

Drought Management Plan

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This plan was adopted by Central Tablelands Water on 13 October 2021.

Executive Summary

This plan

This Drought Management Plan has been developed in order to

- provide guidance to Central Tablelands Water (CTW) staff when managing drought events in relation to Lake Rowlands Dam.
- inform the community of the issues associated with drought management and the community's role during drought.

Having a sound Drought Management Plan in place is part of the NSW Government best-practice management requirements for water supply.

This Drought Management Plan has the following uses with relation to drought management

- operational plan
- resourcing strategy
- authorised approach, that is, staff have the confidence that the actions in this plan have been authorised in advance
- basis for government grant applications
- basis of a public awareness and community communication program.

This plan gives authority to CTW's General Manager, in consultation with the Chairman, to declare drought and implement the actions described in this plan.

This Drought Management Plan has been prepared to provide Council with a comprehensive drought management strategy. The NSW Local Government PPRR (prevention, preparation, response and recovery) emergency management approach has been applied. This approach provides a strategic and systematic drought management process to reduce risk to the community and the environment. It involves effectively integrating implementation strategies before (i.e. prevent and prepare), during and after drought events.

Drought prevention strategy

Drought prevention actions are proactive measures that CTW can undertake in order to increase supply longevity of Lake Rowlands Dam. Prevention actions may be activated / implemented prior to drought or during drought declared stages. Preventative actions are provided in Section 2.

Drought preparedness strategy

Being prepared for drought is essential for CTW to manage its water supply and to provide the community with mechanisms to cope with the consequences of drought. This drought management plan is part of the necessary preparedness. Further discussion is provided in Section 3.

Drought response strategy

Drought triggers

Drought triggers are situations that activate staged response strategies according to the severity of the drought. The triggers are described in Section 4.1.2 and summarised in Table i-i.

Table i-i. Central Tablelands Water restriction triggers

Supply							Demand		
Bore water			Lake Rowlands Storage Levels		Lake Rowlands Supply	Water restriction levels	Estimated Annual Demand – All residential & non-residential		Residential Consumption per Person
%	ML/y	ML/d	% (triggers)	ML	ML/d		ML/y	ML/d	L/person/d
100%	500	1.37	100%	4500	6.16	Level 1	2749	7.53	269
100%	500	1.37	60%	2700	5.72	Level 2	2588	7.09	241
100%	500	1.37	50%	2250	5.12	Level 3	2371	6.49	211
100%	500	1.37	40%	1800	4.42	Level 4	2114	5.79	178
100%	500	1.37	35%	1575	3.89	Level 5	1919	5.26	155
100%	500	1.37	30%	1350	3.41	Level 6	1746	4.78	136
			20%	900	(Lake Rowlands dead storage)				

Demand-side actions

Demand-side actions are intended to reduce the water consumption, matching the demand to the diminishing water resources. Restrictions on the use of water are the main actions. Details are provided in Section 6.4.

Supply-side actions

Supply-side actions aim to supplement the existing water resources with additional water sources. Details of these actions are provided in Section 4.4.

Drought management team

A Drought Management Team comprising of senior management and reporting to Council will be responsible for managing activities during drought. Table 4-2 in Section 4.2 lists the roles and the responsibilities of the team.

Monitoring

A continuous monitoring program will be implemented during drought to track the availability and quality of water, the demand, and the effectiveness of the response plan. Details are provided in Section 4.5.

Drought recovery strategy

The recovery process is to support affected communities in the reconstruction of the physical infrastructure and the restoration of emotional, social, economic and physical wellbeing. The recovery actions are described in Section 5.

Background information

Background information on the water supply scheme, the climate, and the regulatory framework is provided in Sections 6, 7 and 8.

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1 Introduction

1.1 Context

This Drought Management Plan (DMP) has been developed in order to:

- provide guidance to CTW staff when managing drought events
- inform the community of the issues associated with drought management and the community's role during drought.

The NSW Government Best-Practice Management of Water Supply and Sewerage Guidelines (2007) require Local Water Utilities to have a sound Drought Management Plan in place and be ready to implement their plan when drought conditions arise. This plan satisfies the guidelines requirement. A copy of the Best-Practice Guidelines Drought Management checklist is included in Appendix A.

1.2 This Plan

This DMP provides a combination of long-term and short-term management actions to respond to drought incidents and nominates who is responsible for acting upon those situations. The aims of this plan are to:

- ensure that timely warning can be provided to the appropriate authorities and other stakeholders (including customers) in a drought event
- provide relevant information for use in response to a situation when water availability becomes a concern
- identify customer groups who have different requirements during droughts, for example hospitals and schools
- outline procedures to CTW staff so as to respond to and mitigate drought related issues
- enable timely warning to appropriate personnel to implement appropriate actions
- document how CTW will manage the water supply scheme during water shortages due to drought.

This plan has several uses:

- as an operational plan for water supply management during drought
- as a resourcing strategy and staff allocation to manage drought
- as an authorised approach to drought management enabling staff to act knowing that necessary actions have been endorsed beforehand
- as the basis for government grant applications to address the needs identified in this plan
- as the basis of a public awareness and community communication tool for use by CTW to demonstrate transparent and responsible drought management.

The plan includes strategies specific to CTW's water supply.

1.3 Drought Planning

1.3.1 Objectives of Drought Planning

Drought planning is an emergency response plan that aims to reduce the impact of water scarcity on the community, business, economy and environment.

1.3.2 The PPRR Approach

This plan is based on a four-step approach referred to as PPRR (prevention, preparation, response and recovery) approach. The PPRR is a continuous process that involves effectively integrating implementation strategies before (i.e. prevent and prepare), during and after drought events with particular emphasis on response and recovery.

An overview of the four phases is provided below:

- **Prevention.** Actions to reduce or eliminate the likelihood or effects of drought related issues. These include understanding the climate patterns and their impact on water availability, understanding water sharing plans rules and analysing past drought events. They also may include upgrading the water resources, typically through capital investment.
- **Preparedness.** Developing strategies for drought situations before an incident occurs, to ensure effective response and recovery. This DMP is a key component of this phase.
- **Response.** Actions to control contain and/or minimise the impacts of the drought. Typically, this would involve implementation of demand-side and supply-side actions listed in this DMP.
- **Recovery.** Restoration of 'normal' water supply conditions, including actions to assist the community and businesses to recover from the impacts of drought.

This plan describes the actions that CTW will implement in the prevention, preparedness, response and recovery stages of a drought incident.

1.4 Consultation

This plan was developed in consultation with representatives from constituent councils and CTW staff members in a workshop held on 14 November 2019. Workshop participants are listed in Table 1-1. The attendance sheet for the workshop is included in Appendix B. The CENTROC drought management plan was also consulted as part of the development of this document.

Table 1-1. Stakeholder consultation

Company	Name	Role
Central Tablelands Water	Cameron Townsend	Network manager
	Bernadina Smith	Governance and Executive Support
	Peter McFarlane	Director Finance and Corporate Services
	Gavin Rhodes	General Manager
	Noel Wellham	Director Operations and Technical Services
Weddin Shire Council and Central Tablelands Water	Paul Best	Central Tablelands Water Councillor Weddin Shire Council Councillor
Cabonne Council and Central Tablelands Water	Kevin Walker	Central Tablelands Water Deputy Chair Cabonne Council Councillor
Atom Consulting	David Bartley	Workshop facilitator
	Lucy Parsons	Workshop recorder

A follow up workshop was held on 4 March 2021 to review the 2019 draft Drought and Demand Management Plans taking into account the 2019/20 drought period. The workshop attendees are listed in Table 1-12. The attendance sheet is in Appendix B.

Table 1-2. Workshop attendees

Company	Name	Role
Central Tablelands Water	Gavin Rhodes	General Manager
	Bernadina Smith	Governance and Executive Support Officer
	Peter McFarlane	Director Finance and Corporate Services
	Noel Wellham	Director Operations and Technical Services
Blayney Shire Council and Central Tablelands Water	David Somerville	Central Tablelands Water Chairman Blayney Shire Council Councillor
Blayney Shire Council and Central Tablelands Water	John Newstead	Central Tablelands Water Councillor Blayney Shire Council Councillor
Weddin Shire Council and Central Tablelands Water	Craig Bembrick	Central Tablelands Water Councillor Weddin Shire Council Councillor
Weddin Shire Council and Central Tablelands Water	Paul Best	Central Tablelands Water Councillor Weddin Shire Council Councillor
Atom Consulting	David Bartley	Workshop facilitator
	Lucy Parsons	Workshop recorder

2 Drought prevention strategy

2.1 Overview

Drought prevention actions are proactive measures that CTW can undertake in order to increase supply longevity of Lake Rowlands Dam. Prevention actions may be activated / implemented prior to drought or during drought-declared periods. This will be determined at CTW's discretion.

During drought, existing water resources are expected to decrease at a rate dependent on the respective water demand rate at a particular water restriction level. While current water resources are diminishing, other supply options may be considered as potential alternatives for supplementary or emergency water sources.

Some prevention actions are described below.

2.2 Short-term actions

2.2.1 Voluntary water restrictions

When Lake Rowlands Dam is approaching the level that would trigger the implementation of water restrictions, CTW will implement water conservation measures. CTW will use various media platforms to communicate the importance of using water saving measures, especially in times of approaching drought.

2.2.2 System improvements

CTW has identified the following options to improve water supply system resilience and is working toward their approval and implementation:

- Lake Rowlands augmentation
 - Enlarge Lake Rowlands to increase water storage
- Bi-directional pipeline connection between Lake Rowlands and Carcoar Dam

2.2.3 Drought water pricing

CTW may consider the introduction of scarcity pricing before and/or during drought to reduce discretionary water use (possibly a two-step usage charge). The price signal also communicates to customers the seriousness of the event.

CTW would monitor the impact of the pricing on the demand and assess the effectiveness of this action.

2.2.4 Purchase temporary allocation

The Orange to Carcoar bi-directional pipeline was commissioned in April 2019. This pipeline is to be used for the provision of a bulk water supply sourced from Orange City Council.

The bi-directional pipeline between Cowra Shire Council and CTW supply (Trunk Main H) will be commissioned in 2021. This pipeline is to be used for the provision of a bulk water supply sourced from Cowra Shire Council.

2.3 Long-term actions

The Centroc Water Security Study (MWH, 2009) has provided an in-depth investigation of potential options to improve water supply security across the Centroc region. Option F2a: Lake Rowlands Regional Network was the preferred option from this study. F2a includes the augmentation of Lake Rowlands to cater for and supplement regional supply to CTW, Orange, Cowra, Forbes, Parkes, as well as mining water demand at Cadia Valley Operations.

CTW is in the process of undertaking the Lake Rowlands augmentation project to increase water storage which includes the option of raising the existing dam wall and/or building a new dam downstream.

In addition to the augmentation of Lake Rowlands Dam, the potential benefits of the Lake Rowlands to Carcoar Dam Pipeline project is being considered to strengthen water security for CTW as well as the region.

3 Preparedness

3.1 Overview

Being prepared for drought is essential to lessen the effect and to enhance the capacity of CTW and the community to cope with the consequences of drought through ongoing monitoring and consultation.

The major benefits of being prepared for incidents or having a sound drought management plan are:

- having a pre-determined and agreed list of actions to be taken in case of drought situations and allowing for an effective implementation of those actions
- being able to promptly obtain drought relief funds for projects identified to improve drought resilience
- having well defined protocols of drought restriction activation and escalation

This DMP documents CTW's preparedness in regards to incidents affecting town water supply. The actions described in this plan have been endorsed by Council, therefore in case of emergencies, the appointed staff can quickly activate relevant personnel required to take actions to respond to the problem, to acquire other resources required for drought management and to quickly implement the pre-determined drought response actions outlined in Section 4. Section 3 describes some of the ongoing activities that CTW should undertake in order to be prepared for drought situations.

3.2 Exercising Drought Management

In order to ensure the ongoing effectiveness of this plan and to prepare staff for emergency situations, a periodic program for exercising drought management will be developed and implemented in conjunction with other emergency training programs. These exercises will be a simulation of drought starting and intensifying, requiring actions.

3.3 Data Availability

Technical information (i.e. design, operational, maintenance plans) relevant to the water supply system is available on the CTW internal IT network. This ensures in case of emergencies all relevant information is in one location facilitating an effective and prompt response to the problem. These attachments should be updated regularly, as the plans are modified.

3.4 Monitoring

Continuous monitoring of the water sources and water supply schemes is essential to understand the performance of the water sources and their capability of supplying demand. Monitoring of these parameters assists CTW in preparing for unconventional situations. In order to ensure a safe and sustainable water supply, the following monitoring should be continued:

- drinking water daily demand
- daily available supply from each source
- daily monitoring of water supply source (include as relevant)
- water level at Gooloogong and Quandialla Bores
- water level at Lake Rowlands
- daily temperature and rainfall.

3.5 Consultation

3.5.1 Community engagement

Engagement with the community is a critical element of an effective drought management program, as it ensures customer acceptance and behavioural changes, required to reduce water demand. CTW will inform the community about the DMP and the drought action plans in place. This will assist the community to understand the critical importance of drought management actions and the need to conserve water.

This plan was developed in consultation with Councillors from Blayney Shire Council, Cabonne Council and Weddin Shire Council who represent the community. CTW will use their community engagement strategy to communicate the introduction and use of this plan.

3.5.2 Government consultation

Consultation on the implementation of the Drought Management Plan would be expected to be with:

- Department of Planning Industry & Environment (DPIE) Water
- NSW Health (especially in relation to water quality)
- Blayney Shire Council
- Weddin Shire Council
- Cabonne Council
- Cowra Shire Council
- Centroc Water Utilities Alliance
- Orange City Council.

3.5.3 Other water users

Regular meetings will be held with the other members of the Centroc Water Utilities Alliance in order to explore areas of common interest in respect to longer term drought management in alignment with the Centroc Regional Drought Management Plan.

4 Drought Response Strategy

The response strategy consists of implementing appropriate actions to control, contain or minimise the impacts of droughts. The implementation of the DMP including identifying and reviewing situations, overseeing the implementation of supply and demand actions, approving media releases and reviewing operations will be the responsibility of the Drought Management Team. The following sections describe the response strategy during drought incidents.

4.1 Drought Strategy Activation Plan

4.1.1 Overview

The drought response strategy will be activated in an event when the water supply is affected due to natural climate conditions.

The main scenario that would activate a drought management response, including the introduction of supply restrictions, is water scarcity. Scarcity levels are defined in Table 4-1.

4.1.2 Drought Triggers

Triggers are the situations that will activate the response strategy plan. The triggers are based on progressive reductions in water availability. The triggers for implementing drought restrictions are provided in Table 4-1.

These triggers initiate demand-side actions which are expected to reduce the demand to a target daily demand. If the demand reduction is not achieved by the introduction of the restrictions for each level, the next level should be applied.

Table 4-1. Proposed water restrictions triggers

Water restriction level	Lake Rowlands storage levels	
	%	ML
Level 1	100%	4,500
Level 2	60%	2,700
Level 3	50%	2,250
Level 4	40%	1,800
Level 5	35%	1,575
Level 6	30%	1,350
Dead storage	20%	900

4.2 Drought management team roles and responsibilities

4.2.1 Activation and setting restriction level

CTW's General Manager (GM), in consultation with the Chairman, can proclaim this drought management plan to be in force once the GM determines that Trigger 1 has been reached. The GM with the Chairman have the authority to change the restriction levels on the advice of the Drought Management Team.

4.2.2 Drought management team

The drought management team (DMT) will hold quarterly meetings and operate as described in Table 4-2.

Table 4-2. DMT roles and preliminary responsibilities

Chair and incident manager	General Manager
Responsibilities	<ul style="list-style-type: none"> • Coordinate the activities of the team • Communicate with Council / Board • Communicate with government agencies – high level • Monitor and assess data • Provide an assessment of the situation • Prioritise tasks and develop response actions • Ensure adequate facilities and resources – both specialist and support • Communicate with stakeholders, neighbouring LWUs, government agencies and major customers – action level • Hold regular team meetings • Monitor the use of actions and their effectiveness • Determine completion of the response phase, and commence recovery • Post incident, coordinate review of incident and update of the Drought Management Plan
Senior Management Team	Director Operations & Technical Services and Director Finance & Corporate Services
Responsibilities	<ul style="list-style-type: none"> • Support and provide advice to the DMT Chair
Communication Manager and support	Governance and Executive Support Officer
Responsibilities	<ul style="list-style-type: none"> • Support the DMT Chair and Incident Manager with communication • Prepare communication material as appropriate • Issue media statements and interviews if appropriate • Maintain media database including social networks • Monitor and manage social networks communication • Record keeping • Provide administrative support, telephone answering, email first review and general office duties

4.3 Demand-side action plan

Water restrictions aim to reduce water demand by customers through regulating the type and duration of water-using activities. If not specifically mentioned otherwise, the restrictions of each level apply to the all higher levels. For example, if fixed hoses are prohibited for Level 2, fixed hoses are also prohibited for the higher levels. The activities connected to each water restriction level are listed in Table 4-3, actions are consistent with other regional water systems in the Centroc Water Utilities Alliance. CTW's water restrictions apply across the entire supply area.

CTW's automatic water filling stations and standpipes are to be restricted to the use of identified constituent council rate payers only, when Level 5 water restrictions or above have been implemented across the CTW supply area.

Other demand targets and activities are included in the Demand Management Plan.

Table 4-3. Water restrictions demand side actions

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Residential water use						
Target consumption	260 L/person/day	240 L/person/day	220 L/person/day	200 L/person/day	160 L/person/day	120 L/person/day
Baths, showers	Permitted	Permitted	Permitted	Five (5) minute showers, one bath per person per day	Three (3) minute showers, one bath (100 mm depth) per person per day	Three (3) minute showers, one bath (100 mm depth) per person per day
First fill of private swimming pools	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, daily	Only with Council permission and provided pool covers are used	Only with Council permission and after water savings elsewhere within property. Covers must be used	Not permitted	Not permitted
Inflatable or temporary children pools	Permitted	Permitted	Permitted	Permitted	Not permitted	Not permitted
Irrigation of new turf	Permitted for one week after laying after which level 1 restriction on watering lawns applies	Permitted for one week after laying after which level 2 restriction on watering lawns applies	Permitted for one week after laying after which level 3 restriction on watering lawns applies	Not permitted	Not permitted	Not permitted

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Residential water use						
Topping up private swimming pools/spas	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, every day	Only between hours of 0700-0900 and between 1800-2000 hrs, daily provided pool covers are used	Only between hours of 0700-0900 and between 1800-2000 hrs, daily. Pool covers must be used	Not permitted	Not permitted
Topping up, filling garden water features	Permitted	Permitted	Permitted	Permitted	Not to be topped up or filled.	Not to be topped up or filled.
Use of evaporative air conditioners	Permitted	Permitted	Permitted	Permitted only 0700-2400 hrs daily	Permitted only 0700-2400 hrs daily, exemptions may be granted to aged accommodation or nursing homes	Permitted only 1800-2200 hrs daily, exemptions may be granted to aged accommodation or nursing homes
Washing cars at home	Permitted with bucket and trigger hose on lawn at any time	Permitted with bucket and trigger hose on lawn between 0900-1200 hrs any day	Permitted with bucket and trigger hose on lawn between 0900-1200 hrs any day	Permitted with bucket only on lawn between 0900-1200 hrs any day	Not permitted	Not permitted
Washing down walls or paved surfaces	Permitted using a pressure washer when Lake Rowlands is at 90% capacity or above. An exemption is required from CTW when Lake Rowlands is below 90%.	Permitted with exemption from CTW only.	Permitted with exemption from CTW only.	Permitted with exemption from CTW only.	Not permitted	Not permitted
Washing of clothes	Permitted	Permitted	Full loads only encouraged	Full loads only permitted	Full loads only permitted	Two full loads of clothes per week

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Residential water use						
Watering of Lawns Note: Subject to varying summer and Winter times	Watering systems, microsprays, drip systems, soaker hoses, non-fixed sprinklers, handheld hoses only. Summer time between 1800-0900 hrs only daily. Winter time 0600-1000 hrs and 1600-2200 hrs daily	Watering systems, non-fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Microsprays, drip systems, soaker hoses, trigger hose only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Not permitted	Not permitted	Not permitted
Watering of Residential Gardens: Subject to varying Summer and Winter times	Watering systems, microsprays, drip systems, soaker hoses, non-fixed sprinklers, hand held hoses only. Summer time between 1800-0900 hrs only daily. Winter time 0600-1000 hrs and 1600-2200 hrs daily	Watering systems, non-fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Microsprays, drip systems, soaker hoses, trigger hose only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Microsprays, drip systems, soaker hoses, only. Summer time between 1800-2000 hrs only on each Wednesday and Sunday. Winter time 1600-1800 hrs on each Wednesday and Sunday	Bucket / watering can watering only. Summer time between 1800-2000 hrs on Sunday only. Winter time between 1300-1500 hrs on Sunday only	Not permitted

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Non-residential water use						
Target consumption	260 L/person/day	240 L/person/day	220 L/person/day	200 L/person/day	160 L/person/day	120 L/person/day
Abattoirs	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.	Not permitted.
Aged accommodation	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP
Businesses with cooling towers	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted
Canneries	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.
Child care	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP
Cleaning - exterior	Permitted with trigger hoses or pressure washer, any time.	Permitted with pressure washer, any time.	Permitted with pressure washer. Business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.
Commercial or Government nurseries	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.
Construction - wash down, paint prep, curing.	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.
Construction industry e.g. mortar or concrete mix	Permitted	Permitted	Permitted	Permitted	Permitted	Not permitted.
First fill of public swimming pools/spas, including those in motels etc.	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, every day	Only with Council permission	Only with Council permission and after water savings elsewhere within property. Covers must be used	Not permitted	Not permitted

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Non-residential water use						
Food or pet food production	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.
Hospitals, hospices, nursing homes, rehab centres	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP
Hotels, registered clubs	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.
Irrigation of new turf on non-residential premises	Permitted for one week after laying after which level 1 restriction on watering lawns applies	Permitted for one week after laying after which level 2 restriction on watering lawns applies	Permitted for one week after laying after which level 3 restriction on watering lawns applies	Not permitted.	Not permitted.	Not permitted.
Motels, caravan parks, cabins	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.
Pet care	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP
Public car and truck wash facilities	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.
Public parks, gardens, aviaries, plant houses, zoos	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted
Public water features	Permitted	Permitted	Permitted, but WSAP must be prepared	WSAP must be implemented	WSAP must be implemented	Not permitted
Schools, technical colleges, colleges, universities	Permitted	Permitted	Permitted, but business must prepare WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Business must implement and comply with WSAP.
Topping up public swimming pools/spas, including those in motels etc.	Permitted	Only between of 0700-0900 and between 1800-2000 hrs, every day	Only between hours of 0700-0900 and between 1800-2000 hrs, every day provided pool covers are used	Only between hours of 0700-0900 and between 1800-2000 hrs, every day. Pool covers must be used	Not permitted	Not permitted

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Non-residential water use						
Turf farm irrigation, market gardens	Permitted	Permitted	Irrigation only between 2000-0800 hrs. Business must prepare WSAP	Business must implement and comply with WSAP	Not permitted	Not permitted
Watering of Gardens Note: Subject to varying Summer and Winter times	Watering systems, microsprays, drip systems, soaker hoses, non-fixed sprinklers, hand held hoses only. Summer time between 1800-0900 hrs only daily. Winter time 0600-1000 hrs and 1600-2200 hrs daily	Watering systems, non-fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Microsprays, drip systems, soaker hoses, only. Summer time between 1800-2000 hrs only on each Wednesday and Sunday. Winter time 1600-1800 hrs on each Wednesday and Sunday	Bucket / watering can watering only. Summer time between 1800-2000 hrs on Sunday only. Winter time between 1300-1500 hrs on Sunday only	Not permitted

Activity	Water restrictions					
	Level 1 low	Level 2 moderate	Level 3 high	Level 4 very high	Level 5 extreme	Level 6 critical
Non-residential water use						
Watering of Lawns Note: Subject to varying Summer and Winter times	Watering systems, microsprays, drip systems, soaker hoses, non-fixed sprinklers, handheld hoses only. Summer time between 1800-0900 hrs only daily. Winter time 0600-1000 hrs and 1600-2200 hrs daily	Watering systems, non-fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Watering systems, non-fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. Summer time between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. Winter time between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system	Not permitted	Not permitted	Not permitted

4.4 Supply-side action plan

When drought occurs, actions must be taken to mitigate the effects of water shortage and to ensure that a reliable water supply is available to meet the health and safety needs of the community. Supply-side actions are actions taken by CTW aimed at supporting the restrictions as well as preparing for worsening situations.

4.4.1 Staged Action-Plan

Drought management supply-side actions should be implemented while the community, guided by CTW, takes action to reduce water demand using water restrictions. The supply actions are proposed to be implemented within a time frame so that water supply is sufficient to sustain the estimated water demand at the particular water restriction level. The supply-side actions will be undertaken to continually supply water to its customers during drought. Table 4-4 lays out how supply actions are implemented as restriction levels are increased.

Table 4-4. Staged drought supply-side actions

Level	Supply side activity
1 Low	<ul style="list-style-type: none"> • Monitor all bore capacities • Monitor Lake Rowlands storage level
2 Moderate	<ul style="list-style-type: none"> • Negotiate access to water with owners of alternative water sources for future use if required • Investigate water delivery by pipeline(s) from alternative sources within and outside the CTW service area • Investigate groundwater sources including testing water quality (consult NSW Health) • Monitor Lake Rowlands storage level and review infrastructure required to access 'dead' storage (900 ML)
3 Moderate – High	<ul style="list-style-type: none"> • Review of alternative groundwater supply options and their capacities. • Review strategies to access 'dead' water storage in Lake Rowlands • Design and prioritise engineering projects including pipelines and bores
4 High	<ul style="list-style-type: none"> • Construction of long lead time projects • Perform design and if possible, trial implementation process to ensure operability of Lake Rowlands "dead" water storage access system • Enquire and verify the availability of water supply from alternative water sources
5 Very high	<ul style="list-style-type: none"> • Construction of short lead time projects • Complete construction of infrastructure for accessing 'dead' water storage in Lake Rowlands
6 Extreme	<ul style="list-style-type: none"> • Access Lake Rowlands "dead" water storage for emergency only

4.4.2 Water carting

Water carting is only viable for towns with populations under 1,000. In 2017/18 the daily demand was 4.8 ML (DPIE, 2017/18), in order to provide water by semi-trailers (approximately 20kL capacity each), 240 deliveries of water would need to be made every day. As CTW has over 15,000 customers, this option is considered unfeasible.

4.5 Monitoring during drought

The following monitoring will be carried out during drought. Some of the items listed below are recorded on a regular basis as part of the water business requirements:

- weekly water demand
- weekly supply from all water sources
- weekly monitoring of water sources (river flows, dam levels, groundwater table level)
- weekly temperature and rainfall outlook (BOM)
- resulting impact of restrictions on water consumption
- ongoing water source quality:
 - electrical conductivity (monthly)
 - total dissolved solids (monthly)
 - pH (daily)
 - alkalinity (monthly)
 - algae levels (daily)
 - taste and odour (on complaint)
 - chemical analysis (monthly)
 - microbial analysis (bores only – on demand)

A chart showing the daily demand, restriction level, temperature and rainfall is to be prepared and updated at least weekly.

Monitoring is intended to provide effective management of the incident. Some or all of the data may be used as part of the communication campaign.

4.6 Communication strategy

4.6.1 Community

Purpose

The purpose of the communication strategy in relation to the community is to:

- communicate the restriction levels and expected behaviour
- provide general information to the community and enlist its support and understanding to the actions taken by CTW.

Channels

Some of the communication channels that may be used:

- Radio, television and newspapers
- Media releases
- Social media (CTW's Facebook page)
- Interviews / media conferences / presentation to community group meetings
- Signs in key locations and major roadways
- Common noticeboards around the town
- Talks at schools
- Newsletters distributed with quarterly water accounts
- Announcement by high profile persons (e.g. Chairman)
- Direct communication with hotel and motels to convey restrictions with guests

4.6.2 Agencies

Purpose

A separate communication strategy is required for regulators, other government agencies, Water Managers and neighbouring utilities in order to:

- share resources for managing the drought
- apply for regulatory and financial support as required
- obtain access to alternative water sources.

Contact List

The contact list for key organisations that may need to be contacted is saved in the following CTW internal IT network directory G:\Emergency Contacts\EMERGENCY COMMUNICATIONS DIRECTORY.

5 Recovery Strategy

The recovery process will commence at the end of the response operations. The end of the drought should start with the GM revoking drought conditions. The DMT will cease operation, but members will still be available to assist the Recovery Coordinator, mainly in debriefing and assessing the response.

A Recovery Coordinator will be appointed by the DMT to oversee the recovery process. The Recovery Coordinator will be responsible for:

- preparing a response report and recommending actions based on the experience. The report will be submitted to the GM following the revoking of drought conditions. The GM will then report to Council at the next Council meeting. Once endorsed by Council the report will become the main component of the preparedness stage, and
- assessing the remaining drought impacts and determining the appropriate personnel to coordinate the recovery activities. This will be based on the drought recovery survey described below.

A drought recovery survey will be developed to evaluate the recovery process needed to restore the physical infrastructure and the restoration of emotional, social, economic and physical wellbeing. The drought recovery survey will assess the following criteria in order to determine the recovery actions required:

- **Ownership:** Determine the ownership of private or public asset and the source of assistance that may be available
- **Severity of impact:** Develop a scale to determine the severity of social, economic and financial impact to be based upon
- **Time to recover:** Evaluate a timeframe required to recover from the drought impact
- **Cost of impacts:** The financial loss due to the drought impact
- **Resources required:** Resources (financial and others) required to complete the recovery process

With the outcomes of the drought recovery survey, CTW will be able to seek the appropriate resources to address the recovery needs. The recovery process will involve restoring the community to the point where normal social and economic activities may resume.

CTW will not compensate private customers for costs or financial losses caused by the drought. CTW, however, will assist customers and co-ordinate activities associated with seeking compensation from other sources such as government and insurance companies, where possible.

When the drought period is considered over and the conditions return to normal, the following actions are to be considered:

- reviewing the Drought Management Plan and actions in the light of experience
- insurance compensation
- government assistance
- liaise with tax office to provide tax relief (reduction or delay of payment deadline)
- develop rehabilitation/recovery programs based on the drought recovery survey
- ensure fire control programs are in place
- assist the community in resolving conflicts, where possible.

6 Water supply scheme

This section of the report details the current system operated by CTW.

6.1 Location

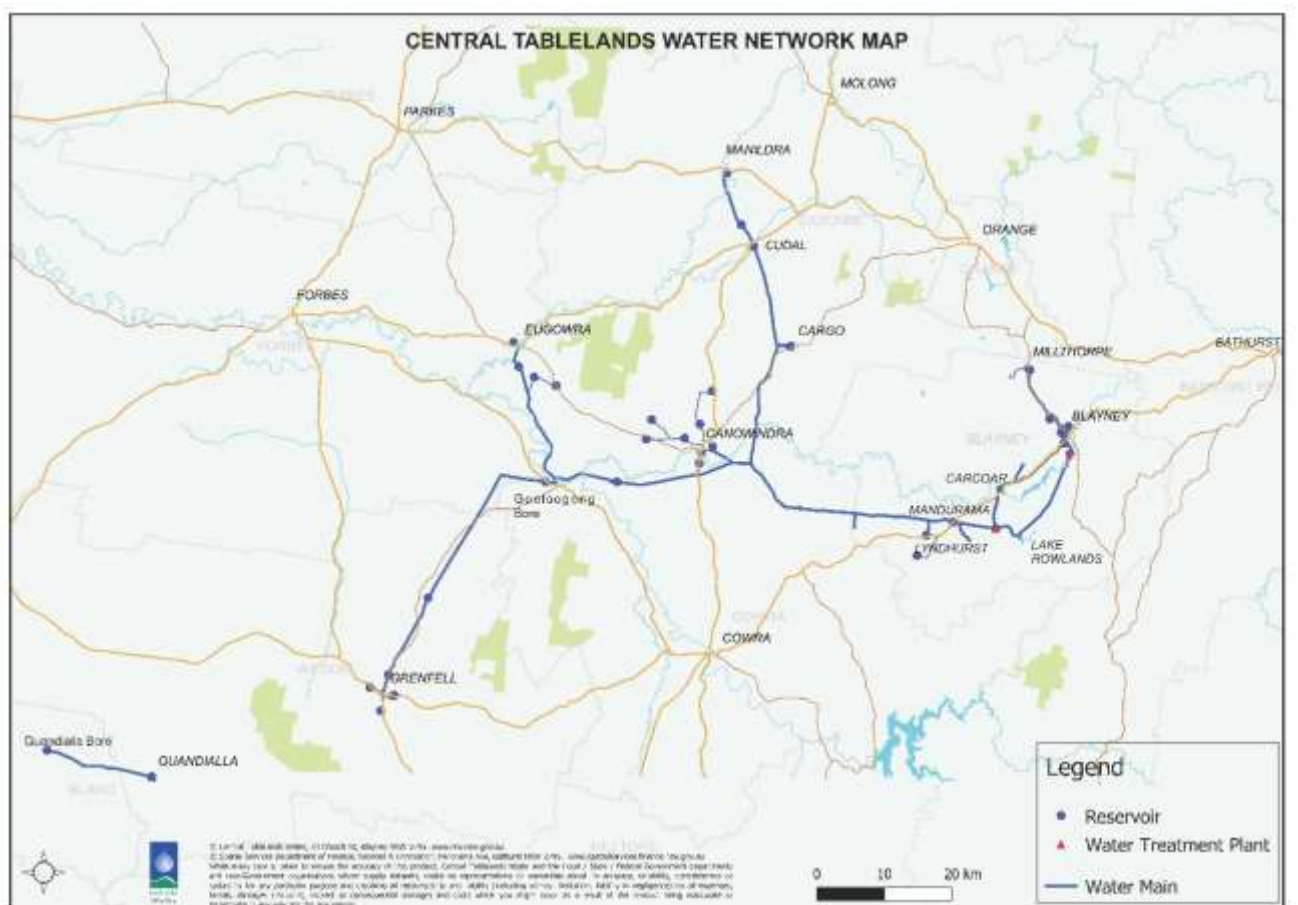
CTW supplies drinking water to the local government areas of Blayney Shire, Cabonne Shire, Weddin Shire and parts of Cowra Shire located in the central west region of NSW (see Figure 6-1).

Figure 6-1. Central Tablelands area of operations



Source: Google

The water supply network is shown in Figure 6-2.

[illegible]

Existing and potential water sources are discussed in this section.

The main water source is Lake Rowlands, with groundwater bores supplementing supply to the towns of Grenfell and Gooloogong as required. The township of Quandialla is supplied potable water via a separate bore scheme. Lake Rowlands was completed in 1953 with a total storage capacity of 4,500 ML and a catchment area of approximately 197 km². It is situated on the Coombing Rivulet, a tributary of the Belubula River and does not supply any major river or have any major downstream stakeholders.

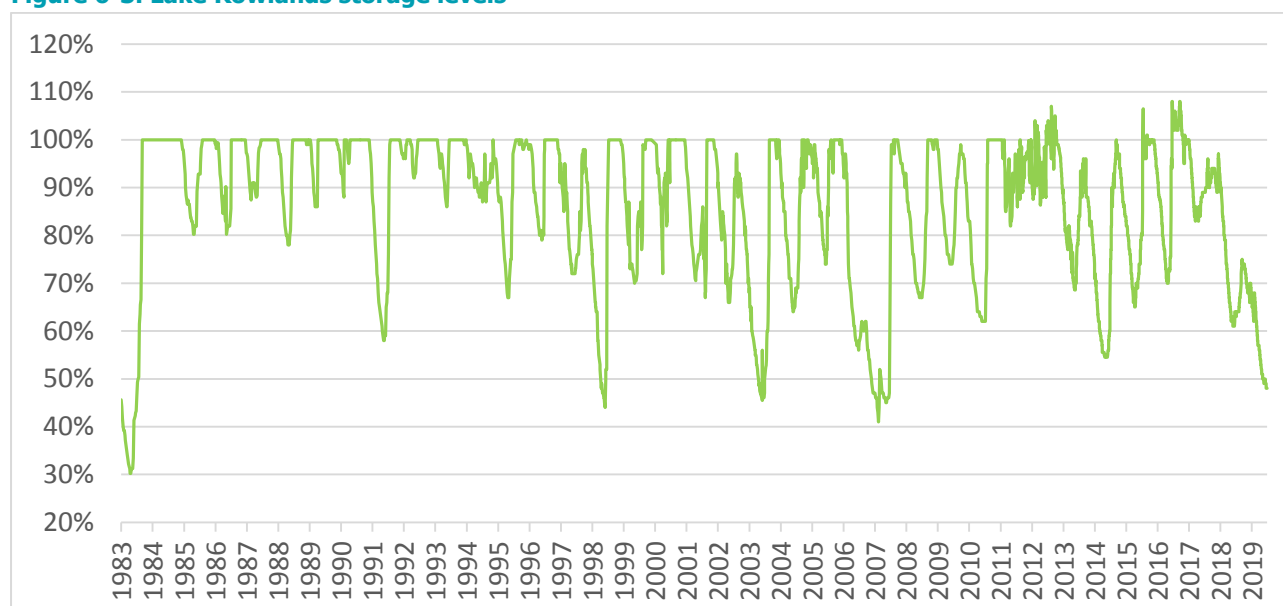
Table 6-1. Central Tablelands water sources

Water source	Capacity	Extraction Licence (ML/a)	Comments
Lake Rowlands	4,500ML	3,150	
Gooloogong Bore No. 1	Bore pump 3.8ML/d	400	Secure source with long term yield
Gooloogong Bore No. 2	Bore field 5ML/d		

Water source	Capacity	Extraction Licence (ML/a)	Comments
Quandialla Bore No. 1	Bore pump 1.2 ML/d	266	Only supplies town of Quandialla
Quandialla Bore No. 2			
Cudal Bore	Well: 4 L/s (0.35 ML/d) Bore pump 0.35 ML/d	100	Standby source that must be maintained in operating condition
Bangaroo Bore No.1	Bore field 3.8 ML/d	472	Not in use
Bangaroo Bore No.2	Northern pump 0.8 ML/d Western pump 3.0 ML/d		Not in use
Blayney Well	Well: 0.6 ML/d	250	Standby source that must be maintained in operating condition
Blayney Blue Hole	Surface pump: 0.6 ML/d		
Total extraction entitlement		4,638	

The dam water level from 1983 to 2019 is graphed in Figure 6-3.

Figure 6-3. Lake Rowlands storage levels



Source: CTW data

6.3.2 Potential sources

The following options for water sources are not included as part of ordinary operation but should be considered to supplement supply during drought conditions:

- The Orange to Carcoar bi-directional pipeline was commissioned in April 2019. This pipeline is to be used for the provision of a bulk water supply sourced from Orange City Council.
- The pipeline that is used to provide bulk water to Cowra Shire Council between Woodstock and the CTW supply is to be commissioned in 2021 as a bi-directional pipeline. This pipeline is to be used for the provision of a bulk water supply sourced from Cowra Shire Council.
- Stand-by and unused bores can be brought online including:
 - Cudal Bore
 - Bangaroo Bore No.1
 - Bangaroo Bore No.2
 - Blayney Well

- Blayney Blue Hole

Water quality and infrastructure at each of these new sources will be investigated before bringing them online.

6.4 Water demand

This section is a brief summary of the CTW demand monitoring. Further details of water demand measures can be found in the CTW Demand Management Plan.

6.4.1 Water pricing

Details of water pricing are included in the CTW Long Term Financial Plan (2020).

6.4.2 Water users

CTW has approximately 6,000 water connections and 15,000 consumers in 14 towns and villages including Blayney, Cudal, Mandurama, Canowindra, Eugowra, Millthorpe, Carcoar, Grenfell, Manildra, Cargo, Lyndhurst, Quandialla, Woodstock, Gooloogong and Cowra Shire Council rural's and rural properties on Council Trunk Mains. CTW customers make up Blayney Council and Weddin Council and most of Cabonne Council. Table 6-2 summarises the divide of water demand amongst different categories from 2017/18.

Table 6-2. 2017/18 Connections and metered usage

Customer type	Connections	Billed water 2017/18 (kL)	Percentage of total usage
Residential (incl Rural)	5,036	1,139,383	64.2%
Multi residential	49	24,856	1.4%
Commercial	637	216,772	12.2%
Industrial	13	235,964	13.3%
Parks	65	44,495	2.5%
Institutions	36	58,138	3.3%
Cowra bulk supply	1	54,839	3.1%
TOTAL	5,837	1,774,447	

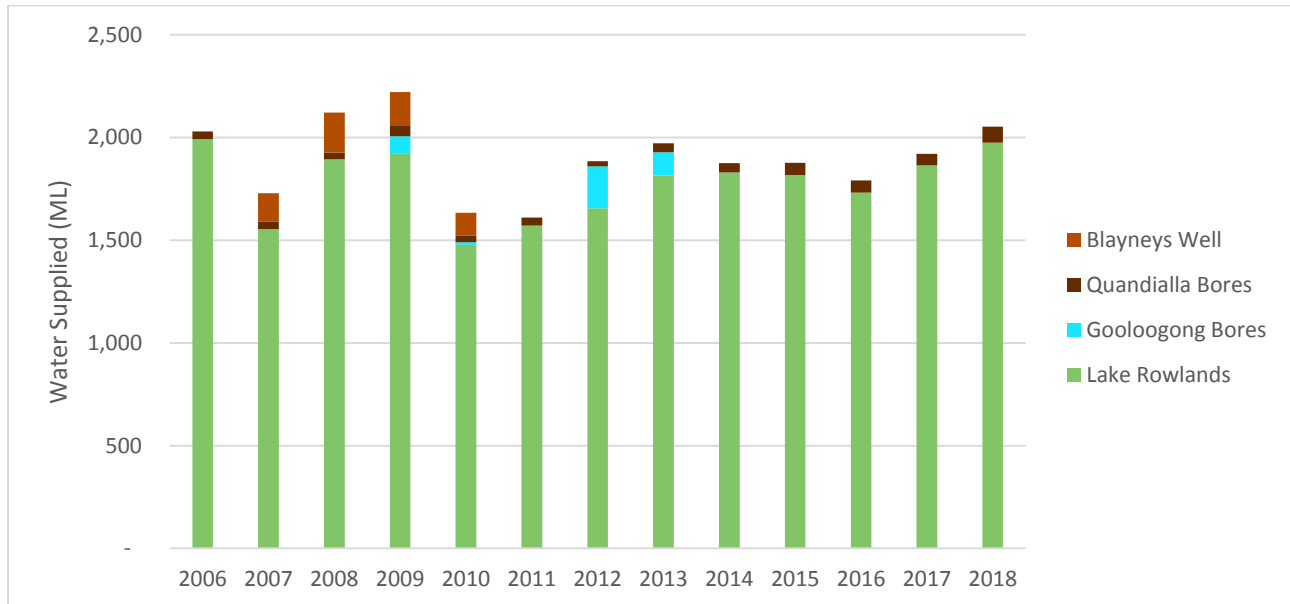
Source: DPIE LWU performance reporting

6.4.3 Current water usage

In 2015/16 the weighted median inland water utility annual residential water supplied was 248kL/property, the CTW average consumption in 2017/18 was below this at 205kL/property/year (DPIE, 2018).

6.4.4 Historical water demand

The water supplied from each water source from 2006 - 2018 is shown in Figure 6-4.

Figure 6-4. Water supplied from each source 2006 - 2018

Source: CTW data

6.4.5 Top water consumers

The top water consumers are listed in Table 6-3 and ranked by their annual consumption.

Table 6-3. Central Tablelands Water top customers (2018/19)

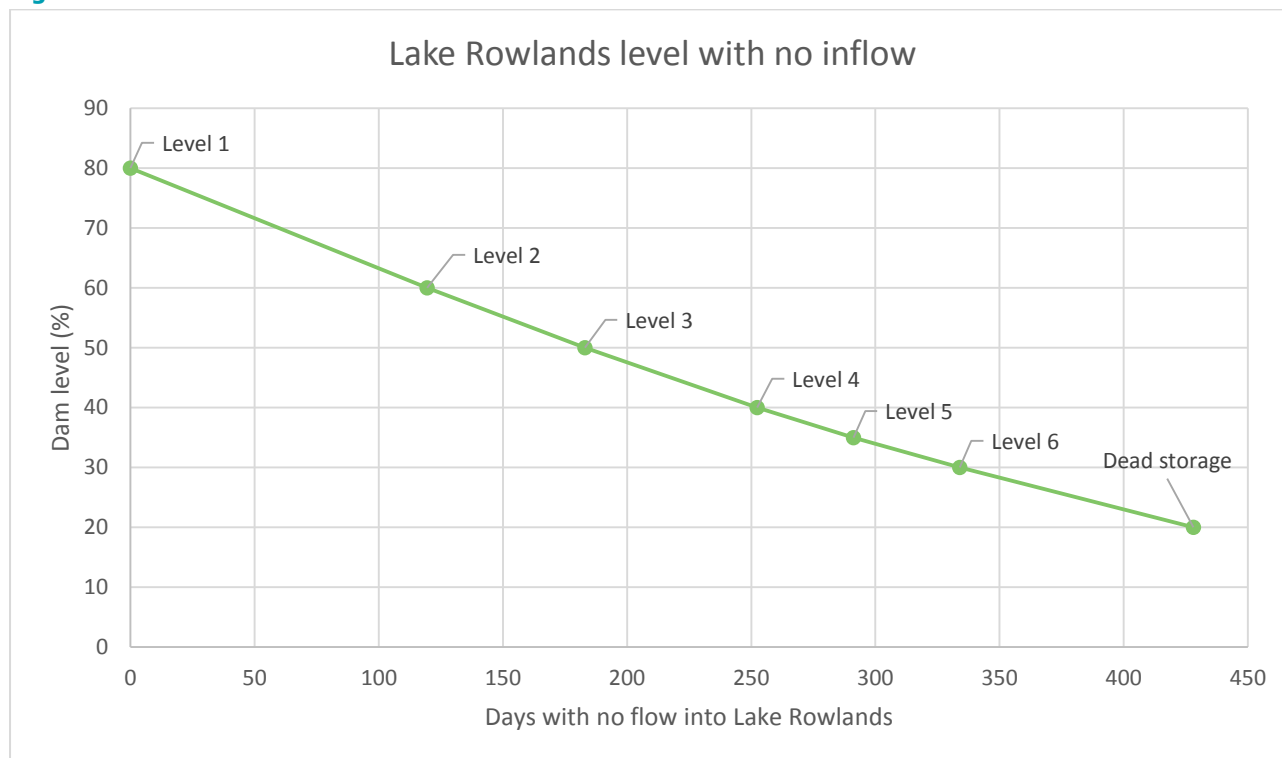
Top customer	Town	Type	Average annual consumption (ML/y)
Friskies Pet Care / Nestle	Blayney	Industrial	82.68
Manildra Flour Mills	Manildra	Industrial	52.06
Williams Crossing	Quandialla	Quandialla rural	42.64
MSM Milling P/L	Manildra	Industrial	40.24
Western White Linen	Blayney	Industrial	15.62
Blayney Shire Council	Blayney	Public Parks	12.53
Newcrest Mining Ltd	Blayney	Industrial	11.85
Cabonne council	Canowindra	Commercial	11.49
Metziya	Blayney	Commercial	10.74
Blayney Shire Council	Blayney	Commercial	9.83

6.4.6 Dry year annual demand analyses

The number of days that CTW can operate and supply water in a dry year has been conservatively estimated. Assumptions made in the estimate include:

- no flow into Lake Rowlands
- initial dam level of 80%
- evaporation was not taken into account
- appropriate water restrictions are put into place and implemented effectively by the community
- daily consumption is based on the water restriction targets which are higher than the actual average daily consumption, making the time period shorter than it may be with lower water use.

The level in Lake Rowlands as impacted by water restrictions and no inflow is plotted in Figure 6-5.

Figure 6-5. Lake Rowlands level with no inflow

Source: CTW data

If the drought continued and Lake Rowlands storage reduced further, tougher restrictions would be imposed until only dead water storage remains.

6.4.7 New customers in time of drought

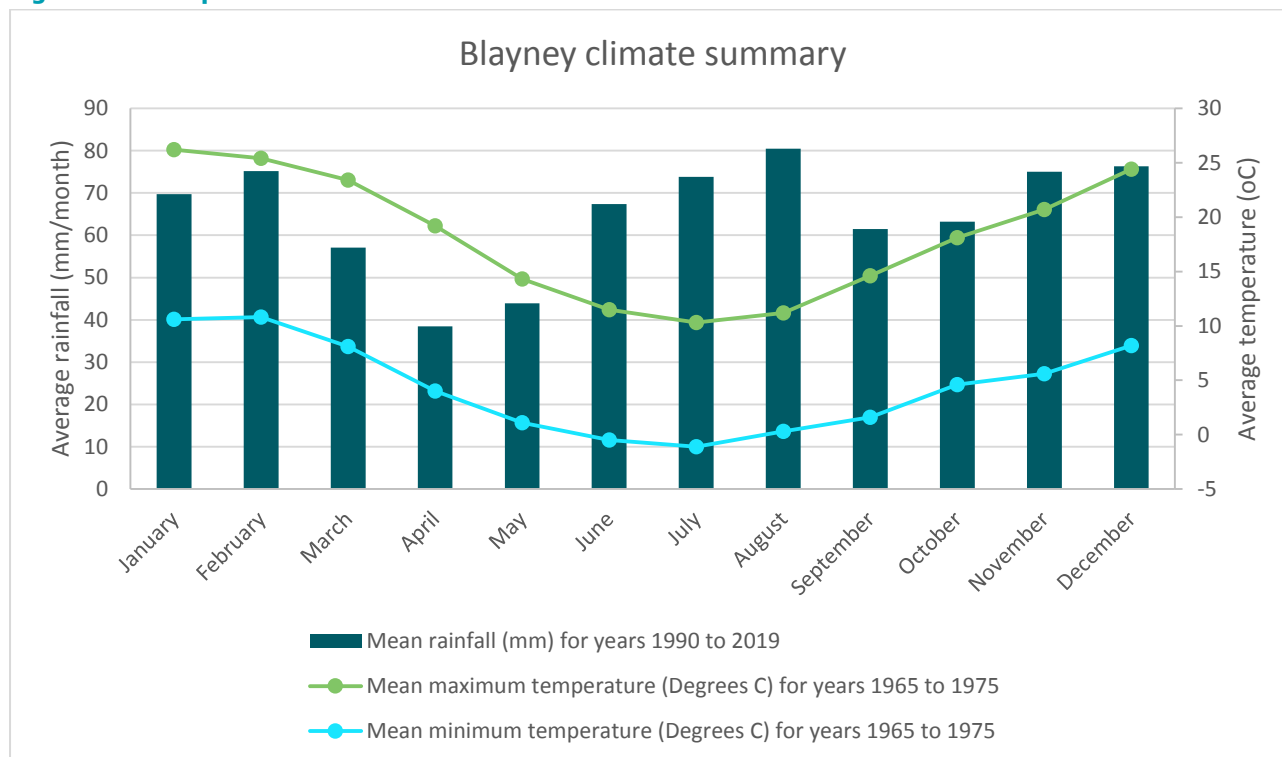
There may be increased demand if neighbouring water utilities run out of water in times of drought. This may include Orange City Council and Cowra Shire Council as they have existing pipelines and agreements in place for water transfer.

7 Climate

7.1 Rainfall, Evaporation and Temperature

The climate data collected for the Blayney area by the BOM is plotted in Figure 7-1. The Temperature data was taken from the Blayney Post Office and the rainfall data was taken from Blayney (Orange Rd).

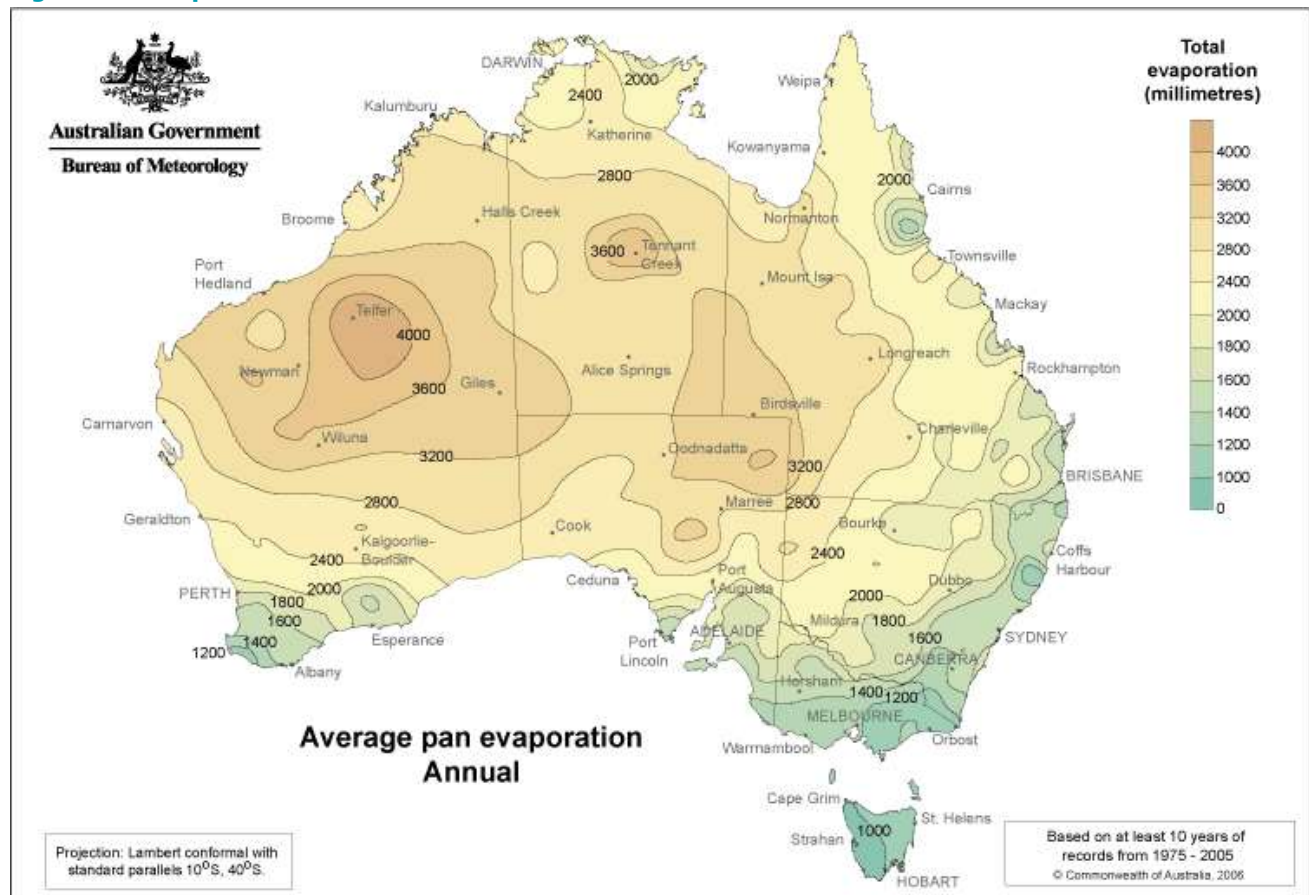
Figure 7-1. Temperature and rainfall data



Source: Bureau of Meteorology 2019

The average total annual evaporation in at the water storages is approximately 140 mm (Figure 7-2).

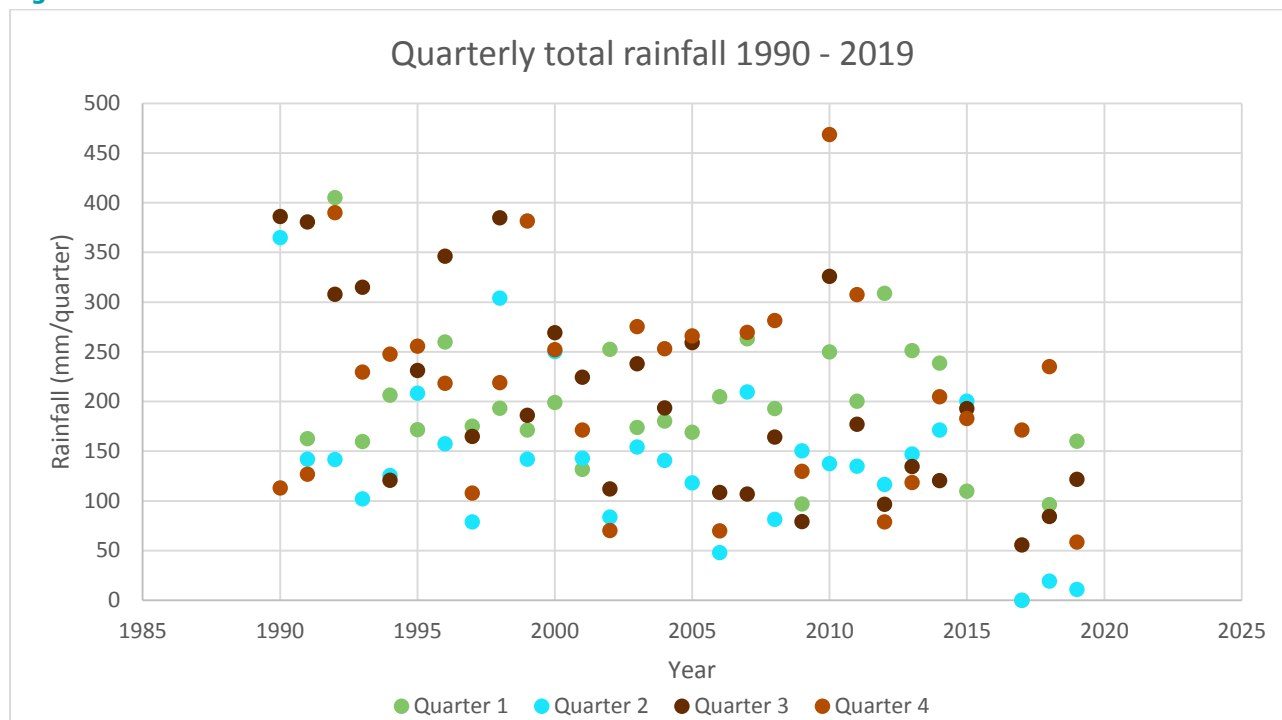
Figure 7-2. Evaporation data



Source: Bureau of Meteorology 2006

7.2 Climate change

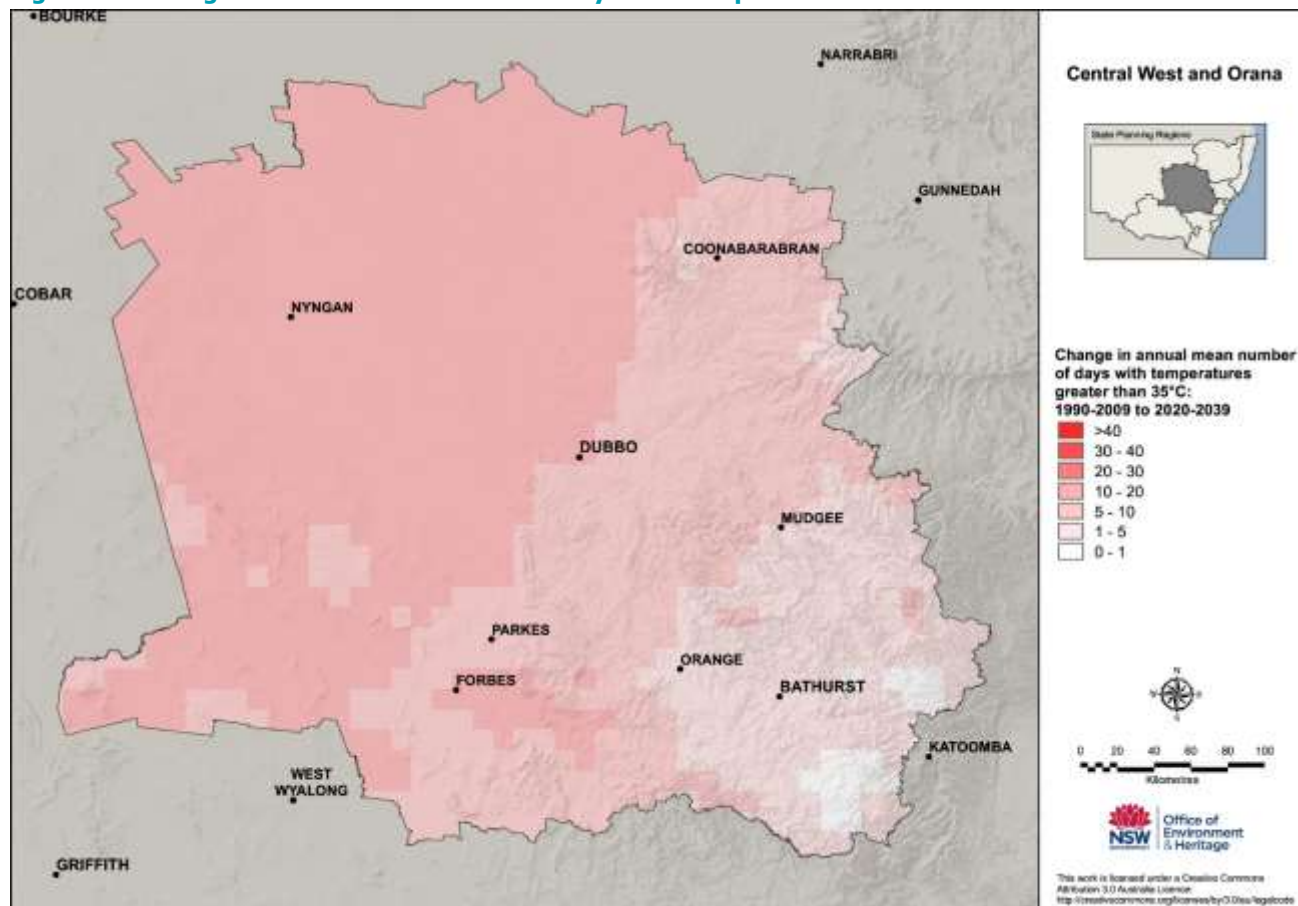
The threat of climate change to the CTW supply is present and CTW staff are aware of this. The rainfall over the previous 30 years at Blayney (Orange Rd) has been plotted to assess the threat to the water supply. Results in Figure 7-3 show a decrease in total rainfall since 2015, particularly quarter 1.

Figure 7-3. Rainfall trend 1990 - 2019

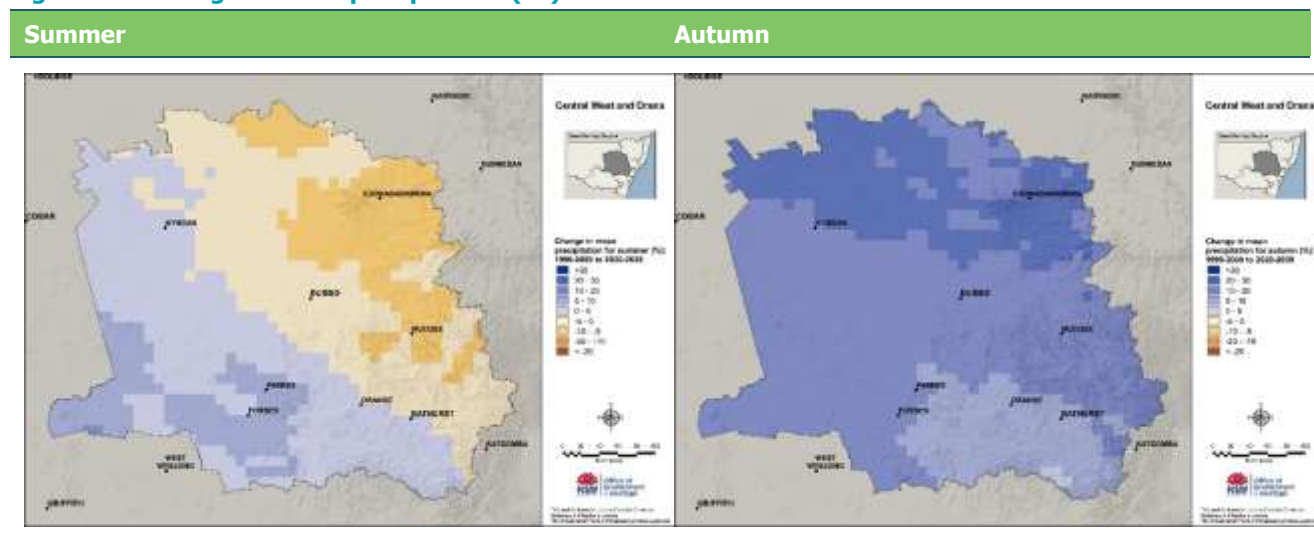
Source: Bureau of Meteorology 2019

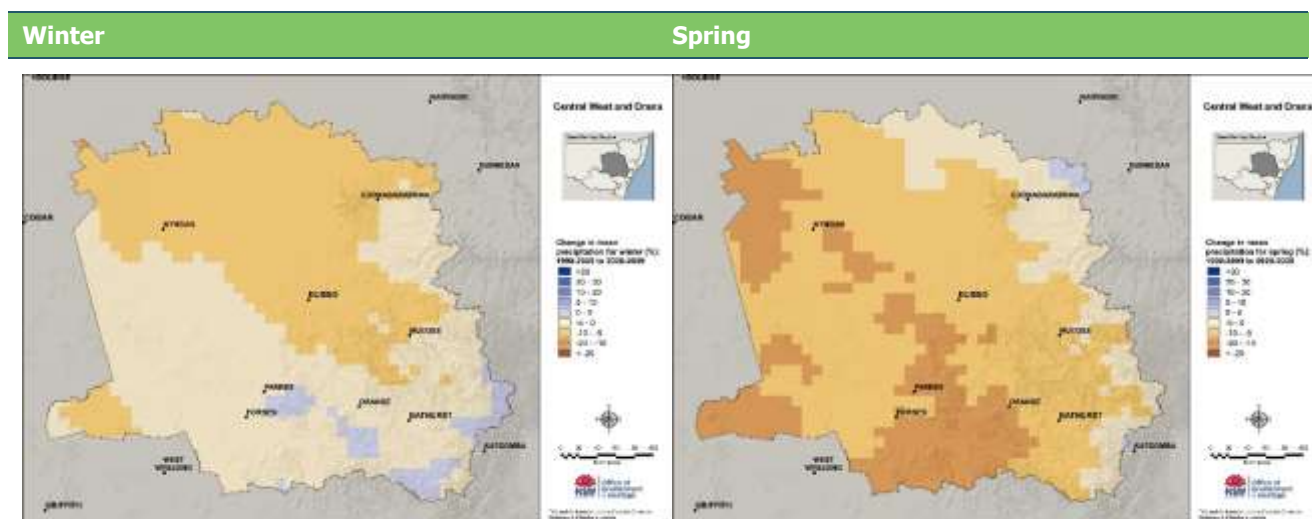
The Climate Change in Australia climate futures tool operated by the CSIRO and the Australian Government Bureau of Meteorology has been used to evaluate potential seasonal rainfall and temperature change between 2020 and 2030 in the event of high emissions in the Murray Darling Basin. From November to April there is a very high consensus that the mean surface temperature will warm by 0.5°C -1.5°C and there is moderate consensus that there will be little change to total rainfall over the same period. From May to October there is a unanimous consensus that the mean surface temperature will be warmer by 0.5°C -1.5°C and a moderate consensus that the winter season will be drier by 5-15%.

The NSW Office of Environment and Heritage produced a climate change snapshot report for the Central West and ORANA region in November 2014. Results included the change in annual mean number of days with temperatures over 35°C (Figure 7-4) and change in seasonal rainfall (Figure 7-5). The rainfall in spring was forecast to decrease by 10-20%, no change in winter and little change in summer and autumn.

Figure 7-4. Change in annual mean number of days with temperature above 35°C

Source: NSW Office of Environment and Heritage, 2014

Figure 7-5. Change in mean precipitation (%)



Source: NSW Office of Environment and Heritage, 2014

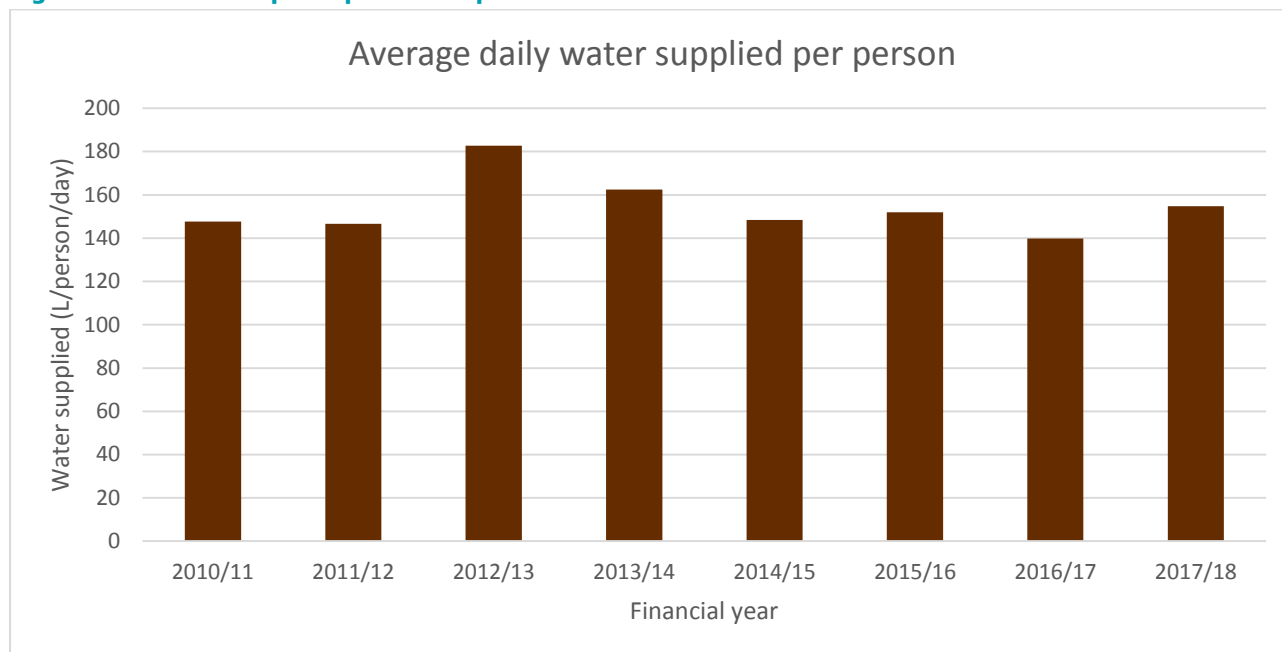
7.3 Drought restrictions history and effects

A summary of major droughts in NSW as listed by the Department of Planning, Industry and Environment is in Table 7-1.

Table 7-1. History of drought in NSW

Severity	Date	Details
Major	1895 – 1903	Federation drought
	1937 - 1945	World War II drought
	2001 – 2010	Millennium drought
	2017 – 2020	
Short major	1914 – 1915	
	1965 – 1967	
	1982 - 1983	

Permanent level 1 water restrictions have been in place since July 2007. Recent data is supplied in Figure 7-6.

Figure 7-6. Historical per capita water production

Source: CTW data

7.4 Supply-side historical actions

Supply side actions carried out historically are listed below:

- A standby bore was installed at Gooloogong in 1987 to provide water security for the groundwater supplies.
- In 1993 the Blayney Well was recommissioned to provide additional water to Blayney.
- In 2019 the Orange – Carcoar bi-directional pipeline was installed and commissioned to support the sustainable supply of water.

8 Regulatory framework

8.1 Central Tablelands Water

CTW delivers water under the provisions of the NSW *Local Government Act 1993* (NSW). Some aspects of the water business are carried out under the provisions of the NSW *Water Management Act 2000* (NSW). CTW is empowered to restrict water supply (e.g. by public notice published in a newspaper circulating within CTW area) under the Local Government (General) Regulation 2005.

The *Local Government Act 1993* (NSW) Section 637 reads: “a person who wilfully or negligently wastes or misuses water from a public water supply, or causes any such water to be wasted, is guilty of an offence”. The maximum penalty which can apply is:

- Maximum penalty: 20 penalty units
- Current (as per September 2014) penalty unit: \$110

Consumers who are identified breaching water restrictions in place may have their supply cut off or restricted by Council in accordance with Clause 144 of the Local Government (General) Regulation 2005 (NSW).

This plan is administered by CTW. During drought, this plan will be overseen by the Drought Management Team (see Section 4.2). The implementation of this Drought Management Plan will be the responsibility of the Drought Incident Manager.

8.2 Department of Planning, Industry and Environment Water

8.2.1 General

Department of Planning, Industry and Environment (DPIE) Water works with partner agencies and with the community to provide a reliable, sustainable supply of water for households, irrigators, farmers, industry and the environment.

For regional NSW, DPIE Water provides managerial, technical and financial support through Goals 21, 22 and 5 of the State Plan NSW 2021 and the Safe and Secure Program for water supply and sewerage.

Available water determinations are made for each water source generally at the start of a water year (on 1 July). The licensed volume or the percentage of the share component is defined by DPIE Water. Since the introduction of the *Water Management Act 2000*, DPIE Water is preparing water sharing plans for rivers and groundwater systems across New South Wales.

8.2.2 Water Sharing Plans

Lake Rowlands Dam is situated on the Coombing Rivulet, a tributary of the Belubula River. It is not included in the Belubula River water sharing plan. CTW is not a member of any water sharing plan.

The river downstream is small and does not supply any additional users.

8.3 Fire Fighting Requirements

Fire services have access to water hydrants for water access. In the event that the emergency lasts more than 3 days conditions the drought management team should seek an alternative source for the firefighting (e.g. raw water) if appropriate.

9 References

- Bureau of Meteorology, 2019, Climate statistics for Australian locations, Canberra AU
- Bureau of Meteorology, 2020, Average annual and monthly evaporation, Canberra AU
- DPIE 2018, LWU performance monitoring data and reports, NSW Government, Sydney
- Hydroscience Consulting, 2012, CENTROC regional drought management plan, Sydney
- MHW, 2009, CENTROC Water Security Study, Sydney
- NSW Office of Environment and Heritage, 2014, Central West and Orana Climate Change Snapshot, NSW Government, Sydney
- Timbal, B et al., 2015, Murray Basin Cluster Report, Climate Change in Australia Projections for Australia's Natural Resource Management Regions: Cluster Reports, eds. Ekström, M et al., CSIRO and Bureau of Meteorology, Australia

Appendix A Best practice checklist

Topic	Outcome achieved	Central Tablelands Water
Executive summary	Covers all major issues, objectives, planning, strategies and monitoring for existing essential supplies of water to the service area(s).	✓
	Includes a summary of the drought management plan and an adopted schedule of trigger points for timely implementation of appropriate water restrictions.	✓
Background	Includes the existing water supply system(s) in the service area(s) and a locality map.	✓ Section 6
	Includes history of past droughts.	✓ Section 7.3
	Includes information on the impact of past droughts on water services, eg. restrictions, effect of restrictions on demands, any emergency sources identified, etc.	✓ Section 7.4
Objectives	Identifies key objectives required to maintain a basic/restricted supply to all users. There is a need to consider social and environmental impacts.	✓ Section 1.3.1
	Tailor strategies relevant to the service areas.	✓
	Endorse and implement a plan that minimises the risk of the community running out of water.	✓
Data	Identification of all communities served by the LWU's reticulated water supply, those with private reticulated water services and those with no reticulated water services within the service area(s).	✓ Section 6.4.2
	Identification of any properties, businesses, other LWUs etc. that may seek water in times of drought.	✓ Section 6.4.7
	Identification of all water requirements. Identify the normal and minimum potable and non-potable water requirements.	✓ Section 6.4.2
	Identify water dependent industry/businesses, any fire fighting requirements and opportunities for recycled water use.	✓ Section 6.4.5 and 8.3 Recycled water not considered as sewage not supplied.
	Includes a description and plan of all water supply schemes in the service area(s).	✓ Section 6
	Includes height/storage volume and height/surface area graphs for all water supply dams and weirs.	✓ Table 6-1 and Figure 6-3
	Historical performance of rivers, dams, weirs and bores in previous droughts.	✓ Figure 6-4

Topic	Outcome achieved	Central Tablelands Water
Plan	Includes the average rainfall figures and evaporation rates.	✓ Section 7.1
	Demand management options.	✓ Section 6.4 and the demand management plan
	Restriction strategies including means and methods for the enforcement of restrictions and the expected results of imposing restrictions	✓ Section 4.3
	Adopted schedule of trigger points for the timely implementation of appropriate water restrictions in order to minimise the risk of failure in times of drought	✓ Section 4.1.2
	Availability of alternative water sources (including estimated costs and times to implement).	✓ Section 4.4
	Water cartage options.	✓ Section 4.4.2
	Identify legislation, local laws and council policies affecting the contingency arrangements.	✓ Section 8
	Links to water sharing plans/committees, water management plans/committees, irrigators, etc.	✓ Section 8.2.2
	Impact of extraction on downstream stakeholders	✓ Section 8.2.2
	Impact of reduced flows in water courses.	✓ Section 8.2.2
	Level of prediction and intervention.	✓ Section 3
	Identify human resource requirements.	✓ Section 4.2
Monitoring during drought	Daily monitoring of demands.	✓ Section 4.5
	Daily monitoring of water supply sources (dams, bores and streams).	✓ Section 4.5
	Monitoring impact of restrictions on consumption	✓ Section 4.3
	Monitoring the electrical conductivity, alkalinity and algae levels in the water sources.	✓ Section 4.5
Consultation	Comprehensive media strategy and public consultation.	✓ Section 4.6
	Regular consultation with appropriate government agencies (DWE, DECC, NSW Health etc).	✓
Operation of drought management plan (DMP)	DMP should discuss, analyse and identify any impact on other regions and localities ie. upstream, downstream or conjunctive water users.	✓ Section 5
	DMP should demonstrate a sustainable strategy that considers all other stakeholders.	✓ Section 4.2.2
	DMP documents an agreed procedure for progressive implementation of water restrictions.	✓ Section 4.2.2

Appendix B Consultation workshop attendees

Central Tablelands Water Demand & Drought Management Workshop List of Attendees, 14 November 2019



Name	Lucy Parsons	
Organisation	Atom Consulting	
Role	Chemical Engineer	
Name	David Bartley	
Organisation	Atom Consulting	
Role	Facilitator	
Name	Cameron Townsend	
Organisation	CTW	
Role	Network Manager	
Name	Bee Smith	
Organisation	CTW	
Role	Governance & Executive Support	
Name	PAUL BEST	
Organisation	CTW ON BEHALF OF WOODSHIRE	
Role	CTW COUNCILLOR	
Name	Peter McFarlane	
Organisation	CTW	
Role	Director Finance & Corporate Services	
Name	KEVIN WALKER	
Organisation	CTW	
Role	DEPUTY CHAIR COUNCIL COUNCILLOR	
Name	Gravin Rhodes	
Organisation	CTW	
Role	General Manager	
Name	WELWELHAM	
Organisation	CTW	
Role	DIRECTOR OPERATIONS & TECHNICAL SERVICES	

Central Tablelands Water
Drought and Demand Management Plans Workshop
 List of Attendees, 4/3/2021



Name	Organisation	Role	Phone number	Signature
Lucy Parsons	Atom Consulting	Chemical Engineer Workshop recorder		
Neil Williams	CTW	DOTS		
Bae Smith	CTW	GESO		
Peter McFarlane	CTW	Dir. Corp Serv & Finance		
JOHN NEWSTEAD	CTW	COUNCILLOR		
Craig Bembrich	CTW	COUNCILLOR		
Gravin Rhodes	CTW	GENERAL MANAGER		
David Roth	Atom Consult	Facilitator		

Atom Consulting for Central Tablelands Water

Central Tablelands Water
Drought and Demand Management Plans Workshop
 List of Attendees, 4/3/2021



Name	Organisation	Role	Phone number	Signature
Paul Best	CTW	Councillor		
David Somervault	CTW	Councillor		

Atom Consulting for Central Tablelands Water