



Three Waters Plan

Palmerston North

SMALL CITY BENEFITS, BIG CITY AMBITION

2018/21

Te Kaunihera o Papaioea
Palmerston North City Council





To fulfil the vision of small city benefits, big city ambition the Council has adopted five goals. The Eco City Strategy was developed to achieve **Goal 4: An eco city**, and this plan shows how the Council will contribute to achieving this goal in its provision of water services

The Manawatū River forms the geographic, recreational, and spiritual heart of the city and the wider region. The Manawatū River is of great historical, cultural, spiritual and traditional significance to Rangitāne. The name 'Manawatū' refers to a pūrākau (story) of Hau, a significant ancestor in the region, whose heart stood still when he beheld the beauty of the river. Now, unfortunately, the river rarely inspires such a response. The river's flow connects the people of Norsewood to those of Foxton, linking all of us who live between. Consequently, the mauri of the river cannot be restored by any single agency or group. Instead it requires a coordinated approach involving public, private and iwi groups from across the region.

The Manawatū River Leaders Accord sets out the commitment to improving the mauri of the river. Council will collaborate with mana whenua to develop the best practical option for wastewater discharge, plant river banks; improve the city's stormwater network, re-establish wetlands, improve public access to the river, and undertake cultural monitoring of the quality of waterways.

Wastewater treatment

As a member of the Manawatū River Leaders Accord, Council recognises its role in improving the health and mauri of the Manawatū River. Palmerston North and its surrounding villages discharge treated wastewater into the Manawatū River via the Totara Road Wastewater Treatment Plant. Over recent years, efforts have been made to reduce the environmental impact of wastewater by following regional policy and complying with resource consents. The number of council wastewater discharge points into the river has reduced to one.

Council has also brought forward its wastewater resource consent review by five years to look at how the city can contribute to improving the health and mauri of the Manawatū River. The upcoming review will need to identify ways to improve the city's wastewater treatment, particularly when the river level is low. Council will need to actively engage with the community in the lead-up to this process to help identify possible future treatment options.



Due to infiltration from the stormwater network, significant parts of the city's wastewater network are at capacity during major wet weather events. The primary causes of this are damaged infrastructure and private property owners either accidentally, or deliberately, diverting their stormwater into the wastewater network. Renewals will need to be prioritised to target critical trunk sewers. The leakiest parts of the network also need to be targeted to exclude stormwater infiltration.

New growth areas may need a different approach to managing wastewater. Extending the network as it currently exists in parts of the city could create problems at the treatment plant. New pressurised sewer technologies could provide cost-effective reticulated services with increased storage control.

Water supply

While Palmerston North has a generally good water supply, in recent years it has been affected by summer droughts. The city has an integrated water supply network, with water sourced primarily from the Turitea Dam and supplemented by bores across the city. The quality of Palmerston North water is very high and was awarded New Zealand's 'Best Water' in 2016. Water is generally readily available and capacity is adequate to service current and immediately foreseeable demands. However, summertime droughts have led to a need to conserve water for months at a time, to ensure residents and businesses have enough water for consumption and sanitation.

Council will need to increase capacity to deal with potential seismic event failures or mechanical faults. Seismic strengthening of key assets, such as the Turitea Dam, is also needed to reduce the risk of major asset failure and reduced service in a significant earthquake event. Resilience should also be increased by providing a second pipeline across the Manawatū River and by strengthening the main trunk network across the city.

The costs and benefits of reducing water pressure need to be weighed up. Reducing water pressure could prevent significant wastage of water and reduce maintenance costs for water infrastructure. However, the community may not accept lower water pressure and there may be implications for commercial fire system compliance.

Council will investigate domestic water saving and storage solutions to identify potential water demand savings and wastewater flow reduction. District-wide resilience will be improved by connecting Palmerston North's water supplies to its satellite communities.

Like many cities, Palmerston North has aging infrastructure. Some assets have already been renewed or upgraded, and many others will need to be. Seismic resilience assessments are underway to investigate the city's earthquake risk. The city needs to be able to bounce back

quickly from a significant natural disaster, with water an essential need for residents and businesses.

Water-sensitive design / Green infrastructure

The impact of wastewater on the city is well understood as a result of monitoring for resource consents, and Council has a plan in place to mitigate these effects. However, the impact of stormwater run-off is less well understood. Council needs to raise the profile and quality of the city's urban streams, acknowledging their cultural significance as tributaries of the Manawatū River.

Development has increased the amount and speed of rainwater that goes into urban waterways, increasing both peak flow rates and the soils and other contaminants going directly into the river system. This is because buildings, paving, and roads divert water that would have otherwise drained into the soil and recharged groundwater. Council is working with Horizons Regional Council to measure the impact of urban run-off on the Manawatū, as part of developing a consistent regional approach to stormwater management. Developing a map of the city's catchments will help in developing a stormwater management plan for the city.

Intensification of development in the existing urban area and more urban development on the fringe of the city will generate even more stormwater for pipes and streams to cope with, which may trigger expensive upgrades if current levels of service are to be maintained. Council needs to explore alternative approaches to ensure there is a more sustainable response to growth. Water-sensitive design approaches to development and a wider use of tools such as water tanks, green roofs, swales, rain gardens and detention ponds will all help.

Climate change is expected to bring higher intensity rainfall events, moreover, which will increase the frequency of both nuisance flooding on roads and properties and the flooding of habitable dwellings. Development in high-risk areas with inadequate protection or floor-level separation should be avoided.

Council has recently tried to take a more naturalised approach to managing stormwater. This is apparent in Norton Park, where a trial wetland has been established, as well as the nearby Edwards Pit Park, where wetlands have been developed to reduce pollution, illegal dumping, and damage to critical assets and habitats. Council will look for more opportunities to transform drainage corridors and urban waterways, to improve biodiversity, and more sustainably manage stormwater.





The purpose of the Three Waters Plan is to respect and enhance the mauri of the Manawatū River; regenerate native biodiversity; invest in infrastructure that serves to protect, enhance and preserve our environment; and use Council's legislative powers and policies to ensure that urban development is sustainable now and into the future (Priorities 1, 3, 4, and 5, Eco City Strategy).

The Council provides a range of wastewater, water, and stormwater services to the public through:

- Integrated network infrastructure • Engineered solutions to natural services e.g. channelised urban waterways
- Wastewater treatment at the Totara Road Treatment Plant • The Turitea Reserve Water Reservoir and water bores



Where we are now

Wastewater collection, treatment, and disposal

- The Palmerston North City Council has an integrated district-wide wastewater network.
- Wastewater from the city and its satellite communities is treated at and discharged from the Totara Road Wastewater Treatment Plant.
- The Wastewater Treatment Plant is fully compliant with its existing resource consent requirements.
- Significant renewal of key components of the Wastewater Treatment Plant infrastructure is due to be completed by the end of the 2017-2018 financial year.
- Council has agreed to bring forward the renewal of the resource consent for the wastewater treatment plant by five years to June 2022.
- Rural properties are self-serviced for wastewater.
- Significant parts of the existing wastewater network are at capacity during major wet weather events, due to stormwater entering the network through damaged pipes and illegal discharges e.g. runoff from roofs being misdirected into wastewater pipes instead of stormwater pipes.
- Council is in advanced stages of developing a city-wide wastewater network hydraulic model.
- Trade waste discharge monitoring and control of trade waste discharges is being carried out by Council. The cost of this is higher than the charge that is being given to trade waste generators.
- Council has commissioned cultural impact assessments from Rangitāne o Manawatū to inform decision making on infrastructure projects. E.g. Ashhurst Wastewater Treatment Plant Review.
- Informal cultural monitoring framework is in place to inform Rangitāne o Manawatū of Council projects.

Water supply

- Palmerston North City has its own integrated water network, which is supplied by bores and the Turitea Reservoir.
- Satellite communities have their own water supply networks supplied by bores.
- Rural properties are self-serviced for water.
- Source and treatment capacity is adequate for current and immediately foreseeable demand requirements.
- All network water sources are chlorinated.
- Seismic resilience assessments are well advanced for all key water source, storage and treatment assets.
- All the city water supplies are currently fluoridated; excepting Bunnythorpe and Longburn which will be fluoridated by the end of 2017-18.
- All existing water supplies are secure and have approved safety plans in place.
- Renewal programmes are effectively minimising the risk of unforeseen treatment and network failures.
- Non-commercial users of water pay a targeted rate. The targeted rate is intended to cover infrastructure and use costs. Commercial users only pay for their water use, which means in some instances domestic users are subsidising commercial users (when a commercial charge is less than the targeted rate).
- Water discoloration appears to be more apparent in Ashhurst than other communities.

Stormwater, and water sensitive design / green infrastructure

- The City is serviced by a range of engineered stormwater facilities, including culverts, drains and stormwater detention areas. Natural waterways also play a significant role in stormwater management, particularly in rural settings.

- City-wide stormwater modeling has been completed, which will inform future decision-making.
- Open channel stormwater facilities are largely treated as conveyance corridors with some connectivity via walkways.
- A trial engineered treatment wetland has been constructed at Norton Park to evaluate the costs and benefits of a more naturalised approach to stormwater management.
- Water sensitive design is mandatory in new industrial and residential growth areas. There are no specific controls or standards that are applicable to existing brownfield or infill developments.
- Stormwater discharges and urban stream environments are scheduled to be assessed to better understand the impacts of urban stormwater on the environment.
- An active programme of work is in place to improve the connectivity and performance of the existing stormwater pipe network.
- An informal cultural monitoring framework is in place to advise Rangitāne o Manawatū of Council projects that particularly relate to waterways.
- Very few functioning wetlands remain in the City.
- Secondary flow paths are often compromised by urban development, where they are not in the road corridor.
- Urban waterways are discontinuous through the City and interrupted by short piped sections and private property ownership, which makes access for maintenance difficult.
- Urban waterways have limited aquatic biodiversity, due to poor water quality, limited riparian vegetation, low base flow and because they are managed as stormwater conveyance corridors rather than waterways.
- Ponding and surface flooding is apparent in parts of the city during significant and high intensity rain events.
- Urban development is increasing the proportion of hard surface, which delivers larger and more rapid runoff to the existing stormwater network, eroding current levels of service and reducing the extent of shallow groundwater recharge.
- The Rangitāne o Manawatū Claims Settlement Act 2016 places specific requirements on Council to inform and consult Rangitāne o Manawatū on developments adjacent to the Manawatū River and its tributaries. Council is developing a thorough understanding of the sensitive sites located along waterways to ensure development is undertaken in a cultural appropriate manner.



Where we want to be

Wastewater treatment

- A best practicable option (BPO) for the treatment and disposal of the city's wastewater is identified for the renewal of Wastewater Treatment Plant resource consents by June 2021.
- Smart metering and on-line monitoring is introduced to provide more robust profiling of flows and loads from large trade waste dischargers.
- Stormwater infiltration and inflow into the wastewater network is reduced.
- There is a 100% user pays charge for trade waste consent monitoring, inspection, treatment and conveyance costs.
- A pressure sewer policy is developed to support wastewater bylaw reviews to mandate pressure sewer implementation in NEIZ and City West zones.
- A city-wide wastewater network hydraulic model is completed and in use to inform asset management and city development decisions.

Water supply

- There is a safe and readily available water supply that is cost effective and environmentally sound.
- All existing water supplies are secure, have approved safety plans in place and are fully compliant with the New Zealand Drinking Water Standards.
- Council uses smart metering to accurately profile commercial water use.
- Pressure management reduces leakage and delivers sustainable reductions in water use and wastewater flows
- There is a 100% user pays charge for water supply to commercial customers.
- All urban areas are serviced with chlorinated and fluoridated water.
- A global resource consent is issued by Horizons to provide for flexible and staged increases in groundwater take.
- Groundwater source capacity is increased to provide redundancy in the event of mechanical or seismic event failure.
- There is seismic strengthening of key water assets to reduce risk of major asset failure, loss service and reduce the time to restore services in a seismic event.
- A second pipeline crossing of the Manawatū River is connected into the water network.
- There is a strengthened trunk main network across the city to improve seismic resilience.
- District water supply zones enable water pressure to be reduced and deliver water efficiency savings .
- We have evaluated the cost/benefit of household water saving and storage solutions to reduce water demand, wastewater flows and provide greater service resilience.
- Improve district-wide resilience through connecting the Palmerston North water supply network to its satellite communities.

Water sensitive design / green infrastructure

- Use modelling data to identify areas of the city subject to high risk of flooding and to evaluate options for engineered solutions to reduce flooding frequency and reduce the extent of losses associated with flood events.
- Evaluate options to implement controls by way of permeable surface coverage, stormwater detention, water sensitive design and minimum floor level separation to mitigate the effects of and flooding risks associated with new development.
- There is an approved city-wide resource consent from Horizons Regional Council for managing stormwater.



- All urban streams are in full public ownership.
- Biodiversity treatments are undertaken on all urban waterways.
- Urban waterways are thriving ecosystems.
- District Plan provisions enable Council to require mitigation to restrict impacts of stormwater run-off from new development, particularly infill or brown field redevelopment.
- There is a formal cultural monitoring framework for freshwater management with Rangitāne o Manawatū.
- Council understands iwi and community values around urban waterways.
- Stormwater services are resilient enough to cope with the effects of climate change.
- District plan controls better manage the effects of urban development on stormwater services.



How we're going to get there

Day to day / ongoing actions to achieve the purpose

- Provide a safe water supply to the city.
- Provide stormwater services that protect buildings from inundation from flooding in major events.
- Provide for the safe collection, treatment and disposal of the city's wastewater.
- Undertake cultural monitoring for infrastructure projects, especially those situated near waterways.
- Continue to comply with resource consent requirements.
- Improve the cultural and biodiversity values of our urban waterways.
- Acquire private land in urban waterway corridors where necessary.

New ongoing actions to achieve the purpose

- Provide infrastructure for growth.
- Conduct seismic assessment and strengthening of all Council three waters assets.
- Enhance and improve efficiency of water and wastewater networks.
- Increase water supply source capacity through the development of additional bores.
- Extend city water supply to satellite communities.
- Initiate a city-wide stormwater infiltration and inflow reduction programme to identify defects in the wastewater network that are susceptible to stormwater entry and repair.
- Identify and remedy sources of stormwater entry from private property to the wastewater network.
- Implement new stormwater capital works to reduce frequency of property damage due to frequent rainfall events.
- Major capital works to improve resilience of water supply.

Specific programmes to achieve the purpose (with timeframe)

- Identify the best practicable option (BPO) for the wastewater treatment plant consent renewal (by end of 2019/2020).
- Implement programme to reduce potable water discolouration (by 2019/2020).
- Adjust water pressure throughout the city to better match level of service (by end of 2020/2021).
- Change District Plan to require water sensitive design solutions and runoff mitigation for all new developments in flood prone catchments (by end of 2018/2019).
- Review the Development Contributions Policy to incentivise water-sensitive design practices for new developments (by end of 2018/2019).
- Map cultural values of urban waterways (by end of 2020/2021).
- Evaluate the use of residential water tanks to reduce domestic water consumption, wastewater discharge, and improve resilience of water supply (by end of 2018/2019).
- Adopt a pressure sewer policy for the City, supported by revisions to the Wastewater Bylaw (by end of 2018/2019).



Actions contributing to Council's strategic themes

a) Smart city practices

- Create smart infrastructure networks to improve monitoring e.g. through the use of sensor technology.
- Build and maintain calibrated computer models for water, wastewater and stormwater to better analyse infrastructure opportunities and constraints.
- Use GIS to interpret stormwater modelling to inform District Plan zoning decisions and resource consent applications.
- Use GIS to map sites of importance/significance to iwi and community..

b) Sustainable practices

- Work to restore the mauri of urban waterways.
- Require water sensitive design for all new development to reduce environmental impact on urban waterways.
- Increase the amount of energy generated from waste, as discussed in the Energy Plan.

c) Iwi partnerships

- Collaborate with iwi on the wastewater BPO review and urban waterway improvement projects.
- Work with iwi to map sites of significance and cultural value.

d) Strategic partnerships

- Work collaboratively with Horizons Regional Council on Wastewater Treatment Plant BPO review and urban waterway projects.
- Work with Environment Network Manawatū to identify urban waterways that are of community importance.



Measures of success



- Water supply is secure and compliant with the New Zealand Drinking Water Standards
- Wastewater discharge to the Manawatū River complies with resource consent requirements
- The wastewater network has the capacity to function without failure in significant rainfall events
- Stormwater network minimises the extent of property loss in majority of rainfall events
- Increase in the efficiency of water use
- Increase in rainwater tank uptake

Related policies

- Infrastructure Strategy
- Wastewater Bylaw
- Stormwater Drainage Bylaw
- Water Supply Bylaw
- Trade Waste Bylaw
- City-wide Vegetation Framework
- District Plan
- Development Contributions Policy
- Dam Safety Policy



Long-term Plan levels of service

Council provides stormwater services to protect buildings from inundation from flooding in major events.
 Council provides wastewater services for the safe collection, treatment and disposal of the city's wastewater.
 Council provides water services for the provision of safe and readily available water.

Long-term Plan KPIs

Stormwater:

Mandatory: The number of flood events per year resulting in stormwater from the Council's stormwater system entering a habitable floor in an urban area.

Mandatory: The number of habitable floors per 1,000 properties within urban stormwater service areas affected by a flood event.

Mandatory: Median time to attend a flooding event.

Mandatory: The number of complaints received about the performance of the Council's stormwater system per 1,000 properties connected.

Mandatory: Compliance with resource consents for discharge from Council's stormwater system measured by the number of:

- abatement notices
- infringement notices
- enforcement orders
- convictions

in relation to stormwater resource consents.

A 30 year Asset Management Plan is in place and major AMP projects approved in the 10 year plan are achieved.

Wastewater:

Mandatory: Number of dry weather wastewater overflows from the Council's wastewater system per 1,000 connections per year.

Mandatory: Complaints per 1,000 connections about:

- Wastewater odour
- Wastewater system faults
- Wastewater system blockages

- Council's response to issues with the wastewater system.

Mandatory: Median time for attending to overflows resulting from blockages or other faults.

Mandatory: Median time for resolution of overflows resulting from blockages or other faults.

Mandatory: Compliance with resource consents for discharge from Council's wastewater system as measured by the number of:

- abatement notices
- infringement notices
- enforcement notices
- convictions received by Council in relation to resource consents.

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Water

Mandatory: Compliance with Part 4 (bacteria compliance criteria) of the Public Health Act 1956 (as amended by the Health (Drinking Water) Amendment Act 2007).

Mandatory: Compliance with Part 5 (protozoal compliance criteria) of the Public Health Act 1956 (as amended by the Health (Drinking Water) Amendment Act 2007).

Mandatory: The number of complaints per 1,000 connections relating to:

- clarity of the drinking water
- taste of the drinking water
- odour of the drinking water
- the continuity of Council's water supply
- drinking water pressure or flow
- Council's response to any of these issues.

Mandatory: Average consumption of drinking water per day per resident

Mandatory: Median response time for urgent call out time attendance.

Mandatory: Median response time for resolution of urgent call outs.

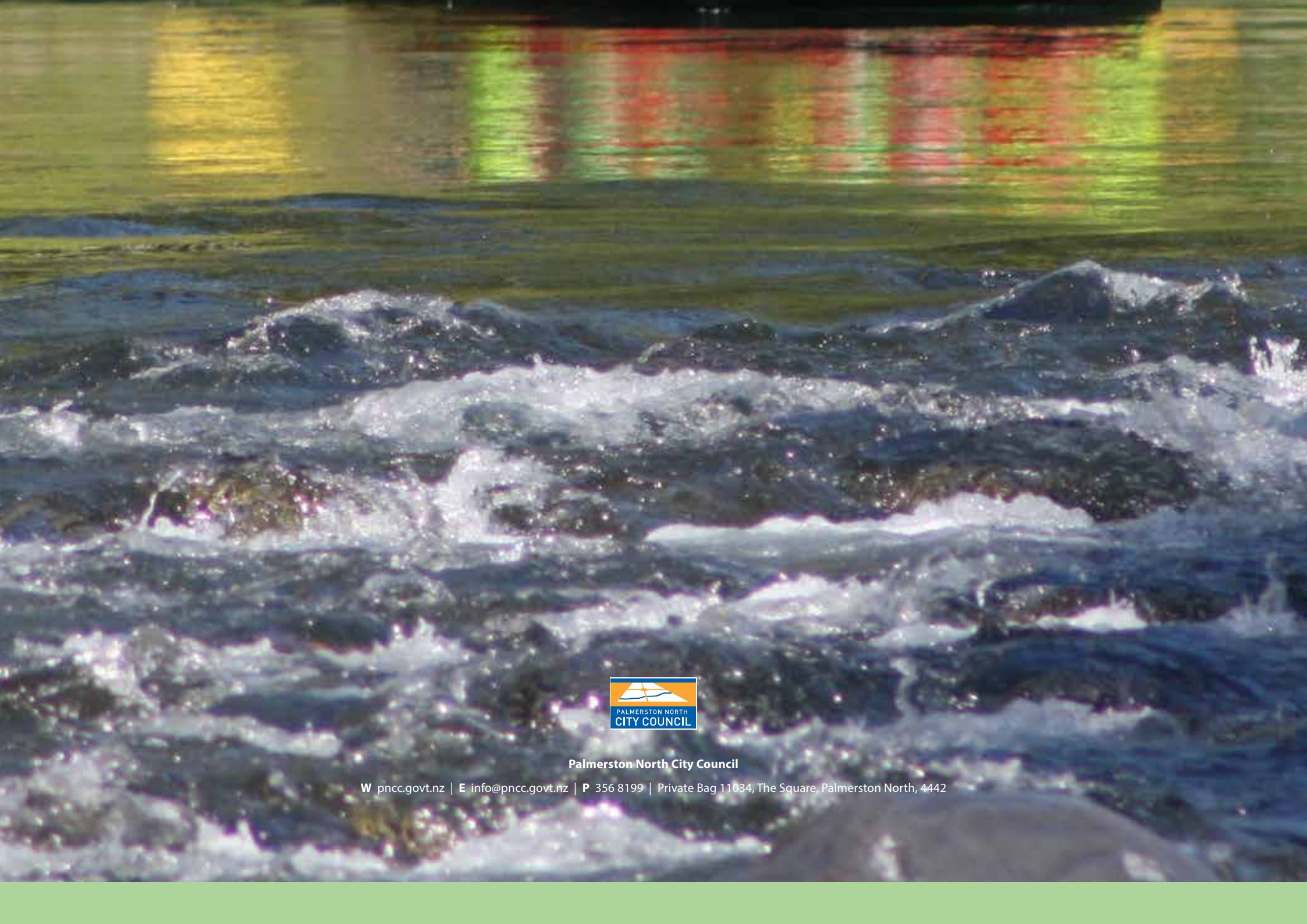
Mandatory: Median response time for non-urgent call out time attendance.

Mandatory: Median response time for resolution of non-urgent call outs.

Mandatory: Percentage of real water loss from the water reticulation network.

A 30 year Asset Management Plan is in place and major AMP projects approved in the 10 year plan are achieved.





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