



## JERILDERIE SHIRE COUNCIL

# DEMAND MANAGEMENT PLAN



Adopted .....

## Document Control Table

<b>Number</b>	<b>Type</b>	<b>Date Resolved by Council</b>	<b>Date of Effect</b>
Draft	Draft Report for Council	23 September 2014	23 September 2014

## **1. INTRODUCTION**

Water is a valuable resource. Effective demand management is essential to ensure the most efficient, sustainable use of this valuable resource. It will reduce or postpone capital expenditure to upgrade water system assets and hence minimise long-term residential bills.

Demand Management is also a requirement of the “NSW Best-Practice Management of Water Supply and Sewerage Framework”.

It involves assessing demand and implementing measures to encourage efficient water use. These measures may include water pricing, water loss management, leakage reduction, education, water audits, rebates and ongoing monitoring.

Jerilderie does not currently have a demand management plan but has had managed its water system with a view to using water efficiently. Treated effluent from the Sewerage Treatment Works, for example, is used on the racecourse.

The availability of historical water use data for Jerilderie is limited. Implementing demand management will require, over time, the installation of monitoring devices that will assist in better management of the system and also provide a measure of the effectiveness of measures introduced.

## **2. DESCRIPTION OF SUPPLY SYSTEM**

The town of Jerilderie, population 950, has a dual water supply system. Total number of houses is approx. 360. Raw water is drawn from Billabong Creek upstream of a weir at the northern end of town, pumped in a 200mm diameter main to a 2.5 megalitre steel reservoir next to the railway station at the southern end of town. The non-potable reticulation system is fed directly from the pumping station at the Creek until the reservoir is full and then feeds by gravity from the reservoir.

The filtration plant is fed through a 150mm diameter main from the elevated raw water tank via the old 580m<sup>3</sup> concrete water tank on the filtration plant site. The filtration plant consists of a chemical mixing / flocculation tank, sedimentation / clarifier tanks and a sand filter. The water is then chlorinated and retained in a clearwater well prior to pumping into the reticulation system.

Filtered water pumps through the system to a 455m<sup>3</sup> elevated steel reservoir adjacent to the main raw water reservoir at the southern end of town. When this tank is full it signals to the filtration plant to stop pumping and the system is fed by gravity until the tank needs refilling. The storage is equivalent to 1.5 days supply.

In the event that either of the steel reservoirs are unable to be used the existing concrete reservoir at the filtration plant site can be used as a temporary replacement. Raw or filtered water can be diverted directly to it as required.

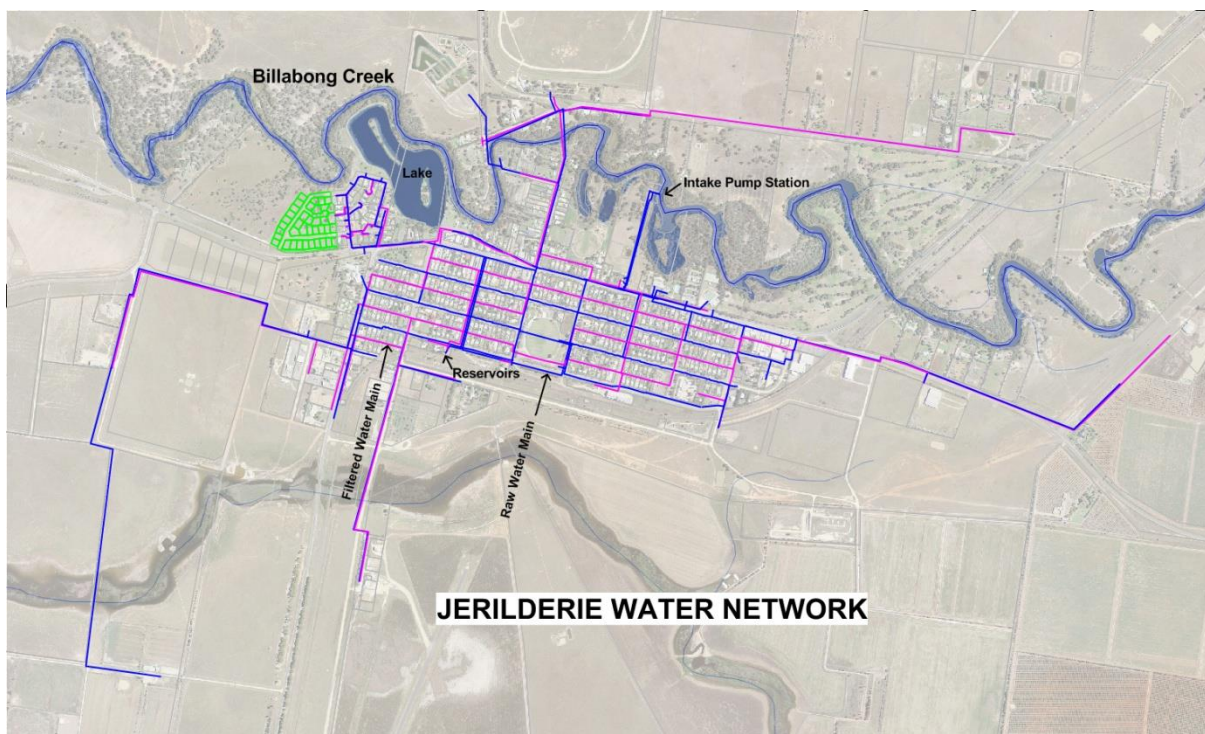
Major industrial users of the water supply are Barthers (chickens), Billabong Produce (tomato processing) and the town swimming pool.

The raw water scheme was initially constructed in 1939. The filtered water system commenced in 1983. The filtered system is metered but the raw system is not.

### 3. SUPPLY TO EXTERNAL USERS

There are a number of external users who cart water for purposes such as rural stock & domestic supply, chemical spraying and civil construction.

There is only one access point to extract water from Council' system, which is the standpipe located at the water treatment plant. Supply is by arrangement with Council staff and all water taken is recorded. In a typical 12 month period approximately 3,000 kilolitres may be carted.



### 4. RELIABILITY OF SUPPLY

Jerilderie has a 500 megalitre per annum high security water license for extraction from the Billabong Creek. The town lake has a 100 megalitre per annum general security licence for extraction from the Billabong Creek. In times of drought the allocation available may be restricted by Government.

## 4.1. Alternative Water Sources

Approximately 50% of town households have rain water tanks. This number is expected to increase over time due to water efficiency requirements for new development and people wishing to have their own on-site source.

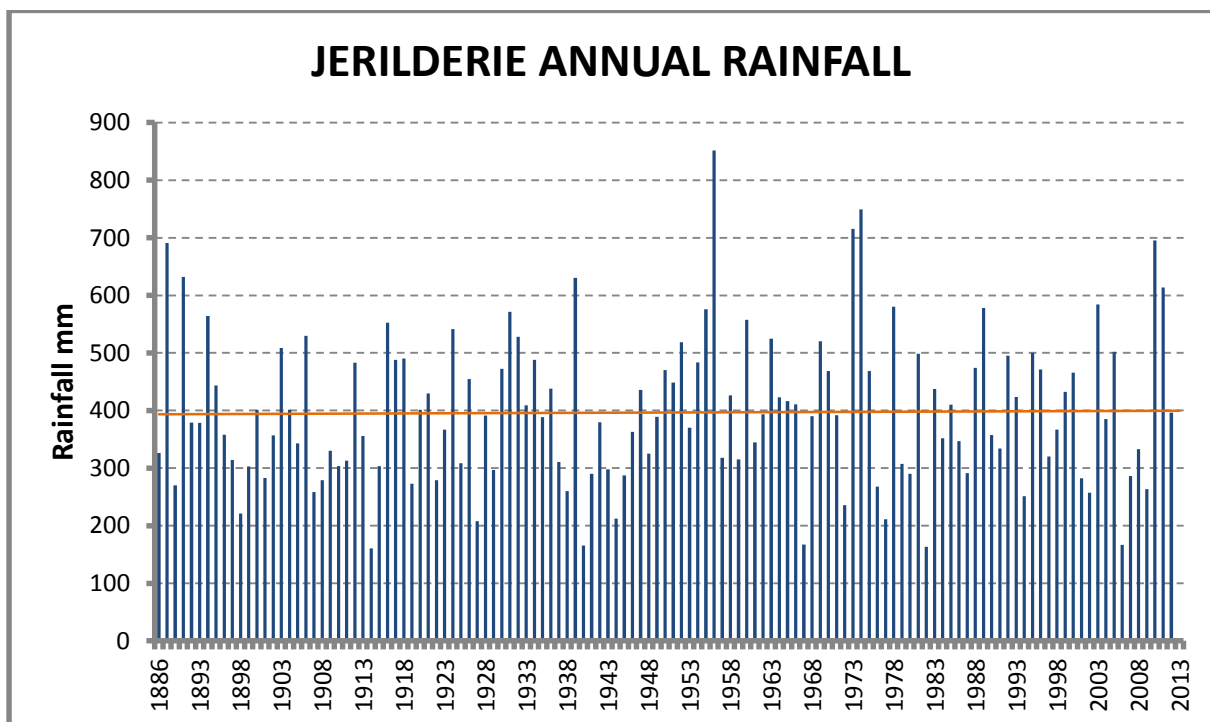
Investigations have been undertaken into groundwater sources but there are no viable groundwater supply options within an economic and feasible distance of Jerilderie.

Water cartage would be available if necessary from such sources as dams, bores and the rural irrigation system. Council has its own resources for water cartage and would also be able to engage private contractors if required.

## 5. CLIMATE

Jerilderie is at an elevation of 110m AHD and has a median annual rainfall of 400mm. Mean monthly maximum long term temperature is 32°C with daily highs up to 46°C. Mean monthly minimum long term temperature is 3°C with daily lows to -5°C

The chart below shows annual and monthly rainfall figures since 1886.



Monthly Rainfall (millimetres)

JERILDERIE TREATMENT WORKS

Station Number: 074055 · State: NSW · Opened: 1886 · Status: Open · Latitude: 35.35°S · Longitude: 145.73°E · Elevation: 110 m

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
<b>Mean</b>	28.1	27.5	30.8	28.6	37.8	38.9	35.3	38.2	34.5	38.5	30.5	30.9	401.1
<b>Lowest</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	160.7
<b>5th percentile</b>	0.0	0.0	0.0	0.0	3.8	7.4	7.9	7.0	6.2	2.2	1.0	0.0	210.7
<b>10th percentile</b>	0.1	0.5	0.6	2.1	5.8	10.0	10.0	12.2	9.5	6.3	2.8	0.6	259.5
<b>Median</b>	20.9	17.6	21.4	21.9	29.7	36.6	31.9	37.4	30.7	32.5	22.2	21.9	390.8
<b>90th percentile</b>	61.2	77.6	83.0	67.1	88.0	67.1	64.9	68.2	67.2	74.3	64.5	69.0	566.2
<b>95th percentile</b>	79.7	87.7	103.3	81.5	104.0	84.3	73.0	75.0	75.3	99.6	80.1	92.0	630.6
<b>Highest</b>	211.4	154.0	154.8	133.6	142.6	126.0	107.1	99.8	122.7	146.0	149.5	215.5	851.3

**6. POPULATION AND GROWTH**

Based on current trends, it is unlikely Jerilderie town’s population will significantly increase over the next twenty years. A growth rate of 0.2% per annum is expected to take into account declining occupancy ratios and new development areas within the town area.

With this minimal growth rate and a universal trend towards water efficiency, there is not expected to be any additional demand on the water treatment plant.

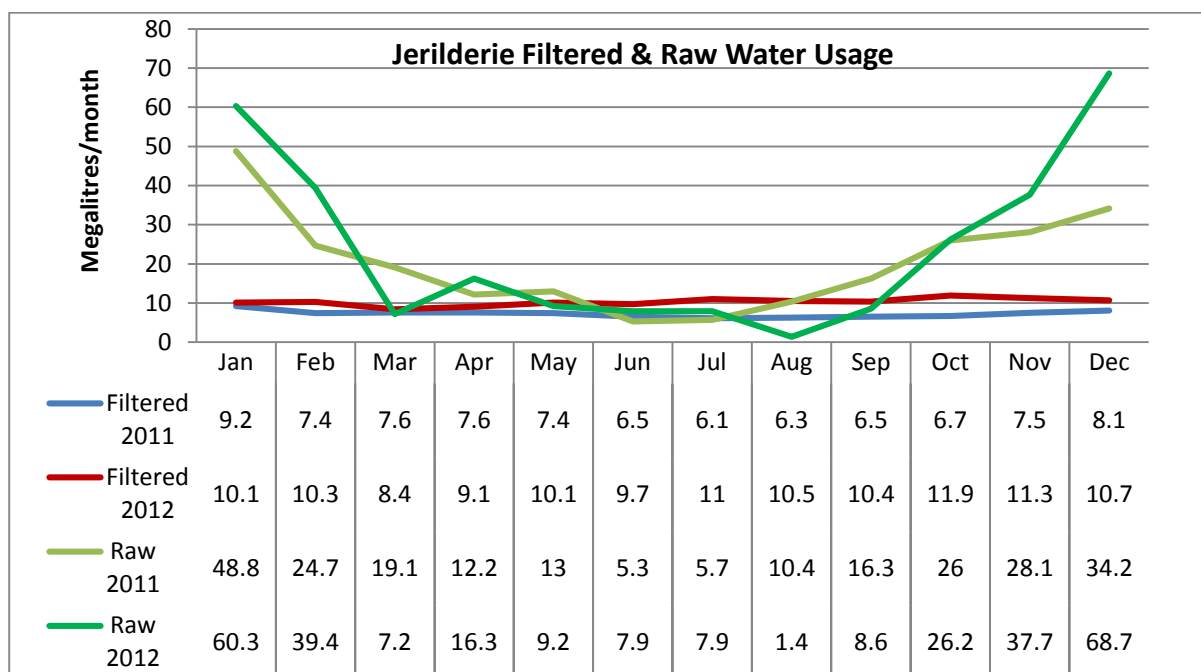
**7. WATER DEMAND**

Typical filtered and raw water usage is shown in the tables below.

These tables show that filtered water use, including peak day and average day, is generally consistent throughout the year. Climate is a major factor on non-potable water use. During periods of wet weather raw water use drops off but there is no major impact on filtered water use

Periods of low monthly water use are consistent with corresponding periods of extended rainfall. Conversely a hot, dry summer will see greater than normal water use.

<b>Typical Jerilderie Filtered Water Demand</b>		
<b><i>Month/Year</i></b>	<b><i>Peak Day Demand Filtered</i></b>	<b><i>Average Day Demand Filtered</i></b>
Jan 2013	580 kl	368 kl
June 2013	504 kl	410 kl



## 8. DEMAND MANAGEMENT OPTIONS

Numerous options are available to Local Water Utilities (LWUs) for managing and encouraging the efficient use of water. These include:

### 8.1. Residential retrofits and audits

Residential properties are assessed to advise on water efficient products and to ensure that any water efficient products already installed have been installed and used properly.

Indoor audits may target showerheads, toilet cistern flushing, leaks, flow regulators and efficiency of water using appliances. Evaporative cooling units would also be assessed

Outdoor audits would look at garden and lawn watering practices and options for saving water. These options may include using trigger nozzles, tap timers, water saving crystals and plant selection.

Subsidies may be offered to water ratepayers for the audit and/or retrofitting.

### 8.2. Large Water User Audits

Large water users, including Council, can develop a water savings action plan (WSAP) following assessment and identification of current practices and ways of using water more efficiently. Developing the WSAP usually requires at least 12

months of historical water use data. Irrigation practices of parks and gardens and landscaped areas would be assessed.

### **8.3. Residential Rebates**

Residential rebates provide a financial incentive for water users to be more water efficient. It encourages the replacement of water inefficient fixtures. A targeted rebate program may be offered covering products such as:

- Showerheads
- Dual flush toilets
- Rainwater tanks
- Greywater reuse
- Pool covers
- Washing machines

Rebates would only be available to customers connected to the reticulation supply, installing only approved water efficient products and limited in number and amount per property. The product installed would not be eligible for rebate if it was required under any development conditions, BASIX requirements, other legislative requirement or already funded under another program.

Rebates would only apply during the current Council Management Plan and be subject to a budget limit. This means receipts must be provided showing purchase was made within the current Council Management Plan year. Applications will be dealt with in order of receipt and may be cut-off when budget limit is reached.

### **8.4. Water Efficient Labelling and Standards Scheme - WELS**

The WELS Scheme rates household water using appliances by issuing a “star” rating. Encouraging the use of these products will minimise household water use.

Over one third of the water savings under the WELS scheme has been estimated to come from more efficient showers, about 34 per cent from washing machines and 23 per cent from toilets.

### **8.5. Rainwater tanks**

Rainwater tanks provide individual alternative water sources to reticulated supply. They conserve reticulated supply and reduce stormwater impacts.

Rainwater tanks can be plumbed direct to fixtures, such as toilets, where the tank is the primary source, with the reticulated supply topping up the tank when it reaches a low level. This provides maximum benefit for substitution of the reticulated supply.

Rainwater tanks also provide individual water security during periods of drought.



## **8.6. Dual reticulation**

Dual reticulation is the provision of two separate reticulation systems. One for potable (drinking) water and the other with non-potable water. Potable water is usually for internal use and non-potable for external use. Dual reticulation systems aid in demand management in that they allow separate control of internal and external water use.

## **8.7. Community Awareness and Education**

There are a number of components to a community awareness program, including:

- School education
- Media advertising
- Direct mailouts of water saving information
- Providing points for customer access to water saving information such as at Council office, library and Council website.

## **8.8. Permanent Water Conservation**

The introduction of permanent water conservation measures reinforces the water efficiency message and should seek to develop a common sense approach to water saving. It should not create undue hardship on the community.

The main areas to be targeted include:

- Vehicle cleaning – wash the vehicle on a non-porous surface (eg lawn) and use a trigger nozzle or bucket
- Hard surfaces – don't use a hose to wash hard surfaces, such as paths, decks, driveways and walls unless it is for health and safety reasons. Use a high pressure cleaning unit or water efficient nozzle.
- Sports Grounds, Parks, Gardens and Lawns - Don't use fixed hoses and sprinklers during specified times and any watering in the heat of the day is discouraged.

## **8.9. Water Loss Management**

A Water Loss Management Plan looks at system flow, pressure and losses. It requires quantifying all water use through connections, including private property, public facilities, parks and gardens, standpipes and water and sewer facilities. Audits of meters are required to confirm their accuracy. Unaccounted for water can then be assessed to determine that portion attributable to system leaks, where the leaks are and what action is required.

Active leak detection can be undertaken in suspect areas to determine sources of possible leakages and repairs actioned.

### **8.10. Pricing**

Best Practice pricing requires implementation of a two-part tariff. This involves an availability charge and an inclining usage charge

### **8.11. Recycling/Reuse**

Reuse of treated effluent can provide a substitution for reticulated town water. It is generally applied to non-active public areas or supplied by agreement to nearby rural properties.

### **8.12. Meter all water connections**

Metering of all connections to the reticulated supply provides accurate information on water use and confirms unaccounted for losses.

### **8.13. SCADA (Supervisory Control & Data Acquisition) SYSTEM**

SCADA management provides current and historical data on water use, water quality, system performance issues, failures and allows detailed analysis of any data that is captured. It enables instant monitoring and management of the system depending on the extent of monitoring stations. A SCADA system provides demand management benefits particularly by providing continual monitoring of water use that will allow assessment of any demand management measures that are introduced.

## **9. CURRENT DEMAND MANAGEMENT MEASURES**

Jerilderie Shire Council currently manages water demand by the following means:

### **9.1. BASIX**

BASIX applies to all new development and major home renovations in NSW. Any BASIX relevant development application made to Council needs to be accompanied by a BASIX Certificate. This Certificate confirms the commitments made by the applicant to use water efficiently through choice of water sources and fittings.

### **9.2. Development Control**

As well as the mandatory BASIX Certificate, Council encourages efficient water use through conditioning of development approvals. This may relate to extent and type of landscaping, provision of alternative water sources and time limits on external water use for businesses.

### **9.3. Water Meters**

The filtered water system has been metered since installation in 1983. The Raw water system is not metered due to problems with small molluscs blocking water metering devices. Raw water is provided for all external use both private and public.

#### **9.4. Pricing**

All metered users of potable water pay an access charge based on meter size and a (2 tier) usage charge.

Raw water users pay a common access charge and there is no usage charge (no meters).

#### **9.5. Restrictions**

Water restrictions were introduced during the drought from July 2009 to September 2010. This was the only period Jerilderie has had restrictions applied. There are currently no levels of permanent restriction.

#### **9.6. Recycling**

Treated effluent from the Sewerage Treatment Plant is used on the Racecourse. The racecourse can utilise all the treated effluent.

#### **9.7. Public Education**

Historically Council has hosted inspections of water treatment facilities by schools and provided literature to residents about water saving measures. There is currently no formal education program for water demand management. Some general water saving information is available on Council's website.

#### **9.8. SCADA System**

Jerilderie Water Supply does not currently have SCADA management of its water supply or any system giving phone alerts. It is a manual system with visible/audible alarms and all records are kept manually by the operators. Some data is transferred to excel data sheets by office staff for the purpose of annual and monthly returns to Government Departments. Access to historical water data is reliant on operator data sheets

### **10. PROPOSED DEMAND MANAGEMENT MEASURES**

Jerilderie Shire Council proposes to implement the following measures to improve the efficiency of water use.

#### **10.1. Water Loss Management**

Distribution system losses throughout the potable and non-potable water systems have not been assessed. Undertaking an investigation of system leakages could identify and reduce unaccounted for water loss.

## **10.2. Pricing**

Council has in place on the potable water system usage and availability charges pricing, with an inclining block tariff, which accords with best practice pricing. Council reviews these charges annually during preparation of the Operational Plan.

## **10.3. Education**

Education through schools and community is important to encourage water efficiency. A community awareness program will utilise direct mailouts, information on Council website, school presentations, advice and information at Council Office

## **10.4. Open Space Watering**

Council has a number of public open spaces. Current watering practices will be assessed to minimise water use. Feasibility of installing bulk water meters will be investigated to enable direct monitoring of water use.

## **10.5. Public Facilities**

Public facilities such as halls, toilets and sports ground change rooms will be audited for use of water efficient appliances and leaks.

## **10.6. Evaporative coolers**

In hot dry climates like Jerilderie there is extensive use of evaporative coolers that collectively consume large volumes of water. Owners of such appliances will receive information about how to monitor and control the water used.

## **10.7. Implement Alarm/SCADA system**

Council will investigate options for a system to remotely monitor key water system components. Initial priority will be for a remote alarm system to alert operators of faults with the ultimate aim being to have a database of information that will allow analysis of water use and system performance.

## **11. CONCLUSION**

The focus of this initial Demand Management Plan is on measures that can be implemented in the short term without reliance on obtaining funding beyond Council's normal budget or needing to have systems or devices in place for that measure to be implemented.

Having limited historical data restricts the ability to analyse specific benefits gained from demand management, but improvements to data collection will occur as this plan is implemented.

It is proposed that this plan will be reviewed 2 years after adoption to assess success of demand management measures implemented, whether those measures should continue and what new measures should be implemented.

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