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# Upper Hunter Shire Council Drought Management and Emergency Response Plan

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**April 2014**

Daryl McGregor Pty Ltd, Consulting Engineers  
*Strategies for a Water Efficient Future*

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## DOCUMENT STATUS AND RELEASE INFORMATION

**DLM Environmental Consultants Pty Ltd** ABN 63 119 722 093

641 Macauley Street

Albury NSW 2640 Australia

T: 61 2 6041 6403 F: 61 2 6041 6403 E: [darylm@bigpond.com](mailto:darylm@bigpond.com) M: 0417 271 618

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## **Executive Summary**

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### **Supply**

Upper Hunter Shire Council supplies water to residential, commercial and industrial customers in the following towns:

- Aberdeen
- Merriwa
- Murrurundi
- Scone
- Cassilis (village)

### **Purpose of Drought Plan**

This Drought Plan outlines the various demand and supply side drought response actions that should be employed at various stages during an extended drought period.

The fundamental objective of the Plan is to minimise the risk of the community running out of water, and to ensure that there is always sufficient water available to satisfy the basic needs of the community. These objectives will be enhanced by the effective implementation of appropriate demand management initiatives.

The Plan is also intended to be activated under “emergency response” situations, such as:

- Contamination of supply, either at the source or within the supply systems of Murrurundi, Merriwa, Scone, Aberdeen and/or Cassilis;
- Concentrations of algae, suspended material or other contaminants in the raw water supply;
- Widespread power failure affecting transmission of raw and / or treated water;
- Major system failure, including failure of major distribution mains, service reservoir(s) or distribution pumping stations;

The response would largely depend on the magnitude and/or duration of any of the above emergencies and the ability of the system to supply water to consumers.

### **Overall Objectives**

There are three (3) principal sets of objectives: Strategic Objectives; Planning Objectives & Operational Objectives.

#### ***i) Strategic Objectives***

To ensure a systematic, timely, effective and efficient response to drought and emergencies which minimises disruption and adverse impact on customers by:-

- ensuring timely warning of any potential water shortages or supply disruptions and having in place ready response strategies.

- Identifying and responding to long term planning issues to ensure financial capacity to implement necessary infrastructure installation.

**ii) Planning Objectives**

To ensure that:

- consumers are made aware of the development of the Response Plan to ensure all stakeholders have an understanding and an ownership of the Plan.
- the Plan identifies all the necessary steps that need to be taken throughout a drought or emergency, including identification of triggers which instigate implementation of management actions.
- the Plan is subject to monitoring and regular review as the system develops  
**and**
- the Plan is monitored and reviewed throughout the course of a drought or emergency and adjusted where necessary.  
**and that in the long term**
- the agreed level of service, including security of supply, satisfies the requirements of UHSC and its customers at an acceptable cost.  
**and**
- all feasible options for achieving a balance between supply and demand are evaluated in terms of impact on customers.

**iii). Operational Objectives**

To ensure that in the **short term**:

- in all droughts a minimum supply of at least 140 litres per person per day is provided to accommodate the minimum requirements for health and sanitary purposes. This would apply to Level 6 restrictions. Council has adopted a range of target supply levels under drought conditions, commencing at 260 litres per person per day under Level 1 restrictions.
- the most efficient use is made of water resources during periods of water shortage.
- a reliable assessment of drought or emergency status is made so that Upper Hunter Shire Council is aware of what stage of a drought applies and/or how severe the emergency is.  
**and that in the long term:**
- Upper Hunter Shire Council is kept informed of demand patterns and customer expectations in relation to desirable levels of services, so that assessments can be made of system reliability during future droughts/emergencies.
- **emergency measures** caused by supply shortfalls beyond Stage 6 restrictions are not required more often than in 2% of years; that the duration of restrictions (during drought) not exceed 3 months; that the duration of interruption to supply during an extreme emergency not exceed 4 weeks and that the portability of restrictions in any year is, on average, no greater than 10%.

### **Trigger Points**

There are three (3) sets of trigger points covering the separate supplies to Murrurundi, to Scone and Aberdeen and to Merriwa and Cassilis:

#### **a) Murrurundi**

The trigger points for introduction of restrictions at Murrurundi have been set to accommodate fluctuations in the capacity of Murrurundi Dam, pending determination of greater security (as discussed in Section 4.3 above).

<b>Dam Level</b>	<b>Restriction Level</b>	<b>Target Reduction in Consumption</b>
7.5m	Level 1	10%
7.0m	Level 2	20%
6.5m	Level 3	30%
6.0m	Level 4	50%
5.5m	Level 5	70%
5.0	Level 6	85%
Algae or other contaminants requires dam water use to cease and supply to be drawn from Boyd Street Pages River inlet screen and pit	Level 5	70%

#### **b) Scone and Aberdeen**

As part of State Water's ongoing management of the water resource, the available volumes and allocations of water are determined on a continuous basis.

Under these resource management processes, Town water allocation "Trigger Points" should be set in parallel with restrictions to supply as they affect other users.

The restriction triggers set out below are based on State Water's/Office of Water's available water determinations (AWD) announcements which are made under the *Water Sharing Plan for the Hunter Regulated Water Source, 2003*

The adopted trigger levels are aimed at ensuring that Singleton is affected by water restrictions for less than 10% of the time and no more than 5 times per 100 years.

These Triggers have also been adopted by both Muswellbrook and Upper Hunter Shire Councils, as part of a regional approach to water supply management in the region.

<b>Trigger</b>	<b>Restriction Level</b>
10% reduction in High Security Water allocations	Level 1
25% reduction in High Security Water allocations	Level 2
40% reduction in High Security Water allocations	Level 3
55% reduction in High Security Water allocations	Level 4

70% reduction in High Security Water allocations	Level 5
85% reduction in High Security Water allocations or major break down of rising main or pumping equipment	Level 6

**c) Merriwa and Cassilis**

Three bore pumps are available to supply bore water to Merriwa and Cassilis with the following capacities:

- Pump #1 (McKenzie Street): 13 L/s
- Pump #2 (Langley Street): 19 L/s
- Pump #3 (Collins Street): 21 L/s

The capacity of the treatment plant limits the operation of the pumps to Pump #1 + Pump# 2 or Pump #1 and Pump #3.

Parks & gardens watering is a major user and should be restricted during high consumption periods.

The trigger levels listed below have been adopted to ensure that (a) there is always a stand-by pump available; (b) pumping times are within the normal range of operation to prevent pump burn out.

<b>Trigger</b>	<b>Restriction Level</b>
Two (2) Bore pumps operate for 20 hrs/day for more than one day	Level 1
If level 1 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 2
If level 2 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 3
If level 3 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 4
If level 4 restrictions have failed to keep 2 bore pumps operating for less than 18 hours per day Or Significant equipment breakdown	Level 5
Major failure of bore pumps or water treatment plant	Level 6

**Action Plan**

The Drought Management Action Plan (Council's Water Restriction Policy) is set out in Section 7, Page 35 (Table 8).

**Review**

It is proposed that this Plan be reviewed annually.

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Appendix B:	Guidelines for Water Carters – NSW Health
Appendix C:	Typical Media Releases
Appendix D:	Forward Capital Works Plans

## 1. INTRODUCTION

### 1.1 General

The preparation of a Drought Contingency and Emergency Response Plan for a water supply authority needs to be based on a thorough assessment of the regional and local factors which affect planning and management.

There are two primary components involved in securing an adequate water supply in times of drought and during emergency situations. These are:-

- a. the provision of an adequate supply system to satisfy current and future demands over a range of climatic conditions (including drought conditions) and emergency situations.
- b. the definitions of actions required when shortfalls in water available for supply occur and when supply is interrupted under emergency conditions.

The first component represents the long term planning actions which result in a satisfactory level of infrastructure development and the investment required to secure supply under a range of adverse conditions.

The second component relates to management actions which are required to be implemented to minimise the adverse impacts of a shortfall in supply. These actions complement the long term planning process.

An acceptable Drought Contingency and Emergency Response Plan involves an appropriate combination of long term and short term management actions.

This document is a Drought Contingency and Emergency Response Plan for Upper Hunter Shire Council's water supply district.

Upper Hunter Shire Council (UHSC) as the Local Water Utility (LWU) is responsible for the provision of water supply services to residential, commercial and industrial customers in its Local Government Area (LGA).

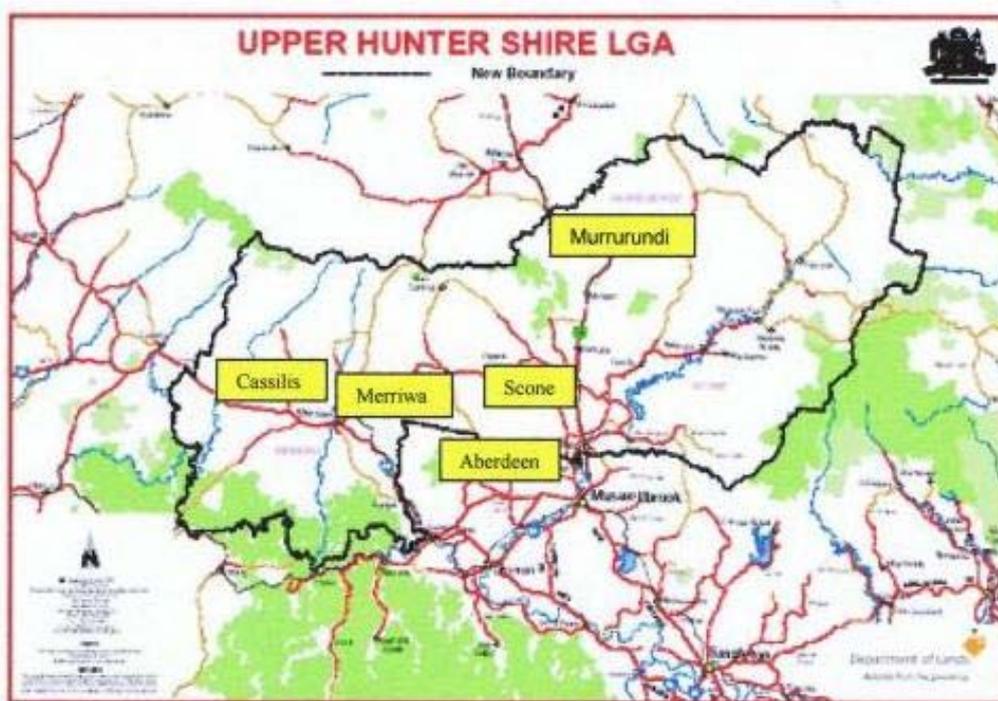
Council supplies water to:

- Aberdeen
- Merriwa
- Murrurundi
- Scone

and

- The Village of Cassilis.

The Shire and Towns supplied are shown in Figure 1 below:



*Figure 1: Upper Hunter Shire Council – Towns Supplied with Water*

## 1.2 Purpose

This Drought Plan outlines the various demand and supply side drought response actions that should be employed at various stages during an extended drought period.

The fundamental objective of the Plan is to minimise the risk of the community running out of water, and to ensure that there is always sufficient water available to satisfy the basic needs of the community.

**These objectives will be enhanced by the effective implementation of appropriate demand management initiatives.**

It is important therefore, to consider this Plan in conjunction with Council's Demand Management Strategy and Integrated Water Cycle Management Plan.

Drought management planning is an essential component of the NSW Government's Best Practice Management Guidelines for local water utilities (DEUS, 2004).

## 1.3 Legislation & Enforcement

Under Section 5, Part 2 of the Local Government (Water Services) Regulation 1998, Council is empowered to restrict water supply (by public notice published in a newspaper circulation within the Council's area).

Under Section 637 of the Local Government Act 1993, the Penalty which can apply is a maximum of \$2,200 as follows:

Maximum penalty: 20 penalty units  
Current Penalty Unit: \$110

Restrictions will be enforced by Council's Ordinance Officers who are empowered under the Local Government Act (1993) to issue such infringement notices.

Council's current enforcement practices are:

- The **first time** a person is found to be contravening water restrictions imposed by Council, they will be given a written warning. The warning will include a reminder of the particular restrictions in force, and a warning of the consequences if they contravene the restriction again;
- If the person is found to be contravening the restrictions a **second time** an "on the spot" fine of \$210 (in 2010 \$ subject to increases) will be issued by Council's Ordinance Officer;
- If the same person is found to ignore the warning and contravene the restrictions a **third time** their water supply will be restricted by the insertion of an orifice plate in the water service pipe at the meter.

Council may also choose to prosecute offenders under Section 637 of the local Government Act (as detailed above - maximum penalty: \$2,200).

#### **1.4 Role of NSW Office of Water**

The NSW Office of Water works with partner agencies and with the community to provide a reliable, sustainable supply of water for households, irrigators, farmers, industry and the environment.

State Water operates the major rural dams across NSW. Water supplies to households are the responsibility of local water utilities across most of NSW and State-owned Corporations in the major metropolitan centres.

For non-metropolitan areas, the Office of Water provides managerial, technical and financial support under the Country Towns Water Supply and Sewerage Program.

Available Water Determinations (AWDs) are made for each water source generally at the start of a water year. The licensed volume or the percentage of the share component is defined by NSW Office of Water. (Source: NSW Office of Water website).

#### **1.5 Emergency Response Issues**

Apart from drought, the issues that could trigger an emergency response and introduction of restricted supplies, are:

- Contamination of supply, either at the source or within the supply systems of Murrurundi, Merriwa, Scone, Aberdeen and/or Cassilis;

- Concentrations of algae, suspended material or other contaminants in the raw water supply causing substantial loss of filtration capacity;
- Widespread power failure affecting transmission of raw and/or treated water;
- Major system failure, including failure of major distribution mains, service reservoir(s) or distribution pumping stations.

The response would largely depend on the magnitude and/or duration of any of the above emergencies and the ability of the system to supply water to consumers.

## **2. PLAN OBJECTIVES**

### **2.1 General**

A set of objectives is required for a Drought Contingency and Emergency Response Plan in order to give the Plan direction and purpose. Also, the effectiveness of drought assessment and response activities will be difficult to monitor and evaluate without a clear set of objectives.

There are essentially three types of goals to be considered, namely:-

a) Strategic:

to address overall objectives for drought and emergency response which are linked to other strategic objectives of UHSC.

b) Planning:

to address future infrastructure and supply needs and linked to the overall planning objectives of UHSC.

c) Operational:

to translate the strategic objectives into specific responses and management actions.

### **2.2 Strategic Objectives**

To ensure a systematic, timely, effective and efficient response to drought and emergencies which minimises disruption and adverse impact on customers by:-

- ensuring timely warning of any potential water shortages or supply disruptions and having in place ready response strategies.
- Identifying and responding to long term planning issues to ensure financial capacity to implement necessary infrastructure installation.

### **2.3 Planning Objectives**

To ensure that in the short term:-

- consumers are made aware of the development of the Response Plan to ensure all stakeholders have an understanding and an ownership of the Plan.
- the Plan identifies all the necessary steps that need to be taken throughout a drought or emergency, including identification of triggers which instigate implementation of management actions.

- the Plan is subject to monitoring and regular review as the system develops  
**and**
- the Plan is monitored and reviewed throughout the course of a drought or emergency and adjusted where necessary.  
**and that in the long term**
- the agreed level of service, including security of supply satisfies the requirements of UHSC and its customers at an acceptable cost.  
**and**
- all feasible options for achieving a balance between supply and demand are evaluated in terms of impact on customers.

## 2.4 Operational Objectives

To ensure that in the **short term**:

- in all droughts a minimum supply of at least 140 litres per person per day is provided to accommodate the minimum requirements for health and sanitary purposes. This would apply to Level 6 restrictions. Council has adopted a range of target supply levels under drought conditions, commencing at 280 litres per person per day under Level 1 restrictions.
- the most efficient use is made of water resources during periods of water shortage.
- a reliable assessment of drought or emergency status is made so that Upper Hunter Shire Council is aware of what stage of a drought applies and/or how severe the emergency is.  
**and that in the long term:**
- Upper Hunter Shire Council is kept informed of demand patterns and customer expectations in relation to desirable levels of services, so that assessments can be made of system reliability during future droughts/emergencies.
- **emergency measures** caused by supply shortfalls beyond Stage 6 restrictions are not required more often than in 2% of years; that the duration of restrictions (during drought) not exceed 3 months; that the duration of interruption to supply during an extreme emergency not exceed 4 weeks and that the portability of restrictions in any year is, on average, no greater than 10%.

### 3. BACKGROUND INFORMATION

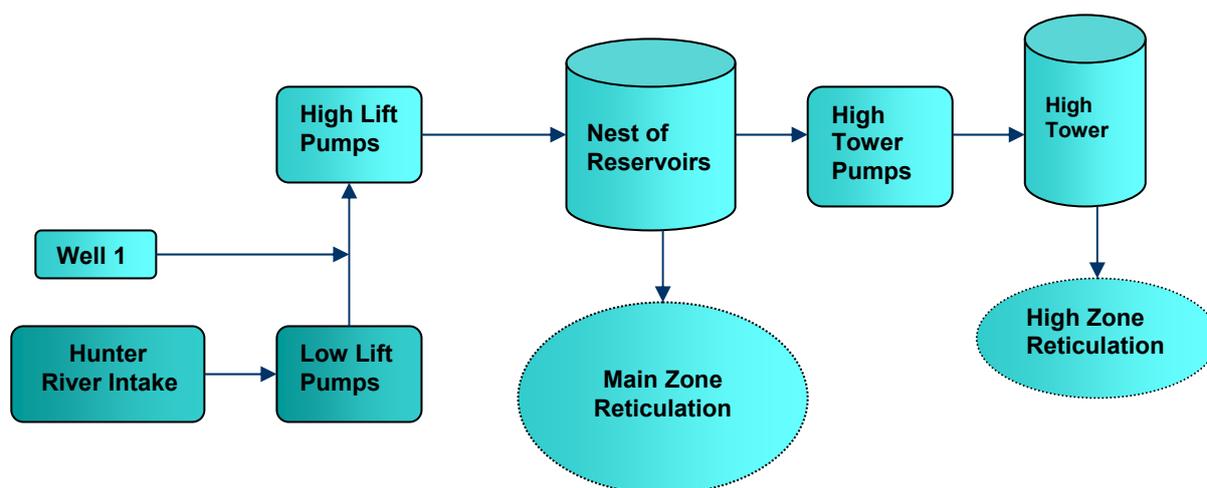
#### 3.1 System Description

##### a) Aberdeen

The Aberdeen water supply scheme serves approximately 2,500 people. The scheme consists of:

- River inlet works (six river screens shared with the Scone scheme; low lift pump capacity 25 L/s);
- One bore;
- High lift pump (capacity 35 L/s);
- A chlorinator;
- Three low level reservoirs, combined capacity 7.5 ML;
- One high level reservoir (capacity 0.1 ML).

The water source is the regulated Hunter River (via Glenbawn Dam) and a supplementary bore (adjacent to the Hunter River).



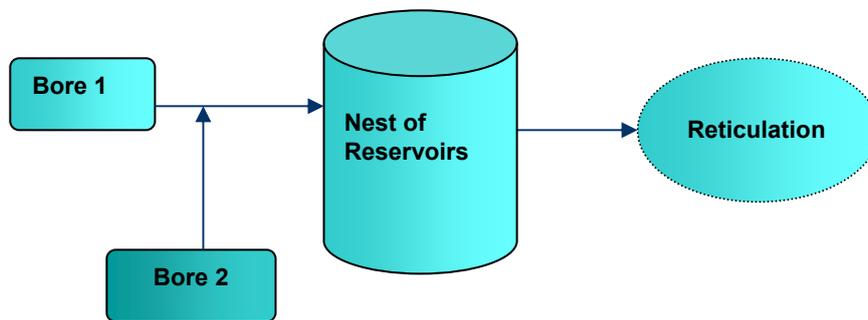
**Figure 2: Aberdeen Water Supply Schematic**

##### b) Cassilis

The Cassilis Water Supply Scheme serves approximately 100 people. The Scheme consists of:

- Two bores (pump capacities 0.4 and 0.2 ML/day);
- Chlorinator;
- Four reservoirs (total capacity 0.4 ML);
- 1.4 km of reticulation.

The water source is via a groundwater bore.



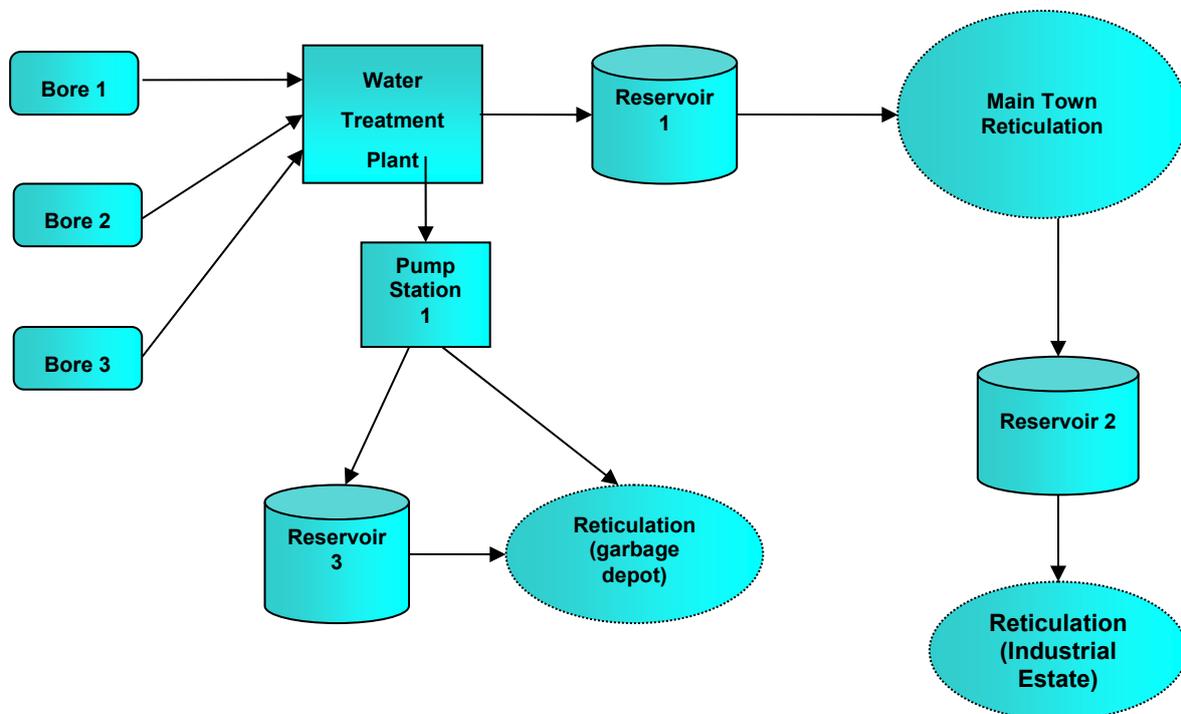
**Figure 3: Cassilis Water Supply Schematic**

**c) Merriwa**

The Merriwa water supply scheme serves approximately 950 people. The scheme consists of:

- Three bores (artesian and sub-artesian)
- Treatment plant, rated capacity 27 L/s but operated at up to 43 l/s
- 1.5 ML service reservoir and 0.9 ML supplementary reservoir
- Approximately 13 km of reticulation.

The water source is via three (3) groundwater bores



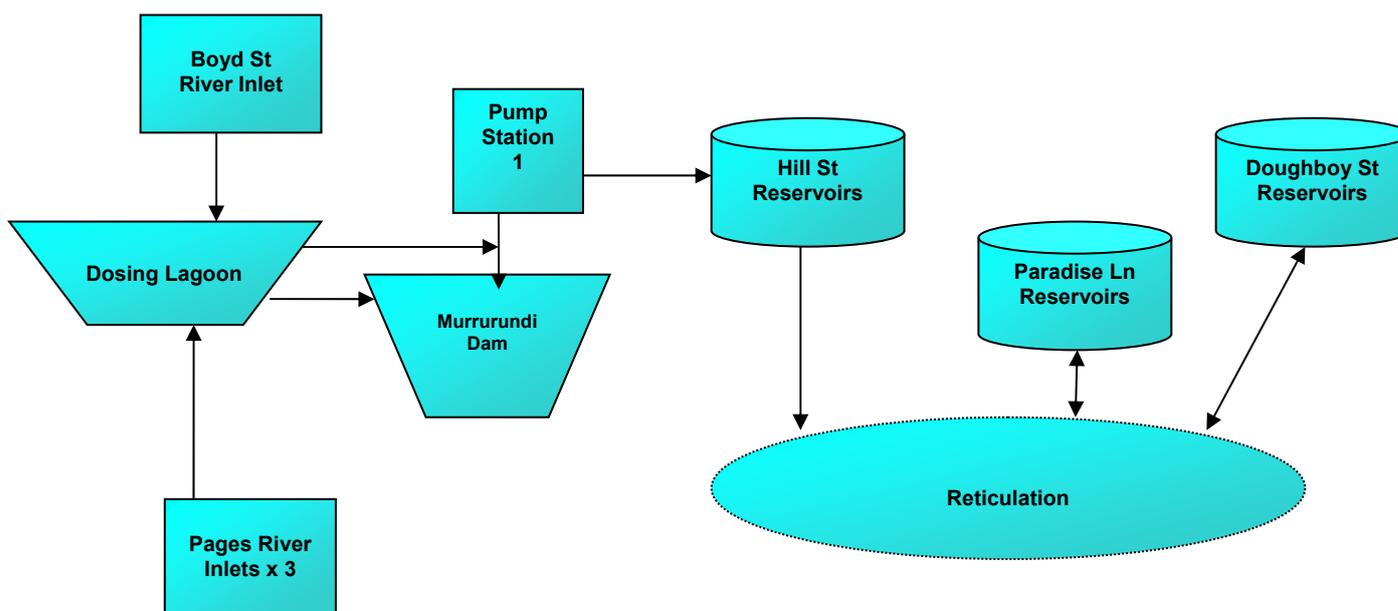
**Figure 4: Merriwa Water Supply Schematic**

**d) Murrurundi**

The Murrurundi water supply scheme serves approximately 1000 people. The scheme consists of:

- Three river inlets (Pages River). Water is now drawn from under the Pages River using off takes installed in early 2014, when the supply from Murrurundi Dam was contaminated with an outbreak of blue green algae (which brought about the need for Stage 5 restrictions and water supplied by truck from the Scone supply system). Council is also currently investigating the feasibility of a permanent supply from Scone which would also serve the villages of Parkville, Wingen and Blandford; as well some rural properties along the pipeline route.
- Dosing lagoon and storage dam (Murrurundi Dam 180 ML capacity);
- Chlorinator;
- Four reservoirs, combined capacity 1.4 ML;
- Boyd Street River Intake
- Approximately 25 km of reticulation.

The water sources are the Pages River and Singles Creek, via Murrurundi Dam.



**Figure 5: Murrurundi Water Supply Schematic**

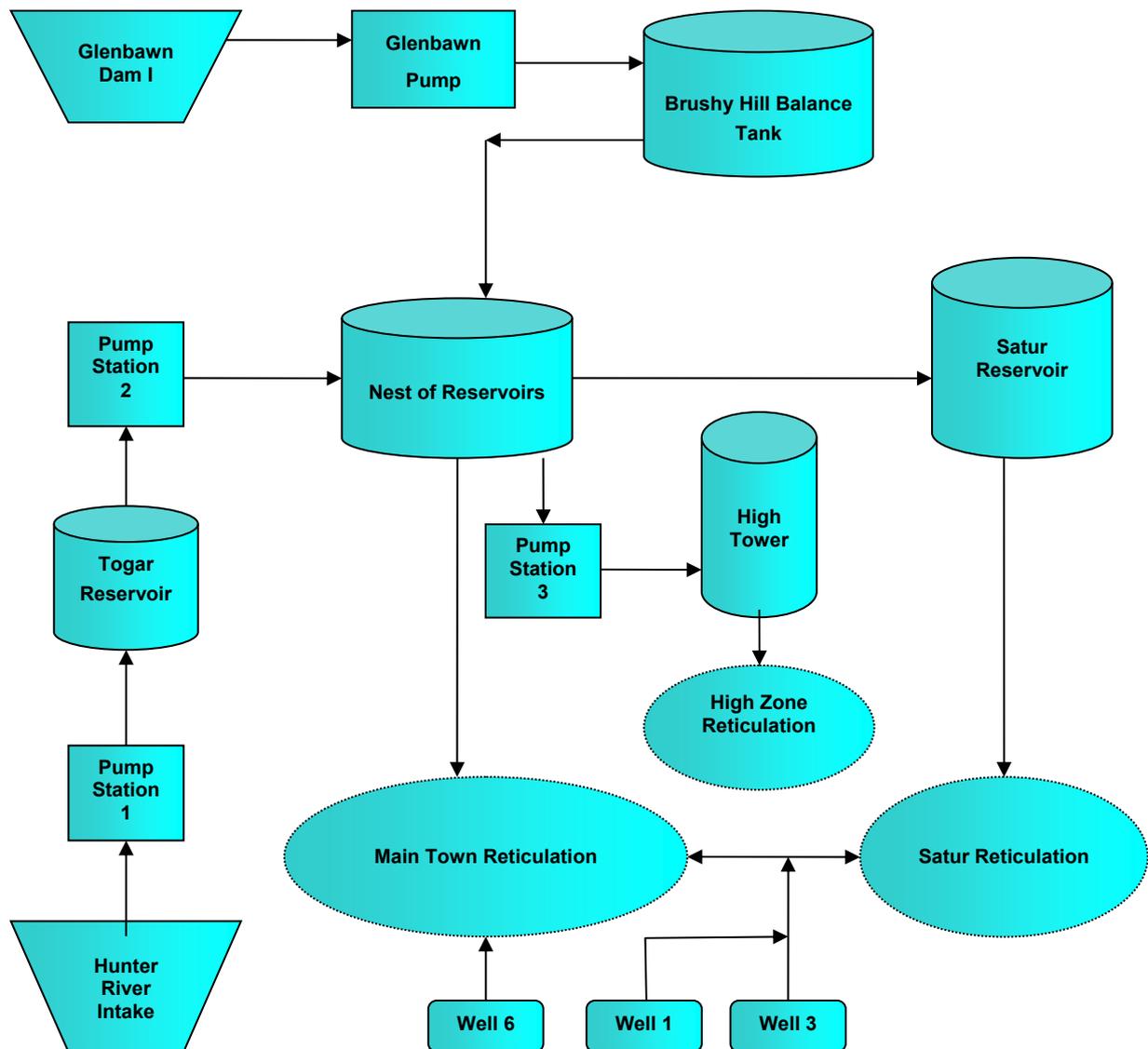
**e) Scone**

The Scone water supply scheme serves about 4600 people. The scheme consists of:

- Supply from Glenbawn Dam
- Six river screens (shared with Aberdeen scheme);
- Three pump stations (intake and Togar pump stations capacity 70L/s);
- Four low level reservoirs (combined capacity 11.4 ML);
- One high level reservoir (capacity 0.5 ML);

- Three operational bores on Kingdon Ponds, yield varies depending on rainfall.

The water sources are the regulated Hunter River and supplementary bores at Kingdon Ponds.



[Note: Wells 2, 4 & 5 are abandoned]

**Figure 6: Scone Water Supply Schematic**

**f) Water Treatment**

Upper Hunter Shire Council operates 4 Water Treatment Plants namely:

- Aberdeen/Scone: Chlorination only; Capacity 12 ML/d
- Merriwa: Conventional treatment (Filtration); Capacity 2.3 ML/d

- Murrurundi: Chlorination only; Capacity 2.4 ML/d
- Cassilis: Chlorination only; Capacity 0.6 ML/d

**Total Capacity:** 17.3 ML/d

**Peak Day Demands:** Not recorded

**Peak Hourly Demands:** Not recorded

Only one plant (the Merriwa plant) provides filtration. The other plants are simply disinfection (chlorination) facilities.

### 3.2 Major Storages

Town	Water Sources	Major Storage	Capacity
Aberdeen	<ul style="list-style-type: none"> <li>▪ Regulated Hunter River</li> <li>▪ Supplementary Bore</li> </ul>	Glenbawn Dam	750 GL
Cassilis	<ul style="list-style-type: none"> <li>▪ Groundwater</li> </ul>	-	-
Merriwa	<ul style="list-style-type: none"> <li>▪ Groundwater</li> </ul>	-	-
Murrurundi	<ul style="list-style-type: none"> <li>▪ Pages River/Singles Creek</li> </ul>	Murrurundi Dam	180 ML
Scone	<ul style="list-style-type: none"> <li>▪ Regulated Hunter River</li> <li>▪ Supplementary Bores (Kingdon Ponds)</li> </ul>	Glenbawn Dam Brushy Hill Reservoir	750 GL 0.5 ML

### 3.3 Service Reservoirs

Town	No. of Service Reservoirs	Capacity (ML)	Peak Days Capacity (days)
Aberdeen	3 x Low Level 1 x High Level	7.5 } 0.1 } 7.6	2.1
Cassilis	4	0.4	-
Merriwa	3	2.4	0.92
Murrurundi	4	1.4	-
Scone	4 x Low Level 1 x High Level 1 x High Zone (Bhima Drive)	11.4 } 0.5 } 12.9 ML total 1.0 }	0.8484

### 3.4 Population & Growth

Upper Hunter Shire covers an area of 8,102 km<sup>2</sup>, is situated in the NSW Hunter Region with a number of distinct areas of population, including Scone, Aberdeen, Murrurundi and Merriwa.

The Shire is bounded by Liverpool Plains Shire and the Tamworth Regional Council area in the north, Gloucester and Dungog Shires in the east, the Singleton Council area and Muswellbrook Shire in the south and the Mid-Western Regional Council area and Warrumbungle Shire in the west.

The principal centre, Scone is approximately 255 kilometres north west of Sydney. The current population of the Shire (2011 Census) is 14,200 people.

The populations of the centres provided with water supply by Council are shown in Table 2 below (ABS March 2011):

The total population of Upper Hunter Shire, as reported by the 2006 Census was 12,974. The Australian Bureau of Statistics (Regional Population Growth, Australia, Cat.No.32180) Reports the 2007 population of the Shire at 13,594.

It is not possible to compare this population with the 2001 Census results, because of the changes to local government, boundaries which occurred in 2004. However, based on changes in population in the main centres (Scone, Aberdeen, Merriwa and Murrurundi) it would appear that population has grown by 1.3% (or 0.25% pa).

Population projections for the Shire, as published by the NSW Department of Planning and Infrastructure, are shown in the Table below, reflecting an average annual growth rate of 0.8 % pa.

**Table 1: Population Projections for Upper Hunter Shire**

(Source: *Population Estimates & Projections for Local Areas NSW; NSW Planning & Infrastructure, 2013*).

	2011 Census	2016	2021	2026	2031	Total Predicted growth	Total % Change	Annual % Change
UHSC	14,200	14,900	15,500	16,000	16,500	2,300	16.2%	+0.8%

Most growth is expected to be in the two principal population centres of Scone, (2011 census population of 5,079) and Aberdeen, (2011 census population 1,837).

For the five (5) towns supplied with water, the expected population growths are presented in the Table below.

**Table 2: Population Growth: Towns Supplied with Water**

(Source: *Population Estimates & Projections for Local Areas NSW; NSW Planning & Infrastructure, 2013*).

Urban Centres	Current (2011) Census	2016	2021	2026	2031
Cassilis	350	352	355	358	401
Murrurundi	847	854	861	868	874
Merriwa	973	981	989	997	1,005
Aberdeen	1,837	1,852	1,867	1,881	1,896
Scone	5,079	5,120	5,160	5,200	5,250

The number of properties connected to the water supply systems is 4,600 (TBL Water Supply Performance Report, 2012/13).

The region is characterised by relatively strong population growth. The overall Shire growth rate is approximately 0.8% pa. The future growth rate for the Shire is predicated at 16.2% over the 20 years from 2011 to 2031 (Source: NSW Planning & Infrastructure, 2013).

### 3.5 Human Resources

There is a total of 7 staff employed directly in the water and Sewerage Section, as follows:

- Merriwa 0.5
  - Murrurundi 0.5
  - Administration 1.5
  - Scone/Aberdeen 4.5
- 7.0 total

Staff are interchangeable between sites and Council considers that, overall, there are adequate staff numbers to effectively operate and maintain the water supply systems. Management during drought

periods involves most of the staff employed at Council and, in recent years, drought periods and resulting water restrictions have been managed very well.

### 3.6 Water Pricing

Water Charges for 2013/14 incorporate an access and usage component. The access or base charge has been calculated to cover the fixed costs of the water reticulation scheme.

Council's pricing structures for the various supply areas are shown in the Tables below:

Component	Aberdeen/Scone \$	Cassilis/Merriwa \$	Murrurundi \$
<b>Access Charge</b>			
Water Meter Size:			
20 mm	300	300	374
25 mm	383	383	465
32 mm	484	484	618
40 mm	607	607	745
50 mm	753	753	924
80 mm	1,219	1,219	1,483
100 mm	1,523	1,523	1,941
200 mm	3,182	3,182	3,875
<b>User Charges per kL</b>			
<b>Residential Users:</b>			

First 75 kL/quarter	1.59	1.59	1.93
Over 75 kL/quarter	2.28	2.28	2.28
Kidney dialysis users	0.74	0.74	0.74
<b>Non-residential Users:</b>			
<b>(commercial, industrial &amp; non-rateable)</b>			
Scone saleyards Primo Scone Abattoir	1.27	NA	NA
Council Parks & Gardens	0.71	0.71	0.71
Other	1.86	1.86	1.91

**Table 3: Water Pricing –Upper Hunter Shire**

Properties with more than one connection will be charged for each additional meter according to size, as per the above Schedule.

The actual water used, as recorded by the Council-installed water meter, is charged to each property on a quarterly basis.

### 3.7 Drought History

The Upper Hunter has a history of regular droughts. The water supply area was drought declared from January 1999 to January 2002, from October 2002 to December 2003 and again in 2004, 2005 and 2006. Level 1 restrictions were also in place for Murrurundi from January 2014 until 11 February 2014 at which time the restrictions were lifted to Level 5; due primarily to high algae levels in the Dam. These restrictions were lifted

#### a) Merriwa and Cassilis

Both are supplied from groundwater and are, therefore, less impacted by drought.

**Water restrictions have been applied infrequently; typically as a result of plant (pump) failure.**

#### b) Murrurundi

Drought affecting flows in the Pages River and Singles Creek impact on supplies to Murrurundi.

In the autumn and winter of 2005, the level of Murrurundi Dam dropped below 50%. Although contingency supply plans were developed, they were not required as rain fell before the Dam reached critical supply level. (Murrurundi Dam has a full supply capacity of 180 ML, which is considered inadequate for prolonged drought periods. Plans are in place to raise the dam wall to provide 250 ML capacity. Construction is dependant on receipt of Government financial assistance (subsidy).

As noted above, restrictions were again introduced in January 2014 (Level 1) when the level in Murrurundi Dam fell to 75% (a trigger point in Council's Drought Management Plan). The level was increased to Level 5 restrictions on 11 February 2014 due to high algal concentrations in the storage and water was trucked in to Murrurundi from Scone from 12 February 2014 until 21 February 2014

c) Scone

The Scone system is limited by the capacity of its intake pumps and delivery main, rather than supply of water from the Hunter River. The impact of drought has led indirectly to water restrictions. The extra garden watering and other use occurring in the drought results in an increase in demand. This in turn results in a need for water restrictions during peak times to reduce the demand to a level that can be supplied by the existing infrastructure.

Also, during dry years the aquifer at Kingdon Ponds recharges slowly, so cannot be used effectively as a supplementary water source.

In recent years restrictions have been in place for Scone during these periods:

- Summer 2002/03: four months of level one restrictions;
- Summer 2003/04: three months of level one and two weeks of level two restrictions;
- Autumn 2004: two days of level four restrictions due to pump failure;
- Summer 2004/05: three months of level one restrictions.

d) Aberdeen

Although Aberdeen pumps water from the same source as Scone, the infrastructure is adequately sized and recent droughts have not affected the water service.

On 17 December 2009 Level 1 restrictions were imposed for **Scone and Murrurundi**, involving:

- Sprinklers restricted to the hours of 6.00am to 8.00am and 6.00pm to 8.00pm;
- No washing of paved areas;
- Car washing allowed with trigger nozzle or bucket only;
- No emptying and refilling of pools (initial fill and topping up permitted);
- Hand held hoses are permitted.

### 3.8 Water Consumption

Details of historical water consumption in Upper Hunter Shire are summarised in the following Tables.

a) Annual Consumption

<b>Consumption (ML)</b>										
<b>Town</b>	<b>03/04</b>	<b>04/05</b>	<b>05/06</b>	<b>06/07</b>	<b>07/08</b>	<b>08/09</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>
Scone	688.1	754.8	1112.1	1040.7	815.7	1059.0	980.4	1193.5	979.6	1113.6
Aberdeen	180.6	217.4	253.1	200.9	143.4	219.3	215.4	210.0	215.3	346.5
Merriwa	200.5	202.5	330.3	180.3	239.0	191.0	161.6	147.0	147.9	200.9
Murrurundi	37.5	84.4	92.2	70.3	58.8	77.9	74.8	76.8	75.2	81.6
Cassilis	9.6	8.4	12.5	11.1	8.3	10.1	11.3	11.1	9.7	11.2
<b>Total</b>	<b>1116.3</b>	<b>1267.5</b>	<b>1800.2</b>	<b>1503.3</b>	<b>1265.2</b>	<b>1557.3</b>	<b>1443.5</b>	<b>1638.4</b>	<b>1427.7</b>	<b>1753.8</b>

**Table 4: Water Treated and Supplied to Towns**

Category 2013/14	Scone/Aberdeen		Cassilis		Merriwa		Murrurundi	
	%	(ML)	%	(ML)	%	(ML)	%	(ML)
Residential	44	898	78.4	16	46	120	63	66
Commercial/Industrial	12	246	3.0	0.5	16	42	18	19
Industrial (Primo/saleyards)	21	421	0.0	0	0	0	0	0
Rural	0	0	1.5	0.3	3	8	0	0
Institutional	0	0	0.0	0	5	12	0	0
Parks	4	77	1.0	0.2	17	45	3	3
UFW	19	378	5.5	3.4	13	33	16	17
		<b>2,020</b>		<b>20.4</b>		<b>260</b>		<b>105</b>

**Table 5: Water Consumption by User Category**

(Note: UFW = Unaccounted for Water – is exceptionally HIGH)

Peak day demands are not known or recorded

It should be noted that:

- The average water usage per property across all 5 towns is 294 kL/year (2012/13) which is in the highest 20% in the State (the State median is 166 kL/Property/year)
- Overall water supply system losses are 90 kL/connection/day which is in the top 40% of statewide comparison losses (the statewide median is 60 kL/connection per day)

Council needs to take action to:

- Reduce residential consumption
- Reduce system losses

### 3.9 Communities without Reticulated Supply

There are approximately 6400 residents of the Shire not served by reticulated water schemes. These include rural residents and residents of the villages of Parkville, Wingen, Bunnan, Gundy and Blandford.

These residents may seek assistance during a drought. It has not been Council's experience in past droughts that these householders seek assistance (other than financial assistance). There is a well established system of residents privately arranging water cartage when required, without intervention from Council.

### 3.10 Water Dependant Industries/Businesses

There are several industries dependent on reticulated water in the Upper Hunter Shire. These are:

- Primo Meats, Scone
- Scone saleyards
- Boral Concrete Batching, Scone
- Scone Hospital
- Scone Nursing Home

- Merriwa Aged Hospital
- Retirement Villages

Council will make decisions about any appropriate restrictions for these customers based on individual assessment. Low level water restrictions would not generally affect these businesses.

### **3.11 Fire Fighting Considerations**

Provision of water supply for fire fighting purposes is a critical issue to consider during periods of restrictions.

All water supply schemes in the Shire have fire fighting capabilities to AS 2419.1 and comply with the Building Code of Australia and NSW Fire Brigade requirements (for all residential, commercial and industrial areas).

Under high level water restrictions there are alternate water sources for use in fire fighting (farm dams, pools, creeks, rivers and storages).

Under all demand reduction restriction options, preference will be given to accommodating fire fighting requirements.

The bottom 10% of all water stored in service reservoirs will be reserved for fire fighting requirements.

Should an emergency last for more than 5 days, Fire Services will be directed to alternative supply sources or to secure groundwater sources.

### **3.12 Upper Hunter Shire Climate**

Weather stations in the Shire are located at Scone, Murrurundi and Cassilis.

There are 3 (three) active stations located at Scone (at Scone SCS, Scone Philip Street and Scone Airport AWS) Data from Philip Street dates back to 1873; but the station was closed in 1992. Scone SCS has data from 1950 and the Airport site from 1988

Data for the SCS and Philip Street sites are presented below, along with data from the Murrurundi and Cassilis sites.

3.12.1 *Scone Data*

Month	Mean Daily Max.		Mean Daily Min.		Mean Monthly		Daily Evaporation	
	Temp (°)		Temp (°C)		Rainfall (mm)		(mm)	
	SCS	Philip St	SCS	Philip St	SCS	Philip St	SCS	Philip St
Jan	31.2	32.0	16.9	16.4	81.3	83.4	7.1	-
Feb	29.8	30.9	16.9	16.1	76.9	69.2	6.1	-
Mar	27.9	29.1	14.6	14.0	52.9	56.5	5.0	-
Apr	24.5	24.9	11.3	10.0	38.9	43.9	3.5	-
May	20.2	20.7	8.0	6.5	46.5	44.8	2.2	-
Jun	17.0	17.2	6.0	4.5	45.5	46.7	1.6	-
Jul	16.3	16.7	4.7	3.1	36.5	41.8	1.8	-
Aug	18.3	18.7	5.5	4.0	38.1	40.6	2.7	-
Sept	21.5	22.3	7.9	6.2	38.5	43.8	3.9	-
Oct	24.9	25.9	10.8	9.7	57.8	52.6	5.0	-
Nov	27.7	28.9	13.3	12.4	63.5	55.2	6.1	-
Dec	30.2	31.5	15.7	14.9	67.2	68.6	7.1	-
<b>Annual</b>	<b>24.1</b>	<b>24.9</b>	<b>11.0</b>	<b>9.8</b>	<b>644.3</b>	<b>646.5</b>	<b>1581.7</b>	<b>-</b>

Surprisingly, maximum monthly temperatures are higher from the long term, Philip Street site (1873 to 1992) than the SCS site (1950 to present) and rainfall is, also, marginally higher.

3.12.2 *Murrurundi Data*

Month	Mean Daily Max. Temp. (°C)	Mean Daily Min. Temp. (°C)	Mean Monthly Rainfall (mm)	Evaporation (mm)
Jan	30.7	15.2	90.8	N/A
Feb	29.7	15.0	78.5	N/A
Mar	27.	12.6	62.1	N/A
Apr	23.7	8.5	52.4	N/A
May	19.2	5.1	54.5	N/A
Jun	15.8	3.2	70.0	N/A
Jul	15.1	2.0	63.5	N/A
Aug	16.9	2.5	61.2	N/A
Sept	20.7	4.9	57.9	N/A
Oct	24.1	8.2	72.5	N/A
Nov	27.3	11.1	76.3	N/A
Dec	29.7	13.6	89.6	N/A
Annual	23.4	8.5	829.6	N/A

3.12.3 *Cassilis Data (applicable to Merriwa as well)*

Month	Mean Daily Max. Temp. (°C)	Mean Daily Min. Temp. (°C)	Mean Monthly Rainfall (mm)	Evaporation (mm)
Jan	29.5	16.0	72.1	N/A
Feb	28.3	15.7	68.6	N/A
Mar	26.1	13.5	54.5	N/A
Apr	21.8	9.2	40.6	N/A
May	17.9	5.3	39.7	N/A
Jun	14.6	3.2	46.5	N/A
Jul	14.1	1.9	42.4	N/A
Aug	15.9	2.8	43.3	N/A
Sept	19.6	5.1	44.4	N/A
Oct	23.2	8.7	50.0	N/A
Nov	26.4	11.9	55.8	N/A
Dec	28.8	14.8	64.4	N/A
Annual	22.2	9.0	622.4	N/A

#### 3.12.4 Summary

The data indicates a wide variance in temperature and rainfall across the Shire, as demonstrated in the summary below.

	Scone	Murrurundi	Cassilis
Mean Daily Max. Temp. (°C)	24.1 – 24.9	23.4	22.2
Max. Temp. Month	January	January	January
Mean Daily Min. Temp. (°C)	9.8 – 11.0	8.5	9.0
Min. Temp. Month	July	July	July
Mean Annual Rainfall (mm)	644.3 – 646.5	829.6	622.4
Max. Rainfall Month	January (81.3-83.4)	January (90.8)	January (72.1)
Min. Rainfall Month	July (36.5-41.8)	April (52.5)	May (39.7)

Cassilis is typically colder than Scone or Murrurundi, but has less rainfall than Scone. Murrurundi is colder than Scone, but has by far the highest rainfall of the three centres.

It would be reasonable to assume that residential water consumption should be highest in Scone and lowest in Murrurundi.

### 3.13 Water Entitlements

Water entitlements for Upper Hunter from the Hunter River and the Groundwater are detailed below:

<b>Source</b>	<b>Licence Category</b>	<b>Entitlement (ML)</b>	<b>Current (2013/14) (ML) Allocation</b>
<b>Hunter Regulated River</b>	Town Water	2,000	2,000
	General Security	669	<b>669</b>
<b>Groundwater</b>	-	198	<b>198</b>
	<b>Totals</b>	<b>2,867 ML</b>	<b>2,867 ML</b>

**Table 6: Upper Hunter Shire Council – Water Entitlements**

[Excludes licences for future irrigation schemes]

In summary, Council holds total entitlements of 2,867 ML/a.

There have never been any reductions in entitlement resulting from drought conditions.

[**Note:** Entitlements for Merriwa, Cassilis & Murrurundi are not known]

### **3.14 Drought Management**

Demand management, or implementation of water conservation initiatives, is a different process entirely to Drought Management. Whereas, demand management seeks to bring about an overall, on-going, reduction in water use, drought and emergency response management seeks to enforce restrictions on use; to ensure that a safe, potable supply of water is maintained during droughts and/or periods of supply interruption.

This Drought Management and Emergency Response Plan, whilst a stand-alone document, should also be read in conjunction with Council's Demand Management Plan to ensure there is no conflict. (Refer Section 5 below).

## 4. CLIMATE CHANGE ASPECTS

### 4.1 Climate Details

A 2008 Report on NSW climate change impacts, *Future Climate and Runoff Projections (to 2030) for New South Wales and Australian Capital Territory*, provides the first detailed projections of the impacts of climate change on runoff and water availability across New South Wales.

The Report concludes:

- There is considerable uncertainty in the modelling of rainfall response to global warming in NSW and ACT
- 9 out of 15 of the global climate models (GCM's) show a decrease in the mean annual rainfall
- Winter rainfalls are likely to be lower across the entire State
- There is less likelihood of reductions in future summer rainfalls (only 5 out of 15 GCM's indicate a reduction)
- The median (or best) estimate indicates that mean future rainfall in NSW in 2030 relative to 1990 will be lower by 0 to 20% in the southern parts
- Averaged across all regions, the median estimate is a 5% decrease in mean annual rainfall

The results of this study/report will be used in NSW to look at the impacts of future flows and river health, aquatic ecosystems and water availability for towns, irrigation and industry.

The Department of Water and Energy has recently (October 2008) provided a list of possible climate change impacts relating to water service planning. The List is reproduced in Appendix B

For UHSC, although the science and modelling are by no means conclusive, the potential impacts of climate change include:

- Reduced rainfall and runoff
- Increasing rainfall variability
- Increased maximum temperature
- Increasing evaporation
- Possible increase in damage to underground infrastructure, particularly pipelines
- Increases in water usage and demand
- The need for water conservation and reuse initiatives (like grey water reuse, effluent reuse etc)
- Population changes as a result of migration away from rural and particularly irrigation areas.

### 4.2 Climate Change Impacts

**Impacts on the Water Utility** may include:

- Changes to water access licence conditions
- Greater uncertainty about yield from the existing raw water source
- Possible increases in damage to underground infrastructure, particularly pipelines
- Reduction in sewage volumes

- Increased retention time of sewage in mains, particularly rising mains
- Increased concentration of nutrients and chemicals in raw sewage
- Changing technology and legislation
- Greater interest and/or need to use low carbon dioxide (green) energy

**Impacts on Customers may include:**

- Increased total and/or seasonal water usage
- Increased grey water use
- Increased use of evaporative coolers
- Movement of people and industries away from areas of water shortage.

**Impacts Specific to Upper Hunter**

The Tom Farrell Institute for the Environment has undertaken climate change modelling specific to the Hunter, Lower North Coast and Central Coast regions (utilising the CSIRO GCM predictions for NSW). (Source: *Hunter & Central Coast Regional Environmental Management Strategy*).

For Upper Hunter the projections indicate:

- ✧ very little change in rainfall patterns, except for a statistically significant increase in autumn rainfall;
- ✧ an increase in extreme heat days;
- ✧ general increases in mean daily temperatures, with autumn and winter increases the most significant;
- ✧ a significant increase in the average minimum temperature of approximately 4.2°C in the western zone (including Upper Hunter Shire) for the period 2020-2080;
- ✧ minimal changes in average summer maximum temperatures.

Table 7 shows the CSIRO's modelled predictions for Hunter-Central Rivers catchment.

Upper Hunter Shire Council will need to consider these possible predictions in planning the future needs for both water supply and sewerage.

It is understood that Council will be required to assess the "secure yield" of its water source (Glenbawn Dam) in the next year or two.

**Table 7: Current and Projected Climate Change in the Hunter-Central Rivers Catchment**

	Present (1990) <sup>(1)</sup>	Projected Change	
		2030	2070
Temperature			
Average	Paterson: 17-32 °C <sup>(2)</sup> Scone: 17-29 °C <sup>(2)</sup> Williamtown: 18-29 °C <sup>(2)</sup>	+ 0.2 +1.6 °C	+0.7-+4.8 °C
No. Days below 0 °C	Score: 5	Score: 1-4	Score: 0-2
No. Days above 35°C	Score: 17	Score: 19-32	Score: 24-78
No. Days above 40°C	Score: 1	Score: 1-4	Score: 2-23
Rainfall			
Annual Average	Paterson: 928 mm Scone: 647 mm Williamtown: 1,120 mm	-7-+7%	-20-+20%
Extreme Rainfall <sup>(3)</sup>		-10-+12%	-7-+10%
Evaporation		+1-+13%	+2-+40%
No. Droughts per decade <sup>(4)</sup>	3	1-5	1-9
Extreme Winds		-5-+8%	-16-+24%
No. Fire Days <sup>(5)</sup>	Williamtown: 16	Williamtown: 17-19	Williamtown: 18-24
<p>1 Present day conditions for temperature and rainfall represent long-term averages from the Bureau of Meteorology. For extreme temperatures, the present average is based on 1964-2003. For fire danger, the present average is based on 1974.</p> <p>2 Range represents average July and January maximum temperature.</p> <p>3 Defined as 1 in 40 year 1-day rainfall total Values represent the range in seasonal projections from a limited set of climate models.</p> <p>4 The values for drought represent average monthly drought frequencies, based upon the Bureau of Meteorology's criteria for serious rainfall deficiency (see also Burke et al., 2006)</p> <p>5 Number of days annually with a "very high" or "extreme" fire danger index. Changes are for 2020 and 2050, respectively.</p>			

(Source: CSIRO – Climate Change in the Hunter-Central Rivers Catchment)

### 4.3 Water Security

i) Scone/Aberdeen

Water supply security for Scone and Aberdeen is very sound, with a secure supply from Glenbawn Dam to both Towns. Supply is also supplemented by secure ground water supplies at Kingdon Ponds.

ii) The Merriwa and Cassilis schemes are sourced from artesian and sub-artesian bores located within the urban areas. Yield has generally been reliable from these bores. From the bore locations and the geology of the area, there is no expectation that yield will significantly decrease in the future.

iii) The Murrurundi scheme sources water from the Pages River and Singles Creek, approximately 5 km upstream of the town. Flow in the Pages River can regularly cease for long periods due to lack of rain. After extended periods of no inflow, dam levels drop significantly.

The flow is now supplemented by a pump station pumping from the alluvial aquifer below the Pages River. During droughts this supplement has been sufficient to maintain dam levels (with appropriate water restrictions in place).

Council is currently investigating options to make the Murrurundi supply more secure, including:

- Construction of a pipeline from Scone to Murrurundi to secure supply from Glenbawn Dam to the Town
- Increasing the storage capacity of the Murrurundi Dam
- Augmenting the supply from the Pages River gravel beds (increased yield)

The choice of option will depend heavily on the subsidy Council is able to attract from government for the necessary works.

## **5. WATER CONSUMPTION AND DEMAND MANAGEMENT OPTIONS**

### **5.1 Introduction**

Council currently has the following demand management initiatives in place:

- Separate metering of *existing* multi-unit developments is encouraged – each unit is levied individual access charges
- Separate metering of *new* multi-unit developments
- Effluent reuse at Scone; and proposed at Murrurundi
- Garden mulch sold cheaply at shire landfill
- Rainwater tanks are encouraged - required on new subdivisions. A rainwater tank rebate applies
- Water restrictions imposed when necessary
- Media and web site notices
- Public education program
- Implementation of Building Code program (including BASIX)
- Customer billing at least 4 times a year
- Full pay-for-use pricing.

### **5.2 Water Conservation & Demand Management Initiatives**

Council has completed a Demand Management Strategy (adopted in 2011) which assessed the feasibility of a range of initiatives, including:

- Water use efficiency
- Pricing Policy
- Use of rainwater tanks
- Residential greywater reuse
- Reuse of reclaimed water
- Water sensitive urban design.

Council has implemented an appropriate pricing policy in Scone and is actively encouraging the use of rainwater tanks. Reclaimed water is planned to be used to irrigate the Rosedale Sports Complex in Murrurundi and water sensitive urban design is being encouraged.

This Drought Plan should be read in conjunction with the Demand Management Strategy.

### **5.3 Alternate Water Sources**

Alternate water sources for all Towns in the Shire supply area include groundwater sources in Scone, Aberdeen, Merriwa and Cassilis.

The potential for a supply to Murrurundi from Scone is currently under investigation.

### **5.4 Target Reductions in Consumption**

Councils Demand Management Plan (*DLM Environmental Consultants, May 2010*) established target water reductions for Scone and Aberdeen, based on modelling of the above initiatives, as follows:

#### **a) Scone**

	Year					
	2015 (ML)	2020 (ML)	2025 (ML)	2030 (ML)	2035 (ML)	2040 (ML)
<b>Target Savings</b>	<b>60</b>	<b>72.5</b>	<b>82.5</b>	<b>91.5</b>	<b>100.5</b>	<b>105.5</b>
<b>Target Demands</b>	<b>1321</b>	<b>1329.5</b>	<b>1340.5</b>	<b>1352.5</b>	<b>1365.5</b>	<b>1373.5</b>

b) Aberdeen

	Year					
	2015 (ML)	2020 (ML)	2025 (ML)	2030 (ML)	2035 (ML)	2040 (ML)
<b>Target Savings</b>	<b>15</b>	<b>22</b>	<b>28</b>	<b>34</b>	<b>40</b>	<b>45</b>
<b>Target Demands</b>	<b>220</b>	<b>224</b>	<b>229</b>	<b>235</b>	<b>242</b>	<b>249</b>

## 6. TRIGGER POINTS

The following Trigger Points have been determined to enable timely implementation of appropriate water restrictions in order to minimise the risk of system failure in times of drought.

### a) Murrurundi

The trigger points for introduction of restrictions at Murrurundi have been set to accommodate fluctuations in the capacity of Murrurundi Dam, pending determination of greater security (as discussed in Section 4.3 above).

Dam Level	Restriction Level	Target Reduction in Consumption
7.5m	Level 1	10%
7.0m	Level 2	20%
6.5m	Level 3	30%
6.0m	Level 4	50%
5.5m	Level 5	70%
5.0	Level 6	85%
Algae or other contaminants requires dam water use to cease and supply to be drawn from Boyd Street Pages River inlet screen and pit	Level 5	70%

### b) Scone and Aberdeen

As part of State Water's ongoing management of the water resource, the available volumes and allocations of water are determined on a continuous basis.

Under these resource management processes, Town water allocation "Trigger Points" should be set in parallel with restrictions to supply as they affect other users.

The restriction triggers set out below are based on State Water's/Office of Water's available water determinations (AWD) announcements which are made under the *Water Sharing Plan for the Hunter Regulated Water Source, 2003*

The adopted trigger levels are aimed at ensuring that Scone and Aberdeen are affected by water restrictions for less than 10% of the time and no more than 5 times per 100 years.

These Triggers have also been adopted by both Muswellbrook and Singleton Councils, as part of a regional approach to water supply management in the region.

Trigger	Restriction Level
10% reduction in High Security Water allocations	Level 1
25% reduction in High Security Water allocations	Level 2
40% reduction in High Security Water allocations	Level 3

55% reduction in High Security Water allocations	Level 4
70% reduction in High Security Water allocations	Level 5
85% reduction in High Security Water allocations or major break down of rising main or pumping equipment	Level 6

**c) Merriwa and Cassilis**

Three bore pumps are available to supply bore water to Merriwa and Cassilis with the following capacities:

- Pump #1 (McKenzie Street): 13 L/s
- Pump #2 (Langley Street): 19 L/s
- Pump #3 (Collins Street): 21 L/s

The capacity of the treatment plant limits the operation of the pumps to Pump #1 + Pump# 2 or Pump #1 and Pump #3.

Parks & gardens watering is a major user and should be restricted during high consumption periods. The trigger levels listed below have been adopted to ensure that (a) there is always a stand-by pump available; (b) pumping times are within the normal range of operation to prevent pump burn out.

<b>Trigger</b>	<b>Restriction Level</b>
Two (2) Bore pumps operate for 20 hrs/day for more than one day	Level 1
If level 1 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 2
If level 2 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 3
If level 3 restrictions have failed to keep 2 bore pumps operating for less than 20 hours per day	Level 4
If level 4 restrictions have failed to keep 2 bore pumps operating for less than 18 hours per day Or Significant equipment breakdown	Level 5
Major failure of bore pumps or water treatment plant	Level 6

## **7. RESPONSE OPTIONS & RESTRICTIONS**

### **7.1 Introduction**

Response options can be generally classified under two broad categories:

- Demand Management
- Supply Management.

In this Section of the Plan, demand management and supply enhancement options to be applied by Upper Hunter Shire Council are outlined.

### **7.2 Demand Reduction during Drought – Water Restrictions**

The Stages of water restrictions that will be applied by Council under declared drought conditions are set out in Table 7 below.

**It should be noted that annual usage in the Shire over the last ten years has averaged 1,764 ML/year; with a high of 1,800 ML in 2008/09.**

**Given that the Shire's Total Town Water Entitlement is 2000 ML per year, with a total water entitlement of 2867 ML, (including a General Security Entitlement of 669 ML and Groundwater Entitlement of 198 ML) there is no spare capacity to accommodate any foreseeable future reductions in allocation/supply from supply sources, or to withstand any additional increase in consumption.**

**Table 8: UHSC Council: Water Restriction Policy**

**RESTRICTIONS ON THE USE OF WATER FROM THE WATER SUPPLY SYSTEM**

REGIONAL SYSTEM OF WATER RESTRICTIONS						
ACTIVITY	WATER RESTRICTIONS					
	LEVEL 1 LOW	LEVEL 2 MODERATE	LEVEL 3 HIGH	LEVEL 4 VERY HIGH	LEVEL 5 EXTREME	LEVEL 6 CRITICAL
TARGET WATER CONSUMPTION	260 litres/person/day	240 litres/person/day	220litres/person/day	200 litres/person/day	180 litres/person/day	140 litres/person/day

**RESIDENTIAL WATER USE**

Watering of Lawns	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs daily. <b>Winter Time</b> 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Not permitted	Not permitted	Not permitted
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**Note: Subject to varying Summer and Winter Times**

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Watering of Residential Gardens <b>Note: Subject to varying Summer and Winter times</b>	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs daily. <b>Winter Time</b> 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 1800-2000 hrs only on each Wednesday and Sunday. <b>Winter Time</b> 1600-1800 hrs on each Wednesday and Sunday.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, not permitted at any time. Bucket / watering can watering only. <b>Summer Time</b> between 1800-2000 hrs on Sunday only. <b>Winter Time</b> between 1300-1500 hrs on Sunday only.	Not permitted
Topping up, filling garden water features	Permitted	Permitted	Permitted	Permitted	Not to be topped up or filled.	Not to be topped up or filled.
Irrigation of new turf	Permitted for one week after laying after which level 1 restriction on watering lawns applies	Permitted for one week after laying after which level 2 restriction on watering lawns applies	Permitted for one week after laying after which level 3 restriction on watering lawns applies	Not permitted.	Not permitted.	Not permitted.
Washing down walls or paved surfaces	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
Topping up private swimming pools/spas	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, every day.	Only between hours of 0700-0900 and between 1800-2000 hrs, every day provided pool covers are used	Only between hours of 0700-0900 and between 1800-2000 hrs, every day. Pool covers must be used.	Not permitted	Not permitted

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First fill of private swimming pools	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, every day	Only with Council permission and provided pool covers are used.	Only with Council permission and after water savings elsewhere within property. Covers must be used.	Not permitted	Not permitted
Washing cars at home	Permitted with bucket and rinse with trigger hose on lawn at any time.	Permitted with bucket and rinse with trigger hose on lawn between 0900-1200 hrs any day.	Permitted with bucket only on lawn between 0900-1200 hrs any day.	Permitted with bucket only on lawn between 0900-1200 hrs any day.	Not permitted	Not permitted
Baths, showers				Five (5) minute showers, one bath per person per day	Three (3) minute showers, one bath ( 100 mm depth) per person per day	Three (3) minute showers, one bath ( 100 mm depth) per person per day
Washing of clothes	Permitted	Permitted	Permitted Full loads only encouraged.	Full loads only permitted.	Full loads only permitted.	Two full loads of clothes per week
Use of evaporative air conditioners	Permitted	Permitted	Permitted	Permitted only 0700-2400 hrs daily	Permitted only 0700-2400 hrs daily, exemptions may be granted to aged accommodation or nursing homes.	Permitted only 1800-2200 hrs daily, exemptions may be granted to aged accommodation or nursing homes.
Inflatable or temporary children's pools	Permitted	Permitted	Permitted	Permitted	Not permitted	Not permitted

**NON - RESIDENTIAL WATER USE**

Watering of Lawns	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs only daily. <b>Winter Time</b> 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Not permitted	Not permitted	Not permitted
Watering of Gardens	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs only daily. <b>Winter Time</b> 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. <b>Winter Time</b> between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. <b>Summer Time</b> between 1800-2000 hrs only on each Wednesday and Sunday. <b>Winter Time</b> 1600-1800 hrs on each Wednesday	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, not permitted at any time. Bucket / watering can watering only. <b>Summer Time</b> between 1800-2000 hrs on Sunday only. <b>Winter Time</b> between 1300-1500 hrs on	Not permitted

			every second day as per odds and evens system.	and Sunday.	Sunday only.	
Topping up public swimming pools/spas, including those in motels etc.	Permitted	Only between the hours of 0700-0900 and between 1800-2000 hrs, every day.	Only between hours of 0700-0900 and between 1800-2000 hrs, every day provided pool covers are used	Only between the hours of 0700-0900 and between 1800-2000 hrs, every day. Pool covers must be used.	Not permitted	Not permitted
First fill of public swimming pools/spas, including those in motels etc.	Permitted	Only between hours of 0700-0900 and between 1800-2000 hrs, every day	Only with Council permission	Only with Council permission and after water savings elsewhere within property. Covers must be used.	Not permitted	Not permitted
Turf farm irrigation, market gardens	Permitted	Permitted	Irrigation only between 2000-0800 hrs. Business must prepare WSAP.	Business must implement and comply with WSAP	Not permitted	Not permitted
Irrigation of new turf on non-residential premises	Permitted for one week after laying after which level 1 restriction on watering lawns applies	Permitted for one week after laying after which level 2 restriction on watering lawns applies	Permitted for one week after laying after which level 3 restriction on watering lawns applies	Not permitted.	Not permitted.	Not permitted.
Public car and truck wash facilities	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP	Businesses designated by Council must implement and comply with WSAP	Not permitted.
Construction industry eg mortar or concrete	Permitted	Permitted	Permitted	Permitted	Permitted	Not permitted.

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mix							
Construction - wash down, paint prep, curing.	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP	Businesses designated by Council must implement and comply with WSAP	Not permitted.	
Cleaning - exterior	Permitted with trigger hoses, any time.	Permitted with pressure trigger hoses, any time.	Permitted with pressure trigger hoses.	Businesses designated by Council must implement and comply with WSAP	Businesses designated by Council must implement and comply with WSAP	Not permitted.	
Commercial or Government nurseries	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.	
Abattoirs	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.	
Food or pet food production	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.	
Canneries	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.	
Pet care	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses must implement and comply with WSAP.	
Public water features	Permitted	Permitted	Permitted, but WSAP must be prepared.	WSAP must be implemented.	WSAP must be implemented.	Not permitted.	

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Child care	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses must implement and comply with WSAP.
Public parks, gardens, aviaries, plant houses, zoos	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.
Schools, technical colleges, colleges, universities	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.
Hospitals, hospices, nursing homes, rehab centers	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Business must implement and comply with WSAP.
Aged accommodation	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Business must implement and comply with WSAP.
Motels, caravan parks, cabins	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.
Hotels, registered clubs	Permitted	Permitted	Permitted, but businesses designated by Council must prepare WSAP.	Businesses designated by Council must implement and comply with WSAP.	Businesses designated by Council must implement and comply with WSAP.	Not permitted.
Businesses with cooling towers	Permitted	Permitted	Permitted, but businesses designated by Council must	Businesses designated by Council must implement and	Businesses designated by Council must implement and	Not permitted.

prepare WSAP.

comply with WSAP.

comply with WSAP.

## NOTES

### ODDS & EVENS SYSTEM EXPLAINED

This means that if the street number of your property is odd you can water in accordance with the restrictions on odd days.

If your property has an even number you can water in accordance with the restrictions on even days.

If your property has a range of street numbers then it should be treated as odd or even as per the first number in the range.

For example if your property is 12-15 Smith Street then you can water on even days in accordance with the restrictions.

If your property has no street number then it should be treated as an even property.

For example if your property is "Tara" then you can water on even days in accordance with the restrictions.

### OTHER SOURCES OF WATER

These restrictions are restrictions that Council is placing on the use of its potable water supply. If the restrictions say " Not permitted" for a particular use, this means that Council's potable water supply cannot be used for this purpose. Water from another source, however, could be used for this purpose.

### TIMES

The times quoted in the restrictions are based on a 24 hour clock.

For example, if the restrictions state 2200 hrs it is equivalent to 10 pm.

**Summer Time** - refers to Daylight Saving period 2.00am

Eastern Standard Time first Sunday in October to

Eastern Daylight Saving Time 3.00am first Sunday in

April

**Winter Time** - refers to the period outside of Daylight

Saving Time

**WSAP**

This refers to a Water Savings Action Plan, an enterprise specific plan to adopt water efficiency prepared in accordance with "Guidelines for Water Savings Action Plans", Dept of Energy, Utilities and Sustainability, October 2005.

At certain levels of restrictions a business may be required to prepare a WSAP. The completed WSAP must be approved by Council.

Further water restrictions may permit the continued use of water for that activity but only if the business strictly complies with its approved WSAP.

The steps in preparing a Water Saving Action Plan are presented on Page 39 below. More detailed information is available at [www.environment.nsw.gov.au/resources/sustainbus/08594waterguidelines.pdf](http://www.environment.nsw.gov.au/resources/sustainbus/08594waterguidelines.pdf)

**Targets**

Level	Target (L/person/day)
1	260
2	240
3	220
4	200
5	180
6	140

### **7.2.1 PREPARING WATER SAVING ACTION PLANS**

Experience in NSW and elsewhere has demonstrated that even the largest and most sophisticated water users – nevermind the users for whom water is a relatively small part of their operations – can find additional opportunities for cost-effective water savings. There are various techniques available for identifying and assessing those potential savings and the purpose of Water Savings Action Plans is to identify and help deliver those savings in a practical, effective and flexible way.

#### **1. Determining How Much Water is Used**

The first step is to use 12 months of water usage data to identify the existing baseline water use. This baseline water use needs to accurately reflect regular operating conditions. For this reason you should record any anomalies in the baseline, which takes into account any unusual operating circumstances in the baseline year, and makes sure your actual future savings are recognised against the correct starting point.

#### **2. Planning at Management Level**

It is invaluable to involve the right level of management at the right time in your water planning and identify the appropriate level of accountability. The term used for this step is a Water Management Review.

#### **3. Determining How Water is Used and Efficiency Opportunities**

A technical review is used to break down water usage at a site. This breakdown will help assess what appliances and processes are consuming water, and will facilitate the assessment of water utilisation and opportunities for investment. Technical reviews should be conducted to a level that enables investment decisions to be made based on whether an opportunity meets or exceeds an organisation's hurdle rate of return and other applicable business investment criteria.

With regard to local councils, it is recommended as a guide that the top 10 sites be included in the Water Savings Action Plan to capture the bulk of the water use. However, the measures in the Plan may relate to more or fewer sites.

#### **4. Putting the Plan Together**

The Plan itself is a compilation of all the tasks undertaken in identifying water use and a priority list for implementation of savings measures.

#### **5. Implementing and Reviewing Plans**

Plans will include a list of actions that will be implemented over the next 4 years. Annual progress reports on outcomes are to be prepared, and Plans reviewed every 4 years.

### **7.3 Demand Management During Emergencies**

The situations which would trigger an emergency response are listed in Clause 1.5 and are repeated below:-

- contamination of the water supply, either at the source or within the Shire's supply system
- concentrations of algae (as has been the case with the algal outbreak in Murrurundi Dam in February 2014).
- or suspended material in the raw water supply causing substantial loss of treatment capacity.
- widespread power failure affecting transmission of raw and/or treated water.
- major failure of mains, service reservoir(s) or distribution pumping stations.

**It should be noted that Council's Water Storages have a capacity of 24.7 ML which under the emergency conditions of 140 L/person per day, would be sufficient to provide supply for nearly 20 days.**

The key is to always maintain as close to full supply capacity in the storages during drought events.

Typically, inability by Council to supply is restricted to distinct areas within the supply system and local area restrictions are normally put in place to manage these situations.

The responses which apply to various emergency situations are listed below:-

#### **Level 1 Response: Local Area Interruption to Supply**

This may occur as a result of:-

- a burst water main
- failure of a supply zone pumping facility
- necessary maintenance works, such as mains flushing, disinfection and repairs.

Procedure:-

- all affected residents are notified of the interruption and advised of the likely time to rectify the fault.
- alternative supply options within the system are investigated and actioned if possible.
- if the interruption is expected to last longer than 12 hours, alternative supply sources are initiated.

Stage 4 water restrictions implemented.

#### **Level 2 Response: Widespread Interruption to Supply**

This may occur as a result of:-

- major, system wide, power failure.
- failure of the water filtration plant.
- failure of a major pumping station.
- burst of a major distribution pipeline.
- failure of a service reservoir.

Council's supply systems have considerable in-built redundancy, such that most supply districts can be supplied from alternate sources. This makes the above eventualities reasonably unlikely. However, the following procedures shall apply in such an emergency.

Procedure:-

- all affected residents are notified of the interruption and advised of the likely time to rectify the fault.
- alternative supply options within the system are investigated and actioned if practicable.
- if the interruption is expected to last longer than 12 hours, alternative supply sources are initiated.
- residents are advised to implement Stage 5 Water restrictions until fault rectified.

### **Level 3 Response: Extreme Emergency**

This may occur as a result of:-

- projected long term interruption to supply caused by contamination of supply.
- prolonged outage at water filtration plant.
- severe power failure.
- major system failure.

This is typically an event which will require more than 1 day and less than 5 days to rectify.

The procedure which would apply is:-

Procedure:

- immediate implementation of Stage 4 water restrictions. (That is, supply for household use only).
- implementation of a widespread awareness campaign to alert the community, to advise them of Stage 4 restrictions and to encourage them to be conservative with their in-house water use.
- negotiate with bulk and industrial water users to implement emergency water use provisions.
- careful monitoring of water use throughout the supply area.

If the situation cannot be rectified in 5 days or less, the following procedure will apply.

- immediate implementation of (Emergency Stage 6) restrictions.
- arrangements made to cart in water with discharge into appropriate service reservoirs. This is an extreme event and would require mobilisation of a large number of suitable tankers.
- advise industries and commercial premises of the emergency and seek co-operation in water reduction measures.

## 8. BULK WATER CARTING

Water carting may be an acceptable option, as a last resort, **when all other supply sources fail.**

An indication of the feasibility of water carting is provided in Table 10:

Population	Water Carting Feasibility	Advantages / Disadvantages
10	Yes	Low cost, quick to implement
100	Yes	Low cost, quick to implement
1000	Maybe	Medium cost, implementation efficiency dependant on source
5000	Probably not	Expensive
20,000	No	Very expensive
50,000	No	Very expensive, Logistically almost impossible to organise and co-ordinate, Long lead times required to prepare

**Table 9: Feasibility of Water Carting**

The table indicates that water carting would be expensive, and that it probably will **not** be feasible (but it may be the only option (apart from evacuation of the Towns and Villages) in extreme emergencies).

Evacuation is not a sensible or realistically viable option for a Shire the size of Upper Hunter. It would be extremely difficult logistically and would result in significant social disruption.

During drought, there is Government assistance (via the Minister for Primary Industries) towards the cost of any necessary water cartage, subject to agreement with the NSW Office of Water of the proposed volumes to be carted and the arrangements for transportation. The subsidy is reviewed periodically, with the current arrangements being that the Minister may meet all freight charges in excess of \$1.86 per kilolitre – for those towns without a water supply.

Financial assistance is not available for hiring or operating temporary pumps or pipelines, or for costs of management measures.

However, in considering drought assistance for capital works, water carting costs provide a benchmark for NSW Office of Water and NSW Treasury.

(Source: Drought Relief for Country Towns, NSW Office of Water, November 2009).

Potential supply sources for carting water are:

- To Scone/Aberdeen: the old supply wells
- To Merriwa: Truck from Denman or Scone
- To Murrurundi: Truck from Scone
- To Cassilis: Truck from Merriwa

A major difficulty in implementing any water cartage program is the acquisition & employment of a sufficient number of trucks.

## **LINKS TO OTHER PLANS**

This Drought Management and Emergency Response Plan should be read in conjunction with similar, relevant strategic plans prepared by Council, including:

- Water and Sewerage Strategic Business Plan (2009);
- Water Conservation and Demand Management Strategy (2011);
- Integrated Water Cycle Management Plan Evaluation Study (2010)
- Water Sharing Plan for the Hunter Regulated River Water Source (Recommended 20/02/2009)

Another relevant plan is the Water Sharing Plan for the Hunter Regulated River Water Source (NSW Government 2003).

The Water Sharing plan was (temporarily) suspended in December 2006 for the duration of the drought and was recommended on 20 February 2009.

## **9. MONITORING**

Council will monitor consumption on a daily basis. During water restriction periods or emergency situations, monitoring can be stepped up to hourly usage.

During droughts, Council staff will also monitor all water sources on a daily basis.

Council will also monitor the impact of restrictions on consumption and advise Council accordingly.

Levels of electrical conductivity, alkalinity and algae in water sources will also be monitored.

It is estimated that for the peak summer demand which usually occurs in December/January, the demand could be reduced by as much as 55% under Stage 4 Restrictions.

However, since this has not been verified, it is very important to carefully monitor demand patterns during a drought and whilst restrictions are in force, to assist in determining the relative reductions in total demand that can be obtained from each of the stages of restriction proposed.

## **10. MEDIA/COMMUNICATION STRATEGY**

Council's media/communication strategy is as follows:

### *1. General Water Conservation Campaign*

Council will conduct an annual media campaign to provide the community with information and tips on ways to effectively conserve water.

This Campaign will be conducted via all media outlets (newspapers, radio and television) as well as via Council's own publications, website ([www.upperhunter.nsw.gov.au](http://www.upperhunter.nsw.gov.au)) and news letters and there will also be a direct letter box drop to all residences when necessary.

### *2. Notification of Restrictions*

These will be communicated to the community via:-

- Public notices in Newspaper
- Notice on Council's Web Site
- Radio announcements
- Television announcements
- General media releases

### *3. Emergency Situations*

These will be communicated to the community via:-

- Radio announcements
- Public notices in Newspapers
- Letter box drop to all affected residences.
- Social media such as Facebook
- Doorknocking

## **11. REVISIONS**

It is proposed that this Plan be reviewed annually and any revisions formally recorded on a Record of Document Control.

A data base of all recipients of the Plan will be established, so that revisions can be managed and disseminated appropriately.

## 12. CONTACT LIST

### OFFICE HOURS

#### UPPER HUNTER SHIRE COUNCIL OFFICES

- Merriwa: 6521 7000
- Murrurundi: 6540 1350
- Scone: 6540 1100
- Council's Water Section: 6540 1109
  - Media releases
  - General enquiries
  - Enforcement issues
  - Supply issues

### AFTER HOURS

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| • Water emergencies:                 | 6540 1199                       |
| • Manager Water & Waste Services     | 6540 1199; Mobile: 0408 910 118 |
| • Director Technical Services        | 0428 401 109                    |
| • Local Emergency Management Officer | 0407 789 015                    |
| • State Emergency Services           | 132 500                         |

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# APPENDICES

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**Appendix A: NSW Office of Water: Drought Management Plan Checklist**

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Topic	Outcome Achieved	Addressed ?
<b>Executive Summary</b>	A. Covers all major issues objectives planning strategies and monitoring for existing essential supplies of water to the service area(s).	Yes
	B. Includes a summary of the drought management plan and an adopted schedule of trigger points for timely implementation of appropriate water restrictions.	Yes
<b>Background</b>	A. Includes the existing water supply system(s) in the service area(s) and a locality map.	Yes (section 3.1)
	B. Includes history of past droughts.	Yes (section 3.7)
	C. Includes information on the impact of past droughts on water services e.g. Restrictions effect of restrictions on demands any emergency sources identified etc.	Yes (section 3.7)
<b>Objectives</b>	A. Identifies key objectives required to maintain basic/restricted supply to all users. There is a need to consider social and environmental impacts.	Yes (section 2 )
	B. Tailor strategies relevant to the service areas.	Yes (section 2)
	C. Endorse and implement a plan that minimises the risk of the community running out of water.	Yes (sections 2 & 7)
<b>Data</b>	A. Identification of all communities served by the LWU's reticulated water supply those with private reticulated water services and those with no reticulated water services within the service area(s).	Yes (section 3)
	B. Identification of any properties, businesses other LWUs etc. that may seek water in times of drought.	Yes (section 3.9)
	C. Identification of all water requirements. Identify the normal and minimum potable and non-potable water requirements.	Yes (section 3.8)
	D. Identify water dependent industry/businesses any fire fighting requirements and opportunities for recycled water use.	Yes (section 3.10)
	E. Includes a description and plan of all water supply schemes in the service area(s).	Yes (section 3.1)
	F. Includes height/storage volume and height/surface area graphs for all water supply dams and weirs.	Yes (section 3.2)
	G. Historical performance of rivers dams weirs and bores in previous droughts.	Yes (section 3.1)
	H. Includes the average rainfall figures and evaporation rates.	Yes (section 4.1)
Note: All data to be specified on a daily basis.		
<b>Plan</b>	A. Demand management options.	Yes (section 5)
	B. Restriction strategies including means and methods for the enforcement of restrictions and the expected results of imposing restrictions.	Yes (sections 7 & 8)

		C. Adopted schedule of trigger points for the timely implementation of appropriate water restrictions in order to minimise the risk of failure in times of drought.	Yes (section 7)
		D. Availability of alternative water sources (including estimated costs and times to implement).	Yes (section 5.3)
		E. Water cartage options.	Yes (section 8 & Appendix B)
		F. Identify legislation local laws and council policies affecting the contingency arrangements.	Yes (section 1.3)
		G. Links to water sharing plans/committees water management plans/committees irrigators etc.	Yes (section 9)
		H. Impact of extraction on downstream stakeholders.	NA
		I. Impact of reduced flows in watercourses.	NA
		J. Level of prediction and intervention.	Yes (sections 7 & 8)
		K. Identify human resource requirements.	Yes (section 3.5)
<b>Monitoring Drought</b>	<b>During</b>	A. Daily monitoring of demands.	Yes (section 10)
		B. Daily monitoring of water supply sources (dams, bores and streams).	Yes (section 10)
		C. Monitoring impact of restrictions on consumption.	Yes (section 10)
		D. Monitoring the electrical conductivity alkalinity and algae levels in the water sources.	Yes (section 10)
<b>Consultation</b>		A. Comprehensive media strategy and public consultation.	Yes (section 11)
		B. Regular consultation with appropriate government agencies (DWE, DECC, NSW Health etc).	Yes (section 11)
<b>Operation of Drought Management Plan (DMP)</b>		A. DMP should discuss analyse and identify any impact on other regions and localities i.e. Upstream, downstream or conjunctive water users.	NA
		B. DMP should demonstrate a sustainable strategy that considers all other stakeholders.	Yes
		C. DMP documents an agreed procedure for progressive implementation of water restrictions	Yes

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**APPENDIX B: Emergency Water Carting Plan & NSW Health  
Guidelines for Water Carters**

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<b>Section 1 - Preliminary Details</b>		
1	Date water supply failed:	N / A <i>Please forward a current "Emergency Water Carting Plan for Upper Hunter Shire" to the NSW Office of Water at Wollongong in the event of a failure of the Shire's town water supply.</i> Email <a href="mailto:peter.ledwos@water.nsw.gov.au">peter.ledwos@water.nsw.gov.au</a> .
2	Is Council looking at alternate source options?	Yes, Council would look at an emergency drilling program, emergency repairs or replacement to sections of pipelines, or installing a temporary pump station or additional pumps, or installing diesel generator sets to maintain power; depending on the given nature of the problem.
3	What is the normal source of water for the Upper Hunter Shire Water Scheme?	Refer Section 3.1 of Council's Drought Contingency & Emergency Response Plan, 2014 (as attached)
4	What has interrupted normal supply?	1. Drought 2. Emergency
5	Date water carting commenced:	TBA
6	Proposed time period of water carting?	TBA
7	Purpose for which carted water is being used:	All essential purposes

<b>Section 2a - Preliminary Water Carting Demands For Scone/Aberdeen</b>					
	Category	Amount	Approved Rate	Estimate	Quantity (L)
"Drought Relief for Country Towns Brochure"					
1	Residents	6916	95 L/head/day		657,020
2	Hospital Patients	31	330 L/person/day		10,230
3	Nursing Home Patients	99	154 L/person/day		15,246
4	School Students (non residents) – 3 schools	2615	37 L/person/day		96,755
5	Hotels	Scone 5 Aberdeen 2		5000 L	20,000
6	Clubs	Scone 4 Aberdeen 2		5000 L	25,000
7	Cafes/ restaurants	12		3000 L	36,000
8	Tourists	3		95 L/p/day	285
9	Motels	6		5000 L	30,000
10	Public Toilets	4		5000 L	20,000
11	Other			250 L	
	TOTAL				910,536
Total Quantity of Carted Water/day for Scone or Aberdeen is 911kilolitres/day (0.91ML/d)					

**So the total quantity of water required to be carted to Scone and Aberdeen should the Scone and Aberdeen Water System fail is 911 kL/day.  
That is, 0.91 ML/day.**

<b>Section 2b - Preliminary Water Carting Demands For Merriwa/Cassilis</b>					
	Category	Amount	Approved Rate	Estimate	Quantity (L)
"Drought Relief for Country Towns Brochure"					
1	Residents	1790	95 L/head/day		170,050
2	Hospital Patients	25 beds Average 15	330 L/person/day		4,950
3	Nursing Home Patients	16	154 L/person/day		2,464
4	School Students (non residents) – 6 schools	335	37 L/person/day		12,395
5	Hotels	1		5000 L	5,000
6	Clubs	2		5000 L	10,000
7	Cafes/ restaurants	4		3000 L	12,000
8	Tourists	2		95 L/p/day	190
9	Motels	2		5000 L	10,000
10	Public Toilets	3		5000 L	15,000
11	Other			250 L	
	TOTAL				242,049
Total Quantity of Carted Water/day for Merriwa/Cassilis is 242 kilolitres/day (.24 ML/d)					

**So the total quantity of water required to be carted should the Merriwa Water System fail is 242 kL/day.  
That is, 0.24 ML/day.**

<b>Section 2b - Preliminary Water Carting Demands For Murrurundi</b>					
	Category	Amount	Approved Rate	Estimate	Quantity (L)
"Drought Relief for Country Towns Brochure"					
1	Residents	847	95 L/head/day		80,465
2	Hospital Patients	6	330 L/person/day		1,980
3	Nursing Home Patients	19	154 L/person/day		2,926
4	School Students (non residents) – 6 schools	53	37 L/person/day		1,961
5	Hotels	3		5000 L	15,000
6	Clubs	1		5000 L	5,000
7	Cafes/ restaurants	2		3000 L	6,000
8	Tourists	1		95 L/p/day	95
9	Motels	2		5000 L	10,000
10	Public Toilets	4		5000 L	20,000
11	Other			250 L	
	TOTAL				143,327
Total Quantity of Carted Water/day for Merriwa is 143 kilolitres/day (0.14ML/d)					

**So the total quantity of water required to be carted should the Merriwa Water System fail is 143 kL/day.  
That is, 0.14 ML/day.**

**The total required to be carted if all 3 systems (Aberdeen/Scone; Merriwa/Cassilis; Murrurundi) fail is 1,296 kL/day or 1.29 ML/day.**

<b>Section 3 - Preliminary Sources of carted potable water –</b>		
<b>3.1 Preferred Carting Location – Scone</b>		
<u>3.1.1(a) Transferring water from Scone to Murrurundi</u>		
1	Locations from which water is carted:	Scone Water Supply
2	Distance from potable supply; and carting route:	65 kms via the New England Highway, all sealed roads
3	Number of trips/day from source/s	Say the trip from Scone to Murrurundi is 45 minutes each way - a return trip is 1.5 hours. Plus half an hour to fill and half an hour to empty. Giving a total turnaround time of two & a half hours for each tanker. <b>Each tanker can therefore do 3 trips per 8 hour working day, Allow 6 trips per 16 hour/day during an emergency operation (as an operational average – includes stoppages, changeover, breakdown etc)</b>
4	Tanker Volume Required For a normal day For an emergency operation	Normal day Tanker volume: 143 kL/ 3 trips per day = 47.6 kL of volume Emergency operation Tanker volume: 143 kL/ 6 trips per day = 23.8 kL of volume
5	Number of tankers required	A small tanker may be 11 kL. A large tanker may be 25 kL.  Minimum number of tankers: Using the largest tankers of 25 kL each: Then 143kL /25 kL tanker = 6 tanker trips /day. With each tanker doing 6 trips per day, carting water to Murrurundi from Scone would need one (1) tanker. Allowing for breakdowns, hold-ups etc, Upper Hunter Shire would need to source one 25 kL tanker.  [By comparison, the maximum number is (assuming 11 kL tankers) 143 kL /11 kL = 13 trips. 13/3 = 5 tankers of 11 kL each]. Somewhere between 1 and 5 tankers would therefore, likely be needed.
6	Estimated Cost of carting water	Using \$5/km + \$50/hour, then a 130km round trip taking 2.5 hours costs \$775  The minimum operational cost of transport, using 1 large tanker, making 6 tanker trips per day is <b>\$4,650 per day</b> . [A maximum cost is–13 trips costing <b>\$10,075/day</b> ].  Then the estimated operational cost of water carting is a <b>minimum of \$32,550 per week; and more likely to be around \$70,525 per week for the duration of water carting.</b>

Loading Up at Scone

There are existing, suitable potable water standpipes at Scone & Murrurundi

<b>Section 3 - Preliminary Sources of carted potable water –</b>		
<b>3.2 Preferred Carting Location – Scone</b>		
<u>3.1.1(b) Transferring water from Scone to Merriwa</u>		
1	Locations from which water is carted:	Scone Water Supply
2	Distance from potable supply; and carting route:	65 kms via Bunan Road & Merriwa Scone Road, all sealed roads
3	Number of trips/day from source/s	Say the trip from Scone to Murrurundi is 45 minutes each way - a return trip is 1.5 hours. Plus half an hour to fill and half an hour to empty. Giving a total turnaround time of two & a half hours for each tanker. <b>Each tanker can therefore do 3 trips per 8 hour working day, Allow 6 trips per 16 hour/day during an emergency operation (as an operational average – includes stoppages, changeover, breakdown etc)</b>
4	Tanker Volume Required For a normal day For an emergency operation	Normal day Tanker volume: 242 kL/ 3 trips per day = 80.6 kL of volume Emergency operation Tanker volume:242 kL/ 6 trips per day = 40.3 kLof volume
5	Number of tankers required	A small tanker may be 11 kL. A large tanker may be 25 kL.  Minimum number of tankers: Using the largest tankers of 25 kL each: Then 242kL /25 kL tanker = 10 tanker trips /day. With each tanker doing 6 trips per day, carting water to Merriwa from Scone would need a minimum of 2 tankers. Allowing for breakdowns, hold-ups etc, Upper Hunter Shire would need to source say 3 tankers of 25 kL each.  [By comparison, the maximum number is (assuming 11 kL tankers) 242 kL /11 kL = 22 trips. 22/3 = 8 tankers of 11 kL each]. Somewhere between 2 and 8 tankers would therefore, likely be needed.
6	Estimated Cost of carting water	Using \$5/km + \$50/hour, then a 130km round trip taking 2.5 hours costs \$775.  The minimum operational cost of transport, using 2 larger tankers, making 6 tanker trips per day is <b>\$9,300 per day</b> . [A maximum cost is– 22 trips costing <b>\$17,050/day</b> ].  Then the estimated operational cost of water carting is a <b>minimum of \$65,100 per week; and more likely to be say \$119,350 per week for the duration of water carting.</b>

Loading Up at Scone

There are existing, suitable potable water standpipes at Scone and Merriwa

<b>Section 3 - Preliminary Sources of carted potable water –</b>		
<b>3.3 Preferred Carting Location – Muswellbrook</b>		
<u>3.1.1(c) Transferring water from Muswellbrook to Scone</u>		
1	Locations from which water is carted:	Muswellbrook Water Supply
2	Distance from potable supply; and carting route:	25 kms via New England Highway, all sealed roads
3	Number of trips/day from source/s	Say the trip from Muswellbrook to Scone is 30 minutes each way - a return trip is 1 hour. Plus half an hour to fill and half an hour to empty. Giving a total turnaround time of two hours for each tanker. <b>Each tanker can therefore do 4 trips per 8 hour working day, Allow 8 trips per 16 hour/day during an emergency operation (as an operational average – includes stoppages, changeover, breakdown etc)</b>
4	Tanker Volume Required For a normal day For an emergency operation	Normal day Tanker volume: 911 kL/ 3 trips per day = 304 kL of volume Emergency operation Tanker volume: 911 kL/ 6 trips per day = 152 kL of volume
5	Number of tankers required	A small tanker may be 11 kL. A large tanker may be 25 kL.  Minimum number of tankers: Using the largest tankers of 25 kL each: Then 911kL /25 kL tanker = 37 tanker trips /day. With each tanker doing 8 trips per day, carting water to Scone from Muswellbrook would need a minimum of 5 tankers. Allowing for breakdowns, hold-ups etc, Upper Hunter Shire would need to source say 6 tankers of 25 kL each.  [By comparison, the maximum number is (assuming 11 kL tankers) 911kL /11 kL = 83 trips. 83/4 = 21 tankers of 11 kL each]. Somewhere between 5 and 21 tankers would therefore, likely be needed.
6	Estimated Cost of carting water	Using \$5/km + \$50/hour, then a 50 km round trip taking 2 hours costs \$350  The minimum operational cost of transport, using 5 larger tankers, making 8 tanker trips per day is <b>\$14,000per day</b> . [A maximum cost is –83 trips costing <b>\$29,050/day</b> ].  Then the estimated operational cost of water carting is a <b>minimum of \$98,000 per week;</b>

Loading Up at Muswellbrook

There are existing, suitable potable water standpipes at Scone & Muswellbrook

<b>Section 4 - Size and Number of Tankers Available; and contact details</b>		
Name	Contact Number	Tanker Size (kL)
M Nutt	02 6548 2004	1 x 25
Russells	02 6548 2246	1 x 12.5; 1x 13.1
Albury's Tilt Tray	02 6545 2159	3 x 13
Subzero	02 6540 9400	1 x 12; 1 x 18
Economy Sweepers	02 4942 4999	1 x 11; 2 x 13; 1 x 15
Upper Hunter Shire Council	02 6540 100	Ex RFS Tanker

<b>Section 5 - Register of Water Carters</b>	
Name	Address
M Nutt	53 Mckenzie Street, MERRIWA 2329
Russells	PO Box 108, MERRIWA 2329
Albury's Tilt Tray	21 McLoughlin Street, SCONE 2337
Subzero	Level 1, 39-43 Bridge St, MUSWELLBROOK 2333
Economy Sweepers	9 Oakdale Drive, GATESHEAD 2290
Upper Hunter Shire Council (Manager Civil Operations)	P O BOX 209 SCONE NSW 2337

<b>Section 6 - Discharge of Carted Water</b>		
1	Where is the carted water to be discharged?	Discharge direct into Council's Storage Reservoirs at Merriwa, Murrurundi and/or Scone depending on where supply shortage is occurring
2	What is the access like for semi trailers?	Easy access for all trucks including B-Double or road- train.
3	Alternative discharge points?	As an alternative, temporary discharge points could be set up. The tanker would discharge to one or more plastic tanks. A petrol pump would then pump from the plastic tanks into the reservoir. It would require some temporary polythene piping into the top of the reservoir.

<b>Section 7 - Water Quality and Testing Details</b>		
1	Are there water quality test results from emergency water source (circle):	yes / no
2	If yes please attach copies.	
3	If source previously used in similar	yes / no

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	situation (circle):	
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## Policy Directive



Department of Health, NSW  
73 Miller Street North Sydney NSW 2060  
Locked Mail Bag 961 North Sydney NSW 2069  
Telephone (02) 9391 9000 Fax (02) 9391 9101  
<http://www.health.nsw.gov.au/policies/>

### Water Carters (Guidelines for) - NSW Health

**Document Number** PD2005\_269  
**Publication date** 27-Jan-2005  
**Functional Sub group** Population Health - Water  
Personnel/Workforce - Occupational Health & Safety  
**Summary** Specifies requirements of containers etc for water carters.  
**Author Branch** Environmental Health  
**Branch contact** 9816 0292  
**Applies to** Area Health Services/Chief Executive Governed Statutory Health Corporation, Board Governed Statutory Health Corporations, Affiliated Health Organisations - Non Declared, Environmental Health Officers of Local Councils, NSW Dept of Health, Public Health Units  
**Distributed to** Public Health System, Environmental Health Officers of Local Councils, NSW Department of Health, Public Health Units  
**Review date** 27-Jan-2010  
**File No.** 02/6890  
**Previous reference** 2002/111  
**Issue date** 12-Dec-2002  
**Status** Active

#### Director-General

**Compliance** with this policy directive is **mandatory**.

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## CIRCULAR

File No	02/6890
Circular No	2002/111
Issued	12 December 2002
Contact	Adrian Farrant (02) 9816 0541 Environmental Health Branch

### NSW HEALTH GUIDELINES FOR WATER CARTERS

NSW Health has developed the following public health guidelines for the operation of water carting vehicles supplying water for drinking and domestic use.

These guidelines are in addition to any provisions required by the local council (water supply authority) to protect their assets.

Water carters may offer an alternative water supply in areas where the water supply is insufficient or is temporarily unsuitable.

#### 1. LEGISLATION

The treatment and handling of water that is used or intended to be used for human consumption gives rise to a general duty of care and is also specifically regulated by law under the Public Health Act, 1991, the Food Act, 1989, and the Local Government Act, 1993.

##### i) Food Act, 1989

Section 3 of the Food Act, 1989, defines food as:

“a substance or compound commonly used, or represented as being for use, as food or drink for human consumption or as an ingredient (whether or not after processing) of food or drink for human consumption or use,....”.

If a water supply authority sells water to a water carter as potable and fit for human consumption then it is a food for the purposes of the Food Act, 1989. Similarly, if a water carter sells water to a consumer as potable and fit for human consumption then it is a food.

If the water contains any foreign matter it may be considered adulterated under Section 8(n) of the Food Act, 1989, and the supplier may have committed an offence under section 9(3) of that Act by selling the water.

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Distributed in accordance with circular list(s):

A 110	B 14	C 92	D	E	73 Miller Street North Sydney NSW 2060
F	G	H	I	J	Locked Mail Bag 961 North Sydney NSW 2059
K 5	L	M	N	P	Telephone (02) 9391 9000 Facsimile (02) 9391 9101

In accordance with the provisions incorporated in the Accounts and Audit Determination, the Board of Directors, Chief Executive Officers and their equivalents, within a public health organisation, shall be held responsible for ensuring the observance of Departmental policy (including circulars and procedure manuals) as issued by the Minister and the Director-General of the Department of Health.

The water tank and hoses etc are also subject to specifications set out in the document issued by Safe Food Australia, *A Guide to the Food Safety Standards- Standard 3.2.2, Division 5 – Cleaning, sanitizing and maintenance (clauses 19 to 21)*.

**ii) Public Health Act, 1991**

Under section 101 of the Public Health Act, 1991, the Chief Health Officer may give direction to prevent or restrict the use of water supplied by a carter or give directions to bring the water into a safe condition.

**iii) Local Government Act, 1993**

The Local Government Act, 1993, and Local Government (Orders) Regulation, 1999, also contain specific provisions for the regulation of water carting vehicles by local councils. Section 124 of the Act sets out the council's powers to order the owner or operator of a vehicle used for the storage and transportation of food (including drinking water) to take action as specified by the council to render the vehicle in a clean or sanitary condition. Part 4, Clause 19 of the Orders Regulation specifies particular requirements, including that a water carting vehicle must have an aperture that is large enough to enable easy inspection and thorough cleaning of the interior and must have a cover that is able to be kept clean.

A clean or sanitary condition has not been defined in the Local Government Act, 1993, but if the conditions below are met the water and vehicle would be considered clean and sanitary.

Section 68(2) Part B(1) of the Local Government Act, 1993, allows a person to draw water from a council water supply and sell the water, but only with the prior approval of the council.

The Local Government Act, 1993, also contains a provision excluding liability and claims under certain circumstances, if the matter or thing (actions or omissions) was done in good faith for the purpose of executing the Act. However if the Council (water supply authority) is aware of the problem and has failed to do anything to remedy the situation, it is unlikely that it is acting in good faith.

## **2. WATER QUALITY**

**i) Guidelines**

Water carter operators providing potable water for human consumption should source water from a water supply that meets the 1996 NHMRC/ARMCANZ *Australian Drinking Water Guidelines (ADWG)*. The water must meet the microbiological guidelines as a minimum. Appropriate sources of water would include abstraction from reticulated supplies, or directly from a bulk water supplier at the point of treatment.

The water source must not exceed drinking water guidelines for blue-green algae or their toxins. It is the responsibility of the water carter to ensure that this requirement has been met.

**Note:** When water that meets the ADWG is added to an empty rainwater tank it may resuspend the sludge in the bottom of the rainwater tank creating taste and turbidity problems.

**ii) Treatment**

The water source should be chlorinated prior to carting, to ensure the safety of the supply. The operator must maintain an adequate chlorine residual up to the point of supply to consumers. An adequate free chlorine residual would be between 0.2 -1.0mg/L, depending on the quality of the source water. This can be obtained by adding 8 grams (one dessert spoon) of calcium hypochlorite (granular) at 65% strength per 10,000 litres giving 0.5 mg/L of chlorine. Alternatively, if sodium hypochlorite (liquid) is used add 40 mL at 12.5% strength per 10,000 litres of water to give 0.5 mg/L of chlorine. (Free chlorine will be less depending on turbidity, colour etc and should be checked.)

### **3. WATER TANK AND VEHICLE**

Ideally, the water tank should be used only for the transport of potable water. If this is not possible, then at a minimum the tank must not be used for transport of effluent (treated or otherwise), petroleum products, or other potentially hazardous materials that may be prejudicial to health.

Where the tank has been used for transport of non-hazardous materials other than potable water, the tank must be cleaned and disinfected prior to filling with potable water. First, the tank should be physically cleaned inside, flushed out and then filled with water and chlorinated to at least 5.0 mg/L free chlorine for a minimum of 30 minutes. This can be achieved using 76 grams of calcium hypochlorite at 65% strength per 10,000 litres of water or if sodium hypochlorite is used 400 mL at 12.5% strength per 10,000 litres of water.

All tanks constructed of mild steel should be coated or lined with a material that complies with *AS/NZS 4020:1999 Products for use in contact with drinking water*.

The vehicle tank and apparatus should be submitted once every twelve months for inspection by Council.

### **4. HOSE**

Hoses must be made of food grade material. Hoses and fittings must be capped or stored in a dust proof container during transport or when not being used.

Where the tank has been used for transport of non-hazardous materials other than potable water, the hose must be cleaned, flushed out and then disinfected by filling with water and chlorinated to at least 5.0 mg/L free chlorine for a minimum of 30 minutes.

### **5. STANDPIPES AND HYDRANT BOXES**

Fixed standpipes must have an air gap to prevent backflow into the reticulated supply.

Hydrant boxes should be self draining, mounted above ground level and not collect surface runoff.

Any tanks being filled from a reticulated supply via a removable standpipe must have a backflow prevention device that complies with the *NSW Code of Practice for Plumbing and Drainage*.



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## **APPENDIX C: Typical Media Release**

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**i) MURRURUNDI BACK ON TAP BUT LEVEL 5 WATER RESTRICTIONS REMAIN**

Murrurundi's town water is safe to drink.

As a precaution residents are advised that any taps that have not been used in the last few days should be run for 2 minutes to clear any old water, before drawing drinking water.

If you have a skin condition and have not been washing in the water due to algae, run the hot water tap for 5 minutes. Residents if they wish, and are able to, can capture the water they are flushing through their taps and use it on their gardens, given the water restrictions that are still in place.

Water out of the taps in Murrurundi is coming from the town's reservoirs, filled with water Council has trucked in. That water has been tested repeatedly at all stages of the system. Testing for algae and toxins has consistently returned excellent results over the last few days.

Upper Hunter Shire Mayor Michael Johnsen thanked the Murrurundi community for their patience and resilience during the water supply interruption.

"Businesses, community groups and individuals have worked with Council to get through this from installing extra water tanks to checking on vulnerable people at their homes.

"I also thank Council staff for their hard work both in finding a solution and distributing clean water to the community."

"Council workers put in long hours to get a safe water supply flowing again but there is still a lot of work to do," Council General Manager Waid Crockett said.

"We are still having to truck water in to Murrurundi from Scone until we can finish the infrastructure for a sustainable supply system.

"We have a lot to do including finishing a temporary treatment facility, putting in a new 850 metre pipeline and fixing roads damaged by rain and the water truck heavy traffic."

Since last week Council has trucked in about 2.5 million litres of water from Scone to Murrurundi as an alternate source to the dam, after algae and toxins were detected last week. The dam continues to be treated and tested and could be available again as a source of potable water in the next few weeks.

Council is also working on drawing water from the Pages River for use in the town water supply. Testing has been done on the water which will also be treated. A new 250 metre pipeline bypassing the dam will be needed.

As the town water supply is safe, bottled water will no longer be available from the Murrurundi office of the Upper Hunter Shire Council. Where Council has fitted 18 temporary water tanks at Murrurundi businesses and services such as Murravale Retirement Home and the hospital, staff will be in contact to re-plumb them back to the town water supply.

**Level 5 water restrictions to remain in place in Murrurundi include:**

- No watering of lawns
- Watering gardens: Bucket / watering cans between 6pm and 8pm on Sundays and Wednesdays only.
- No water to be used for pools, water features, washing exterior surfaces or cars.

More information on restrictions can be seen on the Council's website under [“Murrurundi Water Update”](#) or call Council on 6540 1100.

**Contact Details**

Upper Hunter Shire Council  
Phone: 02 6540 1100  
Fax: 02 6545 2671  
Email: [council@upperhunter.nsw.gov.au](mailto:council@upperhunter.nsw.gov.au)

ii) **WATER FROM THE PAGES RIVER IN THE SYSTEM**

Water is being drawn from under the Pages River for use in the Murrurundi water supply.

Sourcing water from the Pages River is a major step in ensuring a reliable water supply for the town, after a long stretch of hot, dry weather caused an algal bloom in the main storage dam in February.

“For the last month, water out of the taps in Murrurundi has come from the town’s reservoirs, filled with water Council has transported from Scone,” Upper Hunter Shire Council General Manager Waid Crockett said.

“In the first fortnight (13 February – 28 February), 4,787,000 litres of water was trucked in from Scone to Murrurundi.

“That doesn’t include the thousands of bottles of water Council distributed to residents in need during the water supply interruption.” he said.

“For the moment we no longer need to truck water in to Murrurundi. This is a major step forward.”

An under river bed infiltration gallery has been installed in the Pages River at Boyd Street, Murrurundi. A new 560 metre pipeline has been constructed to take the water to a back up dam. That water is treated before it goes into a concrete reservoir and then the town water supply.

No water is coming from the Murrurundi dam where the algal bloom occurred in February. The dam continues to be treated and tested and should be available again as a source of potable water when the algal and nutrient levels are safe. Desludging the dam may be possible but only during a long period of heavy rain to allow it to refill.

Every day, seven days a week Murrurundi’s town water supply is tested by Council staff for Ph, chlorine, turbidity and temperature levels. Once a week a sample is sent to an independent laboratory for microbiological tests. (During the water supply interruption the microbiological tests were done everyday.)

In the long term Council is seeking funding to continue the Scone/Aberdeen pipeline to Murrurundi.

**Level 5 water restrictions remain in place in Murrurundi and include:**

- No watering of lawns
- Watering gardens: Bucket / watering cans between 6pm and 8pm on Sundays and Wednesdays only.
- No water to be used for pools, water features, washing exterior surfaces or cars.

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## **APPENDIX D: Forward Capital Works Programs**

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**UPPER HUNTER SHIRE COUNCIL: WATER SUPPLY CAPITAL WORKS PROGRAM**

Project Description	Type of Works			Cost Renewals	Totals										
	Improved LOS	Growth	Renewals			2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Scn - Kingdon St (Kelly to Main St)			100%	\$63,000	\$63,000	\$63,000									
Scn - Main St (Daycare to Kelly St)			100%	\$175,000	\$175,000	\$175,000									
Abn - Segenhoe St (Gordon to St Heliers St)			100%	\$140,000	\$140,000		\$140,000								
Scn - Hill St (Kingdon St to Liverpool St)	50%		50%	\$110,000	\$220,000		\$220,000								
Scn - Kingdon St (Main to Park St)			100%	\$80,000	\$80,000		\$80,000								
Scn - St Aubins St (Aberdeen to Moore St)	25%	25%	50%	\$132,500	\$265,000				\$265,000						
Abn - Segenhoe St (St Heliers St to Perth St)			100%	\$140,000	\$140,000			\$140,000							
Abn - Moray St (Segenhoe St to Abercainey Tce)			100%	\$83,000	\$83,000			\$83,000							
Scn - Guernsey St (St Aubins St to Mount St)			100%	\$155,000	\$155,000						\$155,000				
Scn - Main St (Susan St to Philip St)			100%	\$160,000	\$160,000								\$160,000		
Abn - McQueen St (Gordon to St Heliers St)			100%	\$140,000	\$140,000				\$140,000						
Scn - Philip St (Muffett to Waverly St)			100%	\$180,000	\$180,000								\$180,000		
Abn - St Andrews St (Campbell St to McCloud St)			100%	\$120,000	\$120,000					\$120,000					
Scn - Sydney St (Main St to Waverly St)			100%	\$192,000	\$192,000						\$192,000				
Scn - Hill St (St Aubins St to Susan St)			100%	\$87,000	\$87,000			\$87,000							
Scn - Waverly St (Birrell St to Susan St)			100%	\$110,000	\$110,000						\$110,000				
Abn - Kyuga St (Moray St to Graham St)			100%	\$123,000	\$123,000						\$123,000				
Abn - Short Street Main Replacement			100%	\$66,000	\$66,000	\$66,000									
Sc St Aubins Street major mains			100%	\$625,000	\$625,000									\$275,000	\$350,000
Scone - unallocated			100%	\$120,000	\$120,000			\$120,000							
Aberdeen - unallocated			100%	\$57,000	\$57,000			\$57,000							
Abn - Walker Street (Moray to Mount)			100%	\$51,500	\$51,500		\$51,500								
Abn - Upp Campbell St (Graham to reservoir)			100%	\$193,000	\$193,000	\$193,000									
Scn - Davies St Main			100%	\$32,000	\$32,000	\$32,000									

Upper Hunter Shire Council: Drought Contingency and Emergency Response Plan

Scn - Scott St Main (Cooper to Liverpool)			100%	\$224,000	\$224,000							\$224,000			
Scn - Main St Main (Liverpool to Phillip)			100%	\$174,000	\$174,000		\$174,000								
Abn - Kyuga St Main (Bedford to Moray)			100%	\$129,000	\$129,000				\$129,000						
Kelly Street main Replacements			100%												
Valve and hydrant replacement			100%	\$150,000	\$150,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Murrurundi AC main replacements			100%	\$270,000	\$270,000		\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Merriwa AC main replacements			100%	\$270,000	\$270,000		\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Mrdi - Hospital service upgrade	100%				\$81,600	\$81,600									
Mwa - in fill mains 100mm															
	100%				\$16,900		\$16,900								
	100%				\$31,200			\$31,200							
	100%				\$10,400					\$10,400					
	100%				\$13,650							\$13,650			
	100%				\$2,730										\$2,730
	100%				\$3,500	\$3,500									
Mrdi - in fill mains	100%				\$29,750					\$29,750					
	100%				\$26,000			\$26,000							
Scn - Gundy Rd Main (Barton to Kilgalin)	100%				\$182,000				\$182,000						
Sc/Ab - Infill mains															
			100%	\$400,000	\$400,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000
			100%	\$491,580	\$491,580	\$48,717	\$48,815	\$48,912	\$49,010	\$49,108	\$49,206	\$49,305	\$49,403	\$49,502	\$49,601
			100%	\$36,000	\$36,000	\$12,000	\$12,000	\$12,000							
			100%	\$170,000	\$170,000		\$25,000		\$75,000				\$35,000	\$35,000	
Ab - Lowlift Pump 1 river to wet well			100%												

Upper Hunter Shire Council: Drought Contingency and Emergency Response Plan

Ab - Lowlift Pump 2 river to wet well			100%	\$75,000	\$75,000						\$75,000				
Sc/Ab - Lift pump 1 to Togar			100%												
Sc/Ab - Lift pump 2 to Togar			100%	\$25,000	\$25,000			\$25,000							
Sc/Ab - Togar P stn Pump 1			100%	\$20,000	\$20,000				\$20,000						
Sc/Ab - Togar P stn Pump 2			100%	\$20,000	\$20,000				\$20,000						
Sc - Hizone Pump 1			100%	\$12,000	\$12,000					\$12,000					
Sc - Hizone Pump 2			100%	\$12,000	\$12,000					\$12,000					
Sc - Well pump 3			100%	\$27,500	\$27,500						\$27,500				
Sc - Well Pump 1			100%												
Ab - Highzone Pump 1			100%	\$30,000	\$30,000							\$30,000			
Ab - Highzone Pump 2			100%		\$0										
All areas - telemetry upgrades	50%		50%	\$30,000	\$60,000		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000			
Mwa Number 1 (Mackenzie St)			100%	\$35,000	\$35,000			\$35,000							
Mwa Number 2 (Langly St)			100%	\$35,000	\$35,000	\$35,000									
Mwa Number 3 (Collins St)			100%	\$35,000	\$35,000										\$35,000
Cassilus Bore 1			100%	\$30,000	\$30,000		\$15,000			\$15,000					
Cassilus Bore 2			100%	\$15,000	\$15,000				\$15,000						
Scone/Aberdeen	100%				\$110,000	\$110,000									
Murrurundi															
Merriwa															
Scone															
Merriwa	100%				\$15,000	\$15,000									
Cassillus	100%				\$15,000	\$15,000									
Merriwa Treatment Building replacements			100%	\$12,000	\$12,000	\$12,000									
Cassillus Bore land purchases	100%				\$20,000					\$20,000					

Upper Hunter Shire Council: Drought Contingency and Emergency Response Plan

Treatment plant minor renewals			100%	\$96,000	\$96,000			\$12,000		\$12,000		\$60,000		\$12,000	
			100%	\$90,000	\$90,000								\$30,000	\$30,000	\$30,000
	75%	25%			\$10,900,000	\$350,000	\$6,000,000	\$4,550,000							
			100%												
	100%				\$9,823,864	\$200,000	\$3,933,864	\$4,000,000	\$1,690,000						
Remainder Reservoir renewals															
Murrurundi Hospital Reservoir			100%												
Sc/Abn - Minor Reservoir repairs			100%	\$308,000	\$308,000	\$68,000	\$70,000				\$100,000			\$70,000	
Mrdi - Repaint/Repair Steel reservoir			100%												
Mrdi - Augment Concrete reservoirs			100%	\$343,270	\$343,270		\$25,000								\$318,270
Mwa/Cass - Minor Reservoir Repairs			100%	\$140,000	\$140,000			\$70,000				\$70,000			
<b>TOTAL CAPITAL WORKS EXPENDITURE PROPOSED FOR TEN YEAR PERIOD</b>					<b>\$28,594,444</b>	<b>\$1,504,817</b>	<b>\$10,967,079</b>	<b>\$9,390,912</b>	<b>\$2,761,210</b>	<b>\$374,858</b>	<b>\$812,106</b>	<b>\$713,305</b>	<b>\$583,053</b>	<b>\$586,502</b>	<b>\$900,601</b>
<b>TOTAL RENEWALS ONLY EXPENDITURE PROPOSED FOR TEN YEAR PERIOD</b>					<b>\$7,040,350</b>										