

Demand Management Plan



June 2021 3.0

Document Status:	Version:	3.0				
Document	Status	Reviewer	Version	Date		
History:		Annalisa Contos	1.0	30/09/19		
	For comment		2.0	07/02/20		
	For comment	CTW Council/SMT	3.0	18/11/20		
	Final draft	CTW Council/SMT	4.0	16/06/21		
Authors:	Lucy Parsons, David Ba	rtley				
Contact:	Annalisa Contos Atom Consulting 65 Cambourne Ave St Ives NSW 2075 annalisa@atomconsulting.com.au 02 9488 7742					
File Name:	CTW1805 Demand Mar	agement Plan v4.0.do	СХ			

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

Executive Summary

This report outlines Central Tablelands Water's demand management plan to be adopted by Council in 2021.

Demand forecasting

The historical demand has been analysed and future demand has been forecast. Residential water consumption makes up 64% of the annual water use and represents the greatest opportunity to decrease demand.

The water loss due to leakage has increased from 8% in 2013/14 to 14% in 2017/18. Central Tablelands Water's water loss is above the state-wide median.

The population increase is predicted to be 0.7% annually. The demand is forecast to increase proportionally with the population.

The demand target is to maintain 254 L/person/day and minimise water loss due to leakage.

Demand management

In 2015/16 the weighted median inland water utility annual residential water supplied was 248kL/property (DPIE, 2017). The target of this demand management plan is to maintain the total water consumption per person of 254kL/person/year.

The demand management measures that are detailed in this report are summarised in Table i-i.

Demand management	Direct annual costs	Target water	Estimated annual water saving
measure		customers	Volume (ML/yr)
Permanent water restrictions	-	All	35
Community education	\$2,000 \$0.15/kL	Residential	13
Water loss management	\$46,800 \$9.54/kL	Water leakage	5
Key user internal efficiency audits	-	Commercial, industrial, public and parks	0.22

 Table i-i. Central Tablelands Water demand management controls

Implementation

In order to manage the demand effectively it is recommended that the implementation of the measures outlined above is monitored and their success evaluated. The water consumption should be reviewed every year against the demand forecast in Section 3.3.2 and the demand management targets. The review should be brief and assess:

- Change in water consumption to ensure target of 254 L/person/day is maintained,
- Residential and non-residential customer consumption percentage change since previous year to assess which controls are most effective,
- The implementation of all controls outlined in this plan,
- The need to strengthen existing controls or implement new controls to meet water targets,

• Correct implementation of water restrictions.

Controls found to need strengthening or implementation should be recorded for assessment in the following year's review.

Contents

Exe	cutive S	Summ	ary iii					
	Dema	nd for	ecastingiii					
	Demand managementiii							
	Imple	menta	tioniii					
1	Introd	uctior	11					
	1.1	Dem	and management goals1					
	1.2	Bene	fits of demand management1					
	1.3	Histo	ry of demand management in the Central Tablelands region1					
	1.4	Best	practice requirements2					
	1.5	Cons	ultation3					
2	Water	supp	y systems4					
	2.1	Syste	em description4					
		2.1.1	System upgrades6					
3	Demai	nd for	ecasting7					
	3.1	Prev	ous demand trends7					
	3.2	Curr	ent water use8					
		3.2.1	Residential and total demand8					
		3.2.2	Non-revenue water					
	3.3	Futu	re water use					
		3.3.1	Population growth10					
		3.3.2	Changing water demand11					
4	Demai	nd ma	nagement planning13					
	4.1	Long	-term demand management measures13					
		4.1.1	Permanent water restrictions					
		4.1.2	Community education					
		4.1.3	Water loss management14					
		4.1.4	Key user internal efficiency audits15					
	4.2	Effec	t of long-term demand management on demand forecast15					
5	Monito	oring,	evaluation and reporting16					
6	Refere	ences						
Арр	endix A	A W	ater restrictions triggersA-18					
Арр	endix E	3 B	est practice checklistB-1					
Арр	endix (C C	onsultation workshop attendeesC-3					
Арр	Appendix D Top non-residential customers							

Appendix E	Annual report template	.E-2)

Tables

Table i-i. Central Tablelands Water demand management controls	iii
Table 1-1. Adopted demand management strategies	2
Table 1-2. Stakeholder consultation	3
Table 2-1. Central Tablelands Water raw water sources and allocations	4
Table 3-1. 2017/18 Connections and metered usage	8
Table 3-2. Daily average and peak demand	10
Table 4-1. Water loss management estimated costs	14
Table 4-2. Adopted demand management strategies	15
Table A-1. CTW restriction triggers	A-18
Table D-1. CTW top customers (2018/19)	D-1

Figures

Figure 2-1. Central Tablelands Water network map	5
Figure 2-2. Lake Rowlands historical storage	6
Figure 3-1. Total water production January 2005 to June 2019	7
Figure 3-2. Bore water use	8
Figure 3-3. Customer distribution in 2017/18 water consumption	9
Figure 3-4. Average residential potable water consumption for local water utilities	9
Figure 3-5. Non-revenue water 2011 to 2018	10
Figure 3-6. Population forecast	11
Figure 3-7. Demand forecast	12
Figure 4-1. Demand management scenario forecasts	15

1 Introduction

This Demand Management Plan (DMP) describes the water supply demand management initiatives to be implemented in the Central Tablelands Water (CTW) area of operations over the next four years. These initiatives will support and maintain efficient water use and water supply security in the region.

This Plan builds on the initiatives in the 2010 Demand Management Plan (CTW, 2010) and recommends actions that aim to be economically, socially and environmentally sound.

1.1 Demand management goals

The overall goals for demand management in CTW's area of operations are:

- Responsible and efficient water use
- Overall consistency in water demand
- Reduce and maintain water losses from CTW infrastructure to sustainable levels
- Minimise or defer capital expenditure in new water sources
- Implement innovative water efficiency measures
- Develop effective mechanisms to monitor, report and evaluate the success of demand management actions.

The water supply systems operated by CTW, supply a range of residential and non-residential customers (see Section 3.1). The actions in this plan have therefore been targeted to customer type.

While water pricing is often effective for demand management, it is not addressed in this Plan. Water pricing forms part of CTW's financial planning.

1.2 Benefits of demand management

Effective demand management provides economic, social and environmental benefits to the community. In particular by reducing total water demand, the capital cost of constructing new water supplies, treatment and transportation can be deferred. Demand management can also reduce the required capacity of new infrastructure and reduce operating cost relative to population.

Demand management reduces the need for extraction of water from rivers and aquifers which increases environmental flows. This increase in river flows not only provides environmental benefits but improves community wellbeing by providing water for amenity and recreation.

Effective demand management requires strong community engagement. Education of the community is essential to uptake of water efficient appliances and to highlight the impact of water wastage. Community engagement also encourages them to be advocates for water conservation and develops the expectation that water is supplied and used efficiently.

1.3 History of demand management in the Central Tablelands region

Details of the demand management strategies currently in place are detailed in Table 1-1.

	-
Item	Details
Permanent low-level restrictions	Permanent restriction of sprinklers and fixed hoses between 10am and 5pm was implemented in July 2007.
Water education	Member of Smart Approved WaterMark. There are Smart Approved WaterMark documents on the Council website providing recommendations for water saving.
Metering	All free standing residential premises are separately metered. All new free standing and multi-unit residential developments are separately metered.

Table 1-1. Adopted demand management strategies

1.4 Best practice requirements

The NSW Government encourages best practice by all Local Water Utilities (LWUs) to:

- Encourage the effective and efficient delivery of water supply and sewerage services; and
- Promote sustainable water conservation practices and water demand management throughout NSW

To achieve best practice, there are six elements that LWUs must comply:

- 1. Strategic Business Planning
- 2. Pricing
- 3. Water Conservation
- 4. Drought Management
- 5. Performance Reporting
- 6. Integrated Water Cycle Management

For water conservation, the NSW Government has developed a checklist to guide LWUs develop their demand management strategies. This completed checklist is in Appendix B.

1.5 Consultation

A workshop was held on 14 November 2019 to gather input from stakeholders, workshop participants are listed in Table 1-3. The attendance sheet is in Appendix C. The CENTROC demand management plan was also consulted as part of the development of this document.

Table 1-2. Stakeholder consultation					
Company	Name	Role			
Central Tablelands Water	Cameron Townsend	Network Manager			
	Bernadina Smith	Governance and Executive Support Officer			
	Peter McFarlane	Director Finance and Corporate Services			
	Gavin Rhodes	General Manager			
	Noel Wellham	Director Operations and Technical Services			
Weddin Shire Council and	Paul Best	Central Tablelands Water Councillor			
Central Tablelands Water		Weddin Shire Council Councillor			
Cabonne Council and Central	Kevin Walker	Central Tablelands Water Deputy Chair			
Tablelands Water		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 1-33. The attendance sheet is in Appendix C.

Table 1-3. 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	David Somervaille	Central Tablelands Water Chairman
Central Tablelands Water		Blayney Shire Council Councillor
Blayney Shire Council and	John Newstead	Central Tablelands Water Councillor
Central Tablelands Water		Blayney Shire Council Councillor
Weddin Shire Council and	Craig Bembrick	Central Tablelands Water Councillor
Central Tablelands Water		Weddin Shire Council Councillor
Weddin Shire Council and	Paul Best	Central Tablelands Water Councillor
Central Tablelands Water		Weddin Shire Council Councillor
Atom Consulting	David Bartley	Workshop facilitator
	Lucy Parsons	Workshop recorder

2 Water supply systems

This section of the report details the current system operated by Central Tablelands Water.

2.1 System description

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. The main water source is Lake Rowlands, with groundwater bores supplying the town of Quandialla, and bores at Gooloogong supplementing supply to Gooloogong, Grenfell and Eugowra as required. Lake Rowlands was completed in 1953 with a total storage capacity of 4,500 ML and a catchment area of approximately 197 km². Raw water sources are detailed in Table 2-1.

Table	2-1.	Central	Tablelands	Water	raw	water	sources	and	allocati	ons

	Capacity	Volume extraction licence (ML/yr)
Lake Rowlands Dam	4,500 ML	3,150
Gooloogong Bore 1	Bore pump: 3.8ML/d	400
Gooloogong Bore 2	Bore field rated: 5 ML/day	
Quandialla Bore 1	Bore pump: 1.2 ML/day	266
Quandialla Bore 2 (stand by)	Bore: 1 ML/day	
Cudal Bore	Well: 4 L/s (0.35 ML/day)	100
	Bore pump: 0.35 ML/day	
Bangaroo Bore 1	Bore field rated: 3.8 ML/day	472
Bangaroo Bore 2	Northern pump: 0.8 ML/day	
	Western pump: 3.0 ML/day	
Blayney Well	Well: 0.6 ML/day	250
Blayney Blue Hole	Surface pump: 0.6 ML/day	

Water from Lake Rowlands is treated at two water treatment plants located at Blayney and Carcoar. Figure 2-1 shows the CTW network map.



Figure 2-1. Central Tablelands Water network map

CTW water restrictions for all customers are based on the water levels at Lake Rowlands. The water level at Lake Rowlands is recorded weekly. The historical water storage levels at Lake Rowlands are graphed in Figure 2-2.





2.1.1 System upgrades

There are plans to improve the capacity and resilience of the water supply system by building a pipeline between Lake Rowlands and Carcoar dam, with the ability to pump water from Carcoar Dam to CTW's Blayney WTP for urban use. This has not yet been approved but should be considered in the next demand management plan.

3 Demand forecasting

This section of the plan details the historical analysis of water demand and future forecasting.

3.1 Previous demand trends

Historical records for the surface water and ground water are assessed in this section with climate correction.

Bulk water production is metered and recorded on a daily basis. This data from Lake Rowlands has been plotted in Figure 2-1. The permanent level 1 water restriction has not had an effect on the water demand.



Figure 3-1. Total water production January 2005 to June 2019

Source: Central Tablelands Water dam monitoring

An investigation into water losses due to evaporation at Lake Rowlands was carried out in 2010. During 2010 and 2011, the maximum evaporative losses from Lake Rowlands was 36 ML/week in summer and the minimum in winter was 6 ML/week.

Bore water flow is monitored daily when in use. The use of Quandialla and Gooloogong Bores, the Blayney well from June 2006 to 2018 is graphed in Figure 3-2.





3.2 Current water use

3.2.1 Residential and total demand

Water customers are classified in accordance with the categories defined in the *NSW Water Supply and Sewerage Performance Monitoring Report*. All free-standing residential premises meters are separately metered. The most recent financial year's water use has been analysed to assess the viability of demand management options. The connections and water billed in 2017/18 are shown in Table 3-1. The divide between the different customer types has been represented in Figure 3-3.

Table 3-1. 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





Source: DPIE LWU performance reporting 2017/18

In 2015/16 the weighted median inland water utility annual residential water supplied was 248 kL/property, the CTW average consumption in 2017/18 was below this at 205 kL/property/year (DPIE, 2018). The CTW consumption has been benchmarked with neighbouring local water utilities and graphed in Figure 3-4.





Source: DPIE LWU performance reporting 2017/18

The daily peak and average demand have been calculated and summarised in Table 3-2.

Consumer category	Average daily demand (L/service connection/day)	Peak day demand (L/service connection/day)	Peak day ratio
Residential	578.5	929.8	1.6
Commercial	1,055.7	1,376.2	1.3
Industrial	56,245.5	64,782.6	1.2
Public	5,040.7	6,570.8	1.3
Parks and Open Space	2,134.9	13,330.1	6.2
Rural	1,404.9	4,167.7	3.0

3.2.2 Non-revenue water

The non-revenue water is a combination of unbilled water use, apparent losses from unauthorised use and real losses from water leakage. Non-revenue water has increased from 8% in 2013/14 to 14% in 2017/18 (Figure 3-5). The state-wide median non-revenue water is 92 L/service connection/day, in 2017/18 CTW Water had approximately 160 L/service connection/day.

Figure 3-5. Non-revenue water 2011 to 2018



Source: DPIE LWU performance reporting

3.3 Future water use

This section summarises future population levels in the CTW customer area.

3.3.1 Population growth

The historical population data and projected population growth (based on a 0.7% annual growth rate) is plotted in Figure 3-6. The growth rate was taken from the Long Term Financial Plan (2018).



Figure 3-6. Population forecast

3.3.2 Changing water demand

The target demand is to maintain 254 L/person/day. The demand forecast takes into account a reduction in dam yield. Demand was forecast in three ways:

- 1. The baseline forecast was based on a consistent demand per person and a population growth of 0.7% per year as forecast in Figure 3-6.
- 2. Using the 5/10/10 rule which is based on the average production with 5% time on restrictions, restrictions in less than 10% of years and severity of restrictions does not exceed 10% (ie. System can provide 90% of unrestricted dry year water demand).
- 3. 25% reduced inflow in the next 30 years which resulted in decrease of 17.6 ML dam yield each year.

The increase in water demand has been graphed in Figure 3-7. The risks to water supply associated with climate change are discussed in the Drought Management Plan.





4 Demand management planning

The target of this demand management plan is to maintain the residential water consumption of 226 kL/connection/year.

4.1 Long-term demand management measures

The actions that CTW will carry out to manage demand are outlined below with cost estimates. These include measures currently in place and those that are proposed. Reduced energy costs have not been considered in the cost estimates as it has been assumed that variable energy costs are incorporated into the water usage charge.

4.1.1 Permanent water restrictions

Level one water restrictions are permanently in place and have been since July 2007 to encourage smart water use. This control will stay in place and communication will be improved to ensure consumers are aware of the restrictions. The community awareness program should include improved communication of water restrictions.

The limitations included in level one residential water restrictions include:

- Watering systems, microsprays, drip systems, soaker hoses, non-fixed sprinklers, handheld hoses only
 - o Summer time between 1800-0900 hrs only daily
 - \circ Winter time 0600-1000 hrs and 1600-2200 hrs daily
- Irrigation of new turf permitted for one week after laying after which level 1 restriction on watering lawns applies
- Washing down walls or paved surfaces is only permitted when Lake Rowlands is at 90% capacity or above
- Washing down walls or paved surfaces under an exemption application consideration process when Lake Rowlands is below 90%, and
- Washing cars at home is permitted with bucket and rinse with trigger hose on lawn at any time.

Details of other water restrictions are listed in Appendix A.

Level one water restrictions aim to achieve 260 L/person/day water consumption. This target is already routinely met with an average water consumption in 2017/18 was 254 L/person/day. It is estimated that implementation of this demand control measure will reduce external water use in all categories by 20%. This will result in average water savings of 35 ML/yr.

There are no costs for CTW to implement the permanent water restrictions. Communication costs are included in community education.

4.1.2 Community education

CTW will continue to educate the community about opportunities for water saving. Community education measures that will be implemented include:

- Maintaining a 'Saving Water' page on their website, and share information regarding water saving tips, water restriction levels and links to Smart WaterMark on their Facebook page.
- Improving public understanding regarding the significance of the water restriction levels.

- Continuing the distribution of quarterly newsletters with information about water pricing, water restrictions and water saving tips.
- Hosting workshops to educate the public about water saving options in the garden and home.
- Developing and implementing a school education program.
- CTW promotional video that emphasising the importance of water conservation.

For this measure to effectively impact demand it must be implemented consistently, particularly in drought periods. It is estimated that these measures will reduce residential water use by toilets and baths by up to 1%, residential water use by showers, taps, dishwashers, washing machines, evaporative cooling systems and external leakage by up to 5% external residential water use by up to 20% and external commercial, industrial and public use by 10%. This would result in water savings of up to 13 ML/yr.

The cost of implementing the community education is approximately 2,000 per year. This number is for pamphlets, advertisements and membership to Smart Approved WaterMark subscription, the cost of staff has not been included in this estimate. The annual cost of this is equivalent to 0.15per kL of water.

4.1.3 Water loss management

Leakages lead to the loss of 12% of the total sourced water in 2017/18. The Central Tablelands Water distribution is comprised of approximately 561km of water mains that require regular maintenance and routine monitoring for the quick detection and resolution of water leaks in order to minimise water loss. One of the challenges for CTW is that of the 561km of water mains, there are 294km of transfer mains where leaks can go undetected as they are remote from customer's properties. CTW will implement the following water loss management strategies:

- Water main maintenance program to improve the asset condition and minimise the likelihood of mains breaks.
- All free-standing residential premises are separately metered and CTW encourage multiresidential developments to meter each unit separately to improve leak detection.
- CTW will investigate options to minimise water loss due to evaporation and implement resulting actions.
- CTW will investigate the use of a drone to visually inspect leaks in trunk mains

Water for mains flushing is necessary and cannot be reduced, because of this it is assumed that 50% of water losses are avoidable. The cost of implementing this measure was estimated using values in Table 4-1.

Table 4-1. Water loss management estimated costs

Item	Details
Start Date for program	2020
% of avoidable losses in total losses	50%
Ongoing annual administration costs	\$2000
Current total length of water mains (km):	561
Percentage of system covered each year	10%
Percentage reduction in avoidable losses on repair	75%
Life span for loss reduction (years)	3
Inspection costs per km	\$300
Repair costs per km	\$500

This results in average water savings of 5 ML/year and annual cost of \$46,800 or \$3.52 per kL of water.

4.1.4 Key user internal efficiency audits

CTW will maintain a list of the high quantity water customers and during periods of water restrictions level 3 or higher will encourage internal water efficiency audits be carried out by the customers. It is predicted that this will only require two years of implementation.

It is estimated that there will be a 75% decrease in internal and external water leakage for commercial, industrial, public and parks and garden customers. This will result in the temporary saving of 0.22 ML/yr. No costs were included in this estimate.

4.2 Effect of long-term demand management on demand forecast

Four scenarios have been assessed to predict the impact of the controls on the demand (Table 4-2). The actions included in each scenario are summarised in Table 4-2.

Table 4-2. Adopted demand management strategies

Details	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Permanent low level	х	Х	Х	Х
restrictions in use				
Community		Х	Х	Х
Education				
Water loss			х	х
management				
Non-residential user				х
audits				

Figure 4-1. Demand management scenario forecasts



5 Monitoring, evaluation and reporting

In order to manage the demand effectively it is recommended that the implementation of the measures outlined above is monitored and their success evaluated. The water consumption should be reviewed every year against the demand forecast in Section 3.3.2 and the demand management targets. The review should be brief and assess:

- Change in water consumption to ensure target of maintaining 205 L/person/day (DPIE, 2018) residential use is maintained,
- Residential and non-residential customer consumption percentage change since previous year to assess which controls are most effective,
- The implementation of all controls outlined in this plan,
- The need to strengthen existing controls or implement new controls to meet water targets,
- Correct implementation of water restrictions.

Controls found to need strengthening or implementation should be recorded for assessment in the next year's review.

A template for the annual review in Appendix E.

6 References

Central Tablelands Water (2010), Demand Management Plan, Hydroscience Consulting

Centroc (2013), Regional Water Demand Management Plan, MWH

DWE (2007), *Best Practice Management of Water Supply and Sewerage – Guidelines*, NSW Department of Water & Energy

Turner, A., Willetts, J., Fane, S., Giurco, D., Kazaglis, A., and White S., (2008). *Guide to Demand Management*. Prepared by the Institute for Sustainable Futures, University of Technology, Sydney for Water Services Association of Australia Inc.

NSW Department of Primary Industries Water (2017). *2015-16 NSW Water Supply and Sewerage Performance Monitoring Report*, NSW DPI, Sydney.

Appendix A Water restrictions triggers

The triggers were developed on the basis of the following input data:

- The demand forecast outcomes were based on local population of 13,493 in 2009 (source: CTW Demand Management Plan 2009)
- Central Tablelands Water supply includes:
 - Lake Rowlands Yield of 2050 ML/y (source: Review of Lake Rowlands Safe Yield, SMEC, 2010)
 - Gooloogong Bore No. 1 & No. 2 combined licensed allocation of 400 ML/y
 - Cudal Bore licensed allocation of 100 ML/y

Table A-1. Central	Tablelands	Water	restriction	triggers
--------------------	-------------------	-------	-------------	----------

Supply							Demand		
Bore wa	ater		Lake Rowla Storage Le	inds vels	Lake Rowlands Supply	Water restriction levels	Estimate Annual I – All resi & non- residenti leakage)	ed Demand idential ial (incl.	Residential Consumption per Person
%	ML/y	ML/d	% (triggers)	ML	ML/d		ML/y	ML/d	L/person/d
100%	500	1.37	100%	3150	6.16	Level 1	2749.0	7.53	260
100%	500	1.37	60%	2700	5.72	Level 2	2587.6	7.09	240
100%	500	1.37	50%	2250	5.12	Level 3	2370.5	6.49	220
100%	500	1.37	40%	1800	4.42	Level 4	2114.1	5.79	200
100%	500	1.37	35%	1575	3.89	Level 5	1918.9	5.26	160
100%	500	1.37	30%	1350	3.41	Level 6	1745.7	4.78	140
			20%	900	(Lake Rowlands dead storage)				

Appendix B Best practice checklist

Торіс	Outcome achieved	Central Tablelands Water
Demand monitoring	Bulk water production metered and recorded on a daily basis	\checkmark
	All new free standing and multi-unit	\checkmark
	residential developments (both strata and	
	non-strata) approved after 1 July 2004	
	Must be separately metered	1
	be separately metered by 1 July 2007	
	LWUs should encourage separate	\checkmark
	metering of existing multi- unit residential	It is encouraged but the
	developments, where cost-effective	responsibility of the developer
	Customer water consumption billed at	✓ Ouarterly
	quarterly)	Quarterly
	Customers classified in accordance with	\checkmark
	the categories defined in the latest NSW	
	Water Supply and Sewerage Performance	
	reported annually	
	If facing augmentation of the peak day	\checkmark
	capacity of your system, monitor and	
	record service reservoir levels on a daily	
Domand forecasting	basis in high demand periods	<u>√</u>
Demanu Torecasung	of climate	Section 3
	Data records screened for errors	\checkmark
		Section 3
	Demand forecasts prepared for each	√ Castian 2
	customer category as well as for leakage	Section 3
Demand management	Examined a range of long-term demand	\checkmark
planning	management measures including: retrofit	2010 Demand Management Plan
	programs, rebates for water, efficient	
	appliances, rebates for rainwater tanks,	
	repates for garden mulch, effluent and	
	Completed benefit/cost analysis of	\checkmark
	demand management measures that	Section 4
	includes benefits from reduced capital	
	works and lower operating costs.	
	Completed investment schedule/plan for	
	management measures	
Implementation	Subsidised and promoted at least two of	✓
•	the identified demand management	2010 Demand Management Plan
	initiatives	
	Examined the implementation of	¥
	minimise wastage, in accordance with	
	Item 91 (iii) of the National Water	
	Initiative	

Торіс	Outcome achieved	Central Tablelands Water
	Implemented a cost-effective leakage reduction program to reduce system water losses	 ✓ Drone for trunk mains to visually check for leaks Mains replacement program
	Ongoing customer education campaign	\checkmark
	focussing on the importance of conserving our valuable water resources	Website, Facebook
	If average residential water use per	
	property exceeds that for the median NSW utility (290 kL/yr in 2002/03) by over 20%, the LWU must show progress towards achieving a reduction in average residential use by 1 July 2007	N/A
	Monitoring program for reviewing the effectiveness of the implemented demand	\checkmark
	management measures	

Appendix C Consultation workshop attendees

Central Tablelands Water Demand & Drought Management Workshop List of Attendees, 14 November 2019 Name Parsons Organisation onsulting Role noiner Name 60 Organisation hh a (on k Role Name Comeron Townsend Organisation CTW Network Manager Role Name BREC Smith Organisation CTW over nance 3 Executive Role Name PAUL BEST . Organisation - CTW ON BEHALF OF WEDDW SHIRE Beat Role CTW Connermon Name Pater Fac P Organisation Role Finance + Corpor 10 irector RIVICES Name MALKER KEVIN Organisation h CABNINE COUNCILL Role CHAIR DERMY Name GAVIN K hould 5 Organisation CTW Role Manage PREVA Name NAL Organisation Role REPATIONS LCZ SCONS 1 ECA

Name	Organisation	Role	Phone number	Signature
Lucy Parsons	Atom Consulting	Chemical Engineer Workshop recorder	-	2.Pm
when when when when	Crul	Dors	-	algerer.
Bee Smith	an	GESO	T	A I
Peter MiForland	CTW	Dir. Corp Savu		Parit
JOHN NEWSTERS	СТЫ	COUNCILLOR	-	Jo Newton
Price Bembrich	ctw	conversion		h
Cravin Rhodes	CTW	GENCEM MANAGE		Alles.
David Both	Aton Consult	Facilitat		Dun

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



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

- 1989 - C			
LTW	Councillor		
CTW	Councillos		2 Dunal
			4,5
	CTW	CTW Councillor CTW Councillor	CTW Consillor CTW Consillor

Atom Consulting for Central Tablelands Water

Atom Consulting for Central Tablelands Water

Appendix D Top non-residential customers

Table D-1. Central Tablelands Water top customers (2018/19)

Top customer	Town	Туре	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

Appendix E Annual report template

The data used to fill in this report should be the same as the data provided to DPIE Water.

Central Tablelands Water Annual Demand Management Review Year:

	Pre yea	vious r	This year	Comments on change
Average residential water supplied (kL/service connection)				
Commercial water supplied (ML)				
Sum of industrial water supplied (ML)				
Non-revenue water (Real Losses) (ML)				
Was it implemented ye	this ear?	Cost	Effectiveness 1-5	Changes to implementation in next year
Permanent water restrictions (All)				
Community education (Residential, commercial)				
Water loss management (Real losses)				
Key user internal efficiency audits (Commercial, Industrial, public and parks)				