compliance assessment in unregulated water sources (see **Chapter 3**). The combined effect could put further pressure on flows important for aquatic ecosystems and town water requirements. The Commission therefore supports the *NSW Water Strategy* Action 1.6, which commits to reviewing the regulation of domestic and stock basic landholder rights.²⁵³

As highlighted in the *Lachlan Water Resource Plan* risk assessment,²⁵⁴ there are existing risks of insufficient water being provided for the environment in these water sources under

²⁵¹ The Commission acknowledges that there has been a change in the methodology to determine basic landholder rights.

²⁵² In addition, the share component for unregulated river access licences increased in the Unregulated Effluent Creeks Water Source from 2,309 unit shares to 2,762 unit shares. Given this water source covers many unregulated rivers in the lower Lachlan, it cannot be determined at this time whether this would affect Ivanhoe's water supply.

²⁵³ DPE-Water (2021) [NSW Water Strategy](#)

²⁵⁴ DPE-Water (2018) [Lachlan Water Resource Plan risk assessment](#)

certain flow regimes. Growth in basic rights/licensed extraction will increase these risks further.

Local councils also identified this risk. In an interview with the Upper Lachlan Shire Council it was mentioned that:

“We’re a small council but the area is starting to grow. The infrastructure we have already doesn’t really meet our needs. We are concerned what might happen with new growth – 800 houses all located at a higher elevation than town. You see it elsewhere – spread of suburbia (...).”²⁵⁵

DPE-Water should consider the risks of growth in extraction in the water sources in the upper Lachlan catchment area and work with councils to address these risks to ensure the priorities of the Act are adequately met.

7.4 Emerging infrastructure projects may require future Plan amendments

The Australian and NSW Governments have provided funding to progress a business case in the Belubula catchment (i.e., the *Belubula Water Security Project*) to investigate several inter-related infrastructure options. These infrastructure options include:

1. the construction of a pipeline between Central Tablelands Water owned and operated Lake Rowlands Dam (capacity of 4,500 ML) and WaterNSW operated Carcoar Dam (35,800 ML). The pipeline would enable the direct transfer of water between the Lachlan Unregulated Plan area and the Belubula Regulated Plan area
2. the augmentation of Lake Rowlands to enlarge Central Tablelands Water storage capacity.

At the time of this review, documentation outlining the scope and objective of the business case is limited.²⁵⁶ However, DPE-Water’s website suggests that the objectives of the business case are to improve town water security (for Central Tablelands Water) and/or to enhance the reliability of water access licence holders in the Belubula Regulated system.²⁵⁷ Considering these two possible objectives, there are several issues that may warrant further consideration in the remake of the Lachlan Unregulated Plan and the Belubula Regulated Plan.

Although unregulated water sources in the Belubula catchment are already closely connected to the Belubula Regulated River, the transfer of unregulated water to Carcoar Dam could cause several issues and potentially lead to outcomes not intended by the project.

Firstly, the impact of the project with respect to the LTAAEL is unclear, as take from the unregulated system is not well understood (see **Chapter 3** and **Chapter 4**). During the interview with Water Infrastructure NSW, the Commission heard ‘*The Water Infrastructure project team suspect that extraction in the Lachlan Unregulated System may be at the LTAAEL limit, so any additional extraction via transfer may have impacts.*’²⁵⁸

²⁵⁵ Interview: Upper Lachlan Council, 16 February 2023.

²⁵⁶ The origin of the Belubula Water Security Project is the *Infrastructure NSW 2018 State Infrastructure Strategy* and the *WaterNSW Lachlan Valley Water Security Study*.

²⁵⁷ [Belubula Water Security Project | Water \(nsw.gov.au\)](https://www.water.nsw.gov.au/belubula-water-security-project)

²⁵⁸ Interview: Water Infrastructure NSW, 15 February 2023.

The transfer of unregulated water to Carcoar Dam, which is then used for future town water supply purposes, could lead to an increase in overall take in the Lachlan Unregulated Plan area or the Unregulated Macquarie-Bogan Plan area (noting that Central Tablelands Water has a pipeline connection to Orange).²⁵⁹ Such growth increases the risk that the LTAAEL in these unregulated Plan areas may be exceeded, which could impact other water users. Water transfers from Lake Rowlands could also lead to reduced flows downstream into Coombing Creek, which could impact the environment and basic landholder rights. The ecological implications need to be considered in the context of a changing climate and should be assessed accordingly.

The transfer of water between Lake Rowlands and Carcoar Dam could also lead to consequences for the end-of-system requirements in the Belubula Regulated River. Currently, meeting these end-of-system requirements is challenging (see **Chapter 4**), which was highlighted when clause 26 of the Belubula Regulated Plan was suspended (July 2019 to June 2020). Under the existing (Belubula Regulated Plan) provisions, water transfer from Lake Rowlands may need to be set-aside to meet end-of-system requirements first, which would have a positive environmental outcome but may impact on other licence holders and town water security.

In addition, the current Belubula Regulated Plan does not have an LWU share component. If the intent of the project is to quarantine the water transferred from Lake Rowlands to Carcoar Dam for future town water use, DPE-Water needs to consider how this could be provided for in the absence of an LWU share component in the Belubula Regulated Plan.

Landholders who hold water access licence entitlement shares in the Belubula Regulated Plan expressed concerns about a pipeline project connecting the two storages as it was seen to cause potential impacts on entitlement reliability. In interviews with Belubula landholders,²⁶⁰ the Commission heard: *'Farmers have no understanding of the ratio that we get from the project – we need something in black and white before would support it.'*

The Commission notes that the business case is in its preliminary stages and no decisions have been made on future infrastructure augmentation. However, if the project is progressed consideration of potential issues and consequences for water sharing and Plan outcomes will be essential in the replacement process for the Lachlan Unregulated Plan and the Belubula Regulated Plan. Further consultation with stakeholders in the Belubula catchment will be also critical.

7.5 Recommendations

R 15	<p>As part of the replacement of the Lachlan Unregulated Plan and the Belubula Regulated Plan, DPE-Water should:</p> <p>a) review the adequacy of relevant flow classes and access rules in the Lachlan Unregulated Plan for the Boorowa River and Hovells Creek Water Source, the Crookwell River Water Source, the Lachlan River above Reids Flat Water Source, the Goobang and Billabong Creeks Water Source, the Unregulated Effluent Creeks Water Source and the Belubula Tributaries below Carcoar Water</p>
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²⁵⁹ Central Tablelands Water has a pipeline connection to Orange City Council and is currently developing a sub-regional town water strategy with Cabonne Shire Council and Orange City Council to strengthen the connection between council areas. Any additional water that is transferred into the Macquarie-Bogan Plan area (i.e., outside the councils' reticulated system) would become an additional resource for the Macquarie-Bogan Plan area, which – if extracted – increases take in the Unregulated Macquarie-Bogan Plan area.

²⁶⁰ Interview: Lachlan Valley Water and Belubula landholders, 15 February 2023.

	<p>Source (particularly Coombing Creek), to ensure the provisions are adequate to protect town water supplies without impeding on, or compromising the principles and priorities of the Act</p> <p>b) insert a clause in Part 12 of the Lachlan Unregulated Plan and the Belubula Regulated Plan that enables the plans to be amended in the event that the Belubula Water Security Project is progressed during the term of the replacement Plans.</p>
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8 Improving outcomes through trade in the Lachlan Unregulated Plan

Trade is an important tool for water licence holders, including primary producers, urban water suppliers, and environmental water managers to achieve economic, social and environmental outcomes. In addition, trade can be an important and cost-effective part of a suite of adaptation strategies for climate change.²⁶¹ This is critical given climate change may cause a significant shift in the region's climate, potential long-term declines in water availability, and more frequent and intense extreme events.

Both the Lachlan Unregulated Plan and the Belubula Regulated Plan include objectives to *'maintain, and where possible improve, access to water to optimise economic benefits for agriculture, surface water-dependent industries and local economies'*, and targeted objectives to *'maintain, and where possible improve, water trading opportunities for surface water-dependent businesses'*.²⁶² These objectives illustrate that the Plans have a clear intent to adapt and support socio-economic outcomes, and recognise a need to optimise water use – potentially through trading – given the constantly changing water needs and water availability in the Plan areas.

Currently, the Lachlan Unregulated Plan prohibits most forms of water trading, to the extent that it is unlikely aligned with the intent to have an open,²⁶³ fair, efficient and sustainable water market in NSW.²⁶⁴ While some trade restrictions remain critical to protect environmental and other priority needs, there is scope to review these restrictions to identify opportunities to expand trade opportunities, provided risks are managed (**Section 8.1**). There is a substantial amount of new data that could support appropriate, risk-based expansion of trade opportunities (**Section 8.2**).

In addition to concerns about trade restrictions in the Lachlan Unregulated Plan, stakeholders raised concerns about the possibility of extending trade between the Belubula Regulated Plan and the regulated Lachlan River. The Commission's views on this are outlined in **Section 8.3**.

8.1 The Lachlan Unregulated Plan prohibits most trade

The Lachlan Unregulated Plan currently prohibits most forms of trade,²⁶⁵ including:²⁶⁶

- licence conversions (dealings under section 710 of the Act)²⁶⁷

²⁶¹ Trade provides an opportunity to reallocate scarce resources during climate extremes, including droughts, which can benefit the environment, social and economic outcomes.

²⁶² Provision 11 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#) and Provision 9 of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#). The [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#) provides slightly stronger wording in that "the targeted economic objective of this Plan are as follow (a) to provide water trading opportunities for surface water-dependent businesses.

²⁶³ The NSW Government recognises that trade limitations may be necessary in certain circumstances to protect the water source, the environment, basic landholder rights and other licence holders.

²⁶⁴ COAG (2004) [Intergovernmental Agreement on a National Water Initiative](#)

²⁶⁵ The current licence dealings rules are also unnecessarily complex and could be simplified (see clause 63 (c) and 63 (d) and clause 66 (c) and 66 (d) for example.

²⁶⁶ Part 10 of the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#)

²⁶⁷ Dealings under section 710 are also prohibited in the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

- licence/entitlement trades ('permanent trades') between unregulated water sources unless these unregulated water sources have a very high connectivity (dealings under 71Q of the Act)²⁶⁸
- allocation trades ('temporary trades') between many unregulated water sources unless these unregulated water sources have a very high connectivity (dealings under section 71T of the Act)²⁶⁹
- amendments to share components dealings²⁷⁰ for all water sources except the Western Bland Creek Water Source (dealings under 71R of the Act)²⁷¹
- nomination of water supply works dealings²⁷² in many water sources (dealings under section 71W of the Act).

These trade restrictions are based on DPE-Water's assessment of the instream values of each of the unregulated water sources when the Lachlan Unregulated Plan was first made.²⁷³ This assessment concluded that 18 of the Plan's 23 unregulated water sources had 'high' instream values. As a result, DPE-Water has adopted a precautionary approach to trade in the unregulated water sources to protect high ecological values or to limit demand, which resulted in limited trade opportunities in most unregulated water sources in the Lachlan and Belubula catchments.

The Commission also acknowledges that some unregulated water sources have different trade rules from the default approach to recognise their unique circumstances. For example, specific trade rules apply in the following water sources:²⁷⁴

- **Abercrombie River above Wyangala Water Source** – this water source is split into two management zones, and permanent and temporary water trades are restricted from downstream of the Abercrombie River and Bolong River junction to the area upstream of the junction. This restriction was imposed to protect high ecological values in the upper part of the unregulated water source (clause 63(1)(a) and clause 66(1)(a))
- **Mid-Lachlan Water Source** – trade into Booberoi Creek is prohibited despite the close connection between the regulated Lachlan River and Booberoi Creek. This restriction was put in place to limit irrigation demand on the creek (clause 63(1)(l) and 66(1)(l)) but is also codified in section 15(2c) of the *NSW Access Licence Dealing Principle Order 2004*
- **Effluent Creek Water Source** – trade between the lower Lachlan effluent creeks is prohibited due to the existence of high value ecosystems and to minimise the concentration of irrigation demand on a particular creek. In addition, the trade rules also prevent trades into Lake Waljeers due to significant socio-economic and environmental value associated with the lake (clauses 63(1)(f-j) and clauses 66(1)(f-j)).

²⁶⁸ In the [Water Sharing Plan for the Lachlan Unregulated River Water Sources 2012](#), the notable exception is the Western Bland Creek Water Source where trades into the Western Bland Creek Water Source are permitted from Tyagong Creek Water Source.

²⁶⁹ *Ibid.*

²⁷⁰ This includes the change in location where a water access licence can be used and the movement of the licence to another water source or part of the water source.

²⁷¹ The amendment to the share component dealings for the Western Plan Creek Water Source is restricted by section 64(1)(b).

²⁷² This includes the amendment of the licence for delivery of water from an alternative water supply work or group of works.

²⁷³ DPI-Office of Water (2016) *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Source: Background document for amended plan 2016*, p.33.

²⁷⁴ DPI-Office of Water (2016) *Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Source: Background document for amended plan 2016* p.34 and 35.

At the same time, the Commission acknowledges that trade limits remain an important mechanism to protect environmental and basic landholder rights outcomes. Opening up trade opportunities could enhance the risk of LTAAEL exceedance (see **Chapter 3**), especially if current access rules do not provide sufficient protection and the absence of appropriate LTAAEL compliance assessments. This risk must be carefully considered. However, the Commission considers it prudent to re-evaluate whether the existing trade constraints that were put in place when the Lachlan Unregulated Plan was made, remain appropriate given changes in water use and demand patterns as well as updated ecological information and knowledge.

As discussed in **Chapters 3, 4 and 5**, the Commission considers that DPE-Water should prioritise LTAAEL accounting and compliance assessments and the development and tailoring of appropriate access rules in the Lachlan Unregulated Plan area, instead of applying a broad-scale prohibition on trade in most water sources. In addition, DPE-Water should reassess whether the previous classification of the 18 unregulated water sources as having 'high' in-stream values is still appropriate, or whether alternative trade opportunities could be provided for.

A review of the past trade data highlighted that there have only been five permanent trades (71Q trades) and eight temporary trades (71T trades)²⁷⁵ during the life of the Lachlan Unregulated Plan.²⁷⁶ The Commission suggests that part of the limited market depth in the Lachlan Unregulated Plan is a result of restrictive and complex trade rules.

The Commission suggests that a comprehensive review of Part 10 of the Lachlan Unregulated Plan could:

- expand further economic and social opportunities in the Lachlan Unregulated Plan area
- improve alignment with the Plan's economic objectives, strategies and performance indicators
- better align with the *National Water Initiative* objective to progressively remove trade barriers to facilitate a deepening of the water market.²⁷⁷

Such a review and any consequential revision to the existing trade rules should ensure that environmental, basic landholder rights, Aboriginal cultural and other instream values remain protected²⁷⁸ in accordance with the principles of the Act. In addition, consideration about expanding trade opportunities should not increase the risk of LTAAEL exceedance.

In undertaking its review, DPE-Water should also consider trade rules contained in the *Water Sharing Plan for the Lachlan Regulated River Water Source 2016* given the close connectivity between unregulated and regulated water sources downstream of Forbes.

8.2 New information could expand trade in the Lachlan Unregulated Plan area

New data and research undertaken since the Lachlan Unregulated Plan was developed provide a better understanding of the ecological values and hydrologic needs in the

²⁷⁵ Temporary trades have predominantly occurred in the Lake Forbes and Back Yamma Creek Water Source and in the Mandagery Creek Water Source.

²⁷⁶ Data provided by WaterNSW.

²⁷⁷ DCCEEW (2022) [Intergovernmental Agreement on National Water Initiative](#), clause 23.

²⁷⁸ Submission: Inland rivers Network, April 2022.

Lachlan Unregulated Plan area.²⁷⁹ This should support a more granular assessment of the likely risks and benefits associated with trading activities and be used to review the existing trade rules in the Lachlan Unregulated Plan.²⁸⁰

The *Lachlan Water Resource Plan* risk assessment provides comprehensive information on the hydrologic stress of each unregulated water source in the Lachlan and Belubula catchments and ranks them according to a consequence score. These scores provide an indication of the potential impacts to ecological functions and assets using the HEVAE values and the extraction pressures within each water source.²⁸¹ The risk assessment grouped the water sources according to four zones (upland, midland, lowlands and terminal) and assigned a 'high' or 'very high' consequence score to the following unregulated water sources:²⁸²

- **in the upland and midland zones:** the Abercrombie River above Wyangala Dam, the Crookwell River, the Lachlan River above Reids Flat, and the Mandagery Creek²⁸³ – due to the presence of threatened fish and frog species, including the Macquarie perch, silver perch, Murray crayfish and the southern bell frog
- **in the lowland and terminal zones:** the mid-Lachlan unregulated water source and the unregulated effluent creeks water source have high and medium consequence scores²⁸⁴ – due to the presence of Murray cod, Menindee nightshade and the southern bell frog.

The Commission recommends that DPE-Water uses the information from the *Lachlan Water Resource Plan* risk assessment and other relevant information, including the latest information on environmental assets, climate and drought refugia, to review all dealings provisions in the Lachlan Unregulated Plan, paying close attention to those unregulated water sources with a 'high' or 'very high' consequence score.

In addition, the review of the dealing provisions should also consider where the licensed share component has increased over the life of the Plan, including:

- **Abercrombie River above Wyangala Dam Water Source** where the share component increased from 773 unit shares to 969 unit shares
- **Mandagery Creek Water Source** where the share component increased from 8,054 unit shares to 9,026 unit shares
- **Unregulated Effluent Creek Water Source** where the share component increased from 2,309 unit shares to 2,762 unit shares.

For all other unregulated water sources that have been assigned a medium or low risk, DPE-Water should consider whether trading opportunities could be expanded.

The *Lachlan Long-Term Water Plan* also provides information on key water-dependent values, water source or planning unit hydrology and recommended management strategies, which should be considered by DPE-Water in developing the replacement

²⁷⁹ DPIE (2020) [Lachlan Long-Term Water Plan](#)

²⁸⁰ A review of trade opportunities should consider and prioritise the protection of environmental, Aboriginal cultural and other instream values.

²⁸¹ MDBA (n.d.) [Lachlan water resource plan](#)

²⁸² DPE-Water (2018) [Risk assessment for Lachlan water resource plan area \(SW10\)](#)

²⁸³ In addition, the Boorowa River and Hovells Creek, the Belubula Tributaries below Carcoar also have high risk ratings.

²⁸⁴ The Goobang and Billabong Creeks water source also has a high-risk rating for some flow regimes. This water source is of relevance for Parkes Shire Council's water supply.

plan.²⁸⁵ DPE-Water should also consider the newly developed climate datasets and updated hydrologic models developed for the regional water strategies when reviewing the Lachlan Unregulated Plan's trade provisions.²⁸⁶ This information will be useful to better understand the risks and consequences of future climate variability and climate change on the region's water sources and trade opportunities.

Recognising that many issues associated with trade are state-wide, DPE-Water has provided advice to previous unregulated water sharing plan reviews that the Department will review the dealing rules as part of the plan remake to ensure the rules are appropriate and improve flexibility for water users.²⁸⁷ In developing the replacement Lachlan Unregulated Plan, DPE-Water should draw on any findings in other plans²⁸⁸ to determine the most appropriate dealing rules and trading zones in the Lachlan Unregulated Plan and explore opportunities to minimise trade restrictions. Provisions should be designed at the appropriate geographic scale and clearly stated in the Plan to support trade within environmental and system constraints. The Commission supports the inclusion of updated trade rules where it can be demonstrated that this supports improved environmental, economic and social outcomes.

While trade rules should be reviewed as soon as possible, and no later than in the replacement Lachlan Unregulated Plan process, the Commission does not support interim case-by-case trade arrangements. These would require the suspension of the Lachlan Unregulated Plan's trade provisions and the development of individual assessment criteria, which would take the focus from developing revised Plan rules and may have unintended outcomes. To the extent that future dealings provisions need to consider provisions of the Lachlan Regulated Plan²⁸⁹ (including in the Effluent Creeks),²⁹⁰ DPE-Water should take these provisions into consideration.

8.3 Trade within and between the Belubula Regulated and Lachlan rivers

There are active water markets in all of NSW's inland regulated river systems. Limited trade opportunities also exist between hydrologically connected river catchments (e.g., Murray and Murrumbidgee catchments, and Peel and Lower Namoi catchments). However, these inter-catchment trade arrangements are less common across NSW.

Despite the existing – although variable – connectivity between the Belubula Regulated River and the regulated Lachlan River, permanent and temporary trades between these two catchments are currently not permitted. However, clause 62 of the Belubula Regulated Plan allows for future Plan amendments to enable trade into the Belubula Regulated

²⁸⁵ DPIE (2020) [Lachlan Long-Term Water Plan](#). The Commission acknowledges that there are some data and modelling limitations.

²⁸⁶ The Commission acknowledges that hydrologic models do not exist for unregulated water sources in the Lachlan, which is a gap that was recognised in the [Draft Lachlan Regional Water Strategy](#)

²⁸⁷ Feedback from DPE-Water on previous water sharing plan reviews.

²⁸⁸ The Commission acknowledges that DPE-Water has commissioned an independent review of the issues and options for permanent and temporary trade between the Peel and Lower Namoi regulated water sources. The finding of this independent review may also be of relevance for other catchments.

²⁸⁹ The [Water Sharing Plan for the Lachlan Regulated Plan Water Source 2016](#) is scheduled to be reviewed in FY2024/25.

²⁹⁰ Water in the unregulated effluent creek water source comes primarily from the regulated Lachlan River. Water can therefore only be extracted for irrigation purposes once the requirements of the Water sharing Plan for the Lachlan Regulated River have been met. This is essentially once storages are full, orders have been met and environmental and replenishment flows have been provided for. The access rules in this water source were required to ensure that all environmental flows from the regulated Lachlan River are protected and that replenishment flows from the regulated Lachlan River are used solely for domestic purposes.

system to the extent that the total share amount at the commencement of the Belubula Regulated Plan is not exceeded.²⁹¹

The Commission notes that the National Water Initiative and the *Basin Plan 2012* intended for trade within and between regulated river systems to be free and subject only to a set of permitted conditions.²⁹² These permissible conditions include physical delivery constraints (which includes issues related to transmission losses), or where expanding trade could lead to environmental impacts.

The Commission heard that stakeholders had no concerns about trades within the Belubula Regulated Plan area. However, stakeholders raised concerns about extending trade to the regulated Lachlan River. In particular, stakeholders told the Commission that they *'do not want people on the Lachlan to buy water off [us] as it would undermine Belubula water use. (...) We are happy with our own trade area on the Belubula.'*²⁹³

The Commission notes there have been over 230 temporary trades in the Belubula Regulated Plan area, which suggest there is an active water market. The Commission cannot find evidence of unnecessarily or cumbersome trade restrictions within the Belubula Regulated water source.

Should DPE-Water review the feasibility of trade between the Belubula Regulated River and the regulated Lachlan River as part of the Plan remake, the Commission recommends DPE-Water considers:

- the existing low reliability of general security access licence holders in the Belubula Regulated Plan area and the fact that Carcoar Dam only commands a small proportion of inflows into the regulated system – further trade into the Belubula Regulated water source would likely exacerbate the reliability issue of existing licence holders in the system
- the impact on end-of-system flows in the Belubula Regulated River – trade into the Belubula catchment would likely result in more water use and less flows reaching the end of the system, which would exacerbate existing connectivity issues between the Belubula Regulated River and the regulated Lachlan River
- the delivery of any substantive volume of water from the Belubula Regulated River to the regulated Lachlan River, which could also significantly increase transmission losses during dry times and impact on water users not party to trade
- the likely demand for inter-catchment trade between the Belubula Regulated and regulated Lachlan water sources (noting that demand has been small in other catchments like the Peel and lower Namoi) and broader stakeholder feedback.

The Commission also notes that the recent independent review of issues and options for permanent and temporary trade between the Peel and Lower Namoi regulated water sources showed there is potential for impacts from allowing trade between regulated systems due to the change in the location and timing in which water is delivered.²⁹⁴ In addition, DPE-Water would also need to consider the feasibility, practicality, costs and benefits of implementing trade between the two catchments.

²⁹¹ Even under the amendment provisions, no trade would be allowed out of the regulated Belubula River, so it would seem licences would need to be cancelled for this amendment to be useful.

²⁹² Chapter 12 of the [Basin Plan 2012](#)

²⁹³ Interview: Lachlan Valley Water and Belubula landholders, 15 February 2023.

²⁹⁴ DPE-Water should consider whether the [independent review](#) of the issues and options for permanent and temporary trade between the Peel and Lower Namoi regulated water sources could inform the review of trade between the Belubula and Lachlan regulated systems.

8.4 Recommendations

<p>R 16</p>	<p>To improve outcomes through trade, DPE-Water should review and revise existing water access licence dealings provisions in the Lachlan Unregulated Plan at an appropriate scale.</p> <p>This review should be based on the latest information on hydrologic stress, entitlement and basic landholder rights' volumes, connectivity, HEVAE mapping and cultural assets and values, and be supported by an accompanying explanatory document.</p>
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9 Monitoring, evaluation and reporting

A lack of coordinated monitoring, evaluation and reporting (MER) is a consistent theme raised in the Commission's reviews of water sharing plans. This is largely due to a lack of plan-specific MER programs, as well as limited resources dedicated to MER. This review has found a similar lack of plan-specific MER over the life of the Plans subject to this review.

The Commission acknowledges that DPE-Water is working to improve MER arrangements for water sharing plans and water resource plans. It has prepared the *Lachlan Surface Water Monitoring, Evaluation and Reporting Plan* as part of its work for the Lachlan Surface Water WRP.²⁹⁵ In addition, the Commission welcomes DPE-Water's work on a draft NSW Water Sharing Plan Evaluation Framework, including the development of the NSW Water Sharing Plan Evaluation Program and method statements to support its implementation. The Commission understands that DPE-Water will commence implementation of the Program in 2023.

There are also several existing or historical environmental monitoring programs in place (led by DPE-Water, EHG and DPI-Fisheries in particular) (see **Section 9.1**) that support an understanding of the conditions of water sources in the Plan areas, and how environmental assets respond to changes in flow. Despite their value, these historic monitoring programs are often focused on the regulated Lachlan River system or tailored to specific site investigations.

The *NSW Water Strategy* includes an action under Priority 3 to 'invest in long term and effective monitoring, evaluation, reporting and research'.²⁹⁶ The Commission welcomes this commitment, including the intent to publish an updated River Condition Index.²⁹⁷ However, the Commission notes the lack of clarity around long-term future funding that will be available for MER activities, including water sharing plan monitoring and evaluations actions.

The Commission considers it critical that DPE-Water receives (or re-allocates) adequate funding to undertake appropriate monitoring and evaluation as a priority. Funding should be commensurate with the importance of MER for assessing water sharing plan effectiveness and supporting adaptive management. The Commission understands that funding for water sharing plan MER activities is predominantly allocated from the Independent Pricing and Regulatory Tribunal NSW final determination of charges that the Water Administration Ministerial Corporation can levy on licence holders for its water management services over the period of four years. The current determination was handed down in 2021 and expires on 30 June 2025.

Section 9.2 discusses pathways to improved MER, **Section 9.3** outlines key knowledge gaps that should be addressed, and **Section 9.4** provides recommendations about future stakeholder engagement as part of the Plans' replacement process.

²⁹⁵ NSW DPI (2020) [Lachlan surface water resource plan: Lachlan surface water monitoring, evaluation and reporting plan - Schedule J](#)

²⁹⁶ DPIE-Water (2021) [NSW Water Strategy](#)

²⁹⁷ DPE-Water (n.d.) [Report on the strategy's progress](#)

9.1 Existing monitoring programs in the plan areas

Although there is a lack of monitoring and reporting against both Plans' performance indicators, other existing monitoring programs provide some insight into environmental condition and outcomes being achieved in the Lachlan and Belubula catchments.

Unfortunately, these programs can often not be directly attributed to either one of these Plans or any specific Plan provisions given they are largely associated with the use of environmental water holdings and environmental water allocations from the regulated Lachlan River.²⁹⁸ Nonetheless, the Commission recognises that provisions that are intended to protect environmental water holdings and planned environmental water releases can contribute to realising intended outcomes in the catchment downstream of the regulated Lachlan River (and by extension in the Lachlan Unregulated Plan area).

Much of the monitoring and evaluation that has occurred to date has focused on the regulated Lachlan River system and in particular the lower Lachlan River system, which spans the area from Lake Brewster to the Great Cumbung Swamp.²⁹⁹ Data and information gathered through this work and others across the catchment is valuable to further improve river and wetland health in the catchment. Relevant programs include:

- Water for the Environment Monitoring, Evaluating and Reporting (MER) program led by DPE-Environment and Heritage Group
- various Fisheries monitoring projects and programs led by DPI-Fisheries³⁰⁰
- private consultancies have also conducted several studies related to fish populations in the Lachlan catchment.

The Commonwealth Environmental Water Office (CEWO) also undertakes several long- and short-term monitoring programs in the Lachlan catchment to evaluate the environmental responses of selected watering actions. However, this does not extend to the Belubula catchment as the CEWO does not currently hold any water entitlements in the Belubula catchment.³⁰¹ Data and information gathered through this work is valuable to further improve river and wetland health in the broader Lachlan catchment.

In addition, a significant amount of analysis and evaluation has been undertaken in relation to the Wyangala Dam Wall Raising Project³⁰² and the Belubula Water Security Project.³⁰³ Important insights were also gained through the development of the Lachlan water resource plans and work that led to amendments to clause 26 of the Belubula Regulated Plan. Unfortunately, some gaps remain, including gaining a better understanding of the connectivity between the Belubula Regulated River and the Belubula Valley Alluvial Groundwater source.³⁰⁴

There are also existing hydrologic and water quality monitoring sites in the Lachlan and Belubula catchments which were considered as part of this review. As part of the development of *the Lachlan Surface Water Resource Plan*, DPE-Water prepared a water quality technical report based on data from these sites. In addition, DPE-Water completed a

²⁹⁸ The Commission notes that the Commonwealth Environmental Water Holder does not have water entitlements in the Regulated Belubula Plan area.

²⁹⁹ CEWO (n.d.) [FLOW Monitoring Evaluation Research](#)

³⁰⁰ The primary program is the Basin Plan Environmental Objectives Monitoring project, which assesses the status of native fish population against related [Basin Plan 2012](#) objectives and targets.

³⁰¹ Department of Climate Change, Energy and the Environment (n.d.) [Monitoring – Lachlan](#)

³⁰² DPE-Water (n.d.) [Wyangala Dam wall raising](#)

³⁰³ DPE-Water (n.d.) [Belubula Water Security Project](#)

³⁰⁴ The Commission acknowledges that DPE-Water has committed to undertake further work to determine the level of surface water and groundwater connectivity in the Belubula catchment as part of the remake of the [Water Sharing Plan for the Belubula Regulated River Water Source 2012](#)

review of its stream, storage, groundwater and water quality monitoring network in 2021. This work has led to work being progressed to upgrade existing gauges and install new gauges in NSW, including in the Plan areas.³⁰⁵

The Commission understands that DPE-Water will draw upon existing programs and link them back to the Plans' objectives and monitoring themes as part of an integrated MER plan.

9.2 Pathways towards improved MER

Water sharing plans

DPE-Water is taking steps to improve water sharing plan MER and support efficient and effective use of available resources. This includes:

- updating water sharing plan objectives as part of Plan amendments in 2020 to make them measurable and more meaningful
- establishing a Water Planning Implementation unit in DPE-Water including a Water Evaluation and Reporting team that is focused on improving MER through the development of DPE-Water's *NSW Water Sharing Plan Evaluation Framework*, which intends to inform future water sharing plan reviews
- establishing a NSW Water Sharing Plan Implementation Program that will track and report on progress of implementation of water sharing plan MER activities
- investing in projects to strengthen MER and help target resources, including development of a framework for prioritising water sources for MER activities and development of a transferability model.

Water resource plan

In addition to strengthening water sharing plan MER, DPE-Water is also developing a Water Resource Plan MER Framework and customised environmental MER plans as part of the development of water resource plans. These seek to integrate MER activities across agencies and map out monitoring efforts by research theme.

The Commission has considered the *Lachlan Surface Water Resource Plan's* MER plan, which was designed to meet *Basin Plan* reporting requirements. The environmental MER plan is based on program logic developed for the water sharing plan objectives, but also objectives from the *Lachlan Long-Term Water Plan* and *Water Quality and Salinity Management Plan*. The program logic is intended to guide monitoring activities, while risk assessments undertaken as part of the water resource planning process are intended to inform areas for further research. The MER plan also maps out existing monitoring programs by research theme.

9.2.1 Areas for improving MER

There is room for improvement in water sharing plan MER:

- while the amended Plans includes clearer, measurable objectives, important Plan provisions have not been updated to support the achievement of the revised objectives, meaning that in some respects, these objectives risk not being met
- the Plans lack equity objectives and corresponding performance indicators – without these, the Plans' effectiveness and alignment with the Act with respect to how they

³⁰⁵ DPE-Water (n.d.) [Hydrometric Gauging Stations Installations and Upgrades](#)

manage equitable sharing of water between and within licence categories, and the Plans' treatment of different users, lack transparency and are difficult to assess

- improved real-time gauging is required to support MER
- there do not appear to be clear roles and responsibilities or adequate resources for overseeing and undertaking water sharing plan MER, which generates risks to implementation.

Given limited resources, it will be critical for DPE-Water to continue to identify efficiencies, focus on the most critical water sharing plan MER needs, and continue to work collaboratively with other government agencies and academic institutions to coordinate monitoring activities that support water sharing plan evaluation. MER activities should be prioritised based on value and risk. Water source prioritisation and transferability studies currently underway by DPE-Water will help to target MER effort and resourcing.

Public reporting of MER priorities, findings, and how they were considered in the amendments of plans is needed to improve transparency and public awareness around plan outcomes. It is preferable that public reporting of available MER occur at regular intervals and in line with the NSW Water Sharing Plan Evaluation Framework, which is currently in development.

While MER may be limited by resources, public reporting of outcomes of the MER that is available would be consistent with best practice and with various NSW commitments to increased transparency in water management. It would also be comparable with the MDBA and Basin states' publication of reports and other matters required by the *Basin Plan*.

There is also a need to report on extreme events that occur during the term of a water sharing plan. These have already been observed during the term of the current Plans that are the focus of this water sharing plan review. Specifically, there should be greater visibility regarding water management arrangements during extreme events and how they influence plan outcomes.

9.3 Knowledge gaps

As noted above, much of the focus for existing monitoring programs has been in the regulated Lachlan River. Further understanding of the unregulated river water sources and of the Belubula Regulated River is required to improve system knowledge, refine the Plans' provisions and support whole-of-catchment planning. Further need for monitoring and evaluation includes:

- assessing and quantifying historic levels of extraction and estimating current levels of extraction (where not metered) and interception activities in both catchments. This should include LTAAEL compliance assessment in unregulated rivers in the Lachlan and Belubula catchments³⁰⁶
- identifying cultural flow needs for water-dependent Aboriginal cultural assets in the Belubula Regulated River and any unregulated water sources in the catchment
- assessing the level of surface water-groundwater connectivity in the Belubula catchment and the Lachlan catchment downstream of Forbes and the likely impact of climate change on the level of connectivity

³⁰⁶ As noted earlier in this report, an estimation of current extraction and the carrying out of LTAAEL compliance assessment should not be deferred until full data is available. Rather, it should commence immediately using the best available information or estimation and be continually improved as data becomes available (for example through the implementation of the non-urban metering reform).

- locating high-quality drought refugia, and assessing the impacts of climate change and extended droughts on waterhole persistence, as well as their connectivity between unregulated and regulated rivers
- comprehensively identifying regionally significant wetlands and lagoons dependent on unregulated river water sources, their current condition, impacts associated with extraction and an altered flow regime, and their resilience to extended droughts and effectiveness of rules to protect them, as well as their connectivity to and dependence on regulated river flows
- expanding habitat mapping to refine environmental water requirements to inform future water sharing plan updates
- improving the understanding of the habitat needs and functional flow requirements of native fish, as well as better understanding of barriers to fish movement and how they impact on connectivity to help prioritise where investment and/or amended unregulated river access rules or regulated river system operation rules are most needed to improve connectivity
- assessing whether basic landholder rights and LWU needs are being met (after environmental needs) consistent with the water management principles (section 5 and 9 of the Act).

9.4 Increase stakeholder engagement and communication

It is important that stakeholder engagement mechanisms support the replacement process for these Plans. Since the dismantling of DPE-Water’s stakeholder advisory panel, the Commission has heard that engagement and communication between DPE-Water and regional stakeholders about plan amendments or the process for future review and plan replacement has been limited.³⁰⁷

For the replacement of the Belubula Regulated Plan and Lachlan Unregulated Plan, the Commission considers it critical that any engagement occurs with a broad cross section of stakeholders, including Aboriginal people, local councils, licence holders, environmental water managers, industry stakeholders and landholders in the Plan areas. This will enable DPE-Water to gain a broad range of perspectives and local insights regarding potential impacts of changes to Plan provisions.

The Commission acknowledges that DPE-Water has limited resources to undertake active and sustained engagement across all plan areas for every plan amendment. However, the Commission is of the view that there are benefits of communicating and engaging with stakeholders about planned and proposed amendments to the Plans to ensure stakeholders’ perspective can be heard and future Plan amendments are understood and complied with.

9.5 Recommendations

R 17	<p>To inform the replacement of the Lachlan Unregulated Plan and Belubula Regulated Plan and improve Plan-specific MER, DPE-Water should, in consultation with other agencies:</p> <p style="padding-left: 40px;">a) identify and address critical knowledge gaps</p>
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³⁰⁷ Interview: Stakeholder, 19 October 2022.

	<ul style="list-style-type: none">b) specify what MER activities will be undertaken to address critical knowledge gaps, support transparency and adaptive management of the Belubula Regulated and Lachlan Unregulated Plans in line with the NSW Water Sharing Plan Evaluation Framework and Prioritisation Tool (i.e., prioritise MER activities based on value and risk)c) strengthen stakeholder engagement in the lead up to and during the Plans' replacement process.d) includes equity objectives and co-designed Aboriginal objectives and corresponding performance indicatorse) specifies timely reporting requirements of the results of MER activities to support transparency and adaptive management. This should include but is not limited to reporting on:<ul style="list-style-type: none">▪ includes reporting on environmental outcomes▪ water management during extreme events that occur in the Plan areas▪ benefits for Aboriginal people arising from the plan provisions.
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10 Compensation implications of recommendations

Under the Act, compensation may be payable by the NSW Government to access licence holders – only in some circumstances where water allocations under a water sharing plan are reduced. Section 43A(3A) of the Act requires the Commission to consider some potential compensation requirements resulting from recommended changes to water sharing plans.

Specifically, the Act states:

‘(3A) If a report of the Natural Resources Commission under subsection (3) recommends changes to a management plan that will result in a reduction of water allocations in relation to which compensation might be payable under section 87AA, the Commission is to state in the report whether the purpose of the proposed change is:

1. *(a) to restore water to the environment because of natural reductions in inflow to the relevant water source, including but not limited to changes resulting from climate change, drought or bushfires, or*
2. *(b) to provide additional water to the environment because of more accurate scientific knowledge that demonstrates that the amount previously allocated to the environment is inadequate.’*

Many of the recommendations can be advanced without triggering compensation. The Commission notes that Section 87AA indicates for instance that compensation is not payable due to a reduction in water allocation if *‘the reduction in water allocations is for the purpose of restoring water to the environment because of natural reductions in inflow to the water source, including but not limited to changes resulting from climate change, drought or bushfires.’* However, the Commission considers that compensation might be payable under Section 87AA in relation to some recommendations listed in **Table 5**.

Table 5: Recommendations that may trigger compensation

Establishing sustainable extraction	
R 2 (d) and R 6 (d)	For the Lachlan Unregulated Plan and the Belubula Regulated Plan , DPE-Water should include a provision in the replacement Plans requiring DPE-Water to determine the sustainable level of extraction by Year 5 based on best available ecological requirements, hydrologic and climate information.
Managing water sources in the Belubula catchment	
R 5	<p>The Commission recommends DPE-Water considers merging the Belubula Regulated Plan into the Lachlan Unregulated Plan and setting up a separate management unit for all surface water resources in the Belubula catchment as part of the Lachlan Unregulated Plan.</p> <p>This would require a fundamental review of all provisions in the Belubula Regulated Plan and the Lachlan Unregulated Plan that relate to the management and accounting of surface water sources in the Belubula catchment, but would allow for more simplified, targeted and equitable access provisions.</p>

<p>R 7</p>	<p>To improve outcomes in the Belubula catchment, DPE-Water should introduce more appropriate access rules for the Belubula Tributaries Below Carcoar Dam Water Source to protect the unregulated water source, support connectivity and improve its contribution to end-of-system flow targets in the Belubula Regulated River.</p>
<p>R 9</p>	<p>In the next two years, DPE-Water should undertake a detailed review of the following clauses in the Belubula Regulated Plan:</p> <ul style="list-style-type: none"> ▪ clauses 47 and 48 to simplify these provisions and ensure take from uncontrolled flows can be appropriately accounted for consistent with the objects and principles of the Act and to ensure transparent and equitable water sharing ▪ clause 49 to ensure access to supplementary flows and uncontrolled flows are equitable and transparent to all water users.
<p>Strengthening environmental protection</p>	
<p>R 10</p>	<p>As part of Lachlan Unregulated Plan replacement, to address the inadequacy of the environmental protection provided by current access rules, DPE-Water should:</p> <ol style="list-style-type: none"> a) review the current hydrometric network to identify where the Plan can reference operational gauges for establishing flow classes and flow-based access rules b) ensure as a priority that high environmental value water sources at medium to high risk from extraction have flow-based access rules that support connectivity and adequately protect water sources and their dependent ecosystems (this should include Mandagery Creek as a priority) c) review if conditions attached to current water access licences and works approvals are appropriate to protect high priority needs, and ensure any changes to access rules from (a) and (b) are reflected in water access licence/works approval conditions.
<p>R 11 (b)</p>	<p>To ensure that nationally and regionally significant wetlands are protected in the Lachlan Unregulated Plan replacement, DPE-Water should:</p> <ol style="list-style-type: none"> b) ensure that access rules and trade rules for tributaries of significant wetlands are adequately protective and contribute to inflows to maintain the ecological character of these wetlands.
<p>R 12 (c)</p>	<p>To improve the outcomes associated with provision of flows in effluent creeks of the Lachlan, DPE-Water should:</p> <ol style="list-style-type: none"> c) establish end-of-system flow targets for effluent creeks with significant environmental values to ensure that flows are provided downstream of Trust districts (in addition to environmental water deliveries).

R 13	<p>To ensure environmental water deliveries from the regulated Lachlan River can achieve their intended outcomes in the unregulated river water sources, the replacement Lachlan Unregulated Plan must include provisions that:</p> <ul style="list-style-type: none"> a) protect these flows from unauthorised extraction, obstruction and diversion in unregulated river water sources b) require that private structures along unregulated river water sources are operated (e.g., boards removed) to allow for environmental water deliveries to pass through.
Securing town water supply to meet future needs	
R 15 a	<p>As part of the replacement of the Lachlan Unregulated Plan, DPE-Water should:</p> <ul style="list-style-type: none"> a) review the adequacy of relevant flow classes and access rules in the Boorowa River and Hovells Creek Water Source, the Crookwell River Water Source, the Lachlan River above Reids Flat Water Source, the Goobang and Billabong Creeks Water Source, the Unregulated Effluent Creeks Water Source and the Belubula Tributaries below Carcoar Water Source (particularly Coombing Creek), to ensure the provisions are adequate to protect town water supplies without impeding on, or compromising the priorities of the Act.

Recommendation 2d and 6d could require compensation if the analysis determines that the current LTAAELs based on historic extraction are too high to adequately protect the water sources and their ecosystems. In this case the potential change in allocation may be due to new scientific information about ecological requirements as well as a natural reduction in inflows that may be associated with climate change and may result in a lower availability of water into the future.

Recommendation 5 may require compensation depending on the process for how the Belubula Regulated Plan (including the existing licensed entitlements, access rules and allocation rules) gets absorbed into the Lachlan Unregulated Plan. The Commission acknowledges that **Recommendation 5** is a significant departure of current water management arrangements in the Belubula catchment and will require detailed consideration and extensive stakeholder engagement.

Recommendations 7, 9, 10, 11 (b), 12 (c), 13 and 15(a) may require compensation if changes to access rules, flow classes or other restrictions materially affect overall long-term allocation available to users. Changes made under these recommendations could be necessary to provide additional water to high priority needs, including the environment because of more accurate knowledge, as well as because of potentially reduced inflows due to climate change.

The Commission acknowledges that there are other recommendations that may affect water allocations. However, these changes are allowed through amendment provisions provided for in the Plan or in the Commission’s view would not affect long-term allocation. The Commission advises DPE-Water to seek their own legal advice on this matter.

In considering the requirements under Clause 87AA of the *Water Management Act 2000*, the Commission has not made any determination in relation to entitlements to or amount of compensation and does not provide legal advice in this report. DPE-Water should seek legal advice regarding any potential compensation implications of implementing the recommendations in this report.