

Masterton District Council Water Conservation Management Plan

Version Control	Revision	Reviewer	Approval
1 - Initial Draft	July 2017	PE	DH
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Executive Summary

There are many benefits to implementing a Water Conservation Management Plan. Water conservation can have a positive impact on the environment by reducing depletion of water resources (surface and groundwater); reducing expenditure on energy, chemical use and operating costs as well as potentially reducing Council capital expenditure by delaying infrastructure upgrades required to meet increases in water demand.

In Masterton, approximately 64% of water is used by domestic consumers, 6% by commercial and industrial consumers with the balance comprising unaccounted for water including network leakage. The Masterton District Council itself is the largest water user accounting for 3% by volume of the Town's water consumption.

Council constantly invests in measuring water consumption by means of bulk water meters and carrying out night demand surveys. Average residential household water consumption has been generally declining as a result of lower household occupancy and more efficient water use appliances.

Additionally, Council is active in reducing water use through a range of strategies including investment in significant and on-going water network renewals and through the provision of volumetric metering of the largest water users.

The Water Conservation Management Plan outlines specific initiatives to support additional reductions in water consumption and to maintain high levels of water use efficiencies.

Initiative 1. Improve the efficiency of the distribution system

Initiative 2. Enforce regulation to control consumption

Initiative 3. Public Awareness

Initiative 4. Leadership in conservation management

Initiative 5. Installation of Domestic Water Meters

Council intends to measure the success of the Water Conservation Management Plan by assessing the average per capita water usage over a five year rolling average.

Council will review the Water Conservation Management Plan every three years to assess progress made in implementation of the initiatives identified in the Plan and to confirm that the assumptions underpinning the initiatives remain valid.

Why have a Water Conservation Management Plan?

Water is a critical resource, essential for life and necessary for human health and well-being as well as for the preservation of the environment. Masterton has a generally reliable and secure supply of water but this is subject to seasonal variability. Unless carefully managed, water demand may exceed supply in particular during the summer months.

Council has limits on the volume of water that can be extracted from the Waingawa River. These limits are based on both legal requirements created by the Resource Consent and physical constraints from the design of the intake and treatment system itself.

Water conservation then has many benefits. Reducing the amount of water consumed conserves the resource within the river and can help with improved ecosystem health. This is particularly true during the summer when rainfall and river flow is at a minimum and demand is highest.

Conserving water helps to conserve energy. Energy is required to treat and pump water via the distribution system to users. Reducing energy use reduces the costs of delivering the water supply.

Reduced water consumption will also contribute to reductions in wastewater flows which will further reduce the impact on the environment.

Finally, reducing the amount of water consumed can contribute to delaying the upgrade of infrastructure required to treat and distribute water where infrastructure is close to capacity. The same pumps and pipes can be used to supply any increase in water demand due to population growth for longer. This will contribute to reducing the cost to supply water over the long term.

Where Does our Water Come From?

Masterton sources its drinking water from the upper reaches of the Waingawa River. This is piped to the treatment plant at Kaituna via a 4 km long siphon before being treated and reticulated to the urban area.

The treatment plant includes storage dams which can hold up to 60,000m³ of water. This equates to 3 to 6 days storage and allows for diversion of the water when the river is in flood, or at times of low flows. The less water that is taken for storage and treatment, the more water is retained in the river.

Because of the close link between the Waingawa River and the water treatment plant, water conservation measures have a direct impact on the volume of water retained in the River.

How Much Water Do We Use?

Masterton has a daily, per capita usage of 434 litres. This equates to 7,800m³ per day. This does not include industrial / commercial users and is considerably higher than other cities in New Zealand. Usage increases over the summer months.

Industrial / commercial use is approximately 300m³ per day, or around 6% of total usage.

However, usage increases over the summer month.

Daily average output of the treatment plant is 13,000m³ per day. Summer consumption is higher (average 14,400m³ per day) while Winter consumption is lower (Average 11,800m³ per day)

What Have We Done So Far to Promote Efficient Water Use?

Council has been actively working to reduce water loss and increase efficiency in Masterton for several years, by reducing leakages, metering our larger users and promoting water efficiency to the wider community.

Network Leakage

Council currently undertakes reactive leaks repairs as and when required. A leak detection study was completed in 2008 and a network condition assessment commenced in 2009. This work is ongoing and is detailed in the 35 year asset management plan. Systematic replacement of aging infrastructure will result in increased efficiency of the system with less losses and fewer maintenance issues overall.

This work will continue to contribute significantly to the efficiency of the network.

Metering Commercial Users

The largest commercial / industrial users on the network are metered in order to help manage their usage. This allows the users to better understand their individual water use and, although water is not

currently being charged for, it does allow the Council to determine appropriate charging for the water provided should the need arise.

Promoting Water Use Efficiency

Council runs a public awareness campaign during the summer to educate the public on water restrictions and usage. In addition to ‘sprinkler bans’, the Council will promote positive water efficiency messages to highlight the benefits, and emphasise the linkage between water use and river health.

A public education campaign is planned to run prior to the commencement of the summer to coincide with seasonally low river flows. This will include the promotion of positive steps people can take, such as the choosing to use efficient drip irrigation over sprinklers.

What Powers Do We Have To Manage and Restrict Water Use?

Council has adopted a bylaw to assist with the management and regulation of the Town’s water supply.

The Water Supply Bylaw 2012 includes provisions for demand management;

5.7.3 Demand management

The customer shall comply with any restriction or other conservation measures which may be approved by the WSA to manage high seasonal or other demands. Such restrictions shall be advised by public notice.

Even when such restrictions apply the WSA shall take all practicable steps to ensure that an adequate supply for domestic purposes is provided to each point of supply.

Typically, this results in water restrictions being introduced for the water supply area during the summer;

Stage 1 – Use of drip irrigation on any day, but alternative days sprinkler bans

Stage 2 – Total irrigation bans (sprinklers and drip irrigation), but with hand-held hoses still permitted

Stage 3 – Total ban on all watering and non-essential use.

The level of water restriction is directly related to the flow rate of the Waingawa River. As the flow drops below 1,900 l/s, increasingly restrictive water conservations measures are implemented by Council;

Status	Conservation Measures	River Flow Rate (l/s)
Green	Normal use	>1,900
Amber	Stage 1; Alternate days	1,900 – 1,700
Red	Stage 2; Sprinkler bans	1,700 – 1,100
Low Flow	Stage 3; Watering Prohibition	<1,100

The river tends to peak rapidly following a rainfall event. Water restrictions are not implemented unless there is a likelihood that low flows will continue for a period of time. Water restrictions will be looked at when the river flow is clearly trending towards a flow of less than 1,900l/s and no significant rainfall is forecast within the following 5 days.

A single rainfall event is therefore not sufficient to justify removing the restrictions.

Communication with Greater Wellington Regional Council

Prior to the implementation of water restrictions, or to a change to a more restrictive measure, Council will consult with the Environmental Manager, GWRC. This is to ensure that a consistent message is being relayed to the Masterton Community by both Councils and that the proposed measure is appropriate. A flexible and common sense approach will be taken in terms of the public messaging to ensure that the need for water conservation is clearly communicated, with a view to avoiding confusion.

What Can We Do To Further Reduce Our Water Usage?

Initiative 1. Improve the efficiency of the Network

Improving the efficiency of the distribution system is key to maintaining and improving on water use efficiency.

In order to better understand the system and to continue to improve efficiency and measure any improvement, Council needs to continue its flow and water use monitoring. Council has invested in monitoring systems to better understand how the water supply operates, and identify areas where improvements can be made.

Outcome sought	Actions	Progress to date (2017)
Improve understanding of the water supply network	Trial of small number of water meters to gauge 'typical use'.	Pilot trial in association with BRANZ being implemented.
	Ongoing programme of flow monitoring to better understand zones of the system.	Lower cost and practical measures to assess flow rates throughout the network.
Reduce leakage in the water supply system.	Continue current investment in routine inspections, network maintenance and water main replacement programme.	Majority of water mains replaced. Secondary lines to be projected for replacement through Asset Management model.
	Carry out conditional assessment of critical pipes and use asset management modelling to better target renewals.	Asset management model currently being developed with a go-live date of XXXX.

Initiative 2. Enforce regulation to control consumption

Council will continue to enforce the Water Supply Bylaw as required. In particular Council will target water losses on private property and illegal water use in the town, including the use of water for gardening during times of water restrictions. Note that Council is not currently aware of any illegal water connections but will endeavour to locate and stop unauthorised use if it is identified.

Initiative 3. Public Awareness

There is a great deal that the community can do on an individual level to reduce their water use in the house and garden. Council will provide information and guidance to the community on how consumers can reduce their water use.

It is not clear that the community understand the direct link between water use and the impact on the Waingawa River. Council will therefore use a variety of media to not only promote water conservation, but also that linkage.

Council will promote a low flow “consumption target” of **11,000m³/d** via its webpage and other media outlets when the river flow drops below 1,900 l/s. This target is equivalent to the average low flow during the winter months. Note that the average summer flow is 14,400m³/day, so this is equivalent to a 30% saving in consumption.

Commercial Users

As commercial users make up 6% of all the water used in the town, Council will also promote water efficiency to industry and commercial users.

Outcome Sought	Actions	Progress to Date (2017)
Commercial users educated / advised on water efficiency initiatives they can implement.	Contact with major users.	TBC
	Information / plan on reduction in supply to major users at time of low river flows.	TBC
Communication to wider public on the need to conserve water	Communication plan for implementing water use restrictions	TBC
	Coms plan for public education programme focusing on linkage between water use and the river.	TBC
	Coms plan for the need to generally conserve water, not just at stress times, through efficient water use.	TBC

Initiative 4. Leadership in water management

Council intends to promote water conservation by leading by example. There are a number of initiatives that Council will commence in the next three years.

Outcome sought	Actions	Progress to date
Irrigation of sports parks and public reserves to be via non-potable water sources.	Use of bore water to irrigate sports fields.	Red Star, Sports Oval and Memorial Park currently use non-potable bore water for irrigation.
	Parks and roadside plantings irrigated via non-potable water.	Council will investigate; <ul style="list-style-type: none"> • Sewer-mining for water.

		<ul style="list-style-type: none"> • Water harvesting from roof of recreation centre. • Planting of drought-tolerant species.
Increased water efficiency in Council buildings and facilities.	Water efficient appliances / systems installed in its own administration buildings	Investigate push button taps/urinal sensors in new builds and refurbishments.
	Leak investigations and minimisation at recreation centre pools.	Ongoing investigation and maintenance.

Council will provide relevant, practical and up to date advice on best practise for water conservation. Council will keep the community informed on the water use within the town and provide information on conservation initiatives and their effect on overall water use.

Initiative 5. Installation of Domestic Water Meters

Council has allocated funds in the 2019/20 Long Term Plan for the installation of water meters for domestic users. Water meters serve to increase public awareness of water use, provide feedback on water efficiency measures and allow for improved leak detection and prevention. The final decision on whether or not to proceed with the installation will need to be made closer to the budget year and will depend on the effectiveness of the other water conservation measures.

How Will We Measure Our Success?

Council intends to show that the success of the Water Conservation Management Plan by demonstrating that Masterton's per capita water use is below average for similar communities and is stable or declining over a rolling 3 year period. Council is currently participating in a small scale pilot trial to determine 'normal' household usage, and this information will assist in modelling water use for a typical household in Masterton.

Council will determine the success of the Low-Flow management measures by tracking water consumption during times when the low-flow messages are being advertised. Changes to the message and the media format will be made depending on the public's response.

Council will review the Water Conservation Management Plan every three years.