

Water Conservation

MANAGEMENT PLAN

**Meeting Council's Goals
for Water Conservation**

February 2016

This document was prepared by Palmerston North City Council, City Networks, Water and Waste Division.

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Water Conservation Management Plan

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Executive Summary

There are many benefits from 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 Palmerston North approximately 57% of water is used by domestic consumers, 20% by commercial and industrial consumers with the balance comprising unaccounted for water including emergency and unregulated use as well as network leakage. The Palmerston North City Council is the largest water user accounting for 3% by volume of the City's water consumption.

Council constantly invests in measuring water consumption by means of bulk water meters and a representative selection of residential meters to enable household and per capita water use to be assessed and benchmarked against best practice in other water supplies. Average residential household and per capita water consumption has been slowly declining as a result of both lower household occupancy and more efficient water use appliances.

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

The Water Conservation Management Plan outlines seven specific initiatives to support additional reductions in water consumption and to maintain high levels of water use efficiencies. Four of these are community wide initiatives and three are Council specific initiatives:

Community wide initiatives:

- Initiative 1. Improve the efficiency of the distribution system**
- Initiative 2. Enforce regulation to control consumption**
- Initiative 3. Provide education to the Community**
- Initiative 4. Provide leadership by conservation management**

Council initiatives:

- Initiative 5. Reducing Water Use at Our Treatment Plants**
- Initiative 6. Reducing Water Use in Our Parks and Reserves**
- Initiative 7. Reducing Water Use in Our Facilities and Buildings**

Council intends to measure the success of the Water Conservation Management Plan by maintaining the current 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. In June 2013 a Progress Report on the implementation of the initiatives was prepared for Horizons Regional Council as required by Condition 12 of Water Permit 105146 for the Turitea Water Treatment Plant. The next progress report is due by 1 July 2016.

This revised version of the Water Conservation Management Plan has been updated to include the key findings of the 2013 Implementation Progress Report.

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. Palmerston North has a relatively abundant and secure supply of water. However as the population of the City grows and pressure on the resource grows from other users, and seasonal availability is affected by climate change, water demand may exceed supply.

Water conservation has many benefits. Reducing the amount of water consumed conserves the resource within the **natural environment** making it available for other users. Reduced demand can help to sustain river flows contributing to improved ecosystem health particularly during the summer when rainfall and recharge is at a minimum and abstraction is greatest. Reduced water consumption can contribute to reductions in wastewater flows.

Conserving water also helps to **conserve energy**. Energy is required to treat and pump water via the distribution system to users. Reducing energy use contributes to sustainability by reducing the costs of delivering the water supply activity.

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 infrastructure (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.

The Council's **Sustainable City Strategy** identified Water Conservation as an important part of creating a sustainable city. Environmental Sustainability Driver 5: Managing Water¹ identifies two Council actions in relation to water conservation:

- Reduce domestic water use consumption per household by introduction of good building practice in the District Plan and Urban Design Strategy
- People use water more efficiently by development of a campaign, education and information programme

The Council's **Urban Design Strategy** encourages water conservation by promoting construction of healthy and efficient buildings and homes. The strategy specifically encourages buildings that have systems to reduce the demand for water and the need for treatment².

Council expects that as community awareness of the need for sustainability grows the desire for water conservation will also increase. The aim of this Conservation Management Plan is to provide a framework to enable Council to promote and implement water conservation initiatives in Palmerston North in a manner that is economically viable and environmentally sustainable. It outlines the actions Council will take in the coming years to reduce water usage.

The Resource Consents granted by Horizons Regional Council allow Council to take water for drinking water supply from the Turitea Stream³ and require Council to prepare a Water Conservation Management Plan to demonstrate how water use will be proactively managed to minimise the need to take water from the environment. This Water Conservation Management Plan addresses that requirement.

The Council's Climate Change Action Plan seeks to reduce greenhouse gas emissions from the treatment and supply of water. Conserving water by means of an efficient treatment and distribution system will help to achieve this. An efficient water system with built-in resilience and redundancy will also enable the City to adapt to the potential impacts of climate change on the City's water supply.



¹ Palmerston North Sustainable City Strategy 2010 Pages 23-24

² Urban Design Strategy for Palmerston North 2010 Page 34

³ Resource Consent Number 105146 Condition 11

Where Does our Water Come From?

The majority of Palmerston North's water supply comes from the Turitea Stream. Water is collected and stored in two dams in the hills behind Turitea. The dams can store enough water to supply Palmerston North for about 70 days of average use. Council has a Resource Consent to take up to 13.5 million m³ from the stream each year, with the permitted take dependent upon maintaining minimum flows in the stream downstream of the dams.

Additional source water is provided by a number of groundwater bores located around the City. Bores in Takaro and Papaioea Park areas supply water to the northern part of the City, while bores in Keith Street and Roberts Line area supply water to the elevated areas of Kelvin Grove. Ashhurst, Bunnythorpe and Longburn are supplied by their own groundwater bores. Council has Resource Consents detailing the amount of water that can be abstracted from each bore on a daily basis.

Two separate sources of water provide the City with security of supply, in the event that one or other source is unavailable due to contamination, scarcity or engineering failure.

Water from Turitea Stream is treated at Turitea Water Treatment Plant which is situated downstream of the lower dam. The treatment process comprises:

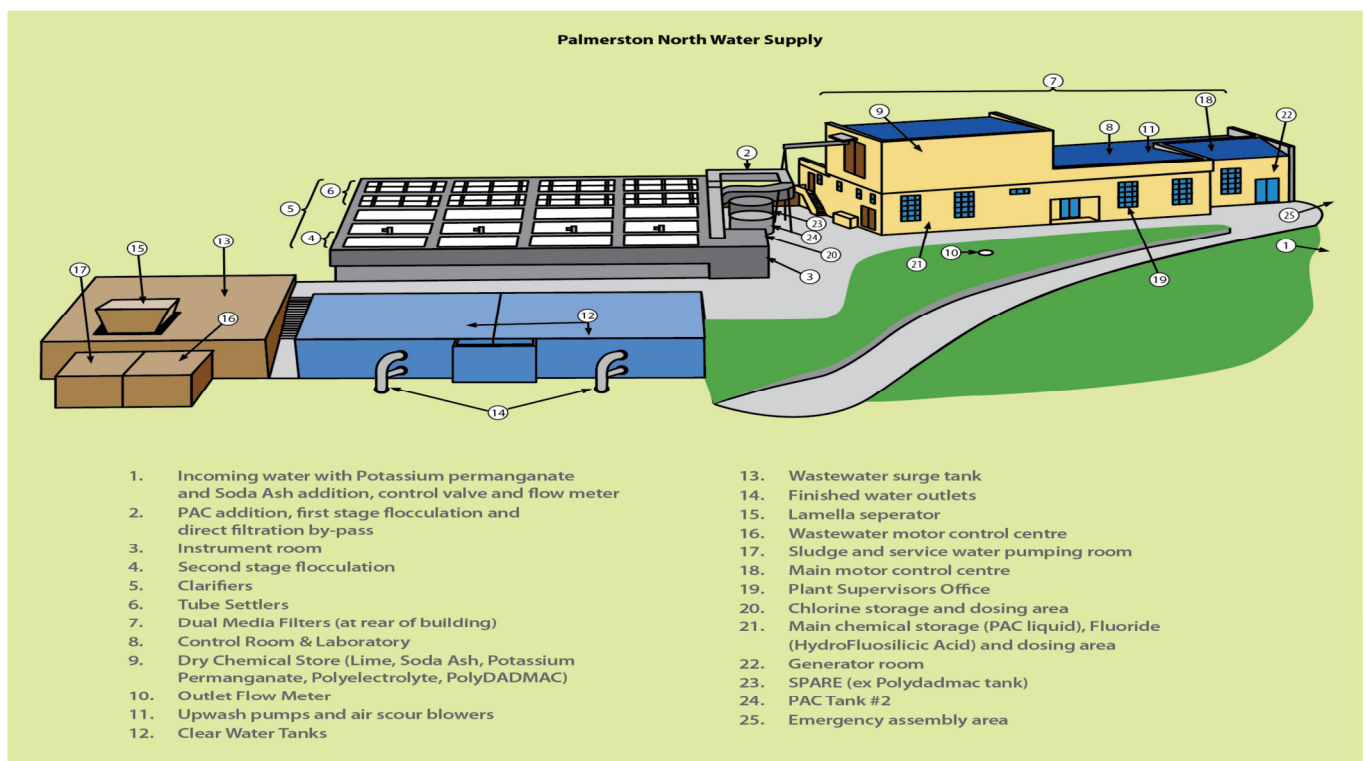
- Flocculation, coagulation and sedimentation (a process to chemically precipitate contaminants in the water causing them to settle out)
- Sand filtration (to remove fine suspended particles)

- Disinfection using chlorine (to kill any remaining bacteria and pathogens)
- Fluoridation (to aid the dental health of the community)

The water taken from the water bores is bacteriologically safe given it is abstracted from deep secure aquifers, so it does not need to be treated. Chlorination to provide for protection from contamination in the network and fluoridation are undertaken prior to distribution to consumers.

Treated water from the Turitea Water Treatment Plant is stored in two reservoirs at Ngahere Park in Harts Road. The reservoirs each store 15,000 m³ of water to assist in meeting hourly variations in water demand as well as providing for emergency events. The reservoirs are sufficient for about 12 hours average use. Ashhurst has its own reservoirs which provide 2,900 m³ of water, sufficient for 3 days average use. A new reservoir of 2,500m³ is being provided to serve the Aokautere supply area.

Water is distributed to consumers via over 450km of pressurised water pipes. Much of the City's water is supplied by gravity while some areas require pump stations to boost the pressure. Council aims to provide each household with a minimum pressure of 350kPa for the majority of the time.

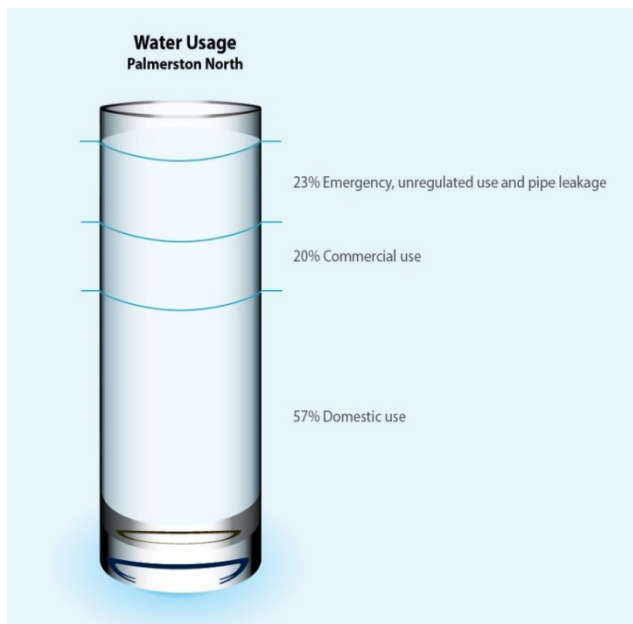


Palmerston North Water Supply



How Much Water Do We Use?

In 2015 Palmerston North City used an average of 25,000 m³ of water per day. Water usage in summer, peaked at 39,000m³ per day in 2015, mainly due to garden irrigation and related outdoor water use.



Of the 25,000 m³ used on average each day approximately 57% is used by domestic consumers, 20% by commercial and industrial consumers and 23% is unaccounted for water comprising emergency, unregulated use and leakage.

Palmerston North City Council uses nearly 3% of all the water used in Palmerston North and is the largest user of water in the City. Council water use includes irrigation of parks and reserves, as well as water used at the Lido Aquatic Centre, Freyberg Community Pool, Tōtara Road wastewater treatment plant and in the numerous Council owned buildings and community housing.

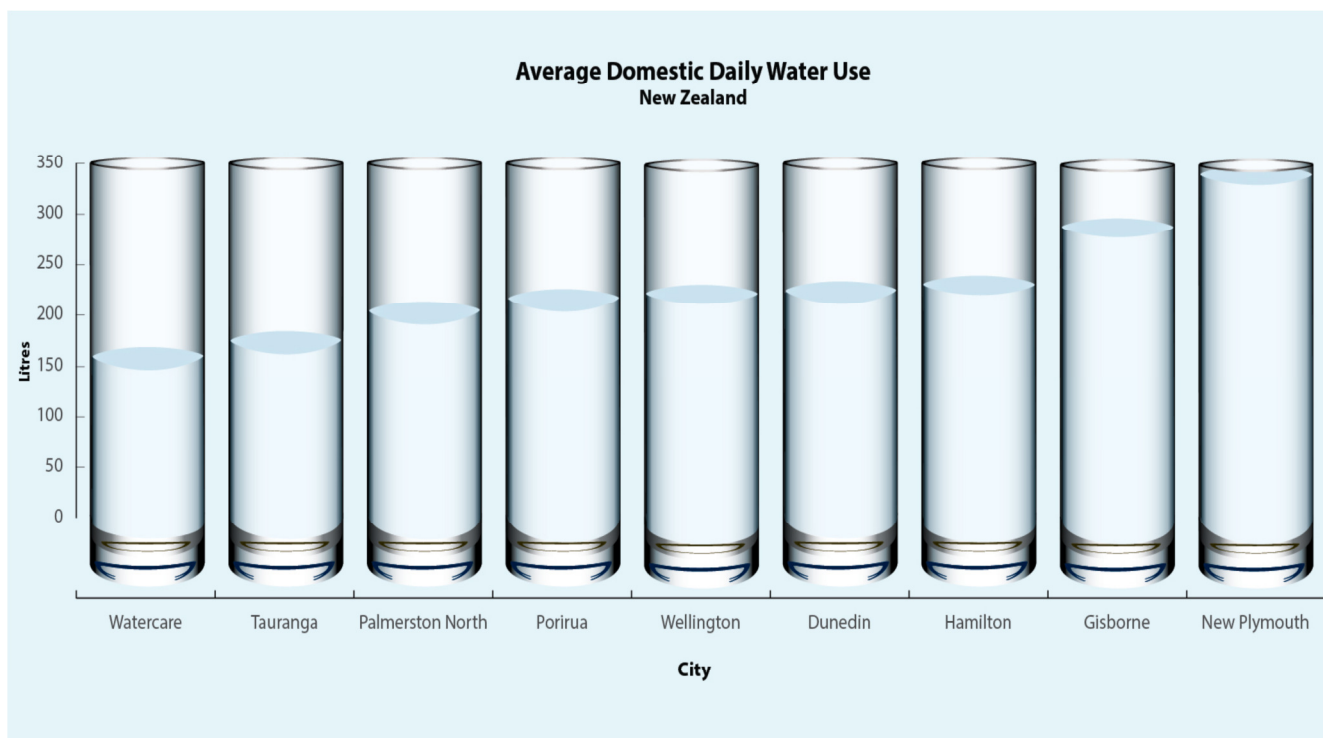
Residential properties are not metered, however PNCC has installed approximately 100 survey meters on residential properties across the city, to provide data on residential household water consumption. Using data from both bulk water meters and residential survey meters recent estimates are that the average household uses approximately 552 litres per day (around 202 litres per person per day), increasing to a peak 900 litres in the height of summer. Council is looking to improve the measurement and monitoring of water flows within the network so as to better understand water use and ensure unaccounted for water remains within acceptable limits.

There are approximately 2,000 commercial water users in Palmerston North. While many commercial consumers use only small quantities of water, around 25% are very large water users. Council aims to meter all commercial consumers who use significantly more water than a typical residential consumer.

How Do We Compare With the Rest of New Zealand?

The average domestic daily water use in New Zealand is 300 litres per person per day, so Palmerston North's average water consumption of 202 litres per person per day is considered reasonable. Water use is generally lower in cities than in rural areas and small towns, as outdoor water use is generally lower given the smaller garden areas.

The graph⁴ shows that on average Palmerston North residents use less water than most metropolitan and provincial cities but on average more than Auckland and Tauranga where residential properties are metered. Palmerston North water use is already relatively low in the absence of individual property meters. There is limited scope to further reduce per capita water use.



⁴ Information taken from Water New Zealand National Performance Review 2013-14. Auckland and Tauranga domestic water supplies are metered.

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

Council has been actively targeting more efficient water use in Palmerston North for several years, by trying to reduce unaccounted for water and network leakage, by reducing network pressures in the main water supply zone, by metering our largest water users to encourage water efficiency and by promoting more efficient water use practice by consumers.

Unaccounted for Water and Network Leakage

The most recent study carried out in 2014 assessed the unaccounted for water and leakage levels. The study estimated that losses in the Palmerston North water supply are around 153 l/connection or 21% of average daily supply.

Council has an active programme of water main renewal, which targets replacement of poor condition pipe based on the occurrence of pipe failure. In addition Council undertakes significant repairs and maintenance of the network replacing failed valves, hydrants and water supply connections as these are identified.



Reducing Pressure within the Network

In 2004 Council conducted an investigation into options for reducing the pressure in the water supply network to extend the life of the pipe network and reduce both consumptive demand and water leakage. Pressures were dropped by around 5m in several areas of the city. Based on an updated assessment of network performance and future demand, Council is considering a further pressure drop of 5m within the central city zone to bring actual pressures which are in the range of 35-40 m closer to the minimum pressure level of service of 30m. Any change will require a long lead in time to provide consumers with time to adjust any systems dependent on the higher pressures e.g. fire sprinklers.



Metering Our Largest Users

Water meters have been installed on many commercial properties in Palmerston North. The installation of meters provides customers with an understanding of their individual water consumption and enables Council to determine appropriate charging for the water provided. Council is reviewing its metering strategy to ensure the right balance is achieved between the cost of measurement and management of demand.

Council has installed flow measurement devices on the top 20 water users which constantly monitor and report water consumption, so that any abnormal water use can be picked up quickly and investigated to reduce leaks or water wastage. Council undertakes regular calibration and meter replacement when required to ensure accurate volumetric measurement.

Promoting Water Use Efficiency

Council has been actively promoting improvements in water use efficiency by installing water saving technology and devices in its own buildings and promoting their use in the building industry, e.g. recommending the installation of pressure limiting valves. Council's Eco-designer has been conducting free in home energy/water efficiency consultations which include advice on reducing household water use.

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 City's water supply. The Water Supply Bylaw 2015 and associated Administration Manual include specific provisions allowing Council to meter and restrict water use.

In particular the bylaw provides Council with the ability to restrict outdoor water use during dry periods to conserve the stored water volume in the Turitea Dams when Turitea stream flows are low.

Four levels of water restrictions are specified ranging from Level 0 – no restrictions to Level 3 – hosing prohibited. When deciding on the level of restriction Council takes into account daily water demand, level of storage in the Turitea reservoirs and long range weather forecasts.

The bylaw is enforced by Council's Regulatory unit but primarily relies on community reporting of individuals who are in breach of the bylaw.

Where water use is considered to be excessive the bylaw empowers Council to install a meter at the customer's cost and for the customer to be charged for excessive water use to incentivise a reduction in usage or wastage.

The relevant clauses from the Water Supply Bylaw and Administration Manual relating to managing and/or restricting water are tabled below.

Palmerston North Water Supply Bylaw 2015

10. Demand Management

- 10.1 The Council may set restrictions on water use to manage demand. The levels of restrictions that may be set are contained within the Administration Manual.
- 10.2 In managing water demand the Council will take into account the usage of water compared to the target levels in the Water Conservation Management Plan; the amount of storage in Council reservoirs; and seasonal weather conditions including recent rainfall and the prospects for rain.
- 10.3 The imposition of water use restrictions will be publicly notified.

Administration Manual (Palmerston North Water Supply Bylaw 2015)

8. DEMAND MANAGEMENT

- 8.1. There are four water restriction levels that can be set. In general, the Council will start at the lowest level of restriction but may "leapfrog" to a higher restriction if warranted by the situation.
- 8.2. Restrictions generally apply during the Summer and Autumn seasons, when daylight savings time is in effect. The times shown for these restrictions are based on daylight savings time, and may be adjusted when daylight savings time ends so that sprinkler use and hosing can be carried out during daylight hours.

Level 0: No restrictions apply.

Level 1: Sprinkler use evenings only, every two days

Unattended hoses, sprinklers, and garden irrigation systems can only be used between 7.00 pm and 9.00 pm; for even numbered houses on even dates, and odd numbered houses on odd dates. Handheld hoses can be used at any time. Minimising the use of water is encouraged.

Level 2: Unattended irrigation prohibited. Handheld hoses only, every two days

Unattended hoses, sprinklers, and garden irrigation systems cannot be used. Handheld hoses for gardens and outdoor household maintenance can only be used between 7.00 pm and 9.00 pm; for even numbered houses on even dates, and odd numbered houses on odd dates. Commercial activities requiring hose use are not restricted but are encouraged to minimise water use or reschedule the work until the restrictions are lifted.

Level 3: Hosing prohibited

Unattended hoses, sprinklers, garden irrigation systems and handheld hoses or watering cans cannot be used. Car washing, household maintenance and outdoor washing by handheld hose are also prohibited. Filling of swimming pools, spa pools and paddling pools is prohibited. Commercial activities requiring water use via hoses may only be carried out with the permission of Council.

13. METERING, METERS AND FLOW RESTRICTORS

- 13.1. An ordinary supply of water is not normally metered, and the cost of such supply shall be determined by the process as prescribed in Part 1, sections 9, 15 to 19 and Part 4, sections 101 to 103 of the Local Government (Rating) Act 2002.
- 13.2. Council will require commercial premises to be metered unless an application for exemption is made to the Council and approval given.
- 13.3. All owners of premises which have a metered water supply must pay the prescribed rate for water supplied by meter.
- 13.4. The Council may fit a water meter to any connection at any time for the purposes of determining water consumption. The Council reserves the right to charge for water by meter for Ordinary Supply or Extraordinary Supply where it has reasonable grounds for believing that water use at a customer's premises is excessive.
- 13.5. Water use can be considered excessive if:
 - a) there is evidence of repeated non-compliance with restrictions imposed as per clause 10 of the Bylaw;
 - b) there is evidence of leakage, or water running to waste, without remedial action by the occupier; or
 - c) there is evidence that water usage exceeds the amount defined as a reasonable per capita allocation under the Water Conservation Management Plan.
- 13.6. Before water can be charged for under section 13.4 of the Administration Manual the Council must serve 10 working days' notice on the customer that it has reasonable grounds for believing that the water use on the customer's premises is excessive, and request that the customer acts within 10 working days to ensure their use is not excessive.
- 13.7. If, after service of notice and the specified time period, the Council continues to have reasonable grounds for believing the water use is excessive, it may charge the customer for metered water supply at the premises in accordance with section 13.4 of the Administration Manual.
- 13.8. If it is established that water use at the premises is excessive then the Council may charge the customer for the actual costs of supplying and fitting the meter, including an additional administration fee of up to 10% of the costs.
- 13.9. The meter will remain the property of the Council which shall be responsible for its maintenance and operation.
- 13.10. A customer (ordinary or extraordinary supply) may request the Council to provide a water meter so that the customer may change from a uniform supply charge to a water by meter charge. In that event, in addition to the cost of installation, the customer shall meet the cost of the water meter. The meter supplied will remain the property of the Council who shall be responsible for its maintenance and operation. In addition to the costs of the meter and installation, an administration fee of 10% of the costs of the meter and installation shall apply.
- 13.11. For meters shared by multiple owners which were in existence prior to the coming into effect of the Bylaw, it is the owners' responsibility to reach an agreement to split the bill and arrange the payment. Where new connections and meters are required or internal plumbing is to be altered, the costs must be met by the owners.
- 13.12. Meters shall be supplied and installed by the Council or Council approved contractors.
- 13.13. Meters and restrictors must be located in a position which is immediately on the Council side of the Point of Supply and readily accessible for reading and maintenance, (see Figure 7 in the Administration Manual). Specific approval by Council is required if it is not practicable to locate the meter or restrictor immediately on the Council side of the Point of Supply.
- 13.14. Restrictors must not be removed without permission from the Council.
- 13.15. A customer with a metered water supply is required to comply with any water supply restrictions imposed under clause 10 of the Bylaw.

What Can We Do To Further Reduce Our Water Usage?

There a wide range of potential water conservation measures, however the relative effectiveness and cost of each varies widely.

Council has identified those measures which it considers provide a balance between the potential benefit in terms of water saved, with cost and ease of implementation. Palmerston North City Council has committed to implement the following initiatives:

Initiative 1. Improve the efficiency of the distribution system

Initiative 2. Enforce regulation to control consumption

Initiative 3. Provide education to the community

Initiative 4. Provide leadership by conservation management

Specific actions were adopted in 2011 for each of the four initiatives and these are tabulated on the following pages. A summary of progress with implementation of these actions has been included in the tables which follow.

Initiative 1: Improve the efficiency of the distribution system

Council has confirmed through recent assessment work that improving the efficiency of the distribution system is key to maintaining and improving water use efficiency. In order to improve efficiency and measure any improvement, Council needs to continue to improve its flow and water use monitoring. Council has invested in improved modelling to understand how the water supply needs to change to meet future demand. Further improvements are required to:

- Better understand how the system works
- Confirm how the system behaves and can be controlled
- Detail on the nature and level of unaccounted for water including losses

Council will continue to invest in improved system metering and measurement to improve understanding and enable benchmarking of water consumption.

Council will continue to prioritise replacement of water mains that are old and in poor condition, targeting those with a break history. A programme to replace old valves and fire hydrants will also be initiated.

System pressure has been identified as a key strategy for reducing water use. Higher than necessary system pressures increase leakage from pipes, joints or plumbing devices as well as increasing the risk of pipe bursts.

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 City. Council is currently not aware of any illegal water use in the city but will endeavor to locate and stop unauthorised use when it is identified.

Council will continue to prioritise the use of water efficient plumbing fixtures and irrigation systems in any upgrades to Council owned and operated facilities.

Council will also encourage (but not enforce at this stage) the use of water efficient plumbing fixtures, rainwater use and efficient irrigation systems in the building consent process.



Initiative 1: Improve the efficiency of the distribution system

Change being sought	Actions	Summary of Progress to Date (2016)
Improve understanding of the water supply network	Initiate a programme of flow meter and valve installation as part of developing zone metering to enable increased flow monitoring and better system control to help identify	Installation of zone metering is high cost and technically difficult. Priority is being given to lower cost and more practical initiatives. This action will be revisited at the next review date.
	Update and utilise the water supply network computer model to help assess water losses in the system alongside measurement and metering of water use	A major model update is nearing completion. The updated has been used to estimate water source and infrastructure upgrades required for future growth over the next 30 years.
	Enhance the domestic survey meter programme to ensure they provide a representative and valid assessment of domestic water consumption	Almost 100 domestic survey meters installed to date. Some additional meters to be installed in areas with poor coverage.
Reduce leakage in the water supply system	Continue current investment in routine inspections, network maintenance and the water main replacement programme	Majority of cast iron pipes have been replaced so the focus has shifted to replacement of asbestos cement (AC) pipes which are at greatest risk of failure and account for most pipe bursts. This will help to control water leakage levels.
	Carry out condition assessment of critical pipes and utilise Hansen database to help better target pipe renewal programme	Core samples from AC pipes are collected, and laboratory tested to provide information on actual pipe condition. The information will enable better refinement and targeting of the water renewals programme.
Reduce pressure in the water supply system	Update and utilise the water supply network computer model to help predict pressures in the system and assess possible areas for pressure reduction	One round of pressure reduction has been implemented with measureable reductions in flow and leakage. A further round of model updates has been completed, and further pressure reductions for parts of the network are being considered.

Initiative 2: Enforce regulation to control consumption

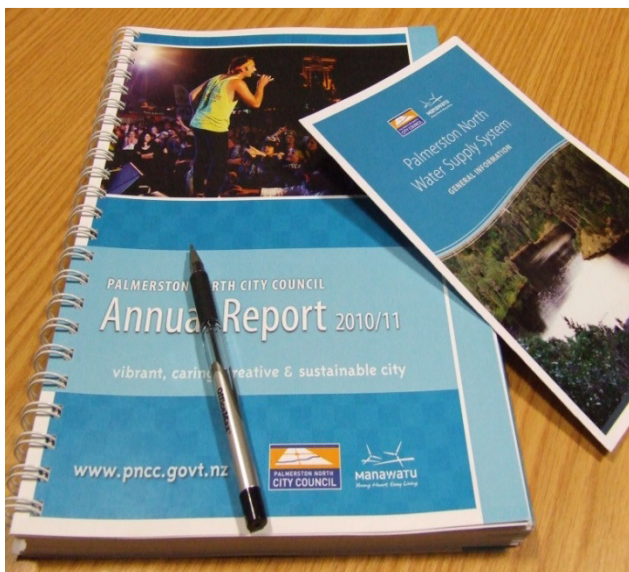
Change being sought	Actions	Summary of Outcomes to Date (2016)
Reduce unauthorised water use	Improve public awareness of the requirements of the Bylaw and encourage public reporting of leakage on private property or unauthorised use. Follow up on all reported issues	The Water Bylaw was revised in 2015 and includes specific provisions for reducing excessive usage through metering and charging customers for excessive use.
Encourage use of water efficient plumbing fixtures	Provide factsheets to be distributed as part of building consent applications encouraging water efficient plumbing fixtures	Information is distributed via the PNCC website and Rates information packs. Building consent applicants for rural self-serviced properties are advised of the potential savings in disposal field size and costs as a result of use of water efficient fittings and fixtures.
	Utilise the Council's Eco Designer to promote water efficient plumbing fittings	Information about the benefits of water saving devices to reduce the use and cost of hot water is distributed by the Eco Designer.

Initiative 3: Provide education to the community

There is a great deal that the community can do on an individual level to reduce their water use in the home and garden. Council will provide information and guidance to the community on how consumers can reduce their water use. Council will use a variety of media to promote water conservation including the Council web and social media sites, local publications and printed fact sheets. It is important that Council provide a consistent message that is both relevant and targeted.

Council already works with local schools to promote Council activities. In recent years the emphasis of this education programme has been on recycling and waste minimisation. As the education programme already includes information about water sources, treatment and water, there is opportunity to extend the programme to include water conservation initiatives.

As commercial users make up 20% of all water used Council will also promote efficient water use in industry and by commercial users.



Initiative 4: Provide Leadership by Conservation Management

Council intends to promote water conservation by leading by example. There are number of initiatives that Council will initiate in the next three years. These are discussed in the next section.

Council will endeavour to provide relevant, practical and up to date advice on best practice for water conservation.

Council will keep the community informed on the water use within the City and provide information on the conservation initiatives and their effect on overall water use.

Initiative 3: Provide education to the community

Change being sought	Actions	Summary of Outcomes to Date (2016)
Promote water conservation message to general community	Produce a series of printed factsheets for community groups or individuals who wish to obtain more detailed information	Information is distributed via the PNCC website and Rates information pack. Radio advertisements to promote water conservation.
	Update Council web and social media sites to include detailed information on what the community can do in their own homes and gardens to reduce water use	Refer to "How to Save Water" ⁵ Refer to "Water Restrictions" ⁶ Refer to "Using Water Wisely" ⁷
	Utilise Council's Eco Designer to promote water efficient plumbing fittings	PNCC employs an Eco Designer whose primary role is the promotion of energy efficiency in the home. The key information distributed within this context is the use of water saving devices and promote water efficient gardens to reduce the use and cost of hot water.
	Promote a 'fix a leak for free' campaign to raise the awareness of how precious our water is and to reduce on property water leaks.	Total 79 on property leaks were fixed by volunteered plumbers. Water Efficiency Brochures are also been distributed.
Promote water conservation to children through schools	Enhance the existing schools programme to cover water conservation	PNCC provides a "Going Greener" public education programme which includes schools. The information presented to schools is kept up to date (refer email in Appendix C).
Promote water conservation to industrial and commercial users	Investigate opportunities for an Eco-Business advisory service and provide a series of workshops to promote water conservation for commercial users	Sustainable Business Programme – PNCC provides 10 scholarships per year to local businesses to complete a sustainable business course in conjunction with Vision Manawatū.

Initiative 4: Provide Leadership by Conservation Management

Change being sought	Actions	Summary of Outcomes to Date (2016)
Provide up to date information to the community	Review Water Conservation Management Plan every three years and ensure Council Officers research latest developments	The Plan has been reviewed and updated in the 2015/16 financial year.
	Revise website information and factsheets annually	Website information is checked and updated monthly to maintain currency.
Keep the Community informed on City water use	Provide information in the Annual Report on the City's water use	A new KPI was introduced in the Long Term Plan 2012/22 and water use information will be reported on in the 2015/16 Annual Report. Water consumption and Turitea Dam level graph is on Council's website and is update regularly during dry seasons.

⁵ <http://www.pncc.govt.nz/services/water-services/tips-on-how-to-save-water/>

⁶ <http://www.pncc.govt.nz/servicesandfacilities/commonservices/waterservices/water-restrictions/>

⁷ <http://www.pncc.govt.nz/media/30188/using%20water%20wisely.pdf>

What Council Are Doing to Reduce Our Own Water Use?

As the largest water user in the city, Council has made a commitment to demonstrate good water conservation practice throughout its activities.

Major water uses within Council include Totara Road Wastewater Treatment Plant, Council owned parks, reserves and sports fields, the Lido and Freyberg Aquatic centers, the event centers and community housing.

A range of actions to give effect to the 3 initiatives were adopted in 2011. A summary of progress on implementation of the actions has been included in the tables which follow.

Initiative 5: Reducing Water Use at Our Treatment Plants

Water is required for many of the treatment processes used at the treatment plants. When Totara Road Wastewater Treatment Plant was upgraded in 2008 priority was given to including water reduction as one of the upgrade objectives. Council will continue to consider ways to reduce water use at our treatment plants and include water saving as a specific objective and outcome when any plant upgrades are undertaken.

Initiative 6: Reducing Water Use in Our Parks and Reserves

The Council has carried out a number of projects to reduce water consumption in recent years, including:

- Use of recycled water instead of fresh water for the water fountains in the Butterfly Pond in The Square.
- Installation of a rain water tank by the Lady's Rest Room in The Square for toilet flushing.
- Design consideration of opportunities to use roof water or recycled water to reduce water use for sports field irrigation.

Initiative 7: Reducing Water Use in Our Facilities and Buildings

The Council recently carried out work at the Lido Aquatic Centre to eliminate leakage in the pipework around the pool areas.

The Council has carried out several building renovations where water conservation measures have been included. Council will ensure that water conservation measures will be included as a key part of the scope of any facility upgrade or new construction.



Initiative 5: Reducing Water Use at Our Treatment Plants

Change being sought	Actions	Summary of Outcomes to Date (2016)
Reduce water use at Council Treatment Plants	Consider water conservation measures when assets are renewed or replaced.	No significant upgrades or renewals have occurred. Efficiency measures are now a key part of any project scope. Staff have been trained to use water more efficiently at the Totara Road wastewater treatment plant during wash down procedures.

Initiative 6: Reducing Water Use in Our Parks and Reserves

Change being sought	Actions	Summary of Outcomes to Date (2016)
Reduce water use in parks and reserves	Consider the use of stormwater retention and drought tolerant species in landscape design to reduce the need for irrigation	Plants appropriate to Palmerston North's climate are planted in Council's reserves, parks, facilities etc. The use of annuals that require irrigation is limited to discreet areas such as the Esplanade and the Square/CBD.
	Incorporate water efficient design of the existing irrigation systems when they need replacement	The irrigation system at Memorial Park was upgraded from a sprinkler system to a more efficient drip irrigation system.
	Consider the use of rainwater tanks at our Parks and Reserve depots to reduce reliance on mains water supply	In designing a new depot consideration was given to rain water tanks for irrigation water storage; however the volumes collected were insufficient to be useful for irrigation, so storage did not proceed.

Initiative 7: Reducing Water Use in Our Facilities and Buildings

Change being sought	Actions	Summary of Outcomes to Date (2016)
Reduce water use in facilities and buildings	Implement a programme to retrofit water saving devices e.g. tap aerators and water saving shower heads in Council owned properties as part of the maintenance programme	Approximately 30 of the 400 properties owned by Council have hot water on mains pressure. All these properties are being refitted with flow reducers. Properties with disability access are fitted with larger flow reducers in order to reduce hot water bills for tenants who may require longer showers.
	To install water conservation signs in Council owned properties to support the water conservation education programme	The majority of tenanted Council properties are occupied by senior citizens who are typically very low water users such that it is considered to be little scope for further water use reductions.
	Adopt a sustainable design approach for any new building design or existing building renovation by building green star certifiable buildings	An economy of scale is required for green star buildings to be cost effective. The cost benefit ratio is unlikely to be sufficient to encourage a change in policy for private properties.

How Will We Measure Our Success?

Council intends to measure the success of the Water Conservation Management Plan by demonstrating Palmerston North per capita water use is below average for similar communities and is stable or declining over a rolling three year period. As part of the Water Management Conservation Plan some 100 flow meters have been installed on domestic properties around the city since 2013 to provide data on typical water consumption. While a relatively small sample size it provides a basis for calibrating model predictions of water use for the whole city.

Council's current target in the 2015-25 Long Term Plan is to achieve an average per capita water consumption of 360 litres per person per day or less for the 2015-2018 period. The measure is calculated on the basis of the total supply, including domestic, industrial/commercial consumptions and lost through emergency and unregulated use and leakage. Council will also report on the levels of unaccounted for water.

Whilst water conservation is an important objective of Council's activities there are no immediate resource constraints or environmental pressures requiring significant reductions to water use below current levels. Given the available water resources, Palmerston North City Council is able to provide a sustainable water supply for the foreseeable future with current levels of investment in infrastructure maintenance and renewal.

Council will review the Water Conservation Management Plan every three years to ensure that the initiatives and actions identified in the Plan have been implemented and that assumptions made in determining the Water Conservation initiatives are still valid.





Palmerston North City Council

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