DUBBO REGIONAL COUNCIL

BE WISE WITH OUR WATER

DROUGHT CONTINGENCY AND WATER EMERGENCY RESPONSE PLAN 2020

Final Version: 13 July 2020

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Belinda Rollason and Owen Johns	Stephen Carter and Julian Geddes	19 March 2020	3
Belinda Rollason and Owen Johns	Stephen Carter and Julian Geddes	25 March 2020	4
Belinda Rollason and Owen Johns	Stephen Carter and Julian Geddes	26 March 2020	5
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Steve Carter and Julian Geddes	Bec Eade	13 July 2020	Final

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

Drought is an inevitable part of Australian life. It is a tough experience to endure yet our community is resilient. This is evidenced by the awareness, understanding and appreciation our community has of the enormous task of delivering effective responses to the drought. Our community has already shown its willingness to pull together during this drought season and we should be proud of who we are.

Effective drought responses require planning, preparation and delivery. This plan introduces solutions that are timely, well considered and seek long-term innovative solutions to securing water. It considers where we are now as well as future planning and preparation.

This plan seeks a proactive yet systematic approach to managing the drought. It is an important step in defining the strategic directives that underpin decision making processes. This document also clarifies governance for feedback with stakeholders in our community.

It is our aim to set course for long-term sustainability of our vibrant community and its businesses.
I would like to thank all those involved in the development of the strategies and actions.

Michael McMahon
Chief Executive Office

Content

Figures and Tables

FIGURES:

1. Executive Summary

1.1 Vision

Our region is well prepared for the inevitability of periodic drought to ensure our residents and business community are sustainable for the long term.

1.2 Developing the Plan

The Drought Contingency and Water Emergency Response Plan has been developed to ensure the people of Dubbo Regional Council have enough water to meet their needs for the medium term, including being able to withstand a drought.

The Drought Contingency and Water Emergency Response Plan (DCWERP) was developed through whole of Council consultation process to ensure that this plan meets the needs of the wider Council Team that support and deliver services as well as the Infrastructure Team who manage water supply and sewer facilities.

Consultation for the development of the plan included:

- Executive leadership direction NSW State Government advice Drought Coordinated Response Team Infrastructure Team
- Individual consultation as needed with Council officers managing operations, parks and recreation facilities, cultural and communications managers to clarify various aspects of the plan.

The DCWERP is based on the NSW Best Practice Guidelines for Drought Management Plan development. It expands on the guidelines to:

- Incorporate emergency management
- Consider risk identification.
- Incorporate NSW State Government audit feedback from the Drought Management Plan 2015.
- Incorporate issues from the Integrated Water Cycle Management Issues Paper 2019.

The plan continues programs already in place to improve water efficiency and recycling for facilities. These programs are an important part of the urban water cycle because they reduce demands on drinking water supplies. The plan also sets out measures that can be put into place as water storage levels fall during a drought.

This plan is an adaptive management approach to its operation that includes; monitoring the effectiveness of the plan, investigating new technologies to assist in demand management, analysing new information holistically and monitoring surface and ground water availability.

1.3 Summary

Dubbo Regional Council has prepared this plan during 2019/2020 as drought conditions worsened and Level 4 restrictions were introduced to the community.

This is an overview of the chapters within the plan. It discusses how they fit with the; NSW Best Practice Framework 2007[1], see Appendix A; the IWCM Issues Paper Report 2020[2] and feedback received by NSW Government audit on the DCC DMP 2015.

[1] Samra, S., McLean, C. (2007) *Best-Practice Management of Water Supply and Sewerage Guidelines*, Crown Copyright, NSW Department of Water and Energy

[2] Ward, J. Blaike, J. (2019) *Dubbo Regional Council Integrated Water Cycle Management Issues Paper Report Number WSR-17004,* NSW Public Works Advisory, Department of Finance, Services & Innovation Crown Copyright

Setting the Context

The introduction to the plan covers the process taken to develop the plan across the Local Government Area (LGA), shown at Figure 1.1 below. This sets the context of the development of the current plan as an overview of the major issues, objectives, planning, strategies and monitoring of water supplies.

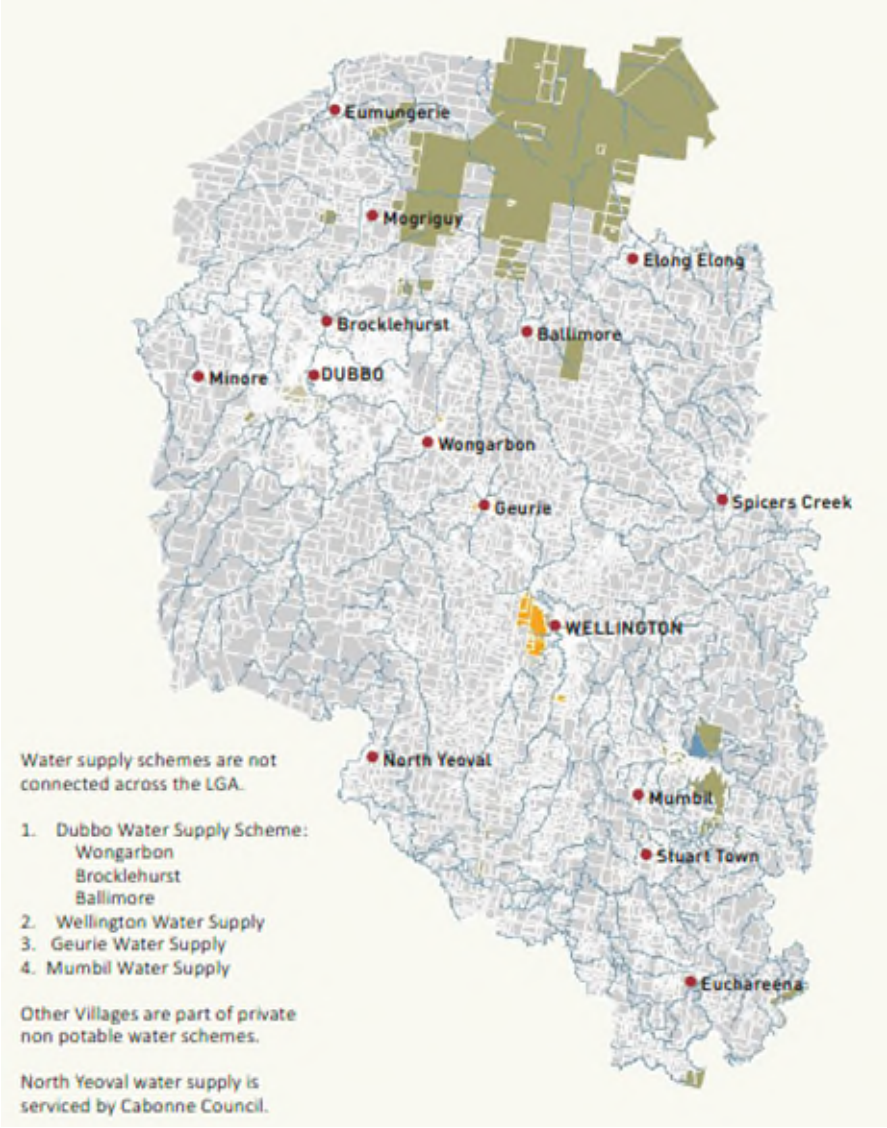


Figure 1.1: Dubbo Regional Council Map with Water Supply Locations

Through the process of development, it discusses current drought actions in meeting our need for water. Challenges in data accuracy, water restrictions and triggers were reassessed as were implementation of business restrictions.

The purpose of the plan structure is to deliver the underlying principles of water management during drought to:

- Set a framework for delivery of drought specific actions;
- Ensure human health needs are met;
- Priorities for community and business needs can be met to operate for as long as is possible;
- Give certainty to business operators;
- Provide deliverable actions for Council;
- Sustain liveability and sense of place; and
- Increase data accuracy and efficiency.

Operation of the DCWERP

The current drought conditions have resulted in a greater understanding of the context, social and financial impacts and data availability to support the introduction of drought measures. As a result, Council has resolved a Council position to assess and support its decision making. A two staged approach has been developed to implement the plan. It breaks down governance and roles based on the restriction level.

From Level 4 restrictions affect the economic sustainability of the region. Careful negotiation with NSW State Government is crucial to the allocation of water to the Council region in support of water security from surface water. This means that Council will maintain close relationships with WaterNSW and DPIE to manage the risk that Burrendong Dam levels will be reduced to a point that Level 4 restrictions would need to come into effect (shown at Figure 1.2 below).

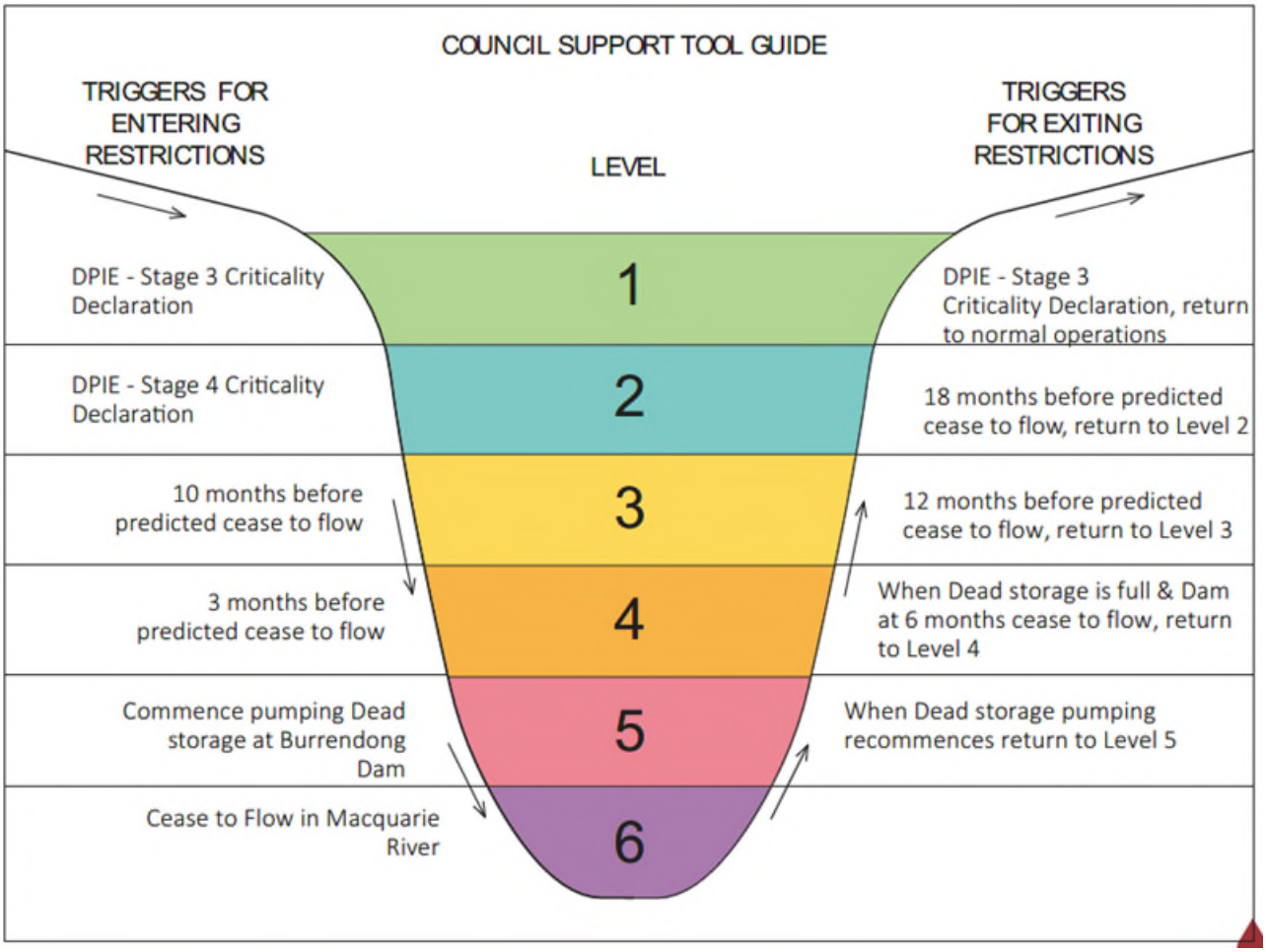


Figure 1.2: Dubbo Regional Council Triggers for Water Restrictions

IWCM issue, recover and future recommendations are covered that identify current and future projects essential to support water services and reduce impacts of drought over the medium and longer term.

Recommendations of the Plan

The plan recommends undertaking the actions based on drought and water emergency conditions. These include current actions to improve:

- Dubbo Effluent Reuse;
- Improved bore connections to WTPs;
- Community education and water demand reduction for both residential and commercial. Improved Council facility and parkland water efficiency; and
- Scope and delivery of the regional pipelines.

Additional future recovery recommendations seek greater long-term water security for the region.

Data - Natural Systems

Environmental aspects are discussed across the region. This includes a discussion on the Murray-Darling Basin, Macquarie - Bogan Catchment, surface and ground water sources, Dubbo City, villages and locality.

Modelling of the current climate and future conditions include the rainfall information and the decline of rainfall over the past five years leading into the current drought. Figure 1.3 (below) shows the recent decline in rainfall averages at Dubbo City Regional Airport.

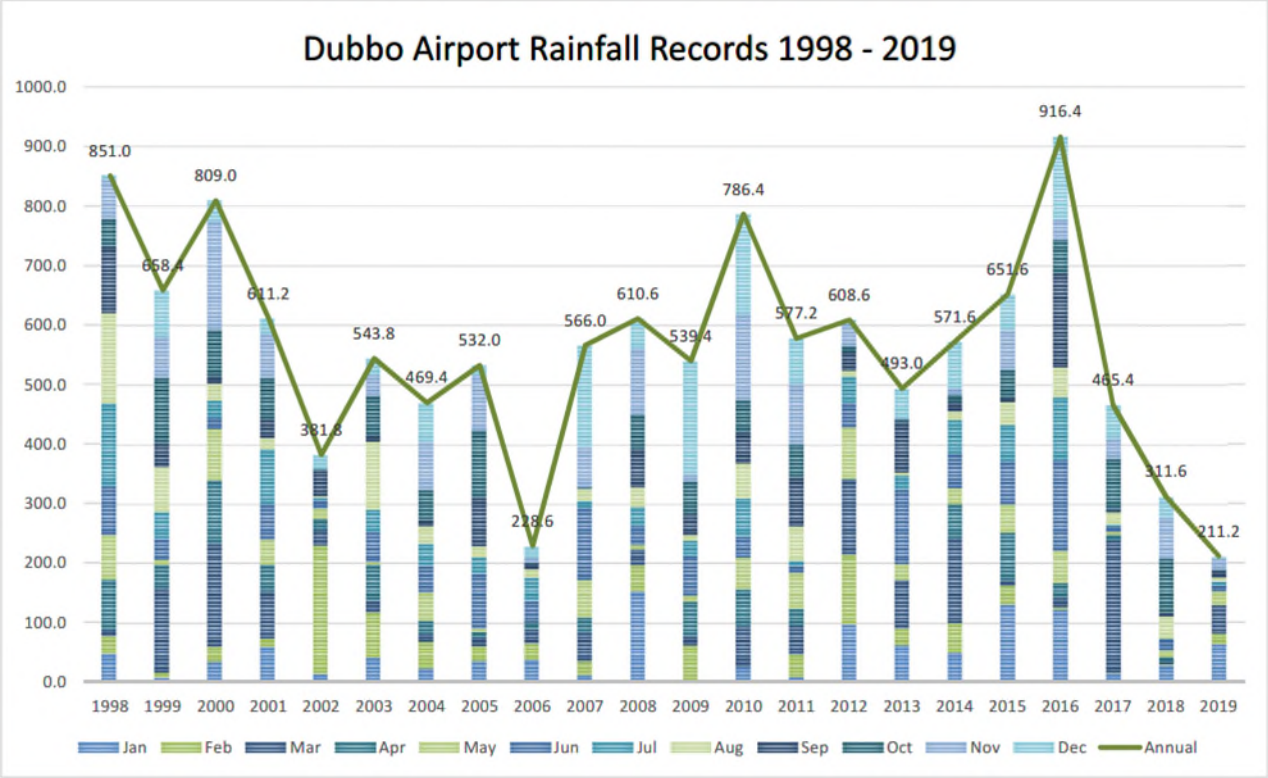


Figure 1.3: Dubbo Regional Council Airport Rainfall Graph

Modelling of the Macquarie-Cudgegong regulated river system shows reductions in monthly allocation of up to 50% for local water utilities during severe droughts. Drought modelling of preferred water availability through allocation has been considered. This model is in context of cease to flow data, at Figure 1.4 (below):

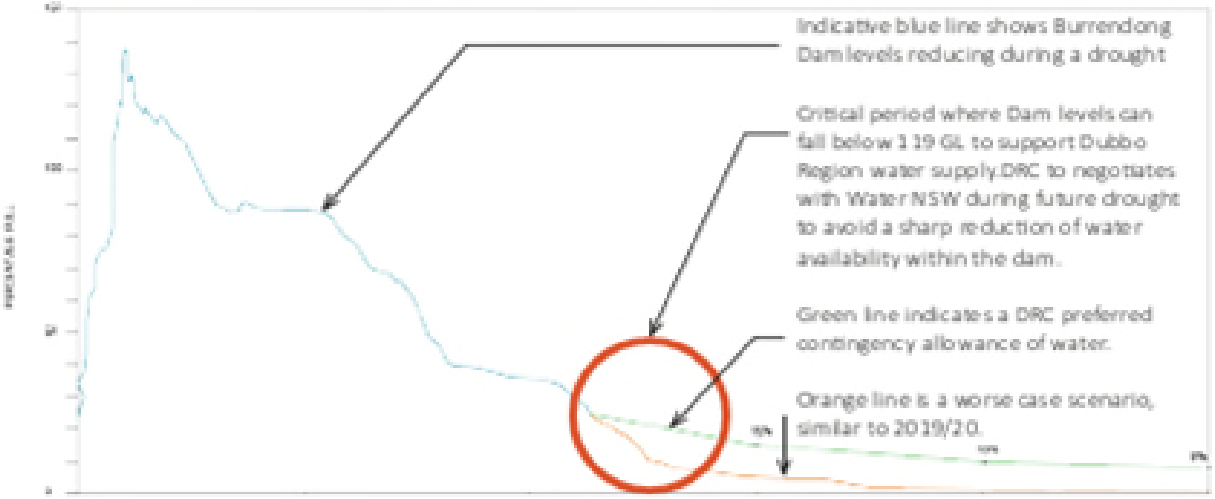


Figure 1.4: Burrendong Dam Levels

The operating environment includes the population demographics of the LGA and predictions for future growth. It also covers the legislative environment in which water supply and sewer operations are covered. It considers the sharing plans for the Macquarie - Bogan Catchment.

Governance has developed guidance around operation of the plan. Current drought conditions have resulted in a specialised whole of Council team. The twofold operation of the plan into management stages has resulted in the defining of roles and responsibilities for these stages.

Stage 1 Management: Levels 1 to 3 is delivered through Infrastructure, shown at Figure 1.5.
Stage 2 Management: Levels 4 to 6 is delivered through a Coordinated Response Team designed to assist in the higher level requirements across the organisation (shown as Figure 1.6).

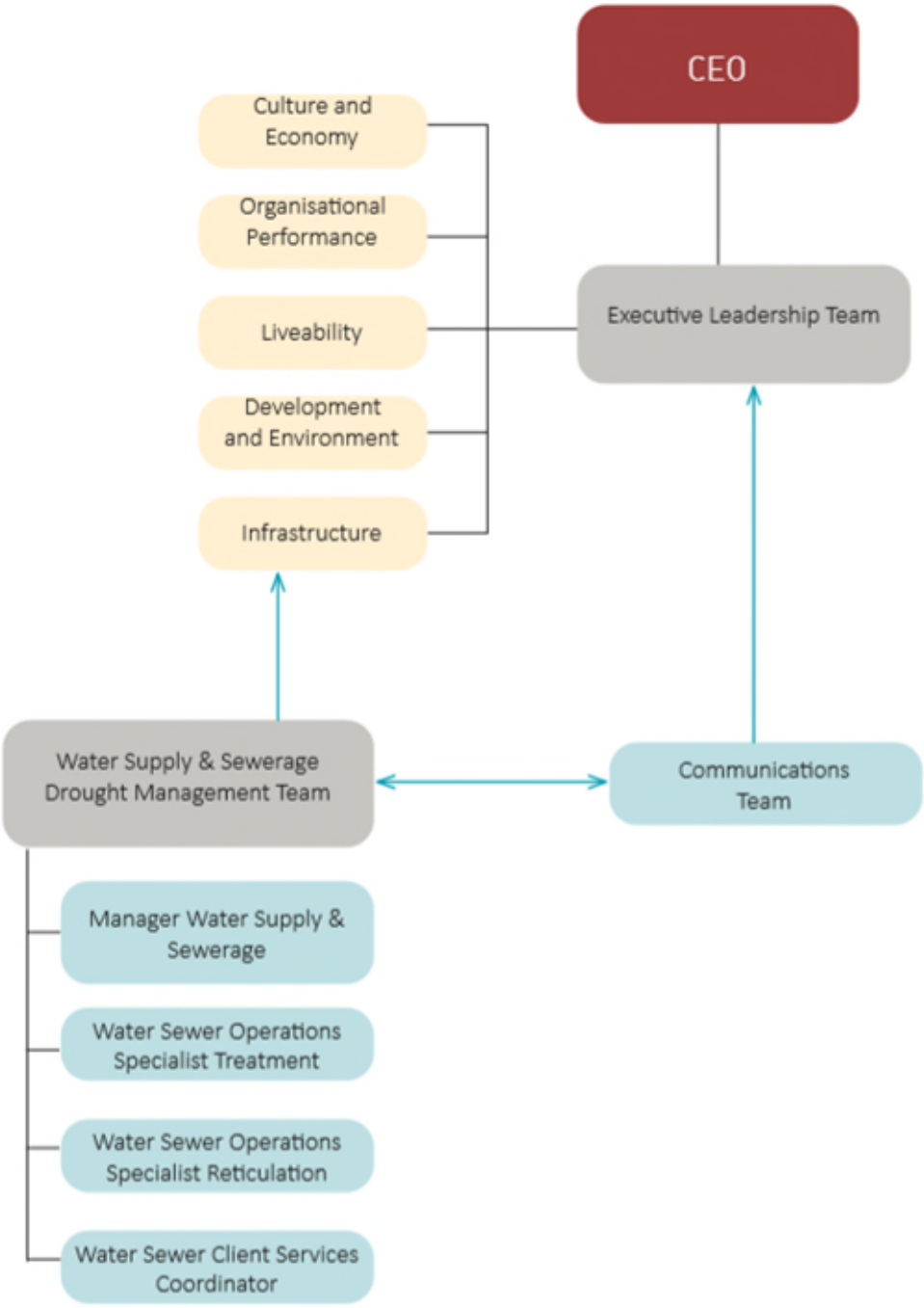


Figure 1.5: Stage 1 Organisation

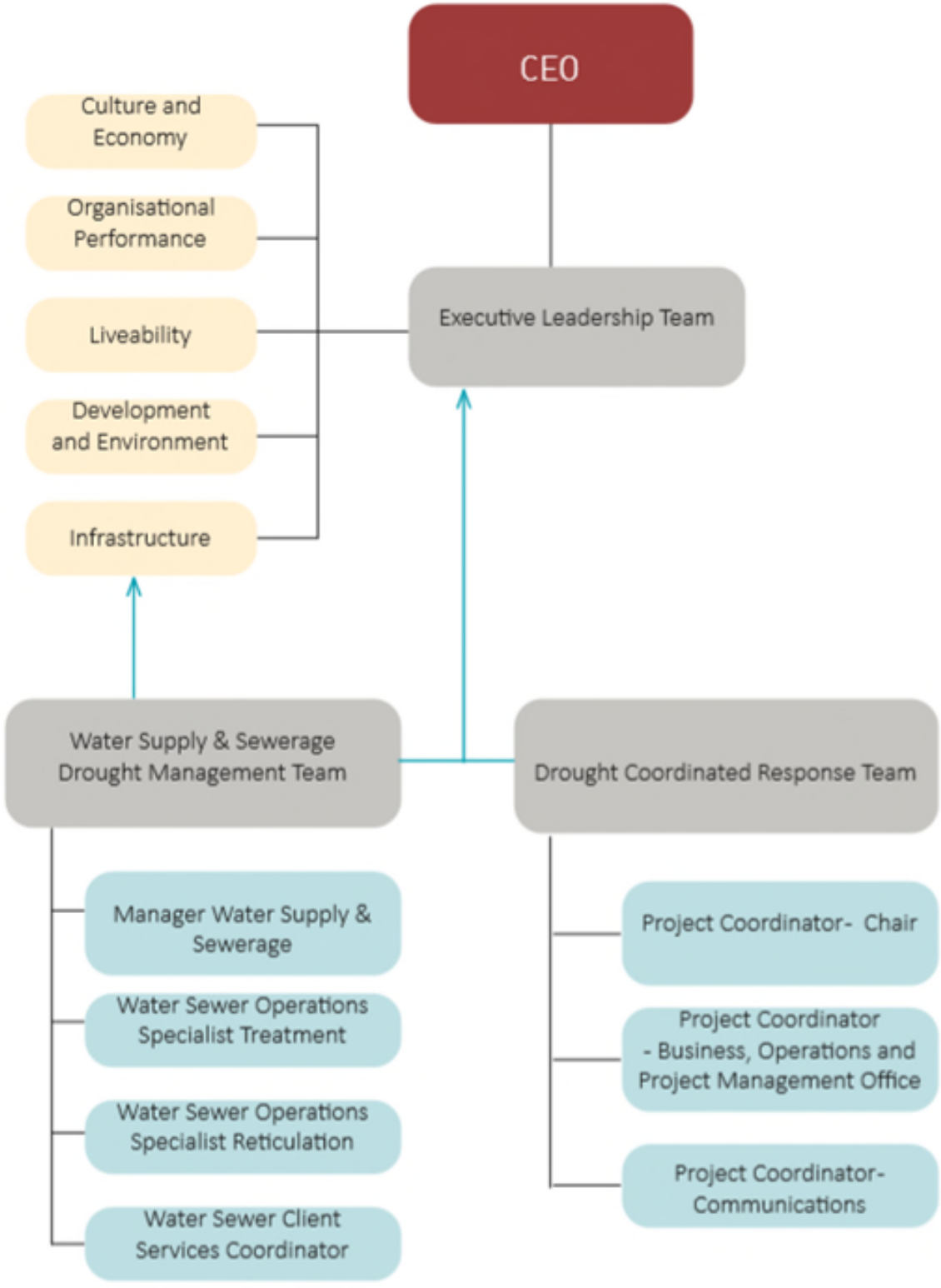


Figure 1.6: Stage 2 Organisation

Data Supply Systems

This section covers the water supply systems across the LGA. The DCWERP covers the supply system including all communities covered by reticulated systems and those with localised supply and water cartage options for drought. This document covers plans and those with localised supply and water cartage options for drought.

This document covers plans and all water supply schemes in the service areas. Figure 1.7 (below) shows all the elements within the water supply.

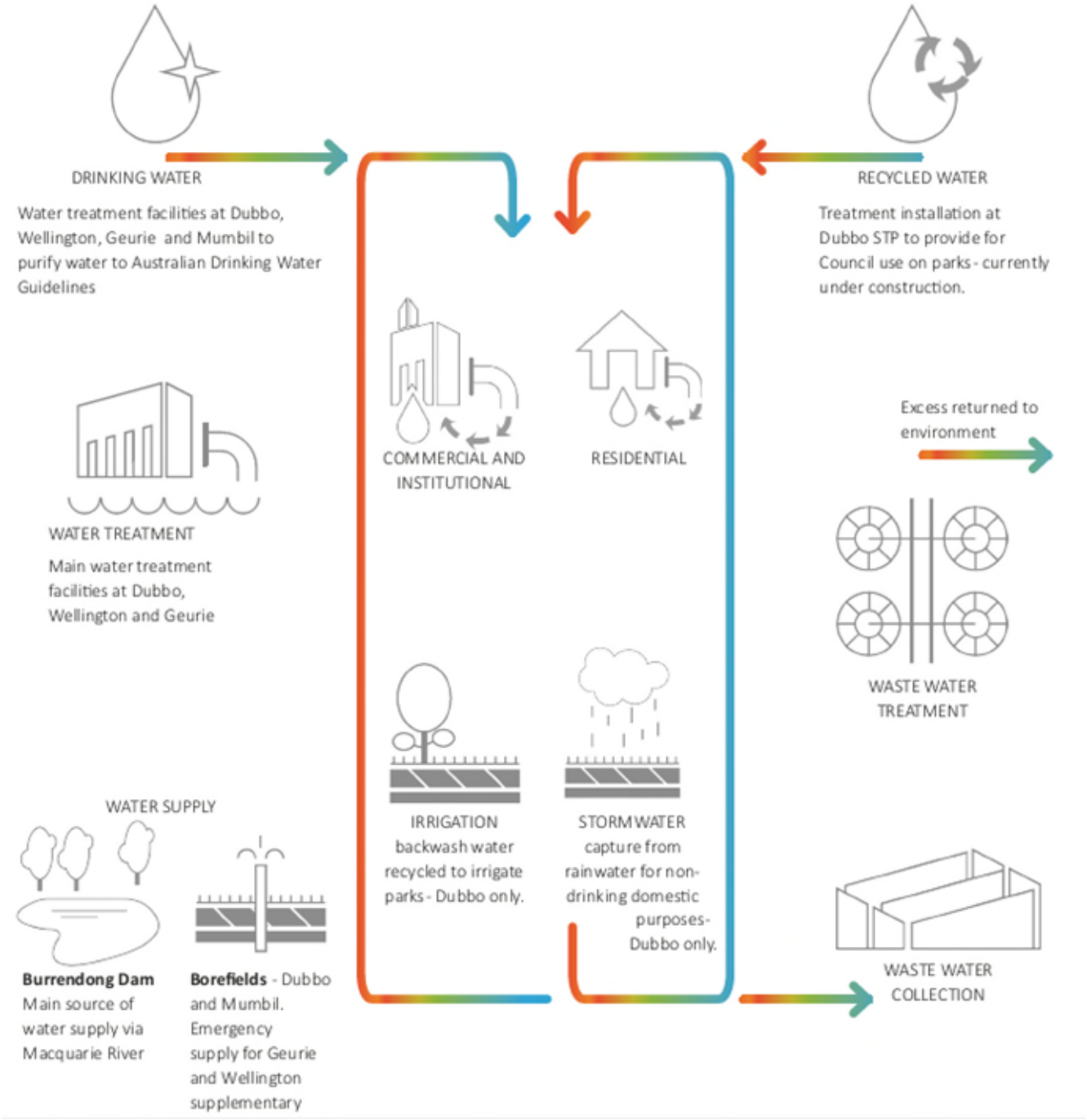


Figure 1.7: Dubbo Regional Council Water Supply Schemes

Surface water allocation is covered including water supply locations and licensing. Burrendong Dam levels are graphed for information regarding inflow data.

Surface water at Burrendong Dam and Windamere Dam volume data is detailed as part of the water supply information for Council, shown at Figure 1.8 below:

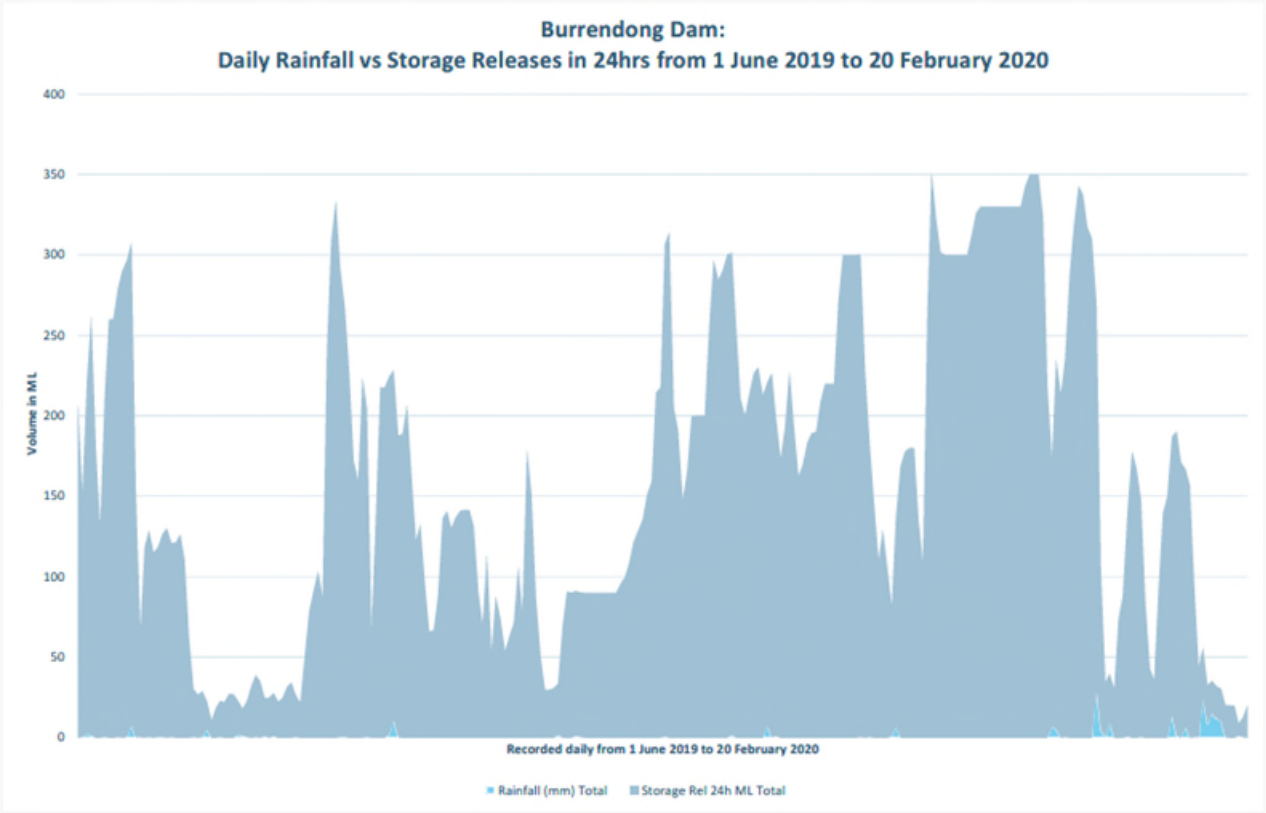


Figure 1.8: Burrendong Dam Rainfall Vs Storage Release

Ground water analysis is across the LGA, covering Dubbo, Wellington, Geurie and Mumbil. Bore names and licences are detailed. Council's water treatment processes are included as well as the sewage and storm water system. This inclusion is based on developments within Council to consider scope and further develop opportunities for water recycling. Currently some waste water from John Gilbert WTP is reused for irrigation of parks. Monitoring of Council facilities has resulted in improvements to water efficiency.

The water supply section defines large water users and improvements to deliver an appropriate water-saving regime across all of Council's city parks, which is currently being undertaken. Restrictions tables are included at Appendix B.

Data - Water Demand Management

This section of the DCWERP covers four elements of water demand; monitoring, forecasting, planning and implementation. Historic demand data has indicated that Council residents use an average of 357.4 kL which is more than the Statewide average of 271.8 kL. Annual demand is shown at Figure 1.9 below:

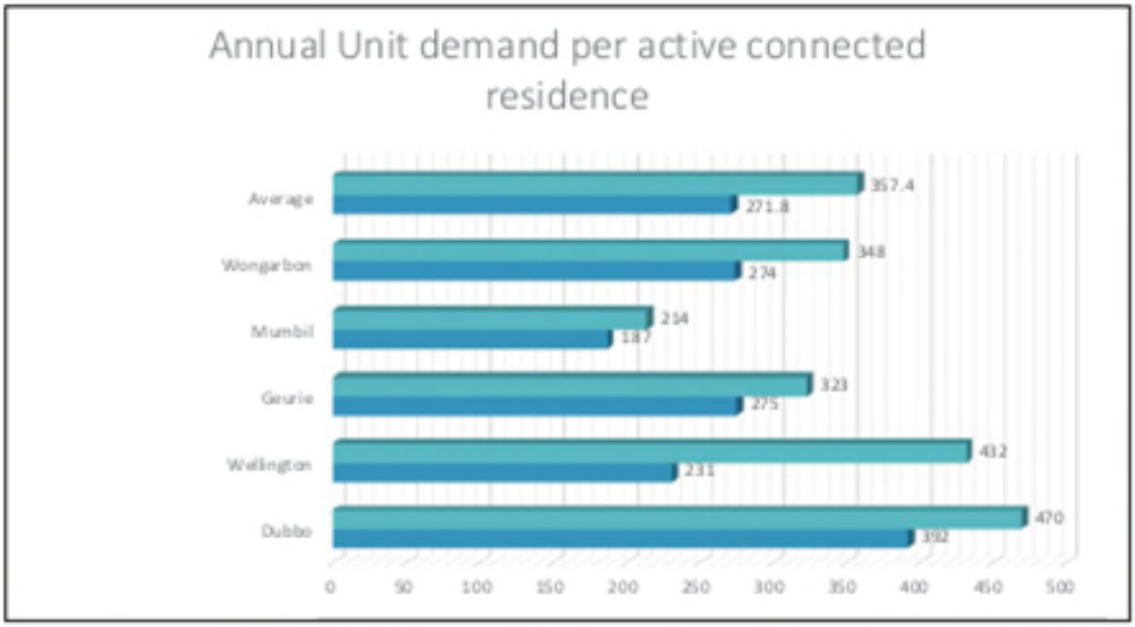


Figure 1.9: Annual Demand Averages (KL/Year)

Residential forecasting analysis has shown that:

- The majority of the population are conserving household use. 83% of the population are in the 25 to 350kL daily water use range, accounting for 78% of total water consumption.
- 10% of users are super-efficient using 1% of total water consumption. These users are within the 0 to 25 kL band.
- The least efficient 7% use 21% of water, over 350 kL.

Forecast extraction needs for future supply have been considered in the DCWERP. Further information from data collected throughout the current drought indicate that restrictions have had impact on water use efficiency, shown at Figure 1.10 below:

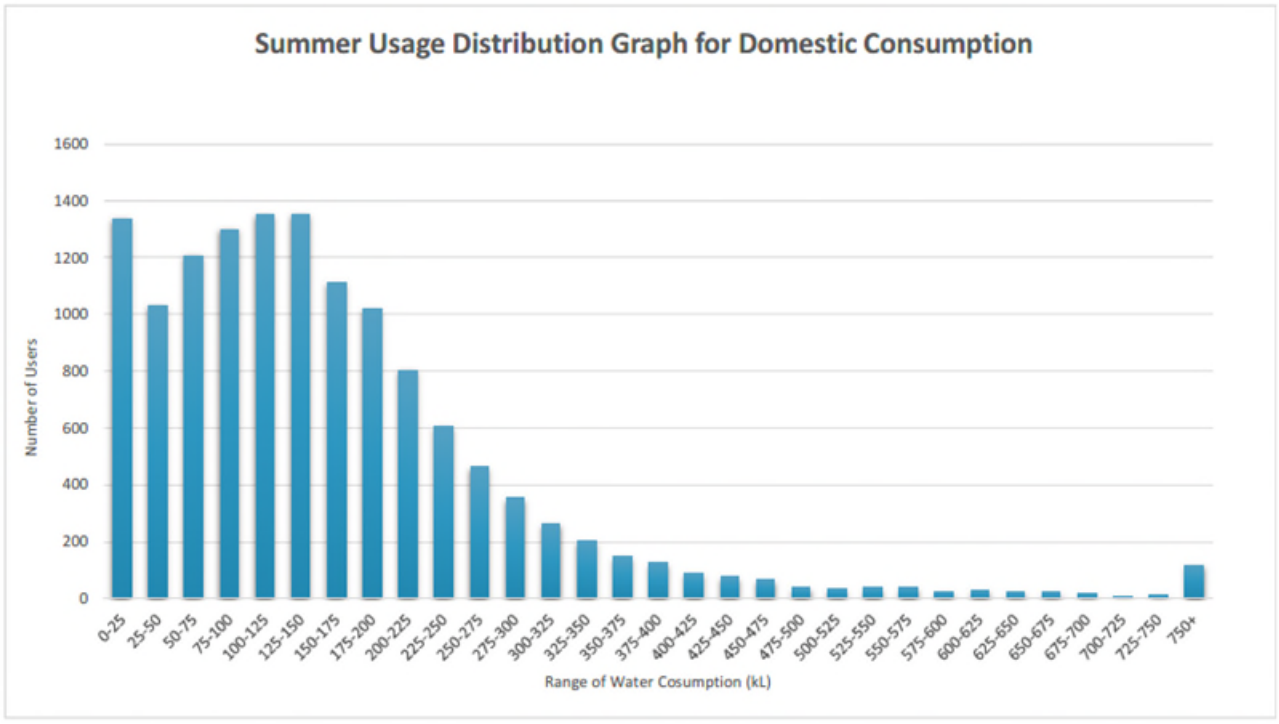


Figure 1.10: Summer Usage Distribution Graph

Predictions for extraction during the current drought have modelled the combined totals of surface water and bore water during a normal year with no restrictions in place against the current 12 month period.

During the current drought, Council has progressively implemented tighter water restrictions. No discernible reduction in usage was achieved during Level 2 restrictions that were in place from 1 July 2019 to 30 September 2019. It can be noted that communications during this time were expanded at the operation of the Drought Coordinated Response Team in October 2019.

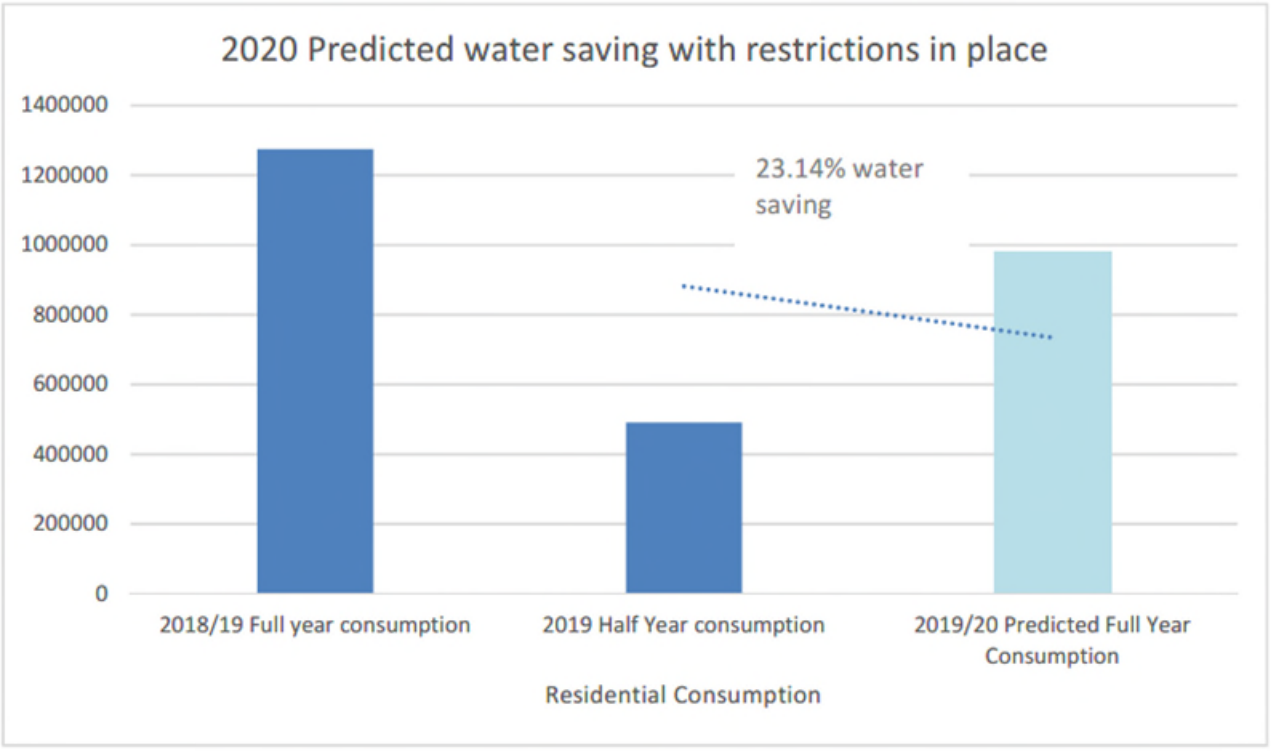


Figure 1.11: Predicted Water Savings

Emergency Response Planning

Due to consideration of the Business Continuity Plan in context of Drought Management, a Water Emergency Management Plan has been included. Management and minimisation of risks are considered at a high level. The high level process is shown at Figure 1.12 below.

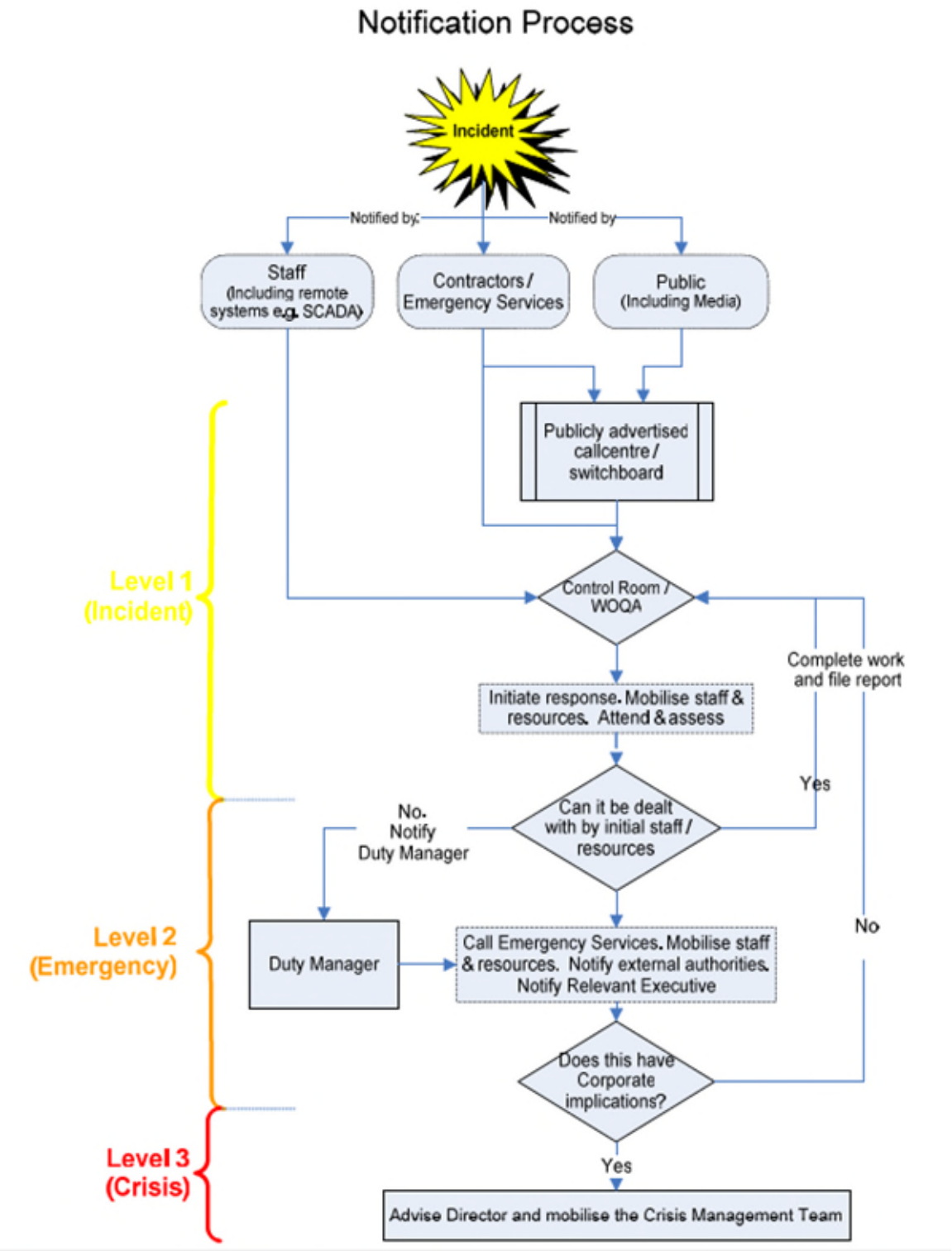


Figure 1.12: Emergency Management Flow Chart

2. Objectives

2.1 Challenges

The strategic directions and resulting actions have been presented during a period of intense drought. The Activation Plan has been implemented due to climate predictions and current conditions.

Meeting our Need for Water

Key actions within the plan are to ensure that water supply is available to meet the current water demands of the community.

The reduction of available ground water will also affect contamination of available water supply. Concentration of algae can increase and affect human and environmental health of the water during low periods.

The first requirement is that our region is able to supply the basic water needs to our community. Water availability is a necessity for maintaining health, hygiene and safety for individuals in our community, businesses and institutional uses (such as aged care and hospital facilities).

Improving our Data Sources and Accuracy

Data is collected that monitors water supply and demand. The current systems are not accurate for the interpretation of drought triggers to cause water restriction based on the figures alone. A key initiative of the current plan is to roll out smart meters and determine accurate figures. This is an immediate term goal of the plan. This will aid modelling and engineering scenarios regarding water availability and the length of time available before a worst case cease to flow of the Macquarie River from Burrendong Dam.

Revising and Updating Water Restriction Triggers

Water restrictions have been resolved and updated to improve the rationale behind decision making. The water restrictions have the potential to greatly affect community, business and liveability of a location.
The restrictions have been aimed at avoiding the key customers, businesses and institutions whom Council does not want to see financially affected in the early part of the drought.

Lower levels of water restriction focuses on general awareness and communications campaigns. These progress to higher levels of restriction that will impact the community. The key is to reduce water usage to below target levels. The levels have been based on current data that indicates the community use around 440 L water per person per day unrestricted. This is regionally higher than other areas.

Implementation of Water Saving Action Plans

Guidance has been set for the highest water users in the business community. It is important for the continuity of regional areas, in particular Council, due to its strategic importance and predicted growth, that water is available for business purposes. Many business activities have been restricted due to water shortage.

The Water Saving Action Plan allows large water users to clarify their needs. This is to inform Council of the requirements for water moving forward, to determine where these users may implement reductions and to sustain a good economy in the region for as long as is possible.

2.2 Purpose of the Plan

Timely Review to Meet our Current Drought

This plan has been reviewed and updated due to the continuing threat of drought. Current forecasts predict conditions to remain for some time. In this light, the plan has been updated to adapt our approach over time.
This is an opportunity to engage the community in our process especially around decision making about water resources.

Setting Strategic Directions We Can Implement

This DCWERP sets the current strategic directions and actions that can be delivered through 2020/2024. It provides opportunities to work with water delivery agencies at the State and Commonwealth level to ensure a whole of system approach is implemented. Cooperation is essential between issuers of bulk water licences and orders and the security of town water supply. It is an opportunity to introduce and seek continual improvement to water system productivity through technology. Advances in metering, modelling and monitoring can assist now and into the future.

Key Underlying Principles of this Plan are to:

- Set a framework for delivery of drought specific actions;
- Ensure human health needs are met;
- Priority community and business needs can be met for as long as is possible;
- Give certainty to business operators;
- Provide deliverable actions for Council;
- Sustain liveability and sense of place; and
- Increase data accuracy and efficiency.

Apply Best Practice Methods

This plan has been based on the best practice methods as set out in State and Commonwealth legislation and policy guidance. The plan is also based on emergency management approaches set out by the NSW Government.

Authority to Implement the Plan

The plan sets out triggers that may be used as guidance by Council in declaration of future drought events. Decisions on drought management are guided by local conditions that may differ from neighbouring areas. This is to ensure that the community has sufficient water available to satisfy its basic needs.

Council endorsement of this plan gives authority to the Chief Executive Officer, in consultation with the Mayor, in activating the Drought Management Team and the actions within this plan.

Clarification of Implementation Strategies

The current actions sit within a framework of response to the drought in 2019. The strategy also covers recovery and preparation for future events.

Community Awareness of Drought Management

The plan aims to ensure consistency of messaging and community acceptance and improve the success of drought management in the region. Communication actions are included in the strategic actions.

Water Sources and Quality in our Region

Water quality in the Macquarie River is highly variable. Water quality is also influenced by flows in the unregulated Bell River, which joins the Macquarie River downstream of Burrendong Dam.

The quality of water sourced from ground water is considered good, although it is hard. Additional bore water is being sourced from the bore fields south of Dubbo to supplement and secure water for the City. Currently total town water extraction licences are of 12,700 ML/year, comprising; Dubbo with 8,700 ML/year in surface water extraction licences and 4,000 ML/year in ground water extraction licences, Wellington 1800ML of surface water and 350 ML ground water, Geurie 300ML surface water and 120ML ground and Mumbil 70ML ground water.

Ongoing careful consideration of the needs of our community is critical to our future water security.

2.3 Guiding Principles

Drought Planning Principle Settings

Through consultation during the initial development stages of the plan the overarching needs of the DCWERP were developed.

These guiding principles are:

1. Community wellbeing is essential for long term resilience. The region should remain attractive to local residents and tourism and a balance with Council assets needs to be drawn to ensure Council retains a sense of place and belonging.
2. Council operations for water systems and wastewater are appropriate and improving.
3. Having certainty around water availability and back up supply adds confidence to our business community.
4. Liveability is influenced by various factors such as access to water. Planning and investing in long term infrastructure secures water for all needs.
5. Prevention is a key factor in future drought resistance.
6. Clear planning pre-drought periods - identifying hazards, assessing threats to life and property and taking measures to reduce potential loss to life or property.
7. Review processes are activated post event. Arrangements for extreme events are in place. Water quality and salinity data is benchmarked and objectives set.
8. Water is needed to preserve the health of the river and environment including parklands and riverside reserves.
9. The capacity of the community is built to cope with the consequences of drought through preparation and well communicated responses.
10. Rules that have been set for water use are appropriate, measurable and accurate.
11. The community is fully engaged in the process of drought management and are proactive in response. Indigenous values are included.
12. During recovery individuals and communities affected by the drought need support in reconstructing physical infrastructure, reactivating environmental, emotional and economic wellbeing of the community.

2.4 Strategic Directions

Direction 1: Prioritise Human Health Needs

The key objectives are to:

1. Ensure human health needs for water are prioritised during periods of drought.
2. Educate and establish the long-term behaviours that support water security. Communication campaigns to raise awareness and are ongoing during drought periods across community groups including community, businesses and Council.
3. Include for needs of community groups, such as aged, indigenous and accessibility.

Direction 2: Secure Business Community Needs

The key objectives are to:

1. Drive and support a coordinated approach to delivering drought responses for the business community that is equitable yet flexible.
2. Provide certainty in ongoing drought periods that is consistent and reliable.
3. Aim for businesses to operate for as long as possible.
4. Maintain liveability for community needs and business requirements for as long as is possible.

Direction 3: Operate Efficient Council Systems during Drought

The key objectives are to:

1. Activate best practice Council governance during drought to support efficient water systems and operational functions. Council acts with a consistent and coordinated approach to water management.
2. Fair stakeholder engagement is achieved.
3. Facilitate proactive staff commitment to deliver outcomes. Best practice governance includes clarity on *who does what*.
4. Clearly define triggers and timely warnings.

Direction 4: Effect Long Term Water Security

The key objectives are to:

1. Proactively plan, fund and implement improved drought management and water security solutions.
2. Extreme events are defined from previous experience and assist in preparation for the future.
3. Continually improve, eliminate or reduce the level of risk to drought events. Council is to drive and support innovation and water saving ideas.
4. Seek long term funding opportunities and improve technology for monitoring.

2.5 Operation of the DCWERP

2.5.1 Council's Position

Council recognises the overarching strategic directions and best practice guideline in the activation and operation of the DCWERP.

The overarching strategic directions of the DCWERP aims to:

- Prioritise human health needs to ensure water equity for all needs is available.
- Secure the business community to ensure minimal impact to the economic development of the region.
- Operate efficient Council systems that are water wise.
- Effect long-term water security.

Supporting this, NSW best practice seeks the operation of the plan on the basis that Council considers:

- Impacts on other regions and localities that are downstream, upstream or have conjunctive use.
- Effects sustainability long term.
- Acts on agreed procedures toward progressive implementation of water restrictions.

The region generally has a reliable water supply. However, the intensity of the current drought conditions has led Council to review the past triggers linked to water restrictions coming into place. With this in mind, demand triggers are now one of the many factors that Council will consider in the activation of the plan.

Triggers for entering restrictions are twofold:

1. It recognises that surface water triggers are not a standalone guide, rather one indicator when considered with ground water availability information.
2. The usefulness of employing Stage 1 (Level 1 to 3 restrictions) as an educational tool that prepares the community for Level 2 and 3 restrictions. This is vital to being able to sustain extended periods of restrictions without social or economic harm.

Level 4 restrictions affect the economic sustainability of the City. It is undesirable for Council to increase water restriction to this level of severity unless necessary.

Current Issues of Reliance on Trigger Information

There is a community and government expectation that Council will commence water restrictions when there is serious drought.

At the same time, it is evident from the current drought modelling and monitoring results that Level 4 restrictions have an impact on financial and business wellbeing of the community. A direct relationship between restrictions and river allocation is not the only tool to consider. River allocations are determined by DPIE and it is the position of Council to maintain close working relationships with NSW State Government to ensure water availability is sufficient to avoid Level 4 restrictions.

Setting a Staged Approach to Operation of the Plan

This plan relates triggers for restrictions to the severity of the drought and length of time before the predicted cease to flow date in the Macquarie River, as predicted by WaterNSW, under a zero inflow into the Burrendong Dam catchment scenario, shown at Figure 2.1 below:

Council has moved away from the current triggers for restrictions, based on imposed allocations as a percentile, with implementation of this plan in two distinct stages. Stage one management does not impact on economic development of the region. Stage 2 has economic, social and liveability implications.

2.5.2 Operation Triggers

Stage 1 Management: Decision Support Tools

Council's decision support tool to activate and move through staged management.

1. Council monitors catchment wide and local indicators for drought to maintain a forecast for two years of surface water security.
2. Catchment wide demand analysis includes monitoring of:
    - Storage levels at Burrendong and Windamere dams consistently decrease.
    - Allocation of river water has remained at 80%.
    - Volume is below 150GL and decreasing
    - Six month forecasts for weather, soil moisture and water inflow predictions for drought.
    - High security water allocations and licences are active and infrastructure is active.
    - Liaison with NSW Government to increase contingency allocation of surface water to maintain a minimum of two years' supply.
    - Other sources of ground water extraction and rate of depletion of ground water are reduced.
    - Ground water inflow, replenishment and quality of raw water is reduced.
3. Transition into water restrictions may also be based on social equity issues of the region. The decision to activate drought management may occur where there is evidence that surrounding regions are being affected by worsening conditions. It may be the case that Council has adequate supply.

4. Restriction Levels 1 to 3 allow for preparation and community education at a gradual rate prior to severe restrictions coming in to force. These levels introduce behavioural change. Level 1 restrictions may be triggered by DPIE - Level 3 Criticality Declaration.

Stage 2 Management: Decision Support Tools

1. Modelling of the cease to flow of surface water sources indicates that no surface water will be available within three (3) months.
2. Allocation of high security water is reduced as well as contingency supply no longer available.
3. Ground water allocation is not available to replace surface water due to depletion or reduced availability. If testing of bores indicates that the safe yield is sufficient it may be possible to avoid introducing Level 5 and 6 restrictions regardless of surface water availability.
4. Businesses are supplied water as required with WSAPs seeking self-imposed restrictions.
5. Drought conditions are unlikely to change within six months of moving to Level 4.

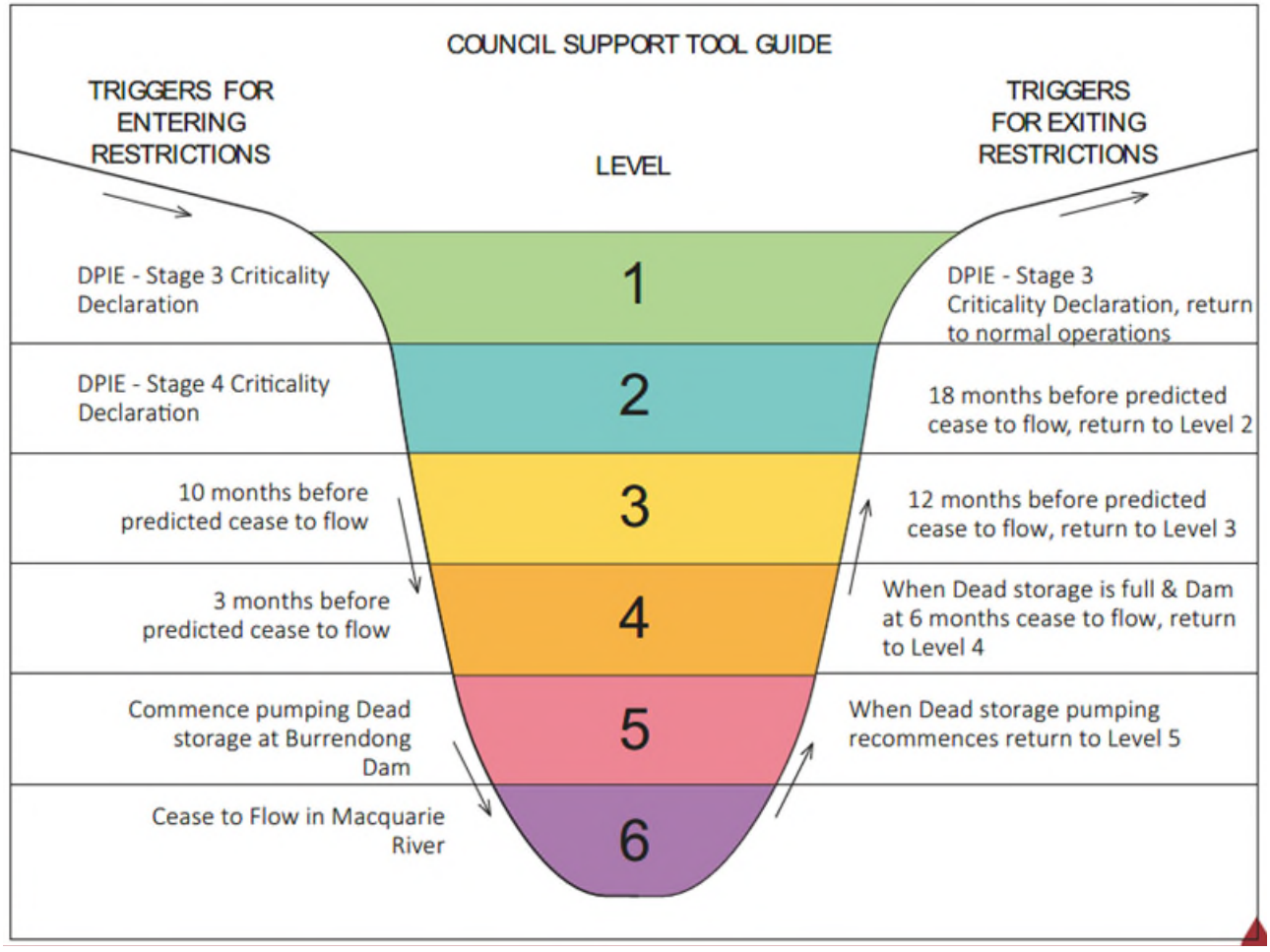


Figure 2.1: Guide to Triggers for Entering and Existing Water Restrictions based on Cease to Flow

2.5.3 Staged Management of the DCWERP

Stage 1:

Operational at 1.5 years of water security based on the cease to flow date predicted by DPIE. Operation of the DCWERP governance model during moderate drought conditions.

Restrictions Level 1, 2 and 3 can be imposed without detriment to business as usual economic activities, Council facilities and operations. Triggers shown at Figure 2.1 are a guide to be used in conjunction with the decision support tools.

Council's Level 1 and 2 restrictions may come into effect aligning with the stage 3 and 4 criticality under the DPIE Extreme Event Policy and announcements made by DPIE.

Level 3 restriction is approximately 10 months from cease to flow.
Operation of the DCWERP will be undertaken by Infrastructure - Sewer and Water teams. Refer roles and responsibilities for further detail on activities, lines of reporting and functions.

Stage 2:

Operational at less than six months of water security. Operation of the DCWERP governance model during severe drought conditions.

Council activates the Drought Coordinated Response Team. Ideally the team is commenced a minimum of one month prior to Level 4 restriction.

Levels 4, 5 and 6 restrictions are incrementally imposed as necessary and Council aims to restrict internal and facility water usage in order to support local economic activity for as long as is possible.

The 'Cease to Flow' dates are agreed in cooperation with DPIE and WaterNSW.

Extreme Water Shortage

The above decision tools are designed to extend changes to restrictions for as long as is possible.

Communication assists in delivering messages around where environmental losses of water are made on the journey of water from Burrendong Dam to Council's LGA. The greatest impact water restrictions will have is just before the accessing of 'Dead' storage and the impact to associated infrastructure actions.

Moving from Level 4 to Level 5 or 6 may be delayed or avoided if sufficient ground water is available.

Level 5 restrictions will commence when the 'Dead' storage in Burrendong Dam starts to be pumped out which is about three months before the Cease to Flow event and there are restrictions on ground water supply.

However, in a worse-case scenario where the Dead Water storage is depleted at Burrendong Dam and Council must rely on a depleted supply of ground water, Level 6 restrictions will be implemented unless further ground or surface water supplies are sourced before the next drought of record.

2.6 Current Actions

Council has received a grant of $30m from the NSW Government to assist in securing Council's water supply during severe drought events. The following projects are in progress:

Dubbo - Effluent Reuse

An effluent reuse scheme is currently being implemented that includes a staged effluent reuse treatment facility at the Dubbo STP capable of eventually delivering up to 8ML/ day, as more treated effluent becomes available. The effluent treatment unit will deliver water to several parks and recreation facilities in Dubbo via pipelines and a storage reservoir at Yarrandale, in north Dubbo.

Tenders for the installation of the pipelines are currently being assessed with a view to completing the pipeline installation by July 2020.

The use of treated effluent will replace some of the current irrigation bores which will in turn be connected to the WTP. Negotiations with large water users for recycled water are ongoing.

Connecting Irrigation Bores to Dubbo Water Treatment Plant

With the use of treated effluent to irrigate some of Council's parks and recreation areas, dedicated irrigation bores will now be connected to the Water Treatment Plant (WTP) boosting the amount of ground water available when the quantity of surface water from the Macquarie River is restricted. It is expected up to 6ML/ day of extra bore water will be supplied through these three bores. The pipeline connecting the bores to the Treatment Plant are expected to be completed by July 2020.

Wellington

A new bore will be installed at Montefiores in Wellington. The bore will be connected to an upgraded bore at Bicentennial Oval and then to the town reticulation system in the event of surface water not being available from the Macquarie River. Water from these bores will be pumped to the WTP for treatment.

The Wellington Showground water recycling project has commenced to review and improve water efficiency; and use of recycled water for the grounds.

Geurie

A new bore has been installed on the Macquarie River south of the township. The bore will be connected to the existing raw water rising main in the event of surface water not being available from the Macquarie River.

Water Saving Action Plans

Water Saving Actions Plans (WSAPs) were distributed to business as identified as top 100 non-residential large water users during Level 3 restrictions. Current actions are to monitor effectiveness of WSAPs.

The Integrated Water Cycle Management Issues Paper Report 2019[3] presented a series of issues to be resolved through the DCWERP.

2.7 Recommendations

IWCM Issues, Recovery and Future Programs

Recommendations for Future

1. Water security entitlement is a longer term issue not drought specific. However, drought reliability strategies should be fully investigated and those that are feasible should be continued including:
    - Purchase of ground water licences: Recommended that Council actively pursue the purchase of properties with ground water licences in the proximity of Dubbo. Council's 30 year Forward Works Program has budgeted to purchase additional ground water licences.
    - Failing the ability to purchase suitable ground water licences in the medium term, Council could investigate installation of pipelines to the general area of existing suitable ground water aquifers as well as installing test bores on crown roads. In a worst case scenario under Section 79 of the Water Act, the Minister could direct that ground water in the area of the test bores be utilised only by Council.
    - Regional pipelines: Continue to support Government initiatives to provide regional drought security by installing regional pipelines. Support the construction of the Burrendong to Dubbo pipeline in order to provide extended delivery of water from the 'Dead' water storage in Burrendong Dam in line with Critical Water Bill. This will be additional to the current $30m grant received.

[3] Ward, J. Blaike, J. (2019) *Dubbo Regional Council Integrated Water Cycle Management Issues Paper Report Number WSR-17004,* NSW Public Works Advisory, Department of Finance, Services & Innovation Crown Copyright

2. Water quality is highly variable and especially inconsistent during low flow periods from river sources. Rolling upgrades to WTPs to assist with improved water quality should be considered, including upgrades to John Gilbert WTP.
3. Non-revenue water for Wellington and Geurie was found to be highly variable and climate dependent. Further investigation is recommended.
4. Effluent reuse is currently limited. In the event of a cease to flow event in the Macquarie River, effluent may be suitable to recharge the aquifer in the vicinity where Council is extracting ground water. It is recommend that Council investigate the possibility of aquifer recharge in extreme drought conditions.
5. Review of demand management for water data to assist with peak demand management may assist with ongoing drought management activities. Opportunities to improve efficient water use should be sought for parks, sale yards and the Dubbo Regional City Airport expanded smart metering and monitoring upgrades.
6. Operation of Burrendong Dam and water allocations: The NSW Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source (2016) states that:
    - *The water supply system shall be managed so that available water determinations for local water utility access licences of 100% of share components can be maintained through a repeat of the worst period of low inflows into this water source (based on historical flow information held by the Department when this Plan commenced).*
    - *The volumes of water set aside from assured inflows into this water source and reserves held in Windamere Dam and Burrendong Dam water storages or other water storages shall be adjusted as required over the course of this Plan if necessary to do so, to ensure subclause point 1, is satisfied.*

Interpretation of this clause of the plan indicates that management of releases from Burrendong Dam will need to be adjusted to enable 100% allocations being made available in light of the current drought of record. It is recommended that Council liaise closely with DPI and WaterNSW in establishing revisions to annual water allocations for all users in order to ensure a more secure supply of water in the next drought of record.

3. Background

3.1 Natural Systems

Council is part of the Western Plains Region, approximately 350 km west of Sydney. Figure 3.1 and 3.2 illustrate the geographical location of Council within New South Wales and Dubbo Regional Council Administrative boundary (green line).

Dubbo and Wellington are the main urban centres. The villages include Ballimore, Elong Elong, Brocklehurst, Geurie, Wongarbon, Mumbil, Mogriguy, Stuart Town, Euchareena and North Yeoval. Geographic locations are shown at Figure 3.3. The City of Dubbo and the villages of Wongarbon, Brocklehurst, Eumungerie, Mogriguy and Ballimore are served with the Dubbo Water Supply Scheme. The town of Wellington and the villages of Geurie, Mumbil, Eumungerie and Mogriguy are served by separate reticulated water supply schemes. Other nearby smaller villages are connected to separate private non-potable water schemes. North Yeoval is currently served by Cabonne Council.

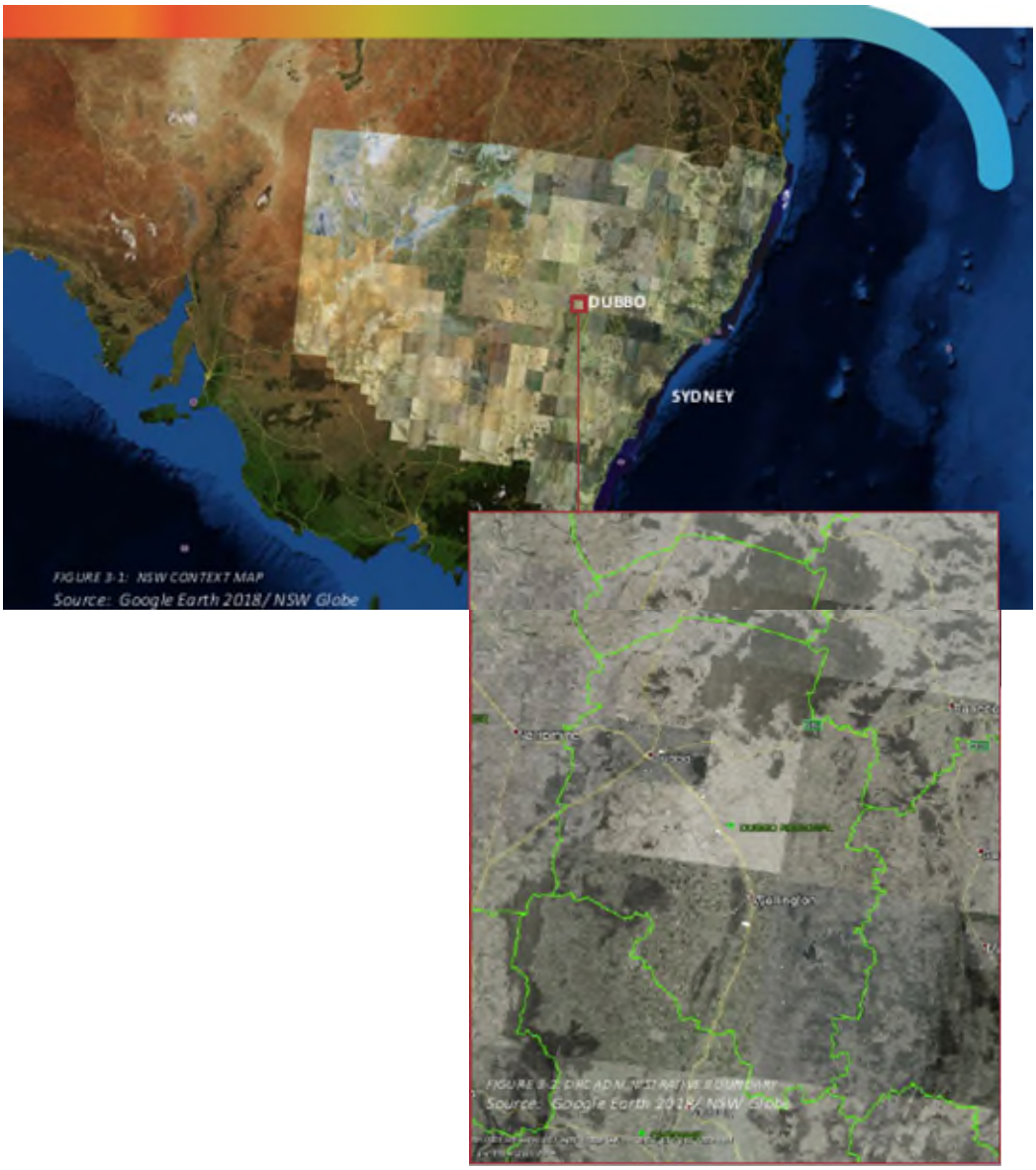


Figure 3.1: NSW Context Map and Figure 3.2: Dubbo Regional Council Administrative Boundary
(Source: Google Earth 2018/NSW Globe)

3.1.1 Location

Dubbo Regional Council Area

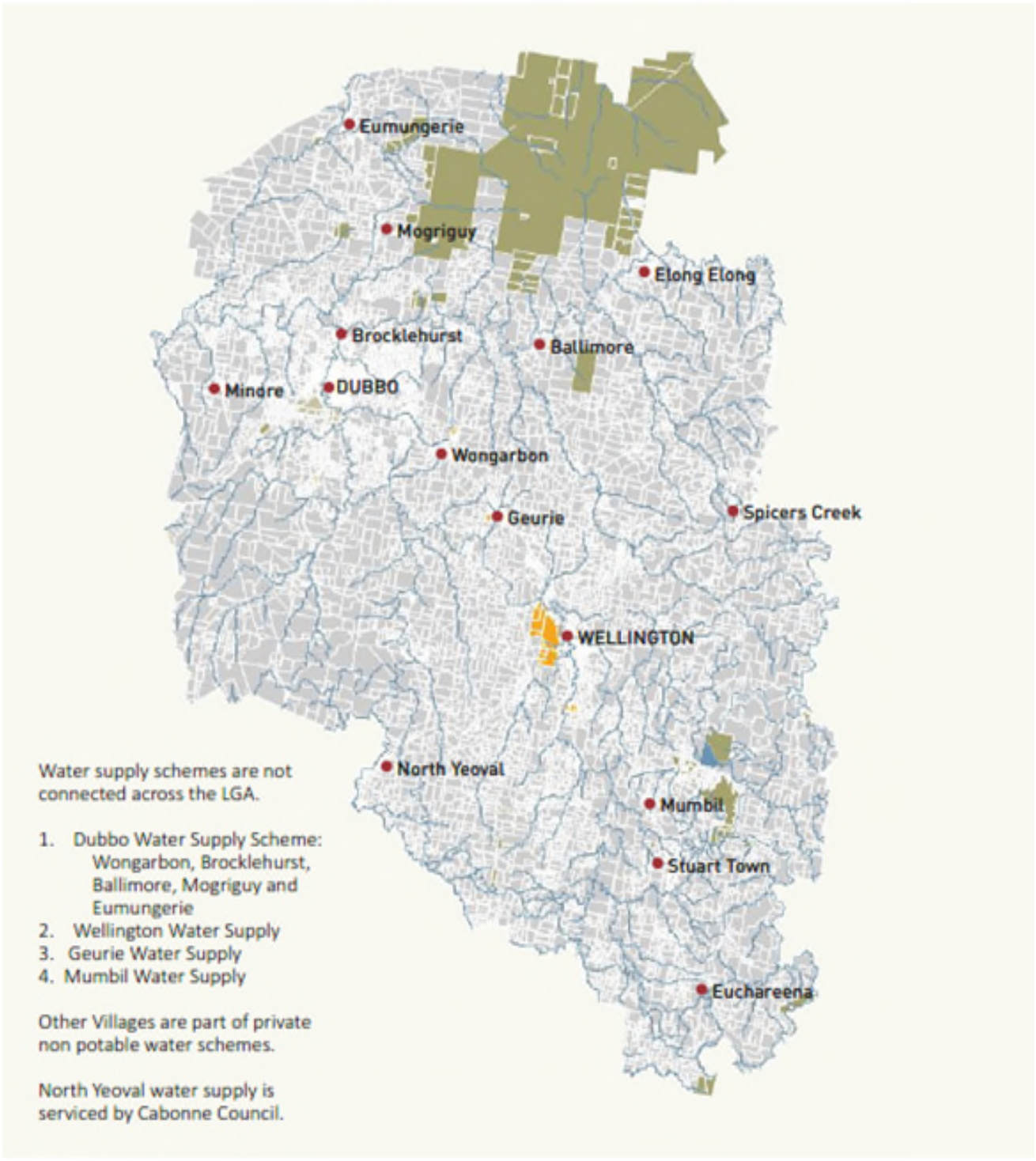


Figure 3.3: The Dubbo Region Local Government Area Illustrating Urban Centres and Villages

The Murray-Darling Basin

The Catchment

The Murray-Darling Basin is the extended catchment for which the Macquarie-Bogan river catchment forms a part. The Murray-Darling basin spans an enormous geographical area of over 1 km. Figure 3.4 (below) illustrates the span of the Murray-Darling Basin across Queensland, New South Wales and Victoria. The Basin is source to both surface water and ground water.

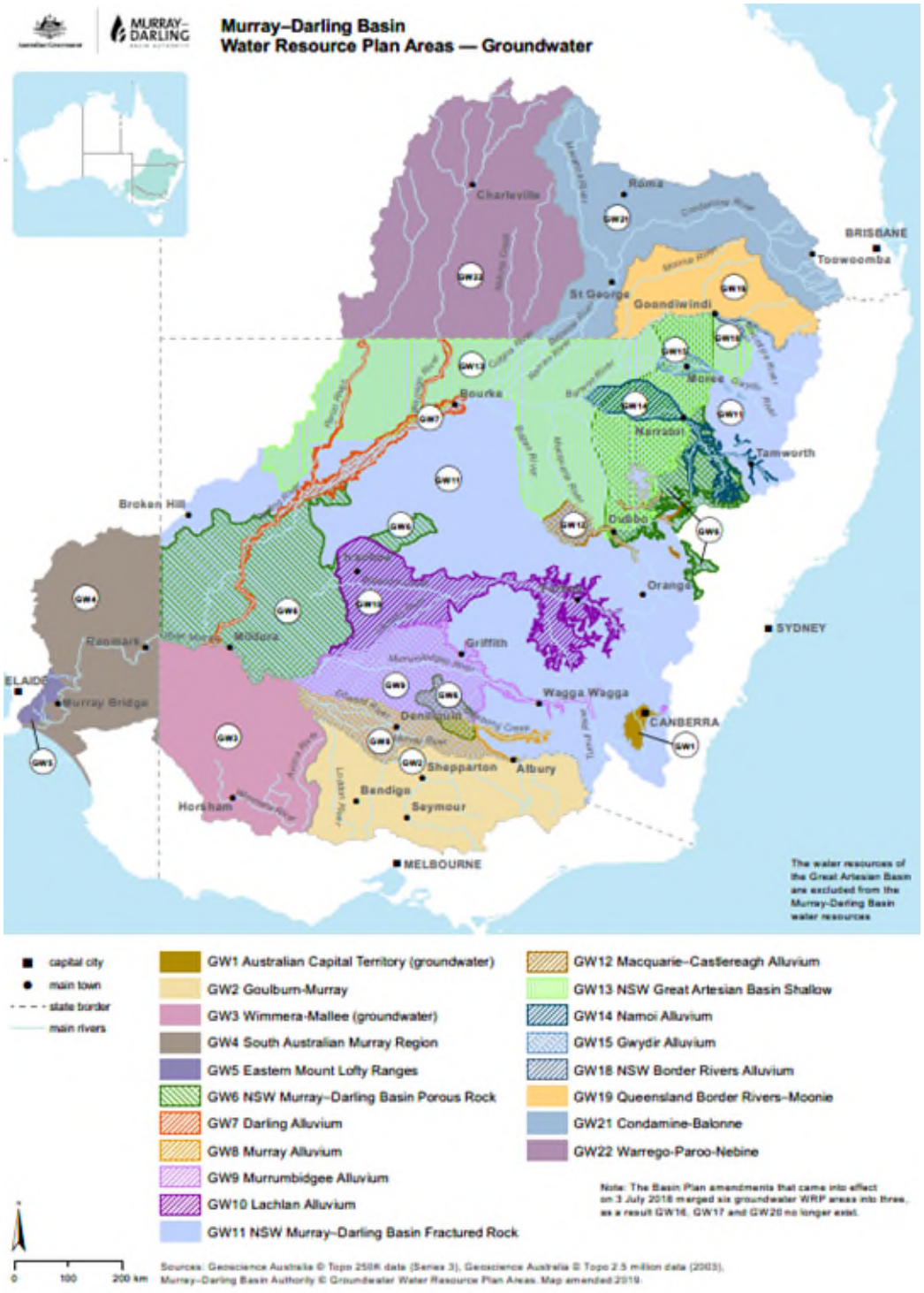


Figure 3.4: The Murray-Darling Basin

Ground water beneath the Murray-Darling Basin can be stored in fractured rocks, porous rocks or soils. Ground water is complex as it supports the pressure for springs, rivers and wetlands sitting above.

Bore Water Sources

The Dubbo Region sits across three overlapping ground water typologies, see Figure 3.5 below:

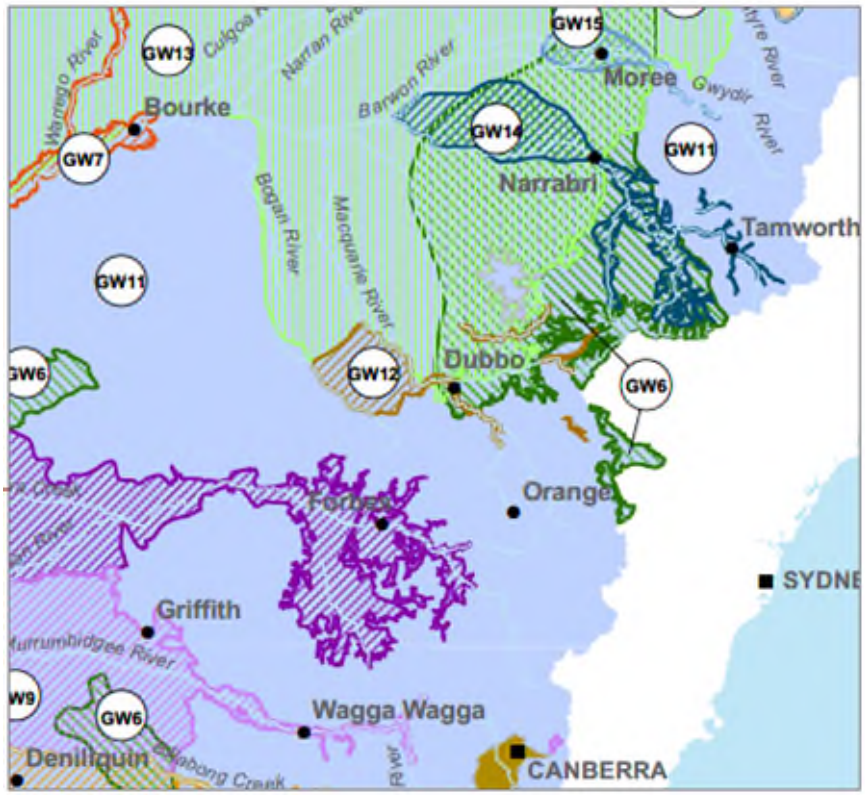


Figure 3.5: Enlarged Dubbo Region[4]

GW6 NSW Murray-Darling Basin Porous Rock

The NSW MDB Porous Rock Water Resource Plan came into effect in July 2019 to establish a long-term sustainable and adaptive management framework. It also gives effect to international agreements, clarifies water resource outcomes and aims to improve water security across the basin. Recharging of these systems is considered to take years to decades.

GW11 NSW Murray-Darling Basin Fractured Rock

The Murray-Darling Basin Fractured Rock covers and extensive area and is generally part of the fractured basaltic, granite, meta-sediments and sandstone.

GW12 Macquarie-Castlereagh Alluvium

The Macquarie-Castlereagh Alluvium Water Resource Plan came into effect in November 2018. This plan sets out the annual extraction limit under a sustainable diversion limit for ground water sources.

GW13 NSW Great Artesian Basin Shallow

The Resource Plan came into effect in July 2019. The Great Artesian Basin Shallow is at the lower edge of the ground water supply access within the LGA.

[4] Geoscience Australia (2019) *Topo 250K & 2.5 million data (Series 3) Murray-Darling Basin Authority Ground Water Resource Plan Areas*, Geosciences Australia

The Macquarie-Bogan Catchment

Surface Water

The Macquarie-Bogan catchment covers an area of more than 74,000 km^2 within the Murray-Darling Basin, shown at Figure 3.6. The headwaters of the Macquarie River originate in the Great Dividing Range south of Bathurst, and the river flows in a north-westerly direction for 960 km until it joins the Barwon River near Brewarrina. The major tributaries of the upper Macquarie catchment are the Cudgegong, Talbragar, Little and Bell Rivers.

While the Bogan River maintains its own catchment, running roughly parallel to the Macquarie, the streams are hydrologically connected via several effluent channels from the Lower Macquarie, which provide regulated flows to the lower Bogan River[5]. The source water supply for the Council LGA is shown at Figure 3.7 below. This also indicates emergency and additional supply at Narromine and Windamere Lake.

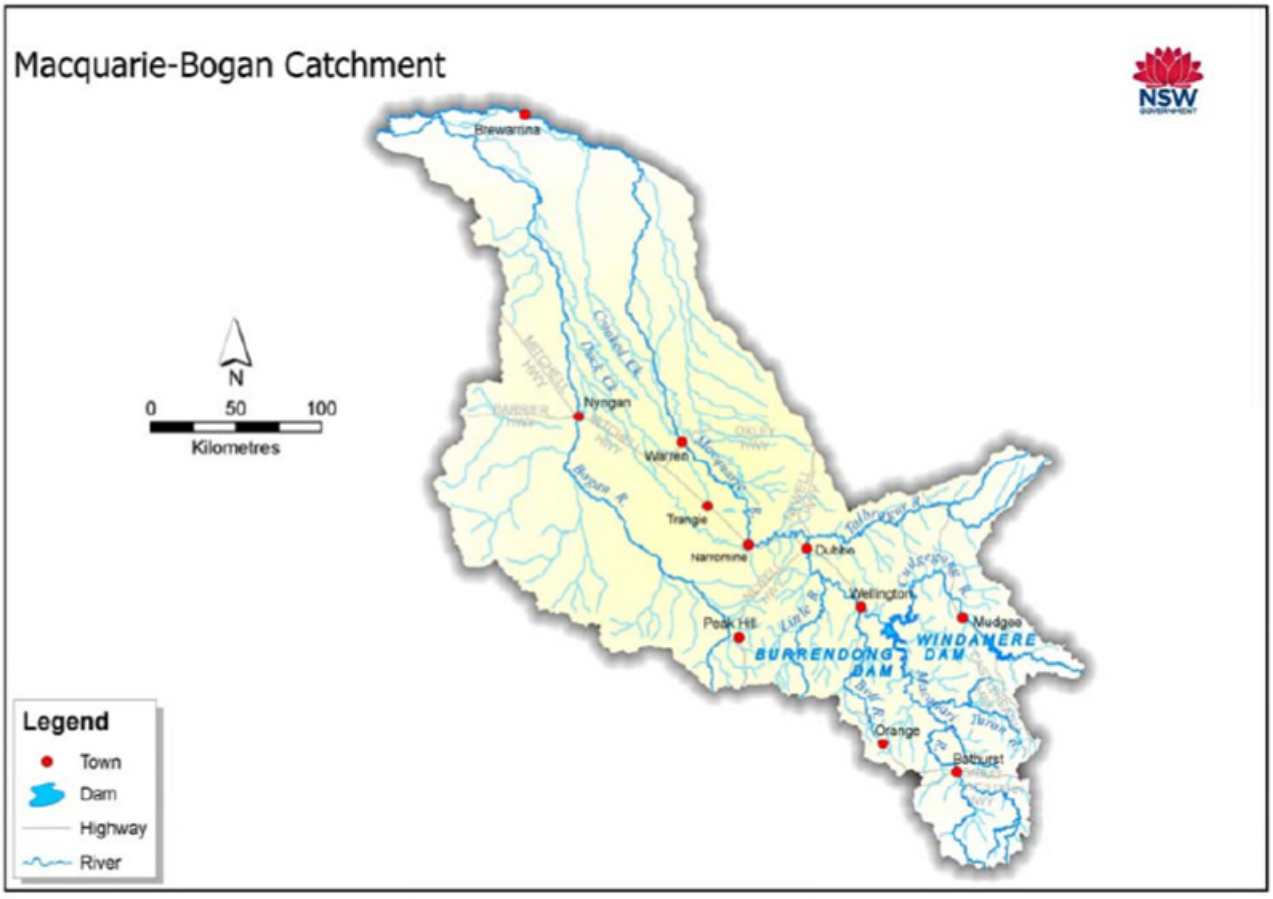


Figure 3.6: Macquarie-Bogan Catchment

Water Storage

Water in the Macquarie River is regulated by two major storages in the upper catchment.

Burrendong Dam supplies water for irrigation, stock and domestic needs along the Macquarie River and the lower Bogan River as well as providing significant flood mitigation capability to reduce downstream flooding. It also stores water for environmental requirements in the Macquarie Marshes, an extensive wetland complex that is a significant natural feature of the lower valley.

[5] Green D., Petrovic J., Moss P., Burrell M. (2011) *Water resources and management overview: Macquarie-Bogan catchment*, NSW Office of Water, Sydney

Windamere Dam, on the Cudgegong River upstream of Burrendong Dam, provides water for the towns of Mudgee and Gulgong and water user requirements along the Cudgegong River.

Source Water Supply for Dubbo Region

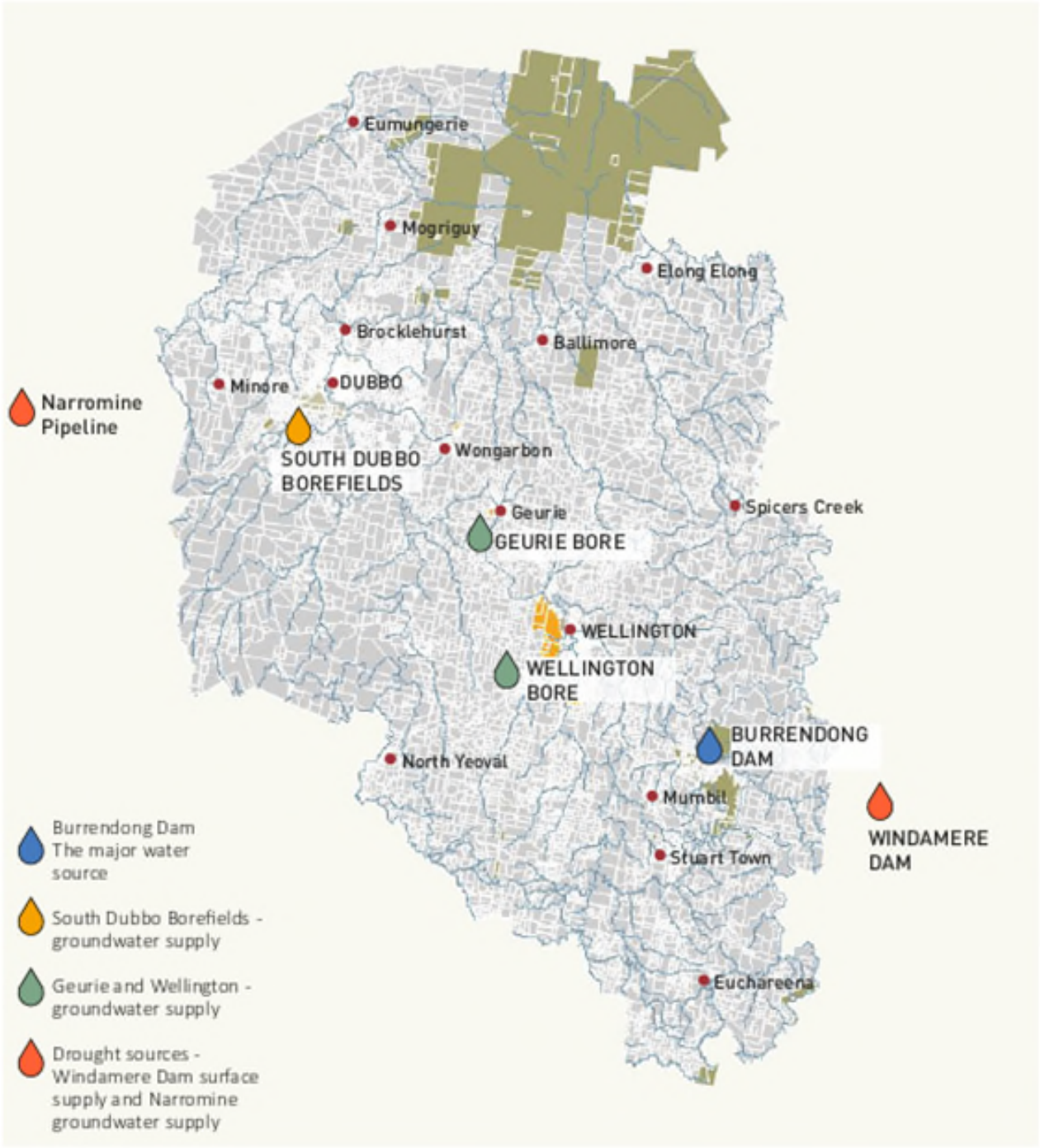


Figure 3.7: Dubbo Region Local Government Area – Surface and Ground Water Supply

The main source of water for the Dubbo Region is Burrendong Dam with South Dubbo Borefields the largest ground water supply point.

3.1.2 Climate

Current Climate Prediction

Climate information is current as at February 2020[6].

Rainfall

Rainfall deficiencies have affected most of the New South Wales, Queensland and South Australian parts of the Murray-Darling Basin since the start of 2017. Much of the northeast inland of New South Wales has had record low rainfall between April 2018 and September 2019. January 2020 rainfall was slightly above average for Australia as a whole due to falls in western and central Queensland and inland Western Australia. However, inflows remain limited for major water storages in the Murray-Darling Basin.

Overall rainfall has been at its lowest on record by a substantial margin breaking drought records since the Federation Drought between 1900 and 1902. Rainfall over 2019 was 34% lower than average[7].

The current forecasts predict that average minimum and maximum temperatures are on the increase across the Basin.

The 2019 cool season has been characterised by snowfall across the Basin becoming vapour rather than melting into water, resulting in less inflow into ground water. Likewise, the water quality has been affected and blue-green algae is continuously monitored. The Lachlan River is at red alert at Corrong.

Rainfall deficiency maps are produced by the Australian Bureau of Meteorology and assist with determining the prediction for a drought to continue, see Figure 3.8 below:

Corresponding information regarding rainfall received at Dubbo City Regional Airport illustrates a consistent decline in annual rainfall from 2016, shown at Figure 3.9 below:

Soil Moisture

Climate predictions for the Murray-Darling also capture information regarding soil moisture and current data regarding water storage across the system. Figure 3.10 below regards the current information for soil moisture. Soil moisture is below average, some parts of the catchment did receive near average rain in September 2019, with Council remaining below average. Dry soil moisture levels have resulted in new long-term records being set (January 2017 to February 2020). The result in less water being runoff and forming inflow to storages.

[6] Australian Bureau of Meteorology (2020) *Drought Statement, Issued 6 February 2020,* Commonwealth of Australia, http://www.bom.gov.au/climate/drought/

[7] Australian Bureau of Meteorology (2019) *Special Climate Statement 70 update - drought conditions in Australia and impact on water resources in the Murray-Darling Basin*, Commonwealth of Australia, http:// www.bom.gov.au/climate/current/statements/scs70.pdf

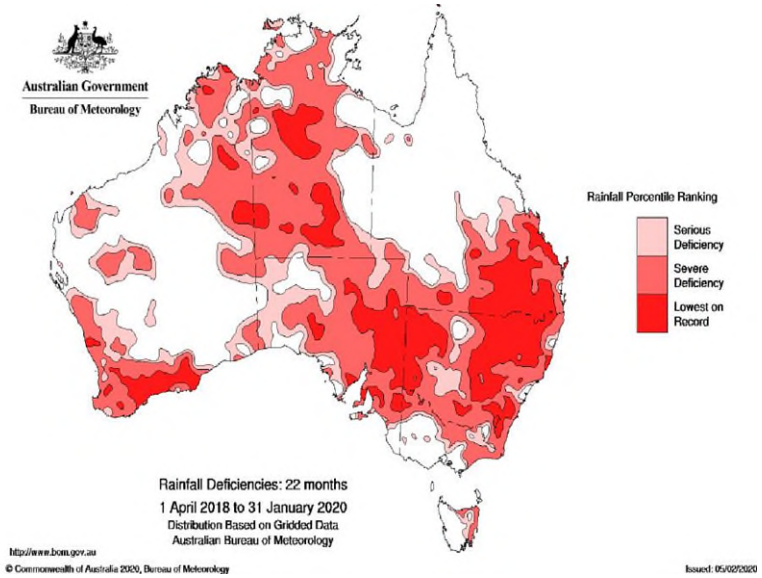


Figure 3.8: Rainfall Deficiency across Australia

Water Inflow

Long-term rainfall deficiencies have had a great impact across water resources for Council. The Macquarie catchment combines Lake Burrendong and Lake Windamere as the main storage dams. The Macquarie River is a regulated river controlled by intentional water releases from the Burrendong Dam, which is situated 40 km upstream of Dubbo.

The heat waves and bushfires in January 2020 have both put pressure on the water resources of the southern Murray-Darling Basin. Several of the catchments of the major storages of the southern Murray-Darling Basin have been affected by bushfires.

The NSW Government (DPIE and WaterNSW) control the operation of Burrendong Dam.

A weir built in the 1940s on the Macquarie River, Dubbo, provides a weir pool for Council to extract raw water through the two raw water pumps.

Water Quality

Increased blue green algae levels to red alert status have frequently raised water quality alerts at Burrendong and Windamere dams. Generally, this occurs in low flow periods.

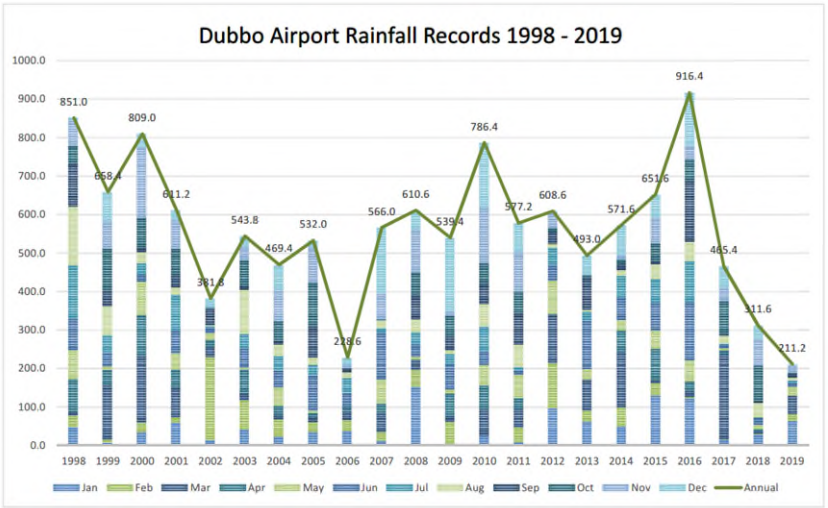


Figure 3.9: Dubbo Airport Rainfall Records 1998 to 2019

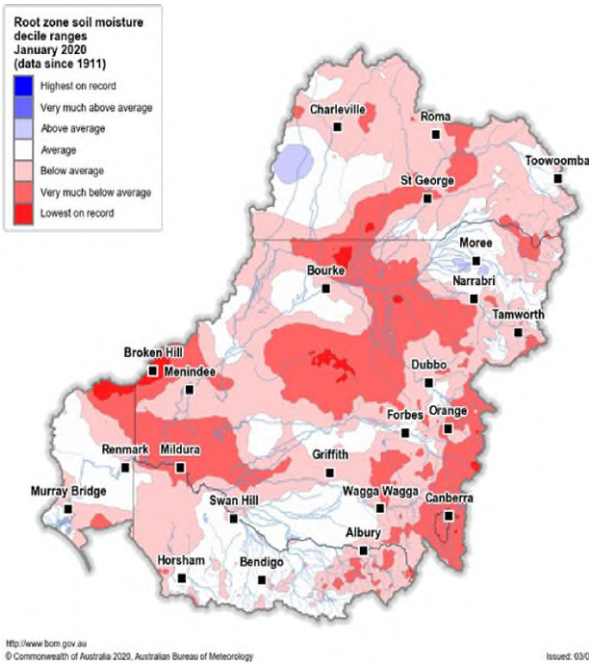


Figure 3.10: Soil Moisture (September 2019)

3.1.3 Storage Levels

Macquarie Catchment Storage Levels

Water resources are greatly influenced by the occurrence and frequency of rainfall across the landscape, and further by temperature and consumptive water use. Given the historic low rainfalls and high temperatures, water availability in the soil, major storages, rivers and ground water across the Murray-Darling Basin is low, shown at Figure 3.11 below:

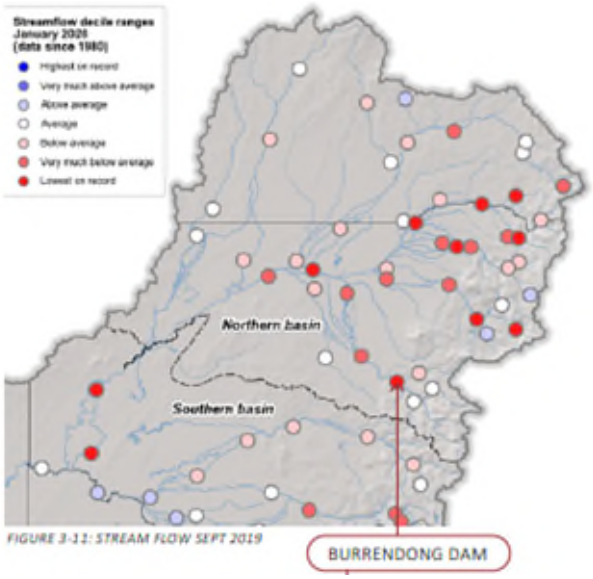


Figure 3.11: Stream Flow (September 2019)

Ground water levels across the Murray-Darling Basin have also declined in response to the prolonged dry period. Aquifer systems are being impacted by low rainfall, stream recharge and by increased pumping for consumptive use, especially given the scarcity of surface water supplies. Thus, less water is getting into aquifers and aquifer systems are under further stress due to increased extractions.

Burrendong Dam

Burrendong Dam, at January 2020, was at 52 GL of a total capacity of 1,154 GL. This equates to 1.5% full. Of this amount, 18GL is active storage and 34GL Dead Storage. Burrendong Dam has been drawn below 10% on five similar occasions (June 1995, January 1998, April 2003, May 2004 and January 2007). Environmental water accounts have been suspended to extend water supplies[8].

Lake Windamere is at 98GL of a total capacity of 368GL. This equates to 26.5% full. Active storage is 97 GL and 1 GL is Dead Storage.[7] Water release will occur from Lake Windamere to Burrendong Dam periodically as per the water sharing plan. Dam levels are shown at Figure 3.12 below:

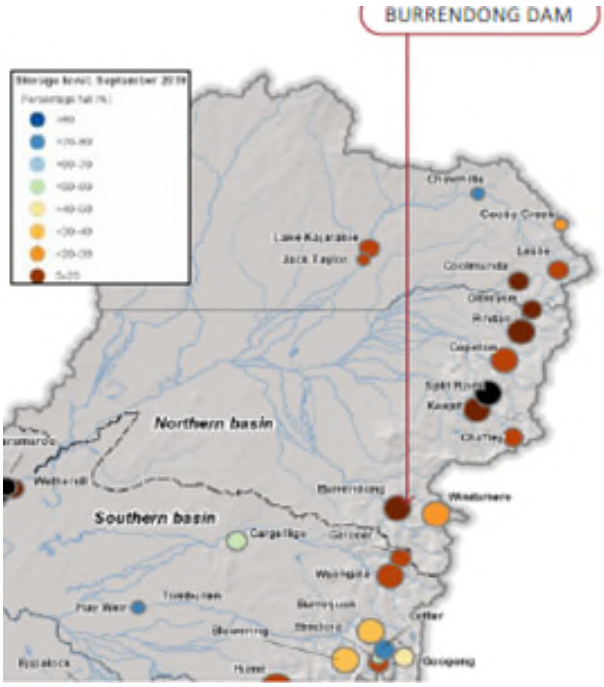


Figure 3.12: Storage Levels (September 2019)

3.1.4 Reliability of Water Supply

Drought Reliability of the System

The volume required in Burrendong Dam to deliver all Water Sharing Plan requirements and run the River for a full water year, prior to delivering water to any general security users, is approximately 170 GL.

The adopted trigger for constrained deliverability of higher priority licences is:

- When Burrendong Dam storage is below 119 GL (10% of full supply volume) on 1 July; and
- Any available Windamere Dam storage resource has been transferred (assuming that 70 GL is required to guarantee local supply under the bulk water transfer protocol).

The analysis therefore uses a total storage above 189 GL (119 + 70) in Burrendong Dam as the trigger for constrained deliverability of higher priority licences.

[8] Australian Bureau of Meteorology (2019) *Special Climate Statement 70 update - drought conditions in Australia and impact on water resources in the Murray-Darling Basin*, Commonwealth of Australia http:// www.bom.gov.au/climate/current/statements/scs70.pdf

If the modelled total storage is less than 189 GL at the end of June, then drought conditions are deemed to have commenced and higher priority licences will begin the water year with allocations of less than 100%.

Figure 3.13 illustrates possible drought modelling against the percentage of dam level reduction over time. This model shows levels that would avoid surface flow reaching a cease to flow within a two year time frame

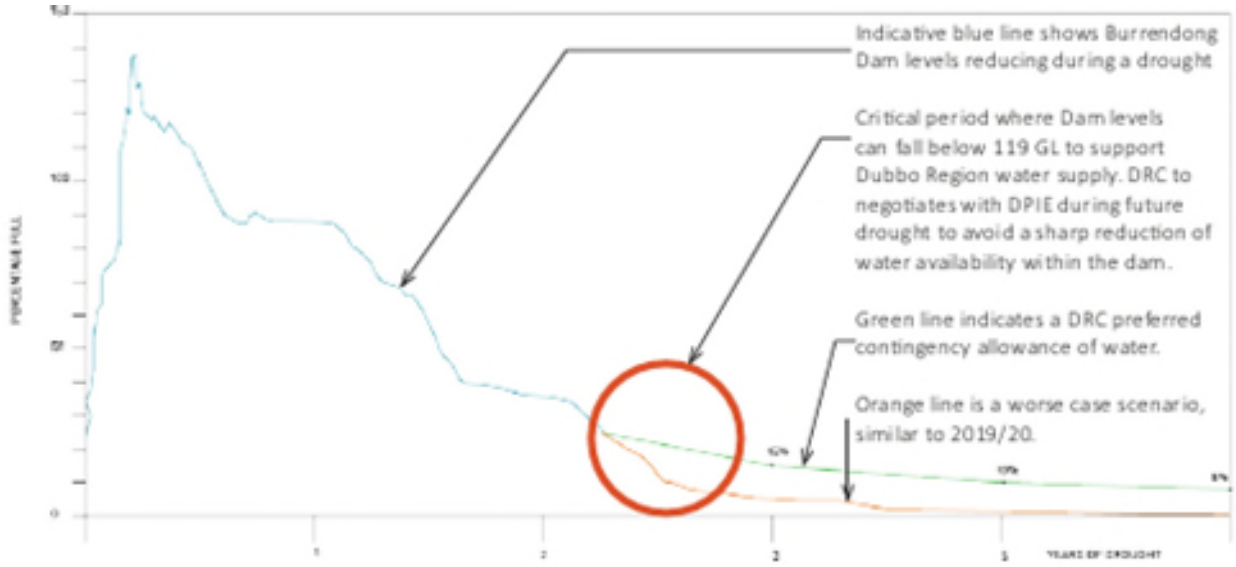


Figure 3.13: Drought Modelling for Percentage Dam Level Reduction over Time

3.1.5 Past Drought Information

Drought History

Information from WaterNSW (shown at Figure 3.14 below) illustrate the long-term averages for inflow into the Macquarie River System and storage at Burrendong and Windamere dams. This shows the usual inflow and allocation of this water to environment and irrigation.

Burrendong Dam

The average inflow in the past six years is 690 GL, far short of the long term average of 1,448 GL. This downward average has impacts on water storage and availability.

This shortfall is further illustrated at Figure 3.14 where the current drought is compared to previous droughts. These droughts included 1906 to 1909, 1937 to 1940, 2006 to 2008, 2012 to 2015 and the current drought since 2016.
The graph illustrates the fact that the extremely low levels in 1906, 1937 or 2007 were not dissimilar.

What is evident is that the current drought event inflow is significantly lower. This has the potential to push Council's drought management to far stricter limits than has occurred in any other drought to date.

This graph indicates how vital drought management planning is to Dubbo Regional Council.

When Burrendong is at very low levels the release of water to the Macquarie River to supply major towns such as Dubbo have very large impacts on the Dam's sustainable supply.

Windamere Dam

Drought inflows at Windamere Dam correspond to low flows received at Burrendong Dam (shown at Figure 3.15). In January 2020, WaterNSW has introduced drought contingency measures that suspend Water Sharing Plan rules. Additional Bulk water transfer is planned from Windamere to Burrendong dams. Access of deep storage at Burrendong Dam is planned.

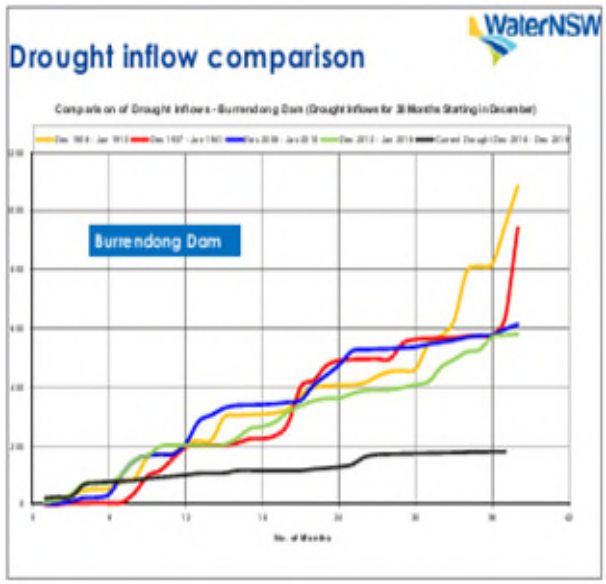


Figure 3.14: Comparison of Drought Inflows – Burrendong Dam (Source: WaterNSW 2019)

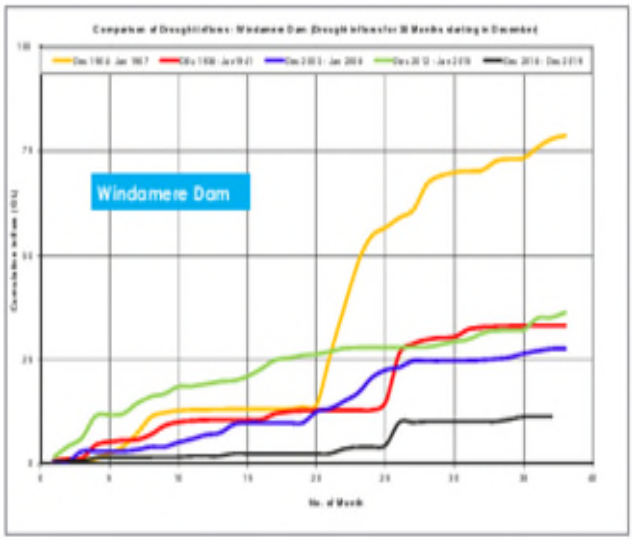


Figure 3.15: Comparison of Drought Inflows – Windemere Dam (Source: WaterNSW 2019)

3.1.6 Cease to Flow Modelling

Modelling of the depletion of the Macquarie River under drought conditions determine various dates the River would cease to flow, see Figure 3.16 below:

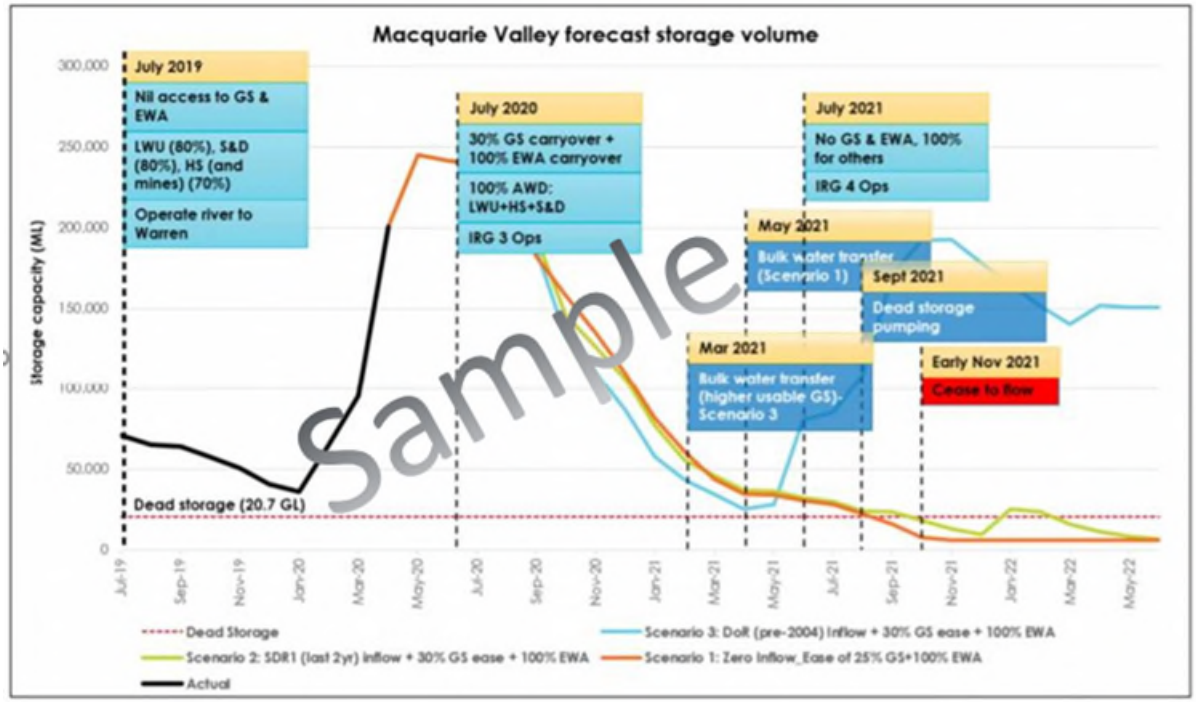


Figure 3.16: Sample Macquarie Valley forecast storage volume depletion curve

Figure 3.17 below shows the inflow against allocations depletion averages over time. Current emergency and contingency planning is required in preparation for the possibility that the Macquarie River will cease to flow in 9 to 16 months.

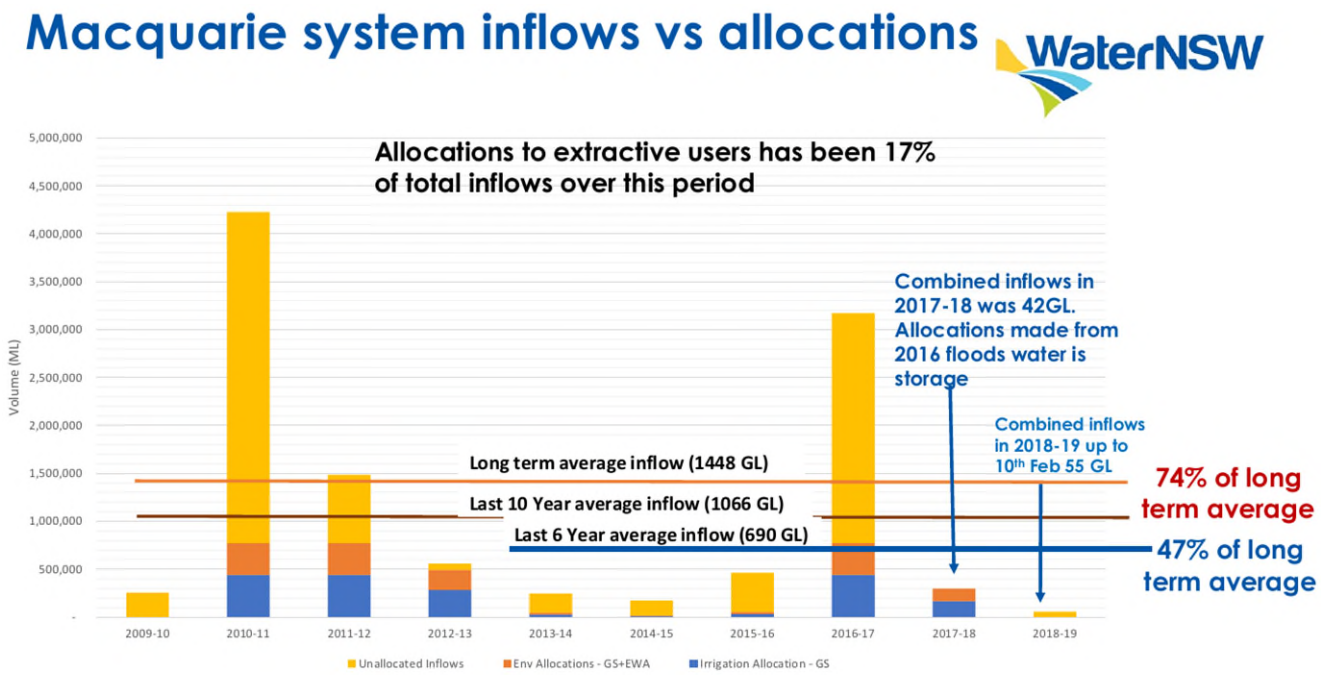


Figure 3.17: Inflow Vs Allocation (Source: WaterNSW)

3.1.7 Future Climate Projections

Climate Change Projections

Climate change projections of the CSIRO for the catchments for the Murray-Darling Basin, comprising the western plains area that extensively developed for dry land and irrigated agriculture, grazing and forestry predict that[9]:

- Average winter rainfall is projected to decrease with high confidence. There is medium confidence in spring decrease. Changes in summer and autumn are possible but unclear. For the near future natural variability is projected to dominate any projected changes.
- Average temperatures will continue to increase in all seasons (very high confidence).
- More hot days and warm spells are projected with very high confidence.
- Fewer frosts are projected with high confidence.
- Average winter rainfall is projected to decrease with high confidence. There is only medium confidence in spring decrease. Changes in summer and autumn are possible but unclear.
- Increased intensity of extreme rainfall events is projected, with high confidence.

Temperature Trend Changes for Dubbo

Since the 1970s there has been a rise in temperature of 1^0 Celsius, which is slightly above the National and Global averages for climate change[10].

[9] Ekström, M (2015), *Central Slopes Cluster Report, Climate Change in Australia Projections for Australia's Natural Resource Management Regions*: Cluster Reports, eds. Ekström, Metal., CSIRO and Bureau of Meteorology, Australia

[10] Rawson, A. (2016) *Climate Change in the Central West of NSW*, NSW Local Land Services , Central West

It is anticipated that temperatures will rise 0.7^0 Celsius by 2030 and 2.1^0 by 2070. This increase represents a significant acceleration of the rate of temperature rise by comparison to the 20th Century. This also translates to a projected increase in the number of hot days (of over 35^0 Celsius). Most of the Western Plains and floodplain local landscapes will receive on average between 10 and 20 more days per year above 35^0 Celsius by 2030, and around 30 to 40 days by 2070.

These landscapes are already exceedingly hot in summer, and it is expected that similar extreme temperatures will spread into spring and autumn as well. New high temperature records in the very high 40s and even 50s may be possible in the north-western parts of the region by mid-century.

Drought and Soil Moisture Deficit

Increased temperatures, coupled with increases in potential evapotranspiration and changed distribution of rainfall has been shown at a global scale to indicate an overall landscape drying trend.

Rainfall and Humidity Trends

Rainfall trends in the Dubbo and Orana region are less predictable due to the historic variability of rainfall in the region. For the Central West region of NSW, it is predicted that mean rainfall will decrease in spring and increase in early autumn.

By 2070, a clear shift towards summer/autumn dominance will become evident, with a possible slight increase (5 to 10%) in annual totals. The extra rainfall in summer and autumn is projected to be associated with increased intensity events (eg storm cells), which are likely to increase the risk of hail and wind damage. Flash flooding risk from these events is also likely to increase.

Droughts per Decade

Predictions for drought is to increase the incident of droughts per decade. The current guide is three per 10 year period. This will increase to two to five per decade by 2030, and will further change to one to nine droughts per decade by 2070[11].

3.2 Operating Environment

3.2.1 Population and Demographics

Overview

Population across the LGA is predominantly within urban centres at Dubbo and Wellington. Villages including Brocklehurst, Wellington, Wongarbon, Geurie and Mumbil are considered in detail within the IWCM Issues paper (see Reference 12).

Information relevant to the development of a best practice DCWERP are averages across the LGA.

Population Projection

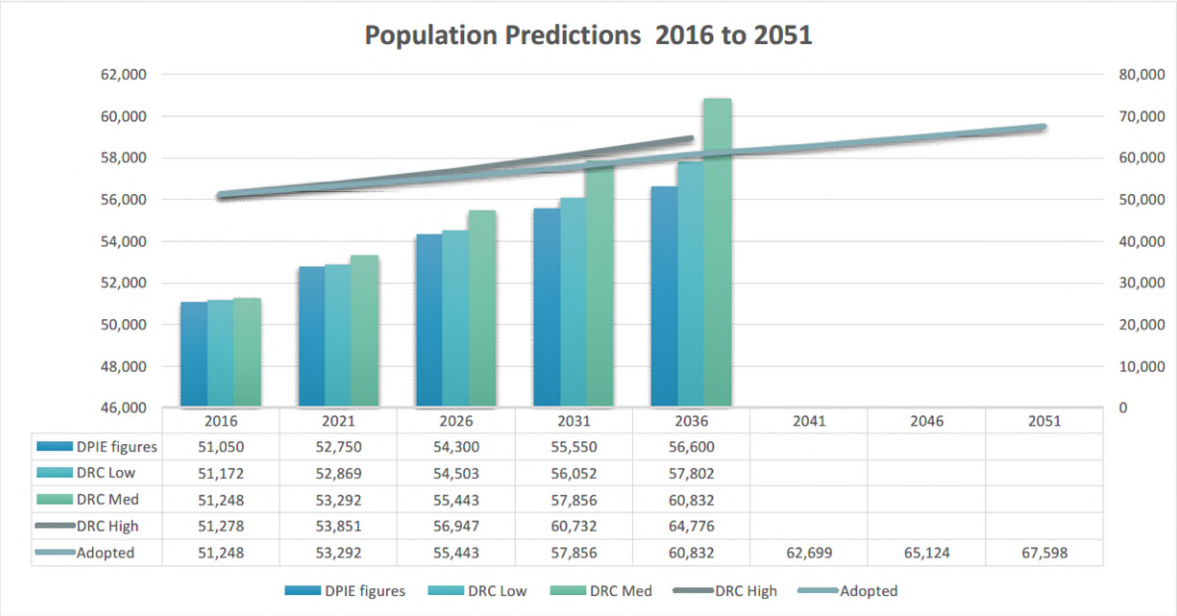
The regional population demographics for population were commissioned by REMPLAN in 2016.

The data shown below at Figure 3.18 illustrates predicted growth of the Dubbo region over time. This data combines the former Wellington and Dubbo City Council areas. The adopted population growth can be noted as the green trend line.

Population growth includes extensive residential land release areas that will be developed over time across seven stages.

[11] Ward, J. Blaike, J. (2019) *Dubbo Regional Council Integrated Water Cycle Management Issues Paper Report Number WSR-17004,* NSW Public Works Advisory, Department of Finance, Services & Innovation Crown Copyright

These figures support numbers published by the Department of Planning Industry and Environment. Council is anticipated to grow as a regional centre, the median age is 35 which is slightly younger than the NSW average of 38[12]. The growth of the Dubbo region includes staged residential development of the City.



	2016	2021	2026	2031	2036	2041	2046	2051
DPIE figures	51,050	52,750	54,300	55,550	56,600			
DRC Low	51,172	52,869	54,503	56,052	57,802			
DRC Med	51,248	53,292	55,443	57,856	60,832			
DRC High	51,278	53,851	56,947	60,732	64,776			
Adopted	51,248	53,292	55,443	57,856	60,832	62,699	65,124	67,598

Figure 3.18: Population Predictions (Source: IWSM Issues Paper)

3.2.2 Legislative Framework

Overview

Legislation and policy regarding use of water across the Murray-Darling Basin, of which the Dubbo region is a part of is complex.

Council is not in control of the total catchment or water supply. There are many players, as can be seen by the NSW regional water management at Figure 3.19 below.

General issues will occur when a failure to meet legal obligations or agreed levels of service in water supply and sewerage occurs. In general, these issues are part of the IWCM Strategy and further detail can be found within these documents.

This section provides a brief overview of relevant policies.

Commonwealth Legislation and Policies

The **National Water Initiative** is an agreement signed by all states and territory governments to increase the efficiency of Australia's water use and includes commitments to reform water markets and trading, and deal with over-allocated, or stressed water systems.

Overarching legislation includes the **Commonwealth *Water Act 2007*** and **Murray-Darling Basin Plan 2012** (the Basin Plan).

The Commonwealth Water Minister has a role in accreditation and compliance of State water sharing plans. The Basin Plan requires the delivery of resource plans called Water Resource Plans. This means that there is oversight of the NSW Government regarding plan making and implementation.

[12] Department of Planning and Environment (2017), Central West and Orana Regional Plan 2036, Crown Copyright 2017, NSW Government, Dubbo

In part, this is also managed by the Murray-Darling Basin Authority who set legally enforceable limits on the quantities of surface and ground water that may be taken (MDBA 2011)[13].

COAG Strategic Framework for Water Reform implemented changes to the current system.

NSW water management is complex as shown by NSW DPIE Roles and Responsibilities Table below:

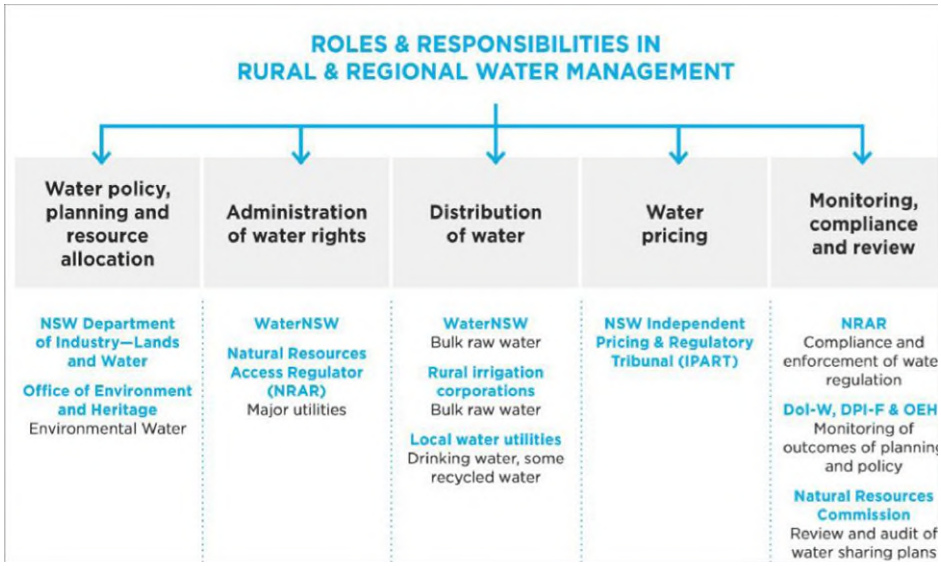


Figure 3.19: Rural and Regional Water Management

NSW Legislation

NSW Water Management Act 2000

The purpose of the Act is to provide protection, conservation an ecologically sustainable development of the water sources for NSW.

The Act established a completely new statutory framework for managing water in NSW. The main objective being[14]:

- To provide for the sustainable and integrated management of NSW water resources for the benefit of both present and future generations.
- Water Sharing Plans are made under the Water Management Act and the majority of NSW water access licences are issued under the Act.

This Act specifies rules regarding water sharing plans across sources of surface water and ground water. These plans are revised on a 10 year cycle.

Under the Act, Council is defined as a Local Water Utility (LWU). The core function of a LWU is the sustainable provision of water supply and sewerage services to the community.

Council is in control of several water licences under this Act to extract water from the Regulated Macquarie River.

Best-practice management is fundamental to the effective and efficient delivery of these services.

[13] Murray-Darling Basin Authority (MDBA)(2011) *Managing Australia's water resources*, Australian Government, Creative Commons Attribution Australia

[14] NSW Irrigators Council (2018) Water Reform in NSW, NSW Irrigators Council, viewed 30 January 2020, http://www.nswic.org.au/wordpress/wp-content/uploads/2018/02/Factsheet-Water-Reform.pdf

NSW Water Sharing Plans

NSW Water Sharing Plans (WSPs) are regulatory instruments under the WMA 2000, and specific provisions are identified in each plan.

These plans cover surface and ground water. The status plans relevant to Council are:

- Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source 2016.
- Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012.
- Water Sharing Plan for the Macquarie-Castlereagh Ground Water Sources 2019.
- Water Sharing Plan for the NSW Murray-Darling Basin Fractured Rock Ground Water Sources 2011.

Water Resource Plans 2017 to 2019

NSW is required to develop 22 Water Resource Plans (WRP) by 2019 in the NSW Murray-Darling Basin Zone. These plans aim to:

- Set water sharing arrangements for consumptive users.
- Establish rules to meet environmental and water quality objectives.
- Show compliance with the sustainable diversion limits.
- Include water quality management plans.
- Provide for environmental watering.
- Establish an extreme events policy.

Water Supply (Critical Needs) Bill 2019

Is to facilitate the delivery of water supply to certain towns and localities to meet critical human water needs and to declare certain development relating to dams to be critical State significant infrastructure.

The Bill allows for a streamlined decision-making approval processes regarding critical infrastructure for localities including Dubbo and Wellington. The development project for Burrendong Dam is specifically mentioned under Schedule 2. Development listed under Schedule 2 are exempt from development control legislation (as per the *Environmental Planning and Assessment Act* 1979). It is intended that development carried out would not contravene the *Water Management Act,* however the Bill exempts State liability for the development. The Bill has a temporary status for two years from assent (21 November 2019) with a possible extension of one year.

Local Government Act 1993

This Act covers day to day activities of Council. Its aim is to provide the legal framework for an effective, efficient, environmentally responsible and open system of Local Government including the provision, management and operation of water supply and sewerage works and facilities.

The IWCM Strategy deals with section approvals relevant to the function and operation of water supply and sewerage and requirements for annual reporting. Council has met regulatory targets for Section 60 approval for water and sewage treatment works. STP effluent under a RWMP for reuse for park and farmland irrigation has not been finalised.

Public Health Act 2010

The provision of safe drinking water is an aim of this Act. Under the Act, Council is required to produce a Drinking Water Management Plan (DWMP).

Water quality is of particular issue during drought and is considered in the Emergency Management Plan at Section 8.

It is noted that the Fluoridation of Public Water Supplies Act (1957) is relevant to provision of safe drinking water.

Protection of the Environment Operations Act 1997

This Act provides for environmental protections. An objective of the Act pertains to human health risks and the prevention of environmental degradation.

Council is licenced to operate Dubbo STP, John Gilbert WTP and Wellington STP and is obliged to meet licensing requirement for sewerage, trade waste and liquid waste discharges. Further information regarding licensing and compliance is with the IWCM Strategy currently in preparation.

The Emergency Management Plan at Section 8 addresses Council's approach during incidents and events that concern water and sewer.

NSW Policy and Guidance

Emergency Management Guidelines

Emergency management includes four recognised elements of emergency management to prevent or mitigate hazards from impacting the community or environment:

1. Preparation
2. Response
3. Recovery
4. Prevention.

Comprehensive emergency management deals with the strategies for risk assessment, prevention, preparedness, response and recovery.

The Best Practice Management of Water Supply and Sewerage Guidelines 2007

This guideline sets out six criteria for best practice management of water supply and sewerage:

1. Strategic business planning
2. Pricing (including developer charges, liquid trade waste policy and approvals)
3. Water conservation
4. Drought management
5. Performance reporting
6. Integrated water cycle management.

Council must illustrate compliance with the above in order to be considered to be following best practice. This document follows best practice for drought management.

The framework for NSW Best Practice Management is at Appendix A.

3.2.3 Dubbo Regional Council Governance

Council endorsement of this document gives authority to the Chief Executive Officer, in activating the Drought Management Team and the actions within this plan. The Drought Contingency and Emergency Response Plan provides the policy tool to activate drought management agreed actions. This relationship is shown at Figure 3.20 below:

Decision Making Overview

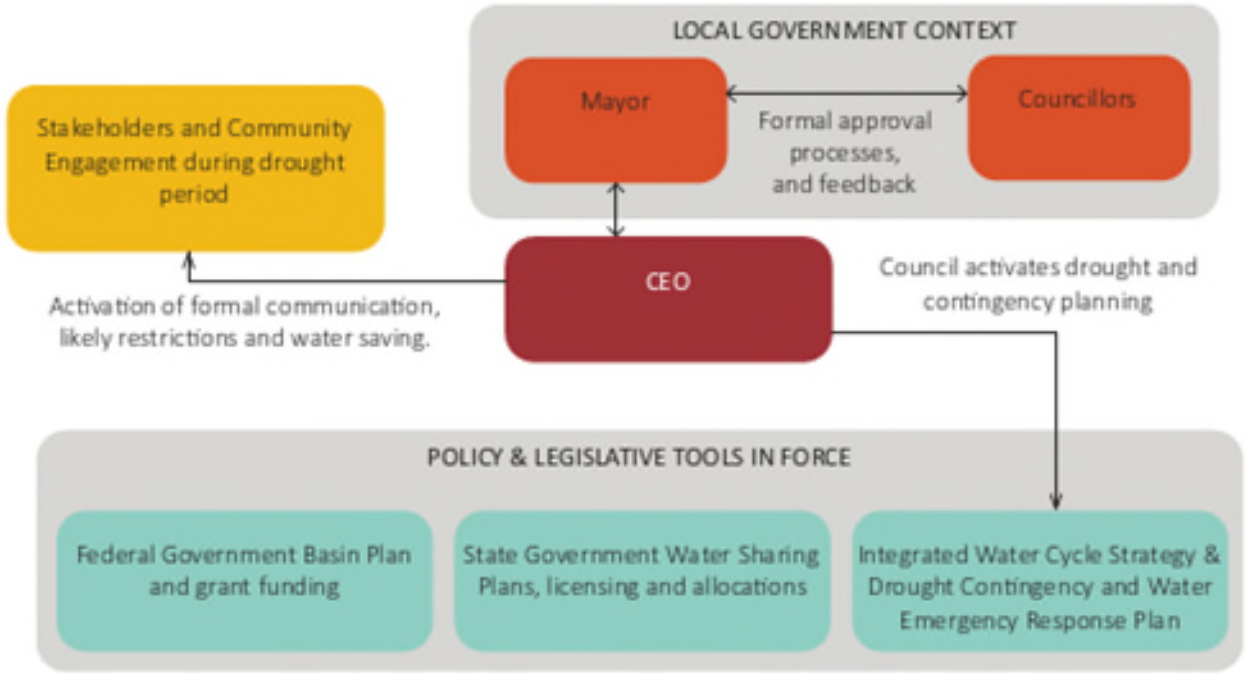


Figure 3.20: Local Government Context

The drought management flowchart illustrates the high level actions taken by Council as part of a best practice approach. The flowchart is shown at Figure 3.21, the flowchart is responsive to changes in the drought event as it lessens or worsens based on drought trigger monitoring. Council will categorise and escalate the incident as required, delivering a proportionate response ranging from dispatch of operations staff for routine and minor incidents, through to whole of business response for major or emergency incidents.

Council is, at its discretion, to activate the team structures as it deems needed. It is projected that under less severe drought circumstances the activities of the DCWERP are managed under Infrastructure teams for Water Supply and Sewer.

During a more severe drought incident the CEO may activate a whole of Council team lead by the Drought Coordinated Response Team.

Drought Management Action Flow Chart

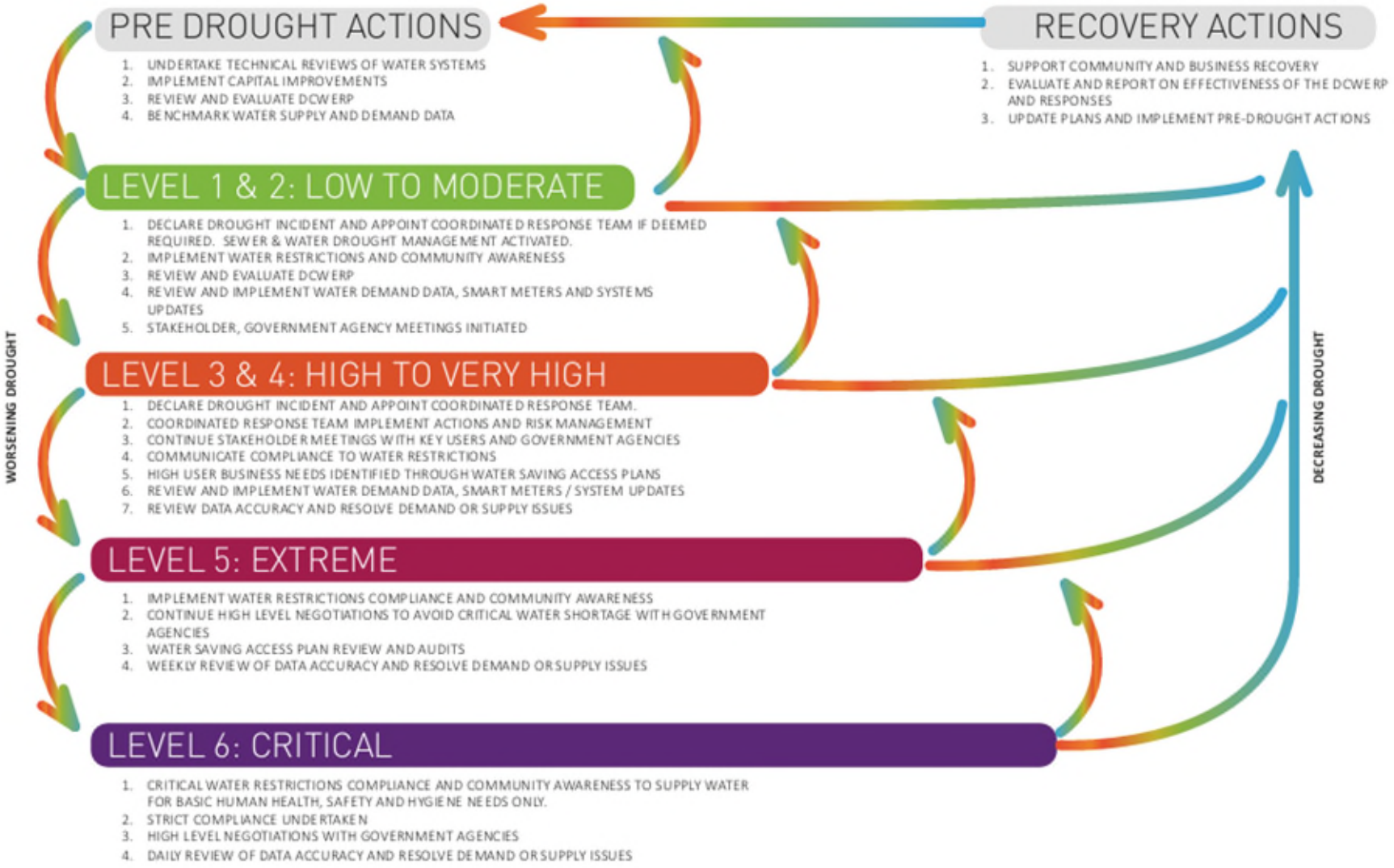


Figure 3.21: Drought Management Action Flowchart

3.2.4 Dubbo Regional Council Team Structure 1

Restriction Levels 1 to 3: Moderate Drought Conditions

The current structure of Council governance splits drought management activities into two stages:

Stage 1: Restriction Levels 1 to 3 is managed by the Sewerage and Water Team with support by the Communications Team.

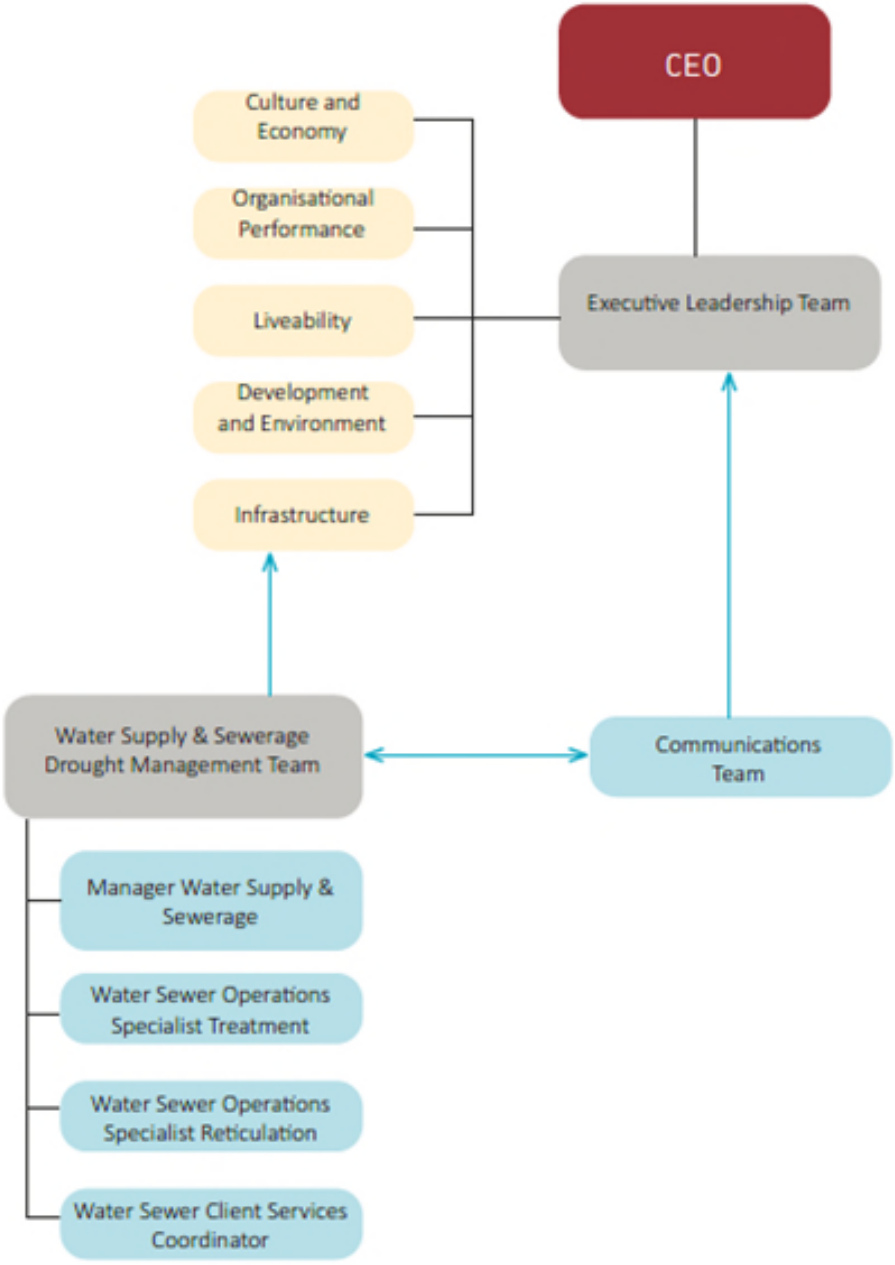


Figure 3.22: Governance Structure at Restriction Levels 1 to 3

3.2.5 Dubbo Regional Council Team Structure 2

Restriction Levels 4 to 6: Extreme Ongoing Drought

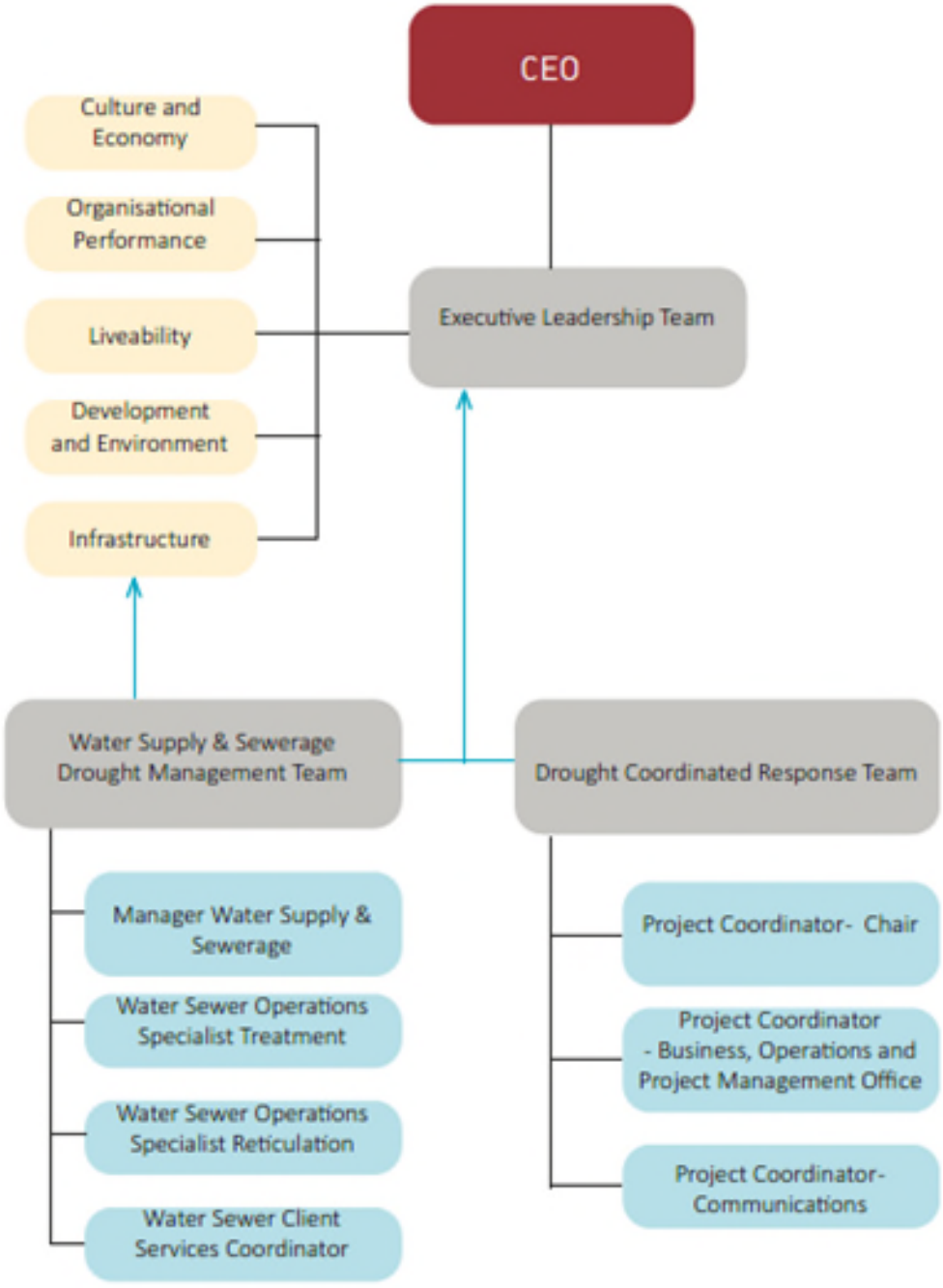


Figure 3.23: Governance Structure at Restriction Levels 4 to 6

As indicators become apparent that drought conditions are worsening to the point that surface water is predicted to cease to flow the CEO activates the Drought Coordinated Response Team to facilitate management issues across all sections of Council. The roles and responsibilities of the Team are structured and aligned to cover major program management monitoring, tracking and communications roles. It is recommended that the Drought Management Team is commenced one month prior to Level 4 restrictions coming into effect.

3.2.6 Roles and Responsibilities

Table 3-1 shown below identifies roles and responsibilities at all levels throughout a drought response period.

ROLE	RESPONSIBILITY
Chief Executive Officer Executive Leadership Team	• In consultation with the Mayor, officially declare a Drought Incident. • Activate and deactivate the Drought Coordinated Response Team. • Provide high level approvals. • Provide overarching guidance to the Drought Coordination Response Team. • Provide intermediate approvals and strategic direction. • Coordinated sub teams to deliver program actions for Culture and Economy, Organisational Performance, Infrastructure, Development and Environment and Liveability.
SEWER AND WATER DROUGHT CONTINGENCY AND EMERGENCY MANAGEMENT TEAM	
Manager Water Supply and Sewerage	• Attends Drought Coordinated Response Team meetings when the team becomes activated by the CEO. • Provides assessment of the available data with respect to security of supply. • Assess timing for implementation of Level 4 restrictions and advise ELT. • Call meetings and coordinate the activities of the Team. • Provide assessment of the available data with respect to security of supply. • Prioritise tasks and allocate to Team members. • Assess inputs from the Operations and Communications staff and implement required actions. • Identify and supply support resources for the team. • Communicate with stakeholders, government agencies and major customers. • Monitor progress of allocated tasks, any new developments and information flows. • Assess the need for and provide relief staff where necessary during an extended incident. • Monitor performance of Team members and take action if required. • Approve all situation reports and media releases. • Assess timing for implementation of Level 4 restrictions and advise the Director Infrastructure. • Determine completion of response phase, advise the Director Infrastructure and commence recovery. • At the end of the drought incident coordinate a review of the response and update DCWERP for future incidents
Water Sewer Operations Specialist Treatment	• Responsible for the link between the DCWERP and Council's operational activities. • Implement water production operational response during the drought incident. • Receive tasks from the Drought Incident Manager and coordinate group. • Brief the Drought Incident Manager.

ROLE	RESPONSIBILITY
Water Sewer Operations Specialist Reticulation	• Identify any additional resources required and implement with Drought Incident Manager's approval. • Establish communications channels and protocols with Water Operations Team and obtain detailed situation assessments and updates. • Assess the impact of any change in supply conditions and consider contingency options in order to maintain services. • Identify need for technical advice where necessary and expedite such advice. • Liaise with external groups such as emergency services and regulators. • Stand down as instructed and contribute to debrief and any necessary investigations. • Implement water reticulation operational response during the drought incident. • Receive tasks from the Drought Incident Manager and coordinate own group. • Brief the Drought Incident Manager as required. • Identify any additional resources required and implement with Drought Incident Manager's approval. • Establish communication channels and protocols with Reticulation Team and obtain detailed situation assessments and updates. • Assess the impact of any change in supply conditions and consider contingency options in order to maintain services. • Identify the need for technical advice where necessary and expedite such advice. • Handle communications with external groups such as emergency services and regulators. • Stand down as instructed and contribute to debrief and any necessary investigations.
Water Sewer Client Services Coordinator	• Responsible for customer liaison. • Liaise with Drought Incident Manager to implement the Customer Notification Procedure. • Receive briefing and role allocation and coordinate own group. • Establish ongoing stakeholder information briefings and presentations • Provide input into preparation of media releases. • Organise customer enquiry responses and answers to frequently asked questions for Customer Experience. • Provide data to update website information. • Assess requests for exemptions from water restrictions for the approval of the Manager Water Supply and Sewerage (includes new turf watering, first fill of pools and exceptions). • When Level 3 restrictions are implemented organise for top 100 water users to prepare their Water Savings Action Plans ready for implementation commencing from Level 4 restrictions. • Implement water saving displays and public education activities • Manage breach procedures. Administration and compliance with Local Government Act.

Table 3.1: Roles and Responsibilities

Facilitation of Council wide drought management activities are managed through a Coordinated Response Team. This Team formalises reporting on activities that extend beyond water and sewer. A Chair is designated to lead the Team.

Activities of the wider Council businesses are likely to have commenced, however, they are not yet formally operating through the DCWERP.

The CEO activates the operation of the Drought Coordinated Response Team (DCRT). DCRT activities are at Appendix F.

DROUGHT COORDINATOR RESPONSE TEAM	
Project Coordinator - Chair	• Coordinate assessments of drought response. • Report on water security, restrictions implementation and drought specific activities by level. • Coordinate timely briefings to Executive Leadership Team and CEO. • Allocate roles and prioritise tasks. • Ensure adequate facilities and resources - both specialist and support. • Ensure key stakeholders are notified and personally handle liaison with authorities and major customers. • Arrange provision of any essential support requirements. • Assess key issues, priorities and potential implications, and develop overall response strategy and tactics. • Direct and coordinate the inputs of the operations and communications groups. • Reconvene the whole team as required for updates and reviews. • Monitor new developments, information flows and response effectiveness. • Monitor the use of procedures and guidelines and effectiveness of actions taken. • Monitor team members' performance and establish relief system during an extended incident, including relief for the Incident Controller role. • Issue 'stand down' instructions as appropriate and ensure arrangement of debrief, counseling, investigation and recovery plan. • Commence potential contingency or recovery plans as needed. • Approve all situation reports prior to circulation. • Post incident, coordinate review of incident and update to DCWERP. • Determine completion of response phase, advise Director Infrastructure and commence recovery. • Coordinate drought recover review. • Finalise arrangement for Team on completion of DCWERP activities or at the reduction of drought to Level 3 or below.
Project Coordinator - Business Operations and Project Management Office	• Implement the Operational Response Procedure during drought. • Identify additional resources required. • Establish communication channels and protocols with Operations Team at site and obtain detailed situation updates and assessments. • Assess incident details and collate appropriate reference material (system maps, directories, operating procedures etc). • Facilitate responses by rangers.

DROUGHT COORDINATOR RESPONSE TEAM	
Project Officer - Communications	• Undertake monitoring, risk assessment and project management activities and report as required. • Assess impact of any change in supply conditions and consider contingency options in order to maintain services. • Coordinate responses to grant funding and source further opportunities. • Stand down as instructed and contribute to debrief and any necessary investigations. • Coordination of materials for executive leadership program status. • Liaise with Team to implement the communication strategy. • Receive briefing and role allocation and co-ordinate own group members; and identify additional resources required. • Ensure the media database and customer notification listing are current. • Allocate specific responsibilities for communication with each stakeholder category (authorities, customers, media and staff). • Obtain latest incident details and arrange priority notifications • Establish ongoing stakeholder update processes. • Consider media management strategy and media monitoring. • Liaise with other response agencies regarding communications responsibilities and actions. • Seek approvals and issue agreed initial media releases/holding statement. Consult with Drought Incident Manager as needed. • Provide 'messages' guidelines to the Communications Team and other affected staff, and ensure all external messages and statements are centrally coordinated and approved. • Arrange media interviews etc. as appropriate and brief spokesperson. • Organise inquiry response resources. • Develop staff information bulletins as required. • Monitor communications effectiveness and external perceptions. • Stand down as instructed and contribute to debrief/investigation. • Coordinate IT representative to be on standby and issue alerts to customer alert database. • Coordinate and monitor communication via social networking (Facebook, Twitter, etc).

4. Data: Water and Supply Demand

4.1 Water Supply Systems

4.1.1 Existing Water Supply Systems

General

The City of Dubbo and the villages of Wongarbon, Brocklehurst Ballimore, Eumungerie and Mogriguy are served with the Dubbo Water Supply Scheme.

The town of Wellington and the villages of Geurie and Mumbil are served with separate reticulated water supply schemes, see Figure 4.1. Almost all properties within the designated urban boundaries in these centres are, or can be, connected to the reticulation systems. Water supply schemes are not connected across the LGA.

1. Dubbo Water Supply Scheme:
   Wongarbon
   Brocklehurst
   Ballimore
   Eumungerie
   Mogriguy
   Refer the Dubbo Water Supply Reticulation Schematic Layout Plan, Figure 4.2.

2. Wellington Water Supply
   Refer to the Wellington Water Supply Scheme, Figure 4.5.

3. Geurie Water Supply
   Refer to the Geurie Water Supply Reticulation Schematic Layout Plan, Figure 4.3.

4. Mumbil Water Supply
   Refer to the Mumbil Water Supply Reticulation Schematic Layout Plan, Figure 4.4.

5. Stuart Town Water Supply
   Stuart Town Water supply is non-potable supply available at a water filling station.

6. North Yeoval is currently served by the Yeoval Water Supply Scheme, which is operated and maintained by Cabonne Council.

Other nearby smaller villages are connected to separate private non-potable water schemes or rely on rain water tanks and bores with potable water trucked in during dry periods.

Bell River, Wellington

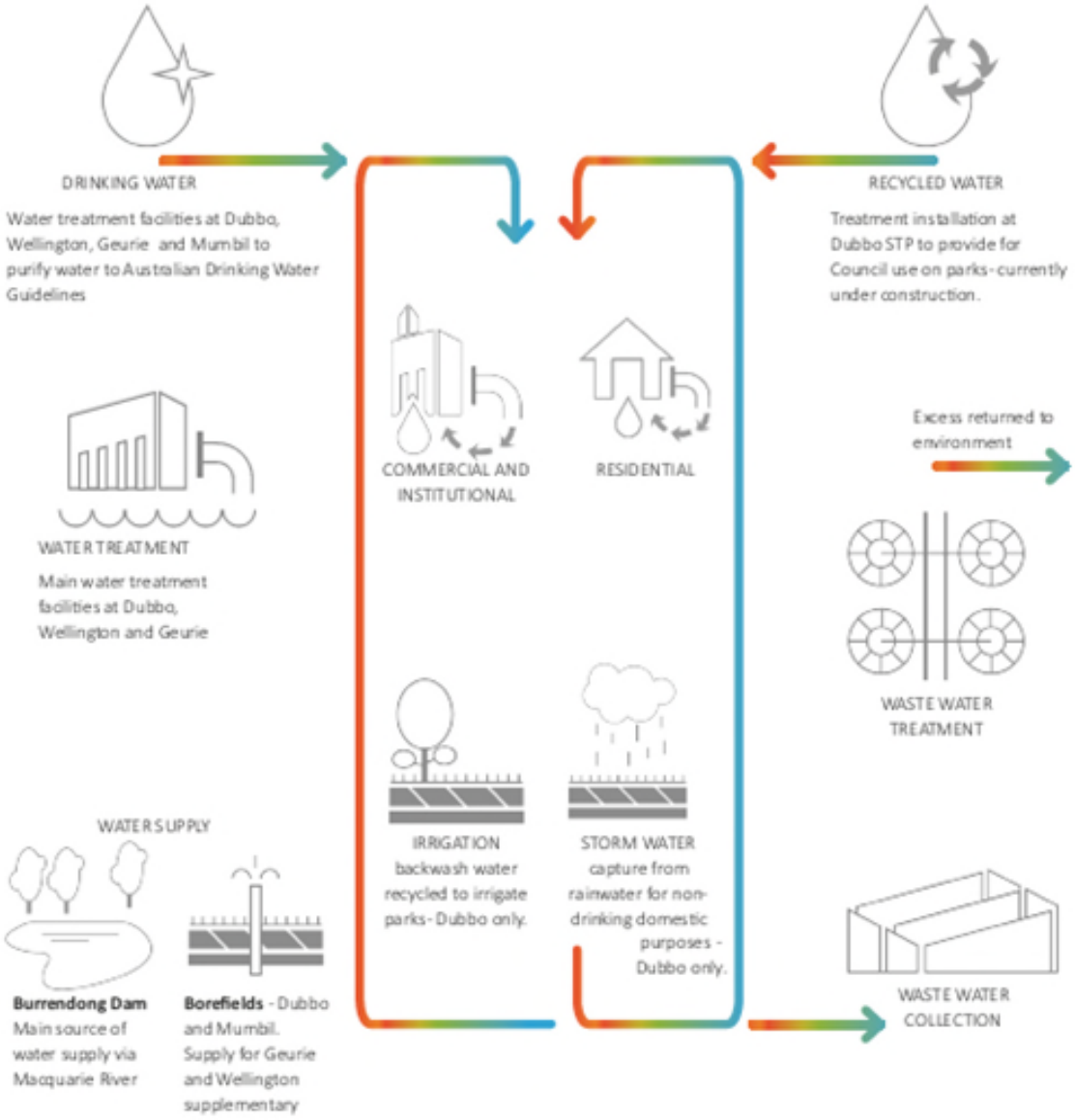


Figure 4.1: Water Source Supply, Treatment and Return to the Environment

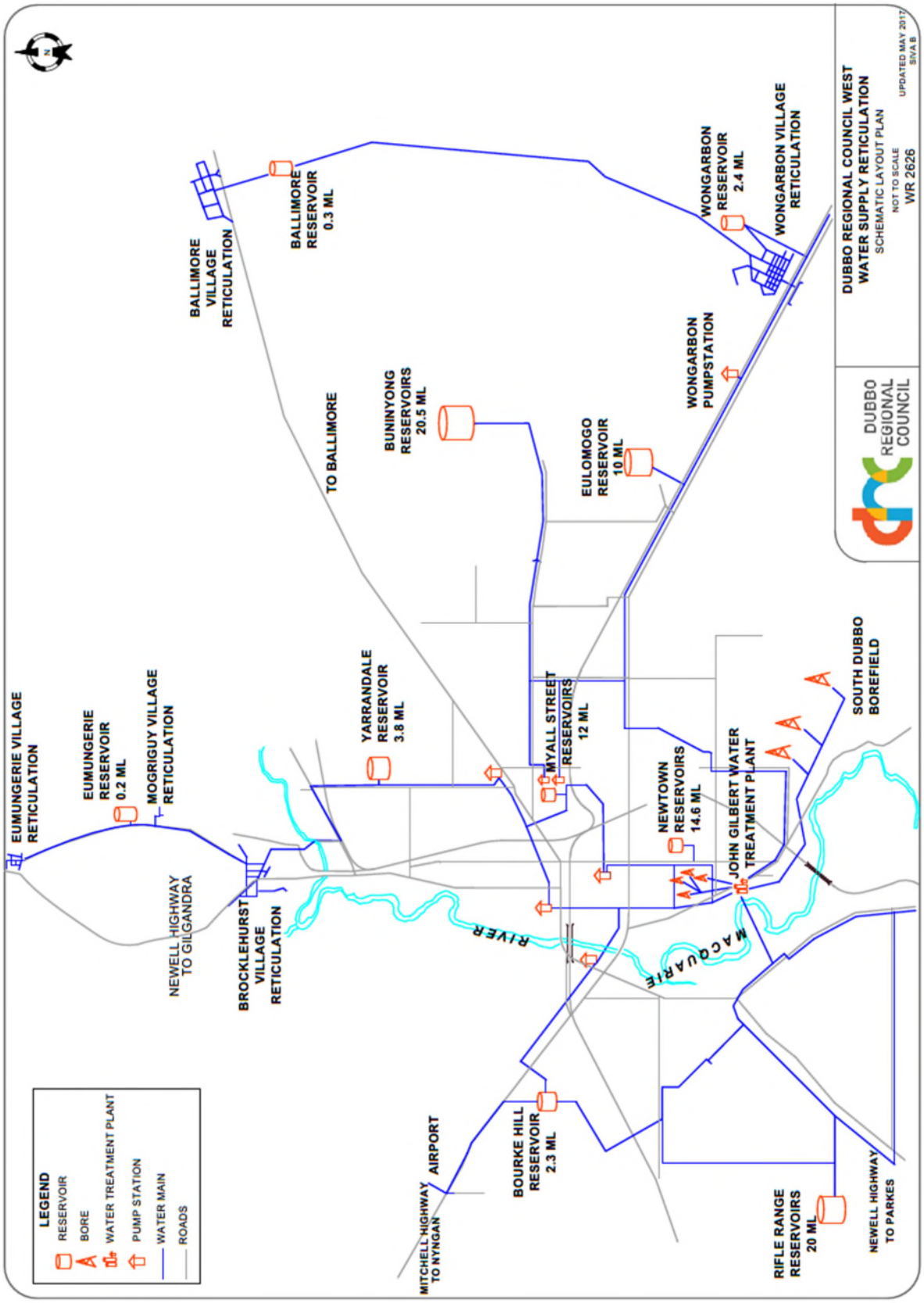


Figure 4.2: Dubbo Water Supply Reticulation Schematic Layout Plan

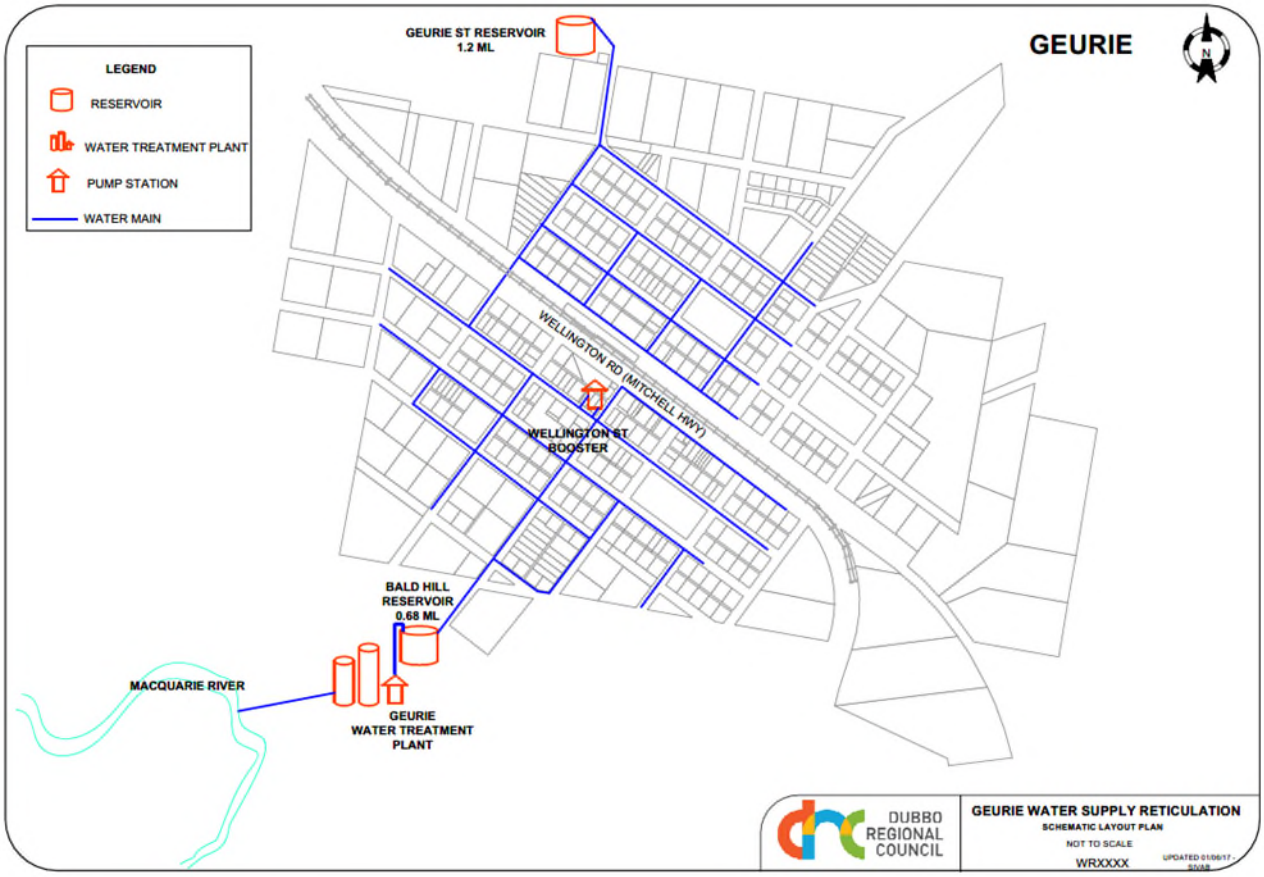


Figure 4.3: Geurie Water Supply Reticulation Schematic Layout Plan

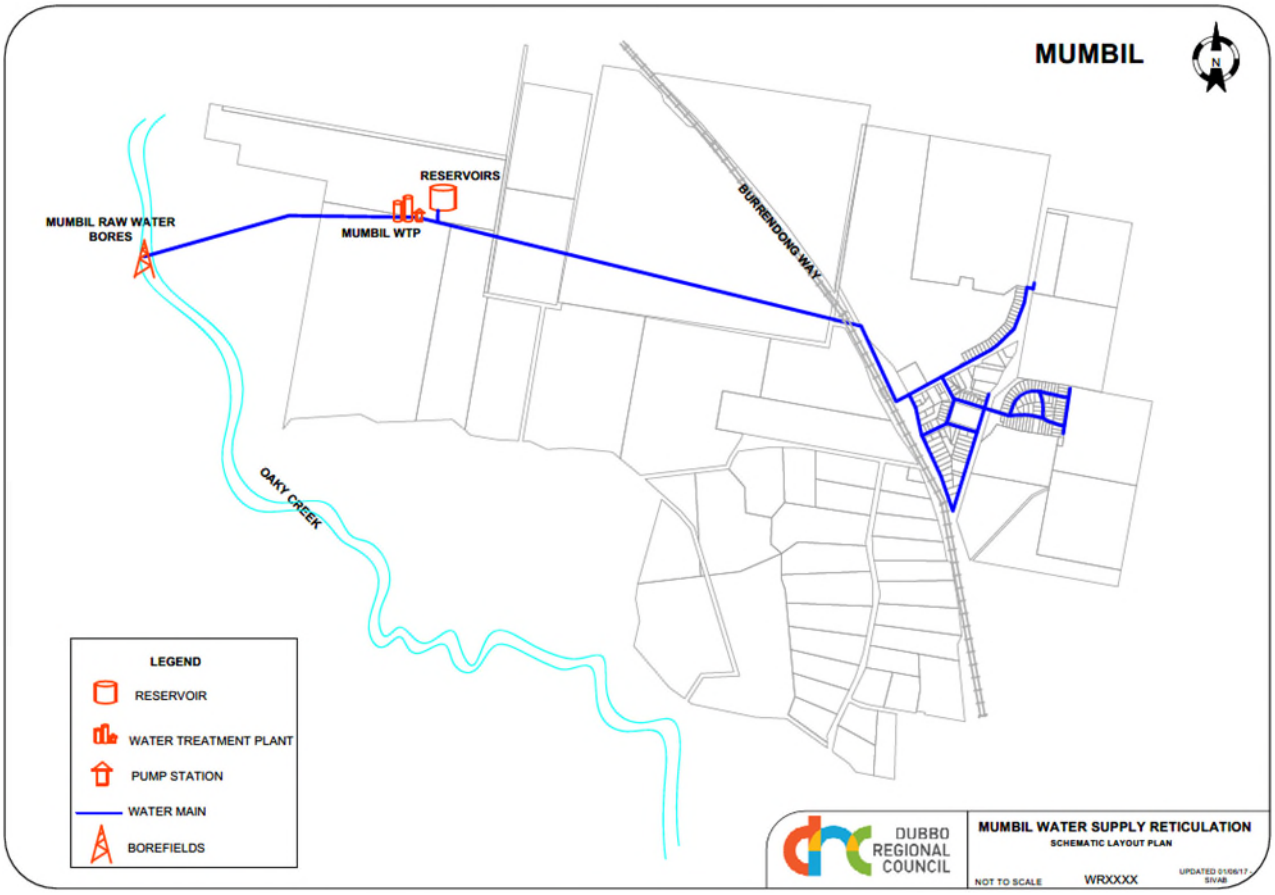


Figure 4.4: Mumbil Water Supply Reticulation Schematic Layout Plan

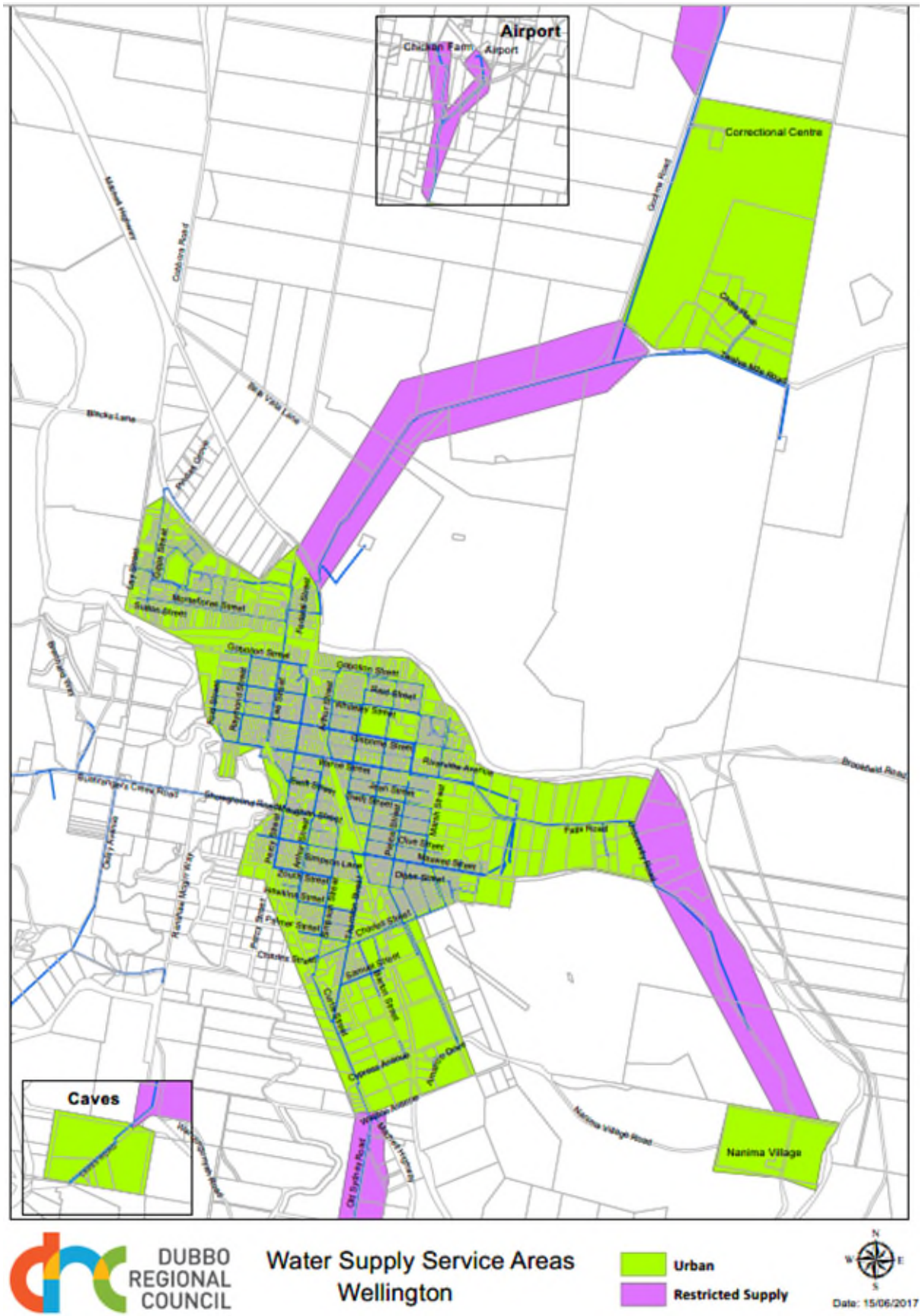


Figure 4.5: Wellington Water Supply Scheme

4.1.2 Water Allocation and Licences

Background
Burrendong Dam is the largest supplier of raw water to Council being delivered via the Macquarie River.

Water quality in the Macquarie River is highly variable, particularly during storm events that result in high turbidity in the River. Water quality is influenced by flows in the unregulated Bell River and Little River which joins the Macquarie River downstream of Burrendong Dam. Water from Burrendong Dam is the largest supplier to Council of potable supply.

Dubbo, Wellington and the other villages on the Macquarie River use less than 2% of the annual volume of water that flows down the river valley.

Dubbo also accesses ground water from operable bores in the City's vicinity. The quality of water sourced from ground water is considered to be good, and normally supplies 30 to 35% of the water being treated at Dubbo WTP. The bore water is treated for hardness while possible contamination of the bores is constantly monitored. There is concern that drawing Council's full allocation from the existing bores may not be sustainable in the long term and this is being investigated. Council is also connecting other nearby irrigation bores to the WTP with a view to increasing the capacity to extract its full ground water allocation in a sustainable manner.

Water Sharing Plan Allocation
Water available to the towns (from the Macquarie system) is determined by the Water Sharing Plan allocations for each town water supply system. Inflow verse allocation is shown below at Figure 4.6[15]. Water allocations for Dubbo, Wellington, Geurie and Mumbil are determined by DPIE under the Water Sharing Plans for the Macquarie and Cudgegong Regulated Rivers Water Source and the Macquarie Bogan Unregulated and Alluvial Water Source.

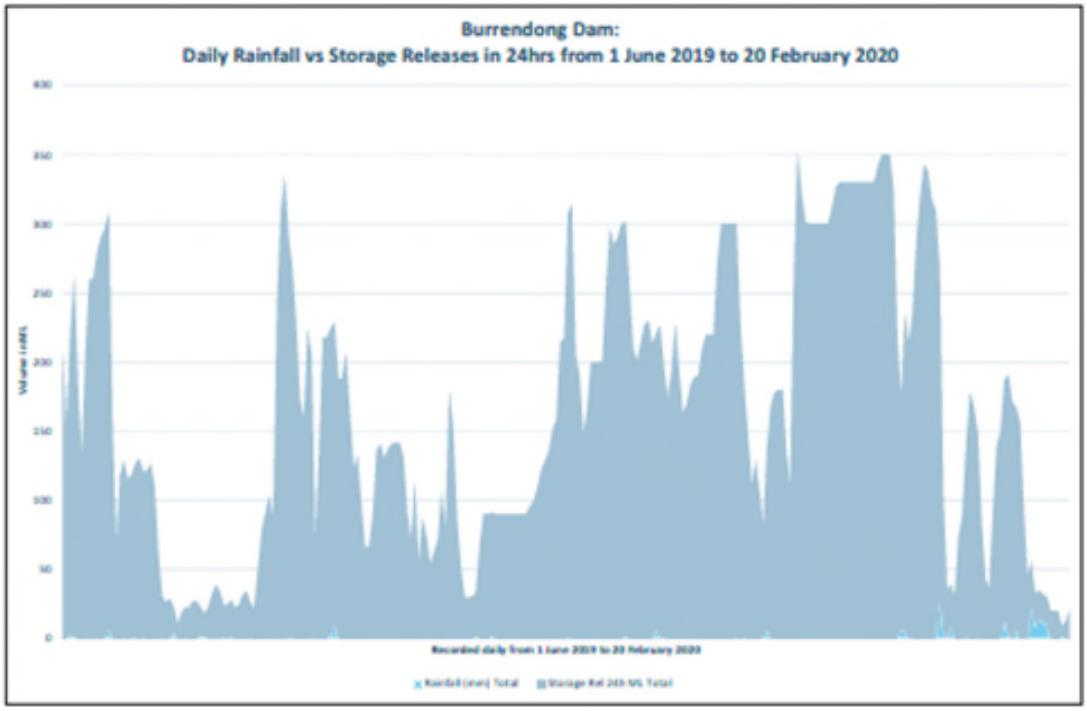


Figure 4.6: Forecast for Water Extraction from 2016 to 2051 (ML)

[15] Langdon, A (2019) *Murray Operational Drought update*, WaterNSW, viewed 1 November 2019, https://www.waternsw.com.au/_data/assets/pdf_file/0006/144573/Murray-Community-Update-May-2019.pdf

The *NSW Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source (2016)* states that:

1. *The water supply system shall be managed so that available water determinations for local water utility access licences of 100% of share components can be maintained through a repeat of the worst period of low inflows into this water source (based on historical flow information held by the Department when this Plan commenced).*
2. *The volumes of water set aside from assured inflows into this water source and reserves held in Windamere Dam and Burrendong Dam water storages or other water storages shall be adjusted as required over the course of this Plan if necessary to do so, to ensure subclause point 1, is satisfied.*

Interpretation of this clause of the Plan indicates that management of releases from Burrendong Dam will need to be adjusted to enable 100% allocations being made available in light of the current drought of record. The Council town water entitlement and Council licences to access surface water or extract ground water are shown at Table 4.1.

Licence Number	Purpose	Entitlement (ML/Annum)	Water Sharing Plan/Source
Dubbo licences for town water			
WAL6447	Surface water for town water supply	8,700	Macquarie and Cudgegong regulated rivers water source
80PT970432	Ground water for town water supply. The entitlement is restricted at 0% surface water to 2000ML.	3,850	Macquarie-Bogan unregulated and alluvial water sources: Upper Macquarie alluvial ground water source
80PT970864	Ground water for town water supply, part allocation for recreation	150	Macquarie-Bogan unregulated and alluvial water sources: Upper Macquarie alluvial ground water source
Dubbo Licences for facilities, parks and sporting fields			
80PT970045	Recreation (Elston Park) ground water	150	
80PT970188	Stock and industrial (Saleyards) ground water		
80PT971105	Recreation	50	
80PT971113	Recreation	5	
80PT971093	Irrigation	27	
Wellington, Geurie and Mumbil			
WAL6451	Surface water for Wellington WTP	1855	Macquarie and Cudgegong regulated rivers water source
WAL3008	Surface water for Wellington WTP	36	Macquarie and Cudgegong regulated rivers water source
WAL3009	Surface water for Wellington WTP	2.70	Macquarie and Cudgegong regulated rivers water source
WAL6452	Surface water for Geurie WTP	300	Macquarie and Cudgegong regulated rivers water source
WAL35088	Ground water supply for Geurie township	120	Macquarie-Bogan unregulated and alluvial water sources: Upper Macquarie alluvial ground water source

Licence Number	Purpose	Entitlement (ML/Annum)	Water Sharing Plan/Source
WAL33851	Ground water for Mumbil town water supply	70	Macquarie-Bogan unregulated and alluvial water sources: Bell alluvial ground water source
Wellington, Geurie and Mumbil licences for facilities, parks and recreation			
80SL128721	Ground water supplying Wellington Montefiores Bore	350	
WAL35293	Wellington caves ground water recreation supply	100	NSW Murray-Darling Basin Fractured Rock Ground Water Sources: Bell Alluvial Ground Water Source
WAL35683	Wellington Caves ground water recreation supply	41	NSW Murray-Darling Basin Fractured Rock Ground Water Sources: Lachlan Fold Belt Mdb ground water source
80BL236615	Unspecified bore	19	
WAL33829	Unspecified bore	25	NSW Murray-Darling Basin fractured rock ground water sources: Bell alluvial ground water source

Table 1.4: Water Access Licences

Key to the discussion on adequacy of water supply is the ability for the supply to meet the needs of basic health and hygiene requirements. Council has a responsibility to be able to supply water to communities on reticulated water supplies. Villages that are more vulnerable to drought will require alternative sources such as interim water cartage.

During drought periods cartage of water to villages without a potable water supply may be subsidised by NSW State Government and carried out by Council.

Water Cartage

Water cartage from Council to the smaller villages without a reticulated water supply is an impact requirement of longer droughts. Currently the towns that may require water cartage are Stuart Town, Elong Elong and Euchareena. It is an unlikely scenario that the town centres such as Dubbo, Wellington, Mumbil and Geurie would require water carting. This scenario is based on no availability of surface water or ground water[16].

There are essentially two categories of events that may lead to an emergency that would require water carting to be implemented:

1. *A catastrophic event leading to non-availability of raw water from the Macquarie River. This includes events such as a plane crash or road tanker with toxic load into Lake Burrendong or the Macquarie River upstream of the Dubbo weir pool; or failure of the WTP.*
2. *Long term depletion of raw water sources leading to non-availability of water from the River and local ground water sources.*

[16] Australian Bureau of Meteorology (2020) *Drought Statement, Issued 6 February 2020,* Commonwealth of Australia, http://www.bom.gov.au/climate/drought/

Under the scenario of complete failure of raw water availability from Lake Burrendong due to prolonged drought the supply of water would be more critical. The drought conditions would also lead to significant depletion in ground water availability. However, this scenario would be predictable from monitoring of storage levels and prevailing weather conditions. This means that Council would have longer lead times to implement a coordinated plan. Refer to the Water Cartage Plan at Appendix E.

Emergency management planning (Chapter 7) covers emergency conditions that could lead to the necessity for water carting.

The Emergency Water Carting for the Dubbo Region Plan investigates the infrastructure required and costs associated with water carting. These include:

- Drinking water quality problem
- Major asset failure
- Chemical, toxic spill or leak
- Natural disaster
- Criminal acts and security threats.

Council is currently reviewing its Business Continuity Plan, which will further detail management of emergency situations including water supply.

4.1.3 Surface Water

General

This section discusses surface water height/storage volume and height/surface area graphs for all water supply dams, weirs and includes performance of non-revenue water.

Burrendong Dam Volume Requirements

DPIE Water has undertaken modelling of the Macquarie-Cudgegong regulated river system over the 123 year period of record 1890 to 2013 to assess the drought reliability of the system, see Figure 4.7. The results of the analysis are summarised below[17]:

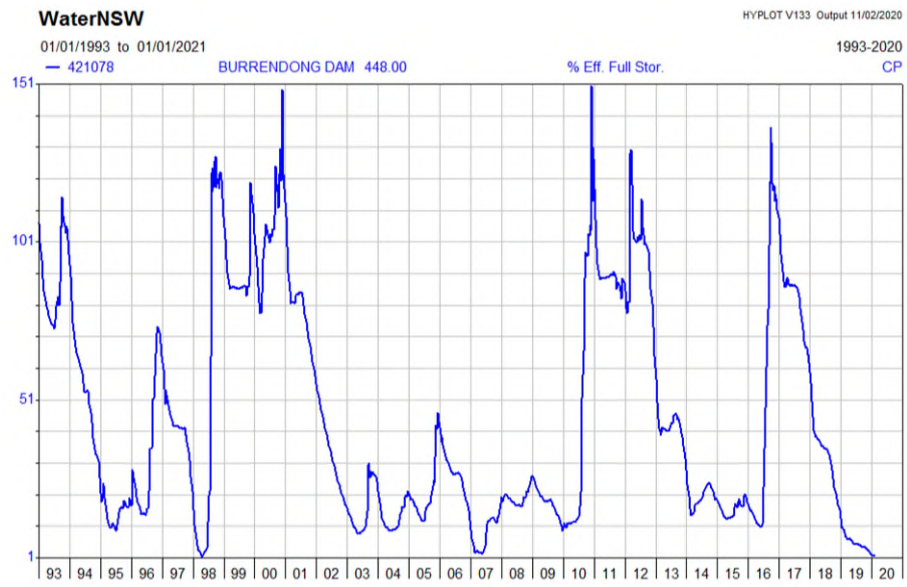


Figure 4.7: Burrendong Historical Storage Levels 1993 to 2021

[17] Ward, J. Blaike, J. (2019) *Dubbo Regional Council Integrated Water Cycle Management Issues Paper Report Number WSR-17004,* NSW Public Works Advisory, Department of Finance, Services & Innovation Crown Copyright

The volume required in Burrendong Dam to deliver all Water Sharing Plan requirements, and run the River for a full water year, prior to delivering water to any general security users, is approximately 170GL. The adopted trigger for constrained deliverability of higher priority licences is:

When Burrendong storage is below 150 GL (10% of full supply volume) on 1 July. Available Windamere storage resource has been transferred (assuming that 70 GL is required to guarantee local supply under the bulk water transfer protocol).

The *NSW Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source (2016)* states that:

"The water supply system shall be managed so that available water determinations for local water utility access licences of 100% of share components can be maintained through a repeat of the worst period of low inflows into this water source (based on historical flow information held by the Department when this Plan commenced)."

Interpretation of this clause of the Plan indicates that management of releases from Burrendong Dam will need to be adjusted to enable 100% allocations. Changes to the revised Macquarie-Castlereagh Surface Water Resource Plan (pending adoption) will see allowances for environmental water at Windamere Dam to be permitted at levels above 110GL. Refer to historic data at Figure 4.8 below:

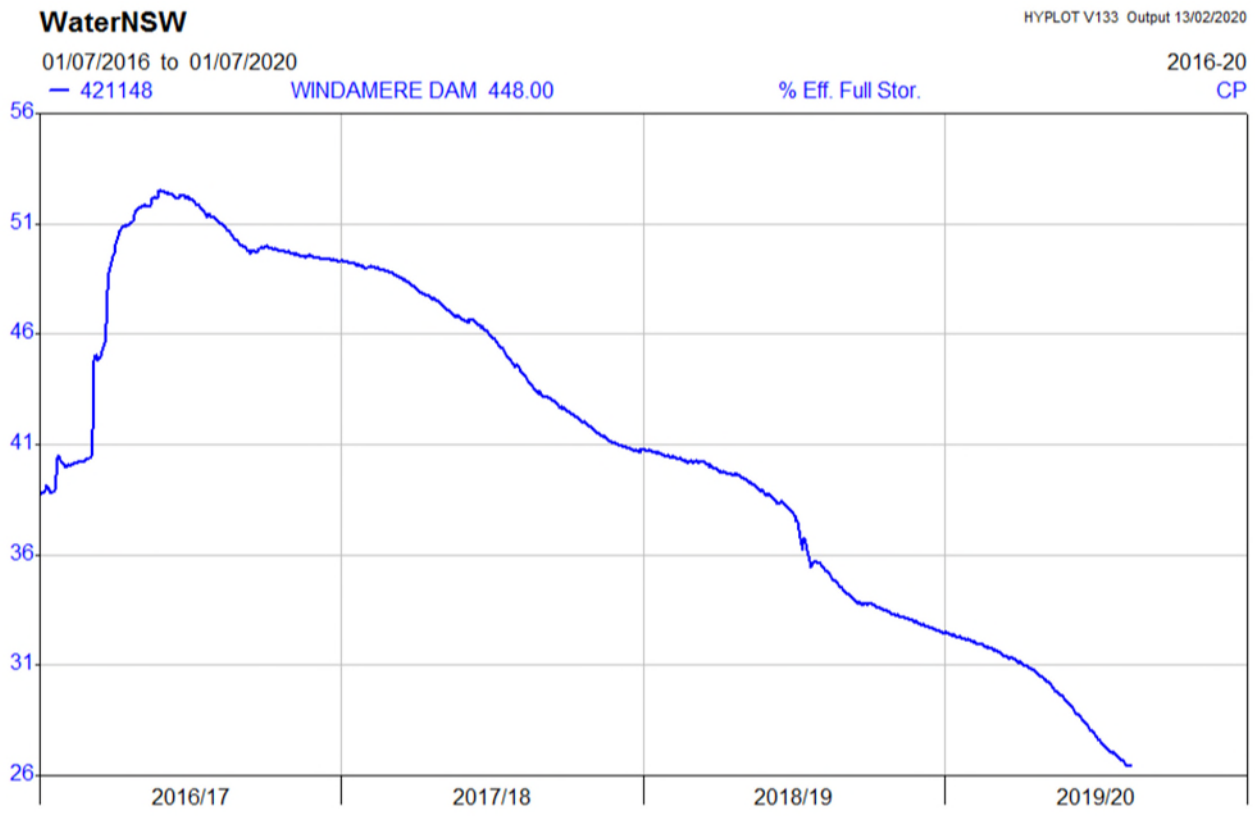


Figure 4.8: Windemere Dam since 01/07/2016

4.1.4 Ground Water

High security water licences for bores across Council are found at Dubbo, Wellington, Geurie and Mumbil. Parkland bores are shown and are not high security licences.

Dubbo

Dubbo currently has seven production bores that normally contribute 30 to 35% of the water used by the John Gilbert WTP.

The combined ground water licences for Dubbo total 4000ML/yr. During dry years, DPIE have advised there is a lowering of the ground water table that may damage the aquifer. Council has previously voluntarily reduced its pumping from these seven bores to 50%.

Testing is currently being carried out to determine the sustainable yield from the bores.
Information regarding Dubbo bores is shown at Table 4.2. The supply shown indicates the bore performance at the time that the bore was commenced.

Current safe yield levels may differ based on dry years, wet years and overall draw down of the aquifer.

In order to provide further confidence in the availability of sustainable ground water extractions Council is currently (February 2020) undertaking a project to connect at least three Council owned irrigation bores to the WTP.

Wellington

Council is currently planning the drilling and completion of a new bore adjacent to the existing bore at Montefiores.
Testing of the bore at Bicentennial oval indicates a safe yield of 15 ML/day. Together with the expected good yield from the new bore there should be sufficient water to supply Wellington without restrictions.

Completion of this project including connection to the Town water supply is scheduled for July 2020.

Geurie

A new bore near the decommissioned bores on the southern side of the Macquarie River on Arthurville Road has been completed and determined to have a safe yield of 0.4 ML/day which is sufficient to supply Geurie on Level 2 restrictions.

The project involves connecting the new bore via an under bore of the Macquarie River to the existing raw water rising main to the WTP.

Mumbil

Mumbil has a secure supply from a bore adjacent to the Bell River. The only issue is that the water is hard. Council has budgeted to install a softener.

Bore name	Licence No.	Year drilled	Pump install	Dia (mm)	Depth (mm)	Supply* (L/S)
Driftwell	V109157	1975	1976	305	55.2	36
Harper	V109158	1974	1976	304	45.7	23
Wheelers	V106337	1970	1979	324	59.2	37
Ronald	v109155	1975	1976	305	47.2	26
Thorby	v109156	1973	1976	305	70.1	24
Shibbles 1	v100431	1974	1979	304	46.6	40
Shibbles 2	v100432	1974	1979	304	49.3	90
Parkland bores						
Elston Park	v106335	1964	1966	203	61	40
Riverbank	23374	1967	1972	203	38.4	37
Martins	V106336	1957	1958	305	37.8	53

Table 4.2: Dubbo Bore Information *Bore performance at the time of commenced year

4.1.5 Water Treatment Plants

Ground water and surface water is treated at WTPs.

The Water Supply Service Areas (WSSA) are shown at:

Dubbo	Figure 4.9
Eumungerie and Mogriguy	Figure 4.10
Wellington	Figure 4.12
Geurie	Figure 4.11
Mumbil	Figure 4.14

Refer to the IWCM Strategy for greater detail regarding WTPs.

John Gilbert Water Treatment Plant

Treated water is pumped from two hydraulically connected clear water tanks at the plant, before distribution to the City of Dubbo, Brocklehurst, Wongarbon, Ballimore, Mogriguy and Eumungerie.

The connection to Eumungerie and Mogriguy includes a pump station at Brocklehurst which pumps water through a 16.6 km long rising main to a 100 kL reservoir at a high point. From there, water gravitates through a main to reticulation at Eumungerie and Mogriguy. A chlorination plant is installed and now commissioned at the Eumungerie supply.

The main reservoirs supporting this supply system are at Rifle Range, Newton, Eulomogo and Buninyong (see Table 4.3 for details).

Water Supply Scheme	Description
Dubbo - John Gilbert Water Treatment Plant	
Bore water maximum extraction capacity	27.5 ML/d
Raw water extraction capacity	64 ML/d
Pre-dosing	Powdered Activated Carbon, Ferric Chloride, Polyelectrolyte, Soda Ash, Lime
Clarification	Conventional
Post clarification	Re-carbonate
Filtration	6 sand/coal gravity filters
Chlorination	Chlorine, Fluoride
Clear water tank	4.5 ML

Table 4.3: Dubbo – John Gilbert WTP

Wellington Water Supply Scheme

The Wellington scheme was commissioned in 1993 and is not as complex. The reservoirs that support this system are located at Barton, Montefiores and Hospital Hill, at Table 4.4.

Water Supply Scheme	Description
Wellington	
Raw water maximum extraction capacity	25 ML/d or 19.4
Bore water extraction capacity	Not currently in operation.
Treatment capacity	14.6 ML
Pre-dosing	Powdered Activated Carbon, PACL, Lime, Polymer, Potassium permanganate

Water Supply Scheme	Description
Sedimentation	Two settling lagoons
Post Clarification	Hydrated lime
Filtration	6 sand/rapid gravity filters
Chlorination	Chlorine, Fluoride
Clear water tank	0.8 ML

Table 4.4: Wellington WTP

Geurie water supply scheme

This water scheme is a simplified scheme with reservoirs at Bald Hill and Geurie Street and a booster at Wellington Road, at Table 4.5.

Water Supply Scheme	Description
Geurie	
Raw water maximum extraction capacity	22 ML/d
Bore water maximum extraction capacity	Not currently in operation.
Treatment capacity	1.5 ML
Pre-dosing	Powdered Activated Carbon, Alum, Soda Ash and Powdered Activated Carbon
Sedimentation	Two settling lagoons
Post Clarification	Soda Ash
Filtration	6 sand/coal/rapid gravity filters
Chlorination	Chlorine
Clear water reservoir	15 kL

Table 4.5: Geurie TWP

Mumbil Water Supply Scheme

The Mumbil system was constructed in 1955. The scheme currently serves approximately 250 persons. The WTP is co-located with the reservoir for the Village.

Water Supply Scheme	Description
Mumbil	
Raw water maximum extraction capacity	11 ML/d
Chlorination	Chlorine Bore water is chlorinated without pre-treatment
Clear water tank	32 kL

Table 4.6: Mumbil WTP

Stuart Town, Euchareena and Elong Elong Water Supply Scheme

The villages have limited schemes and are reliant on majority of water from individual rainwater tanks and bores.

Euchareena (approximately 25 houses) have a limited non-potable water supply scheme operated by residences in conjunction with individual household rainwater tanks. Not all properties within Euchareena are connected to the communal scheme.

North Yeoval Water Supply Scheme

This water scheme is managed by Cabonne Council.

Identified risks to WTPs

Council's Business Continuity Plans cover the ongoing development and management of strategies around the two main risks:

- Loss of production at WTPs
- Extended power interruption at WTPs.

Emergency management considers these risks within the Plan at Chapter 7.

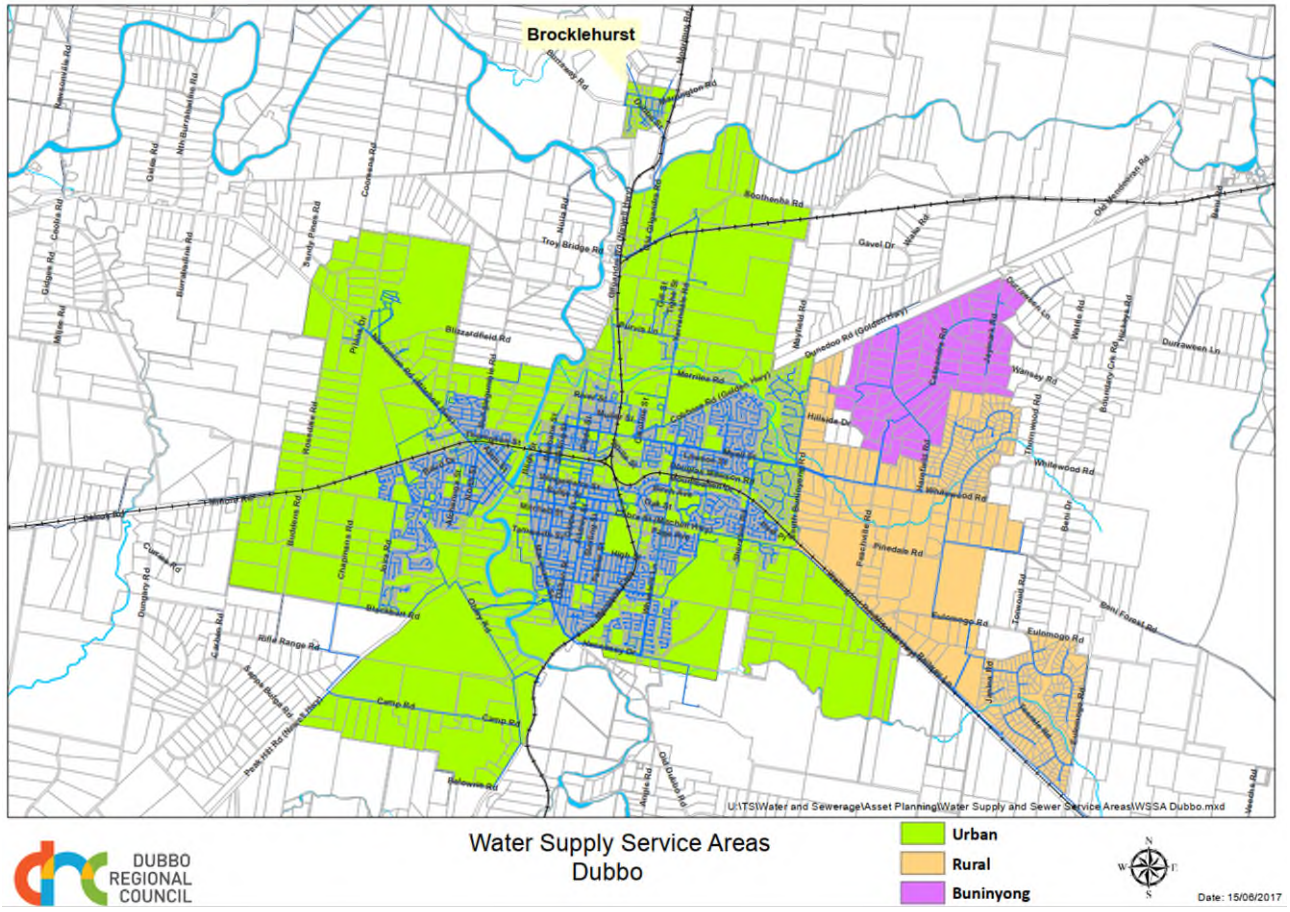


Figure 4.9: Water Supply Services Areas for Dubbo

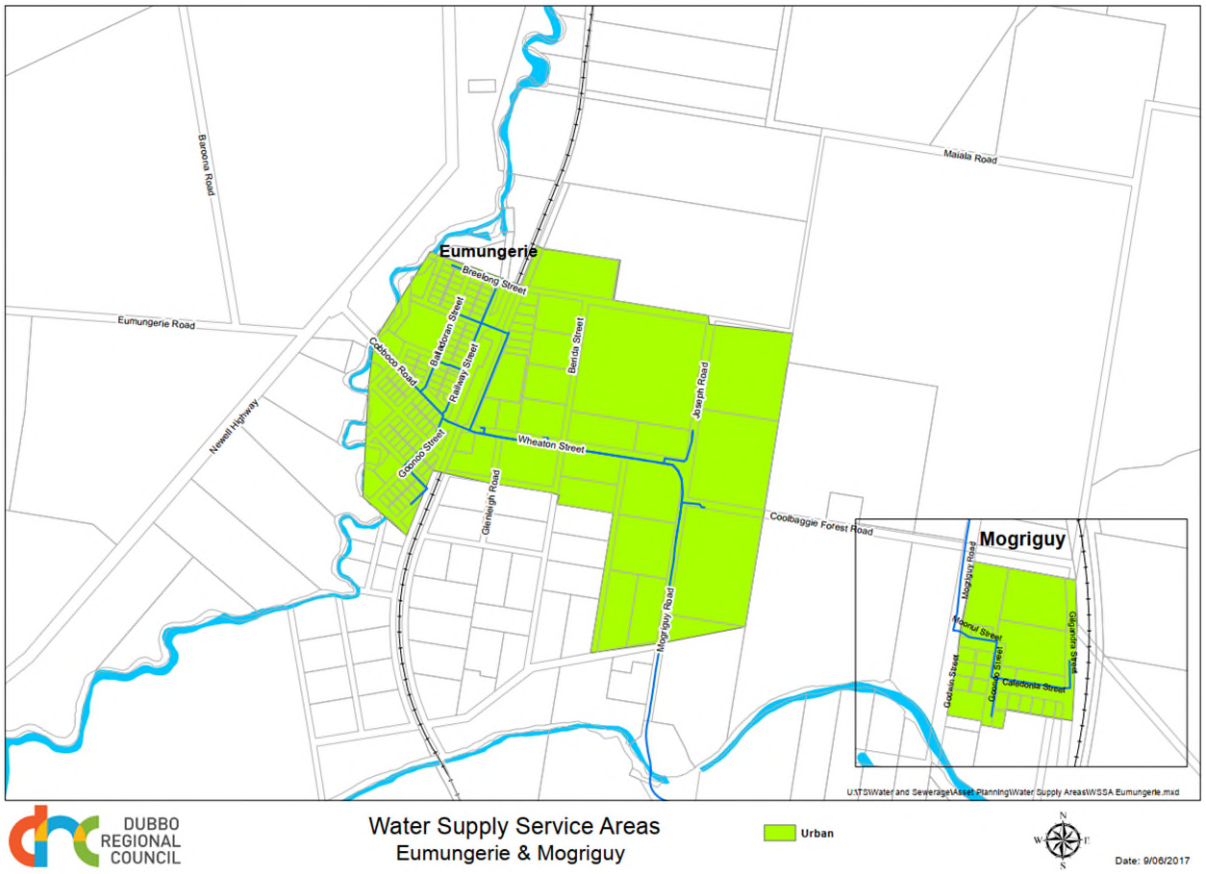


Figure 4.10: Water Supply Service Areas for Eumungerie and Mogriguy

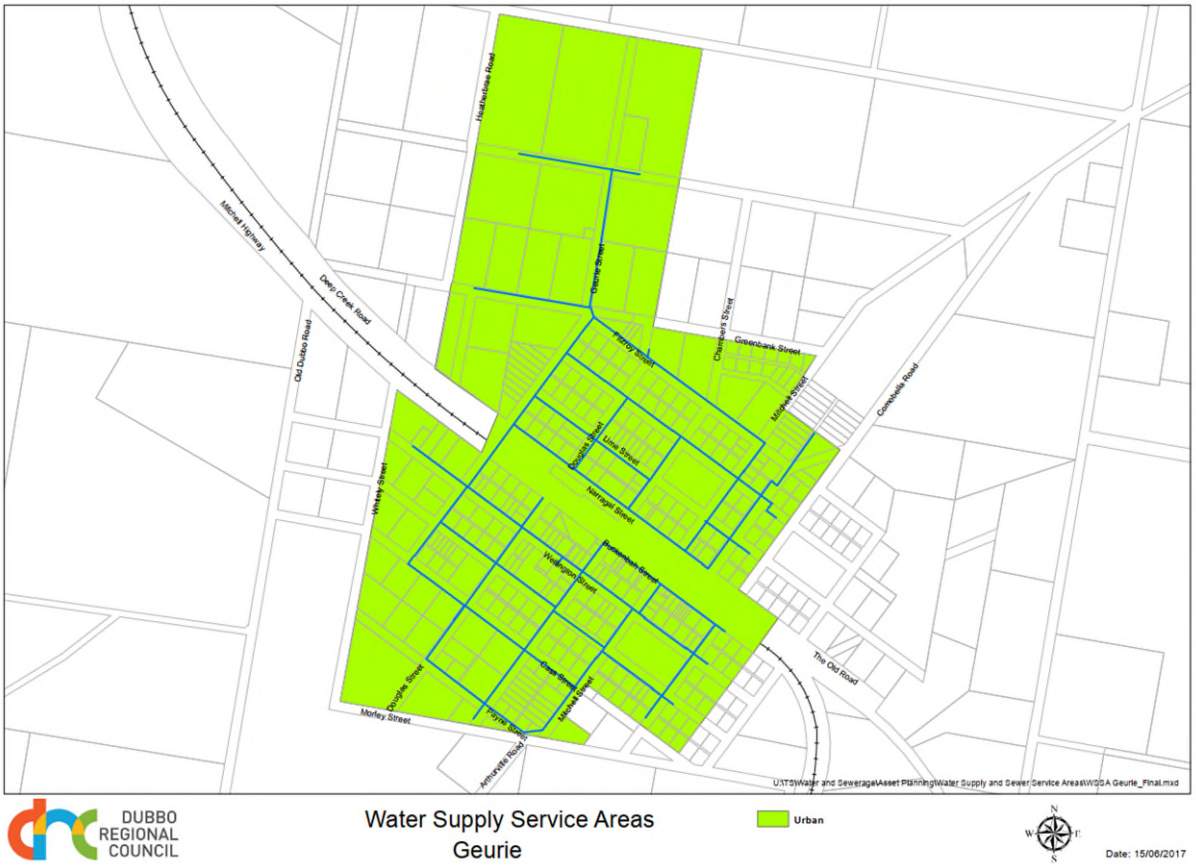


Figure 4.11: Water Supply Service Areas for Geurie

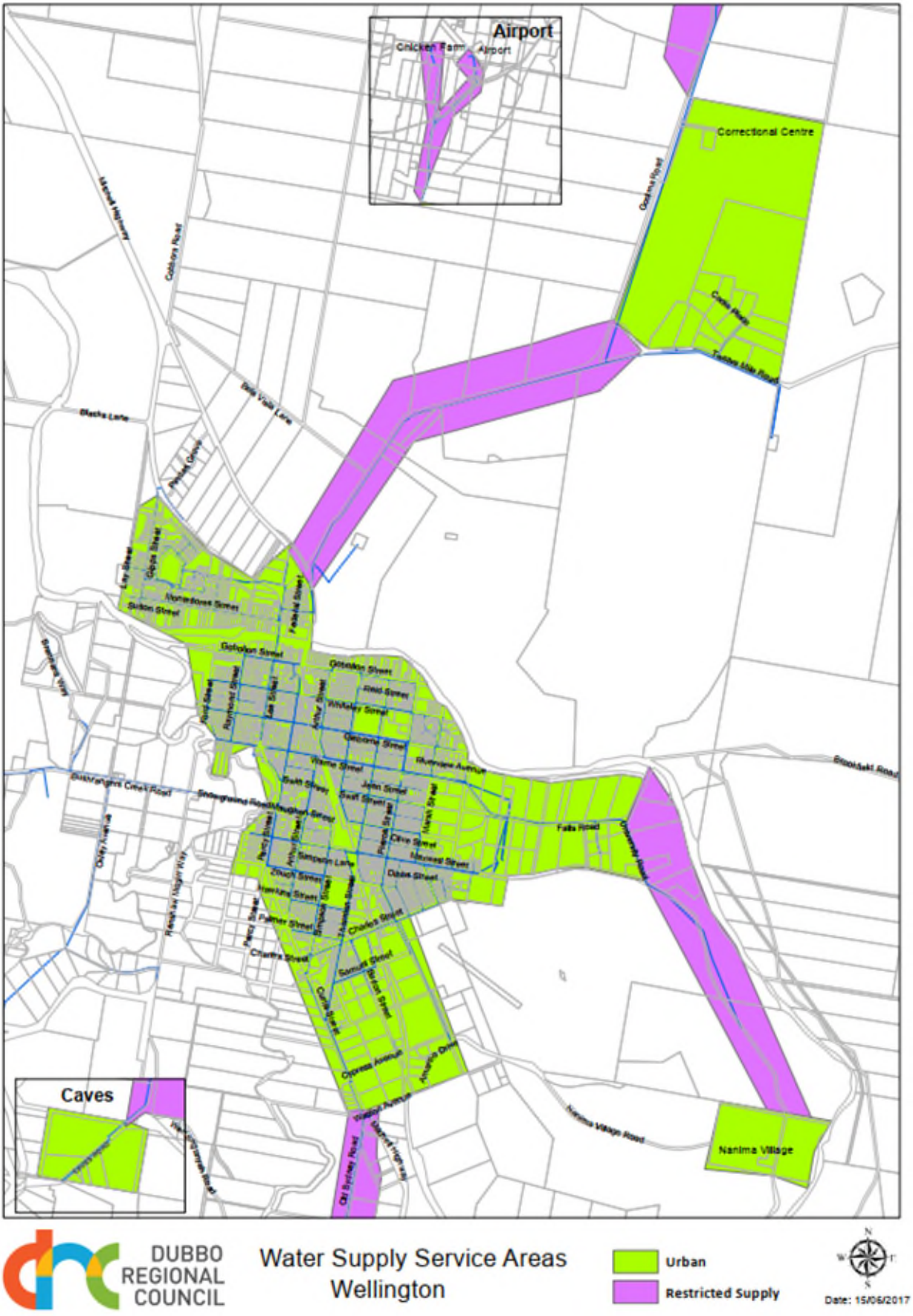


Figure 4.12: Water Supply Service Areas for Wellington

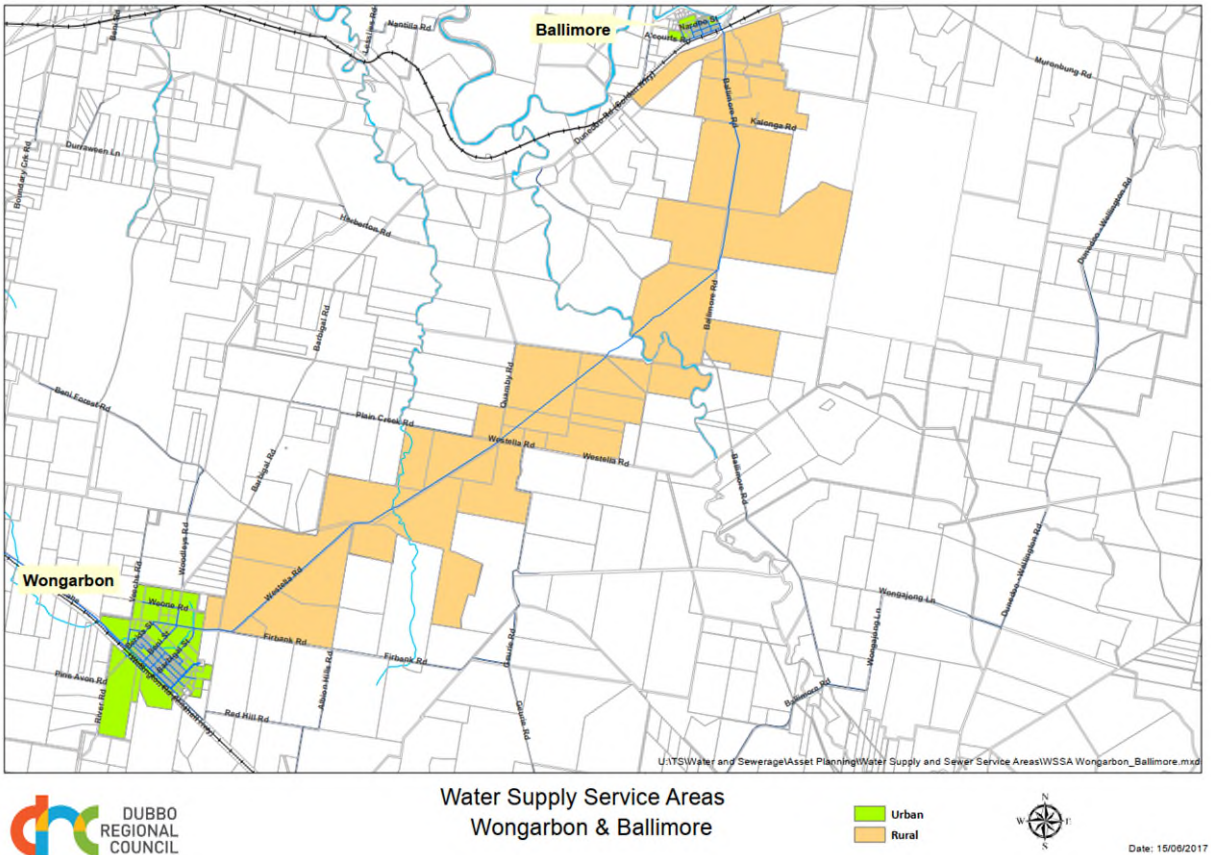


Figure 4.13: Water Supply Services Areas for Wongarbon and Ballimore

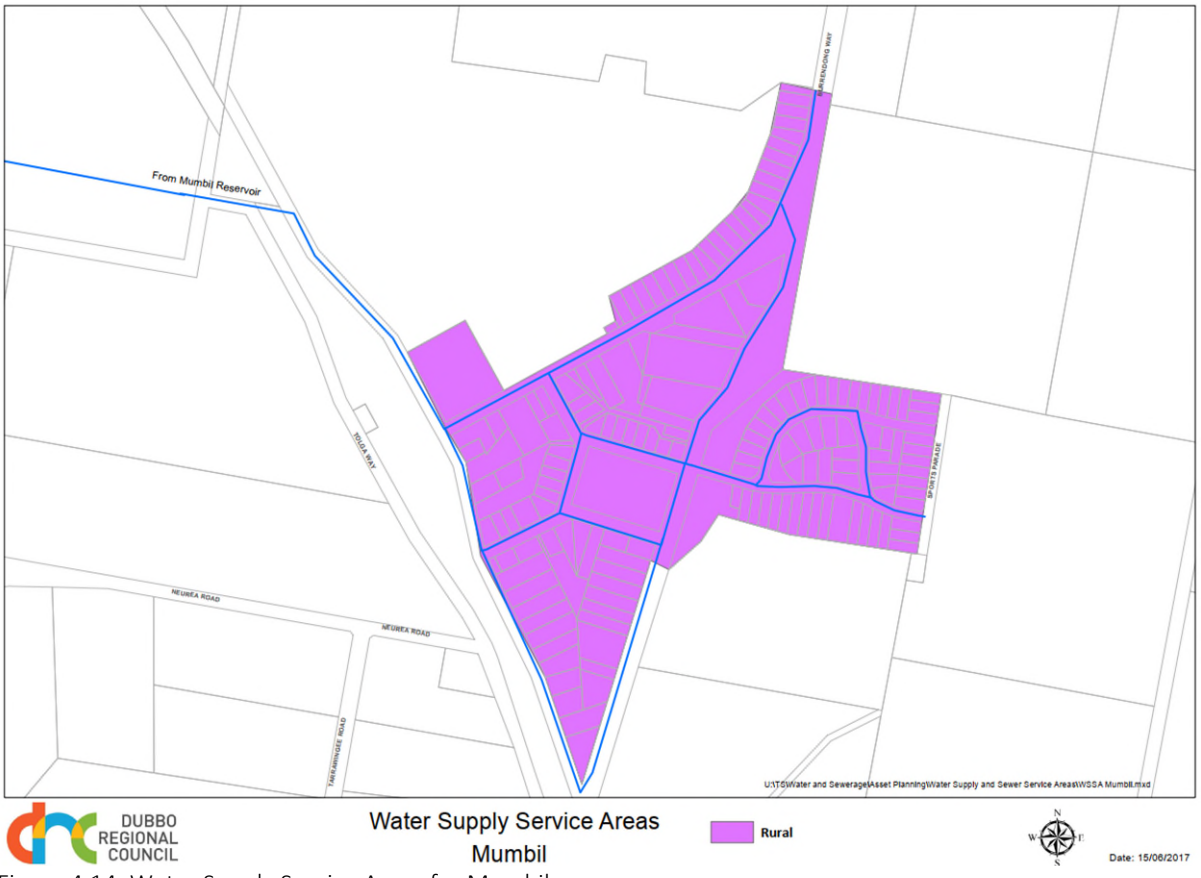


Figure 4.14: Water Supply Service Areas for Mumbil

4.1.6 Sewage and Storm Water

Wastewater Systems

Dubbo Regional Council operates separate sewerage schemes for Dubbo (including Brocklehurst), Wellington, Geurie, Mumbil and Wongarbon. Outside of these service areas, onsite sewage management (including septic tanks, aerated wastewater treatment systems, pit toilets and composting toilets) and private sewerage systems are used.

Wastewater treatment processes rely on both biological processes and chemical processes to treat wastewater to an acceptable quality for discharge into local waterways under licence.

Treatment processes include:

- Inlet works
- Biological treatment
- Chemical treatment
- Biosolids handling
- Effluent disinfection

Dubbo Sewage Treatment Plant

Dubbo and Brocklehurst return waste water to Dubbo STP. Once treated the effluent may be used:

1. For irrigation of the STP grounds and bird wading ponds.
2. To irrigate nearby farm land. Farm land includes Fletchers International (abattoir), Polldale and Greengrove.
3. For irrigation at sports fields and parks.
4. Treated effluent, under licence conditions, may be discharged to the Macquarie River. Treated effluent is only discharged to the Macquarie River during wet weather events when the storage ponds reach capacity.

Biosolids are applied as a soil conditioner at the Greengrove effluent facility.

The sewage received at the Dubbo STP is currently treated and then irrigated on Council owned and some privately owned properties in order to produce fodder (under licence).

Council received $30m in funding to secure the City's town water supply and is currently undertaking an effluent reuse project with a view to substituting irrigation of some parks and recreation facilities with treated effluent.

The project also includes delivering treated effluent to the Taronga Western Plains Zoo and eventually to an irrigator south of the City in exchange for bore water.

Further effluent reuse is being scoped across parks and recreational areas.

Wellington Sewage Treatment Plant

The sewage system at Wellington is via pumping stations, 84.4 km reticulation and rising mains that transport the sewage to a STP.

The effluent is disinfected and is currently discharged into the Macquarie River. Council is currently planning on discharging directly into the Macquarie River via a pipeline.

Geurie Sewage Treatment Plant

The Geurie Sewerage Scheme comprises approximately 9.5 km of gravity sewers, 1.5 km of rising mains, one sewage pumping station and an STP. The Geurie STP treats sewage to a standard suitable for irrigation and is allowed to be discharged into a nearby creek during wet weather events.

Wongarbon Sewage Treatment Plant

The Wongarbon STP treats sewage to oxidation and evaporation ponds. Effluent is also irrigated via a centre pivot on adjoining land.

Mumbil Wastewater

Mumbil has a common effluent system where the effluent from private septic tanks is discharged to oxidation/evaporation ponds.

4.1.7 Water Supply for Open Space

Approximately two-thirds of irrigation demand is met by town (potable) water. The remaining one-third of irrigation demand is met by either raw bore or river water, with approximately 80% being irrigated with bore water and 20% with raw river water. A small area is irrigated through effluent reuse.

Parks irrigated with river water are at a very high risk, as it is likely that general security allocations fall below 100% of allocation in dry years. 'Zero' allocations during some years are also a possibility.

Reduced general security allocations occurred during 15 of the last 30 years, a trend that is likely to continue with an increase in rainfall variability and drought frequency and severity. The cease to flow of surface water triggers will incorporate the level of reduction of water for parks and recreation purposes. This will have severe impacts on the ability of Council to maintain the upkeep of its green open spaces, which are of significant importance to the region. Water NSW is considering raising the Rock Point Weir to sustain water supply to assist with this purpose.

By contrast, falling ground water levels in are a more localised issue. This mainly only affects the ground water level in the vicinity of the bore. This occurrence is largely limited to the South Dubbo Borefield. The issue is less prevalent, or does not exist, at borefields 5 to 10 km upstream or downstream of Dubbo.

It is recommended that Council consider under-utilised high security licences due to its voluntary extraction limit. It may therefore be possible to use a portion of the remaining high security licences at other parks for irrigation purposes.

Current parks and recreation restrictions tables are at Appendix D.

Use of Recycled Water and Water Efficient Landscaping

Recycled sewage effluent is used for agricultural purposes in Dubbo.

Storm water harvesting and reuse programs are proposed for Council.

In addition to the use of recycled water for open space irrigation, Council has implemented water efficient turfing and landscaping in some open space areas.

Stormwater Reuse

Council has installed a stormwater reuse system at Apex Oval. A grant application has been submitted for further capture, treatment and reuse of stormwater near the Macquarie River.

4.1.8 Water Security

Water security is a longer term issue that is not drought specific and is part of the IWCM strategy and supported within the Business Continuity Plan.

Drought Reliability

Drought reliability and the strategies are important to ensure that during drought water supply is reliable, safe to use and measurable.

During the current drought water security measures of immediate concern include:

- Additional ground water allocations on a temporary basis are available to be purchased. Treatment of effluent to a standard suitable for reuse on Council recreation areas utilising part of the $30m funding from the State Government. Connection of irrigation bores to the WTP in order for Council to extract more water, utilising part of the $30m funding from the State Government
- Bore water supply associated with higher security licences at Wellington and Geurie are functioning and available as an emergency supply.
- The Burrendong Pipeline Project in line with $30m received funding and the Critical Water (Bill) NSW 2019.

Triggers that relate to worsening drought include the assessment of available surface water supply. Ground water supply is considered the emergency supply that Council must rely on should surface water in the Macquarie River cease to flow.

Demand Management

All Council operated facilities are required to:

- Submit Water Saving Actions Plans.
- Comply with published non-residential restrictions for commercial and institutional facilities.
- Parks and gardens are designated water reductions in line with published Council's restrictions.

Note: Refer to 4.2 Demand Management for further information regarding peak daily demand information.

These Tables are at Appendix D.

New Residential Development Zones

Systems upgrades are included in planning and strategic development under the IWCM. This includes planning for expanded areas of residential supply

Drought Modelling

Drought modelling of Burrendong Dam releases will be undertaken by DPIE and WaterNSW in order to provide more secure water supply to LWUs and high security users in future droughts of record.

4.1.9 Water Quality

Water Source Quality

Raw water quality may impact the ability of Council to supply a large number of customers with potable water meeting the Australian Drinking Water Guidelines. Incidents and risks are set out in the Emergency Response Plan.

Levels of service for water quality are set out in detail within the Business Continuity Plan, IWCM Strategy and Issues Paper. Drinking Water Management Systems (DWMS) have been prepared for the former Wellington and Dubbo councils. These systems define the Critical Control Points (CCP) for drinking water quality. Operational limits for each system are shown below at Table 4.7:

Critical control point	Operational limits	Adjustment limits	Critical limits
Dubbo Water Supply			
CCP1 pH	6.5 – 8.5	<7.0- >8.0	<6.5- >8.5
CCP2 Turbidity	<5.0 NTU	>0.2 NTU	>1.0 NTU
CCP3 Colour	<15.0 HU		
CCP4 Free Chlorine – High	2.0 – 3.0 mg/L	>2.5	>4.5
CCP5 Free Chlorine – Low	2.0 – 3.0 mg/L	>1.5	>1.5
CCP6 Fluoride – High	0.8 – 1.2 mg/L	>1.0	>1.2
CCP7 Fluoride – Low	0.8 – 1.2 mg/L	<0.8	<0.9
Wellington Water Supply			
Mixing, flocculation and sedimentation: Turbidity	1.5 – 4.0 NTU	2.0--4.0 NTU	>4.0 NTU
Mixing, flocculation and sedimentation: pH	7.5 – 8.0	<7.5- >8.2	<6.5- >8.5
Six filtration units: Turbidity	0.2 – 0.5 NTU	>0.5 NTU	>1.0 NTU
Clearwater quality: Turbidity	0-0.5 NTU	0-1.0 NTU	>1.5 NTU
Clearwater quality: pH	7.4 – 8.2	<7.4 and > 8.2	<7.0- >8.6
Clearwater quality: Free Chlorine	2 – 4 mg/L	<2.0 - >4 mg/L	<1.5 - >2.0 mg/L
Post dose chlorination: Chlorine Residual at CWT Outlet	2-5 mg/L	<2 - >5 mg/L	<2 - >5 mg/L
Fluoridation Plant: Fluoride content	0.95 – 1.1 mg/L	<0.95 - >1.1 mg/L	<0.8- >1.5mg/L

Table 4.7: Water Quality Critical Control Points Operational Limits – Dubbo and Wellington

Critical control point	Operational limits	Adjustment limits	Critical limits
Geurie Water Supply			
Mixing, flocculation and sedimentation: Turbidity	1.5 – 4.0 NTU	2.0--4.0 NTU	>4.0 NTU
Mixing, flocculation and sedimentation: pH	6.8 – 8.5	<6.5- >7.5	<6.5- >8.0
Six filtration units: Turbidity	0.2 – 0.5 NTU	>0.5 NTU	>1.0 NTU
Clearwater quality: Turbidity	0-0.5 NTU	0-1.0 NTU	>1.5 NTU
Clearwater quality: pH	7.4 – 8.2	<7.4 and > 8.2	<7.0- >8.6
Clearwater quality: Free Chlorine	1 – 1.5 mg/L	<1.0 - >1.5 mg/L	<0.5 - >2.0 mg/L
Post dose chlorination: Chlorine Residual at CWT Outlet	1.0 – 2.0 mg/L	<1 - >1.2 mg/L	<0.6 - >5.0 mg/L
Mumbil Water Supply			
Post dose chlorination: Residual Chlorine at the Clear Water Tank Outlet	0.9 – 1.2 mg/L	<0.9 - > 1.2 mg/L	<0.2 - >1.5 mg/L

Table 4.8: Water Quality Critical Control Points Operational Limits – Geurie and Mumbil

4.1.10 Water Supply Monitoring

Monitoring Water Quality

Water quality is managed for several factors. These include:

- Effective disinfection of water leaving the WTPs by measuring Free Chlorine Levels.
- Calculation of minimum chlorine contact time to ensure sufficient inactivation of chlorine for chlorine sensitive pathogens.
- Periodic inspection of reservoirs
- Daily monitoring of town water quality in Dubbo and weekly monitoring at other supply systems.

The Department of Health is considering introducing Health Based Targets (HBTs) as a measure of microbial safety of water. The current treatment capability and assessment category of the WTPs is presented in Table 4.9 below. Further detail can be found within the IWCM Issues Paper.

Treatment Process - Turbidity Target (CCP for treated water is between 0-0.5 NTU, if the treatment plant can consistently produce water with turbidity ≤0.3 NTU, the LRV of Conventional filtration	Log Reduction Value (LRV) Credit		
	Protozoa	Virus	Bacteria
Dubbo Water Supply - Conventional filtration			
Individual filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes. Combined filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes.	3.0	2.0	2.0
Chlorination (C.t of 161.9 mg.min/L)		4.0	2.0
Dubbo Total LRV	3.0	6.0	4.0
Wellington Water Supply - Conventional filtration			
Individual filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes. Combined filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes.	3.0	2.0	2.0
Geurie Water Supply			
Individual filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes. Combined filtrate turbidity ≤0.3 NTU for 95% of the month and not >0.5 NTU for 15 consecutive minutes.	3.0	2.0	2.0

Table 4.9: Water Supply HBT

4.2 Demand for Water

Overview

This section covers the demand management aspects of delivering a water supply system. Information regarding day-to-day operations and demand assessment are part of the IWCM. The DCWERP covers high level information and data to support the actions of the Plan.

Demand management is covered under the NSW Office of Water Best Practice Management Guidelines[18]. Demand management should cover four elements:

1. Demand monitoring
2. Demand forecasting
3. Demand management planning
4. Implementation.

Water conservation measures were developed for the former Dubbo City Council under the Demand Management Plan 2014.

The information provided within this section complies with best practice guidance. It will cover:

- Historical demand information.
- Management of areas such as new release areas.
- Identification of normal and minimal potable and non-potable water requirements.
- Fire-fighting and issues of pressure availability.
- Tourism demand.
- Impacts of demand by major users or large water consumers.
- Trigger information.
- Current water usage information and production.

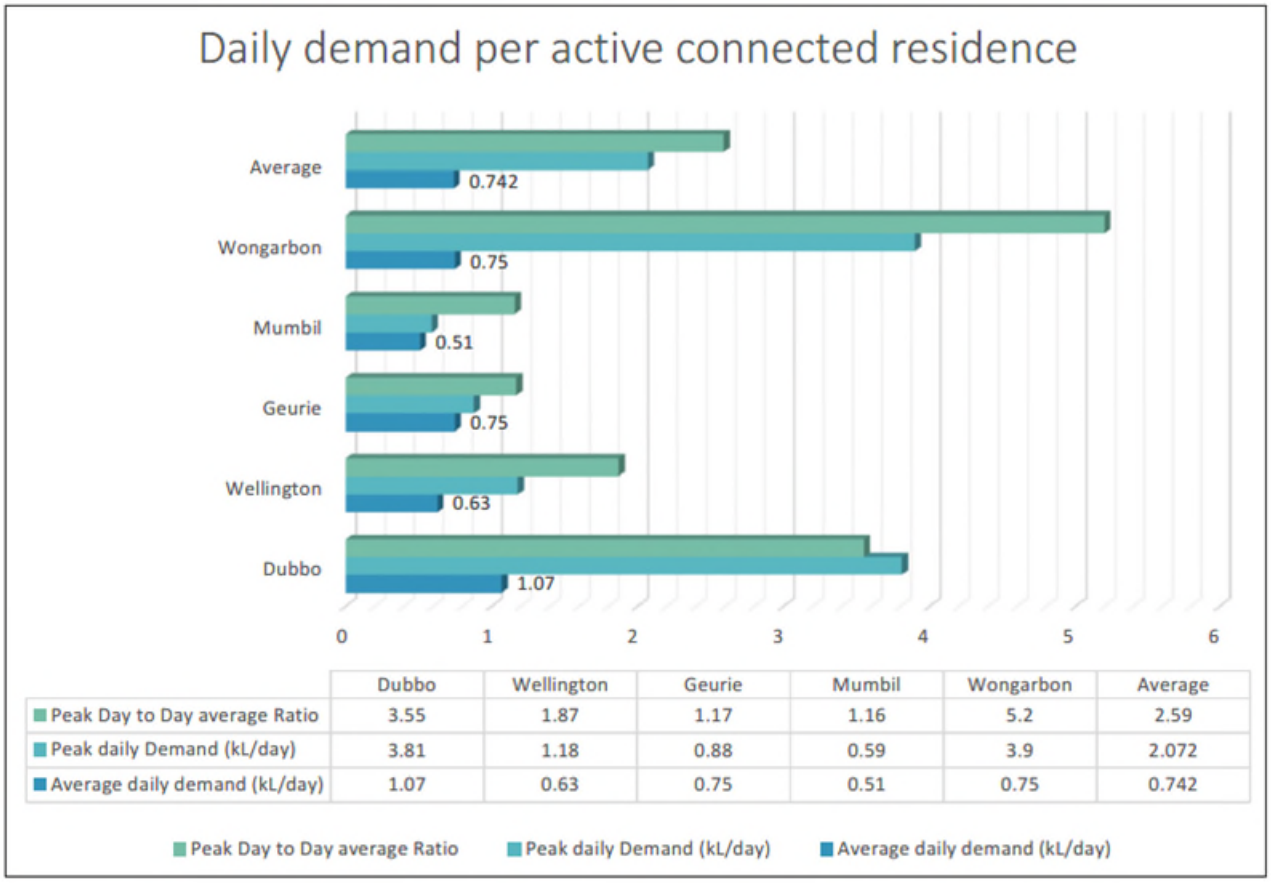
Council's demand management of the water supply during drought periods can include:

- Active reduction of demand through water restrictions.
- Promotion of leak detection, pressure management and water efficiency programs for residential and commercial use.
- Implement water recycling.
- Installation of rainwater tanks across all Council buildings and facilities.

A Note on Water Triggers

Water triggers are discussed within the context of demand management and as they relate to water restrictions. However, this document supports a transition to a system of information to support decision making on drought and restrictions.

[18] Samra, S., McLean, C. (2007) *Best-Practice Management of Water Supply and Sewerage Guidelines*, Crown Copyright, NSW Department of Water and Energy



	Dubbo	Wellington	Geurie	Mumbil	Wongarbon	Average
Peak Day to Day average Ratio	3.55	1.87	1.17	1.16	5.2	2.59
Peak daily Demand (kL/day)	3.81	1.18	0.88	0.59	3.9	2.072
Average daily demand (kL/day)	1.07	0.63	0.75	0.51	0.75	0.742

Figure 4.16: Average Daily Demand for Residential Water Usage

4.2.1 Demand Management

Historic Demand Data

The demand for water was based on current data information to set the baseline. The baseline data is the standard estimated water consumption per person per day for residential use. Residential uses include indoor activities, such as showering, toilet flushing, dish washing and external use for garden maintenance.

The baseline data for water demand across connected residents from Dubbo and Wellington is 357 kL residence per year. Daily demand (Figure 4.16) and Annual demand (Figure 4.17) per active connected residence charts are shown. These figures are derived from data from 1 January 2013 to 13 February 2017.

Bulk water production is metered and monitored. This includes accounting for non-revenue water.

System Leakage

There are unidentified sources of 'leakage' across the town water supply system. Where this occurs the data is assessed for outlier peak demand uses that have affected the general modelling. For example, Wellington residential water demand can be affected by institutional uses from the correctional centres located nearby. These facilities use tanks and periodically refill from town water. When this occurs figures for Wellington demand spike. These types of intermittent water demands are systematically assessed across water demand to reduce inaccuracy.

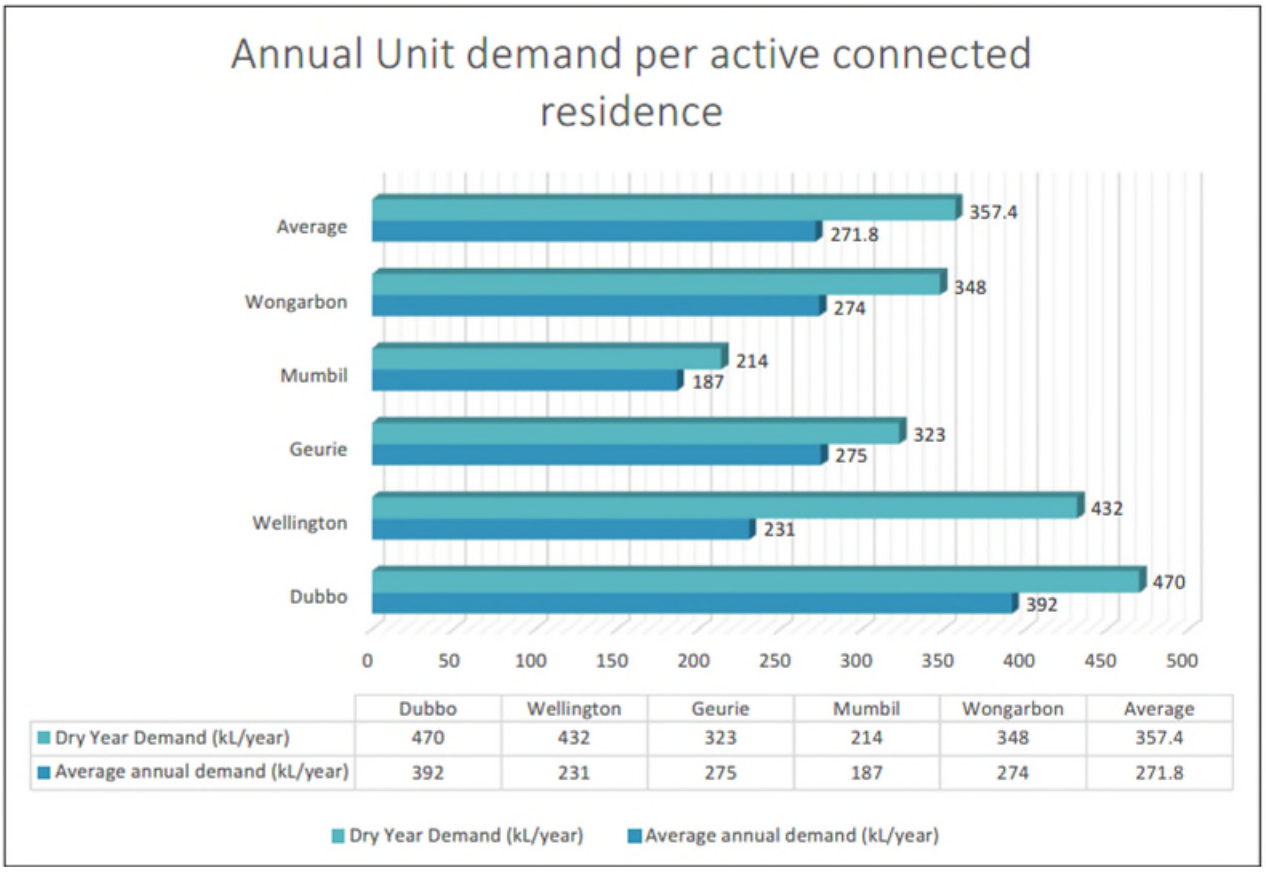


Figure 4.17: Average Annual Demand for Residential Water Usage

Climate Variability

The impact of climate change prediction has been projected across south-east Australia. These predictions are for rainfall, temperature and transpiration records from 2020 to 2070. Peak wet weather flow has been calculated at 15 times the average dry weather flow for Dubbo, 12 times for Wellington and 16 times for Geurie.

Forecast for Customer Accounts and Metered Demand

The 2019 modelling for Dubbo domestic consumption during summer peak has indicated that 25% of residential domestic customers are using 54% of the water. This is shown at Figure 4.18, summer usage distribution graph for domestic consumption.

The graph equates to:

1. The majority of the population are conserving household use. 83% of the population are in the 25 to 350kL daily water use range, accounting for 78% of total water consumption.
2. 10% of users are super-efficient using 1% of total water consumption, these users are within 0 to 25kL band.
3. The least efficient is 7% using 21% of water, which is over 350kL.

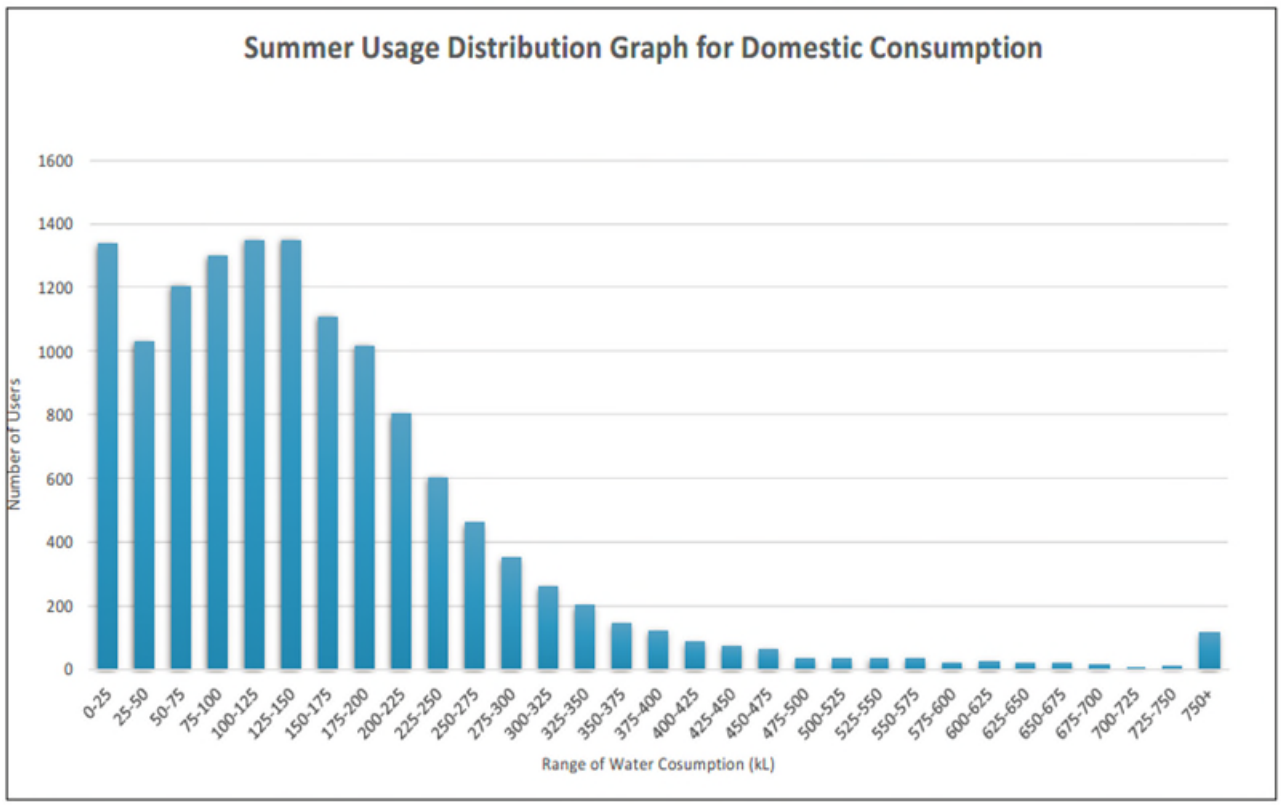


Figure 4.18: Summer Usage Distribution Graph for Domestic Consumption

The forecast change to customer accounts and metered demands are shown at Figure 4.19, number of accounts (by type of customer) by year graphs. Further breakdown information is detailed in the IWCM. The Table shown provides an indication of the increasing demand for consumption by the type of user over time. The figures shown do not include an increased efficiency through BASIX on new residential housing development. BASIX in the Dubbo Region targets 30% reduction in water consumption.

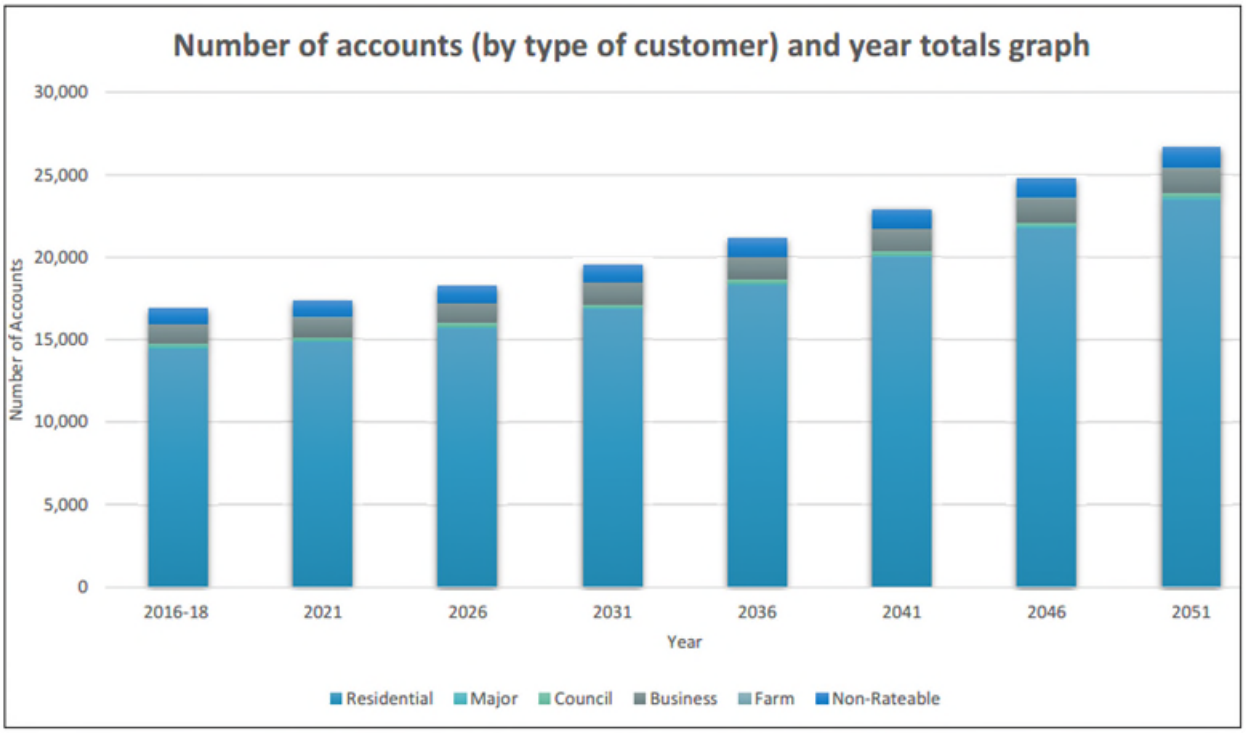


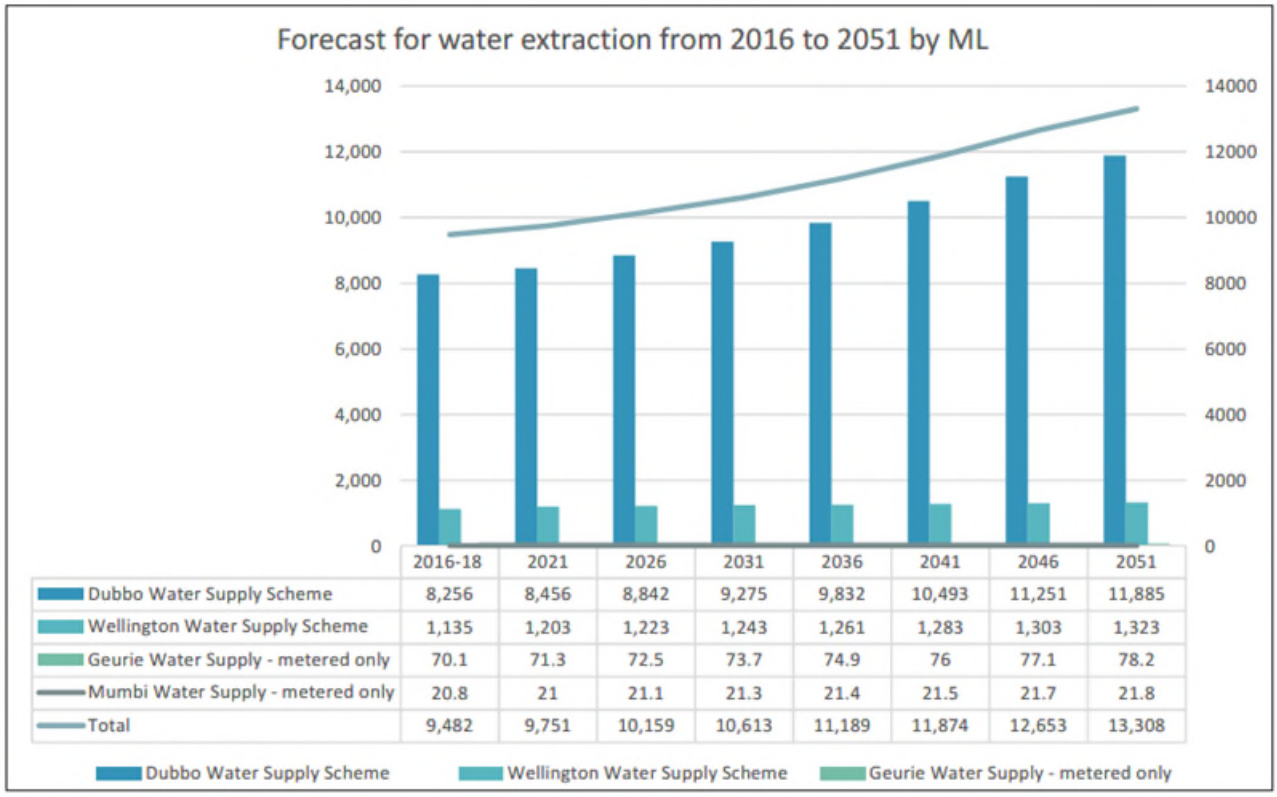
Figure 4.19: Number of Accounts per Type of Customer

Ongoing monitoring is essential for the operation of the Plan. The Plan sets out triggers and target usage measures that can be tracked to reduce risks and limit ongoing issues around water shortage.

During a drought or emergency incident the water restrictions are set to reduce demand. These are triggers to indicate whether Council will need to change water restrictions to an alternative level.

Forecast for Extraction

The average forecasts for water supply demand is shown at Figure 4.20, forecast for water extraction from 2016 to 2051, as a measure of extraction that will be required.

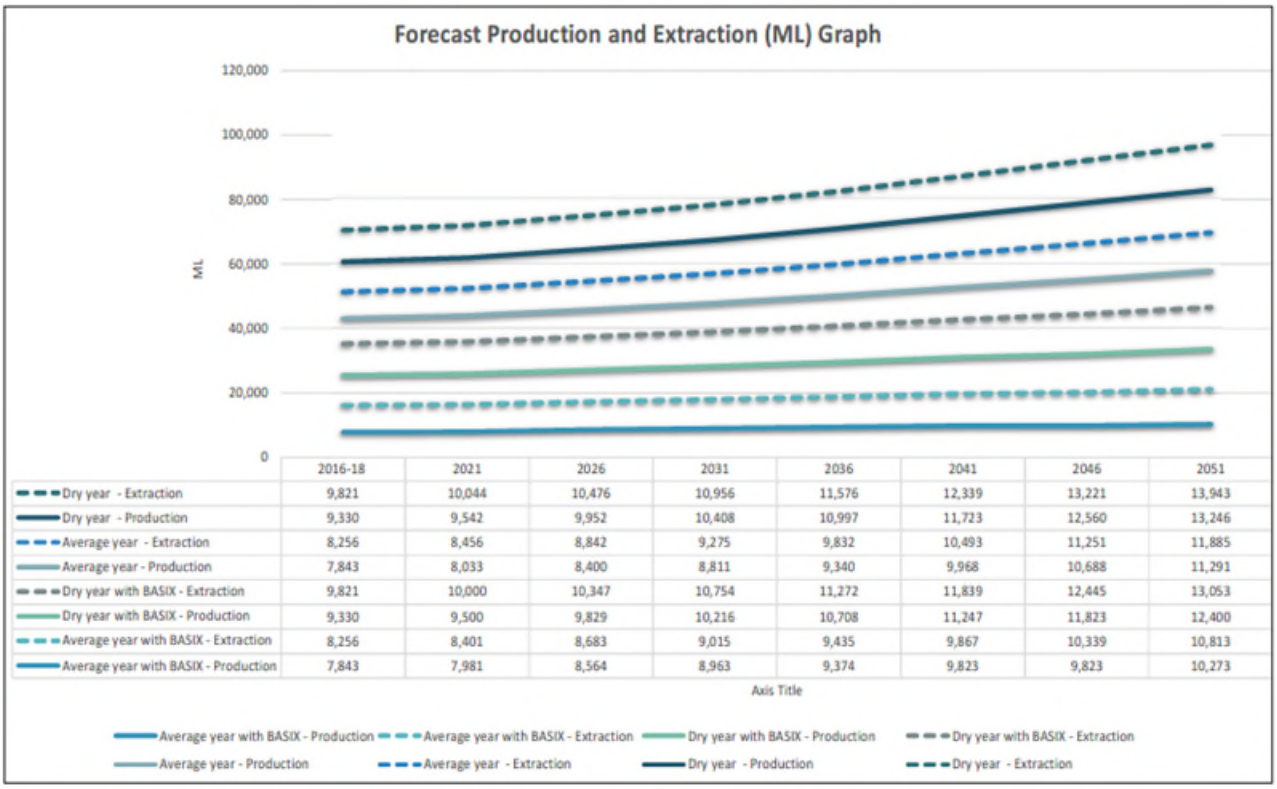


	2016-18	2021	2026	2031	2036	2041	2046	2051
Dubbo Water Supply Scheme	8,256	8,456	8,842	9,275	9,832	10,493	11,251	11,885
Wellington Water Supply Scheme	1,135	1,203	1,223	1,243	1,261	1,283	1,303	1,323
Geurie Water Supply - metered only	70.1	71.3	72.5	73.7	74.9	76	77.1	78.2
Mumbi Water Supply - metered only	20.8	21	21.1	21.3	21.4	21.5	21.7	21.8
Total	9,482	9,751	10,159	10,613	11,189	11,874	12,653	13,308

Figure 4.20: Forecast for Water Extraction from 2016 to 2051 (ML)

Extraction refers to water supply from both surface and ground water sources discussed in the previous chapter against the water returned to the Sewerage system.

As a comparison, Figure 4.21 illustrates the forecast for water extraction against the required production. This Table illustrates predictions for both average years and dry years.



	2016-18	2021	2026	2031	2036	2041	2046	2051
Dry year - Extraction	9,821	10,044	10,476	10,956	11,576	12,339	13,221	13,943
Dry year - Production	9,330	9,542	9,952	10,408	10,997	11,723	12,560	13,246
Average year - Extraction	8,256	8,456	8,842	9,275	9,832	10,493	11,251	11,885
Average year - Production	7,843	8,033	8,400	8,811	9,340	9,968	10,688	11,291
Dry year with BASIX - Extraction	9,821	10,000	10,347	10,754	11,272	11,839	12,445	13,053
Dry year with BASIX - Production	9,330	9,500	9,829	10,216	10,708	11,247	11,823	12,400
Average year with BASIX - Extraction	8,256	8,401	8,683	9,015	9,435	9,867	10,339	10,813
Average year with BASIX - Production	7,843	7,981	8,564	8,963	9,374	9,823	9,823	10,273

Figure 4.21: Summer Usage Distribution Graph for Domestic Consumption

Response to the Restrictions in Place

Current predictions for extraction during this drought have modelled the combined totals of surface water and bore water during a normal year with no restrictions in place against the current 12 month period. The figures predict that the savings in surface water through reduced demand will be:

- 2.17% where the level of restriction is reduced to Level 3 by the end of February.
- 2.62% where Level 4 restrictions are maintained until 30 June 2020.

During the 2017 to 2020 drought Council has progressively implemented tighter water restrictions. No discernible reduction in usage was achieved during Level 2 restrictions that were in place from 1 July 2019 to 30 September 2019.

Level 3 restrictions were implemented during October 2019 resulting in a minimal reduction of 1.5% compared to the same period in October 2019 without restrictions. With Level 4 restrictions in place a 24% reduction in usage between I November 2019 and mid-January when good rainfall started to occur.

While there was a 24% reduction in water usage by Council this only accounted for a 3.5% saving in flow in the Macquarie River during this time.

Water Production

Council monitors flows from and return of water to the river. Monthly flows over the past eight months of data collection are shown below at Figure 4.22.

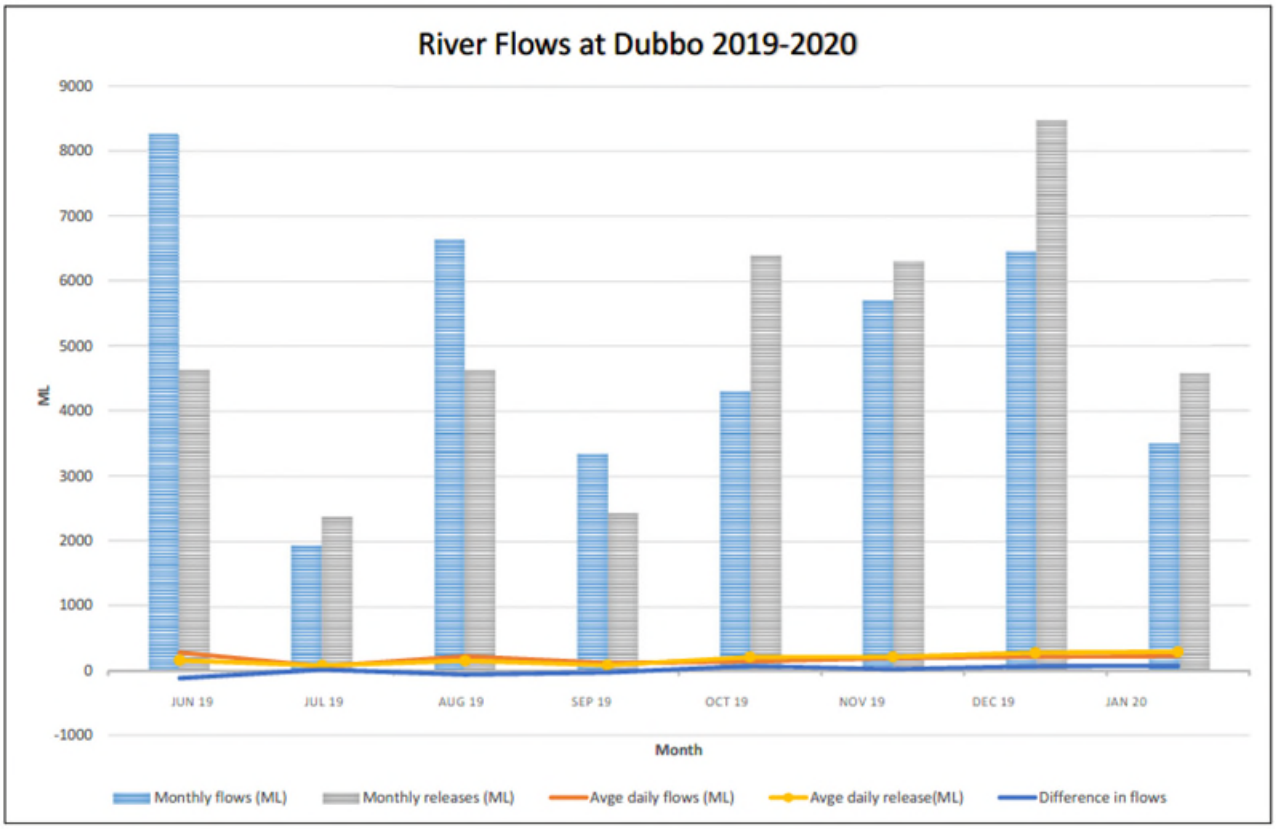


Figure 4.22: River Flows at Dubbo

Quality of Water Produced

The issues paper has identified that satisfaction with water quality and the taste of water require improvement.

Information regarding water conservation has indicated room for education and communication as an ongoing outcome for improved levels of service[19].

There were several questions about water conservation, the key responses were:

- *67% of customers believe that Council should do more to encourage water conservation.*
- *45% of customers were un-aware that they were allowed to install rainwater tanks without Council permission.*
- *54% of customers thought that Council should adopt a water pricing system to encourage residents and other users to practice water conservation.*
- *81% of customers would choose water restrictions over higher prices as a method to reduce consumption during drought.*

4.2.2 Demand Monitoring and Rebates

Infrastructure Requirements to Meet Future Growth in Dubbo

The majority of future growth is expected to occur in the Rifle Range and Eulomogo reservoir zones. The 30 year peak day demand of the Rifle Range reservoir zone exceeds the capacity of the existing reservoirs and trunk mains. Council is currently modelling the infrastructure requirements to meet the growth demands, particularly in west Dubbo.

[19] Ward, J. Blaike, J. (2019) *Dubbo Regional Council Integrated Water Cycle Management Issues Paper Report Number WSR-17004,* NSW Public Works Advisory, Department of Finance, Services & Innovation Crown Copyright

The ability to meet the levels of service in these reservoir zones needs to be reviewed. Recommendations for assessment of reservoir capacity includes:

- Reassess locations of reservoirs for future growth.
- Reassess requirement for Newtown and Myall Street reservoirs in 30 years' if Buninyong/Eulomogo sites are augmented.
- Consider how the Newtown and Myall Street reservoirs, in the medium term, provide additional clear water storage in the event of loss of production at the WTP.

Monitoring Demand during Drought

Council monitors demand through current systems that focus on:

- Bulk water production metered and recorded on a daily basis.
- Customer water consumption billed four times a year.
- Customers are classified and reported annually under residential, commercial, industrial, institutional and rural, fire meters and Council meters.
- Smart meters.

Council has ongoing internal programs to improve water consumption, efficiency and reporting. Currently 72 additional smart meters have been installed to improve monitoring of recreation and Council facilities' consumption.

Demand Management Rebates

During the current drought, Level 4 restrictions have triggered a further water saving rebates administered by Council.

Council has completed an analysis of potential water savings in installing rain water tanks using the model developed by NSW Office of Water. Based on this analysis Council has committed substantial funds in the form of rebates for the installation of rain water tanks.

To further encourage and assist residents to achieve a daily water usage target of 280 litres per person per day under Level 4 water restrictions, Council has implemented a Water Saving Rebate Scheme. Rebates apply to water saving products on a per household/per business basis and only to new water-efficient products.

4.2.3 Non-performance Water

An Unaccounted for Water (UFW) analysis was undertaken for the purposes of this Demand Management Plan to indicate the level of leakage and non-revenue water in the Dubbo Water Supply Scheme. UFW represents leakage, water losses and unbilled water. Leakage studies for over 70 NSW LWUs indicate an average leakage from potable water supply distribution systems of 10% of annual consumption (range from 2% to 27%).

State-wide analysis of Non-revenue Water (NRW) (ie real loss, apparent loss and unbilled water) for NSW water utilities, other than bulk water suppliers, indicates a minimum of 10% of annual water supplied. (Source: 2011-2012 NSW Benchmarking Report by NSW Office of Water).

Dubbo UFW is estimated based on Dubbo's annual water production figures (ie financial year data). The total water that passes through bulk meters at the WTP and consumption data from the water bill database of Council (ie water consumption by tariff category).

Current figures on Non-performance Water (NPW):

Dubbo	NRW is 75L/connection/day
Wellington	NRW is 265L/day
Geurie	NRW is 400KL/day

Council has identified several leaks in the Geurie reticulation system and is currently repairing these, after which a further analysis of water losses will be undertaken. A similar leak detection exercise is to be carried out in Wellington.

Council is recommended to continually monitor the levels of leakage and non-revenue water to ensure the levels of water losses and unbilled water remain steady, or keep dropping.

4.2.4 Large Water Consumers

Large water consumers are generally institutional, industrial or business users. The approach to water use by institutional and business users has been set out in the water restrictions tables, refer Appendix B. A breakdown of the top 100 largest water users for business purposes is shown at Figure 4.23 below:

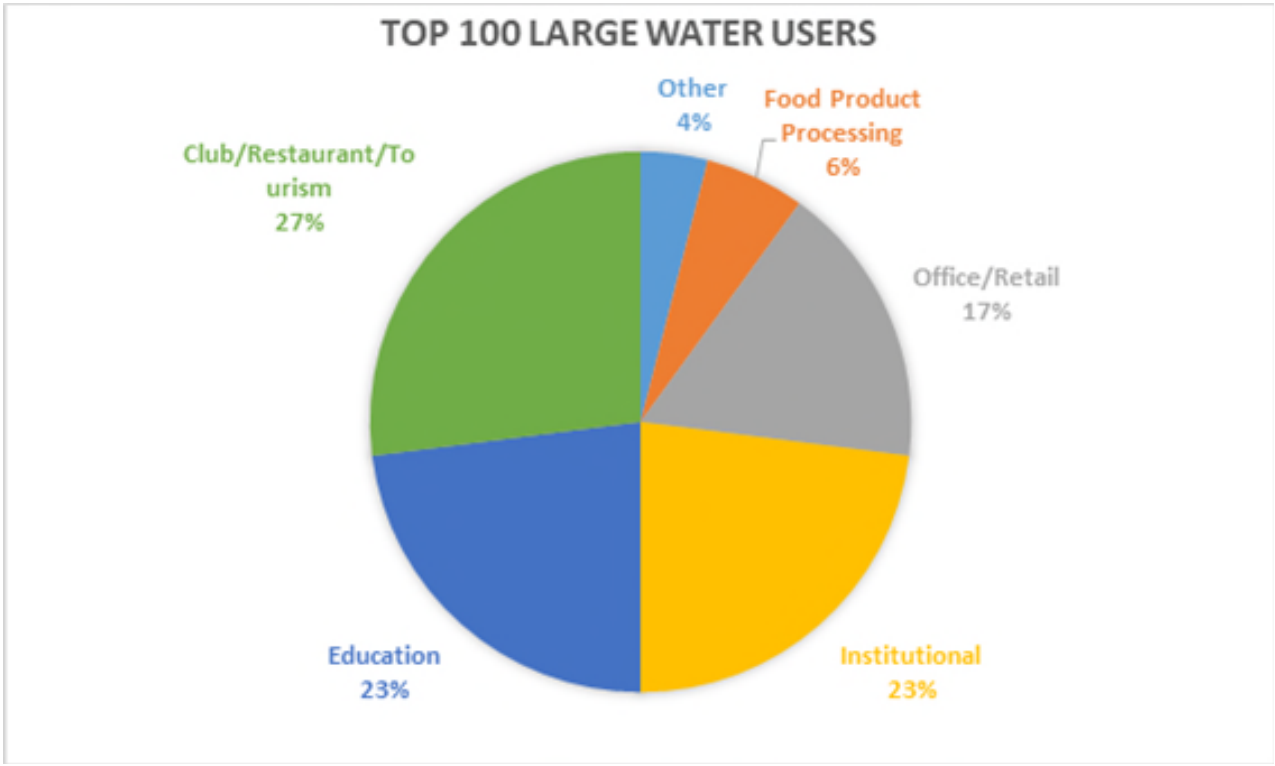


Figure 4.23: Top 100 Large Water Users

Some points regarding Council's modelling and reporting on large water users includes:

- 27% are tourism focused businesses. These include the Taronga Western Plains Zoo, large Dubbo clubs, accommodation and restaurants.
- 23% are education based facilities. These are the many local schools as well as college and university institutions.
- 23% represent institutional facilities and service providers for retirement and nursing homes. The Dubbo Base Hospital is included in this sector. Many of these are residential style living facilities are home to older members of the community.
- 17% are the office and retail spaces and are a combination of large shopping centres and office buildings that cater to many small businesses.
- 6% related to food processing facilities, such as flour mills and abattoir with an additional 2% farm users to support this industry.
- The remaining 4% are other businesses.

Objectives for Setting Restrictions

Restrictions have been set to apply across the entire business community. This is in order to maintain a supply for human health, hygiene and safety purposes as a top priority.

All businesses are expected through drought periods to comply with water use restrictions tables published. The second level of direction is to determine the future demand for water. This has been set by identifying the top 200 largest users of commercial, business or institutional use.

The top 100 businesses identified as large water consumers are notified to complete a Water Saving Action Plan (WSAP).

Current Restrictions Advice to Businesses

It is a strategic direction of this Plan to enable businesses to use water to meet their business needs for as long as is possible. Individual businesses may have different needs and uses. The preparation of a Water Saving Action Plan (WSAP) by individual high water users provides an opportunity to identify where different business needs arise for water supply. These WSAPs are approved by Council.

Level 3 Restrictions

1. Follow the water restrictions for commercial and institutional.
2. Council is required to notify businesses to prepare a WSAP for Council approval.
3. Use this Water Restrictions Commercial and Institutional Guide - Activities to help prepare your application.

Level 4 Restrictions

1. Follow the water restrictions for commercial and institutional.
2. Activate and comply with the approved WSAP.

Level 5 Restrictions

1. Follow the water restrictions for commercial and institutional.
2. Improve water use efficiency where possible.
3. Review essential or core business needs for water use as extreme drought conditions continue.
4. Partnered approach (Council and industry) in onsite auditing, support and advice on WSAP if required.

Water for FIRE FIGHTING

Water for fire-fighting is part of the contingency water supply allocation. In Dubbo, this equates to the last 20% of all water stored. This allocation is approximately enough water for three days' supply during an emergency event.

The current level of service for Dubbo, Wellington and Geurie would remain unchanged for fire-fighting. Fire-fighting water availability is compliant with Australian Standards and aims to:

- Provide 170kPa 95% of the time.
- Provide rural areas including Firgrove and Richmond hydrants at 120 m spacing with 150kPa 95% of the time
- Allow for spacing fire hydrants in urban areas at 60 m apart.

Dubbo City Regional Airport has agreed with RFS to access a future bore at the Airport once operational.

4.2.5 Water Resource Triggers

The drought triggers as shown in Table 4.10 are activated when Council determines to commence drought actions. Each restriction level has an associated target demand and required water saving measure for residential and non-residential potable use.

		Dubbo Residential	Wellington Residential	Geurie Residential	Mumbil Residential	Formulated target/ person/day
Restrictions	Target reduction in demand	Expected average demand ML/d	Expected average demand ML/d	Expected average demand ML/d	Expected average demand ML/d	
Everyday Water Saving Measures	0%	17.3	1.4	0.301	0.147	400
Level 1: Low	5%	16.4	1.3	0.286	0.139	380
Level 2: Moderate	15%	14.7	1.2	0.256	0.125	360
Level 3: High	25%	12.9	0.95	0.225	0.110	320
Level 4: Very High	35%	11.2	0.9	0.195	0.096	280
Level 5: Extreme	45%	9.5	0.77	0.165	0.081	240
Level 6: Critical	55%	7.7	0.63	0.135	0.066	195

Table 4.10: Water Restriction Triggers and Target/Person

Compliance with water restrictions will be monitored and enforced from Level 1. However, everyday water saving measures are not enforceable.

If storage levels drop further, or target demands are not met, higher restrictions requiring greater reductions in water usage can be adjusted and implemented.

During the 2008/2009 period in which the former Dubbo City Council had a water restriction Level 2 average water consumption was found to be increased by 33%. This increase has been attributed to an odds and evens system of watering. Following these findings, Council proposed residential garden watering for lower level restrictions based on overall time per week.

4.2.6 Current Water Usage

Council modelling of current water usage during 2018/2019 against predicted water consumption for 2019/2020 show that the water restrictions in place have produced a water saving of as much as 23% in terms of consumption, see Figure 4.24.

Usage pricing rates have increased by 63% from $0.94 to $2.07 per kL from 2011 to 2019.

Agricultural and industrial uses are generally operated with bore water licensing. This is managed by NSW Government. Landholders apply for a Water Access Licence through WaterNSW, under the WM Act 2000.
This section refers to predominantly residential use and supply across the LGA.

Council's Average Annual Residential Demand

Water use in the LGA is traditionally higher than other neighbouring areas.

Annual use is shown in the Figure 4.24 regarding predicted water saving with restrictions in place.

Previous records of drought restrictions indicate that Council mandated restrictions have only come into effect since the 1980s. The majority of restrictions were voluntary until 2006. Since 2006, Council has issued water restrictions on external watering.

Additional Demand during Drought

It has been found that the previous odd and even watering system had caused an increase in demand for water. It is due to this that in 2019 revised restrictions moved away from the odd and even watering system. The alternative preference is to allow adequate watering to upkeep gardens for as long as is possible. Watering has been set for nominated days per week with maximum times by restriction level.

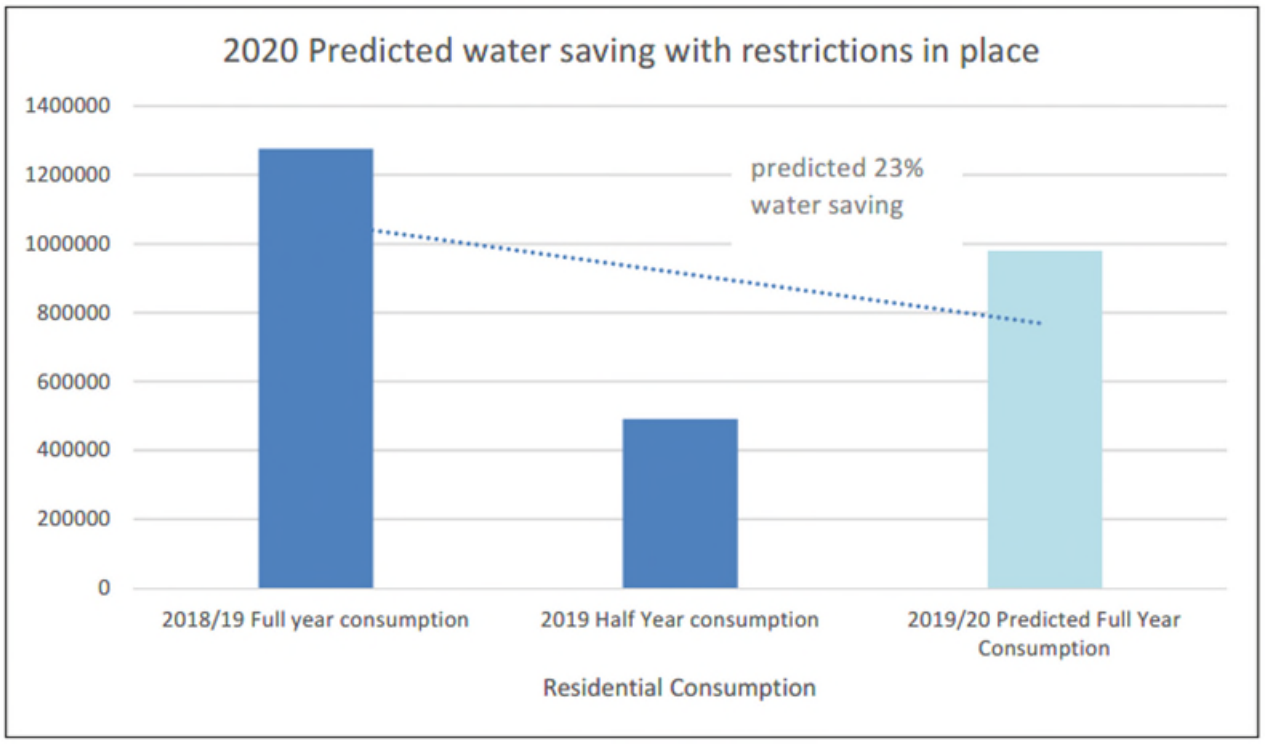


Figure 4.24: Dubbo Regional Council 2020 Predicated Water Saving with Restrictions in Place

5. Plan Review

5.1 Evaluation and Update of the Plan

Review Period

In addition to evaluation and revision after each period of drought, regular reviews of the DCWERP should be undertaken at least every five years. The Plan review should update:

- The latest information on water supply systems, including any augmentations that have occurred, changes to operating rules and up-to-date water consumption data and flow/ level monitoring data for water sources.
- Any major changes/augmentations to water supply systems.

Funding Sources for Future Works

Programs for water security are available through NSW and Commonwealth funding sources.

NSW Government Funding

Safe and Secure Water Program

The Department of Planning, Industry and Environment – Water (DPIE-Water).
Allocation: $1 billion fund.
Co-funding program for eligible planning or capital projects in regional NSW; funding for strategic water plans (eg Integrated Water Cycle Management Plan)

Emergency Relief for Regional Town Water Supplies Program

DPIE - Water.
Water carting. Currently supporting Council funding for Euchareena (from October 2019).

Aboriginal Communities Water and Sewerage Program

DPIE - Water.
Former Wellington Council has been funded through this program.

Australian Government Funding Programs for Water Security Projects

Building Better Regions Fund

Department of Infrastructure, Transport, Cities and Regional Development. Allocation: $841.6m. Three rounds completed to date. Round 4 with an allocation of $200m opened in second half of 2019. Available for local councils and other eligible organisations to apply to Infrastructure Projects Stream and Community Investments Stream.

Drought Communities Programme

Department of Infrastructure, Transport, Cities and Regional Development.

Fund to support drought-affected regions across Australia.

Council received $1m in late 2018 to support local infrastructure projects. This includes:

- $560k to Stuart Town water supply
- $245k amenities project to Church Street, Dubbo
- $195k to Saleyards for shade sails.

6. Communication

6.1 Community Awareness and Actions

The strategic directions of this Plan include a range of media and communication tools to convey messages to the community, business and other stakeholders.
The development of a communication strategy should be approved by the CEO and implemented by the Drought Coordinated Response Team.

Communication with Authorities and Stakeholders

In ensuring the successful implementation of the Drought Management Plan the Communication Strategy must be developed and implemented.

Liaison with key government agencies is an important component of the Communication Strategy.

Relevant agencies are informed when significant impacts on the community, the environment or other stakeholders are expected as a result of emergency incidents or drought.

Once an incident has been categorised, Council follows standard procedures to identify and notify all relevant stakeholders; and to update identified stakeholders with any changing circumstances.

Council specialist resources may assist with stakeholder communications during incidents:

- Internal media relations officers
- External communications support
- Incident management teams
- Crisis management specialists.

Liaison with agencies, businesses or local irrigators ensures they are aware of possible impacts they may have on the town water supplies and conversely, to make sure they are aware of the potential impacts that Council's actions arising from the implementation of the Plan, may have on them.

In the event of a pollution incident, all relevant authorities must be immediately notified, unless there is substantial evidence that they are already aware of the details of the incident. The authorities may advise that they will not be required to attend, however the appropriate level of information must be provided to them so an informed decision on their response can be made.

Communication with Customers during Drought Events or emergency Incidents

Community awareness is vital for ensuring the actions that directly impact them, such as water restrictions, are implemented and associated fines and exemptions are communicated.

The community is given advice on how to minimise the impact of various water restrictions (including options for household recycling of water and when this should be done) and advice on saving water around the home in general.

It is important that the community is kept up-to-date with the status of water supply sources. This includes river flows, dam storage volumes and possible consequences of not achieving target reductions in water consumption.

Council often receives information relating to system faults (eg sewer manhole overflows, water leaks and breaks) from members of the public.

Council's Drought Hub is also available for information at https://www.dubbo.nsw.gov.au/droughthub

Additional methods of communication to inform:

- Radio and media broadcasts
- Door Knocking via rangers or operations staff (usually to the first responders to incidents) to communicate with customers who they are, or who may be impacted by an incident
- Warning and informational signage
- Letter box drops
- Social media
- Phone calls.

7. Emergency Response Contingency Plan

7.1 Introduction

This section of the Drought and Emergency Response Contingency Plan addresses all identified emergencies other than drought.

Council currently has Business Continuity Plans (BCPs) for water and sewerage which addresses responses to emergencies. These are:

- Former Dubbo City Council's Water Supply and Sewerage Branch - Business Continuity Plan (August 2018).
- Former Wellington Council Divisional Business Continuity Sub-plans (April 2016).
- Dubbo Regional Council is currently preparing a Business Continuity Plan (BCP) including sub-plans for each division, for the amalgamated Council. It is expected the new BCP will be completed in 2020.
- In the meantime, the Dubbo's BCP shall be referenced when responding to an emergency.
- Once completed a summary of the new BCP will be included in this document.

Response to Emergencies

The BCP describes the response process as:

- Assess the level of emergency which is either Routine (Level 1), Emergency (Level 2) or Crisis (Level 3)
- Establish an Emergency Management Team depending on the level of the emergency
- Respond to the emergency
- Recovery
- Debriefing.

The flow chart at Figure 7.1 describes the notification process and how to assess the level of the emergency.

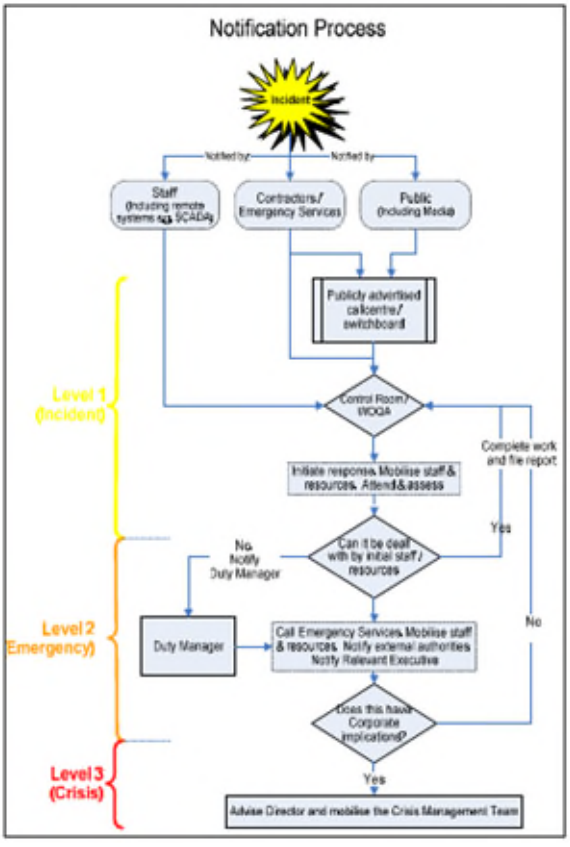


Figure 7.1: Council Notification Flowchart to Assess Emergency

7.2 Identified Emergencies in the Business Continuity Plan

Further Action Required in Emergency Management Procedures

Further evaluation of identified risks and identification of other risks needs to be undertaken as part of the preparation of the new BCP for Dubbo Regional Council.

Minimising the impact of potential risks needs to be undertaken by:

- Regular training of staff in how to respond to an emergency;
- Improved preventative maintenance procedures Adequate supply of critical spare parts especially those with long delivery times; and
- Identifying improvements in the operation of the water and sewerage systems and carrying out capital works if required.

Identified Emergencies in the Business Contingency Plan

The current BCP identifies the emergencies described in the tables below and the required responses. These include:

- Drinking water quality problem
- Major asset failure
- Business systems, IT or communication problem
- Chemical, toxic spill or leak
- Natural disaster
- Physical safety related incident
- Criminal acts and security threats
- Building or office problem
- Pressure group action.

Each emergency is discussed below:

Drinking Water Quality Problem

Incident Type	Raw water problems, turbidity, parasites, water treatment failure and contamination
Impacts	• Risk to public health • Loss of supply • Media attention • Attention from regulatory authorities
Business consequences	• Inability to supply water and/or treated effluent within parameters • Loss of revenue • Additional operational costs • Fines due to (EPA) licence breach Public litigation • Damage to water business image and reputation
Response	• Communicate and liaise with customers and public • Communicate and liaise with external authorities (eg NSW Health) and assist with investigations • Assist authorities to issue public alert (eg boil water notice) and assist in alerting high risk groups (AIDS, cancer, immune suppressed) • Deal with media • Reconfigure delivery system to use filtered stored supply • Provide emergency equipment if possible Apply restrictions if necessary • Begin planning for systems to ensure future water quality is protected Instigate public education program to restore confidence in water business.

Figure 8.2: Drinking Water Quality Problem

Major Asset Failure

Incident Type	Dam failure, failure of treatment plant process or major equipment, collapse of trunk main or value, pumping station problem (choke, explosion or fire)
Impacts	• Harm to employees or public • Releases to environment • Damage to public and private property • Shut down of operating area • Media attention • Attention from regulatory authorities
Business consequences	• Inability to supply water and/or treated effluent within parameters • Loss of revenue • Additional operational/emergency supply costs • Public litigation and compensation claims • Damage to image and reputation • Repair and restoration time and costs
Response	• Shutdown affected assets and assess damage • Make area safe • Check welfare of staff and public, provide aid Communicate with business unit • Communicate and liaise with customers • Communicate with regulators and authorities • Liaise with emergency services and assist • Provide temporary supply or reconfigure delivery system if possible • Provide emergency equipment (pumps, generators, manual systems, local needs etc) • Apply restrictions if necessary • Use public education program to manage available supply • Conduct repairs and begin planning for permanent repairs or replacement assets

Figure 8.3: Major Asset Failure

Business Systems/IT Communications Problems

Incident Type	Failure of business systems (SCADA, telecoms, financial, accounting, billing IT etc), computer virus
Impacts	• Loss of business processes • Loss of data and information • Loss of crucial hardware and software • Loss of operational capability • Loss of communications • Media attention
Business consequences	• Loss of operational capacity • Disruption to systems/data • Reporting and decision-making delays • Time and cost to repair and replace damaged equipment /systems • Increased staff levels and costs Loss of operating/maintenance instructions • Damage to customer service • Loss of revenue
Response	• Advise internal and external businesses and bodies • Check and clean system (if virus affected) • Implement IT Disaster Recovery Plan • Create accounts and reports manually • Replace hardware and software - lease equipment short-term if necessary

Incident Type	Failure of business systems (SCADA, telecoms, financial, accounting, billing IT etc), computer virus
	• Replace lost data where possible with back-up data – recruit additional staff if necessary • Re-key other lost data and information • Review IT Disaster Recovery Plan for effectiveness and revise where necessary • Begin planning for permanent repairs and systems that will ensure no repeat of lost business • Communicate and liaise with external authorities

Figure 8.4: Business Systems/IT Communication Problems

Chemical/Toxic Spill or Leak

Incident Type	Chlorine leak, sewerage or sludge spill, hazardous chemical spill, gas release or oil spill
Impacts	• Harm to employees or public • Releases to environment • Contamination of area • Contamination of supply • Shut down of operating area or asset • Media attention • Attention from regulatory authorities
Business consequences	• Inability to supply water and/or treated effluent within parameters • Loss of revenue • Additional operational costs • Fines due to licence breach • Public litigation and compensation claims • Damage to image and reputation • Repair and restoration time and costs
Response	• Shutdown affected assets and assess damage • Check welfare of staff and public, provide aid • Make area safe and activate spill containment systems and procedures • Check welfare of staff and public, provide aid • Communicate with business unit • Communicate and liaise with customers • Communicate with regulators and authorities • Liaise with emergency services and assist with containment and clean up • Reconfigure delivery system if possible • Assess public attitude to Corporation • Use public education program to manage available supply • Begin planning for more robust systems and procedures to ensure spills are minimised

Figure 8.5: Chemical/Toxic Spill or Leak

Natural Disaster

Incident Type	Earthquake, landslide, bushfire, storm, wind, hail, lightning and drought
Impacts	• Damage to/or loss of facilities and assets • Loss of power/communications • Loss of supply or treatment (quantity/quality) • Spills, leaks and releases to environment • Risk to public and employee health and safety • Public/private property damage • Loss of access to operating sites

Incident Type	Earthquake, landslide, bushfire, storm, wind, hail, lightning and drought
Business consequences	• Inability to supply water and/or treated effluent within parameters • Deterioration of stored water quality • Loss of data/communications • Reduction of operational manpower • Repair and restoration time and costs • Loss of revenue • Additional operational costs • Public litigation
Response	• Shutdown affected assets and assess damage • Make area safe • Check welfare of staff and public and provide aid • Communicate with business unit • Communicate and liaise with customers • Communicate with regulators and authorities • Liaise with emergency services and assist • Provide temporary supply or bypass if possible • Provide emergency equipment (pumps, generators, manual systems etc) • Apply restrictions if necessary • Use public education program to manage available supply • Conduct repairs and begin planning for permanent repairs or replacement assets

Figure 8.6: Natural Disaster

Physical Safety Related Incident

Incident Type	Physical safety related incident
Impacts	• Harm to employees or public • Stress to workers • Grief/outrage staff, public and next-of-kin • Shut down of operating asset or business area • Media attention • Attention from authorities
Business consequences	• Lost time/loss of key resources • Workers compensation investigations and claims • High cost of additional safety measures • Litigation by staff and public • Fines from authorities (eg WorkCover) • Liability of individuals (executives/board) • Damage to water business image and reputation
Response	• Make area safe • Check welfare of staff and public, provide aid • Liaise with police, ambulance or relevant government agency and assist with investigation • Liaise with external authorities and assist with investigations • Review safety at affected site and implement improved work practices and site security • Deal with media • Assess staff morale • Conduct critical incident stress debrief - provide stress and trauma counselling • Assess public attitude to water business Instigate public education program to restore confidence in the organisation

Figure 8.7: Physical Safety Related Incident

Criminal Acts/Security Threats

Incident Type	Terrorism, robbery, fraud, sabotage, extortion or serious vandalism
Impacts	• Damage to/or loss of facilities and assets • Contamination of supply • Loss of supply or treatment (quantity/quality) • Releases to environment • Risk to public/employee health and safety • Public property damage • Loss of cash and/or property • Stress on organisation and staff
Business consequences	• Loss of operational capacity and capability • Threat to safety of staff and/or public • Repair/restoration time and costs • High cost of additional security measures • Loss of data/communications • Loss of revenue
Response	• Assess damage/level of threat to affected assets • Check welfare of staff and public, provide aid • Check functionality of affected business • Communicate and liaise with police or other government authorities as required • Communicate and liaise with customers • Communicate and liaise with next-of-kin • Provide emergency supplies where possible by activating contingency plans or reconfiguration • Increase security on critical assets and brief staff on security response • Assess staff morale • Conduct critical incident stress debrief/provide trauma counselling • Instigate public education program to restore confidence in the water business

Figure 8.8: Criminal Acts/Security Threats

Building/Office Problem

Incident Type	Loss of key accommodation due to incident, lift problem, building collapse or fire/ explosion
Impacts	• Damage to/or loss of assets and adjoining property • Harm to employees or public • Stress to workers • Shut down of business area • Media attention • Loss of accommodation • Loss of critical data, information and systems
Business consequences	• Lost time injuries/loss of key resources • Unplanned absences • Cost to lease alternate accommodation • Disruption due to loss of systems/data • Loss of revenue due to inability to deliver service • WorkCover investigations • Cost to repair and/or replace damaged accommodation and equipment/systems
Response	• Make area safe • Check welfare of staff and public, provide aid • Communicate and liaise with police and emergency services and assist with investigation

Incident Type	Loss of key accommodation due to incident, lift problem, building collapse or fire/ explosion
	• Communicate and liaise with external authorities and assist with investigations • Deal with media • Assess staff morale • Conduct critical incident stress debrief; provide stress and trauma counselling • Replace lost data where possible with back-up data • Ensure building problem is not repeated in other water business areas • Conduct repairs and begin planning for permanent repairs or replacement assets

Figure 8.9: Building/Office Problem

Pressure Group Action

Incident Type	
Impacts	• Pressure on water business to change activities • Loss of access to operating sites • Risk to health and safety of action group and staff • Risk of public/private property damage • Risk of criminal action (eg sabotage) • Media attention
Business consequences	• Loss of operational capacity due to disruption from protests and actions • Time and cost to change systems and operating processes • Loss of revenue due to inability to deliver service because of disruptions • Damage to image and reputation
Response	• Communicate and liaise with police if necessary • Ensure safety of staff is maintained • Communicate and negotiate with pressure groups • Establish water business position and counter arguments • Make concessions where possible • Consider legal action against groups • Respond to media and look to put the local water utility in positive light • Use public education program to manage image • Begin planning for permanent replacement of assets or systems if pressure group is successful in actions

Figure 8.10: Pressure Group Action

8. Drought Management Plan

Direction 1: Prioritise Human Health Needs

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
Program Management	1. Report on program management actions and status to ensure human health needs are prioritised for actions.	Program management for all drought considerations.	Timely communication with ELT of projects, budget allocations, risks and issues. Generate risk register of hazards, threats to life, threats to property, mitigation options in an emergency.	Minimum weekly meetings with Executive regarding current actions and issues. Reports to ELT, CEO and Councillors.	Review and facilitation of improved communication with community and programs/ grants or rebates available
	2. Alert high level risks	Management of issues and risks that can impact on water security.	Funding availability managed for ongoing management of drought activities	Risk strategic planning undertaken and complete. Weekly feedback with staff delivering projects.	Review and evaluation of any risks that could have impacted human health. Review of program management office activities.
Executive Services: Communication	3. Communications to raise awareness 4. Communication to include needs groups such as aged, indigenous and accessible groups.	Delivery of a communication strategy to cover: • Website development and communication campaigns. • Support options for individuals and communities. • Council style and branding for drought awareness.	Increase community awareness and education during drought events. Seek opportunities to engage with community groups, communicate messages to wider groups, accessible information broadcast. Delivery of messages to schools, aged, community for Water Week, Dream Festival and other identified events. Communication with Indigenous community.	Drought Hub online and updated weekly with current information. Timely communication of community messages and restrictions to agreed service levels with ELT/CEO Delivery of branded messages at events.	Review and evaluate effectiveness of various communications delivered.

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
Culture and Economy	5. Ensure business functions and services maintain human health and safety standards.	Delivery of business functions, services, tourism and engagement priorities health and safety standards.	Timely communication to all business services and tourism destinations and venues regarding hazards, threats and messages. Action to maintain high standards of health at all facilities.	Reports to ELT, CEO and Council on continued monitoring of venues, facilities and services.	Review processes and facilitate improved management.
Infrastructure: Engineering, Water and Sewer	6. Ensure there is always enough water to satisfy the basic needs of the community.	Effective management of water supply for immediate use during the current drought. Monitoring of water supply sources are appropriate and activated Smart Water - Automatic meter reading installed across 70 locations.	Daily monitoring of : • Water supply • Demand usage • Triggers and restrictions required to meet water security. Smart water systems installation, education and demand reduction targets monitored.	Water supply available for human needs. Project managers are reporting to Drought Management Coordinated Team with timely information. Tenders complete and 70 smart meters delivered. Monitoring of active meters.	Additional water supply secure for ground water and surface water solutions. Review of smart meter locations and additional meters installed where needed.
Liveability: Open Space and Recreation	7. Ensure community have access to open space and recreation for health and wellbeing during drought periods. 8. Consider liveability during heat and drought conditions.	Water is available for community use areas. Sports and community events are able to proceed with as little disruption as possible.	Community land is available to maintain liveability during extended periods of drought. Water needs of parks and recreational areas identified and prioritised. Availability of swimming pools remains for as long as is possible.	Community groups are able to use parks and recreational spaces with minimal disruption. Not less than 20% loss of trees on the public domain.	Evaluation of the effectiveness of park closures and costs associated with park repair post drought.
Development and Environment: Planning Regulation and Environmental Control	9. Ensure that regulatory actions required for water security are met.	Effective management of compliance teams including ranger education and enforcement of water restrictions.	Ongoing ranger communication with community. Enforcement of water restrictions as needed.	Rangers understand rationale for water restrictions and current needs relating to the Plan.	Review of ranger experiences, challenges and future opportunities.

Direction 2: Secure Business Community Needs

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
Program Management	1. Drive support to business community programs to ensure that they are equitable.	Provide timely stakeholder consultation that inform management responses. Facilitation of access to NSW State and Commonwealth funding sources such as grants and rebates for businesses.	Ongoing meetings to ensure business needs will be met by project managers. Generate risk register of hazards, threats to life, threats to property, mitigation options in emergency.	Minimum weekly meetings with Executive regarding current actions and issues. Reports to ELT, CEO and Council members.	Review of process delivery to business community. Evaluation and update to future plans.
Executive Services: Communication	2. Communicate regarding drought actions required by Council and offer active feedback avenues.	Communication strategy to support communication with the business community and large water users, institutions and industries. Communication through: • Drought Hub • WSAP process and timings • Industry sessions • Branding for specific groups, such as tourism.	Active communication of water restrictions to the business community. Websites and FAQs updated. Communication strategies actively reviewed and improved. Implementation of restrictions to reduce demand well communicated in advance of changes.	Timely communication of feedback to ELT and CEO of issues and future risks to the business community. Fortnightly updates of business focused correspondence undertaken. Communicate WSAP Branding packs distributed to specific and agreed businesses.	Review of strategy delivery and effectiveness of communication. Revise and update communication strategy to meet business needs of the community.
Culture and Economy	3. Ensure businesses are able to function for as long as is possible. 4. Support tourism economy	Provide timely stakeholder consultation regarding current and future actions that may have impact to the business community and functions of Council facilities and services.	Ongoing meetings to ensure business needs are communicated to the Water and Sewer Team. Alert ELT of risks to the business community.	Regular (monthly or more frequent) meetings with business community and Council staff to monitor impacts.	Review process of increased restrictions to determine least impact processes for the future.
Infrastructure: Engineering, Water and Sewer	5. Ensure businesses are able to function for as long as is possible.	Identification of: • Major business users, requirements, short and long term needs.	Ongoing improvement and monitoring of water supply to business users.	Business users' water supply is secure.	Delivery of improved water supply sources to meet business needs.

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
	6. Ensure water availability for large water users. 7. Increase certainty during ongoing drought periods	• Monitoring of business, institutional, industrial use figures.	Implementation of smart meters as needed and management of institutional needs.	Issues and risks reported by project managers to ELT, CEO in a timely manner.	Prioritisation of water needs for essential and core business users updated into service modelling for future changes to supply/demand systems.
Liveability: **Open Space and Recreation**	8. Support business users of sports and recreation and use of open space areas.	Review of businesses and paid use of community facilities, sale yards, showgrounds, parks and recreation areas to manage use and ensure availability for as long as is possible.	Update and communication of changes to facilities with advance notice.	Impacts to businesses due to loss of available Council asset reduced. Issues communicated to ELT and CEO by project managers and operational maintenance teams to agreed service standards.	Review of practicality of actions taken and effectiveness. Improvements to service business users considered for future events.
Development and Environment: Planning Regulation and Environmental Control	9. Ensure clarity, governance, and uniform rules for licence holders. 10. Educate and enable rangers and compliance staff.	Business users are clearly communicated by compliance staff. Compliance staff have clear education to enable their communication with the community.	Communication and audit of restrictions ongoing.	Compliance staff are equipped to manage drought events.	Review of experiences, challenges and future opportunities.

Direction 3: Operate Efficient Council Systems

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
Program Management	1. Drought Coordinated Response Team (DCRT) perform to agreed roles and deliverables. 2. Efficient escalation of issues and risks to efficient Council operation.	Defined roles within the Drought Management Team: • Consistent reporting and management of key projects, issues and risks management. • Facilitate grants and funding to address Council needs. • Defined protocols of drought restriction activation and escalation.	Communication between projects and areas of Council managed to ensure project success. All minor projects supported within management structure with review of scope, timeframes and budgets across all projects undertaken.	Program office managed to best practice standards and clearly communicated to ELT, CEO and all project managers with deliverables. Project administration kept up to date, issues and risk registers used and activated in a timely manner.	Review of strategic actions and revision of essential tasks. Review of program office activities (the Drought Coordinated Response Team) and its roles and responsibilities updated.
Executive Services: Communication	3. Facilitate proactive staff commitment to deliver outcomes.	Internal communications are clear and correct feedback channels are understood. Internal protocols and changes are communicated and managed.	Continued management of internal communication processes and reporting	Delivery of internal communication and feedback of drought concerns on a fortnightly basis.	Council efficiency of communication evaluated and strategies updated.
Culture and Economy	4. Ensure Council facilities and services are efficient. 5. Reduce impacts of restrictions to business community.	Define risks and hazard to operational efficiency. Seek improved water usage.	Continued improvements to water usage at major facilities such as Showground and Saleyards, Airport, Wellington Caves and other tourism destinations.	Improvements are implemented and future improvements identified.	Improvements to water efficiency are scoped and delivered.
Infrastructure: Engineering, Water and Sewer	6. Ensure water systems are available and usable.	Projects to deliver water supply infrastructure improvements are designed, tendered and implemented with priority. Water supply integrity is checked across the system. Monitoring and data inaccuracies are isolated quickly. Government funding expended.	Projects are implemented to improve water systems by Council without delay. Delays are immediately reported to the Drought Coordinated Response Team for escalation if required.	Ensure water supply integrity is achieved. Efficient operation of water supply systems achieved. Appropriate system operating rules are adopted. Regular system monitoring to provide baseline data is	Evaluation of water systems undertaken for supply and demand. Future improvements identified.

COORDINATED RESPONSE	GOALS	IMMEDIATE RESPONSE ACTIONS 2029	ONGOING DROUGHT MANAGEMENT 2020	PERFORMANCE MEASURES	RECOVERY AND FUTURE PROGRAMS 2021-2023
		Integrated Water Cycle Management Plan delivered.		available at daily, weekly, monthly and annual reporting.	
Liveability: **Open Space and Recreation**	7. Community assets are managed efficiently.	Appropriate water saving projects are undertaken such as: • Water re-use at Pioneer Park hockey field, Dubbo. • Rainwater tanks for the Dubbo Aquatic Leisure Centre. Requirements for water across assets defined and register formed.	Ongoing management of water requirements to maintain assets. Education of water saving measures by maintenance teams undertaken.	Reduced impacts and minimal repairs to assets. Council employees follow protocols and priorities as set by DRCT, ELT and CEO. Efficient management of Council facilities and depots.	Review of Council employee manuals for clarity during drought events. Evaluation of service levels required during drought events.
Development and Environment: Planning Regulation and Environmental Control	8. Educate and enable compliance staff	Communication of effects of drought restrictions within Council roles and teams. Teams able to proactively undertake changes to regular planning and regulations to suit drought restrictions. DA process changes and extensions to compliance timelines (eg for turf and swimming pools).	Ongoing updates and changes to drought restrictions communicated clearly to teams and staff.	Proactive staff management.	Evaluation of processes and improvement to best practice.

Direction 4: Effect Long Term Water Security

COORDINATED RESPONSE	GOALS	CURRENT DROUGHT ACTIONS 2019-2020	PERFORMANCE MEASRE	RECOVERY AND FUTURE PROGRAMS 2021-2023
Program Management	1. Facilitate informed programs of activities for long-term water security. 2. Facilitate funding strategy to ensure system is capable of supplying future demands.	Project management of funding requirements for future project. Identification of systems gaps and current future needs. Changing NSW policy and guidelines are incorporated into DCRT practices.	Grant applications for funding of projects completed.	NSW guidelines incorporated into future DCWERP review/s.
Executive Services: Communication	3. Build capacity of the community to cope with the consequences of long-term drought events.	Review and evaluate DCWERP's effectiveness via community feedback to strategic directions taken.	Review communications by Council.	Update and improve communication effectiveness.
Culture and Economy	4. Build capacity of business functions and services to adapt to drought restrictions and continually improve water efficiency.	Determine immediate water efficiency and non-essential water use areas. Review water usage at major facilities such as Showground and Saleyards, Airport, Wellington Caves and other tourism destinations.	Review monitoring data on usage for improvements to current water requirements. Implement metering and recycling projects if possible.	Review facilities for improvements such as recycling, rainwater tanks or more efficient ground water regimes. Seek emergency bore licences if required.
Infrastructure: Engineering, Water and Sewer	5. Funding strategies to assist in management of cost associated with drought. 6. Minimise risks of community running out of water. 7. Long-term supply strategies.	Predetermine and agreed listing of long term projects to: • Reduce future risks; • Minimise disruptions to community and business; and • Identify options for innovation, recycling and improvements.	Funding allocated and project commenced.	Investigate: • Regional pipelines; • Effluent credits; • Effluent reuse; • Stepped tariffs; and • Operation of Burrendong Dam.
Liveability: Open Space and Recreation	8. Innovate and building capacity to sustain availability of open space and recreation for as long as possible.	Long-term innovation to improve sport surfaces, including improved tolerance of turf to drought. Installation and improvements to assets so they are better equipped to deal with drought incidents.	Projects identified and commenced.	Projects completed and reviewed prior to future drought events.
Development and Environment: Planning Regulation and Environmental Control	9. Engage planning for grant development to address identified needs.	Keep register of compliance team incidents and responses to changes in the community due to drought restrictions.	Register identified guides for responses to future events.	Internal review prior to future events.

9. Glossary

Frequently used terms:

TERM	DEFINITION
Basin	Murray- Darling Basin
CCP	Critical Control Points
CEO	Chief Executive Officer
Council	Dubbo Regional Council (unless otherwise stated)
Day Zero	A phrase related to the Cape Town, South Africa running out of water. This term related to the count down in days until there was no water supply left. It is now a common term that describes a worst case scenario.
DCWERP	Drought Contingency and Water Emergency Response Plan
DPIE	NSW Department of Planning, Industry and Environment
DRC	Dubbo Regional Council
Drought Incident	The drought event that triggers operation of the Drought Coordinated Response Team
DWMS	Drinking Water Management System
ELT	Executive Leadership Team
HBT	Health Based Target
IWCM	Integrated Water Cycle Management
MDBA	Murray-Darling Basin Authority
LGA	Local Government Area (Dubbo Regional Council area)
NRW	Non-revenue Water
STP	Sewerage Treatment Plant
WMA 2000	*Water Management Act 2000* (NSW legislation)
WSAP	Water Saving Action Plan
WTP	Water Treatment Plant
WSP	Water Saving Plant

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11. Appendices

1. NSW Best Practice Management of Water Supply and Sewerage Framework
2. Water Restrictions- Residential, Commercial and Institutional
3. Parks and Recreation Irrigation Table
4. Water Carting Plan
5. DRC Drought Coordinated Response Team Actions

APPENDICES

NSW BEST PRACTICE MANAGEMENT OF WATER SUPPLY AND SEWERAGE FRAMEWORK

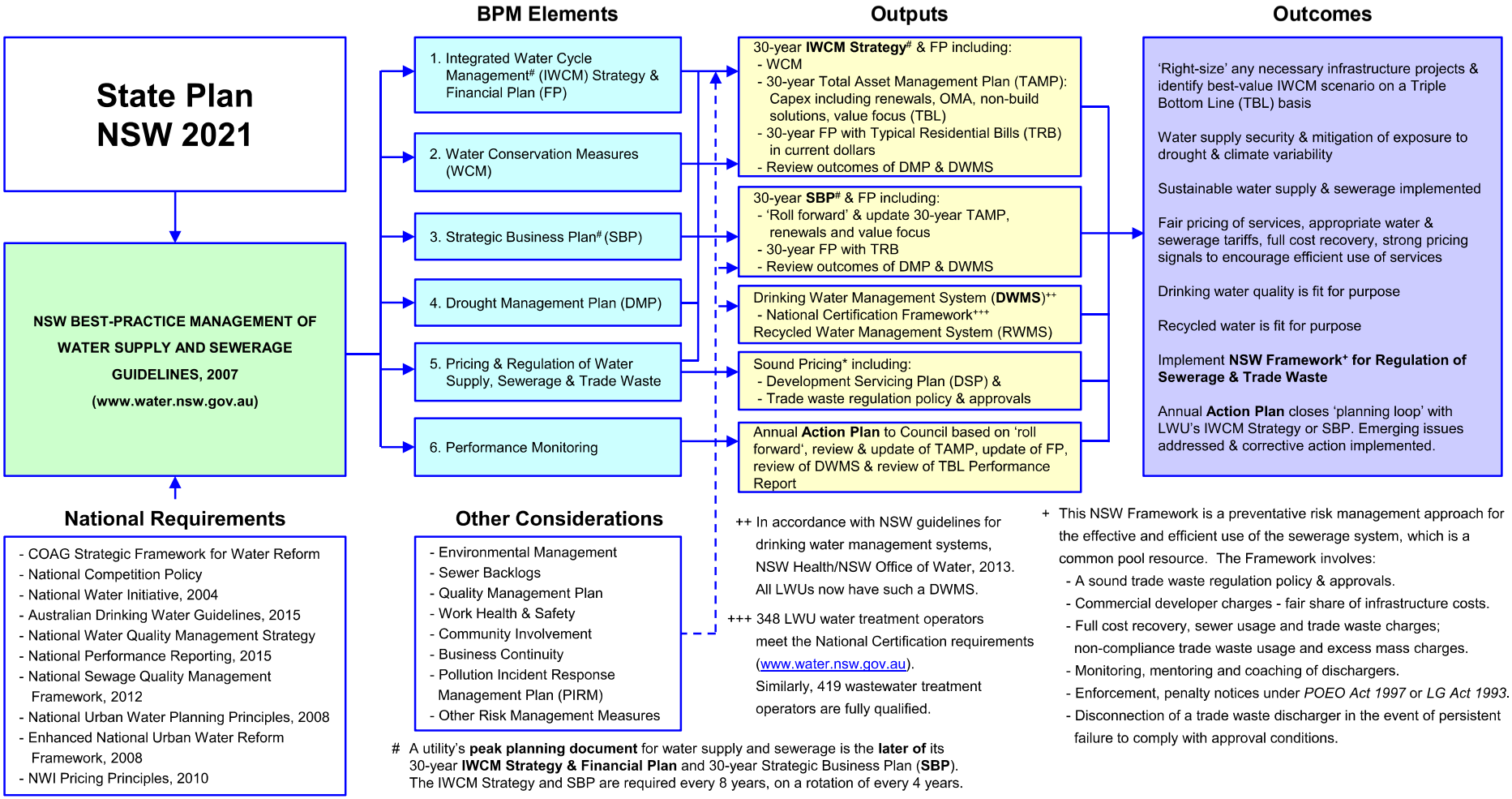
WATER RESTRICTIONS - RESIDENTIAL, COMMERCIAL AND INSTITUTIONAL

PARKS AND RECREATION IRRIGATION TABLE

WATER CARTING PLAN

DRC DROUGHT COORDINATION RESPONSE TEAM ACTIONS

NSW Best-Practice Management (BPM) of Water Supply and Sewerage Framework



National Requirements

- COAG Strategic Framework for Water Reform
- National Competition Policy
- National Water Initiative, 2004
- Australian Drinking Water Guidelines, 2015
- National Water Quality Management Strategy
- National Performance Reporting, 2015
- National Sewage Quality Management Framework, 2012
- National Urban Water Planning Principles, 2008
- Enhanced National Urban Water Reform Framework, 2008
- NWI Pricing Principles, 2010

Other Considerations

- Environmental Management
- Sewer Backlogs
- Quality Management Plan
- Work Health & Safety
- Community Involvement
- Business Continuity
- Pollution Incident Response Management Plan (PIRM)
- Other Risk Management Measures

++ In accordance with NSW guidelines for drinking water management systems, NSW Health/NSW Office of Water, 2013. All LWUs now have such a DWMS.

+++ 348 LWU water treatment operators meet the National Certification requirements (www.water.nsw.gov.au). Similarly, 419 wastewater treatment operators are fully qualified.

\+ This NSW Framework is a preventative risk management approach for the effective and efficient use of the sewerage system, which is a common pool resource. The Framework involves:

- A sound trade waste regulation policy & approvals.
- Commercial developer charges - fair share of infrastructure costs.
- Full cost recovery, sewer usage and trade waste charges; non-compliance trade waste usage and excess mass charges.
- Monitoring, mentoring and coaching of dischargers.
- Enforcement, penalty notices under *POEO Act 1997* or *LG Act 1993*.
- Disconnection of a trade waste discharger in the event of persistent failure to comply with approval conditions.

\# A utility's **peak planning document** for water supply and sewerage is the **later of** its 30-year **IWCM Strategy & Financial Plan** and 30-year Strategic Business Plan (**SBP**). The IWCM Strategy and SBP are required every 8 years, on a rotation of every 4 years.

Note that the *NSW Government's Best-Practice Management of Water Supply and Sewerage Framework* is the practical means of implementing Goal 21 of the State Plan NSW 2021 by the regional NSW local water utilities (LWUs). The BPM Framework assures sound long-term planning, asset management, operation & maintenance, appropriate levels of service and community involvement, fair pricing of services, with strong pricing signals, full cost recovery and affordable water and sewerage services, without wasteful 'gold plating'. Each utility needs to closely involve its community in the utility's implementation of the following ***nineteen (19) outcomes*** required by the NSW BPM Framework:

IWCM Strategy & Financial Plan ***(2)*** - this is a required outcome for each of water supply and sewerage, Strategic Business Plan ***(SBP - 2)***, Water Conservation Measures ***(WCM)***, Drought Management Plan ***(DMP)*** and ***Performance Monitoring (2)*** and the following **11 Pricing* Outcomes** - ***Full Cost Recovery (2)***, appropriate ***residential charges (2)***, appropriate ***non-residential charges (2)***, Development Servicing Plan ***(DSP)*** with commercial developer charges ***(2)***, ***strong pricing signals***, with at least 75% of residential revenue from usage charges, appropriate ***trade waste regulation policy*** and approvals, and appropriate ***trade waste fees and charges***.

Directly supports achievement of GOALS 21, 22 and 5 of NSW 2021:

21 Secure potable water supplies – secure long term potable water supplies for towns and cities supported by effective effluent management.
22 Protect our natural environment. **5** Place downward pressure on the cost of living.

DROUGHT RESPONSE PRIORITISATION RATIONALE

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

Reduce residential and business demand to prolong the water supply

High level considerations are:

1. Lower levels of water restrictions aim to educate and create awareness of the current water supply situation. Promoting behavioural change in terms of water usage across the community.
2. Higher levels of water restrictions aims to result in significant reduction of residential and commercial/ institutional water as a result of the change of behaviours learnt from the lower levels. Continued water supply planning aims to avoid moving to higher levels of restrictions.
3. Exemptions will be in place for those that do not readily fit within the restrictions systems, such as hospitals, care facilities or core business activities. Council approval is given through the Water Saving Action Plan (WSAP) for businesses required to prepare one.
4. There should not be any compromise for maintaining health, hygiene and safety for people or pets. Cleaning outdoor areas for these reasons are acceptable.
5. Rainwater tanks that are connected to the town water supply for refilling are to be subject to the same water restrictions as town water.
6. These restrictions are applied to the use of reticulated town water supply. For those using alternate supply such as bores, Council encourages signage be placed at the front of the premises to identify the water source. Compliance officers may seek to obtain evidence of this alternative water supply.

Baseline water usage 400 litres per person per day

LEVEL 1: LOW

DECISION MAKING RATIONALE:

These levels of water restriction are focused on:

- General awareness rather than trying to achieve significant reductions in usage. The key measure is to limit outdoor watering. Generally the impact on residents and their gardens would be relatively minor.
- Actions are mainly initial measures that activate the Drought Management Plan and its various components.

KEY TASKS

1. Activate Drought Management Plan.
2. Implement water restrictions.
3. Review backup / emergency supply options.
4. Prepare community awareness campaign (media advertising, internet and appropriate signage at town entrances).
5. Review major existing Water Management Plan and update.
6. Weekly review of water supply , actual water consumption and targets.

LEVEL 2: MODERATE

DECISION MAKING RATIONALE:

These levels focus on:

- Implementation of water restrictions within the community, including bans on unattended or untimed watering of lawns and gardens.
- Reducing water usage below typical levels for that time of year. The measures are likely to cause a moderate level of inconvenience to the community, without having extreme impacts on most lawns and gardens. The aim is to prevent over-watering and change watering behaviours.
- Increased communication with key stakeholders to take place.

KEY TASKS

1. Implement community awareness campaigns.
2. Commence issuing warnings and fines for violation of restrictions.
3. Regular drought management coordination meetings, track costs and budgets, water consumption and targets, issues and risks.
4. Meetings with large water users.
5. Consider temporary closure of non-essential, high water dependent services.
6. Preparation of back up supply sources.

LEVEL 3: HIGH

DECISION MAKING RATIONALE:

This level limits all forms of outdoor watering. Residents will experience significant impacts to their normal water usage. The aim is to reduce usage well below typical base line levels while still allowing gardens to be maintained, at a basic level.

Key actions include increased focus on compliance for violation of restrictions, increasing the community awareness campaign and notifying Commonwealth/ NSW Government of the intention to investigate and, if necessary, implement backup supply and/or emergency water supply options.

KEY TASKS

1. Increase community awareness campaign.
2. Meet with large non-residential users to discuss options for further water reduction.
3. Regular liaison with key stakeholders.
4. Daily review of water supply against actual water consumption compared to target
5. Contact large residential water users.
6. Consider temporary closure of non-essential, high water dependant services.

LEVEL 4: VERY HIGH

DECISION MAKING RATIONALE:

This critical level of restrictions involve an intense communication campaign to reduce usage to absolute minimum levels. This would include elimination of all non-essential water usage. It would have major impacts on nearly all residences and businesses. Businesses may be asked to restrict water usage to only essential services, with the possible shutting down of non-essential, water dependent services.

Key actions include implementing emergency response/supply options and an intensive community water reduction appeal.

KEY TASKS

1. Strict compliance.
2. Intense community water reduction campaign.
3. Meetings with large water users continue.
4. Temporary closure of non-essential, high water dependent services.
5. Daily review of water supply vs actual water consumption compared to target.
6. Implement emergency responses.

WATER RESTRICTIONS RESIDENTIAL EFFECTIVE 27 JULY 2020

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
Daily target per person per day	**380 Litres**	**360 Litres**	**320 Litres**	**280 Litres**	**240 Litres**	**195 Litres**
General notes apply to all activities	**LAWNS AND GARDENS** Watering is to be attended by a resident or on programmable timed systems. **Daylight Savings Period** Watering permitted between 6pm and 9am. **Period Outside Daylight Savings** Watering permitted anytime	**LAWNS AND GARDENS** Watering is to be attended by a resident or on programmable timed systems. **Daylight Savings Period** Watering permitted between 6pm and 9am. **Period Outside Daylight Savings** Watering permitted anytime	**LAWNS AND GARDENS** Watering is to be attended by a resident or on programmable timed systems. **WATER OUTDOORS FOR 1 HOUR MAXIMUM ON WEDNESDAYS AND SUNDAYS ONLY (PER HOUSEHOLD)** Only 1 outlet at any time. **Daylight Savings Period** Watering permitted between 6pm and 9am. **Period Outside Daylight Savings** Watering permitted anytime	**LAWNS AND GARDENS** Watering is to be attended by a resident or on programmable timed systems. **WATER OUTDOORS FOR 30 MINUTES MAXIMUM ON WEDNESDAYS AND SUNDAYS ONLY (PER HOUSEHOLD)** Only 1 outlet at any time. **Daylight Savings Period** Watering permitted between 6pm and 9am. **Period Outside Daylight Savings** Watering permitted anytime	**GARDENS ONLY** Watering is to be attended by a resident or on programmable timed systems. **WATER OUTDOORS FOR 15 MINUTES MAXIMUM ON SUNDAYS ONLY (PER HOUSEHOLD)** Only 1 outlet at any time. **Daylight Savings Period** Watering permitted between 6pm and 9am. **Period Outside Daylight Savings** Watering permitted anytime	Critical water shortage means that we reduce our water consumption to essential needs only. Essential needs are the basic needs to sustain human health. Outdoor water use is not permitted except for maintaining fish life.
GREYWATER USE: Collecting greywater from laundries, sinks and showers can hold harmful bacteria and high salt levels as well as other chemicals. With care, greywater can be used on gardens and lawns.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.	Bucketing of greywater is permissible A greywater diversion device whilst not encouraged is permissible if it complies with the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises including the requirement for subsurface irrigation only.
GENERAL WATERING OF LAWNS AND GARDENS						
Hand held hoses fitted with an on/off trigger style nozzle, buckets and watering cans. Water efficient drip and/or fixed timing / programmable/smart water systems. Any watering system that does not have a timer must be attended at all times.	Permitted	Permitted	Permitted up to a maximum time of 1 hour per watering day.	Permitted up to a maximum time of 30 minutes per watering day.	Permitted up to a maximum time of 15 minutes per watering day.	**NOT PERMITTED**

WATER RESTRICTIONS RESIDENTIAL EFFECTIVE 27 JULY 2020

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Activities shown below are common activities for households.

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
GENERAL WATERING OF LAWNS AND GARDENS						
Topping up, filling garden water features	Permitted.	Permitted.	Permitted up to a maximum time of 1 hour. Filling of new garden water features not permitted.	Not permitted except to maintain fish life. Filling of new garden water features not permitted.	Not permitted except to maintain fish life. Filling of new garden water features not permitted.	Not permitted except to maintain fish life. Filling of new garden water features not permitted.
Untimed watering systems, micro sprays and fixed hoses. **Any watering system that is unattended or not able to be programmed.**	Permitted	Permitted.	**NOT PERMITTED**	**NOT PERMITTED**	**NOT PERMITTED**	**NOT PERMITTED**
Watering new turf	Permitted.	Permitted.	Watering is permitted for turf establishment. Use suitable ground preparation with soil wetting agents. A new turf watering plan must be submitted and approved by Council.	Watering is permitted for turf establishment. Use suitable ground preparation with soil wetting agents. Up to a maximum 50m^2 of new turf. A new turf watering plan must be submitted and approved by Council.	**NOT PERMITTED**	**NOT PERMITTED**
OUTDOOR AREAS, POOLS, CARS AND BOATS						
Washing down walls or paved surfaces or window cleaning	Pressure washers, trigger nozzle hoses or buckets are permitted.	Pressure washers, trigger nozzle hoses or buckets are permitted.	Cleaning with bucket only.	Cleaning with bucket only.	**NOT PERMITTED**	**NOT PERMITTED**
Washing cars at home **Washing of boats, jet skis, boat motor and trailers**	Permitted with bucket and rinse with trigger hose on lawn at any time. Pressure washers can be used.	Permitted with bucket and rinse with trigger hose on lawn at any time. Pressure washers can be used.	Permitted with bucket and rinse with trigger hose on lawn at any time. Pressure washers can be used.	Permitted with bucket and rinse with trigger hose on lawn at any time. Pressure washers can be used.	Cleaning of vehicle windows, windscreens, number plates and mirrors permitted for safety and regulatory purposes with a bucket only.	**NOT PERMITTED**
Topping up private swimming pools	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	**NOT PERMITTED**	**NOT PERMITTED**
First fill of swimming pool	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Only permitted with Council permission. Must have a pool cover.	Only permitted with Council permission. Must have a pool cover.	**NOT PERMITTED**

Failure to comply with water restrictions can result in on the spot fines, under the Local Government Act 1993.

WATER RESTRICTIONS COMMERCIAL AND INSTITUTIONAL

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

WATER SAVING IN ACTION

1. These restrictions apply to commercial businesses and institutions. Not all businesses are required to submit a Water Saving Action Plan (WSAP). Only businesses determined by Council as the top high water users will be notified and required to complete a WSAP.
2. Businesses that are not required to submit a WSAP are still expected to comply with the water restrictions. The restrictions provide uniform water restrictions across core business activities.
3. Individual businesses have different needs and uses for water. The WSAP provides an opportunity to identify the specific water requirements of each business. These requirements must be reviewed by Council.
4. The WSAP provides opportunity to identify areas of proactive water saving within the business. Consideration of upgrading inefficient equipment will support broad community efforts to reduce the likelihood of tighter restrictions into the future.
5. It is encouraged that the laying of turf for subdivisions and open space is deferred or minimised subject to endorsement from Council's Development & Environment Division subject to development consent.
6. No greywater is permitted in commercial or institutional uses due to health contamination concerns. Approved treatment systems only.
7. These are the restrictions that Council is placing on the use of its potable (drinking) water supply. If the restrictions say "Not permitted" for a particular use, this means that Council's potable water supply cannot be used. Water from another source, however, could be used for this purpose.
8. Rainwater tanks that are filled by Council's potable water supply are subject to the same water restrictions as town water.

ADVISORY NOTE

Level 3 Restrictions

- Follow the water restrictions for Commercial and Institutional.
- Council is required to notify required businesses to prepare a Water Saving Action Plan (WSAP).
- Use this Water Restrictions Commercial and Institutional Guide - Activities to help prepare WSAP.

Level 4 Restrictions

- Follow the water restrictions for Commercial and Institutional.
- Activate and comply with the approved Water Saving Action Plan.

Level 5

- Follow the water restrictions for Commercial and Institutional.
- Improve water efficiency where possible.
- Review essential or core business needs for water use as extreme drought conditions continue.
- Partnered approach (Council and industry) in on site auditing, support, and advice on Water Saving Action Plan, if required.

ACTIVITIES TABLE – Water restrictions for the majority of business activities.

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
INDOOR BUSINESS AREAS						
Toilets, Showers, Basins	Permitted. Recommended upgrades; water saving shower heads, check for leaking tap-ware, and include water wise information for guests etc.	Permitted. Recommended upgrades; water saving shower heads, check for leaking tap-ware, and include water wise information for guests etc.	Permitted. Recommended upgrades; water saving shower heads, check for leaking tap-ware, and include water wise information for guests etc.	Permitted. Recommended upgrades; water saving shower heads, check for leaking tap-ware, and include water wise information for guests etc.	Permitted. Identify non essential water uses that may be turned off or limited.	Permitted. Identify non essential water uses that may be turned off or limited.
Commercial kitchens, food and meat preparation areas, eating areas (including outdoor dining).	Permitted. No restrictions to ensure health standards are maintained.	Permitted. No restrictions to ensure health standards are maintained.	Permitted. No restrictions to ensure health standards are maintained. Identify if water saving efficiencies can safely be made.	Permitted. No restrictions to ensure health standards are maintained. Identify if water saving efficiencies can safely be made.	Permitted. No restrictions to ensure health standards are maintained. Identify if water saving efficiencies can safely be made.	Permitted. No restrictions to ensure health standards are maintained. Identify if water saving efficiencies can safely be made.
Laundry services	Permitted. Recommended: Offer guests options to reduce towel refresh / alternate day servicing.	Permitted. Recommended: Offer guests options to reduce towel refresh / alternate day servicing.	Permitted. Recommended: Offer guests options to reduce towel refresh / alternate day servicing.	Permitted. Recommended: Offer guests options to reduce towel refresh / alternate day servicing.	Permitted. Recommended: Offer guests options to reduce towel refresh / 3rd or 4th day servicing.	Permitted. Recommended: Offer guests options to reduce towel refresh / 3rd or 4th day servicing.

WATER RESTRICTIONS COMMERCIAL AND INSTITUTIONAL

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
EXTERNAL BUSINESS AREAS						
Topping up swimming pools and spas	Permitted.	Permitted.	Only for a 2 hour maximum time period. Must use pool covers.	Only for a 2 hour maximum time period. Must use pool covers.	**NOT PERMITTED**	**NOT PERMITTED**
First fill of swimming pool	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Permitted. Must have a pool cover.	Only permitted with Council permission. Must have a pool cover.	Only permitted with Council permission. Must have a pool cover.	**NOT PERMITTED**
Hydrotherapy Pools	No restrictions to health and wellbeing facilities.	No restrictions to health and wellbeing facilities.	No restrictions to health and wellbeing facilities.	No restrictions to health and wellbeing facilities.	No restrictions to health and wellbeing facilities.	No restrictions to health and wellbeing facilities.
Washing down of hard areas, driveways, roofs, walls and paths, window cleaning	Permitted Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Permitted Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Permitted for health and safety reasons only or to continue core business activities. Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Permitted for health and safety reasons only or to continue core business activities. Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Permitted with Council approval or WSAP for health and safety reasons only or to continue core business activities.	Not permitted excepting with Council approval.
Pet care and animals	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted.	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted.	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted.	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted.	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted. Reduce numbers of animals where possible.	Provision of drinking water permitted. Washing animals with bucket or hand held hose fitted with an on/off nozzle permitted. Cleaning of pens permitted. High pressure washers permitted. Reduce numbers of animals where possible.
CARS AND TRANSPORT						
Washing vehicles by hand	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Buckets permitted.	Permitted for health, hygiene and safety reasons only or to continue core business activities. Buckets permitted.	Not permitted except with Council approval or WSAP for essential business only.

WATER RESTRICTIONS COMMERCIAL AND INSTITUTIONAL

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
WATERING OF LANDSCAPED AREAS AND LAWNS						
Hand held hoses fitted with an on/off trigger style nozzle. Water efficient drip and/or fixed timing / programmable/smart water systems. Any watering system that does not have a timer must be attended at all times.	Permitted.	Permitted.	**WATER OUTDOORS FOR 1 HOUR MAXIMUM ON MONDAYS AND THURSDAYS ONLY** Only 1 outlet at any time.	**WATER OUTDOORS FOR 30 MINUTES MAXIMUM ON MONDAYS AND THURSDAYS ONLY.** Only 1 outlet at any time.	**WATER OUTDOORS FOR 15 MINUTES MAXIMUM ON MONDAYS ONLY.** Only 1 outlet at any time.	**NOT PERMITTED**
Watering new turf	Permitted.	Permitted.	Watering is permitted for turf establishment. Use suitable ground preparation with soil wetting agents. A new turf watering plan must be submitted and approved by Council.	Watering is permitted for turf establishment. Use suitable ground preparation with soil wetting agents. Up to a maximum 50m^2 of new turf. A new turf watering plan must be submitted and approved by Council.	**NOT PERMITTED**	**NOT PERMITTED**
BUSINESS ACTIVITIES						
Dust suppression	Permitted for compaction and dust suppression only.	Permitted for essential compaction and dust suppression only. Encourage use of non-potable sources.	Permitted for essential compaction and dust suppression only. Encourage use of non-potable sources. Prepare WSAP if notified by Council	Permitted for essential compaction and dust suppression only. Encourage use of non-potable sources. Implement approved WSAP if required.	Permitted for essential compaction and dust suppression only. Encourage use of non-potable sources. Implement approved WSAP if required.	Not permitted except with Council approval or WSAP
Cleaning of construction and other sites	Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Prepare WSAP if notified by Council	Efficient high pressure, low flow rate cleaners with trigger control are to be used. Implement approved WSAP if required.	Permitted for essential business needs or health and safety only. Efficient high pressure, low flow rate cleaners with trigger control are to be used. Implement approved WSAP if required.	Not permitted except with WSAP for essential business only.

WATER RESTRICTIONS COMMERCIAL AND INSTITUTIONAL

DUBBO REGIONAL COUNCIL | BE WISE WITH OUR WATER

ACTIVITY	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
Commercial cleaning including	Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Permitted for health and safety reasons only or to continue core business activities. Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Permitted for health and safety reasons only or to continue core business activities. Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Permitted for health and safety reasons only or to continue core business activities. Efficient high pressure, low flow rate cleaners with trigger control are to be used.
Car wash facilities and car yards	Permitted.	Permitted.	Permitted.	Permitted to continue core business activity.	Permitted to continue core business activity.	Permitted to continue core business activity.
Landscape construction works, hard works.	Avoid using water during the heat of the day. Buckets permitted. Hoses fitted with trigger nozzles. Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Avoid using water during the heat of the day. Buckets permitted. Hoses fitted with trigger nozzles. Efficient high pressure, low flow rate cleaners with trigger control are to be used.	Avoid using water during the heat of the day. Buckets permitted. Hoses fitted with trigger nozzles. Efficient high pressure, low flow rate cleaners with trigger control are to be used. Prepare WSAP if notified by Council	Avoid using water during the heat of the day. Buckets permitted. Hoses fitted with trigger nozzles. Efficient high pressure, low flow rate cleaners with trigger control are to be used. Implement approved WSAP if required.	Permitted with WSAP. Use water before 10am or after 4pm. Buckets permitted. Hoses fitted with trigger nozzles and efficient high pressure, low flow rate cleaners only. Implement approved WSAP if required.	Not permitted except with Council approval.
Landscape construction works, soft works, planting and turf installation.	Permitted Follow restrictions for irrigation of new turf.	Permitted Follow restrictions for irrigation of new turf.	Permitted Follow restrictions for irrigation of new turf.	Permitted Encourage laying of new turf be deferred or minimised (subject to receiving the endorsement of the Council's Development & Environment Division where subject to development consent. Follow restrictions for irrigation of new turf.	Permitted with WSAP or Council approval. Encourage laying of new turf be deferred or minimised (subject to receiving the endorsement of the Council's Development & Environment Division where subject to development consent. Follow restrictions for irrigation of new turf.	Not permitted except with Council approval.

Water Saving Action Plan (WSAP):
This is a specific plan to adopt water efficiencies in the business WSAP must be submitted to Council for approval. A template is available from dubbo.nsw.gov.au/droughthub

Failure to comply with water restrictions can result in on the spot fines under the Local Government Act 1993.

WATERING OF COUNCIL'S SPORTING AND OPEN SPACE ASSETS – DUBBO VERSION 5.1

DUBBO REGIONAL COUNCIL

ASSETS BEING IRRIGATED AT EACH LEVEL OF WATER RESTRICTION

ASSET TYPE	WATER SOURCE	NO RESTRICTIONS	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
Sporting facilities	Bore & town water	Victoria Park 1	Victoria Park 1	Victoria Park 1	Victoria Park 1	Victoria Park 1	Victoria Park 1	
	Bore & town water	Victoria Park 2	Victoria Park 2	Victoria Park 2	Victoria Park 2	Victoria Park 2	Victoria Park 2	
	Bore & town water	Victoria Park 3	Victoria Park 3	Victoria Park 3	Victoria Park 3	Victoria Park 3	Victoria Park 3	
	Bore, stormwater & town water	Apex Oval	Apex Oval	Apex Oval	Apex Oval	Apex Oval	Apex Oval	
	Bore & town water	Barden Park	Barden Park	Barden Park	Barden Park	Barden Park	Barden Park	
	Bore, backwash & town water	Lady Cutler Ovals	Lady Cutler Ovals	Lady Cutler Ovals	Lady Cutler Ovals	Lady Cutler Ovals		
	Bore & town water	Lady Cutler East Ovals	Lady Cutler East Ovals	Lady Cutler East Ovals	Lady Cutler East Ovals	Lady Cutler East Ovals		
	Bore & backwash	Lady Cutler South Ovals	Lady Cutler South Ovals	Lady Cutler South Ovals	Lady Cutler South Ovals	Lady Cutler South Ovals		
	Bore & stormwater	East Dubbo S.C.	East Dubbo S.C.	East Dubbo S.C.	East Dubbo S.C.	East Dubbo S.C.		
	Bore water	Hans Clavan Fields	Hans Clavan Fields	Hans Clavan Fields	Hans Clavan Fields	Hans Clavan Fields		
	Bore water	Nita McGrath Courts	Nita McGrath Courts	Nita McGrath Courts	Nita McGrath Courts	Nita McGrath Courts		
	Bore water	John McGrath Fields	John McGrath Fields	John McGrath Fields	John McGrath Fields	John McGrath Fields		
	Bore water	Bob Dowling Ovals	Bob Dowling Ovals	Bob Dowling Ovals	Bob Dowling Ovals	Bob Dowling Ovals		
	Bore water	Katrina Gibbs	Katrina Gibbs	Katrina Gibbs	Katrina Gibbs	Katrina Gibbs		
	Town water	Pavans/Batistells (*under construction)	Pavans/Batistells*	Pavans/Batistells*	Pavans/Batistells*	Pavans/Batistells*		
	Town water	Pioneer Park	Pioneer Park	Pioneer Park	Pioneer Park	Pioneer Park		
	Town water	South Dubbo Oval	South Dubbo Oval	South Dubbo Oval	South Dubbo Oval	South Dubbo Oval		
	Town water	Jubilee Oval	Jubilee Oval	Jubilee Oval	Jubilee Oval	Jubilee Oval		
Pool	Town water	Dubbo Aquatic Leisure Centre (DALC)	DALC	DALC	DALC	DALC	DALC	
Park & gardens	Bore & town water	Elston Park	Elston Park	Elston Park	Elston Park	Elston Park	Elston Park	
	Bore & town water	Victoria Park	Victoria Park	Victoria Park	Victoria Park	Victoria Park	Victoria Park	
	Town water	Dubbo Regional Botanic Garden (DRBG)	DRBG	DRBG	DRBG	DRBG	DRBG	
	Bore water	Macquarie Lions Park	Macquarie Lions Park	Macquarie Lions Park	Macquarie Lions Park	Macquarie Lions Park	Macquarie Lions Park	
	Backwash water	Regand Park	Regand Park	Regand Park	Regand Park	Regand Park	Regand Park	
	Backwash water	Wahroonga Park	Wahroonga Park	Wahroonga Park	Wahroonga Park	Wahroonga Park		
	Town water	Delroy Park (south)	Delroy Park (south)	Delroy Park (south)	Delroy Park (south)	Delroy Park (south)		
	Bore water	Southlakes (north)	Southlakes (north)	Southlakes (north)	Southlakes (north)	Southlakes (north)		
	Town water	Elizabeth Park (outer)	Elizabeth Park (outer)	Elizabeth Park (outer)	Elizabeth Park (outer)			
	Town water	Delroy Park (north)	Delroy Park (north)	Delroy Park (north)	Delroy Park (north)			
	Town water	Sir Roden Cutler Park (all)	Sir Roden Cutler Park (top section)	Sir Roden Cutler Park (top section)	Sir Roden Cutler Park (top section)			
	Town water	Delroy Park (west)	Delroy Park (west)	Delroy Park (west)				

WATERING OF COUNCIL'S SPORTING AND OPEN SPACE ASSETS – DUBBO VERSION 5.1

DUBBO REGIONAL COUNCIL

		ASSETS BEING IRRIGATED AT EACH LEVEL OF WATER RESTRICTION						
ASSET TYPE	**PRIMARY WATER SOURCE**	**NO RESTRICTIONS**	**LEVEL 1 LOW**	**LEVEL 2 MODERATE**	**LEVEL 3 HIGH**	**LEVEL 4 VERY HIGH**	**LEVEL 5 EXTREME**	**LEVEL 6 CRITICAL**
Park & gardens	Bore water	Southlakes (south)	Southlakes (south)	Southlakes (south)				
	Town water	Elizabeth Park (outer)	Elizabeth Park (outer)	Elizabeth Park (outer)				
	Bore & town water	Theresa Maliphant Park	Theresa Maliphant Park	Theresa Maliphant Park				
	Town water	Spears Drive Park	Spears Drive Park	Spears Drive Park				
	Backwash	Bennett's Park	Bennett's Park	Bennett's Park				
	Town water	Lions Park West Park	Lions Park West Park	Lions Park West Park				
	Town water	South Dubbo Park	South Dubbo Park	South Dubbo Park				
	Town water	Wambool Park	Wambool Park	Wambool Park				
	Town water	Sommerlea Park	Sommerlea Park	Sommerlea Park				
	Town water	Kurrajong Park	Kurrajong Park	Kurrajong Park				
	Town water	Thelma Pelosi Park, Ballimore	Thelma Pelosi Park	Thelma Pelosi Park				
	Town water	Ballimore Sports Oval	Ballimore Sports Oval	Ballimore Sports Oval				
	Town water	Lunar Park	Lunar Park					
	Town water	Buckingham Drive Park						
	Bore water	Ollie Robbins Oval						
	Town water	Manera Heights Park						
	Bore & town water	Daphne Park						
	Town water	Michael Duffy Park						
	Town water	Drift Wells Park						
	Town water	Jubilee Park						
	Town water	Muller Park						
	Town water	Sommerlea Park						
	Town water	Tarlow Park						
	Town water	Red Hill Park						
	Town water	Turnberry Park						
	Town water	Bob Jane Park						
	Backwash water	Tidy Towns Park						
	Town water	Clarisbrook Park						
	Town water	Cormorant Crescent Park						
	Town water	Jack William Park						
	Town water	Kurrajong Estate Park						
	Town water	Yarrawonga Park						
	Town water	Brian Dickens Park						
	Town water	Algona Street Park						
	Town water	Wongarbon Park						

WATERING OF COUNCIL'S SPORTING AND OPEN SPACE ASSETS – WELLINGTON & GEURIE VERSION 5.1

DUBBO REGIONAL COUNCIL

		ASSETS BEING IRRIGATED AT EACH LEVEL OF WATER RESTRICTION						
ASSET TYPE	**PRIMARY WATER SOURCE**	**NO RESTRICTIONS**	**LEVEL 1 LOW**	**LEVEL 2 MODERATE**	**LEVEL 3 HIGH**	**LEVEL 4 VERY HIGH**	**LEVEL 5 EXTREME**	**LEVEL 6 CRITICAL**
Sporting facilities	Town water	Rygate Park	Rygate Park	Rygate Park	Rygate Park	Rygate Park	Rygate Park	
	Town water	Pioneer Park	Pioneer Park	Pioneer Park	Pioneer Park	Pioneer Park		
	Bore & town water	Bicentennial Park	Bicentennial Park	Bicentennial Park	Bicentennial Park	Bicentennial Park		
	Town water	Kennard Park	Kennard Park	Kennard Park	Kennard Park	Kennard Park		
	Town water	Tom Culkin Oval	Tom Culkin Oval	Tom Culkin Oval	Tom Culkin Oval	Tom Culkin Oval		
Pools	Town water	Wellington Aquatic Leisure Centre (WALC)	Wellington Aquatic Leisure Centre	Wellington Aquatic Leisure Centre	Wellington Aquatic Leisure Centre	Wellington Aquatic Leisure Centre	Wellington Aquatic Leisure Centre	
		Geurie Pool	Geurie Pool	Geurie Pool	Geurie Pool	Geurie Pool	Geurie Pool	
Parks and gardens	Town water	Cameron Park	Cameron Park	Cameron Park	Cameron Park	Cameron Park	Cameron Park	
	Town water	Oswana Japanese Gardens	Oswana Japanese Gardens	Oswana Japanese Gardens	Oswana Japanese Gardens	Oswana Japanese Gardens	Oswana Japanese Gardens	
	Town water	Walker Cres Park (sub soil)	Walker Cres Park (sub soil)	Walker Cres Park (sub soil)	Walker Cres Park (sub soil)	Walker Cres Park (sub soil)		
	Town water	Lions Park	Lions Park	Lions Park	Lions Park			
	Town water	Teamsters Park	Teamsters Park	Teamsters Park				
	Town water	Apex Park	Apex Park	Apex Park				
	Town water	Market Square						

NSW GOVERNMENT Public Works Advisory

Water Carting Plan

Emergency Water Carting for Dubbo Region

February 2020

Prepared for:

DUBBO REGIONAL COUNCIL

Document control

Version	Author(s)	Reviewer	Approved for issue	
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Executive Summary

Carting water to consumers under Dubbo Regional Council water supply scheme is a hypothetical exercise. If there is a drought induced failure of the supply or if there is contamination it is not practical to immediately rely on carted water. Additional capital works to make water carting possible would need to be in place well before a failure of supply occurs.

While carting to Dubbo LGA is a trickier situation, carting to Wellington, Geurie and Villages is possible to implement and has been analysed on a case by case basis in this plan. The biggest issue with carting to towns would be the availability of water tankers to cart water.

In the whole of the LGA scenario the most feasible solution in a logistical sense is to use a train to cart water to Dubbo and Wellington, and use trucks to cart to Geurie, Mumbil, Stuart Town and Euchareena. The cost per day of carting is included in the table below. The infrastructure costs have not been accurately estimated but to design and construct it would take a minimum of 12-months and a minimum of $50 million.

Water Carting by Train and Truck

Town Centres	Water Carting by Trains	Water Carting by Trucks	Water Carting Cost/Day	
	No of Trains/Day from Narromine	No of Trucks/Day from Wellington/Dubbo	By Truck	By Train
Dubbo	3.71			$853,697
Wellington	0.69			$95,336
Geurie		2.29*	$916	
Mumbil		1.00*	$399	
Stuart Town		0.49*	$196	
Euchareena		0.58#	$231	
Elong Elong		0.50#	$199	
		Sub-Totals	**$1,941**	**$949,032**
			Total	**$950,973**

* Using 32 kL tankers

Using 13.5 kL tankers

A water carting scenario to the whole of Dubbo Regional Council Local Government Area consumers could require at least 12-months to implement, and the emergency may over by then. An 18-month lead time to allow for sufficient investigation and implementation is recommended. Therefore, it is recommended that efforts be concentrated on the improvement of existing capital works and additional avenues of securing water supply be focused on rather than the provision of an emergency supply of carted water. Should carting to Geurie or Villages be required in an emergency this would be possible to implement. There is also the possibility of carting to Wellington in an emergency, but it is more difficult to implement.

The more likely scenario is a lack of surface water which would result in the need for water carting to Wellington, Geurie and Villages unless a secure groundwater source has been established in these areas. Dubbo has a current bore supply and it is unlikely to fail concurrent with a no-surface water scenario. Refer to **Appendix E**.

The approximate range of costs for carting to Wellington, Geurie and Villages are summarised in the following table.

Water Carting by Truck – Wellington, Geurie and Villages

Town Centres	Raw Water Pumping Demand to WTP			Water Carting by Trucks		Estimated Water Carting Cost/Day by Truck
	(ML/Day)	L/Day	(L/Sec)	No of Carts/Day		
				32kL	13.5kL	
Wellington	1.04	1,036,256	12.0	32.18	76.76	$12,873 - $30,704
Geurie	0.07	73,303	0.8	2.29	5.43	$916 - $2,172
Mumbil	0.03	31,922	0.4	1.00	2.36	$399 - $946
Stuart Town	0.02	15,675	0.2	0.49	1.16	$196 - $464
Euchareena	0.01	7,797	0.1	0.24	0.58	$231
Elong Elong	0.01	6,716	0.1	0.21	0.50	$199
					Total	**$14,814 to $34,716**

At the time of writing this report Dubbo Regional Council has been endeavouring to increase their groundwater entitlement to allow for Dubbo Region to be supplied fully by groundwater while maintaining Level 4 water restrictions.

Contents

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Abbreviations and Notations

DCC	Dubbo City Council
DRC	Dubbo Regional Council
IWCM	Integrated Water Cycle Management
LGA	Local Government Area
LWU	Local Water Utility
NRW	Non-Revenue Water
WSS	Water Supply Scheme
WTP	Water Treatment Plant

1. Introduction

Dubbo Regional Council (DRC) was established following the amalgamation of Dubbo City Council and Wellington Council in May 2016. The local government area (LGA) covers approximately 7,536 km^2 with an estimated population of 51,007 (2015 Census).

Dubbo City Council (DCC) had prepared an emergency water carting plan to serve the population in the DCC area in 2009. This plan covered Dubbo and Dubbo villages (Wongarbon, Ballimore, Brocklehurst, and Eumungerie). Following the amalgamation this emergency water carting plan has been revised to include Wellington and Wellington villages (Mumbil, Stuart Town, Geurie and Euchareena).

DRC borders the local government areas of Gilgandra Shire Council to the North, Cabonne Shire Council to the South, Mid-Western Regional Council to the East and Narromine Shire Council to the West. Dubbo Regional Council Area can be seen in **Figure 1-1: Dubbo Regional Council Area** below. DRC is located within the Macquarie-Bogan catchment.

Figure 1-1: Dubbo Regional Council Area

This emergency water carting plan focuses on the scenario of complete failure of the current raw water supplies. This may be due to events such as mishap and severe drought, and the consequent inability of the water utility to deliver potable water to the population centres of Dubbo, Wellington and surrounding dependent villages. This plan also investigates the possibility of using Lower Macquarie aquifer bores around Narromine for water carting purposes. This can be applied in the case local bores failing concurrently with the that river supply being disrupted.

2. Current Situation of Water Supply Schemes in Dubbo Regional Council Area

The City of Dubbo and the villages of Wongarbon, Eumungerie, Brocklehurst and Ballimore are supplied by the Dubbo Water Supply Scheme. The town of Wellington and the villages of Geurie and Mumbil are supplied by separate reticulated water supply schemes. Other nearby smaller villages are connected to separate private non-potable water schemes. North Yeoval is currently served by the Yeoval water supply scheme, which is operated and maintained by Cabonne Shire Council.

2.1 Dubbo Water Supply System

The Dubbo water supply system supplies Dubbo City and the villages of Ballimore, Brocklehurst, Eumungerie and Wongarbon. Dubbo and Dubbo villages are all on reticulated water supply and treated at John Gilbert Water Treatment Plant in Dubbo. The water supply reticulation for Dubbo and Dubbo Villages can be seen in **Figure 2-1: Dubbo Regional Council Dubbo and Dubbo Villages Water Supply Reticulation**.

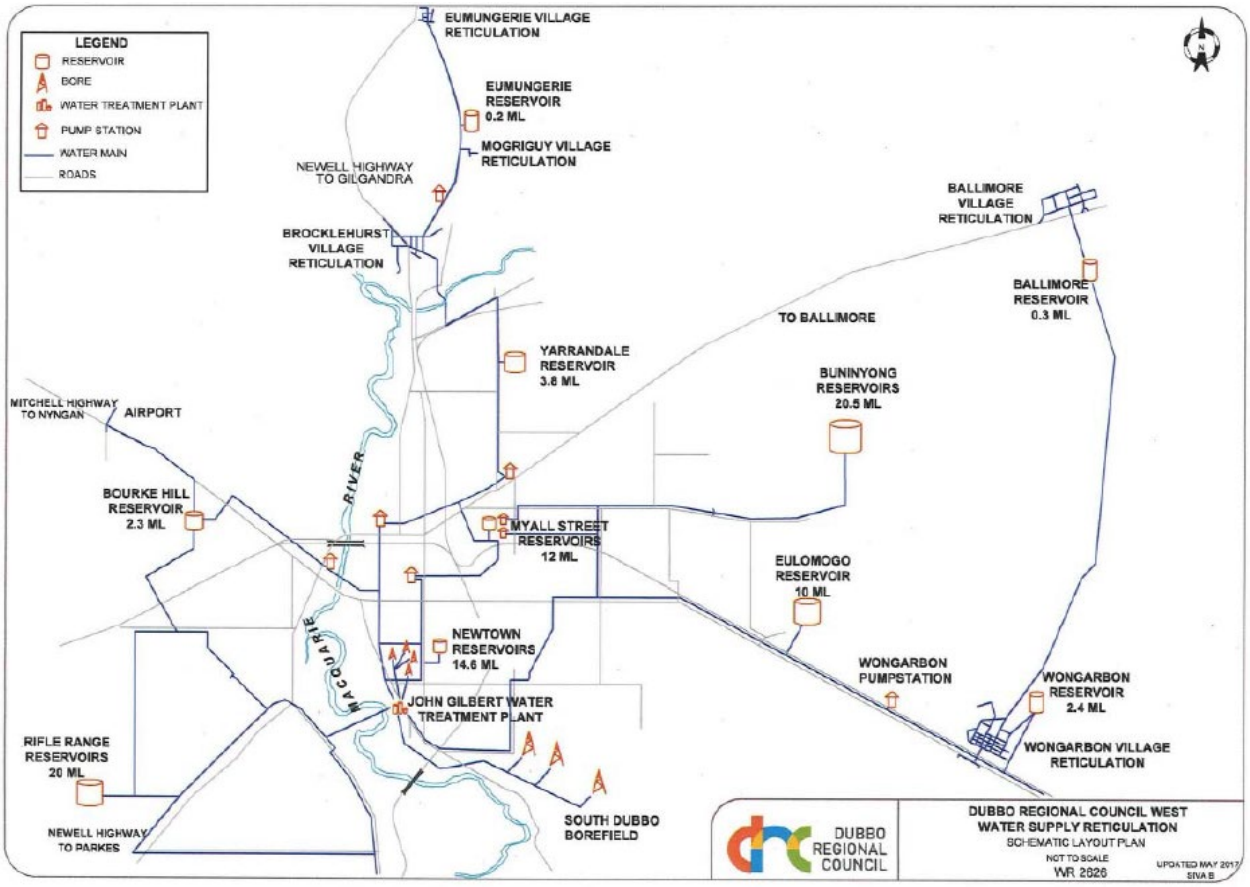


Figure 2-1: Dubbo Regional Council Dubbo and Dubbo Villages Water Supply Reticulation

The water supply is sourced from 70% surface water and 30% groundwater under full entitlement conditions. Dubbo extracts their surface water from the Macquarie River and groundwater from six bores in the Southern Aquifer borefield. The LWU surface water entitlements are approximately 8,000 ML/a with a further 800 ML of general security entitlements. The groundwater extraction licence entitlement is about of 4,000 ML/a. However, the sustainability of the aquifer to support extraction of the full entitlement is uncertain and further testing is currently being undertaken. The available extraction limit in the worst-case scenario from the existing bores may be 2,000 ML/a. These entitlements are detailed in **Table 2-1: Licence Entitlements for Dubbo WSS**.

Table 2-1: Licence Entitlements for Dubbo WSS

License Number	Water Sharing Plan	Water Source	Entitlement (ML/annum)	Groundwater availability at NO Surface water scenario (ML/annum)	Purpose
Surface water					
WAL6447	Macquarie and Cudgegong Regulated Rivers Water Source	Macquarie and Cudgegong Regulated Rivers Water Source	8,700	0	Town water supply
Groundwater					
80PT970432	Macquarie Bogan Unregulated and Alluvial Water Sources	Upper Macquarie Alluvial Groundwater Source	3,850	1925 Restricted	Town water supply
80PT970864	Macquarie Bogan Unregulated and Alluvial Water Sources	Upper Macquarie Alluvial Groundwater Source	150	75 restricted	Town water supply & Recreation
80PT970045			150	150	Recreation (Elston Park)
80PT970188			50	50	Stock & Industrial (sale
80PT971105			50	50	Recreation
80PT971113			5	50	Recreation
80PT971093			27	27	Irrigation

2.2 Wellington Water Supply System

The Wellington Water Supply Scheme sources water from the Macquarie River upstream of Wellington. Water is pumped from the river pump station to the WTP site, where it is treated. Once treated, the water is sent to the reticulated supply and extends as far as Redlea Poultry and the airport. The capacity of the mains extends further out southwest and southeast (Avoca and Nanima). Two booster pump stations deliver water to the Montefiores Reservoir and the Barton Hill Reservoir for the Wellington Correctional Centre and Cadonia rural residential estate. For the extent of Wellington reticulation refer to **Figure 2-2: Wellington Water Supply Reticulation**.

Investigations into potential groundwater sources in Montefiores on the northern side of Wellington have been undertaken. A new bore has been established adjacent to the existing Montefiores Pump Station. It is currently not in operation. It is intended to install a new pump and connect the bore to an existing bore near Bicentennial Oval in Montefiores. This is to enable supply to Wellington in the event of a cease to flow event in the Macquarie River.

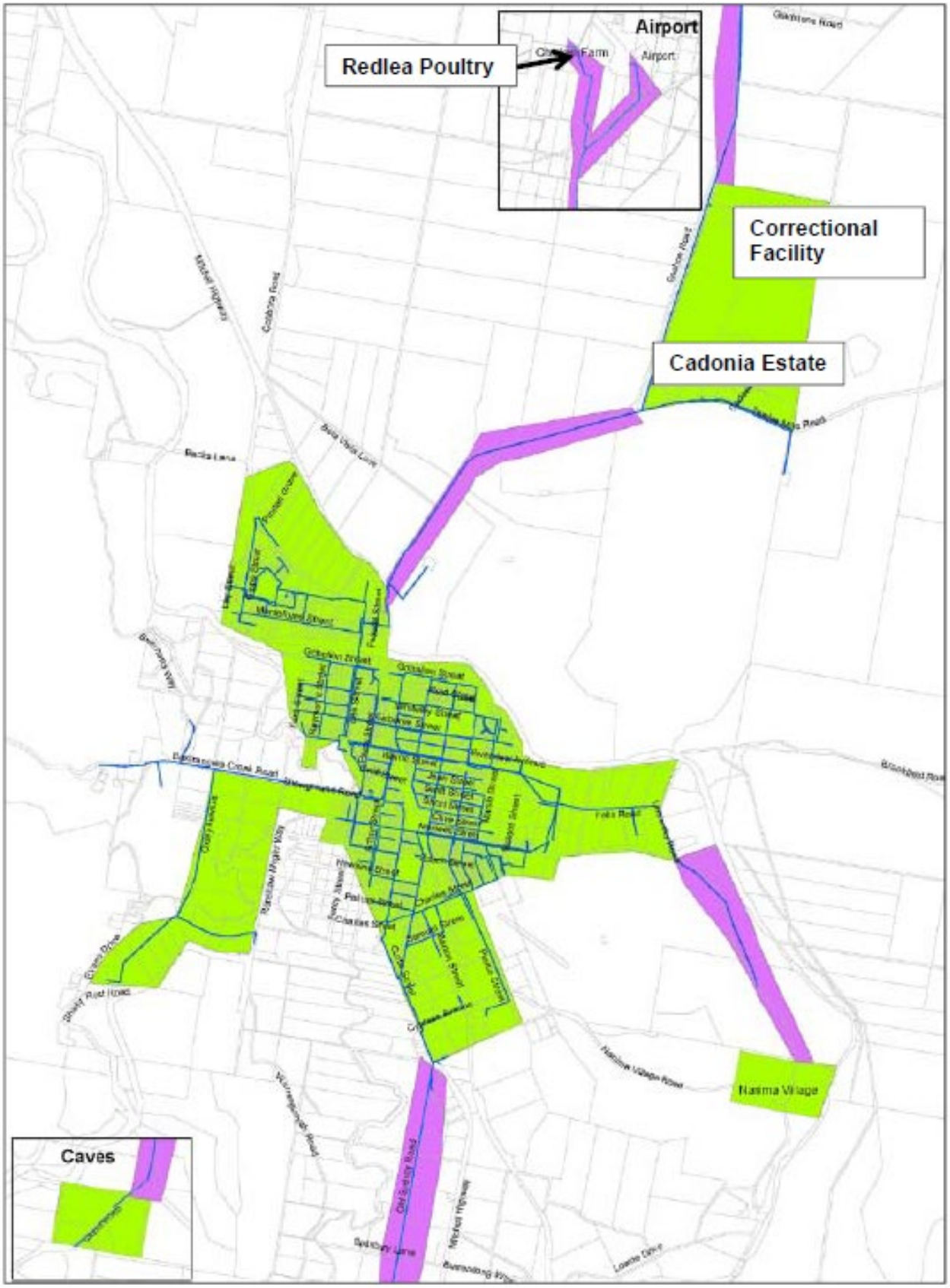


Figure 2-2: Wellington Water Supply Reticulation

Table 2-2: Licence entitlements for Wellington WSS

License Number	Water Sharing Plan	Water Source	Entitlement (ML/annum)	Groundwater availability at NO Surface water scenario (ML/annum)	Purpose
Surface water					
WAL6451	Macquarie and Cudgegong Regulated Rivers Water Source	Macquarie and Cudgegong Regulated Rivers Water Source	1,855	0	Surface water for Wellington WTP
WAL3008	Macquarie and Cudgegong Regulated Rivers Water Source	Macquarie and Cudgegong Regulated Rivers Water Source	36	0	Surface water for Wellington WTP
WAL3009			2.70	0	
Groundwater					
80SL128721		Wellington Montefiores Bore	350	350	Groundwater Supply (currently in commissioning)
WAL35683	NSW Murray Darling Basin Fractured Rock Groundwater Sources	Lachlan Fold Belt Murray Darling Basin Groundwater Source	41	41	Wellington caves groundwater recreation supply (restricted)
WAL35293	Macquarie Bogan Unregulated and Alluvial Water Sources	Bell Alluvial Groundwater Source	100	100	In operation

2.2.1 Geurie Water Supply System

Geurie WSS extracts raw water from the Macquarie River at Geurie. Water is pumped from the river pumping station to the Geurie WTP and supplied to the residents of the Geurie village. During flooding and low flowing periods, the raw water quality deteriorates significantly. The reticulated water supply for Geurie can be seen in **Figure 2-3: Geurie Water Supply Reticulation**.

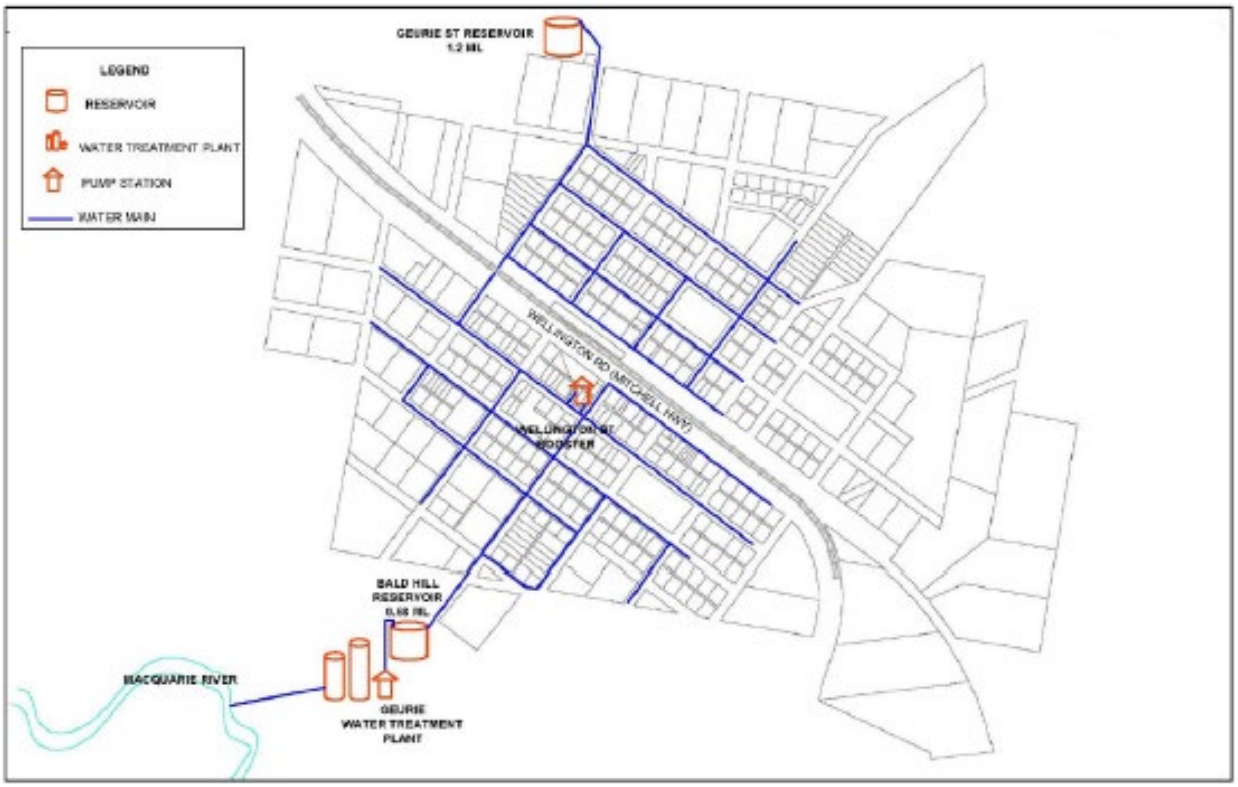


Figure 2-3: Geurie Water Supply Reticulation

Geurie township has a bore licence for 120 ML/annum. The original bore was decommissioned and in 2019 a new bore adjacent to the old bore was drilled with an adequate yield to supply Geurie. It is intended to connect the new bore to the existing rising main to the Water Treatment Plant. This is for emergency supply and in the event of reduced surface water allocation. In the interim, the population of Geurie is less than 500 residents which would make water carting feasible should the water supply be interrupted.

Table 2-3: Licence entitlements for Geurie WSS

License Number	Water Sharing Plan	Water Source	Entitlement (ML/annum)	Groundwater availability at NO Surface water scenario (ML/annum)	Purpose
Surface water					
WAL6452	Macquarie and Cudgegong Regulated Rivers Water Source	Macquarie and Cudgegong Regulated Rivers Water Source	300	0	Surface water for Geurie WTP
Groundwater					
WAL35088	Macquarie Bogan Unregulated and Alluvial Water Sources	Upper Macquarie Alluvial Groundwater Source	120	120	Emergency supply of Geurie township (not in operation)

2.2.2 Mumbil Water Supply System

Mumbil has 119 residential and 9 non-residential/commercial properties that are served by the Mumbil WSS. The peak daily demand of approximately 0.6 ML/day, and peak yearly demand is approximately 17 ML/year. Raw water for the village of Mumbil is sourced from a Bell River aquifer (extraction capacity of 6 L/s) and pumped via a rising main to Mumbil (approximately 6 km). The licence entitlements for Mumbil are all from groundwater and can be seen in **Table 2-4: Licence entitlements for Mumbil WSS**. The water is chlorinated before distribution into the reticulation. The Mumbil WSS is shown in **Figure 2-4: Mumbil Water Reticulation Network**.

Table 2-4: Licence entitlements for Mumbil WSS

License Number	Water Sharing Plan	Water Source	Entitlement (ML/annum)	Groundwater availability at NO Surface water scenario (ML/annum)	Purpose
Groundwater					
WAL33851	Macquarie Bogan Unregulated and Alluvial Water Sources	Bell Alluvial Groundwater Source	70	70	Groundwater for Mumbil town water supply (in operation)
80BL236615			19	19	Bore (not used)
WAL33829	Macquarie Bogan Unregulated and Alluvial Water Sources	Bell Alluvial Groundwater Source	25	25	Bore (not used)

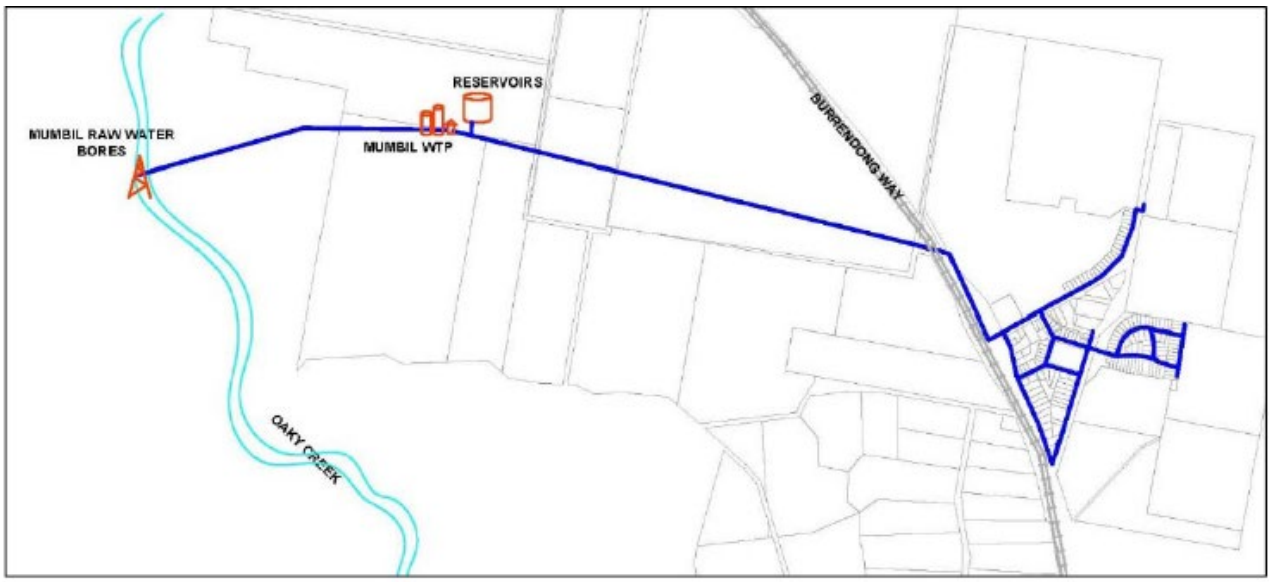


Figure 2-4: Mumbil Water Reticulation Network

The groundwater pumping station consists of three wells (2 are currently operational) adjacent to the Bell River and pumps water approximately 2.5 km to the reservoirs and chlorination unit. There are four reservoirs that hold a total of 0.36 ML. This arrangement can be seen in **Figure 2-5: Mumbil Water Supply Scheme**.

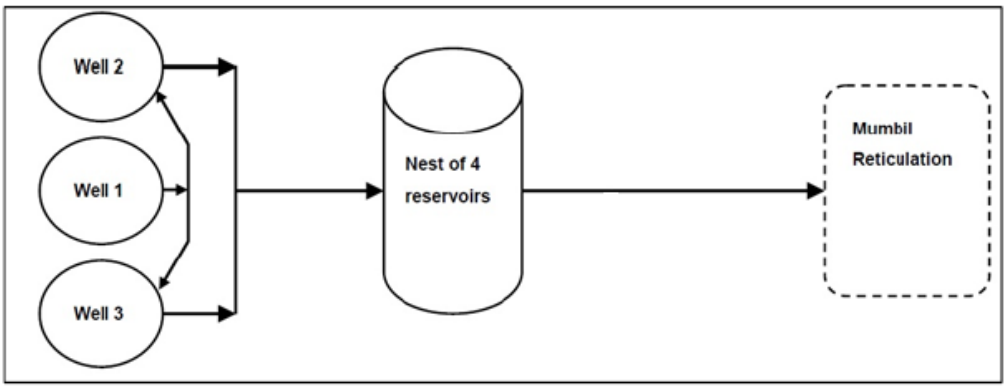


Figure 2-5: Mumbil Water Supply Scheme

2.2.3 Wellington Villages

Wellington, Geurie and Mumbil are served by Wellington, Geurie and Mumbil water supply systems respectively. Approximately 45 of the residences in North Yeoval are located in the Wellington LGA. These are serviced by the Yeoval water supply scheme, which is maintained and operated by Cabonne Council. Lake Burrendong and Mookerawa State Parks on the western side of Lake Burrendong are operated by a State Park Trust which operates its own water and sewage treatment facilities at both parks. Cudgegong River Caravan Park located on the eastern side of Lake Burrendong is operated by a trust. The caravan park has its own water and sewage treatment facilities.

Other Wellington Villages and supply include:

- Stuart Town (approximately 50 residences) does not have any schemes and is solely dependent on individual household rainwater tanks, and privately-operated bores. A recently installed non-potable supply system, using a local bore supply, has been installed by Council with access to a water filling station.
- Euchareena (approximately 25 residences) has a limited non-potable water supply scheme operated by residents in conjunction with individual household rainwater tanks. Not all properties within Euchareena are connected to the communal scheme.
- Elong Elong (approximately 30 residences) has no reticulated supply.

3. Why Water Carting May Be Necessary

3.1 Events Likely to Cause Emergency

There are essentially two categories of events that may lead to an emergency that would require water carting to be implemented:

1. A catastrophic event leading to non-availability of raw water from the Macquarie River. This includes events such as a plane crash or road tanker with toxic load into Lake Burrendong or Macquarie River upstream of the Dubbo weir pool; or failure of the water treatment plant.
2. Long term depletion of raw water sources leading to non-availability of water from the river and local groundwater sources.

Under the scenario of complete failure of raw water availability from Lake Burrendong due to prolonged drought the supply of water would be more critical. The drought conditions have the potential to lead to significant depletion in groundwater availability. It is likely that this scenario would occur after the failure of surface water supply. However, this scenario would be predictable from monitoring of storage levels and prevailing weather conditions. This means that Council would have longer lead times to implement a coordinated plan.

3.2 Emergency Response

3.2.1 Dubbo and Dubbo Villages

The impact of emergency conditions requiring water carting could be immediate and planning would need to be in place ready for immediate application.

For catastrophic events resulting in non-availability of the Macquarie River as a raw water source, it is improbable that the Dubbo's groundwater supply would also be affected. Consequently, water should be available from ground water to satisfy emergency demand, but immediate stringent restrictions would need to be imposed.

The most significant failure for analysis in this report is the complete and sudden loss of raw water availability from Lake Burrendong due to contamination of the stored water or downstream river due to plane crash or major road tanker mishap in the catchment draining to the lake or river.

Under this scenario the only immediate source of raw water would be Council's bore field which usually accounts for 30% of town water supply under full river allocation. Under the most recent drought period it is currently supplying approximately 40% of the town water. Additional licences or acquisition of groundwater through water trading would be required to provide full emergency supply. It is understood that as part of Dubbo Regional Council's Drought Management is the additional provision of groundwater to maintain water to Dubbo and Dubbo villages during drought times.

3.2.2 Geurie

Should there be failure at the Geurie Water Treatment Plant immediate carting from Dubbo or Wellington should begin. In 2019 a new bore adjacent to the old bore was drilled with an adequate yield to supply Geurie as the original bore supplying Geurie was decommissioned last century. It is intended to connect the new bore to the existing rising main to the Water Treatment Plant. This is for emergency supply and in the event of reduced surface water allocation. The project is due for completion in July 2020.

3.2.3 Wellington and Wellington Villages

Wellington and Wellington villages have a more difficult water supply. In the drought period continuing in 2020. Euchareena and Stuart Town are currently carting water from Mumbil. Elong Elong is sourcing water for carting from Dubbo.

In the scenario that a catastrophic event resulting in the non-availability of surface water from the Macquarie River, additional raw water sources would be required for Wellington and dependent

villages' water supply. As a result of investigations into potential groundwater sources in Montefiores a new bore has been established adjacent to the existing Montefiores Pump Station. It is currently not in operation. The intention is to install a new pump to connect the bore with an existing bore near Bicentennial Oval in Montefiores in order supply Wellington in a no surface water scenario.

Other options include compulsory acquisition of access licences from surrounding groundwater users. There is a much initial implementation cost associated with this option. Long term drought proofing in events of reduced to no surface water allocation should form part of the drought management capital works.

4. Calculation of Emergency Water Demand

This analysis of the emergency water carting demand for Dubbo Regional Council (DRC) service area in accordance with the Government guidelines given in "Emergency relief for regional town water supply". These guidelines are included in **Appendix D**.

4.1 How Demand is Calculated – NSW Guidelines

The guidelines seen in **Appendix D** include guidance for determining minimum cartage requirements. The emergency water demand and analyses were carried out based on 2019 IWCM population demand forecast and the emergency residential demand guidelines.

Based on NSW Government guideline the estimate of potable water required in an emergency for Dubbo is approximately 8.1 ML/day (2,945 ML per year). This is treated water required to maintain basic supply to the general public and major institutions in Dubbo in times of emergency. This represents approximately 27% of peak day water consumption. This does not account for losses by Plant or Non-Revenue Water (NRW).

Also based on the guidelines Wellington requires 0,9 ML/day (329 ML per year) for basic emergency supply. The whole of Dubbo Regional Council including Dubbo, Wellington and villages emergency water is 9.1 ML/day (3,318 ML per year).

4.2 Emergency Water Demand

Emergency Residential Water Demand has been forecasted for each WSS for next 30 years based on 2018 IWCM population forecast figures. Public Works Advisory – Infrastructure Services and Dubbo Regional Council developed an Integrated Water Management Plan (IWCM) in 2019. Information regarding population projections and water demand in this plan were obtained through the information contained in the IWCM.

Calculation of customer emergency water demand has assumed that the existing reticulation systems from the water treatment plants will be used for distribution. Therefore, actual raw water demand should be estimated by adding the plant losses (5%) and distribution losses (10%) to the calculated demand.

For further information on how the figures in **Table 4-1: Emergency Water Demand** and **Table 4-2: Emergency Residential Water Demand** are calculated refer to **Appendix A** and the NSW Government guidelines in **Appendix D**.

Table 4-1: Emergency Water Demand

Town Centres	Consumer Supply Demand		Losses (L/Day)		Raw Water Pumping Demand to WTP With Losses		
	L/Day	ML/Day	5% Plant	10% NRW	ML/Day	L/Day	L/Sec
Dubbo	8,068,968	8.069	403,448	806,897	9.28	9,279,313	107.4
Wellington	901,092	0.901	45,055	90,109	1.04	1,036,256	12.0
Geurie	63,742	0.064	3,187	6,374	0.07	73,303	0.8
Mumbil	27,758	0.028	1,388	2,776	0.03	31,922	0.4
Stuart Town	13,630	0.014	682	1,363	0.02	15,675	0.2
Euchareena	6,780	0.014	339	678	0.01	7,797	0.1
Elong Elong	5,840	0.007	292	584	0.01	6,716	0.1
TOTAL	**9,087,810**	**9.096**	**454,391**	**908,781**	**10.45**	**10,450,982**	**120.96**

Table 4-2: Emergency Residential Water Demand

Town Centres	Consumer Supply Demand -Without Losses		Losses (L/Day)		Raw Water Pumping Demand to WTP With Losses		
	L/Day	ML/Day	5% Plant	10% NRW	ML/Day	L/Day	L/Sec
Dubbo	5,492,370	5.492	274,619	549,237	6.32	6,316,226	73.1
Wellington	534,300	0.534	26,715	53,430	0.61	614,445	7.1
Geurie	61,490	0.061	3,075	6,149	0.07	70,714	0.8
Mumbil	27,154	0.027	1,358	2,715	0.03	31,227	0.4
Stuart Town	11,000	0.011	550	1,100	0.01	12,650	0.1
Euchareena	5,900	0.006	295	590	0.01	6,785	0.1
Elong Elong	5,400	0.005	270	540	0.01	6,210	0.1
TOTAL	**6,137,614**	**6.138**	**306,881**	**613,761**	**7.06**	**7,058,256**	**81.7**

For comparison purposes the total water carting demand (including plant and non-revenue water losses) are shown in **Figure 4-1: Total Water Carting Demand for Dubbo Regional Council Area – With Losses**.

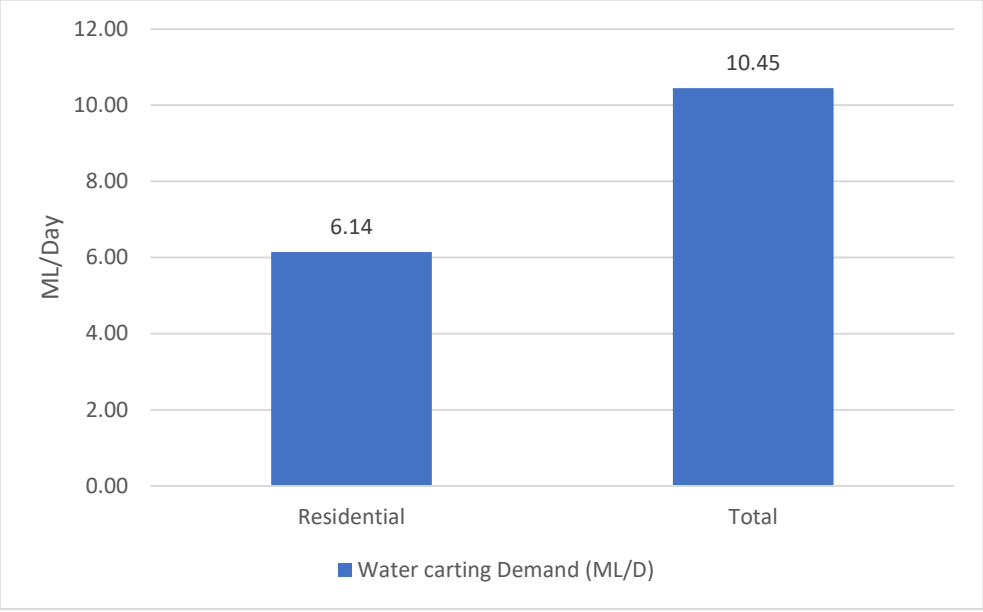


Figure 4-1: Total Water Carting Demand for Dubbo Regional Council Area – With Losses

This analysis indicates that approximately 10.45 ML per day (3.8 GL/annum) metered water demand would be required to maintain limited water supply to the general public and institutions in Dubbo Regional Council consumers during an emergency that would necessitate water carting. This is base survival water rates. For more information regarding the usage and water restrictions refer to **Appendix B**.

5. Possible Sources for Raw Water Carting

5.1 Long Term Depletion of Raw Water Sources

This scenario would require both the non-availability of water from the Macquarie River and the depletion of the local aquifer. Such circumstances would require the importation of water from outside the Dubbo area.

Under prolonged drought conditions there is no water available from Burrendong or local groundwater (or Windamere as it would already have been drained to Burrendong). Under emergency conditions there is no reason to cart water from Burrendong as sufficient water is available from local groundwater in Dubbo to meet emergency demand.

Under the assumed prevailing conditions, no surface water would be available in the immediate vicinity and most likely the only possible water source would be ground water. The nearest possible ground water source would be Narromine provided its water resources are also not depleted. For this hypothetical exercise it is assumed that groundwater would be available from Narromine.

The most likely sources for raw water supply are listed in **Table 5-1: Summary of Options for Raw Water Supply** below.

Table 5-1: Summary of Options for Raw Water Supply

Source	Availability of Raw Water Supply to Dubbo Under Different Scenarios – ML per year								
	Current annual demand 10,000ML			Emergency Supply 2,737ML			Drought Supply 2,737ML		
	Surface	Groundwater	Required	Surface	Groundwater	Required	Surface	Groundwater	Required
Windamere	Not Applicable as any water available would be transferred to Burrendong under any scenario								
Gilgandra	Not Applicable as bore field yield is currently all used								
GAB	Sufficient supply but quality variable and long lead time required for investigation and design – expect high capital costs								
Burrendong	8,700			NIL			NIL		
Dubbo	8,700	3,850	10,000	NIL	3,800	2,737	NIL	NIL	2,737*
Narromine	NIL	4,270^	1,550#	NIL	4,270	1,550#	NIL	4,270	1,550#

^unconfirmed yield of borefield
#average based on winter demand of 2.5ML per day and summer 6ML per day
*to achieve the required emergency target for Dubbo summer restrictions would be required in Narromine

Council can also seek a Ministerial determination under Section 79 of the Water Management Act, 2000 to compulsorily acquire access licences for additional groundwater entitlements due to the critical importance given to town water needs in the circumstances of an emergency.

5.2 Preparation Time Required

The degree of difficulty in implementing such a plan for a community the size of Dubbo is extreme, verging on impossible. A minimum 12 months lead time would be required for detail design, calling and issue of contracts for plant and equipment and to construct works prior to commencement of water carting. Such a tight program would depend on regular review and monitoring of the need for water carting, the identified source of supply and the projected date for commencement of carting.

Currently, seven bores owned and operated by Dubbo Regional Council, which extract groundwater from the Upper Macquarie alluvial aquifer) if the river supply is disrupted. If the supply from local bores fails or proves inadequate the alternative provision is that one of the bores from the town water supply bores at Narromine would be used. These bores extract water from the Lower Macquarie Aquifers. Refer to the recommendations from the hydrogeologist in **0**.

5.3 Water Carting

5.3.1 Who Would Do the Water Carting?

Recommendations given in groundwater hydrology report, groundwater can be extracted from Great Artesian Basin in Lower Maguire Aquifers in Narromine for emergency water carting purpose. Train water carting may more appropriate for emergency water supply from Narromine to Dubbo and Wellington to meet their daily water demands of 9.28 ML/d and 1.04 ML/d respectively.

The daily quantity to be carted in an emergency is estimated at 10.45 ML/Day for all of Dubbo Region. This should be noted that this is emergency survival water. Should a prolonged drought period occur which drains the resources from both surface water and groundwater resources to a level which would necessitate water carting these numbers may be reviewed. At this point they should be revised to account for the demand that DRC would like to supply. This will involve increased cost to DRC.

Water carting would be undertaken either by DRC or an approved water carter. Water carters that are registered with Council are shown in **Table 5-2: DRC Registered Water Carters**. There are tanks of varying capacities from 13,500 L to 32,000 L available. These capacities have been used for the analysis further on to give an estimate of the amount of trucks required.

Table 5-2: DRC Registered Water Carters

Name	Location	Tank Capacity Litres
Black sky partnership	Wellington	13500
O'Brien Contracting	Dubbo	32000
S Blom	Wongarbon	32000
B A Dunn	Dubbo	32000
P R Edwards	Dubbo	15000/13500

All tankers are required to hold a valid Drink Water Microbiological Test Certificate which meets the Australian Drinking Water Guidelines. Given the large amount of quantities of water to be carted it is not feasible that there would be an adequate supply of tankers to supply potable water. For the purposes of this analysis it has been assumed that raw water would be supplied to each town's Water Treatment Plant.

5.3.2 Dubbo, Wellington and Villages

Trains are more efficient for larger volumes than motor vehicles. The township of Narromine and Dubbo are connected by the Main Western Railway and provided water tank carriages and locomotives are available, this could be used as means of delivering water from Narromine to Dubbo and Wellington.

Approximately, bore fields are located 3.5 km away from the railway station. Therefore, train loading infrastructure would be required to be established in Narromine, before commencing the water carting. This includes a bore water pumping station (refer to Figure **5-1**: Typical bore water pump station) and a train loading facility (refer to Figure **5-2**: Typical Train Loading).

Similar infrastructure and logistic facilities would have to be established in Dubbo, Geurie and Wellington to unload the carted water to their own treatment plants. A train unloading facility (refer to Figure **5-3**: Typical Train Unloading) would be required in each town. Alternatively, truck carting to Geurie from Dubbo could occur based on projected infrastructure operation costs for the period for which water carting is expected. Each water scheme requires a dedicated water main from train station to water treatment plant and a pump station near by railway station.

Figure 5-1: Typical bore water pump station

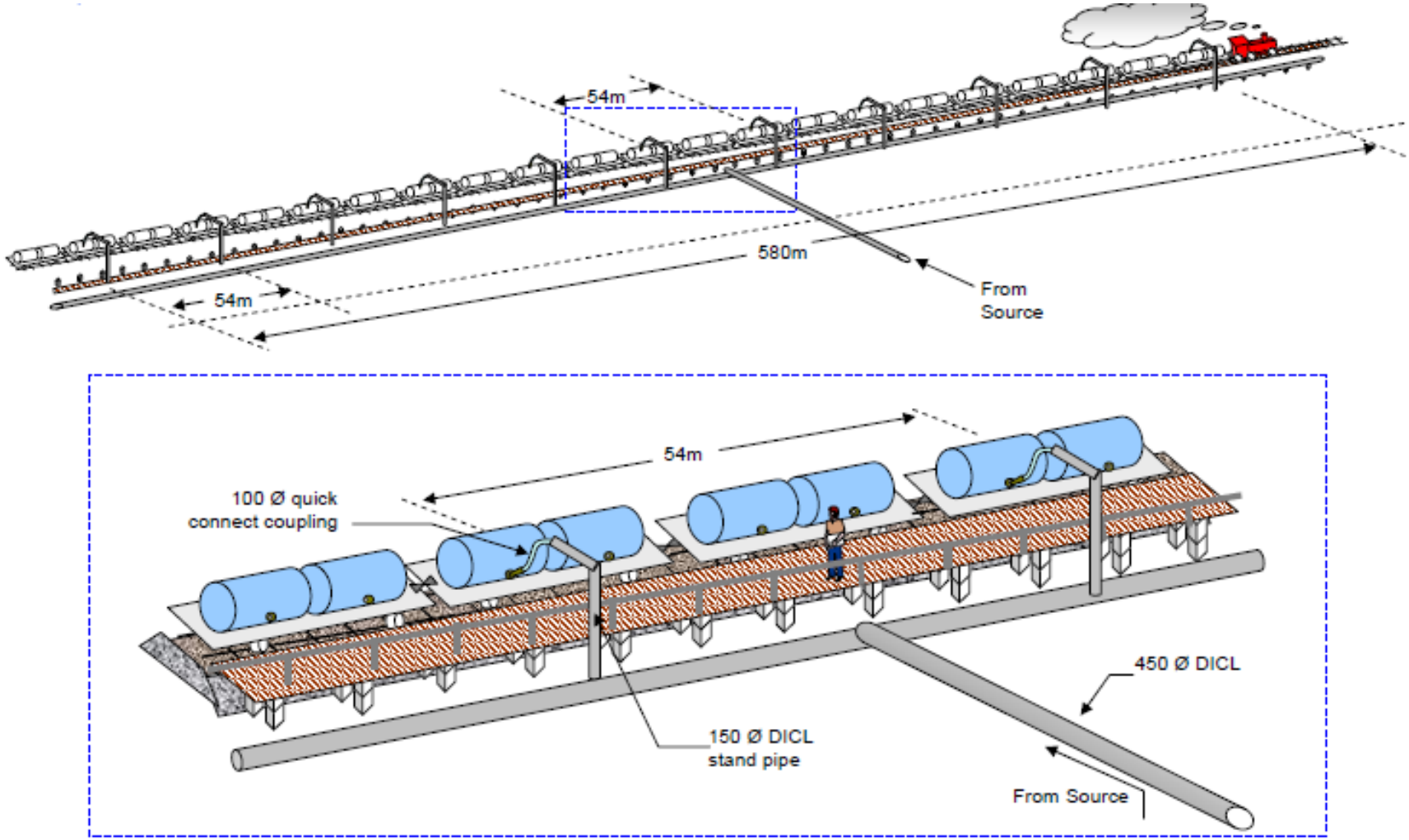


Figure 5-2: Typical Train Loading

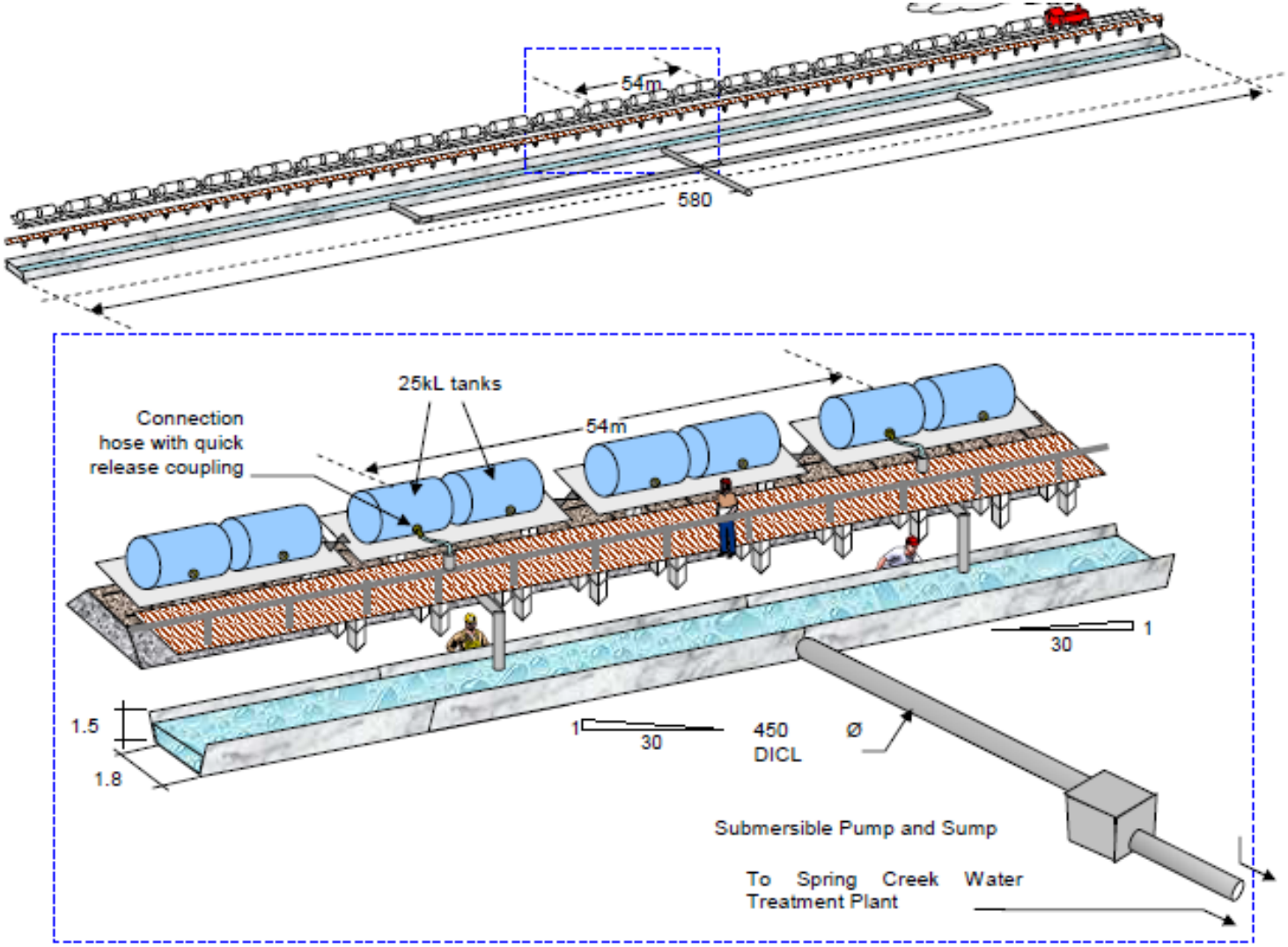


Figure 5-3: Typical Train Unloading

5.3.3 Carting to Wellington and Wellington Villages

In the event that both surface and groundwater are depleted it has been assumed that emergency supplies could be carted from Dubbo. The population of Wellington is on the cusp of what is reasonable to use trucks to cart water. The guidelines for what is considered a reasonable population to cart to can be seen in **Table 5-3: Feasibility of Water Carting**.

Table 5-3: Feasibility of Water Carting

Population	Water Carting Feasibility	Advantages/Disadvantages
10	Yes	Low cost, quick to implement
100	Yes	Low cost, quick to implement
1,000	Maybe	
5,000	Probably not	
20,000	No	Very expensive
50,000	No	Very expensive Logistically almost impossible to organize and coordinate Long lead times required to prepare

In a no surface water scenario it would also be assumed that Dubbo would have limited to no surface water. This could either be from prolonged drought or catastrophic failure. In this instance carting would either begin from Burrendong (depending on the event and availability) or from Dubbo. For this analysis carting from Dubbo has been considered. For information regarding the estimated number of trucks and estimated costs refer to **Section 6.**

6. Water Carting Strategy

6.1 Train Carting from Narromine to Dubbo

The logistics of carting 10.45 ML per day are daunting and require the operation to be run on military precision. The scale of the operation would be such that significant investigation and design would be required along with the construction of large civil works whether the activity be by road tanker or railway.

Truck carting to Dubbo would take somewhere between 290 and 688 truckloads a day. Assuming 290 truckloads would every truckload a 32 kL capacity, and 688 is assuming all trucks have a 13.5 kL capacity. Sufficient water tankers for road or rail cartage options would not be available and would need to be manufactured or imported.

For analysis purposes it is assumed that all water deliveries would take place over a 12-hour period. Between 25 and 58 trucks would be required to deliver water per hour to be delivering water, or one truck to be unloading nearly every minute, which is logistically not feasible. Assuming a 2-hour round trip including loading and unloading there would be between 49 (32kL capacity trucks) and 115 (13.5kL capacity trucks) required to implement truck water carting just to Dubbo. This analysis does also not allow for delays that could be caused by incidents on the road.

Quotes that Dubbo Regional Council has received from water carters are in relation to delivery within 60km of Wellington, so the prices have been kept consistent at a unit rate of $400 per truck load. This means that the estimated cost to cart to just Dubbo would be between $116,000 and $275,000 per day. This is not including the infrastructure required to set this up and the acquisition of the trucks to do this.

Train carting from Narromine to Dubbo and Wellington is a more logistically feasible option. While it does represent a higher cost for both operation and infrastructure it would be achievable to implement. The train would start in Narromine and then cart water to Dubbo and then Wellington. Mumbil, Sturt Town and Euchareena could be carted to by trucks from Wellington WTP, and Elong Elong from Dubbo WTP. While Geurie WTP could also be carted to by train the estimated costs are much higher. Truck carting is on the cusp of feasible to implement for Geurie. If there is an inability to provide enough carts to cart to the rest of the LGA train carting to Geurie could be considered. In the current 2020 drought period Stuart Town and Euchareena are already caring water. The estimated number of trucks and trains required are detailed in **Table 6-1: Estimated Number of Trucks and Trains Required for Carting**.

Table 6-1: Estimated Number of Trucks and Trains Required for Carting

Town Centres	Raw Water Pumping Demand to WTP		Alternative Water Source	Water Carting by Trains			Water Carting by Trucks	
	ML/Day	L/Sec		Train Carriage Capacity (L)	No of Trains /Day from Narromine		Truck Capacity (L)	No of Trucks /Day from Wellington
Dubbo	9.28	107.4	Narromine Bore-field (150L/Sec)	2,500,000	3.71	4.0		
Wellington	1.04	12.0			0.41	1.0		
Geurie	0.07	0.8			0.03		32,000	2.29
Mumbil	0.03	0.4			0.01		32,000	1.00
Stuart Town	0.02	0.2			0.01		32,000	0.49
Euchareena	0.01	0.1			0.00		13,500	0.58
Elong Elong	0.01	0.1			0.00		13,500	0.50

For the costing associated with the strategy it has been assumed that train carting would occur to Dubbo and Wellington from Narromine, and truck carting to Mumbil, Stuart Town, Euchareena, and Elong Elong from Wellington and Dubbo would take place. Given the high operational cost of implementing train carting to Geurie it is preferable to use trucks for water carting.

The routes from train station to Water Treatment Plants in Dubbo, Geurie and Wellington are detailed in **Appendix C**. Geurie has been included as it is possible to implement train carting to Geurie however truck carting has less infrastructure and operational cost. The daily rate to cart to Geurie changes from $916/day (3x32kL truckloads per day) to $2,172 (6x13.5kL trucks per day) to $6,666 per day for train carting. For this reason, truck carting with a 32kL truck has been nominated. The estimated costs for water carting are shown in **Table 6-2: Estimated Cost for Water Carting – Train from Narromine to Dubbo and Wellington; Truck to Geurie and Wellington Villages**.

Table 6-2: Estimated Cost for Water Carting – Train from Narromine to Dubbo and Wellington; Truck to Geurie and Wellington Villages

Town Centres	Water Carting by Trains	Water Carting by Trucks	Unit rate		Water Carting Cost/Day	
	No of Trains /Day from Narromine	No of Trucks /Day from Wellington	Truck load from Wellington*	Train Load from Narromine	By Truck	By Train
Dubbo	3.71			$230,000		$853,697
Wellington	0.41			$230,000		$95,336
Geurie*		2.26	$400		$916	
Mumbil		1.00	$400		$399	
Stuart Town		0.49#	$400		$196	
Euchareena		0.58	$400		$231	
Elong Elong		0.50	$400		$199	
					$1,941	**$949,032**
				Total		**$950,974**

*Geurie could be carted by truck from Dubbo or Wellington

#This is based on a 32 kL tanker capacity

The full details of the estimated costs for water carting can be seen below. It should be noted that for Geurie and Mumbil 32 kL tankers are suggested, for Euchareena and Elong Elong 13.5 kL tankers are suggested, and for Stuart Town 32 kL tankers if available or if not 13.5 kL tankers. This is also determined by the storage capacity at the towns themselves. For Stuart Town, Euchareena and Elong Elong water carting every second day would be a better ideal to make better use of the tanker capacity.

6.2 Truck Carting to Wellington and Villages

It is approximately a 55km drive from Dubbo WTP to Wellington WTP. The quotes for water carting from Wellington to Stuart Town and Euchareena that is currently underway provide an estimate of approximately $400 per trip (for a less than 60km radius), so this price has been kept consistent throughout the analysis.

The carting to Wellington would be done from Dubbo (given that there is adequate bore supply). If there is not adequate bore supply the costs would be required to be increased depending on the distance from the source of the water. From an analysis standpoint it has been assumed that there

are sufficient groundwater resources in Dubbo to supply Dubbo and Wellington and associated villages.

Wellington would require between 33 and 77 truckloads per day, which amounts to approximately 6 to 13 trucks an hour (assuming a 12-hour day). This would mean that a truck would be required every 9.5 or 22.5 minutes. Assuming a 2-hour round trip including loading and unloading over a 12-hour day a total of 6x32 kL trucks would be required (or 13x13.5 kL trucks).

The estimated costs for 32 kL and 13.5 kL tanker supply to Wellington, Geurie. Mumbil and Stuart Town, Euchareena and Elong Elong are detailed in **Table 6-3: Estimated Costs and Number of Truckloads Required for Water Carting to Wellington and Villages (32kL Capacity)** and **Table 6-4: Estimated Costs and Number of Truckloads Required for Water Carting to Wellington and Villages (13.5kL Capacity)**.

Table 6-3: Estimated Costs and Number of Truckloads Required for Water Carting to Wellington and Villages (32kL Capacity)

Town Centres	Raw Water Pumping Demand to WTP			Water Carting by Trucks		Unit rate	Water Carting Cost/Day by Truck
	(ML/Day)	L/Day	(L/Sec)	Tanker Capacity (L)	No of Carts/Day		
Wellington	1.04	1,036,256	12.0	32,000	32.18	$400.00	$12,873
Geurie	0.07	73,303	0.8	32,000	2.29	$400.00	$916
Mumbil	0.03	31,922	0.4	32,000	1.00	$400.00	$399
Stuart Town	0.02	15,675	0.2	32,000	0.49	$400.00	$196
Euchareena	0.01	7,797	0.1	32,000	0.24	$400.00	$97
Elong Elong	0.01	6,716	0.1	32,000	0.21	$400.00	$84
						Total	**$14,565**

Table 6-4: Estimated Costs and Number of Truckloads Required for Water Carting to Wellington and Villages (13.5kL Capacity)

Town Centres	Raw Water Pumping Demand to WTP			Water Carting by Trucks		Unit rate	Water Carting Cost/Day by Truck
	(ML/Day)	L/Day	(L/Sec)	Tanker Capacity (L)	No of Carts/Day		
Wellington	1.04	1,036,256	12.0	13,500	76.76	$400.00	$30,704
Geurie	0.07	73,303	0.8	13,500	5.43	$400.00	$2,172
Mumbil	0.03	31,922	0.4	13,500	2.36	$400.00	$946
Stuart Town	0.02	15,675	0.2	13,500	1.16	$400.00	$464
Euchareena	0.01	7,797	0.1	13,500	0.58	$400.00	$231
Elong Elong	0.01	6,716	0.1	13,500	0.50	$400.00	$199
						Total	**$34,716**

It should be noted that should there be insufficient 32 kL tankers available to do the water carting the cost should be between $14,565 and $34,716 per day. Geurie has been included in the following table for reference only, as at the time of writing this report it does not yet have a secure groundwater supply. The level of storage in the town reservoirs should also be considered for the

tanker size. For this reason, it is suggested that both Euchareena and Elong Elong use 13.5 kL tankers that cart every second day. In the current 2020 drought period Euchareena utilises a 13.5kL tanker that carts every second day.

6.3 Infrastructure Required to Enable Water Carting

Potential pipeline routes from train stations to town water treatment plants can be seen in **Appendix C**. For further information about the type of infrastructure required for train carting refer to **Section 5.3**.

To implement water carting to Dubbo a lead time of a minimum of 12 months would be required. Other limiting factors include:

- the purchase of a significant number of water cartage tankers (for road or rail);
- Design and construction of loading facilities at the water source;
- Design and construction of train unloading facilities at Dubbo, and Wellington
- Design and construction of truck unloading facilities at Geurie and Mumbil;
- Preparation of detailed traffic management plans for both loading and unloading;
- Design and installation of large pipe work and pumping stations;
- Upgrading monitoring and control of Council's SCADA systems; and
- Construction of sealed roadways to dual carriageway heavy duty standard.

The estimated capital cost of infrastructure would require a further level of investigation into the preferred option. There are also external factors including rail crossings, access to RMS roads, upgrades to existing railway tracks that would be required. It is estimated very loosely that a minimum of $50 million and 12-months lead time would be required. This is external to any operating costs including wagon hire that would be required.

A minimum 12 months lead time would be required for detail design, calling and issue of contracts for plant and equipment and to construct works prior to commencement of water carting. Such a tight program would depend on regular review and monitoring of the need for water carting, the identified source of supply and the projected date for commencement of carting.

6.4 Policy Implications

For catastrophic events that would cause immediate or impending loss of surface water supply from Macquarie river immediate emergency water restrictions would be required to be imposed. This is in the powers of Dubbo Regional Council with consent from the Minister. In the event of a catastrophic failure of raw water supplies special emergency powers would also have the potential to be implemented.

Should the need for water carting become likely, an ongoing review and forward planning program should be initiated at least 18 months prior to expected date for commencing water carting. The review should be in close consultation with the water utility responsible for the proposed water source. Public consultation and briefing sessions may be required. The review must include an analysis of the prevailing weather conditions and a forward projection of the expected start for water carting based on worst and average long-term rainfall records. Regular review would then be ongoing until the water carting plan was initiated, or the emergency passed.

It is envisaged that Section 60 approval under the Local Government Act 1993 would be required for any increased water extraction and/or treatment facilities at Narromine.

Any activity that would impact on classified road reserves would require concurrence from the RTA as required under Section 138 of the Roads Act, 1993.

As the water supply situation would be critical by the time a decision is required to proceed with water carting, the project should be declared a development of major infrastructure in accordance with Section 75 Part 3A of the Environmental Planning and Assessment Act 1979.

6.5 Recommendations

Given the length of time for implementation, the cost implications and the general feasibility of water carting alternative strategies to water carting should be investigated. The most feasible solution would be to increase the groundwater entitlements held by Dubbo Regional Council.

The extraction of groundwater is heavily regulated through water sharing plans to ensure usage of the resource does not exceed its long-term sustainable yield. Under the Upper Macquarie Alluvial Aquifer Water Sharing Plan:

- The annual sustainable yield is around 20,000 ML/a.
- Council's current annual allocation is 3,850 ML/a.
- Council's current average annual usage is around 2,200 ML/a.
- Target supply Emergency (groundwater) 3,527 ML/a.

Dubbo Regional Council is currently seeking additional allocation of 2,400 ML/a to allow for Level Four Water Restrictions to be maintained in Dubbo. In addition to this 120 ML/a of groundwater supply at Geurie is to be utilised as well as 350 ML/a of groundwater supply at Montefiores in Wellington.

The key outcomes Council needs to achieve in order to reliably depend on increased groundwater supplies are:

1. Establishing that it can safely extract its full entitlement under the current Water Sharing Plan.
2. Being able to then expand this physical extraction capacity by a further 2,400 ML/a.
3. Securing the necessary additional entitlements to extract this increased volume, either on a temporary or permanent basis.

Should the groundwater entitlements be increased to this capacity, Dubbo should be able to supply the required water if there are immediate restrictions imposed and carting is required to Geurie, Wellington and villages.

This analysis has been a hypothetical exercise. In the event that the groundwater raw water supplies are no longer available to Dubbo LGA further investigation into a reliable water source should begin at least 18-months prior to allow for implementation of water carting.

6.6 Long-term Drought Management

In 2019 November, DRC prepared a water strategy to address the immediate issues of water security across the LGA created by the current drought as well as providing Council with a much more diverse and resilient water supply system to withstand the impacts of future droughts whilst providing for responsible population growth.

The key elements identified in this strategy, which are proposed to be funded by the $30m provided by the NSW Government, include:

- Geurie groundwater source.
- Construction of a network of pipes throughout Dubbo which:
    - Connects existing recreational bores to the water filtration plant to enable these bores to augment the city's water supply; and
    - Enables high quality recycled water to be piped from the sewage treatment plant to appropriate locations across Dubbo to be used as a replacement water source to relieve demand on the existing potable water supplies.
- Provision of enhanced water treatment processes at the Dubbo Sewage Treatment Plant to ensure the quality of recycled water discharged for re-use meets appropriate quality standards.
- Construction of a backwash water re-use scheme at the Dubbo Water Filtration Plant.
- Purchase of additional groundwater water entitlements.

- Development of the first stage of the Dubbo Stormwater Harvesting Scheme as part of Council's overall drainage strategic program.

DRC needs to identify the emergency capital works which are the best means of maintaining critical supplies of water and apply for funding for emergency capital works to the Minister for Regional Water. Furthermore, DRC is endeavouring to purchase groundwater entitlements in the vicinity of Dubbo and has budgeted for these acquisitions.

Appendix A Emergency Water Demands

A.1 Town Emergency Water Demand

Appendix Table A-1: Dubbo Emergency Water Demand

Updated Estimated Emergency Water Supply for Dubbo in 2020		
	No. persons	**Total (litres/day)**
Residents	**42,249**	**5,492,370**
Hospital Patients	400	132,000
Nursing Home Patients #	1,000	154,000
School Students (non-resident)	7,399	310,758
Hotels/Motels #	4,000	616,000
	Sub Total 1	**6,705,128**
Clubs #	1,200	120,000
Cafes/Restaurants #	8,000	800,000
Tourists #	1,134	11,340
High Street Shops #	200	2,000
Youth Detention Centre #	50	7,700
Offices #	2,000	20,000
Shopping Centres #	20,000	200,000
Garages #	1,400	30,800
CSU /TAFE #	1,000	22,000
Non-retail Commercial/Manufacturing #	3,000	150,000
	Sub Total 2	**1,363,840**
	Non-Residential	**2,576,598**
	TOTAL DEMAND	**8,068,968**
	TOTAL QUANTITY FOR WATER CARTING	**9,279,313**

#Adopted 2009 Figures

Appendix Table A-2: Wellington Emergency Water Demand

Estimated Emergency Water Supply for Wellington in 2020		
	No. persons	**Total (litres/day)**
Residents	**4,110**	**534,300**
Hospital Patients	50	16,500
Nursing Home Patients	106	16,324
School Students (non-resident)	949	39,858
Hotels/Motels #	620	95,480
	Sub Total 1	**702,462**
Cafes/Restaurants	50	5,000
Tourists	115	1,150
High Street Shops	20	200
Youth Detention Centre	1000	154,000
Offices	20	200
Shopping Centres	2,000	20,000
Garages	140	3,080
Non-retail Commercial/Manufacturing	300	15,000
	Sub Total 2	**198,630**
	Non-Residential	**366,792**
	TOTAL DEMAND	**901,092**
	TOTAL QUANTITY FOR WATER CARTING	**1,036,256**

#Adopted 2009 Figures

Appendix Table A-3: Geurie Emergency Water Demand

Estimated Emergency Water Supply for Geurie in 2019		
	No. persons	**Total (litres/day)**
Residents	**478**	**62,140**
School Students (non-resident)	36	1,512
	Sub Total 1	**63,002**
Cafes/Restaurants	5	500
High Street Shops	2	20
Garages	10	220
	Sub Total 2	**740**
	Non-Residential	**2,252**
	TOTAL DEMAND	**64,392**
	TOTAL QUANTITY FOR WATER CARTING	**73,303**

#Adopted 2009 Figures

Appendix Table A-4: Mumbil Emergency Water Demand

Estimated Emergency Water Supply for Mumbil in 2019		
	No. persons	**Total (litres/day)**
Residents	**205**	**26,650**
School Students (non-resident)	12	504
	Sub Total 1	**19,744**
Cafes/Restaurants	1	100
	Sub Total 2	**100**
	Non-Residential	**604**
	TOTAL DEMAND	**27,254**
	TOTAL QUANTITY FOR WATER CARTING	**31,922**

#Adopted 2009 Figures

Appendix Table A-5: Stuart Town Emergency Water Demand

Estimated Emergency Water Supply for Stuart Town in 2019		
	No. persons	**Total (litres/day)**
Residents #	**110**	**11,000**
School Students (non-resident)	15	630
	Sub Total 1	**11,630**
Cafes/Restaurants	20	2,000
	Sub Total 2	**2,000**
	Non-Residential	**2,630**
	TOTAL DEMAND	**13,630**
	TOTAL QUANTITY FOR WATER CARTING	**13,630**

#Adopted 2016 Figures

Appendix Table A-6: Euchareena Emergency Water Demand

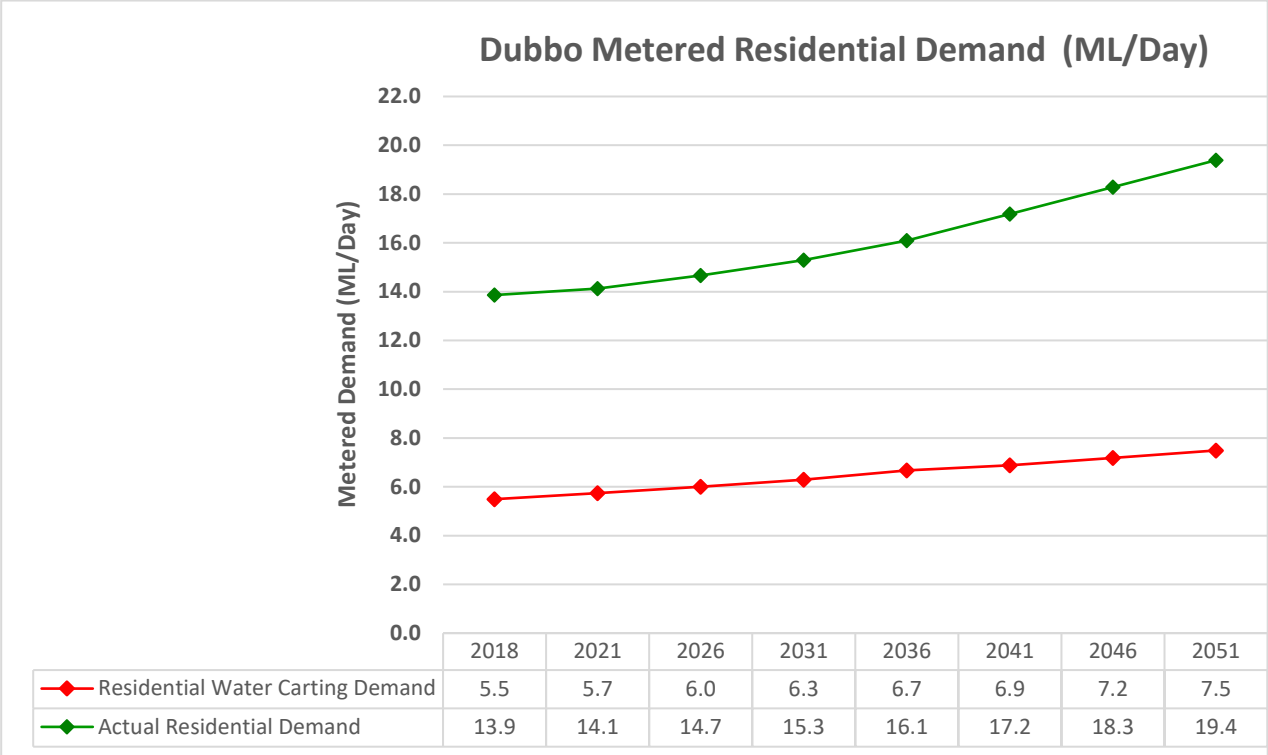
Estimated Emergency Water Supply for Euchareena in 2019		
	No. persons	**Total (litres/day)**
Residents	**59**	**5,900**
School Students (non-resident)	20	440
	Sub Total 1	**6,340**
Community Hall *	20	440
	Sub Total 2	**440**
	Non-Residential	**880**
	TOTAL DEMAND	**6,780**
	TOTAL QUANTITY FOR WATER CARTING	**6,780**

Appendix Table A-7: Elong Elong Emergency Water Demand

Estimated Emergency Water Supply for Euchareena in 2019		
	No. persons	**Total (litres/day)**
Residents	**54**	**5,400**
	Sub Total 1	**5,400**
Community Hall *	20	440
	Sub Total 2	**440**
	Non-Residential	**440**
	TOTAL DEMAND	**5,840**
	TOTAL QUANTITY FOR WATER CARTING	**5,840**

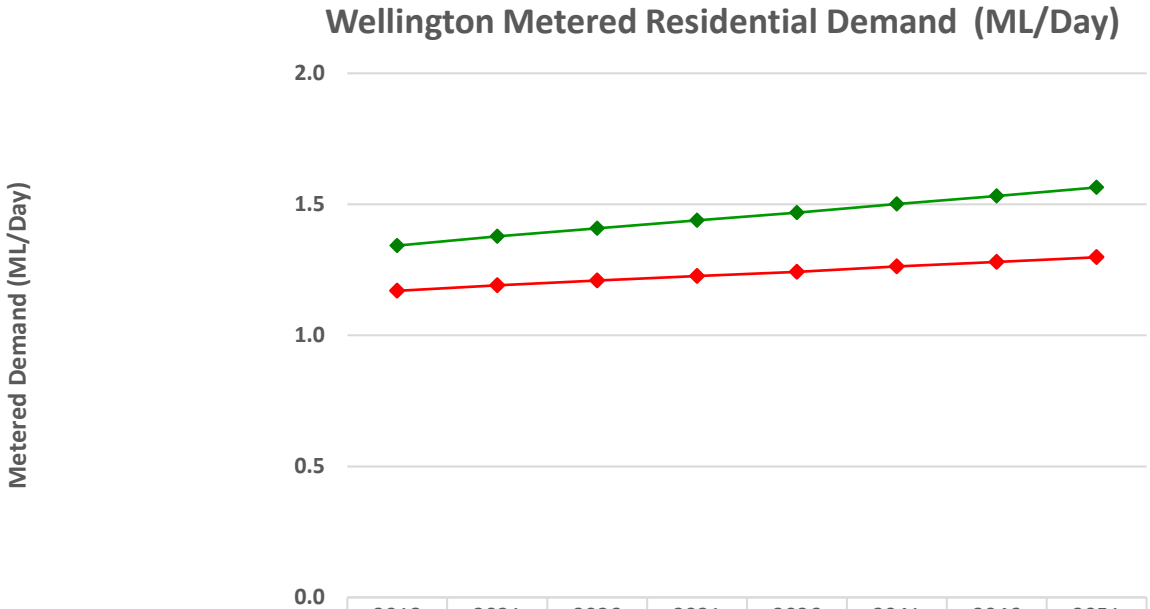
Appendix B Metered Residential Demand (ML/Day)

B.1 Metered Residential Demand



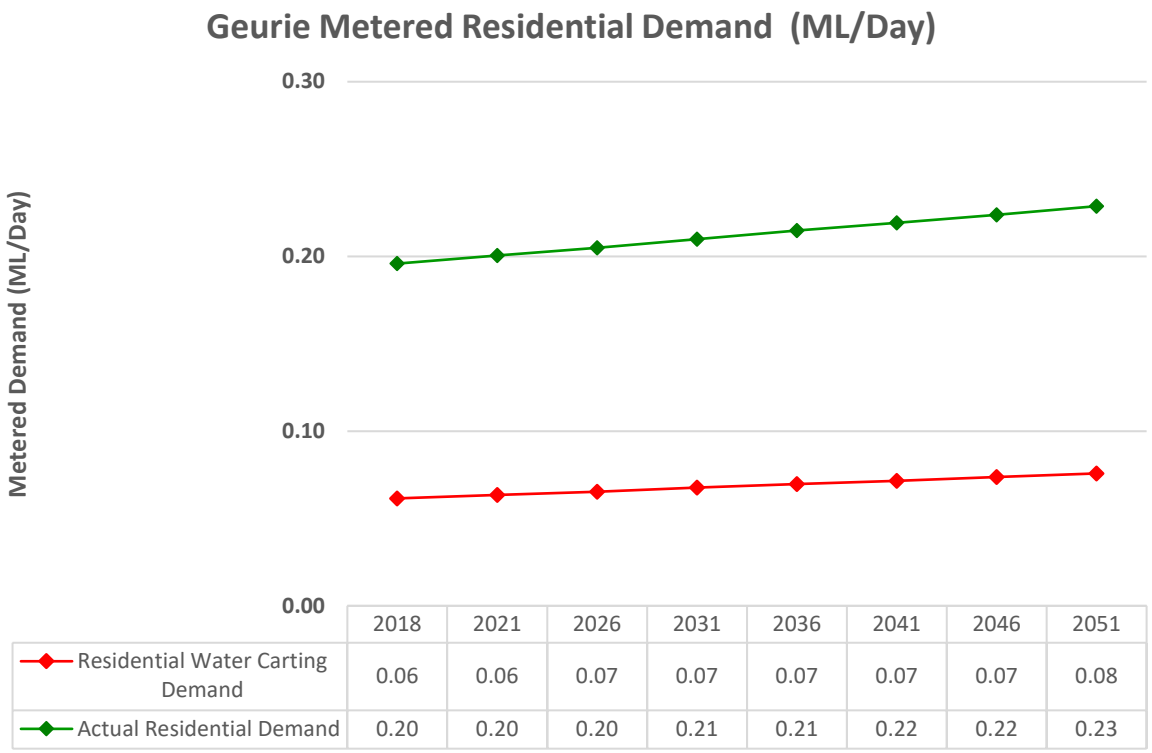
	2018	2021	2026	2031	2036	2041	2046	2051
Residential Water Carting Demand	5.5	5.7	6.0	6.3	6.7	6.9	7.2	7.5
Actual Residential Demand	13.9	14.1	14.7	15.3	16.1	17.2	18.3	19.4

Appendix Figure B-1: Dubbo Metered Residential Demand (ML/Day)



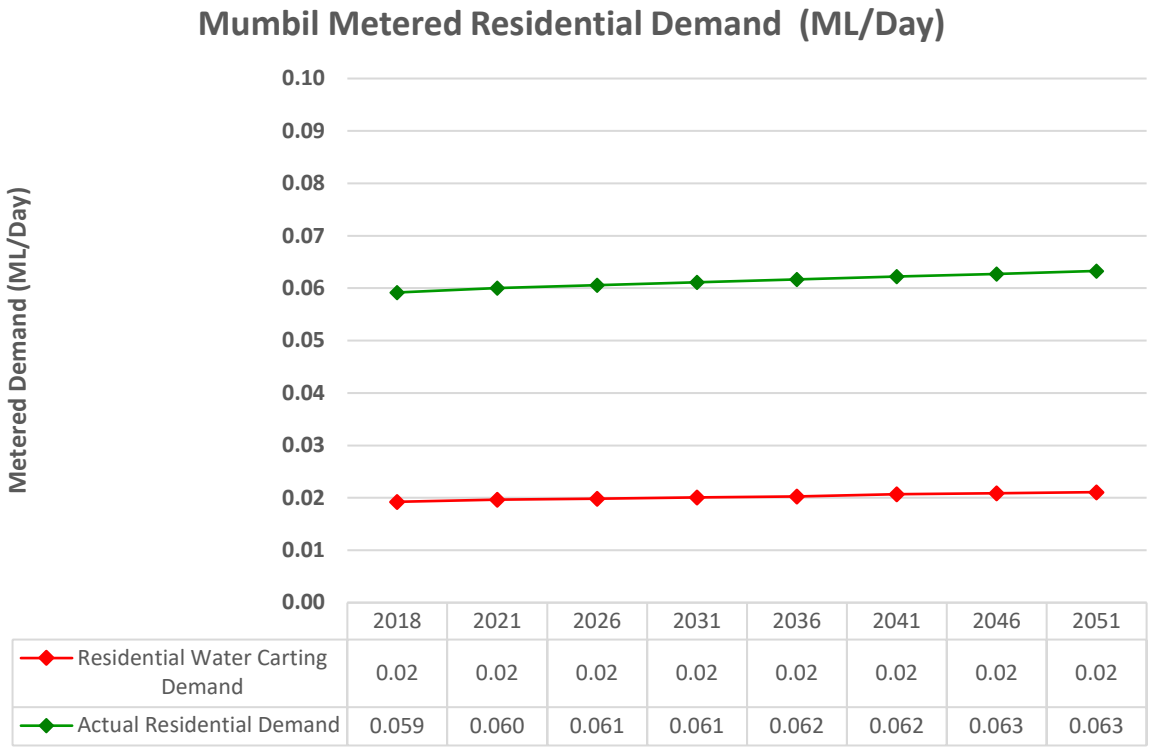
	2018	2021	2026	2031	2036	2041	2046	2051
Residential Water Carting Demand	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Actual Residential Demand	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6

Appendix Figure B-2: Wellington Metered Residential Demand (ML/Day)



	2018	2021	2026	2031	2036	2041	2046	2051
Residential Water Carting Demand	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08
Actual Residential Demand	0.20	0.20	0.20	0.21	0.21	0.22	0.22	0.23

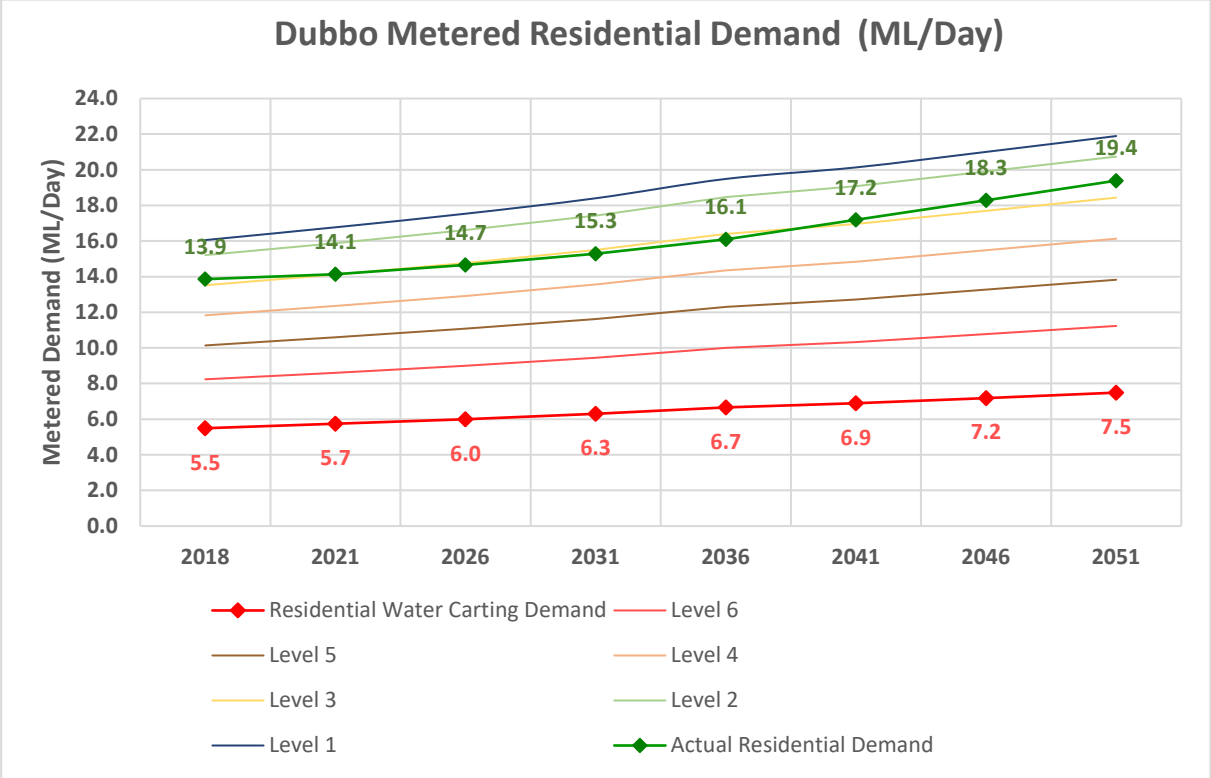
Appendix Figure B-3: Geurie Metered Residential Demand (ML/Day)



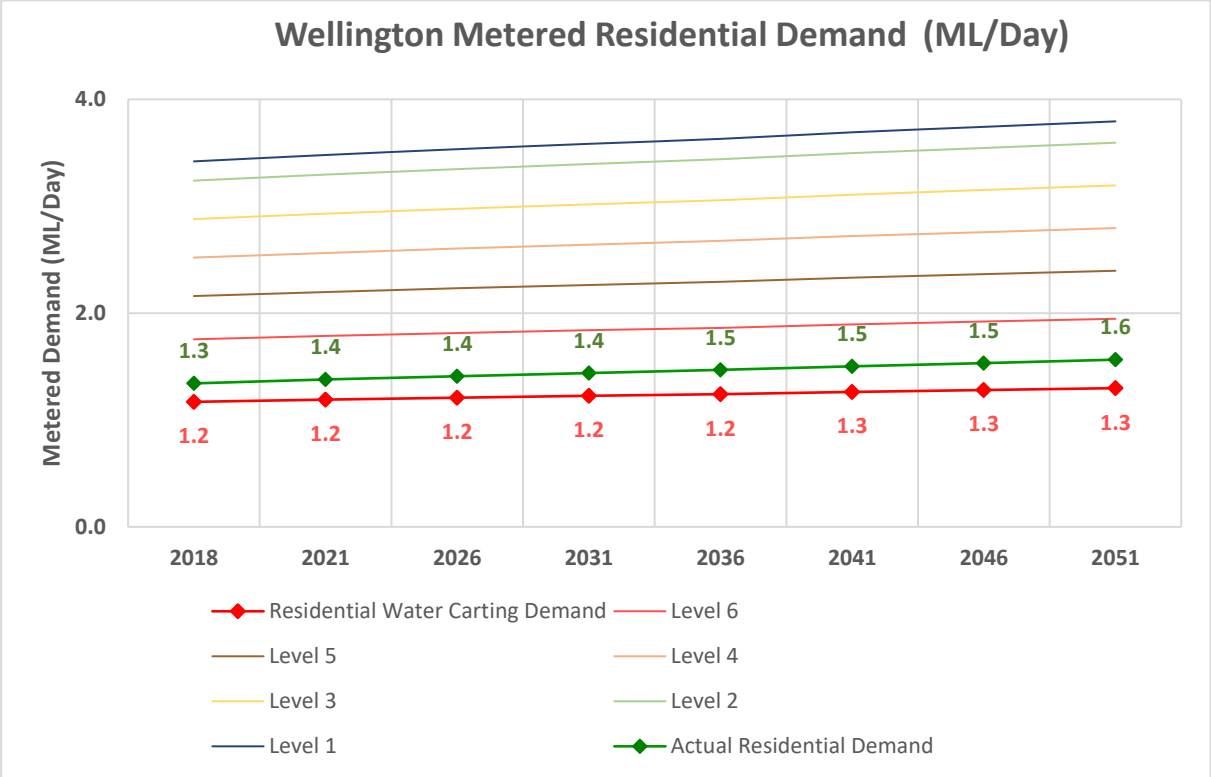
	2018	2021	2026	2031	2036	2041	2046	2051
Residential Water Carting Demand	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Actual Residential Demand	0.059	0.060	0.061	0.061	0.062	0.062	0.063	0.063

Appendix Figure B-4: Mumbil Metered Residential Demand (ML/Day)

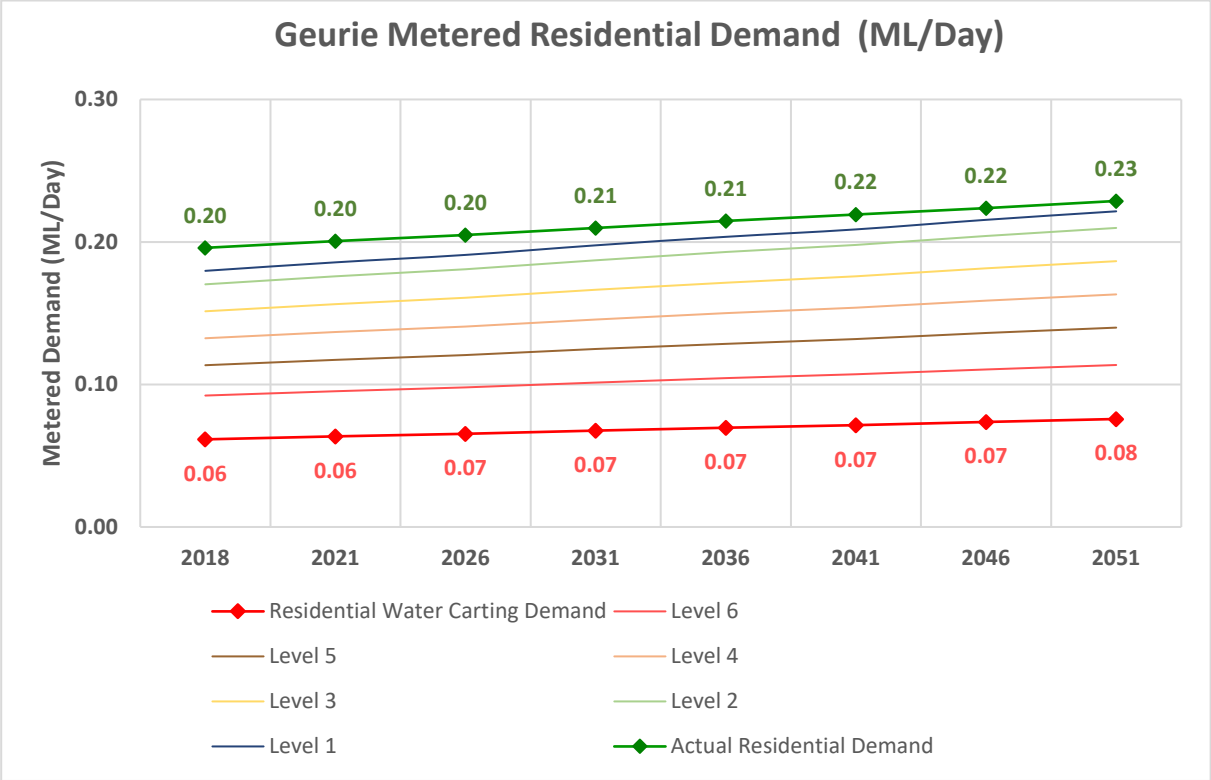
B.2 Metered Residential Demand and Water Restrictions Demand



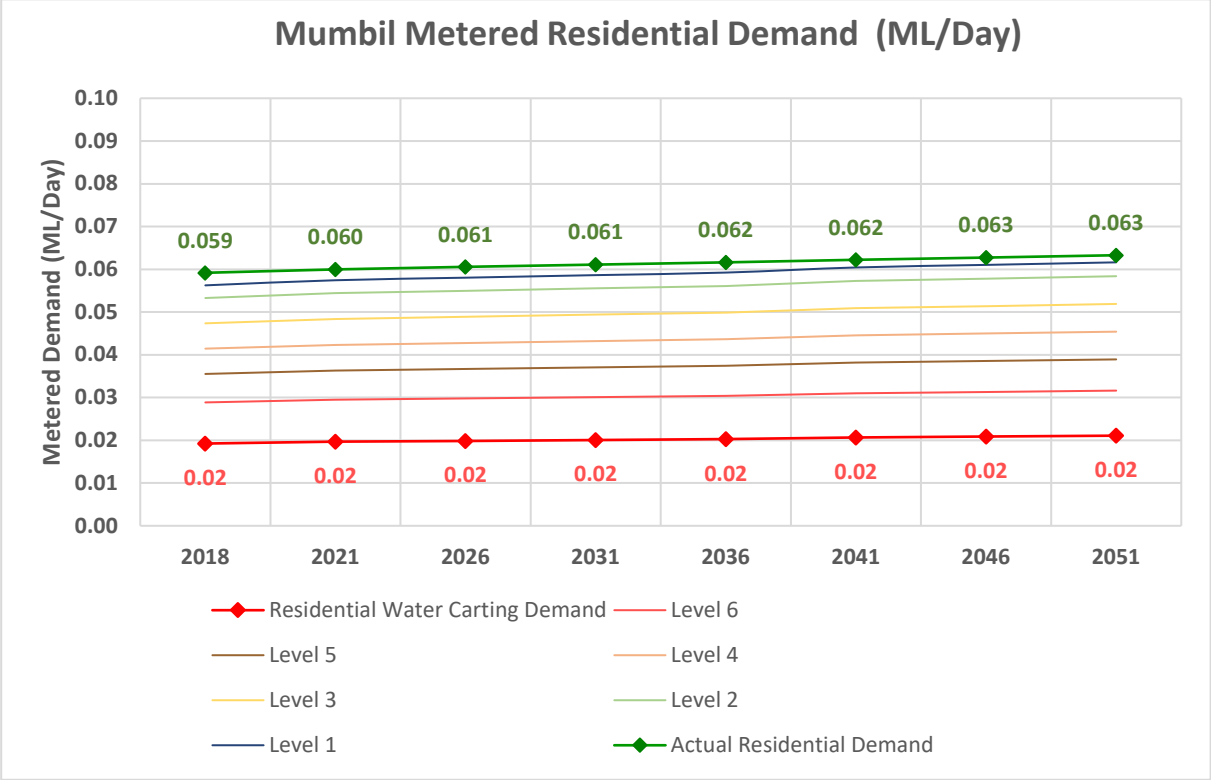
Appendix Figure B-5: Dubbo Metered Residential and Water Restrictions Demand (ML/Day)



Appendix Figure B-6: Wellington Metered Residential and Water Restrictions Demand (ML/Day)

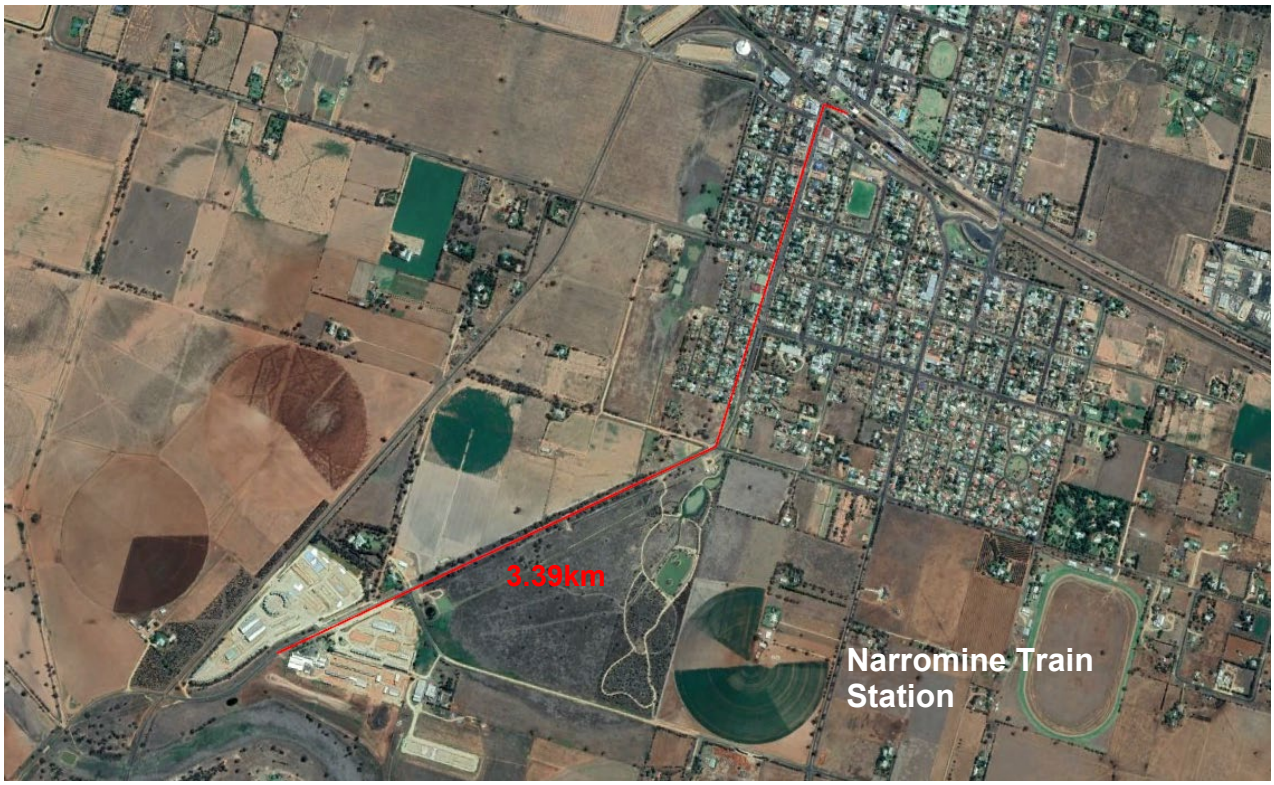


Appendix Figure B-7: Geurie Metered Residential and Water Restrictions Demand (ML/Day)



Appendix Figure B-8: Mumbil Metered Residential and Water Restrictions Demand (ML/Day)

Appendix C Rail Carting Pipelines



Appendix Figure C-1: Proposed 600mm Diameter 3.5 km pipeline from bore field to train station at Narromine

Appendix Figure C-2: Proposed 600mm Diameter 3.5km pipeline from train station to Dubbo WTP

Appendix Figure C-3: Proposed 450mm Diameter 2.5km pipeline from train station to Wellington WTP

Appendix D Emergency Relief for Regional Water Supplies – NSW Government Guidelines

Appendix E Hydrogeologist Advice – Dubbo Water Carting Plan Hydrogeological Issues

NSW GOVERNMENT Public Works Advisory

66 Harrington Street, Sydney NSW 2000
PO Box N408, Grosvenor Place NSW 1220
www.publicworksadvisory.nsw.gov.au

Document No. PWF-3006b July 2019

LEVEL 1 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Implementation of Level 1 restrictions	Ensure all drought management strategies for Level 1 have been implemented by relevant Council business units - in line with Council's Drought Management Plan.	Within the first 4 weeks of transitioning to Level 1.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders.	Ongoing	
	ELT	Update Elected Members	Run drought management workshops with Councillors as and when required to provide updates or address specific Councillor concerns/issues. Run a Councillor workshop prior to moving to Level 2 to address implications of the new level.	Ongoing	
	ELT	Approve strategy for Level 2 restrictions	Review/approve proposed media/communications strategy for Level 2 (reconfirming the one spokesperson for Council). Review/approve proposed compliance strategy for Level 2. Review/approve proposed operations strategy for Level 2. Review funding requirements for all proposed Level 2 activities. Review/approve watering requirements for open spaces under Level 2 (in accordance with the Open Space Irrigation Framework). Strategy for Level 2 to be in line with Council's Drought Management Plan. Ensure the Plan is update-to-date and water restrictions have been reviewed for relevancy and are endorsed.	Prior to commencement of Level 2.	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 1 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 1.	
	Economic Development & Marketing	Industry engagement - public sessions	Facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity in collaboration with the Water Supply and Sewerage Client Services Team.	At the commencement of Level 1, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 1 water restriction requirements.	At the commencement of Level 1, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 1 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 1.	
	Environmental Compliance	Penalties	Review existing breach requirements to reflect Level 1 restrictions. Level 1 is an education phase (outside blatant water misuse) - to start an awareness of wiser water consumption/use.	Ongoing	
	Environmental Compliance	Patrols	If relevant, undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 1 enforcement/compliance strategy.	Prior to or at commencement of Level 1 water restrictions.	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for generating and distributing report to those who require it.	Weekly	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 1 water restriction requirements.	Ongoing	
Executive Services					
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 1 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print). Delivery: Australian Post.	Development - prior to commencement of Level 1. Delivery - within the first 4 weeks of commencement of Level 1.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 1 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 1, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 1 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 1 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 1 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 1 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 1 restrictions, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 1 water restriction information across all sections (e.g. 'what does 380L look like' graphic etc).	All updates ready for commencement of Level 1.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 1. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 1. Subsequent updates as/when required.	
	Corporate Image & Communications	Dubbo Drought Hub - weekly water consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Proactive media releases for use by media outlets.	Develop schedule of releases.	
	Corporate Image & Communications	Community Engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. Activity in collaboration with Water Supply & Sewerage (Client Services)	Prior to commencement of Level 1 followed by ongoing awareness campaigns.	
	Corporate Image & Communications	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
	Corporate Image & Communications	Level 2 Communications Strategy	Review and amend drought communications as required to suit Level 2. Strategy to be approved by ELT.	Prior to commencement of Level 2.	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Management Plan - Level 1 requirements	Implement relevant Level 1 water restrictions in accordance with the Drought Management Plan.	Review prior to commencement of Level 1. Implementation from day 1 of Level 1.	
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 1. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 1. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for generating and distributing report to those who require it.	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 1.	Commencement of Level 1.	
	Water Supply & Sewerage	New Turf Requirements	Assess and determine applications for the installation of new turf for residential households and commercial premises.	Ongoing	
	Water Supply & Sewerage	Industry Engagement	Client Services to engage with local businesses/industry to advise/promote Level 1 water restrictions. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Commencement of Level 1, then as required.	
	Water Supply & Sewerage	Community Engagement	Client Services to develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing.	Commencement of Level 1.	
	Operations	Signage - Town Entry Signage	Install signage boards at town entry/exit points to indicate water restriction levels. Add water droplet at Level 1.	Installation of signage and droplet in time for commencement of Level 1.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 1 watering allowances and determine watering priorities (with advice to Operations).	Prior to commencement of Level 1.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 1.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required	
Organisational Performance					
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions	Develop and/or identify new/additional FAQs specific to Level 1. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 1. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management	Establish and monitor DRC drought management budgets.	Ongoing	

LEVEL 2 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Implementation of Level 2 restrictions	Ensure all drought management strategies for Level 2 have been implemented by relevant Council business units - in line with Council's Drought Contingency and Water Emergency Plan.	Within the first 4 weeks of transitioning to Level 2.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders.	Ongoing	
	ELT	Update Elected Members	Run drought management workshops with Councillors as and when required to provide updates or address specific Councillor concerns/issues. Run a Councillor workshop prior to moving to Level 5 to address implications of the new level.	Ongoing	
	ELT	Approve strategy for Level 3 restrictions	Review/approve proposed media/communications strategy for Level 3 (reconfirming the one spokesperson for Council). Review/approve proposed compliance strategy for Level 3. Review/approve proposed operations strategy for Level 3. Review funding requirements for all proposed Level 3 activities. Review/approve watering requirements for open spaces under Level 3 (in accordance with the Open Space Irrigation Framework). Strategy for Level 3 to be in line with Council's Drought Contingency and Water Emergency Plan. Ensure the Plan is update-to-date and	Prior to commencement of Level 3.	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 2 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 2.	
	Economic Development & Marketing	Industry engagement - public sessions	Where required, facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity to be in collaboration with the Water Supply and Sewerage Client Services Team.	At the commencement of Level 2, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 2 water restriction requirements.	At the commencement of Level 2, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 2 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 2.	
	Environmental Compliance	Penalties	Review existing breach requirements to reflect Level 2 restrictions. Level 2 is an education phase (outside blatant water misuse) - to increase an awareness of wiser water consumption/use.	Ongoing	
	Environmental Compliance	Patrols	If relevant, undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 2 enforcement/compliance strategy.	Prior to or at commencement of Level 2 water restrictions.	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for	Weekly	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 2 water restriction requirements.	Ongoing	
Executive Services					
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 1 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print).	Development - prior to commencement of Level 2. Delivery - within the first 4 weeks of commencement of Level 2.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 2 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 2, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 2 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 2 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 2 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 2 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 2 restrictions, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 2 water restriction information across all sections (e.g. 'what does 360L look like' graphic etc).	All updates ready for commencement of Level 2.	
	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 2. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 2. Subsequent updates as/when required.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Corporate Image & Communications	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Proactive media releases for use by media outlets.	Develop schedule of releases.	
	Corporate Image & Communications	Community Engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Prior to commencement of Level 2 followed by ongoing awareness campaigns.	
	Corporate Image & Communications	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
	Corporate Image & Communications	Level 3 Communications Strategy	Review and amend drought communications as required to suit Level 3. Strategy to be approved by ELT.	Prior to commencement of Level 3.	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Contingency and Water Emergency Plan - Level 2 requirements	Implement relevant Level 2 water restrictions in accordance with the Drought Contingency and Water Emergency Plan.	Review prior to commencement of Level 2. Implementation from day 1 of Level 2.	
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 2. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 2. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for collation and reporting.	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 2.	Commencement of Level 2.	
	Water Supply & Sewerage	New Turf Requirements	Assess and determine applications for the installation of new turf for residential households and commercial premises.	Ongoing	
	Water Supply & Sewerage	Industry Engagement	Client Services to engage with local businesses/industry to advise/promote Level 2 water restrictions. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Commencement of Level 2, then as required.	
	Water Supply & Sewerage	Community Engagement	Client Services to develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing and the Drought Coordinated Response Team.	Commencement of Level 2.	
	Operations	Signage - Town Entry Signage	Change water droplet on all town entry signs from Level 1 to Level 2.	Day of Level 2 coming into force.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 2 watering allowances and determine watering priorities (with advice to Operations).	Prior to commencement of Level 2.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 2.	
	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required	
Organisational Performance					
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions	Develop and/or identify new/additional FAQs specific to Level 2. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 2. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management	Establish and monitor DRC drought management budgets.	Ongoing	

LEVEL 3 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Implementation of Level 3 restrictions	Ensure all drought management strategies for Level 3 have been implemented by relevant Council business units - in line with Council's Drought Contingency and Water Emergency Plan.	Within the first 4 weeks of transitioning to Level 3.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders.	Ongoing	
	ELT	Update Elected Members	Run drought management workshops with Councillors as and when required to provide updates or address specific Councillor concerns/issues. Run a Councillor workshop prior to moving to Level 4 to address implications of the new level.	Ongoing	
	ELT	Approve strategy for Level 4 restrictions	Review/approve proposed media/communications strategy for Level 4 (reconfirming the one spokesperson for Council). Review/approve proposed compliance strategy for Level 4. Review/approve proposed operations strategy for Level 4. Review funding requirements for all proposed Level 4 activities. Review/approve watering requirements for open spaces under Level 4 (in accordance with the Open Space Irrigation Framework). Strategy for Level 4 to be in line with Council's Drought Contingency and Water Emergency Plan.	Prior to commencement of Level 4.	
	ELT	Drought Coordinated Response Team	Consider the role and composition of the DCRT in preparation to moving to Level 4.	Prior to commencement of Level 4.	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 3 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 3.	
	Economic Development & Marketing	Industry engagement - public sessions	Where required, facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity to be in collaboration with the Water Supply and Sewerage Client Services Team.	At the commencement of Level 3, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 3 water restriction requirements.	At the commencement of Level 3, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
	Economic Development & Marketing	Water-wise CBD Promotional Programs	Deliver CDB promotional programs to promote water-wise messaging (flags, banners, stickering of rhino sculpture/s.	As required	
	ALL	DRC business operations - WSAPs	All Culture & Economy businesses to prepare their Water Saving Action Plan.	From day 1 of Level 3.	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 3 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 3.	
	Environmental Compliance	Penalties	Review existing breach requirements and develop/implement penalties to reflect level 3 water restrictions.	Ongoing	
	Environmental Compliance	Patrols	Undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 3 enforcement/compliance strategy.	Prior to or at commencement of Level 3 water restrictions.	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for generating and distributing report to those who require it.	Weekly	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 3 water restriction requirements.	Ongoing	
	ALL	DRC business operations - WSAPs	All Development & Environment business units to prepare their Water Saving Action Plan.	From day 1 of Level 3.	
Executive Services					

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 3 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print). Delivery: Australian Post.	Development - prior to commencement of Level 3. Delivery - within the first 4 weeks of commencement of Level 3.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 3 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 3, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 3 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 3 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as digital mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 3 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 3 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 3 restrictions, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 3 water restriction information across all sections (e.g. 'what does 320L look like' graphic etc).	All updates ready for commencement of Level 3.	
	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 3. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 3. Subsequent updates as/when required.	
	Corporate Image & Communications	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Proactive media releases for use by media outlets.	Ongoing	
	Corporate Image & Communications	Community Engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. Activity in collaboration with Water Supply & Sewerage (Client Services)	In the lead up to commencement of Level 3 followed by ongoing awareness campaigns.	
	Corporate Image & Commincations	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
	Corporate Image & Communications	Level 4 Communications Strategy	Review and amend drought communications as required to suit Level 4. Strategy to be approved by ELT.	Prior to commencement of Level 4.	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Contingency and Water Emergency Plan - Level 3 requirements	Implement relevant Level 3 water restrictions in accordance with the Drought Contingency and Water Emergency Plan.	Review prior to commencement of Level 3. Implementation from day 1 of Level 3.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 3. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 3. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for generating and distributing report to those who require it.	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 3.	Commencement of Level 3.	
	Water Supply & Sewerage	New Turf Requirements	Assess and determine applications for the installation of new turf for residential households and commercial premises.	Ongoing	
	Water Supply & Sewerage	Industry Engagement	Client Services to engage with local businesses/industry to advise/promote Level 3 water restrictions. May wish to organise and provide businesses with water saving collateral such as shower timers, stickers, information sheets etc.	Commencement of Level 3, then as required.	
	Water Supply & Sewerage	Community Engagement	Develop and deliver, in collaboration with Corporate Image & Communications, community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing.	Commencement of Level 3.	
	Water Supply & Sewerage	Commercial WSAPs	Client Services to identify and notify the Region's top water-using businesses to prepare a Water Saving Action Plan (WSAPs) for their business. Number of businesses required to be determined by Water Supply & Sewerage (likely to be Top 100 water-using businesses). Client Services to review and approve each business's WSAP. WSAPs must be prepared at Level 3 ahead of implementation at Level 4 and beyond.	Commencement of Level 3	
	Operations	Signage - Town Entry Signage	Change water droplet on all town entry signs from Level 2 to Level 3.	Day of Level 3 coming into force.	
	ALL	DRC business operations - WSAPs	All Infrastructure operational units to prepare their Water Saving Action Plan.	From Day 1 of Level 3.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 3 watering allowances and determine watering priorities (with advice to Operations).	Prior to commencement of Level 3.	
	Recreation & Open Space	Engagement with Sporting Associations	Undertake engagement with relevant sporting clubs/associations and the sports council to advise of Level 3 water restrictions and the implications on use, condition, availability of sporting fields. Consider the impact restrictions may also have on local/regional sporting events in the Dubbo Region.	Commencement of Level 3, then ongoing as relevant.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 3.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required	
	ALL	DRC business operations - WSAPs	All Liveability operational units to prepare their Water Saving Action Plan.	From day 1 of Level 3.	
Organisational Performance					
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions	Develop and/or identify new/additional FAQs specific to Level 3. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses. - Corporate Image & Communications - to publish on the Drought Hub. Once FAQs are published, Manager Customer Experience to advise all customer facing DRC businesses of new FAQs.	All updates go live on Day 1 of Level 3. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as: - Water savings rebates program. - Water use signage for residential households (i.e. 'tank water in use' and 'bore water in use' signs. - Water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management	Establish and monitor DRC drought management budgets.	Ongoing	

LEVEL 4 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Activation of Drought Coordinated Response Team	Activation of a Drought Coordinated Response Team in line with Council's Drought Contingency and Water Emergency Plan to coordinate Council's drought management processes. The Team's primary function is to work with all Council business units to ensure Council delivers a coordinated response to drought.	Commencement of Level 4.	
	ELT	Implementation of Level 4 restrictions	Ensure all drought management strategies for Level 4 have been implemented by relevant Council business units - in line with Council's Drought Contingency and Water Emergency Plan.	Within the first 4 weeks of transitioning to Level 4.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders, including frequent meetings with the Drought Coordinated Response Team (e.g. twice weekly or as often as required).	Ongoing	
	ELT	Update Elected Members	Facilitate drought management workshops with Councillors as/when required to provide updates or address specific Councillor concerns/issues.	Ongoing	
	ELT	Review effectiveness of the Drought Coordinated Response Team ahead of moving to Level 5 restrictions	Review the performance and suitability of the Drought Coordinated Response Team and make any improvements if relevant (e.g. composition of team, scope of responsibilities, priorities, focus, budget etc).	Prior to commencement of Level 5.	
	ELT	Approve strategy for Level 5 restrictions	Review/approve proposed media/communications strategy for Level 5 (reconfirming the one spokesperson for Council). Review/approve proposed compliance strategy for Level 5. Review/approve proposed operations strategy for Level 5. Review funding requirements for all proposed Level 5 activities. Review/approve watering requirements for open spaces under Level 5 (in accordance with the Open Space Irrigation Framework). Strategy for Level 5 to be in line with Council's Drought Contingency and Water Emergency Plan. Ensure the Plan is update-to-date and water	Prior to commencement of Level 5.	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 4 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 4.	
	Economic Development & Marketing	Industry engagement - public sessions	Where required, facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity to be in collaboration with the Water Supply and Sewerage Client Services and the Drought Coordinated Response Team.	At the commencement of Level 4, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 4 water restriction requirements. Activity in collaboration with the Drought Coordinated Response Team.	At the commencement of Level 4, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications. Activity in collaboration with the Drought Coordinated Response Team.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
	ALL	DRC business operations - WSAPs	All Culture & Economy businesses are operating in accordance with their respective approved Water Saving Action Plan.	From day 1 of Level 4 water restrictions.	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 4 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 4.	
	Environmental Compliance	Penalties	Review existing breach requirements and develop/implement firmer penalties to reflect more stricter water restrictions. A significant increase in enforcement measures under Level 4.	Ongoing.	
	Environmental Compliance	Patrols	Undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 4 enforcement/compliance strategy.	From commencement of Level 4.	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for	Weekly.	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 4 water restriction requirements.	Ongoing.	
	ALL	DRC business operations - WSAPs	All Development & Environment business units are operating in accordance with their respective approved Water Saving Action Plan.	From day 1 of Level 4 water restrictions.	
Executive Services					
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 4 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print). Delivery: Australian Post.	Development - prior to commencement of Level 4. Delivery - within the first 4 weeks of commencement of Level 4.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 4 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 4, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 4, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 4 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as digital mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 4 restrictions, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 4 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 4 restrictions, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 4 water restriction information across all sections (e.g. 'what does 280L look like' graphic etc).	Updates go live on Day 1 of Level 4.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 4. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 4. Subsequent updates as/when required.	
	Corporate Image & Communications	Dubbo Drought Hub - weekly water consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications to update the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Development of media releases for use by media outlets.	Ongoing	
	Corporate Image & Communications	Community Engagement	Development and delivery of community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. Activity in collaboration with Water Supply & Sewerage (Client Services) and the Drought Coordinated Response Team.	In the lead up to Level 4, followed by ongoing awareness campaigns during Level 4.	
	Corporate Image & Communications	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
	Corporate Image & Communications	Level 5 Communications Strategy	Review and amend drought communications as required to suit Level 5. Strategy to be approved by ELT.	Prior to commencement of Level 5.	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Contingency and Water Emergency Plan - Level 4 requirements	Implement relevant Level 4 water restrictions in accordance with the Drought Contingency and Water Emergency Plan.	Review prior to commencement of Level 4. Implementation from day 1 of Level 4.	
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 4. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 4. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - weekly water consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications to update the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 4.	Commencement of Level 4.	
	Water Supply & Sewerage	Water Saving Action Plans (WSAPs)	Review all WSAPs to determine suitability and enforce stricter requirements (and communicate that) if required for Level 4.	Implementation from Day 1 of Level 4.	
	Water Supply & Sewerage	New turf requirements	Assess and determine applications for the installation of new turf for residential households and commercial premises. Under Level 4, both residential households and commercial premises are only permitted to install 50 square metres of new turf.	Ongoing	
	Water Supply & Sewerage	Community engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. Activity in collaboration with Corporate Image & Communications.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing and the Drought Coordinated Response Team.	Commencement of Level 4.	
	Water Supply & Sewerage	Commercial WSAPs	Client Services to notify the Region's top water-using businesses to implement their Council-approved Water Saving Action Plans. Under Level 4, the determined top water-using businesses must be operating in line with their approved WSAP.	Commencement of Level 4.	
	Operations	Signage - town entry signage	Change water droplet on all town entry signs from Level 3 to Level 4.	Day of Level 4 coming into force.	
	Fleet & Depot Services	Drought Coordinated Response Team Vehicle	Provision of a vehicle for use by the DCRT. Vehicle to be wrapped with Council branding.	Commencement of Level 4.	
	ALL	DRC business operations - WSAPs	All Infrastructure operational units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 4 watering allowances and determine watering priorities (with advice to Operations)	Prior to commencement of Level 4.	
	Recreation & Open Space	Engagement with Sporting Associations	Undertake engagement with relevant sporting clubs/associations and the sports council to advise of Level 4 water restrictions and the implications on use, condition, availability of sporting fields. Consider the impact restrictions may also have on local/regional sporting events in the Dubbo Region.	Commencement of Level 4, then ongoing as relevant.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 4.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required.	
	ALL	DRC business operations - WSAPs.	All Liveability operational units are operating in accordance with their respective approved Water Saving Action Plan.	Day 1 of Level 4.	
Organisational Performance					
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions.	Develop and/or identify new/additional FAQs specific to Level 4. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 4. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives.	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as: - Water savings rebates program. - Water use signage for residential households (i.e. 'tank water in use' and 'bore water in use' signs. - Water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management.	Establish and monitor DRC drought management budgets.	Ongoing	
Drought Coordinated Response Team					
	DCRT	Coordination of drought management activities across Council	The Drought Coordinated Response Team's primary function is to work with all Council business units to ensure a coordinated Council response to drought.	Commencement of Level 4.	
	DCRT	ELT/DCRT Meetings	Undertake secretariat duties for the ELT/DCRT meetings.	Ongoing	
	DCRT	Water saving initiatives	Implement or continue water saving initiatives such as a rebates program to encourage smart water use by residential households.	Ongoing / as required	
	DCRT	Direct marketing to all residential households across the Dubbo Region	Development/delivery of water-wise direct marketing campaigns in collaboration with Corporate Image & Communication.	During transition phases to each new water restriction level. Ongoing marketing as required.	
	DRCT	Industry information sessions	If required, development/delivery of industry engagement sessions in collaboration with Water Supply & Sewerage (Client Services) and Economic Development & Marketing.	Commencement of Level 4, then ongoing as required.	
	DRCT	Water-wise awareness campaigns	Development/delivery of any additional water-wise awareness campaigns in collaboration with Economic Development & Marketing, such as the CBD Promotions Program which includes: - Flags in the Dubbo CBD (Macquarie Street) and Wellington town centre. - Wellington Bridge banner. - Banner mesh on the Caltex corner in Wellington. - Wrapping/stickering of the white Dubbo CBD rhino sculpture.	Ongoing / as required	
	DRCT	Water-wise collateral	Design and production of DRC branded water-wise collateral such as stickers, shower timers, signage etc for use by: - Local businesses. - Local accommodation providers (in bathrooms and kitchens). - DRC businesses (in bathrooms and kitchens). - DRC operational units (e.g. in public toilets, community halls etc). - DRC administration buildings (e.g. Customer Experience counters). Activity in consultation with relevant DRC business units (inc. Economic Development & Marketing and Water Supply & Sewerage (Client	Ongoing / as required	
	DCRT	Water use signage	Design and production of DRC branded water use signage covering use of bore water, backwash water, recycled water for DRC operational use, - Installation at parks, gardens and sporting facilities.	Ongoing / required	
	DCRT	Water savings incentive programs	Development and delivery of internal DRC water savings incentive programs, such as a grants program for improving DRC facilities. Types of projects that may be funded include: - Water capture tanks. - Dry landscaping to replace turf. - Upgrades of old style toilets to dual flush toilets. - Smart watering systems for Council's open spaces.	As required	

LEVEL 5 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Implementation of Level 5 restrictions	Ensure all drought management strategies for Level 5 have been implemented by relevant Council business units - in line with Council's Drought Management Plan.	Within the first 4 weeks of transitioning to Level 5.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders, including frequent meetings with the Drought Coordinated Response Team (e.g. twice weekly or as often as required).	Ongoing	
	ELT	Update Elected Members	Run drought management workshops with Councillors as and when required to provide updates or address specific Councillor concerns/issues. Run a Councillor workshop prior to moving to Level 6 to address implications of the new level.	Ongoing	
	ELT	Review effectiveness of the Drought Coordinated Response Team ahead of moving to Level 6 restrictions	Review the performance and suitability of the Drought Coordinated Response Team and make any improvements if relevant (e.g. composition of team, scope of responsibilities, priorities, focus, budget etc).	Prior to commencement of Level 6.	
	ELT	Approve strategy for Level 6 restrictions	Review/approve proposed media/communications strategy for Level 6 (reconfirming the one spokesperson for Council). Review/approve proposed compliance strategy for Level 6. Review/approve proposed operations strategy for Level 6. Review funding requirements for all Level 6 activities. Review/approve watering requirements for open spaces under Level 6 (in accordance with the Open Space Irrigation Framework). Strategy for Level 6 to be in line with Council's Drought Management Plan. Ensure the Plan is update-to-date and water restrictions have	Prior to commencement of Level 6.	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 5 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 5.	
	Economic Development & Marketing	Industry engagement - public sessions	Where required, facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity to be in collaboration with the Water Supply and Sewerage Client Services and the Drought Coordinated Response Team.	At the commencement of Level 5, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 5 water restriction requirements. Activity in collaboration with the Drought Coordinated Response Team.	At the commencement of Level 5, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications. Activity in collaboration with the Drought Coordinated Response Team.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
	ALL	DRC business operations - WSAPs	All Culture & Economy businesses are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from commencement of Level 4.	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 5 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 5.	
	Environmental Compliance	Penalties	Review existing breach requirements and develop/implement firmer penalties to reflect more stricter water restrictions. Likely to be an increase in enforcement measures under Level 5, with issuing of fines for first time offences.	Ongoing	
	Environmental Compliance	Patrols	Undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 5 enforcement/compliance strategy.	From commencement of Level 5.	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for	Weekly	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 5 water restriction requirements.	Ongoing	
	ALL	DRC business operations - WSAPs	All Development & Environment business units are operating in accordance with their respective approved Water Saving Action Plan.	From day 1 of Level 5 water restrictions.	
Executive Services					
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 5 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print). Delivery: Australian Post.	Development - prior to commencement of Level 5. Delivery - within the first 4 weeks of commencement of Level 5.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 5 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 5, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 5, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 5, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as digital mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 5, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 5 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 5, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 5 water restriction information across all sections (e.g. 'what does 240L look like' graphic etc).	Updates go live on Day 1 of Level 5.	

	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 5. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 5. Subsequent updates as/when required.	
	Corporate Image & Communications	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Development of media releases for use by media outlets.	Ongoing	
	Corporate Image & Communications	Community Engagement	Development and delivery of community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. Activity in collaboration with Water Supply & Sewerage (Client Services) and the Drought Coordinated Response Team.	In the lead up to Level 5, followed by ongoing awareness campaigns during Level 5.	
	Corporate Image & Communications	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
	Corporate Image & Communications	Level 6 Communications Strategy	Review and amend drought communications as required to suit Level 6. Strategy to be approved by ELT.	Prior to commencement of Level 6.	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Management Plan - Level 5 requirements	Implement relevant Level 5 water restrictions in accordance with the Drought Management Plan.	Review prior to commencement of Level 5. Implementation from day 1 of Level 5.	
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 5. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 5. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - weekly water consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 5.	Commencement of Level 5	
	Water Supply & Sewerage	Water Saving Action Plans (WSAPs)	Review all WSAPs to determine suitability and enforce stricter requirements (and communicate that) if required for Level 5. Consider enforcing a requirement for businesses to submit an updated WSAP that improves on their Level 4 WSAP.	Review prior to commencement of Level 5. Implementation from commencement of Level 5.	
	Water Supply & Sewerage	New turf requirements	Under Level 5, watering of new turf is NOT PERMITTED. Suggest ongoing communication of this restriction in collaboration with Corporate Image & Communication.	Ongoing	
	Water Supply & Sewerage	Community engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. Activity in collaboration with Corporate Image & Communications.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Where required, Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing and the Drought Coordinated Response Team.	Commencement of Level 5.	
	Operations	Signage - town entry signage	Change water droplet on all town entry signs from Level 4 to Level 5.	Day 1 of Level 5.	
	ALL	DRC business operations - WSAPs	All Infrastructure operational units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 5 watering allowances and determine watering priorities (with advice to Operations).	Prior to commencement of Level 5.	
	Recreation & Open Space	Engagement with Sporting Associations	Undertake engagement with relevant sporting clubs/associations and the sports council to advise of Level 5 water restrictions and the implications on use, condition, availability of sporting fields. Consider the impact restrictions may also have on local/regional sporting events in the Dubbo Region.	Commencement of Level 5, then ongoing as relevant.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 5.	

	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required	
	ALL	DRC business operations - WSAPs	All Liveability operational units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Organisational Performance					
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions	Develop and/or identify new/additional FAQs specific to Level 5. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 5. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as: - Water savings rebates program. - Water use signage for residential households (i.e. 'tank water in use' and 'bore water in use' signs. - Water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management	Establish and monitor DRC drought management budgets.	Ongoing	
Drought Coordinated Response Team					
	DCRT	Coordination of drought management activities across Council	The Drought Coordinated Response Team's primary function is to work with all Council business units to ensure a coordinated Council response to drought.	Ongoing	
	DCRT	ELT/DCRT Meetings	Undertake secretariat duties for the ELT/DCRT meetings.	Ongoing	
	DCRT	Water saving initiatives	Implement or continue water saving initiatives such as a rebates program to encourage smart water use by residential households.	Ongoing / as required	
	DCRT	Direct marketing to all residential households across the Dubbo Region	Development/delivery of water-wise direct marketing campaigns in collaboration with Corporate Image & Communication.	During transition phases to each new water restriction level. Ongoing marketing as required.	
	DRCT	Industry information sessions	If required, development/delivery of industry engagement sessions in collaboration with Water Supply & Sewerage (Client Services) and Economic Development & Marketing.	Commencement of Level 5, then ongoing as required.	
	DRCT	Water-wise awareness campaigns	Development/delivery of any additional water-wise awareness campaigns in collaboration with Economic Development & Marketing, such as the CBD Promotions Program which includes: - Flags in the Dubbo CBD (Macquarie Street) and Wellington town centre. - Wellington Bridge banner. - Banner mesh on the Caltex corner in Wellington. - Wrapping/stickering of the white Dubbo CBD rhino sculpture. Infrastructure Operations to roll-out installation of collateral.	Ongoing / as required	
	DRCT	Water-wise collateral	Design and production of DRC branded water-wise collateral such as stickers, shower timers, signage etc for use by: - Local businesses. - Local accommodation providers (in bathrooms and kitchens). - DRC businesses (in bathrooms and kitchens). - DRC operational units (e.g. in public toilets, community halls etc). - DRC administration buildings (e.g. Customer Experience counters). Activity in consultation with relevant DRC business units (inc. Economic Development & Marketing and Water Supply & Sewerage (Client	Ongoing / as required	
	DCRT	Water use signage	Design and production of DRC branded water use signage covering use of bore water, backwash water, recycled water for DRC operational use, - Installation at parks, gardens and sporting facilities. - 'Irrigation Maintenance in Progress' signage for Liveability operational units.	Ongoing / as required	
	DCRT	Water savings incentive programs	Development and delivery of internal DRC water savings incentive programs, such as a grants program for improving DRC facilities. Types of projects that may be funded include: - Water capture tanks. - Dry landscaping to replace turf. - Upgrades of old style toilets to dual flush toilets. - Smart watering systems for Council's open spaces.	As required.	

LEVEL 6 WATER RESTRICTIONS - DRC ACTIVITIES

Division	Branch	Activity	Description	Timeframe	TRIM Reference
Executive Leadership Team					
	ELT	Implementation of Level 6 restrictions	Ensure all drought management strategies for Level 6 have been implemented by relevant Council business units - in line with Council's Drought Contingency and Water Emergency Plan.	Within the first 4 weeks of transitioning to Level 6.	
	ELT	Monitor progress of all activities	Chair regular meetings with key stakeholders, including frequent meetings with the Drought Coordinated Response Team (e.g. twice weekly or as often as required).	Ongoing	
	ELT	Update Elected Members	Facilitate drought management workshops with Councillors as/when required to provide updates or address specific Councillor concerns/issues.	Ongoing	
	ELT	Review effectiveness of the Drought Coordinated Response Team	Review the performance and suitability of the Drought Coordinated Response Team and make any improvements if relevant (e.g. composition of team, scope of responsibilities, priorities, focus, budget etc).	Ongoing	
Culture and Economy					
	Regional Events	Update signage	Change Elston Park electronic sign to 'Level 6 water restrictions in force across the Dubbo Region' (or similar).	Day 1 of Level 6.	
	Economic Development & Marketing	Industry engagement - public sessions	Where required, facilitate industry engagement sessions with local businesses and institutions across the Dubbo Region. Activity to be in collaboration with the Water Supply and Sewerage Client Services and the Drought Coordinated Response Team.	At the commencement of Level 6, then ongoing as required.	
	Economic Development & Marketing	Industry engagement - direct marketing	Undertake direct marketing initiatives with local businesses to inform of Level 6 water restriction requirements. Activity in collaboration with the Drought Coordinated Response Team.	At the commencement of Level 6, then ongoing as required.	
	Economic Development & Marketing	Grants and funding	Identify grant/funding opportunities for relevant drought management/water infrastructure initiatives and coordinate the preparation and submission of Council grant/funding applications. Activity in collaboration with the Drought Coordinated Response Team.	Ongoing	
	Economic Development & Marketing	Capture of customer feedback	Customer facing businesses, especially the Visitor Information Centres, to capture and provide feedback from customers/visitors any drought/water restriction issues for policy consideration and for future FAQ updates.	Ongoing	
	ALL	DRC business operations - WSAPs	All Culture & Economy businesses are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Development & Environment					
	Environmental Compliance	Water Restriction Legislation	Ensure Council has undertaken the appropriate measures in accordance with The Local Government (General) Regulation 2005 (Part 6, Division 1, Clause 137 (6), to allow enforcement of Level 6 water restrictions. A Council notice must be published in a newspaper circulating within the council's area.	Commencement of Level 6.	
	Environmental Compliance	Patrols	Undertake enforcement - for both residential households and commercial businesses/institutions - in line with approved Level 6 enforcement/compliance strategy.	From commencement of Level 6.	
	Environmental Compliance	Penalties	Review existing breach requirements and develop/implement firmer penalties to reflect more stricter water restrictions. Likely to be a significant increase in enforcement measures under Level 6, with issuing fines for offences.	Ongoing	
	Environmental Compliance	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for [illegible]	Weekly	
	Building & Development Services	Industry engagement	Where relevant, engage with the construction industry to ensure infrastructure development is in accordance with Level 6 water restriction requirements.	Ongoing	
	ALL	DRC business operations - WSAPs	All Development & Environment business units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Executive Services					
	Corporate Image & Communications	Direct marketing to all residential households across the Dubbo Region	Prepare, produce and deliver mail out to households and businesses on town water service advising of Level 6 water restrictions in force across the Dubbo Region. Mail out may include: - Covering letter from CEO, - Print-out of the water restrictions table, - Promotional item of key restrictions (fridge magnet or similar). Content Preparation: CIC Graphics Officer. Printing: (e.g. Arrow Print). Delivery: Australian Post.	Development - prior to commencement of Level 6. Delivery - within the first 4 weeks of commencement of Level 6.	
	Corporate Image & Communications	Paid Advertising - Print	Roll out of a local water restriction information campaign with clear messaging of Level 6 restrictions and permitted activities across print publications, including: - Dubbo Daily Liberal. - Wellington Times. - Photo News.	Weekly prior to commencement of Level 6, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - TV	Roll out of a water restriction information campaign across main local/regional TV networks.	Push in the lead up to commencement of Level 6, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Radio	Roll out of a water restriction information campaign across main local radio stations.	Push in the lead up to commencement of Level 6, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Paid Advertising - Digital	Roll out of a digital water restriction campaign such as digital mastheads on online publications/websites, sponsored social posts etc.	Push in the lead up to commencement of Level 6, then on an ongoing basis as relevant.	
	Corporate Image & Communications	Social Media	Frequent DRC Facebook posts with Level 6 water restriction information - in line with the approved communications (social media) strategy.	Push in the lead up to commencement of Level 6, then ongoing as relevant.	
	Corporate Image & Communications	Dubbo Drought Hub - General	Update Drought Hub with Level 6 water restriction information across all sections (e.g. 'what does 195L look like' graphic etc).	Updates go live on Day 1 of Level 6.	
	Corporate Image & Communications	Dubbo Drought Hub - Frequently Asked Questions	Publish new/additional FAQs specific to Level 4. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 5. Subsequent updates as/when required.	

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Corporate Image & Communications	Dubbo Drought Hub - Weekly Water Consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Corporate Image & Communications	Media Releases	Development of media releases for use by media outlets.	Ongoing	
	Corporate Image & Communications	Community Engagement	Development and delivery of community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. - Collateral for display at Council businesses (libraries, Visitor Information Centres), Old Dubbo Gaol, Wellington Caves, Dubbo Airport etc. Activity in collaboration with Water Supply & Sewerage (Client Services) and the Drought Coordinated Response Team.	In the lead up to Level 6, followed by ongoing awareness campaigns during Level 6.	
	Corporate Image & Communications	Blue House	Promotion of water-wise strategies at Council's Blue House.	Ongoing	
Infrastructure					
	Water Supply & Sewerage	DRC Drought Contingency and Water Emergency Plan - Level 6 requirements	Implement relevant Level 6 water restrictions in accordance with the Drought Contingency and Water Emergency Plan.	Review prior to commencement of Level 6. Implementation from day 1 of Level 6.	
	Water Supply & Sewerage	Dubbo Drought Hub - Frequently Asked Questions	Develop new/additional FAQs specific to Level 6. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 6. Subsequent updates as/when required.	
	Water Supply & Sewerage	Dubbo Drought Hub - weekly water consumption	Weekly update of Dubbo, Wellington and Geurie water consumption statistics on the Dubbo Drought Hub. Roles: - Water Supply & Sewerage (Client Services) provides the water consumption data. - Corporate Image & Communications updates the Drought Hub.	Weekly	
	Water Supply & Sewerage	Reporting	Weekly reporting of compliance/enforcement activities. Roles: - Environmental Compliance contribute to the breach report with outcomes of patrols by rangers. - Water Supply & Sewerage contribute to the report with outcomes from their investigations. Client Services team has responsibility for reporting and distributing report to the rest of the Drought Coordinated Response Team.	Weekly	
	Water Supply & Sewerage	Water use exemptions	Review existing water use exemptions approved for local businesses, schools, recreational clubs (inc. Turf Club and Harness Racing Club) to determine the status of exemptions and if they are still relevant in accordance with Level 6.	Commencement of Level 6	
	Water Supply & Sewerage	Water Saving Action Plans (WSAPs)	Review all WSAPs to determine suitability and enforce stricter requirements (and communicate that) if required for Level 6. Consider enforcing a requirement for businesses to submit an updated WSAP that improves on their Level 5 WSAP.	Review prior to commencement of Level 6. Implementation from commencement of Level 6.	
	Water Supply & Sewerage	New turf requirements	Under Level 6, watering of new turf is NOT PERMITTED. Suggest ongoing communication of this restriction in collaboration with Corporate Image & Communication.	Ongoing	
	Water Supply & Sewerage	Community engagement	Develop and deliver community engagement activities such as: - Education programs at schools. - Pop-up information stalls in shopping precincts. Activity in collaboration with Corporate Image & Communications.	Ongoing	
	Water Supply & Sewerage	Industry information sessions	Where required, Client Services to develop/deliver industry engagement sessions in collaboration with Economic Development & Marketing and the Drought Coordinated Response Team.	Commencement of Level 6.	
	Operations	Signage - town entry signage	Change water droplet on all town entry signs from Level 5 to Level 6.	Day 1 of Level 6.	
	ALL	DRC business operations - WSAPs	All Infrastructure operational units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Liveability					
	Recreation & Open Space	Open Space Irrigation Framework	Review the Open Space Irrigation Framework for Level 6 watering allowances and determine watering priorities (with advice to Operations).	Prior to commencement of Level 6.	
	Recreation & Open Space	Engagement with Sporting Associations	Undertake engagement with relevant sporting clubs/associations and the sports council to advise of Level 6 water restrictions and the implications on use, condition, availability of sporting fields. Consider the impact restrictions may also have on local/regional sporting events in the Dubbo Region.	Commencement of Level 6, then ongoing as relevant.	
	Operations	Watering of public open spaces (parks, gardens and sporting fields)	Implement watering in accordance with the Open Space Irrigation Framework. When watering, appropriate advisory signage must be displayed - 'Maintenance Irrigation Currently in Progress' (or similar).	Commencement of Level 6.	
	Operations	Water-wise promotional programs	Assist with the installation of water-wise promotions across the Dubbo Region. For example, flags in the Dubbo CBD (Macquarie Street) and Wellington town centre and a banner across the Wellington Bridge.	As required	
	ALL	DRC business operations - WSAPs	All Liveability operational units are operating in accordance with their respective approved Water Saving Action Plan.	Ongoing - from Level 4.	
Organisational Performance					

Division	Branch	Activity	Description	Timeframe	TRIM Reference
	Customer Experience	Dubbo Drought Hub - Frequently Asked Questions	Develop and/or identify new/additional FAQs specific to Level 6. Roles: - Customer Experience as front line staff to advise of common issues and what needs addressing as an FAQ (in collaboration with feedback from customer facing DRC businesses). - Water Sewerage & Supply (as subject matter experts) to provide technical advice to generate FAQ responses (in collaboration with the Drought Coordinated Response Team). - Corporate Image & Communications - to publish on the Drought Hub.	All updates go live on Day 1 of Level 6. Subsequent updates as/when required.	
	Customer Experience	Administration of customer-focused water saving initiatives	Deliver the roll-out/administration of DRC customer facing water saving initiatives, such as: - Water savings rebates program. - Water use signage for residential households (i.e. 'tank water in use' and 'bore water in use' signs. - Water restriction information displays at Council administration buildings.	Ongoing	
	Management Accounting	Financial management	Establish and monitor DRC drought management budgets.	Ongoing	
Drought Coordinated Response Team					
	DCRT	Coordination of drought management activities across Council	The Drought Coordinated Response Team's primary function is to work with all Council business units to ensure a coordinated Council response to drought.	Ongoing	
	DCRT	ELT/DCRT Meetings	Undertake secretariat duties for the ELT/DCRT meetings.	Ongoing	
	DCRT	Water saving initiatives	Implement or continue water saving initiatives such as a rebates program to encourage smart water use by residential households.	Ongoing / as required	
	DCRT	Direct marketing to all residential households across the Dubbo Region	Development/delivery of water-wise direct marketing campaigns in collaboration with Corporate Image & Communication.	During transition phases to each new water restriction level. Ongoing marketing as required.	
	DRCT	Industry information sessions	If required, development/delivery of industry engagement sessions in collaboration with Water Supply & Sewerage (Client Services) and Economic Development & Marketing.	Commencement of Level 6, then ongoing as required.	
	DRCT	Water-wise awareness campaigns	Development/delivery of any additional water-wise awareness campaigns in collaboration with Economic Development & Marketing, such as the CBD Promotions Program which includes: - Flags in the Dubbo CBD (Macquarie Street) and Wellington town centre. - Wellington Bridge banner. - Banner mesh on the Caltex corner in Wellington. - Wrapping/stickering of the white Dubbo CBD rhino sculpture.	Ongoing / as required	
	DRCT	Water-wise collateral	Design and production of DRC branded water-wise collateral such as stickers, shower timers, signage etc for use by: - Local businesses. - Local accommodation providers (in bathrooms and kitchens). - DRC businesses (in bathrooms and kitchens). - DRC operational units (e.g. in public toilets, community halls etc). - DRC administration buildings (e.g. Customer Experience counters). Activity in consultation with relevant DRC business units (inc. Economic Development & Marketing and Water Supply & Sewerage (Client	Ongoing / as required	
	DCRT	Water use signage	Design and production of DRC branded water use signage covering use of bore water, backwash water, recycled water for DRC operational use, - Installation at parks, gardens and sporting facilities. - 'Irrigation Maintenance in Progress' signage for Liveability operational units.	Ongoing / as required	
	DCRT	Water savings incentive programs	Development and delivery of internal DRC water savings incentive programs, such as a grants program for improving DRC facilities. Types of projects that may be funded include: - Water capture tanks. - Dry landscaping to replace turf. - Upgrades of old style toilets to dual flush toilets. - Smart watering systems for Council's open spaces.	As required	