Singleton Council

Drought Management and Emergency Response Plan

July 2010

DLM Environmental Consultants Pty Ltd
Strategies for a Water Efficient Future

DOCUMENT STATUS AND RELEASE INFORMATION

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Client:	Singleton Council
Project No:	1007/09-A
Document Title:	Drought Contingency and Emergency Response Plan

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Document Status

Rev No.	Prepared By		Reviewer		Approved for issue	
	Name	Date	Name	Signature	Signature	Date
0 - Draft	D. McGregor		D. McGregor			18 Jan '10
1 - Rev.1	D. McGregor		D. McGregor			2 Mar. '10
2 - Rev.2	D. McGregor		D. McGregor			25 Mar. '10
Final	D. McGregor		D. McGregor			18 July '10

Cover Photo
Glennies Creek Dam

Source: NSW State Water Corporation

Executive Summary

This Drought Management and Emergency Response Plan (DMERP) describes and details how Singleton Council will manage its water supply during periods of drought.
This DMERP supercedes the Plan prepared by Council in 1998.

The Plan will apply to all water supply service areas administered by Council.

Plan Objectives

1. 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. 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 Singleton Shire 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.

3. Operational Objectives

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

- in all droughts a minimum supply of at least 120 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 Singleton Shire is aware of what stage of a drought applies and/or how severe the emergency is.

and that in the long term:

- Singleton Shire 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%.

Levels of Restrictions

The Levels of Restrictions to be imposed by Council are set out in Table 5 of Section 7, on Page 26.
These should be read and considered in conjunction with Sections 5 and 6.

The Levels of Restrictions adopted by Council are in line with the regional restrictions adopted by other Councils in NSW
This regional approach will provide a level of uniformity and consistency for these communities and provide a high degree of flexibility in implementation.

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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 Singleton Council's water supply district, which includes Singleton and the surrounding areas of Broke, Jerrys Plains, Mount Thorley, Singleton Heights, Maison Dieu and the Retreat subdivision areas, as well as to the Singleton Army Camp and Singleton Abattoirs (by individual agreement).

Both Jerry's Plains and Broke also have private bore water supplies.

The Singleton Local government Area, including townships supplied, is shown in Figure 1 below.

Figure 1: Shire of Singleton – Locality Plan

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.
It serves to update the previous Drought Plan, which was prepared in 1998.

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 demand management initiatives.

It should be noted, however, that Singleton's annual entitlement of water from Glennies Creek Dam (5,032 Ml) represents only 2% of total annual allocations from the Dam.

Also of relevance and importance is the long standing Agreement Council has with the State Government. A Deed of Agreement was signed by both Council and the, then, NSW Department of Water Resources in 1987, which states that the Department will only consider reducing the Town's supply "when the supply of water available for Hunter Valley Irrigators is 50% or less of their allocations" And, further, the Agreement stipulates that "the Department will endeavour to ensure, but does not guarantee, that the Council is provided with no less than 80% of its estimated yearly requirements in any water year"

There is also provision in the Deed for Council to take water directly from the Dam.
The terms of the Deed provide a high level of security of supply to Singleton, even in extreme droughts.

It is important to consider this Plan in conjunction with both 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.

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. The orifice plate will be removed following payment of a $384 (in 2010 $ subject to increases) reconnection fee.

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

1.4 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 system;
- 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 filtered 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.

1.5 Response to Current Drought

Due to the current water level in Glennies Creek Dam, Council resolved to remove water restrictions for the summer of 2009/10.

This situation is monitored on a continuous basis by Council and restrictions will be imposed, as and when required.

As at 11 January 2010, Glennies Creek Dam was at 72.6% of capacity. At the same time in January 2008, the Dam was at 40%.

Restrictions at that time involved the imposition of Level 1 Restrictions (as defined in Council's current (1998) Drought Management & Emergency Response Plan. The restrictions included time of day restrictions on the use of fixed hoses and sprinklers.

2. BACKGROUND INFORMATION

2.1 System Description

Raw water for the Singleton town supply runs under gravity from the Glennies Creek Dam offtake. While there is currently no need to pump raw water, a pumping station has been installed which is capable of supplying all of Singletons water needs. Pumping is only required if the dam storage level drops below 25% of capacity.

The water is piped some 18 kilometres to the Treatment Plant where it is treated and filtered, and then pumped into storage reservoirs around the town.

At the filtration plant, aluminium sulphate (alum) and other filter aids are added to the water to flocculate suspended particles. After mixing to ensure that the chemicals are spread throughout the water, a short period elapses to allow the suspended particles to flocculate into clumps big enough to be filtered out. Potassium permanganate is also used in the process, when dam conditions require.

The filter beds consist of layers of gravel and sand, topped with a layer of hard filter coal, which traps the flocculated particles. After filtering, chlorine is added to kill any bacteria, fluoride is added to ensure healthy teeth, lime is added to remove the acidity caused by the alum and the water is stored in tanks nearby.

After a period of 12 to 24 hours operation the filters become clogged and they are cleaned by pumping clean water back through them to flush the filtered material to sludge lagoons. The backwash water is allowed to settle in the sludge lagoons, with the clear water returned to the plant. The settled sediment material is allowed to dry out and is transported to Council's waste landfill for burial.

The filtration plant is computer controlled and is capable of treating up to 340 litres per second or about 30 megalitres per day. The plant operators and computers monitor the operation and the quality of the water, to ensure that it is of a high standard. After filtration, the clean water is distributed to storage reservoirs around the town by a system of pump stations and control valves. The capacity of the system is sufficient to supply the predicted growth of Singleton until at least 2030. Plant augmentation is scheduled around 2028 to meet predicted service connection growth levels.

Key features of the supply system are summarised below:

2.2 Water Supply Services

• Raw Water delivery	Max 500 L/s under high Dam storage conditions
• Obanvale Treatment Plant	Capacity 340 L/s (30 Ml/day)
• Storage Reservoirs	8 No

- Storage Capacity Approximately 25 Ml
- Water Mains 260km (varying in diameter from 100mm to 600mm)
  - Trunk Mains: 97.3 km
  - Reticulation: 163.1 km
- Distribution Pumping Stations: 5 No
- Usable Allocation (combined all supplies) 5,032 Ml
- Annual Consumption (2008/09) 2,414 Ml

(Note: Recorded consumptions for the last 15 years are detailed in Table 1)

- Population Supplied 17,919 (2008/09 Performance Report)
- Customer Service Connections 6,315 (2008/09 Performance Report)

2.3 Water Pricing

The base rates and consumption charges which apply to consumers vary according to location. The Singleton and Jerry's Plains systems are separate and attract pricing relative to each system's capital and operating costs. Although Mt Thorley and Broke are supplied from the Singleton system, their remoteness from Singleton requires pricing relative to the additional pipeline, distribution and pumping costs.

The base rates and charges for a standard 20 mm water service are (at July 2009):

Service Location	Base Rate p.a. (per 20 mm service)	Usage Charge	
Singleton – Residential	$180	0=450 kL >450 kL	$0.89 $1.66
Singleton – Non residential	$180	$0.89 kL	flat rate
Broke	$180	0=450 kL >450 kL	$1.24 $1.66
Mount Thorley (industrial only)	$514	$1.56 / kL	flat rate
Jerry' s Plains	$180	0-450 kL >450 kL	$1.24 $1.66

Stepped (inclining block tariff) pricing, in accordance with State Government Best Practice Guidelines, was implemented for the first time in the 2008/2009 year, as a means of encouraging residential water conservation.

2.4 Service Reservoirs

As outlined in Section 2.2, Council has eight (8) Service Reservoirs with a combined storage capacity of 25 ML. Under peak daily demand (16.2 ML/d in 2008/09), there is sufficient storage capacity in the system for 1.5 days supply.

Based on the peak weekly demand of 96 ML, the storage capacity equates to 1.8 days supply.

Under annual average demand (6.6 ML/d average), there is nearly 4 days storage capacity in the system.

This provides a level of confidence in the event of supply system failure. Under extreme water restrictions, the system could continue to supply residences and businesses for approximately one (1) week.

2.5 Drought History

There has been a large number of general, declared drought periods in the Hunter area over the past 30 years. Water restrictions were imposed for a six month period during a severe drought event which affected Singleton in the early 1980's. These restrictions were necessary due to very low flows in the Hunter River which caused reductions to irrigation licences. Prior to 1992, when the Glennies Creek Dam and Obanvale Treatment Plant became operational, there were several short term periods of water restrictions due to reduced supply capability. In more recent times, tough water restrictions (Level 3) were imposed in 2008/09, when the capacity of Glennies Creek Dam dropped to as low as 30%.

There have been no recorded emergency conditions situations of the type listed in Clause 1.5.

Algal infestations have occurred a number of times since 1992 in Glennies Creek Dam. Not all algal blooms are toxic, and blue-green algal blooms are only toxic at high concentrations and under particular conditions. Singleton Council has a comprehensive Standard Operating Practice (SOP) for the monitoring and control of algae in the raw water supply from the Dam. The offtake can be lowered so that water is taken well below surface algal blooms. Councils Powdered Activated Carbon (PAC) plant is activated when toxicity levels in the raw water require. This has only occurred twice since it commenced operation in 1992. Algal blooms occur for a number of environmental reasons, and are not particularly related to drought periods.

The Obanvale Treatment Plant, PAC Plant and the Distribution System have been able to cope adequately with peak demands during all periods of algal infestation in its 15 year life, without the need for water restrictions.

There have been recorded instances of local area supply restrictions as a result of distribution mains failures. There is a well maintained emergency power backup system at the treatment plant. The

inbuilt redundancy in the system, which enables supply areas to be supplied from alternate storage reservoirs, coupled with the adequate storage capacity has enabled supply to be maintained at all times.

2.6 Communities without Reticulated Supply

There are approximately 4,000 residents of the Shire not served by reticulated water schemes.
They live predominantly on rural properties. There are two (2) small villages which are not currently supplied with town water – Bulga and Camberwell (combined population 440)

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.

2.7 Water Dependant Industries/Businesses

Industrial water consumption in Singleton in 2008/09 was only 11.8% of the total consumption. Residential consumption amounted to 62% of total usage.

The only major industrial water user is the Abattoir (Shellden Pty Ltd) and it has a separate supply under a licence agreement with Council.

Low level water restrictions would not normally impact on businesses.

2.8 Fire Fighting Considerations

Provision of water supply for fire fighting purposes is a critical issue to consider during periods of restrictions. With the exception of Jerrys Plains, all water supply schemes in the Council area 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 alternative 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.

2.9 Water Consumption

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

a) Annual Consumption

Year	*Water Consumption (ML)*	*Population*	*Peak Day Demand (ML)*
1994/95	3,324	12,871	20.4
1995/96	3,085	13,000	21.7
1996/97	2,991	13,500	17.5
1997/98	**3,850**	**13,500**	**24.7**
1998/99	3,245	13,500	23.8
1999/00	2,879	13,500	21.4
2000/01	2,872	13,845	19.4
2001/02	2,989	13,935	16.8
2002/03	3,172	14,267	17.0
2003/04	2,821	14,648	19.7
2004/05	2,719	15,777	16.3
2005/06	3,201	16,092	17.7
2006/07	2,303	17,355	19.0
2007/08	1,940	17,606	10.4
2008/09	2,414	17,919	16.2

Table 1: 15 Year Water Consumption

Water Consumption has reduced substantially since the peak usage year of 1997/98.

The effect of water restrictions can be gauged by the usage in 2007/08 - total consumption 1,940 ML; with a peak day usage of 10.4. These are respectively 50% and 58% lower than the peak consumption year.

b) Consumption by User Category

Consumption by user category for 2008/09 is shown in Table 2 below.

Category	Consumption 2008/09 Consumption (ML)	Consumption 2008/09 (% of Total)
Residential	1,490	60.2%
Commercial	428	17.3%
Industrial	286	11.5%
Rural	41	1.7%
Institutional	169	6.8%
Parks	-	-
UFW	62	2.5%
Total	2,476	100.0%

Table 2: Consumption by User Category

Monthly Water Usages for 1997/98 (peak consumption year), 2007/08 and 2008/09 are shown in Table 2. Observations which can be made from the data in the Tables are:

Trends in water consumption can be summarised as:

a.	Ten (10) Year Average -	1994/95 to 2003/04	2,841 ML/yr
b.	Current Five (5) Year Average	2004/05 to 2008/09	2,515 ML/yr
c.	Overall 15 Year Average		2732 ML/yr
	(Allocation		5,032 ML/yr)

- The current five-year average is lower than either the previous 10 year average or the combined 15-year system life average despite the 39% increase in population served by the system over this period.

- The peak day demand has dropped consistently since its all-time high in 1997/98; again despite a large increase in population served. The peak demand now appears to have stabilized well under 20 ML/day, and well within the treatment plant capacity of 30 ML/day.

Month	Highest Recorded		1997/98 Peak (ML)	2007/08 (ML)	2008/09 (ML)
	Usage (ML)	Year			
July	230.0	1998	192.8	177.4	176.2
August	291.5	1995	269.5	180.9	180.9
September	371.3	1994	225.9	183.2	183.6
October	392.3	1991	311.3	239.9	217.1
November	422.0	1997	438.5	197.8	223.5
December	500.2	1997	499.1	188.9	223.6
January	422.9	1999	390.7	223.3	367.0
February	341.2	2006	327.8	188.3	251.0
March	420.8	1998	421.4	197.4	229.9
April	363.2	1996	351.6	181.3	181.6
May	278.7	2006	228.8	193.5	186.6
June	266.7	2006	228.3	160.5	186.4
Year Total			3,885.7	2,312.4	2,607.4

Table 3: Monthly Water Usages

Council introduced a user pay water pricing system in 1999/2000. Commencing in 2008/09, Council updated its pay-for-use charges to an inclining block tariff; that is, a two tiered charging system for actual, metered, water consumption. The current (2009/10) charges are set out in Section 2.3: “Water Pricing”.

Council is required by the NSW Office of Water to recover 75% of its revenue from consumption charges. Council intends to adjust its pricing policy in 2010/11 in order to comply with the State Government directive.

2.10 Climate Details

Weather Station data for the Shire is available from three (3) sites, namely: Singleton Army Site (closed 1990), Singleton Water Board Site (limited data – from 1991 to closure in 2002) and Jerry’s Plains Post Office (longest, current record of data – from 1884 to present).

There is also a weather station at Cessnock Airport which is the only local site which records data for evaporation. The data only covers the period 1968 to present, however.

The data presented below is, therefore, a combination of the Jerrys Plains and Cessnock data.

Month	Mean Daily Max. Temp. (◦C)	Decile % Max. Temp. (◦C)	Mean Daily Min. Temp. (◦C)	Mean Monthly Rainfall (mm)	Lowest Recorded Rainfall (mm)	Monthly Evaporation (mm)
Jan	31.7	37.9	17.1	76.9	0 (1903)	220
Feb	30.9	36.6	17.1	72.5	0 (1940)	168
Mar	28.9	33.7	15.0	59.1	0 (1909)	155
Apr	25.3	29.8	10.9	44.1	0 (1980)	120
May	21.3	25.0	7.5	40.4	0 (1957)	90
Jun	18.0	21.0	5.3	47.6	2.3 (1953)	60
July	17.4	20.2	3.8	43.3	0.3 (1972)	71
Aug	19.4	23.3	4.4	36.4	0 (1982)	81
Sept	22.9	27.9	7.0	41.7	0 (1980)	111
Oct	26.3	31.7	10.3	51.9	1.4 (1999)	164
Nov	29.2	35.3	13.2	59.8	1.0 (1915)	195
Dec	31.3	36.7	15.7	67.7	0 (1884)	205
Annual	25.2	-	10.6	641.4	234.2 (1950)	1640

Points to note include:

- The lowest annual rainfall of 234.2 mm (1950) is only 36.5% of the long term (125 years) annual average of 641.4 mm.
- There are 8 months where, historically, no rain has been recorded.
- Average annual evaporation exceeds rainfall by nearly 1,000 mm per year.

2.11 Water Entitlements

The licensed water entitlements for the Singleton supply system are set out in Table 4 below.

Licence	Location	High Security ML/year	General Security ML/year
HU/20AL20**0015**	Glennies Creek – town	5000	
HU/20AL20**0018**	Jerry's Plains (supplied through MacGen)	32	
HU/20AL20**1448**	Mt Thorley from Parks		24
HU/20AL20**1240**	Mt Thorley form Windt	5	
HU/20AL20**1239**	Mt Thorley Mine Allocation %	1907	

	Bulga 867		
	Mt Thorley 867		
	Warkworth 145		
	Council 33 to Mush Comp		
	Mushroom Comp Licence	51	
HU/20AL20**1247**	Mt Thorley from Parks	25	
	Totals	**7,020**	**24**

Table 4: Water Entitlements

[It should be noted that Council also holds a (currently unused) Groundwater Entitlement of 4,050 ML, with 3 unused wells which could readily be re-commissioned. The wells can supply 1.3 ML per day. Other wells could be established if required.
Council also has a Memorandum of Understanding with Hunter Water Corporation, which will result in a fully interconnected supply the Corporation's supply system by 2014/15. In times of extreme drought, this source could yield between 1.5 and 3.0 ML per day]

The Town Entitlements total 5,032 ML/year (5,000 ML/yr for Singleton and 32 ML/year for Jerry's Plains.

Mt Thorley water has been built-up over the years from a number of sources - 24 ML of General Security was transferred from existing town Parks usage along with 25 ML of High Security Water.

5 ML of High Security Domestic and Stock was purchased when the industrial land was bought in 1980.

The 1907 ML High Security allocation is held by Council on behalf of a private joint venture scheme, the Mt Thorley Water Supply Joint Venture. Council holds entitlements to source water from this scheme to provide town water to the Mount Thorley Industrial Area. However, water is now supplied from Singleton and not from the Joint Venture.

3. CLIMATE CHANGE ASPECTS

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 Singleton Council, 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.

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

Council will need to consider these possible impacts in planning the future needs for water supply, particularly during periods of prolonged drought.

The NSW Office of water is currently assessing the impacts of climate change on a number of dams which are used 100% for town water supplies. It is anticipated that this assessment will become a general determination for all Town Water Supply Licences drawing water from dams.

4. PLAN OBJECTIVES

4.1 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 Singleton Shire.

b) Planning:

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

c) Operational:

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

4.2 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.

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- consumers are made aware of the development of the Response Plan to ensure all stakeholders have an understanding and an ownership of the Plan.

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

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- a reliable assessment of drought or emergency status is made so that Singleton Shire is aware of what stage of a drought applies and/or how severe the emergency is.

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5. DEMAND MANAGEMENT OPTIONS

5.1 Introduction

Response options can be generally classified under two broad categories:

- Demand Management
- Supply Management.

In this Section of the Plan, demand management options to be applied by Singleton Council are outlined. Some supply enhancement options are possible as emergency actions, and these are examined within the emergency response area (Clause 5.4).

5.2 Water Conservation Strategy

Despite its present water source security and adequate license allocation, since the Glennies Creek Dam and associated water supply and treatment infrastructure were complete and operational in 1992, Singleton Council has endeavoured to control water demand and instill water conservation values throughout the LWU's service area.

The introduction of a two tier inclining block tariff is a significant step in reducing demand. When annual consumption reaches 450 kL/assessment, the price per kL increases by 86.5% (in Singleton) and 34% (in Broke, and Jerry's Plains).

A low key annual campaign, involving local print media advertising and media articles, is conducted every spring/summer (October to February) requesting that customers voluntarily reduce consumption as well as providing helpful "tips" on how to save water - particularly in relation to garden and lawn watering. Flyers are regularly included with water rate notices to all Council water consumers. All commercial and residential water usage is charged at the one rate (currently 89 cents) for every kilolitre of metered usage.
Mount Thorley is charged at a flat rate of $1.56/kL.

Council's on-going "voluntary" water reduction and conservation campaign will involve:-

- Continuation of its successful "Save Water" web site partnership.
- Production of advertising messages, focusing on helpful ways to reduce water consumption.
- Annual advertising campaigns in local radio and print media.
- Production and distribution in October/November of each year of an information brochure, to be delivered to all residences in Singleton, Broke and Jerry's Plains.
- Annual review of water charges to ensure that incentives to control consumption are current.
- Regular media articles to alert the community about trends in consumption, particularly when usage exceeds targets.

- Where necessary and justifiable, requests will be made to residents to voluntarily refrain from fixed sprinkler watering, washing of cars etc. Triggers for a call for voluntary reductions are not set in this Plan, but may coincide with Total Fire Ban days or when high temperatures are predicted during times of historic high water usage.

TARGETS for maximum water consumption in the Singleton LWU service area (outside restriction periods) will be:-

Annual Consumption	Maximum of 300 kilolitres per household per year
Peak Day Demand	20 Megalitres (adjusted as required for growth) (Previously recorded maximum day demand: 24.7 Ml/day in 1997/98)
Growth in Demand:	Projected at 1.0% p.a. from 2009 to 2019

5.3 Demand Reduction During Drought

Although Singleton has a very secure supply from Glennies Creek, there may be occasions when restrictions need to be imposed to cater for drought conditions and to support other Hunter water users experiencing reduced water allocations.

State Water has indicated that reductions in General Security license allocations to irrigators drawing from Glennies Creek Dam would be likely to commence when the Dam capacity drops to 51%. Allocations to the town water supply are only expected to be reduced under times of extremely low storage levels in Glennies Creek Dam, and would likely be by negotiation with State Water and the NSW Office of Water. Council would negotiate and cooperate with State Water at any stage, and adjust its restriction levels and emergency responses to suit. Discuss with Brian

At the time of this Plan's latest revision (January 2010), the dam level is at 72.7% of capacity. State Water has not yet produced a publicly available Drought Management Plan for reducing allocations to license holders (both High Security and General Security) in the Hunter catchment area. It aims to eventually produce such a Plan, and will closely monitor major storage levels and liaise with LWU's individually until such a Plan has been finalized. (It should be noted that the Hunter Regulated River Water Sharing Plan was suspended in 2006, as a result of this current drought).

The stages of water restriction that will be applied by Singleton Council under declared drought conditions in the future, are outlined in Sections 6 and 7. (Note: restrictions will be imposed on water dependant industries under Levels 4, 5 and 6 and under all Emergency Conditions):-

Notes:
Seasonal Variations to Watering Times

For all restriction levels, **Summer** means the following months:
October, November, December, January, February, March and April.

For all restriction levels, **Winte**r means the following months:

May, June, July August, September.

6. TRIGGER POINTS

Supply Triggers

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* (which is currently (2010) suspended).
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.

Water Restriction Level	***Trigger Point***
1. Low Level Restrictions	10% reduction in High Security Water allocations
2. Moderate Level Restrictions	25% reduction in High Security Water allocations
3. High Level Restrictions	40% reduction in High Security Water allocations
4. Severe Level Restrictions	55% reduction in High Security Water allocations
5. Extreme Level Restrictions	70% reduction in High Security Water allocations
6. Emergency Restrictions	85% reduction in High Security Water allocations

Emergency Response Triggers

Stage 1 Emergency Response: Local Area Interruption to Supply

Triggers:-
- a burst water main;
- local area power failure affecting a supply zone pumping facility;
- mechanical or electrical failure at a supply zone pumping facility;
- necessary maintenance works, such as mains flushing, disinfection and repairs;
- planned water supply works requiring mains supply to be turned off.

Procedure:-
- Where possible, affected residents are to be notified of the interruption and advised of the likely time to rectify the fault. Council's after-hours telephone service is to be kept informed and will be able to provide updated advice to callers.
- Alternative supply options within the system are to be investigated and actioned if possible.

- If the interruption is expected to last longer than 12 hours, alternative supply sources are to be initiated.
- Level 4 water restrictions are to be implemented.

Stage 2 Emergency Response: Widespread Interruption to Supply

Triggers:-
- 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.

The Singleton water supply system has considerable in-built redundancy, such that most supply districts can be supplied from alternate sources. This makes the above eventualities very unlikely. However, the following procedures shall apply in such an emergency.

Procedure:-
- Singleton's Local Emergency Management Officer (LEMO) and Singleton Police are to be informed of the situation.
- All affected residents are to be notified of the interruption and advised of the likely time to rectify the fault. This may be done via local radio. Council's after-hours telephone service is to be kept informed and will be able to provide updated advice to callers.
- 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.
- Level 5 water restrictions are to be implemented until the emergency has passed or the fault is rectified.

Stage 3 Emergency Response: Extreme Emergency

Triggers:-
- 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 3 days to rectify. Under this scenario, the storage capacity within the Service Reservoirs (25 Ml) would be sufficient to supply the winter/low demand of around 8 Ml per day for 3 days.

Procedure:
- Immediate implementation of Level 6 water restrictions (supply for household use only).
- Implementation of a widespread awareness campaign to alert the community, to advise them of Stage 6 restrictions and to encourage conservative domestic usage.
- Negotiate with bulk and industrial water users to implement emergency water use provisions.
- Careful monitoring of water use throughout the supply area.

- Use of water carts to import water from outside the Singleton LGA to service reservoirs is to be initiated. This would be an extreme event and would require mobilisation of a large number of suitable tankers and pumping equipment. It would need to be coordinated with the Local Emergency Management Committee (LEMC).
- Advise industries and commercial premises of the emergency and seek co-operation with the implementation of drastic water reduction measures.

Water Restrictions Applied During Drought

When the water restriction trigger level (percentage of capacity in Glennies Creek Dam) is reached, immediate notice will be provided that water restrictions are in force, by advertising in the media, This procedure will normally be applied without officers first obtaining a resolution of Council.
Any decision to remove water restrictions, or reduce the level of water restrictions, will normally be made by resolution of Council, bearing in mind factors such as water percentage capacity available from Glennies Creek Dam, seasonal factors, weather outlook and water allocations being made available to other water licence holders on the Hunter River.

Water Restrictions Applied During Emergencies

Decisions to implement and remove water restrictions during emergencies will be made by the General Manager, bearing in mind the guidelines nominated for this in Section 1.5 of this policy, and advice received from the Manager Water & Waste, regarding a specific emergency situation.

7. RESPONSE OPTIONS – LEVELS OF RESTRICTIONS

The Levels of Restrictions to be imposed by Council are set out in the following Table 5.

These should be read and considered in conjunction with Sections 5 and 6.

The Levels of Restrictions adopted by Council are in line with the regional restrictions adopted by Upper Hunter, Muswellbrook, Bathurst, Orange, Dubbo, Wellington, Narromine, Warren, Bogan, Bourke, Cobar and Brewarrina Councils.

This regional approach will provide a level of uniformity and consistency for these communities and provide a high degree of flexibility in implementation (because of the six (6) levels adopted).

Table 5: Singleton 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	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**	**LEVEL 5**	**LEVEL 6**
	LOW	**MODERATE**	**HIGH**	**VERY HIGH**	**EXTREME**	**CRITICAL**
TARGET WATER CONSUMPTION	**260 litres/person/day**	**240 litres/person/day**	**220litres/person/day**	**200 litres/person/day**	**160 litres/person/day**	**120 litres/person/day**
RESIDENTIAL WATER USE						
Watering of Lawns ***Note: Subject to varying Summer and Winter Times***	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. **Summer Time** between 1800-	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. **Summer Time**	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only.	Not permitted	Not permitted	Not permitted
Watering of Residential Gardens ***Note: Subject to varying Summer and Winter times***	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. **Summer Time** between 1800-0900 hrs only daily. **Winter Time** 0600-1000 hrs and 1600-2200 hrs	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between 1800-2100 hrs every second	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. **Summer Time** between 1800-2000 hrs only on each	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, not permitted at any time. Bucket / watering can watering only. **Summer Time**	Not permitted

	daily.	day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	1800-2100 hrs every second day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Wednesday and Sunday. **Winter Time** 1600-1800 hrs on each Wednesday and Sunday.	between 1800-2000 hrs on Sunday only. **Winter Time** between 1300-1500 hrs on Sunday only.	
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

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	Permitted	Permitted	Permitted	Five (5) minute showers, one bath per person per day	Three (3) minute showers, one bath (100 mm depth) per person per day	Three (3) minute showers, one bath (100 mm depth) per person per day
Washing of clothes	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 ***Note: Subject to varying Summer and Winter times***	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. **Summer Time** between 1800-0900 hrs only daily. **Winter Time** 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Not permitted	Not permitted	Not permitted

Watering of Gardens ***Note: Subject to varying Summer and Winter times***	Watering systems, microsprays, drip systems, soaker hoses, non fixed sprinklers hand held hoses only. **Summer Time** between 1800-0900 hrs only daily. **Winter Time** 0600-1000 hrs and 1600-2200 hrs daily.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. **Summer Time** between 0600-0900 hrs and between 1800-2100 hrs every second day as per odds and evens system. **Winter Time** between 0700-1000 hrs and between 1600-1900 hrs every second day as per odds and evens system.	Watering systems, non fixed sprinklers, hand held hoses not permitted at any time. Microsprays, drip systems, soaker hoses, only. **Summer Time** between 1800-2000 hrs only on each Wednesday and Sunday. **Winter Time** 1600-1800 hrs on each Wednesday and Sunday.	Watering systems, non fixed sprinklers, hand held hoses, microsprays, drip systems, soaker hoses, not permitted at any time. Bucket / watering can watering only. **Summer Time** between 1800-2000 hrs on Sunday only. **Winter Time** between 1300-1500 hrs on Sunday only.	Not permitted
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 business must prepare WSAP.	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.
Construction industry eg mortar or concrete mix	Permitted	Permitted	Permitted	Permitted	Permitted	Not permitted.
Construction - wash down, paint prep, curing.	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.
Cleaning - exterior	Permitted with trigger hoses, any time.	Permitted with pressure trigger hoses, any time.	Permitted with pressure trigger hoses. Business must prepare WSAP.	Business must implement and comply with WSAP	Business must implement and comply with WSAP	Not permitted.

Commercial or Government nurseries	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Abattoirs	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Food or pet food production	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Canneries	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Pet care	Permitted	Permitted	Permitted, but business mustprepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Business 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.
Child care	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.
Public parks, gardens, aviaries, plant houses, zoos	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Schools, technical colleges, colleges, universities	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Hospitals, hospices, nursing homes, rehab centers	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP

Aged accommodation	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.
Motels, caravan parks, cabins	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Hotels, registered clubs	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.
Businesses with cooling towers	Permitted	Permitted	Permitted, but business must prepare WSAP.	Business must implement and comply with WSAP.	Business must implement and comply with WSAP.	Not permitted.

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.
A copy of this document is now available from offices of the Department of Water and Energy.
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.

Targets

Level	Target (l/person/day)
1	260
2	240
3	220
4	200
5	160
6	120

8. 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 (2010);
- Integrated Water Cycle Management Plan and Evaluation Study (2010).

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 this current drought – "as the extremely dry conditions are threatening the security of water supplies to Macquarie Generation".

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.

It is estimated that for the peak summer demand which usually occurs in December/January, the demand could be reduced by as much as 60% 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.singleton.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
   - Letter box drop to all affected residences
   - Public notices in Newspapers

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

A. Singleton Council – Water & Waste

Brian Carter - Manager Water & Waste
Phone: 02 6578 7280
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Mobile: 0411 860 648
Email: bcarter@singleton.nsw.gov.au

Currently vacant– Utilities Planner
Ph: 02 6578 7281
Fax: 02 6571 2874
Mobile: 0413 948 122
Email: bsim@singleton.nsw.gov.au

Jeff Burgmann – Utilities Coordinator Development
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Fax: 02 6571 2874
Mobile: 0403 257 082
Email: jburgman@singleton.nsw.gov.au

Ian Vickers – Utilities Coordinator Operations
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Fax: 02 6571 2874
Mobile: 0411 559 316
Email: ivickers@singleton.nsw.gov.au

B. Singleton Council - Operations

Currently vacant – Director Operations
Phone: 02 6578 7207
Mobile: 0409 988 796
Email: gwoodman@singleton.nsw.gov.au

Mursaleen Sha – Manager Works
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Mobile: 0409 787 233
Email: gmctaggart@singleton.nsw.gov.au

Brendan Behringer – Works Coordinator
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Mobile: 0407 787 241
Email: bbehringer@singleton.nsw.gov.au

C. Singleton Local Emergency Management Committee (LEMC)

Vacant – Local Emergency Management Officer (LEMO)
Phone: 02 6578 7207
Mobile: 0409 988 796
Email: gwoodman@singleton.nsw.gov.au

Superintendent John Gralton (to be checked) – Local Emergency Operations Controller (LEOC)
Phone: 02 6542 6999
Email: gral1joh@police.nsw.gov.au

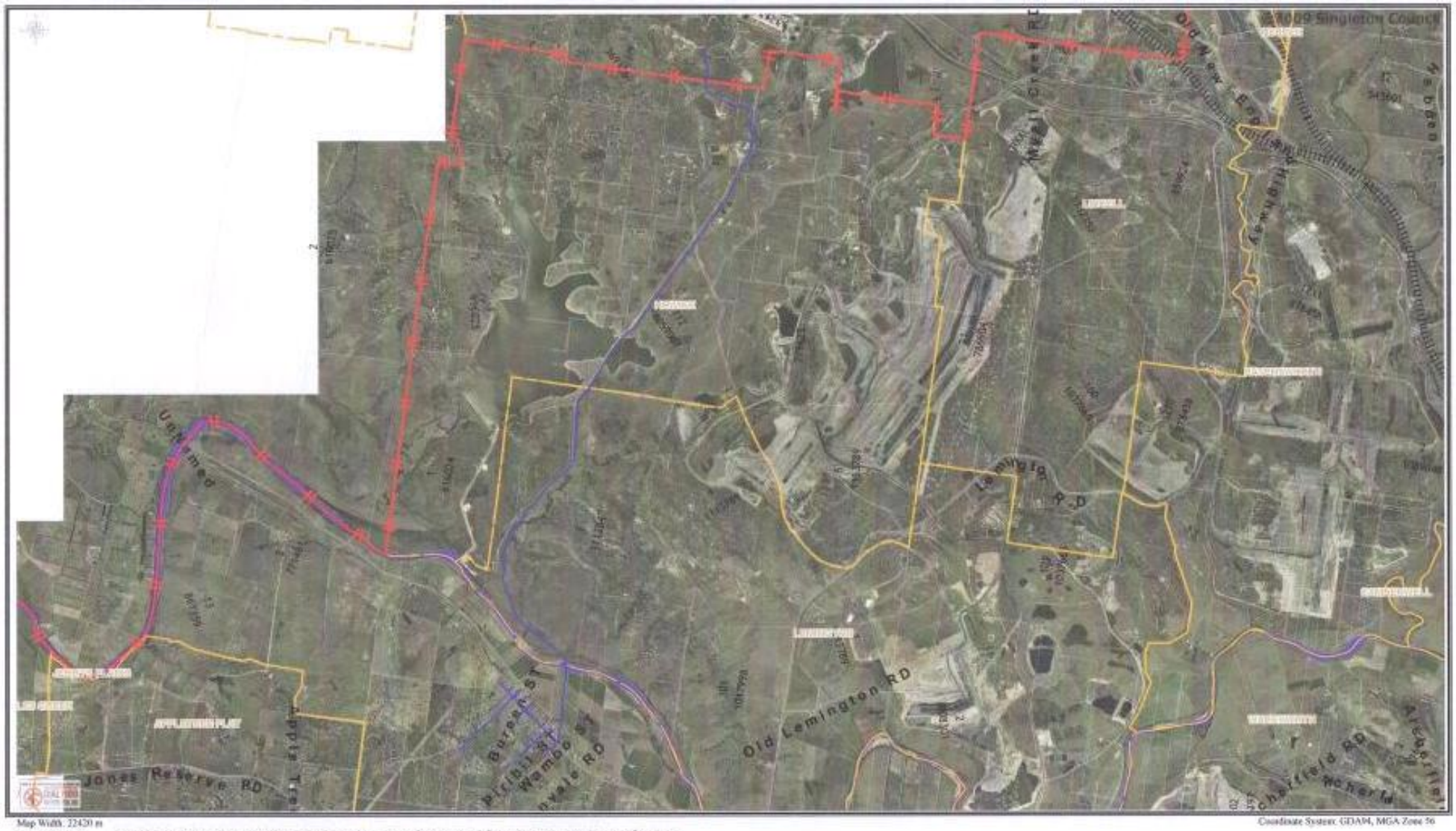
D. State Water Corporation

Gary Hunt - Customer Service Manager, Coastal Area
Phone: 02 6542 4409
Mobile: 0427 919 634
Email: Greg.Hillis@statewater.com.au

APPENDICES

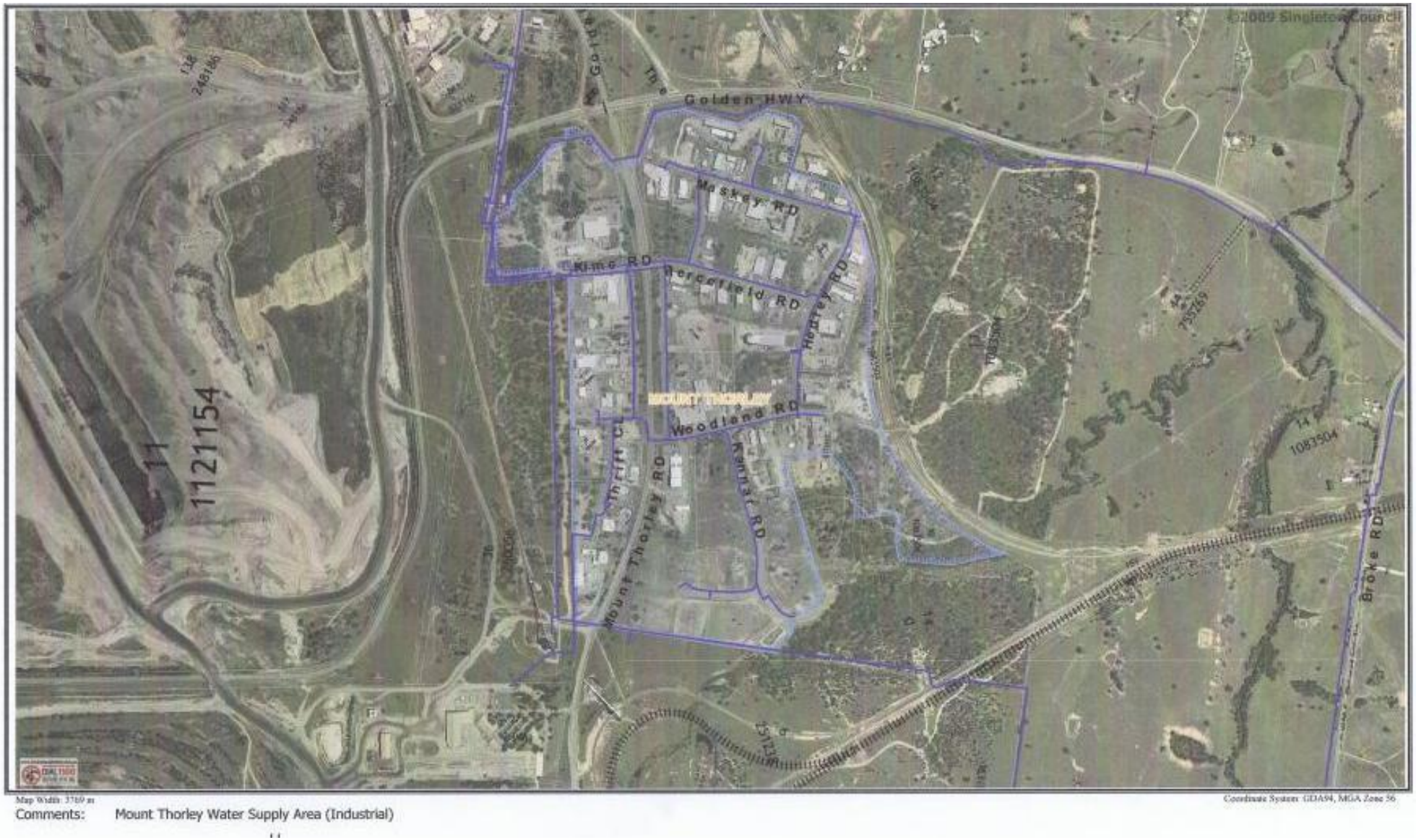
APPENDIX A: Supply System Schematics

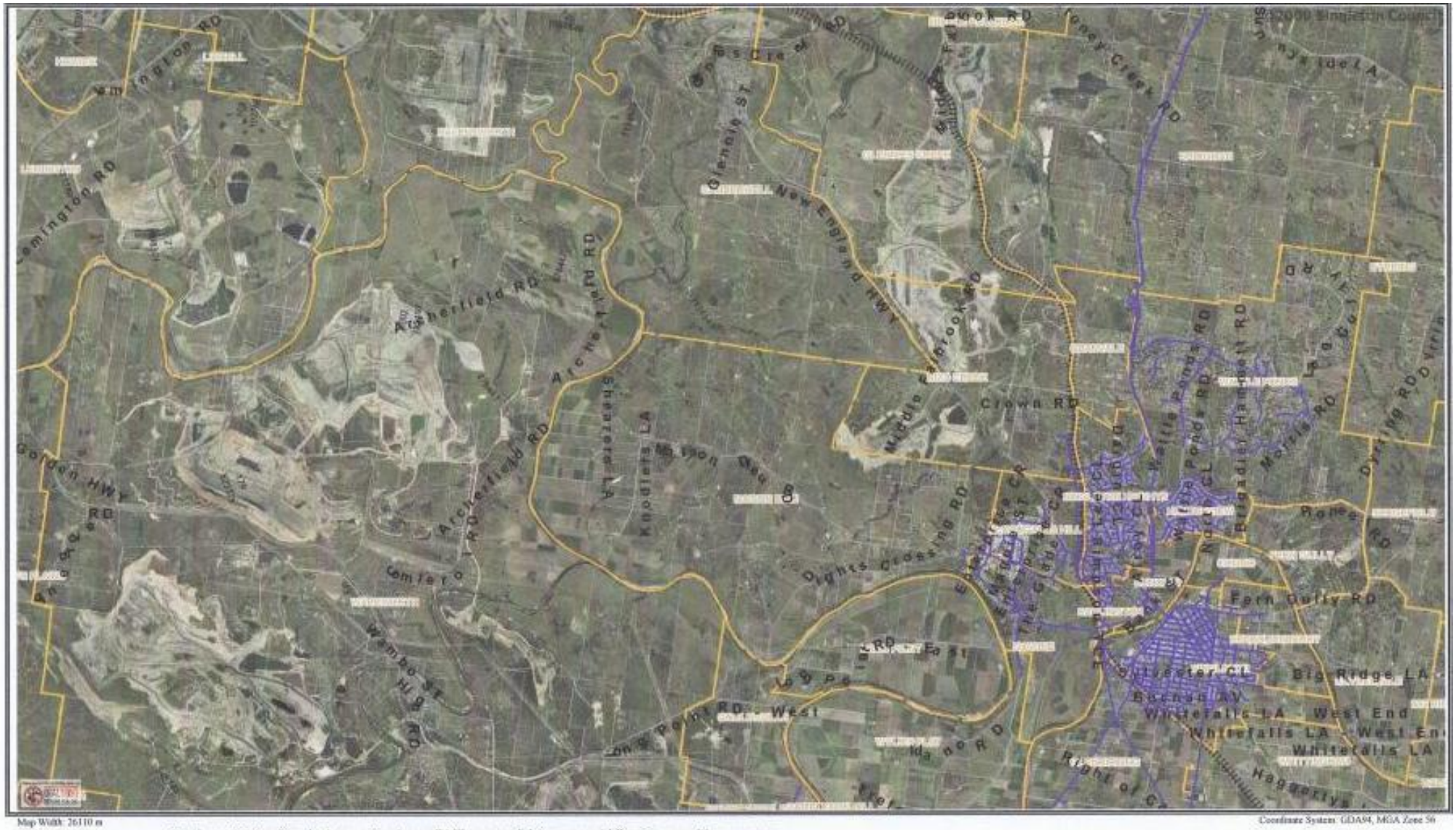

SINGLETON MILITARY AREA
Map Width: 4007 m
Coordinate System: GDA94, MGA Zone 56
Comments:
Broke Water Supply Area
#



Comments: Jerrys Plains Water Supply – Headworks – supply sourced from Bayswater Power Station

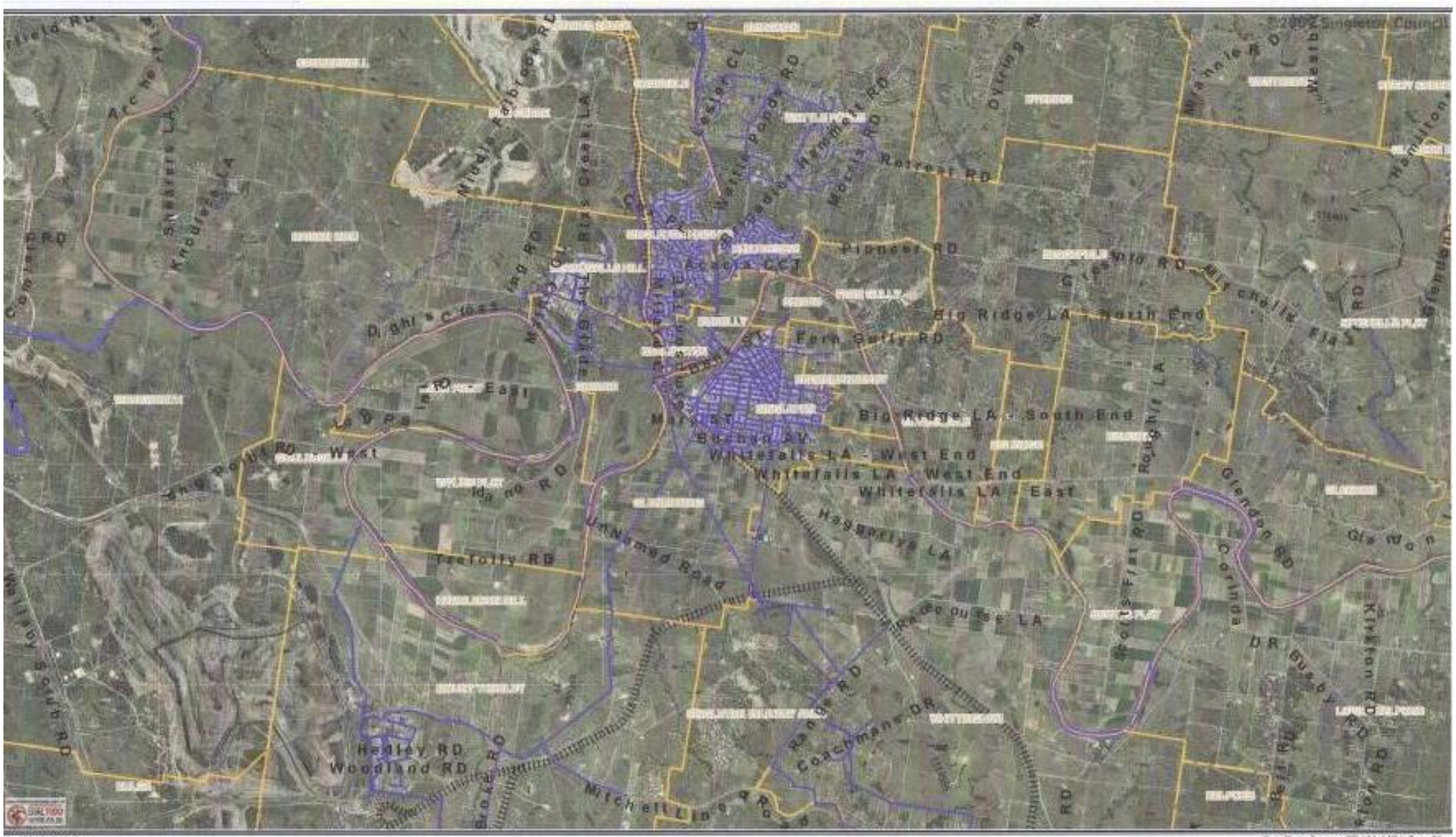
Jerrys Plains Supply System


©2009 Singleton Council
The Golden HWY
Maskey RD
Kime RD
Hercefield RD
Hedley RD
Woodland RD
Mount Thorley RD
Kenlat RD
Broke RD
1121154
1083504
Map Width: 3769 m
Coordinate System: GDA94, MGA Zone 56
Comments: Mount Thorley Water Supply Area (Industrial)



Map Width: 26110 m

Comments: Northern Water Supply Area – Camberwell Village candidate area middle upper position on page



Map Width: 26130 m

Coordinate System: GDA94, MGA Zone 56

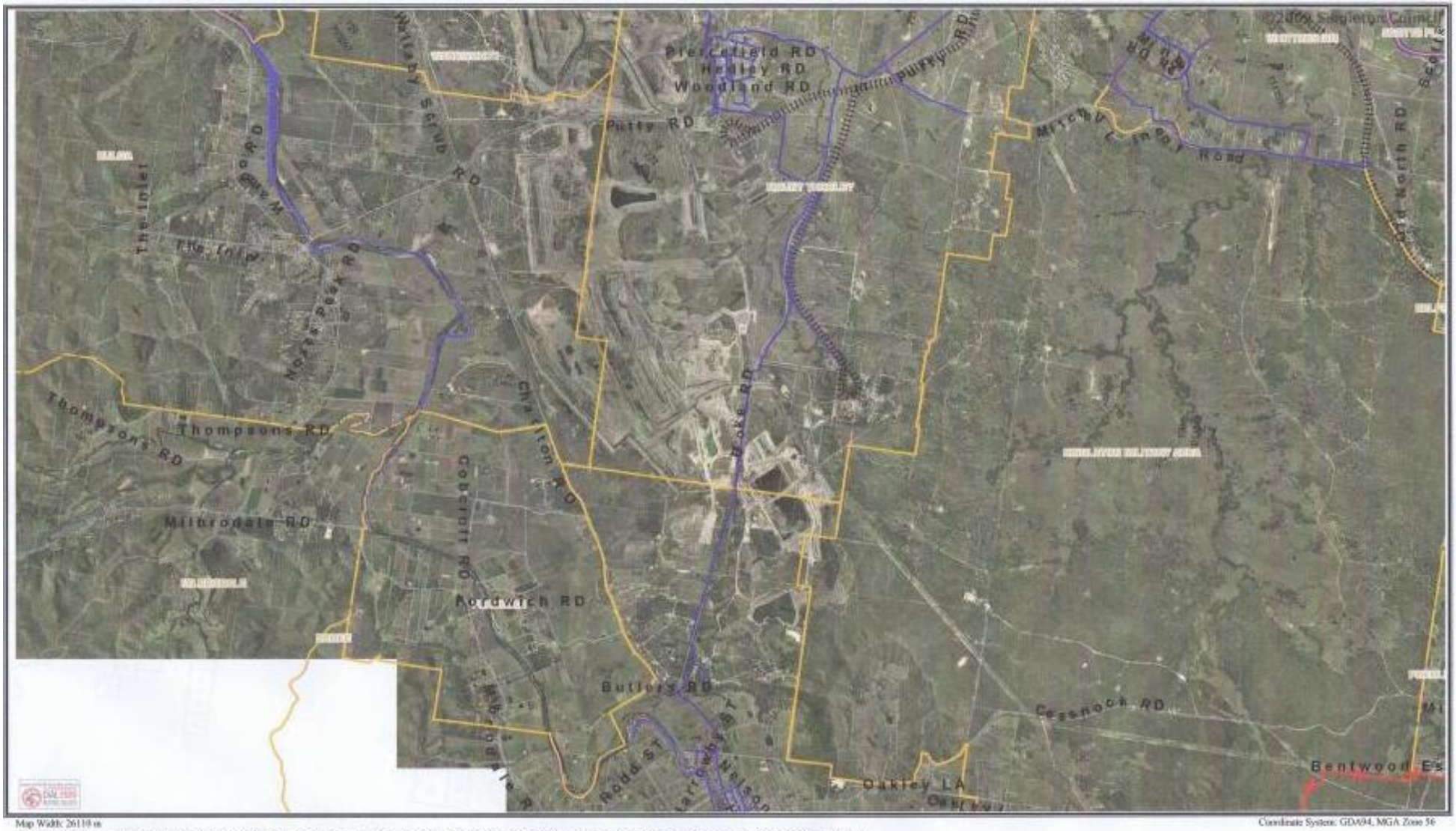
Comments: Singleton and Surrounds Water Supply – Army Camp, Abattoir, Mount Thorley. Interconnecting pipework shown


© 2009 Singleton Council
Map Width: 12860 m
Coordinate System: GDA94, MGA Zone 56
Comments: Singleton Water Service Area

Map Width: 44990 m

Coordinate System: GDA94, MGA Zone 56

Comments: Singleton Water Supply Headworks – 600mm trunk main from Lake St Clair (Glennies Creek Dam) to Singleton North



Comments: Southern Water Supply Areas and connecting pipework. Candidate for water Bulga Village on left. Broke Village bottom

APPENDIX B: Guidelines for Water Carters – NSW Health

Policy Directive

NSW HEALTH

Department of Health, NSW
73 Miller Street North Sydney NSW 2060
Locked Mail Bag 961 North Sydney NSW 2059
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**.

NSW HEALTH DEPARTMENT

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.

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*.

Removable standpipes should be flushed if the hydrant box is full of water, to discard any contaminated water.

6. LOG BOOKS

A water carter must keep a log book in each vehicle to record information of deliveries. Details must include the following:

- All dates of extraction and delivery
- Source of water
- Location of extraction
- Customers name and delivery address
- Volume delivered
- When the tank was last cleaned and materials transported
- Free chlorine level.

7. REGISTER OF WATER CARTERS

A record of water carters that draw from the reticulated water supply must be kept by the Local Council.

Details should include:

- Name of owner
- Name of business
- Contact details for owner of the business
- Details of water carting vehicles, drivers, make, model, registration, tank volume, type of tank eg temporary mounted tanks, etc
- Date of last inspection of each vehicle.

For further information contact your local Public Health Unit. (Under *Health* in the white pages or at www.health.nsw.gov.au/public-health/phus/phus.html).

Robyn Kruk
Director-General

APPENDIX C: Examples of Media Releases

To be supplied by Singleton Shire