



# COONAMBLE

SHIRE COUNCIL

## DROUGHT MANAGEMENT PLAN

2021-2022

## **Executive summary**

### **Context**

This plan has been developed to provide a framework to assist in handling future droughts by both Council Staff and the public.

This plan has been developed in accordance with the checklist provided in NSW Government Best-Practice Management of Water Supply and Sewerage (2007) (Included in Appendix A).

### **Objectives**

The overall objective of this drought management plan is to ensure that at all times a basic water supply is available to all users.

Additionally, this plan also aims to:

- Allow for a timely and consistent response to future droughts.
- Identify groups that have different water requirements and ensure that these customers are considered. The most notable example is the hospital.
- Outline methods for issuing drought information and education.
- Provide information regarding current water supply schemes.

## **Drought Preparation**

### **General Monitoring**

A large part of drought preparation is ensuring water demand is accurately and consistently monitored.

It is most important to ensure the Water Treatment Plant output is always recorded as this will be the main indicator of the demand.

Monitoring is essential to predicting the impacts of drought. In the town of Coonamble, the main issue with drought is the increased pressure placed upon the Water Treatment Plant. By monitoring data consistently, the Coonamble Shire Council can determine whether the Drought Triggers require amendments.

### **Drought Monitoring**

In accordance with the Best-Practice Management of Water Supply and Sewerage Guidelines (2007), during a declared drought the following monitoring must be done:

- Daily Monitoring of demands.
- Daily Monitoring of bores.
- Monitoring impact of restrictions on consumption.

- Monitoring the electrical conductivity, alkalinity, and algae levels in the water sources.

Daily drought monitoring is crucial, as it will allow for the drought management plan to be evaluated and adjusted for future droughts.

## Drought Activation Plan

### Drought Triggers

The drought management plan includes 5 different levels of restrictions. The level of restriction in place is based on certain demand events occurring at the Coonamble Water Treatment Plant known as triggers.

Level	Trigger when:	Relax when:
1 Low	Permanent	Never
2 Moderate	a) Demand on water treatment plant is >90% of capacity (4.7 ML) for 2 consecutive days.	a) Demand on water treatment plant is <85% of capacity for 7 consecutive days
3 High	a) Declaration of drought over LGA b) Demand on water treatment plant is >90% of capacity (4.7 ML) for 7 days	a) Drought declaration lifted b) Demand on water treatment plant is <85% of capacity for 7 days
4 Very High	a) Demand on water treatment plant is >100% of capacity (5.2 ML) for 2 days	Demand on water treatment plant is <90% of capacity for 7 days
5 Extreme	a) Demand on water treatment plant is >110% of capacity (>5.2 ML) for 2 days	Demand on water treatment plant is <90% of capacity for 7 days

## Water Supply Systems

Water Supply System	Population Served	Average Demand (kL/day)	Raw Water Source	Current Problems
Coonamble	2750	3000 kL/day  4400 kL/day January Average  1500 kL/day July Average  Plant Capacity: 5200 kL/day	Groundwater from 3 bores	During hot weather and drought, the capacity of the water treatment plant is not sufficient to provide the high level of demand
Gulargambone	591			
Quambone	166			

## Contents

Executive summary .....	i
Context .....	i
Objectives .....	i
Drought Preparation.....	i
General Monitoring .....	i
Drought Monitoring .....	i
Drought Activation Plan .....	ii
Drought Triggers.....	ii
1 Introduction .....	6
1.1 Context.....	6
1.2 Objectives of the DMP .....	6
1.3 Background.....	6
1.4 History of Past Droughts .....	6
1.4.1 Past Droughts .....	6
1.4.2 Previous Drought Restrictions .....	6
2 Drought Strategy Plan .....	7
2.1 Drought Preparation.....	7
2.1.1 General Monitoring .....	7
2.1.2 Drought Monitoring .....	7
2.2 Drought Activation Plan.....	7
2.2.1 Triggers.....	7
2.2.2 Restrictions.....	10
2.3 Drought Management Team .....	13
2.4 Communication .....	14
2.4.1 Public Engagement.....	14
2.4.2 Information for the Public.....	14
2.4.3 Government Agency Consultation .....	14
2.4.4 Contact List.....	15
2.5 Regulatory Framework.....	15
3. Water Supply Scheme.....	16
3.1 Existing Water Supply Schemes .....	16
3.2 Bore Information .....	17
3.3 Water Treatment Process .....	18

4 Water Demand .....	19
4.1 Water Pricing .....	19
4.2 Water Users .....	19
4.3 Potable Water Demand.....	19
4.4 Non-Potable Water Demand .....	21
4.6 Significant Water Users.....	22
4.7 Historic Water Demand .....	23
5 Climate Data .....	24
References .....	25
Appendix A.....	26

## **1 Introduction**

### **1.1 Context**

This plan has been developed to provide a framework to assist in handling future droughts by both Council Staff and the public.

Most of the information in this report has been gathered from a recent (2020) water security scoping study. Council used consultants DP8 to evaluate future risk to the water supply and also gather general information on the water network.

This plan has been developed in accordance with the checklist provided in NSW Government Best-Practice Management of Water Supply and Sewerage (2007).

### **1.2 Objectives of the Drought Management Plan**

The overall objective of this Drought Management Plan (DMP) is to ensure that at all times a basic water supply is available to all users.

Additionally, this plan also aims to:

- Allow for a timely and consistent response to future droughts.
- Identify customers that have different water requirements.
- Outline methods for issuing drought information and education.
- Provide information regarding current water supply schemes.

### **1.3 Background**

Coonamble Shire is situated on the central-western plains of New South Wales along the Castlereagh Highway approximately 165km north of Dubbo and 6 hours from Sydney. Coonamble is the commercial and social hub of the district with strong agricultural and livestock industries. It has excellent facilities and services and a close connection to the vibrant towns of Gulargambone and Quambone as well as the local farming community. These communities comprise the Coonamble Shire and have a combined population of approximately 4,000.

### **1.4 History of Past Droughts**

#### **1.4.1 Past Droughts**

Drought is a recurrent and regular feature of the Australian environment. Drought is defined in Australia by rainfall levels over a period of three months that are within the lowest 10<sup>th</sup> percentile for that region (Bureau of Meteorology, n.d). Australia has faced two major droughts in the 20<sup>th</sup> century, the Millennium Drought which peaked from 2001-2009 and another from late 2016 to late 2019.

#### **1.4.2 Previous Drought Restrictions**

- January 2019 - Fixed hoses and sprinklers are to be used only between 8:00pm and 8:00am.

- 1<sup>ST</sup> of November 2019 - Fixed hoses and sprinklers to be used only between 7:00pm and 7:00am.

## **2 Drought Strategy Plan**

### **2.1 Drought Preparation**

#### **2.1.1 General Monitoring**

A large part of drought preparation is ensuring monitoring of water use is accurate and consistent. It is most important to ensure the water treatment plant output is always recorded as this will be the main indicator of the level of demand.

Data will be used to determine future drought management plans. The data used for this plan has been included in Chapter 4.

#### **2.1.2 Drought Monitoring**

In accordance with the Best-Practice Management of Water Supply and Sewerage Guidelines (2007), during a declared drought the following monitoring must be done:

- Daily Monitoring of demands.
- Daily Monitoring of bores.
- Monitoring impact of restrictions on consumption.
- Monitoring the electrical conductivity, alkalinity and algae levels in the water sources.

Daily drought monitoring is crucial, as it will allow for the drought management plan to be evaluated and adjusted for future droughts.

### **2.2 Drought Activation Plan**

#### **2.2.1 Triggers**

Triggers are the events which activate different stages of the drought strategy plan. The Triggers listed in the following sections are specific to the Coonamble Shire as they are based on the water supply for the region.

During a drought, treated water is used more regularly for gardens and similar purposes which would otherwise receive water from rain. Therefore, the major implication of drought to the Coonamble Shire Region is the potential for demands on the water treatment plant that are above its working capacity. For this reason, the demand on the water treatment plant has been set as a trigger for different levels of water restrictions.

For the town of Gulargambone, the water supply is constrained by the rate at which the pumps can extract water from the low yield bores.



Quambone only has basic chlorine water treatment and a small population; as such it will not be included in the drought triggers.

Coonamble Shire Council may introduce drought restrictions for the entire region based on the Coonamble Water Treatment Plant Triggers or introduce restrictions exclusively for Gulargambone using the triggers related to the Gulargambone Water Supply Scheme.

Table 2.2.1 Coonamble Water Treatment Plant - Drought Activation Plan Triggers

Level	Trigger when:	Relax when:
1 Low	Permanent	Never
2 Moderate	b) Demand on water treatment plant is >90% of capacity (4.7 ML) for 2 consecutive days.	b) Demand on water treatment plant is <85% of capacity for 7 consecutive days
3 High	c) Declaration of drought over LGA d) Demand on water treatment plant is >90% of capacity (4.7 ML) for 7 days	c) Drought declaration lifted d) Demand on water treatment plant is <85% of capacity for 7 days
4 Very High	b) Demand on water treatment plant is >100% of capacity (5.2 ML) for 2 days	Demand on water treatment plant is <90% of capacity for 7 days
5 Extreme	b) Demand on water treatment plant is >110% of capacity (>5.2 ML) for 2 days	Demand on water treatment plant is <90% of capacity for 7 days

Table 2.2.2 Gulargambone Water Supply Scheme - Drought Activation Plan Triggers

Level	Trigger when:	Relax when:
1 Low	Permanent	Never
2 Moderate	c) Demand is >90% of pump capacity for 2 consecutive days.	c) Demand on water treatment plant is <85% of capacity for 7 consecutive days
3 High	e) Declaration of drought over LGA f) Demand is >90% of pump capacity (4.7 ML) for 7 days	e) Drought declaration lifted f) Demand on water treatment plant is <85% of capacity for 7 days
4 Very High	c) Demand is >100% of pump capacity for 2 days	Demand on water treatment plant is <90% of capacity for 7 days
5 Extreme	c) Demand on water treatment plant is >110% of pump capacity for 2 days	Demand on water treatment plant is <90% of capacity for 7 days

Table 2.2.2 Water Restrictions – Residential

Residential Activity	1 Low	2 Moderate	3 High	4 Very High	5 Extreme
Lawns and Gardens	No restriction	Recommendation to water garden only between 7 pm and 7am	Watering garden only between 7 pm and 7 am	Handheld hoses only between 7 pm in 7 am	Bucket watering only between 7 am and 7 pm
Washing of buildings, footpaths, driveways etc.	No restriction	Recommendation to only between 7 pm and 7am	Only between 7 pm and 7 am	Not at all	Not at all
Filling of Private Pools, spas etc.	No restriction	Pools not to be filled without Council approval. Top ups permitted.	Pools not to be filled without Council approval. Top ups permitted.	Pools not to be filled without Council approval. Top ups permitted.	Pools not to be filled or topped up with reticulated water. New pools not to be filled without approval.
Vehicle Washing	No restriction	Permitted any time by handheld or pressure washer	Bucket Washing only	Not at all	Not at all

Table 2.2.3 Water Restrictions – Commercial

Commercial Activity	1 Low	2 Moderate	3 High	4 Very High	5 Extreme
Lawns and Gardens, including Racecourse, Bowling Club and Golf course	No restriction	Recommendation to water garden only between 7 pm and 7am	Watering garden only between 7 pm and 7 am	Recycled Water Only	Recycled Water only
Schools and Health Care Services	No restriction	Recommendation to water garden only between 7 pm and 7am	Watering garden only between 7 pm and 7 am	Handheld hoses only between 7 pm in 7 am	Bucket watering only between 7 am and 7 pm
Washing of buildings, footpaths, driveways etc.	No restriction	Recommendation to only between 7 pm and 7am	Only between 7 pm and 7 am	Recycled Water Only	Recycled Water only
Washing of new or used cars for sale	No restriction	Recommendation to wash vehicle between 7 pm and 7am	Washing of vehicles only between 7pm and 7am	Bucket Washing only	Bucket Washing only
Emergency Services	Exempt	Exempt	Exempt	Exempt	Exempt

Note. Emergency Services are exempt in all levels of Water Restrictions. If required, preference will be provided to accommodating firefighting requirements.

In the event that the emergency conditions last for more than 3 days, fire services will be directed to arrange alternate water source (e.g. water tankers) if appropriate.

Table 2.2.4 Water Restrictions – Council Parks and Gardens

Activity	1 Low	2 Moderate	3 High	4 Very High	5 Extreme
Public Parks and Gardens	No restriction	Fixed Hoses and Sprinklers banned except for 6hrs/day	Fixed Hoses and Sprinklers banned except for 3hrs/day	Fixed Hoses and Sprinklers banned. Hand held hoses only	No watering at any time
Public Sports Grounds and Playing Fields	No restriction	Main Parks watered to be watered at night	Auto sprinklers 1hr/per line	Auto sprinklers 1hr/per line on every 2 <sup>nd</sup> night	No watering at any time

## 2.3 Drought Management Team

It is critical to have a Drought Management Team (DMT) declared prior to a drought occurring. This will allow for a faster and coordinated approach to implementing the drought management plan.

The Drought Management Team is involved in setting restrictions for droughts which are level 2 and above.

*Table 2.3.1 Drought Management Team*

Role	Responsibilities
Chair  Levels 2-3: Executive Leader - Infrastructure Levels 4-5: General Manager	<ul style="list-style-type: none"> <li>• Coordinate the team</li> <li>• Communicate with the General Manager and Council</li> <li>• Communicate with relevant government agencies when required</li> </ul>
Incident Manager  Manager Water and Sewer	<ul style="list-style-type: none"> <li>• Monitor and assess data</li> <li>• Provide an assessment of the situation</li> <li>• Brief the DMT Chair and GM</li> <li>• Allocate roles to team members</li> <li>• Prioritise tasks and develop response actions</li> <li>• Communicate with stakeholders, neighboring Councils, government agencies and major customers.</li> <li>• Hold regular team meetings</li> <li>• Monitor effectiveness of DMP and DMT</li> <li>• Post-incident, coordinate review of incident and update of DMT</li> <li>• Determine the completion of the response phase and commence recovery</li> </ul>
Communication Manager  Grants and Communications Officer	<ul style="list-style-type: none"> <li>• Support the DMT Chair and Incident Manager with communication</li> <li>• Prepare communication material as appropriate</li> <li>• Prepare media statements for distribution in accordance with Council's Media Policy</li> <li>• Monitor and manage social networks communication</li> </ul>
Administrative Support  Executive Support Officer	<ul style="list-style-type: none"> <li>• Record keeping</li> <li>• Progress reports for DMT members</li> <li>• Administrative support</li> <li>• Attend and minute meetings</li> </ul>
Support Team  As required	<ul style="list-style-type: none"> <li>• Support the Incident Manager and Chair</li> </ul>

## **2.4 Communication**

### **2.4.1 Public Engagement**

Engagement with the community is critical to ensuring that the drought management plan is implemented effectively. Effective engagement increases the likelihood of community acceptance and behavioral changes required to reduce water demand.

Coonamble Shire Council has the following tools available to update the public on the implementation of different stages of the drought management plan:

- Media releases.
- Council website or social media.
- Radio.
- Newspaper.
- Letter drops.
- Notice on water service bills.
- Town signs.
- Printed leaflets.

### **2.4.2 Information for the Public**

The content of messages to the public needs to be carefully considered to ensure the drought management plan is effectively communicated.

It is important that the tone of all communication with the public be carefully considered. The tone should reflect that increases in restriction levels are not reflective of a lack of effort from community. The tone should reinforce that, restrictions are in place to mitigate the impacts of drought.

Messages should include:

- Update and explanation of current restriction level.
- Background information justifying current restrictions.
- Efforts by Coonamble Shire Council.
- Contact details for additional information.
- Contact details for special cases or exemptions.

### **2.4.3 Government Agency Consultation**

The implementation of this drought management plan should coincide consultation with:

- DPI Water.
- EPA (in relation to reuse of recycled water from Sewer Treatment Plant).
- Water NSW.

#### 2.4.4 Contact List

The following contact list includes:

- Government agencies that should be updated upon the implementation of this drought management plan.
- Media outlets which could update the public on restriction levels.
- Specific customers which might require individual updates on restrictions.

Organisation
DPI Water
EPA
Water NSW
Radio MTM FM 91.9
Radio 2WEB FM 91.1
Coonamble Times
Coonamble Multi-Purpose Health Service
Coonamble Golf Club
Coonamble Showground

#### 2.5 Regulatory Framework

Coonamble Shire Council delivers water under the provisions of the NSW *Local Government Act 1993*.

Some aspects of the water business are carried out under the provisions of the NSW *Water Management Act 2000*.

Coonamble Shire Council is authorized to restrict water supply (i.e. by public notice published in a newspaper circulating within the LGA) under the *Local Government (General) Regulation 2005*.

The *Local Government Act 1993* Section 637 reads: “a person who willfully 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 1 July 2020) penalty unit: \$ \$222.

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*.

This plan is administered by the Coonamble Shire Council. During drought, this plan will be over seen by the Drought Management Team (Section 2.3). The implementation of this Drought Management Plan will be the responsibility of the Drought Incident Manager.



### 3. Water Supply Scheme

#### 3.1 Existing Water Supply Schemes

Coonamble, Gulargambone and Quambone are all served by their own centralised water supply systems that use groundwater bores as the sole source of water. Mains water in Coonamble Shire was introduced in the 1950s.

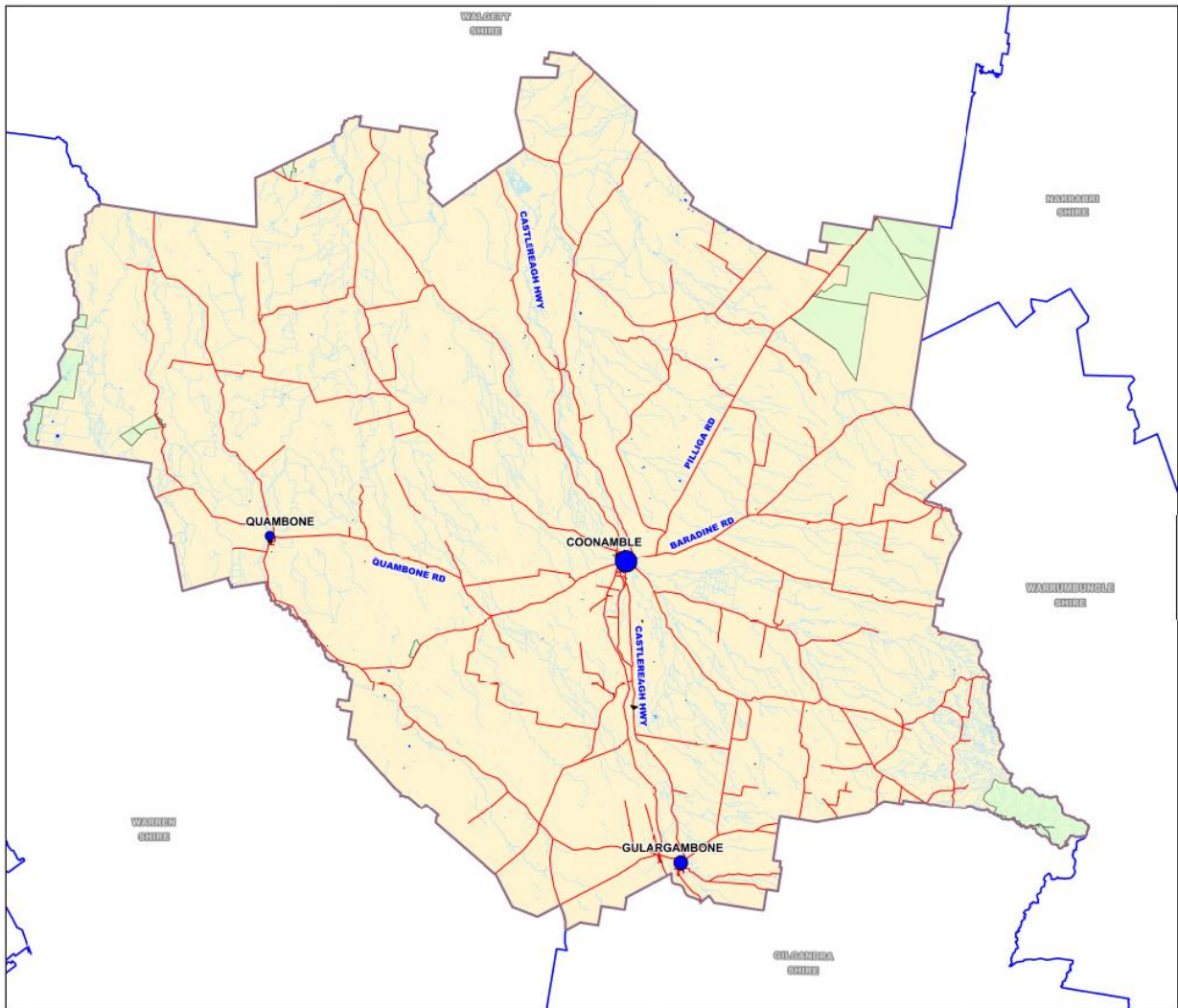


Figure 3.1.1 Map of Coonamble Shire

### 3.2 Bore Information

Currently, Coonamble is serviced by a water treatment plant (built in 2013) designed to reduce levels of hardness and iron in the water. This treatment plant is currently supplied by three bores. However, generally only Bores #4 and #5 are used, and #3 acts as a backup. Details for these bores are in the table below.

Table 3.2.1 Bore information and 2019 performance

Bore Name	Date Complete	Depth (m)	Pumping Rate (2019) (L/s)
Coonamble #3	08/1949	670.3	23.9
Coonamble #4	05/1967	646.2	34
Coonamble #5	08/1990	600.0	42.0



Figure 3.2.2 Coonamble Bores, Bore #4 is on Yarran Street in the treatment plant and Bore #5 is near the Castlereagh Hwy

### 3.3 Water Treatment Process

A flow chart of the treatment process at the Yarran Street Water Treatment Plant has been included. A schematic of the plant has also been included.

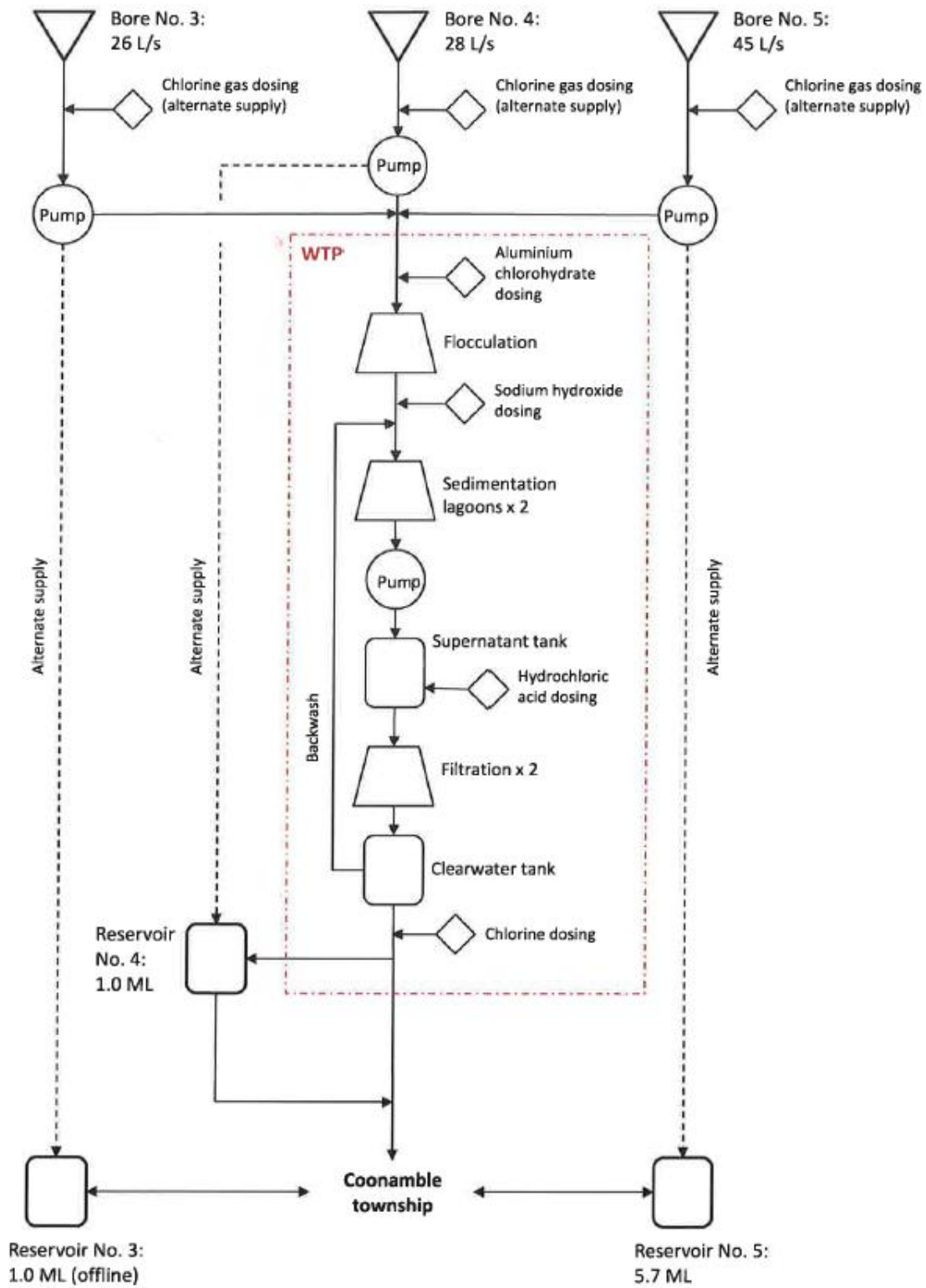


Figure 3.3.1 Flow chart for treatment and distribution of potable water in Coonamble

## 4 Water Demand

### 4.1 Water Pricing

A recent Water Security Scoping Study (DP8, 2020, pp. 39) determined the quantity of nonrevenue water as high. Nonrevenue water accounted for 33% of the water produced in Coonamble, 38% in Gulargambone and 28% in Quambone.

The Scoping Study recommended further analysis into determining the impacts of leakage, theft and usage by unmetered customers on the nonrevenue water.

Establishing and reducing causes (specifically theft and leakage) of nonrevenue water will allow for the water demands of the LGA to be more accurately determined and ultimately reduce the demand on the Water Treatment Plant.

### 4.2 Water Users

The following statistics were submitted in the LWU Performance Monitoring and Reporting 2017-20.

*Table 4.2.1 Population Statistics*

Population Components	2017/18	2018/2019	2019/20
Permanent Population	3341	3341	3341
Peak population served	6676	6676	6676
Total EP	3507	3507	3507

*Table 4.2.2 Water Business – Connected Properties Statistics*

Connected Properties	2017/18	2018/19	2019/20
Service Connections	1751	1737	1808
Residential Assessments	1440	1542	1771
Non-residential assessments	210	212	208

### 4.3 Potable Water Demand

The recent Water Security Scoping Study provided a large amount of data relevant to the potable water demands of Coonamble.

*Table 4.3.1 Coonamble Daily Potable Water Demands(1995-2008)*

Long Term average daily demand	3 ML/day
Long term average January (maximum average demand)	4.4 ML/day
Long term average July (minimum average demand)	1.5 ML/day

The Scoping Study concluded that the daily water usage per person in Coonamble is significantly higher than that of the average Australian. It proposes that the high-water

consumption is due to larger-than-average leakage rates and extensive irrigation of sporting fields and gardens.

Coonamble average daily water usage per person	757 L/day/EP
Average Australian daily usage	200-300 L/day/EP

The following water Supply demand was gathered from an IWCM of Background information paper written in 2018.

*Table 4.3.2 Water Supply Demands 2018*

Average Annual demand	990 ML/a
Dry year unrestricted demand	1300 ML/a
Water license extraction limit	1200 ML/a
Bore capacity (4 & 5)	73 L/s
Peak day demand	5.64 ML/day
Sustainable Yield of Bores	Unknown
WTP Capacity	5.5 ML/day
Reservoir Capacity	6.7 ML

Additionally water demand was calculated during the LWU Performance Monitoring and Reporting 2017-20.

*4.3.3 Water Business – Potable Water Demands*

Potable Water Supplied	2017/18	2018/19	2019/20
Residential	1060.7	1129	508.4
Commercial	98.1	104	86.1
Public parks and gardens	49	52	31.4
Institutional (hospitals, schools etc.)	8	8	54.3
Unbilled authorised consumption	12.3	13.7	No Data

#### 4.4 Non-Potable Water Demand

In addition to the potable water demand, there is also a non-potable water demand which is water supplied from the final lagoon of the Coonamble Sewage Treatment plant. It is intermittently used to water the racecourse and golf course.

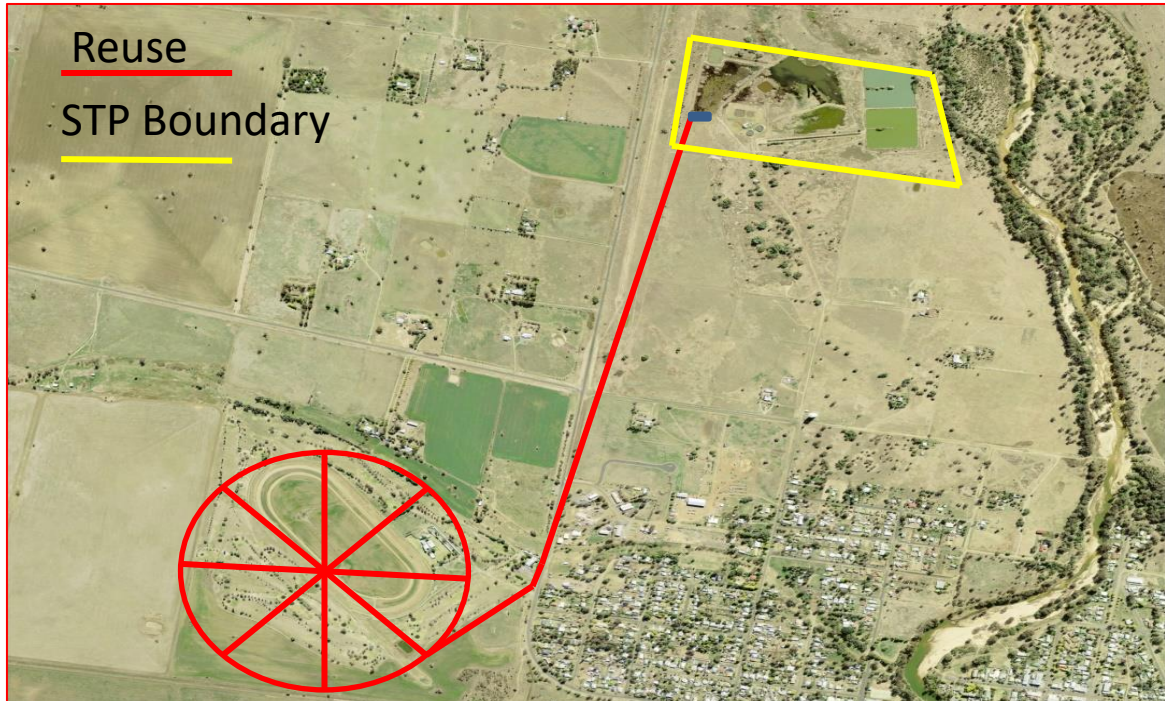


Figure 4.4.1 Coonamble Non-potable water – STP Reuse Scheme

Average non-potable water use on days when it is being used during 2019, has been included below.

Table 4.4.1 Water Business – Recycled Water Demands

Reuse Scheme	2017/18	2018/19	2019/20
Non-Potable Water Supplied	47.5 ML	48.6 ML	37.4 ML
Average non-potable Water Demand per day in use	0.578 ML/day		
EPA License – Maximum Value per Day (ML)	1 ML/day		
Number of times EPA License has been exceeded 2017 onward	1		

Higher non-potable water uses before 2020, indicate the reuse scheme was utilized more during drought which ended in 2019.

The maximum volume of recycled water per day has also not been matched, meaning the reuse scheme could be utilized further in a future drought.

## 4.6 Significant Water Users

The most significant water users in town are (based on data from meter reads 2015 – 2020):

The Council's Parks and Gardens Department which looks after the John Café sports field, Lions Park, Smith Park and Broome Park. They also maintain the Coonamble Swimming Pool which uses an average of 23.5 ML (2015-20) and the Coonamble Showground. In the 2017/18 and 2018/19 financial years, the Council's Parks and Gardens department has used 49.3 ML and 52.3 ML respectively. Until the 2019 / 20 financial year, the Coonamble Showground was unmetered, and it is expected to be a significant component of the Council's water use.

The Coonamble Racecourse uses an average of 10.7 ML in years when it is using potable water. From 2018 to 2020 they have used entirely recycled water from the Coonamble Sewage Treatment Plant reuse scheme.

The Coonamble District Hospital uses an average of 7 ML per year.

*Table 4.6.1 Significant Water Users 2015-20*

Property Name	15/16	16/17	17/18	18/19	19/20
Parks and Gardens Department (kL) <sup>1</sup>			49.3	52.3	
Coonamble Sports Ground (kL)	19631	7737	26894	28716	7355
Crown lease Racecourse (kL)	6747	8519	17090	0	0
Coonamble Showground	-	-	-	-	
Coonamble District Hospital (kL)	6843	2599	8501	11951	2463
Coonamble High School (kL)	3896	3699	3759	3442	1199
Water Treatment Plant (kL)	2423	6038	8852	11147	2091
Coonamble Swimming Pool (kL)	708	179	327	288	519

*1 Includes, potable water supplied to public parks and gardens, Coonamble Swimming Pool and Showground*

#### 4.7 Historic Water Demand

A graph of the total water consumption in Coonamble over the last 20 years has been included. The impact of the millennium drought is notable in the higher demand between the years of 2003-05. It is also worth noting the water consumption has been steadier from 2013 onwards, coinciding with the new water treatment plant which began operating in 2013.

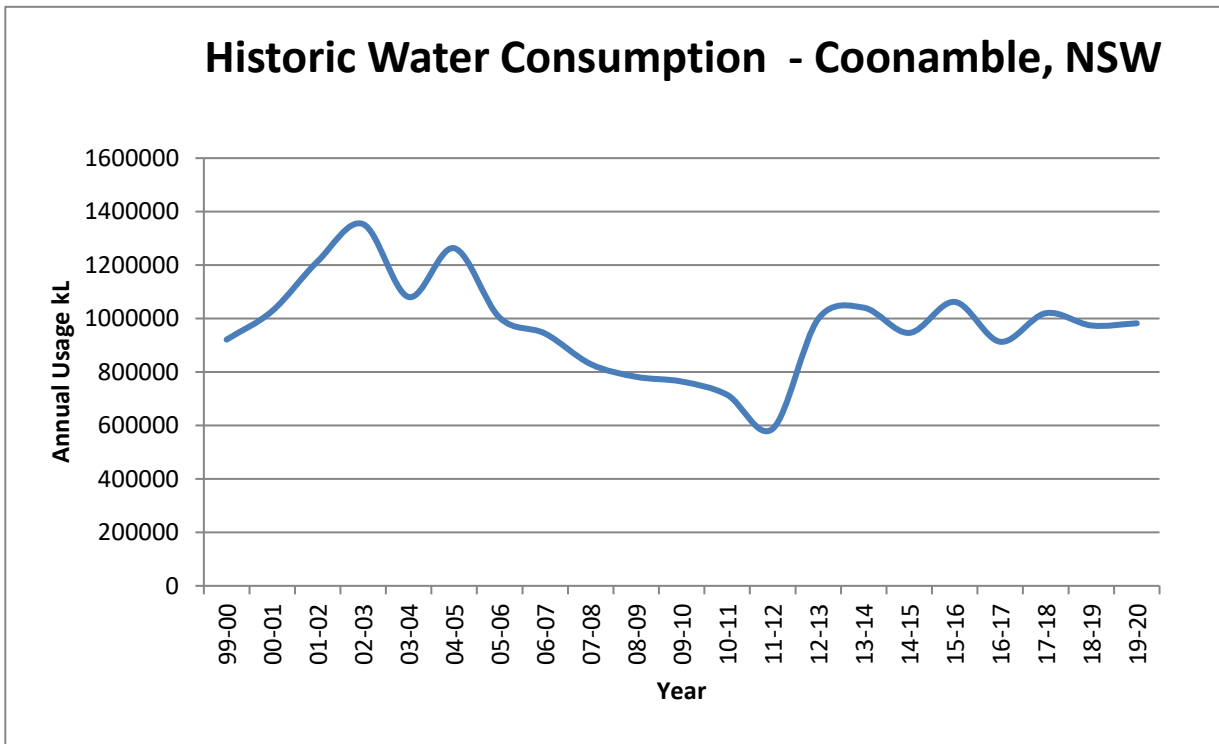


Figure 4.7.1 Annual water consumption in Coonamble from 2000-2020



## 5 Climate Data

The Climate Data in Figures 5.1.1 and 5.1.2 represent the average minimum and maximum temperatures as well as average monthly rainfall using data gathered at the Coonamble Airport for the period 1997-2020. The information was gathered from the Bureau of Meteorology (BOM, 2020).

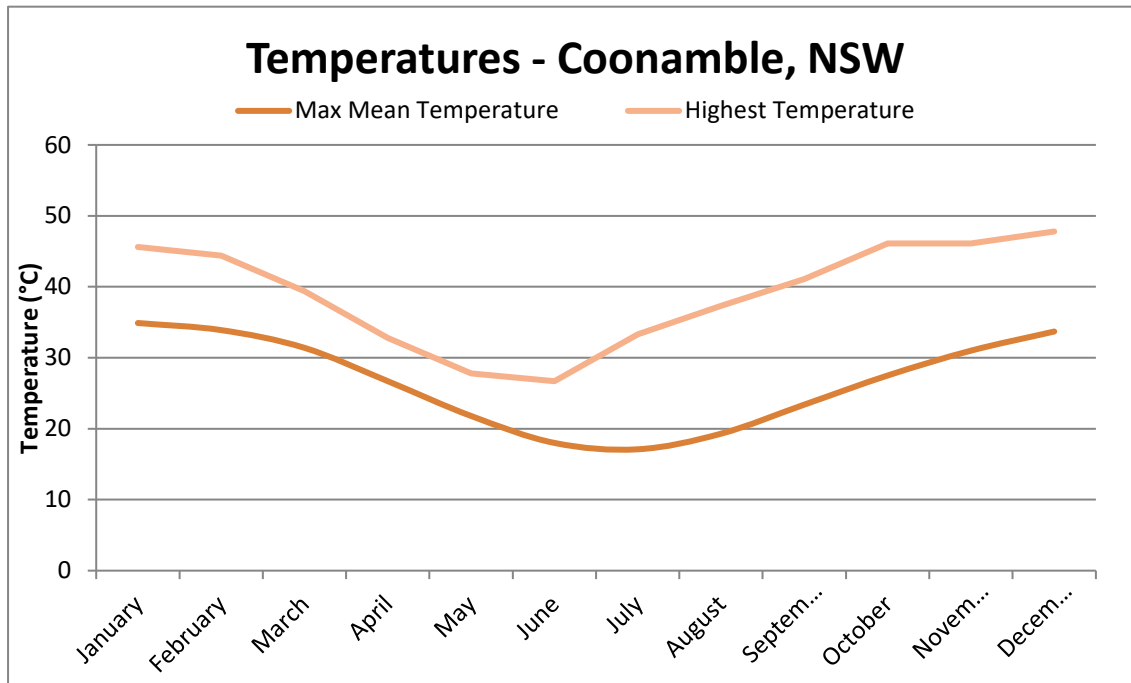


Figure 5.1.1 Average monthly minimum and maximum temperatures at Coonamble Airport

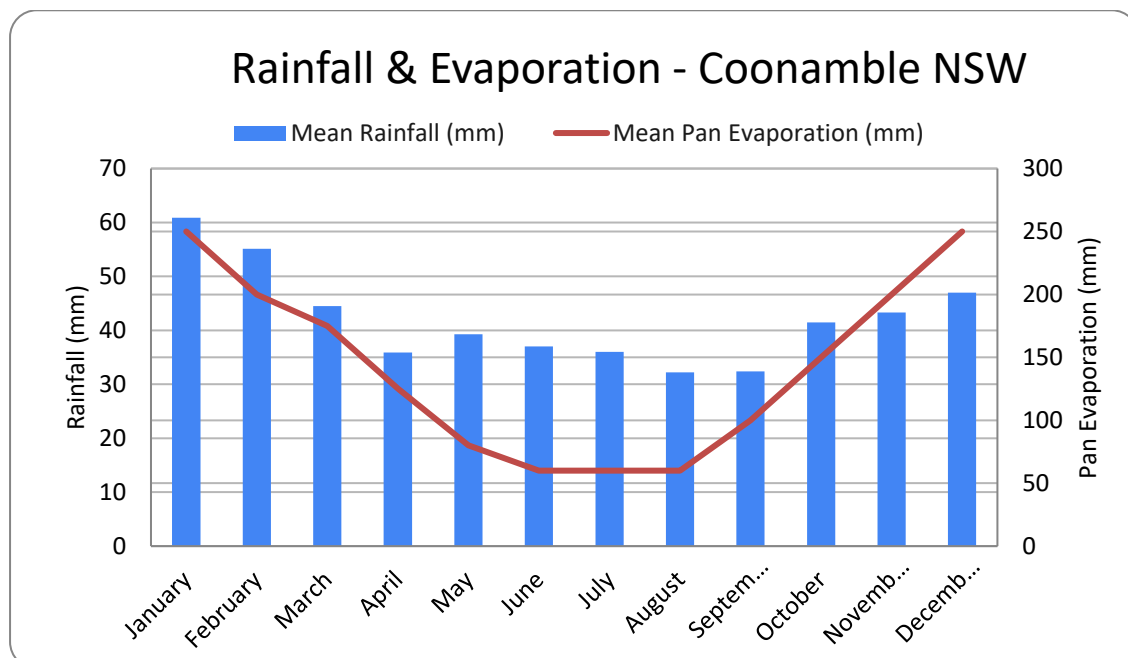


Figure 5.1.2 Average monthly rainfall at Coonamble Airport

## References

Bureau of Meteorology. (n.d.). *Climate Glossary*. Accessed at :  
<http://www.bom.gov.au/climate/glossary/drought.shtml>

Bureau of Meteorology. (2020), Accessed at:  
[http://www.bom.gov.au/climate/averages/tables/cw\\_051161.shtml](http://www.bom.gov.au/climate/averages/tables/cw_051161.shtml)

NSW Government, Department of Water and Energy. (2007). *Best-Practice Management of Water Supply and Sewerage*.

## Appendix A

### NSW Government Best-Practice Management of Water Supply and Sewerage (2007) – Drought Management Checklist

#### Appendix D - Drought Management

##### Check List – August 2007

A comprehensive drought management plan details the demand and supply issues to be addressed during drought conditions and includes adoption of a schedule of trigger points for the timely implementation of appropriate water restrictions. Appropriate drought management planning will ensure that town water supplies with significant storage do not fail in times of drought.

Drought management planning includes documenting basic data on water demands, rainfall, evaporation, records of past droughts, the existing water supply system, and its water resources, and strategies to achieve the objective of having sufficient water to satisfy the basic needs of the community.

This check list is essentially a road map to assist LWUs to quickly implement sound drought management planning. LWUs should have a sound drought management plan in place and be ready to implement their plan when drought conditions arise.

<b>Drought Management – Check List</b>	
<b>Topic</b>	<b>Outcome Achieved</b>
1. Executive Summary	<input type="checkbox"/> Covers all major issues, objectives, planning, strategies and monitoring for existing essential supplies of water to the service area(s). <input type="checkbox"/> Includes a summary of the drought management plan and an adopted schedule of trigger points for timely implementation of appropriate water restrictions.
2. Background	A. <input type="checkbox"/> Includes the existing water supply system(s) in the service area(s) and a locality map. B. <input type="checkbox"/> Includes history of past droughts. C. <input type="checkbox"/> Includes information on the impact of past droughts on water services, eg. restrictions, effect of restrictions on demands, any emergency sources identified, etc.
3. Objectives	A. <input type="checkbox"/> Identifies key objectives required to maintain a basic/restricted supply to all users. There is a need to consider social and environmental impacts. B. <input type="checkbox"/> Tailor strategies relevant to the service areas. C. <input type="checkbox"/> Endorse and implement a plan that minimises the risk of the community running out of water.

## Drought Management – Check List

Topic	Outcome Achieved
4. Data	<p>A. <input type="checkbox"/> 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).</p> <p>B. <input type="checkbox"/> Identification of any properties, businesses, other LWUs etc. that may seek water in times of drought.</p> <p>C. <input type="checkbox"/> Identification of all water requirements. Identify the normal and minimum potable and non-potable water requirements.</p> <p>D. <input type="checkbox"/> Identify water dependent industry/businesses, any fire fighting requirements and opportunities for recycled water use.</p> <p>E. <input type="checkbox"/> Includes a description and plan of all water supply schemes in the service area(s).</p> <p>F. <input type="checkbox"/> Includes height/storage volume and height/surface area graphs for all water supply dams and weirs.</p> <p>G. <input type="checkbox"/> Historical performance of rivers, dams, weirs and bores in previous droughts.</p> <p>H. <input type="checkbox"/> Includes the average rainfall figures and evaporation rates.</p>
<p><b>Note:</b> All data to be specified on a daily basis.</p>	
5. Plan	<p>A. <input type="checkbox"/> Demand management options.</p> <p>B. <input type="checkbox"/> Restriction strategies including means and methods for the enforcement of restrictions and the expected results of imposing restrictions.</p> <p>C. <input type="checkbox"/> 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.</p> <p>D. <input type="checkbox"/> Availability of alternative water sources (including estimated costs and times to implement).</p> <p>E. <input type="checkbox"/> Water cartage options.</p> <p>F. <input type="checkbox"/> Identify legislation, local laws and council policies affecting the contingency arrangements.</p> <p>G. <input type="checkbox"/> Links to water sharing plans/committees, water management plans/committees, irrigators, etc.</p>



## Drought Management – Check List

Topic	Outcome Achieved
	<ul style="list-style-type: none"> <li>H. <input type="checkbox"/> Impact of extraction on downstream stakeholders.</li> <li>I. <input type="checkbox"/> Impact of reduced flows in watercourses.</li> <li>J. <input type="checkbox"/> Level of prediction and intervention.</li> <li>K. <input type="checkbox"/> Identify human resource requirements.</li> </ul>
6. Monitoring During Drought	<ul style="list-style-type: none"> <li>A. <input type="checkbox"/> Daily monitoring of demands.</li> <li>B. <input type="checkbox"/> Daily monitoring of water supply sources (dams, bores and streams).</li> <li>C. <input type="checkbox"/> Monitoring impact of restrictions on consumption</li> <li>D. <input type="checkbox"/> Monitoring the electrical conductivity, alkalinity and algae levels in the water sources.</li> </ul>
7. Consultation	<ul style="list-style-type: none"> <li><input type="checkbox"/> Comprehensive media strategy and public consultation.</li> <li><input type="checkbox"/> Regular consultation with appropriate government agencies (DWE, DECC, NSW Health etc).</li> </ul>
8. Operation of Drought Management Plan (DMP)	<ul style="list-style-type: none"> <li>A. <input type="checkbox"/> DMP should discuss, analyse and identify any impact on other regions and localities ie. upstream, downstream or conjunctive water users.</li> <li>B. <input type="checkbox"/> DMP should demonstrate a sustainable strategy that considers all other stakeholders.</li> <li>C. <input type="checkbox"/> DMP documents an agreed procedure for progressive implementation of water restrictions.</li> </ul>

## REFERENCE

*Drought Management Guidelines*, NSW Local Government Water Directorate, December 2003.

For further information and assistance, please contact Stephen Palmer, Manager Planning on 8281 7331 or [Stephen.Palmer@dwe.nsw.gov.au](mailto:Stephen.Palmer@dwe.nsw.gov.au)