

Long Term Plan 2024-34 Activity Plan

# Wastewater collection, treatment and disposal

- *Council operates wastewater services in a reliable manner*
- *Council has high wastewater discharge quality*
- *Council operates wastewater services in a responsive manner*
- *Public health is protected from Council wastewater services*
- *Council wastewater networks and operations are sustainable*

Adopted XX and XX June 2024

## Approvals

Role	Position	Name	For Draft LTP	
			Signature	Date of sign-off
<Role>	<Position HOS>	<Name>		xx June 2023
<Role>	<Position GM>	<Name>		xx June 2023
<Role>	<Position Business partner>	<Name>		xx June 2023

## Authors and advisors to this Activity Plan

Group	Business Unit	Position	Name
<Group>	<BU>	3W Asset Management – Contracting Engineer	MacKenzie Johnson
		3W Asset Management – Contracting Engineer	James Thorne

## Contents

<b>1. WHAT THIS ACTIVITY DELIVERS.....</b>	<b>4</b>
<b>2. WHY WE DELIVER THIS ACTIVITY .....</b>	<b>8</b>
2.1. COMMUNITY OUTCOMES: HOW THIS ACTIVITY CONTRIBUTES.....	8
2.2. STRATEGIC PRIORITIES - HOW THIS ACTIVITY SUPPORTS PROGRESS ON OUR PRIORITIES.....	9
2.3. CLIMATE RESILIENCE GOALS: HOW THIS ACTIVITY SUPPORTS CLIMATE RESILIENCE GOALS .....	11
<b>3. HOW WE ARE PLANNING FOR FUTURE IMPACTS.....</b>	<b>14</b>
3.1. ISSUES IMPACTING CURRENT AND FUTURE ACTIVITY DEMAND AND DELIVERABILITY .....	14
3.2. THE HIGH IMPACT ISSUES AND MITIGATIONS PLANNED .....	15
<b>4. OUR LEVELS OF SERVICE .....</b>	<b>16</b>
<b>5. HOW ASSETS WILL BE MANAGED TO DELIVER THE SERVICES.....</b>	<b>18</b>
<b>6. CAPITAL EXPENDITURE AND KEY CAPITAL PROJECTS.....</b>	<b>20</b>
<b>7. FINANCIAL RESOURCES NEEDED .....</b>	<b>21</b>
7.1. RESOURCES NEEDED .....	21
7.2. FUNDING CONSIDERATION AND OUTCOME .....	22
<b>8. POSSIBLE SIGNIFICANT NEGATIVE IMPACTS ON WELLBEING.....</b>	<b>23</b>
<b>A. APPENDIX A: LEVELS OF SERVICE DETAIL .....</b>	<b>26</b>
A.1. CONTINUOUS IMPROVEMENT REVIEW (S17A) – RECOMMENDATIONS FOR CHANGE.....	26
A.2. LEVELS OF SERVICE: PERFORMANCE MEASURES IN DETAIL .....	27
A.3. LEVELS OF SERVICE CHANGES FROM LONG-TERM PLAN 2021-31, AND WHY .....	36
<b>B. APPENDIX B: POSSIBLE ISSUES IMPACTING THE ACTIVITY &amp; THE MITIGATIONS PLANNED.....</b>	<b>37</b>
B.1. CHANGING CUSTOMER NEEDS.....	37
B.2. TIRITI PARTNERSHIPS (MEDIUM IMPACT) .....	39
B.3. TECHNOLOGICAL GROWTH (MEDIUM IMPACT) .....	40
B.4. RESILIENCE AND ENVIRONMENTAL CONSIDERATIONS .....	40
B.5. INFRASTRUCTURE (HIGH IMPACT).....	44
B.6. REGULATIONS & REFORM (HIGH IMPACT).....	45
B.7. IDENTIFIED BUSINESS UNIT RISKS .....	46

# 1. What this activity delivers

We are responsible for wastewater collection, treatment and disposal.

*We collect wastewater from around 170,000 homes, businesses and industries, and maintain 1,030 kilometres of laterals, 2,004 kilometres of wastewater mains, 150 pump stations, 84 lift stations and 34 odour control sites.*

## We're investing in Christchurch's future

This document outlines the wastewater infrastructure and services we propose to invest in over the next 10 years to safeguard public health and protect the environment. It is based on the recommendations documented within the council's wastewater asset management plan. This includes a summary of the investment required to meet future demand, prevent further deterioration of network infrastructure and maintain current levels of service. It gives Christchurch residents the opportunity to join the conversation by telling us what matters to them.

## What we provide

Wastewater is grey water and sewage collected from household drains, and commercial and industrial premises. It is conveyed through an underground network of pipes and pumped to treatment plants, where contaminants are removed before it is discharged safely back into the natural environment. The collection and treatment of wastewater keeps residents safe from waterborne illnesses and protects our environment.

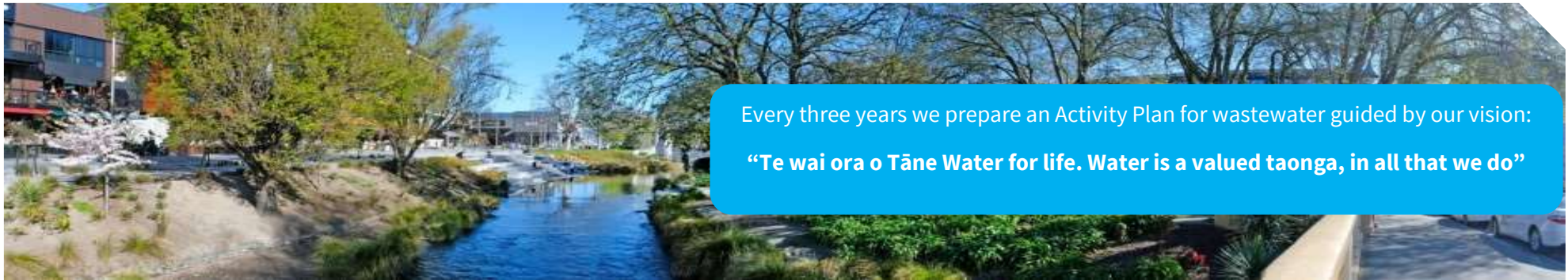
We provide for the continuous collection and conveyance of wastewater from approximately 170,000 properties, and maintain a wastewater network of pipes and pumps, odour treatment facilities, treatment plants, ocean outfalls and land irrigation schemes.

We plan and deliver new and improved wastewater systems and manage, operate and maintain our assets to comply with resource consent conditions, to protect the health of waterways and to provide capacity for future demand. Our accredited laboratory monitors results from the treatment plants to ensure that discharged treated effluent meets the required quality standards of our resource consents.

## This activity includes the following services:

	<b>Council operates wastewater services in a reliable manner</b> Wastewater reliability is measured through resident satisfaction and the number of complaints received through the call centre.
	<b>Council has high wastewater discharge quality</b> Wastewater discharge quality is an important aspect of maintaining healthy waterways and protecting the natural environment. Samples of treated discharged wastewater are taken and analysed for a range of contaminants. These results are provided to Environment Canterbury to comply with resource consent monitoring requirements on a quarterly basis.
	<b>Council operates wastewater services in a responsive manner</b> Responsiveness is measured through the time taken both to arrive on site following the notification of an issue, and by the time taken to resolve the issue.
	<b>Public health is protected from Council wastewater services</b> Wastewater contains human waste, food scraps and debris, so dry weather overflows can have an impact on river quality and cause a risk to public health. Dry weather overflows typically occur in small pipes, and are more frequent than wet weather overflows, however typically these have a smaller impact.
	<b>Council wastewater networks and operations are sustainable</b> We manage the wastewater network in a way that promotes sustainable use of resources, energy efficiency and resilience. This is by encouraging the re-use of by-products generated through the wastewater treatment process, such as the use of methane in energy production and dried sludge for land remediation.





Every three years we prepare an Activity Plan for wastewater guided by our vision:

**“Te wai ora o Tāne Water for life. Water is a valued taonga, in all that we do”**

Achieving the vision will mean that water resources and taonga are managed in an integrated way to provide people, communities and future generations with access to safe and sufficient water resources, maintain the integrity of freshwater ecosystems and manage hazards from flooding and sea level rise.

## The key wastewater activities that Council undertakes include:

### **Wastewater monitoring and control**

Monitoring and control of wastewater flow and quality, including the social, cultural, environmental, economic and technological impacts of wastewater operations.

### **Inflow and infiltration control**

Inflow refers to stormwater or surface water that enters the wastewater network through unauthorized connections or ponding that overflows directly into gully traps. Infiltration describes the entry of groundwater into the network, through broken pipes or joints. Excess inflow and infiltration can overload the system and result in untreated wastewater overflowing into the environment. The Council aims to reduce inflow and infiltration that occurs within the public wastewater system so that our wastewater systems are not overloaded and to reduce wastewater overflows to the environment. Our Water Supply and Wastewater Bylaws require customers to maintain their private wastewater drains to avoid introducing inflow and infiltration into the public wastewater system.

Current estimations show the proportion of Inflow and Infiltration to be 30% of the total annual flow to the Christchurch wastewater treatment plant. During storm events inflow and infiltration can more than triple instantaneous flows.

### **Wastewater overflow management**

Overflows occur when untreated wastewater discharges onto public or private property, waterways or the sea. They occur when the wastewater, inflow and

infiltration volumes are greater than the system can accommodate, typically during heavy rainfall events, or when wastewater pipes become blocked. To reduce overflows, the Council cleans wastewater pipes that are prone to blocking and repairs or replaces leaky wastewater pipes through its renewal programme.

### **Wastewater treatment**

Wastewater is transported along the network to a wastewater treatment plant where it is treated, before being discharged to the land or sea. The Council is responsible for planning, constructing, operating and maintaining a cost-effective and resilient wastewater collection, treatment and disposal system.

### **Treatment by-product management**

Wastewater treatment practices create various by-products, such as sludge and gases that either need to be disposed of, re-used or destroyed. A key Council wastewater activity is the efficient treatment, disposal and/or recycling of wastewater treatment by-products.

### **Laboratory services**

Laboratory services monitor and analyse treatment processes and products to demonstrate compliance with consent discharge conditions.

## A snapshot of provision and use for 2023/24:



### Reticulation

- ✓ 1,639 km gravity wastewater mains
- ✓ 300 km pressure wastewater mains
- ✓ 64 km vacuum wastewater mains
- ✓ 1,003 km wastewater laterals
- ✓ 28,948 manholes
- ✓ 9,405 local pressure sewer system tanks
- ✓ 4,353 vacuum sewer system chambers



### Pumping

- ✓ 150 pump stations
- ✓ 84 lift stations
- ✓ 3 vacuum stations
- ✓ 248 pump station control systems
- ✓ 34 odour control sites



### Treatment & Disposal

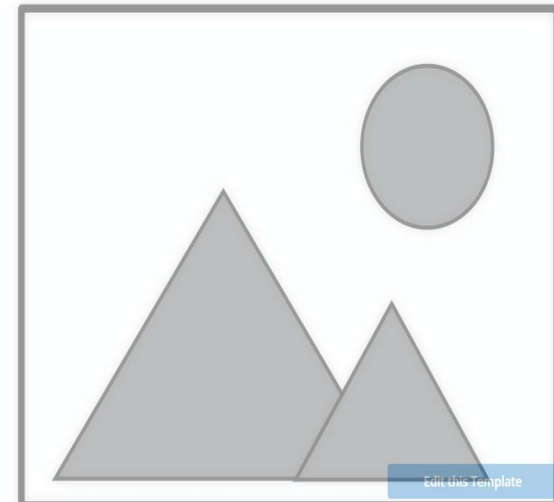
- ✓ 5 wastewater treatment plants
- ✓ 1 outfall pump station
- ✓ 3 ocean / harbour outfalls
- ✓ 2 land irrigation schemes

## Where we came from

The Christchurch wastewater system has evolved from various community reticulations schemes, some dating back to 1875. The Bromley site was established as a sewage farm in 1882 and developed upstream treatment works in 1962. The wastewater network was further standardised in 1989, when five local bodies were merged into the new Christchurch City Council, with Banks Peninsula District Council also merging in 2006.

Our network and services were disrupted by the Canterbury earthquakes of 2010 and 2011. Significant assessment and rebuild work followed, under the Stronger Christchurch Infrastructure Recovery Team (SCIRT) alliance. This programme did not address all earthquake damage and many pipes with varying levels of defects remain. New pipework has been installed to enable wastewater schemes at Governors Bay and Diamond Harbour to be pumped to Bromley and to allow Lyttelton's treatment plant to be decommissioned, ceasing the discharge of wastewater to the harbour.

Wastewater systems in Akaroa and Duvauchelle are due for replacement.



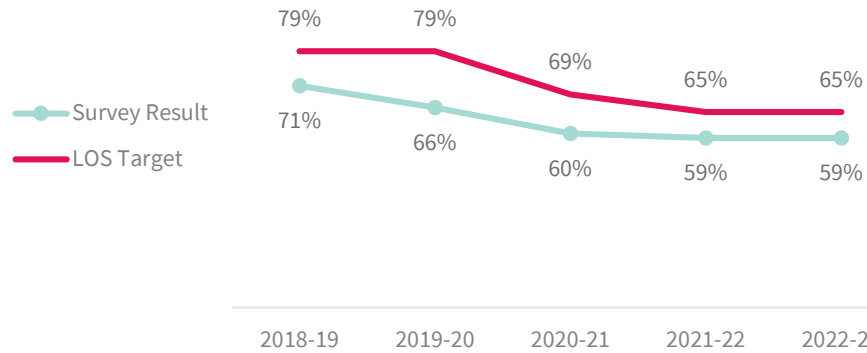
Add image caption. Add source if necessary. Don't forget  
Alternative image text

## What our community is saying



**59% are satisfied**

**LOS 11.0.1.16 Proportion of residents satisfied with the reliability and responsiveness of wastewater services**



Source: *Residents Survey*

**Who our key customers are:** Christchurch City and Banks Peninsula residents

**Who our key stakeholders are:** Christchurch City and Banks Peninsula residents

**What we do:** Provide and maintain a network that collects, treats and disposes of the city's wastewater.

**What you think:** 59% are satisfied with the reliability and responsiveness of wastewater services.





**What you say:** "I'm satisfied with wastewater collection [...] excellent compared to other places in the world!"

**Community outcomes:**

- A thriving prosperous city
- A collaborative confident city
- A green, liveable city






## 2. Why we deliver this activity



### 2.1. Community Outcomes: How this activity contributes

Community Outcomes	Contribution*	Key contributions to achieving our community outcomes
 <p><b>A collaborative confident city</b> Our residents have the opportunity to actively participate in community and city life, have a strong sense of belonging and identity, and feel safe</p>	★★★★	<p><b>Protecting public health by limiting exposure to human waste in accordance with:</b></p> <ul style="list-style-type: none"> <li>• Health Act 1956</li> <li>• Hazardous Substances and New Organisms Act 1996</li> <li>• Resource Management Act 1991</li> <li>• Health and Safety at Work Act 2015</li> <li>• Water Supply, Wastewater and Stormwater Bylaw 2014</li> <li>• Trade Waste Bylaw 2015</li> </ul>
 <p><b>A green, liveable city</b> Our neighbourhoods and communities are accessible and well-connected, supporting our goals to reduce emissions, build climate resilience and protect and regenerate the environment, especially our biodiversity, water bodies and tree canopy</p>	★★★★	<p><b>Reducing wastewater overflows to waterways:</b></p> <ul style="list-style-type: none"> <li>• Ensure infrastructure is resilient</li> </ul> <p><b>Limiting resource use and encouraging by-product re-use:</b></p> <ul style="list-style-type: none"> <li>• Use biogas production from wastewater treatment plant</li> </ul>
 <p><b>A cultural powerhouse city</b> Our diverse communities are supported to understand and protect their heritage, pursue their arts, cultural and sporting interests, and contribute to making our city a creative, cultural and events 'powerhouse'</p>	★★	<p><b>Council response to mana whenua cultural objectives (land discharge of treated effluent):</b></p> <ul style="list-style-type: none"> <li>• Converting to land based discharges of treated effluent where possible</li> <li>• New Akaroa WW Reclaimed Water Treatment and Reuse Scheme</li> <li>• New Duvauchelle WW Reclaimed Water Treatment and Reuse Scheme</li> </ul> <p><b>Increased engagement and collaboration with mana whenua:</b></p> <ul style="list-style-type: none"> <li>• Review and update the 3W Strategy Implementation Plan with mana whenua</li> </ul>
 <p><b>A thriving prosperous city</b> Our city is a great place for people, business and investment where we can all grow our potential, where enterprises are innovative and smart, and where together we raise productivity and reduce emissions</p>	★★★★★	<p><b>We strive for a resilient wastewater network, to support a healthy community, healthy environment and prosperous economy by:</b></p> <ul style="list-style-type: none"> <li>• Minimising damage from natural disasters by setting minimum requirements for new infrastructure.</li> <li>• Gathering an evidence base to support asset lifecycle decision making.</li> <li>• Performing lifecycle management to minimise whole of life costs.</li> <li>• Minimising service disruptions.</li> <li>• Setting requirements for network condition and performance.</li> </ul> <p><b>We strive to manage costs and intergenerational debt by:</b></p> <ul style="list-style-type: none"> <li>• Controlling costs to minimise rates increases</li> <li>• Maintaining networks to prevent future generations inheriting a network in need of significant expenditure.</li> </ul>
<p><b>*Level of contribution – what this means</b></p> <p>★★★★★ This activity is critical to the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service</p> <p>★★★★ This activity strongly supports the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service for some elements</p> <p>★★ This activity supports the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service if practicable</p> <p>★ This activity may provide incidental support to achieving this community outcome – it's not cost-effective to measure our impact</p>		



## 2.2. Strategic Priorities - How this activity supports progress on our priorities


Strategic Priorities		Contribution*	How our strategic priorities influence the way we work
	<b>Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection</b>	★★★★	<ul style="list-style-type: none"> <li>Promote wellbeing through providing the community with clean and safe wastewater management</li> <li>Developing infrastructure solutions that will benefit the future generations</li> </ul>
	<b>Champion Christchurch and collaborate to build our role as a leading New Zealand city</b>	★★	<ul style="list-style-type: none"> <li>Collaborate with other Councils to learn and share best practices</li> <li>Show leadership within the proposed Entity boundaries for the wastewater collection, treatment and disposal activity</li> </ul>
	<b>Build trust and confidence in the Council through meaningful partnerships and communication, listening to and working with residents</b>	★★	<ul style="list-style-type: none"> <li>Increasing customer engagement and consultation through the Long Term Plan process and annual resident surveys to help inform levels of service</li> <li>Providing regular updates/communication to general public</li> <li>Meaningful partnerships/relationships/communication with consultants and contractors</li> <li>Consult and work closely with the community surrounding the Christchurch wastewater treatment plant regarding impact of odours</li> </ul>
	<b>Reduce emissions as a Council and as a city, and invest in adaptation and resilience, leading a city-wide response to climate change while protecting our indigenous biodiversity, water bodies and tree canopy.</b>	★★★★	<ul style="list-style-type: none"> <li>Reduce emissions at the Council offices</li> <li>Reduce emissions by focusing on the key greenhouse gas generators including               <ul style="list-style-type: none"> <li>Processes and activities associated with wastewater treatment</li> <li>Energy consumption in the form of electricity used for wastewater pumping, aeration, heating, etc.</li> <li>Travel associated with operations and maintenance activities</li> <li>Untreated wastewater overflows into the environment during high rainfall events (potential to increase with climate change)</li> </ul> </li> <li>Set realistic and measurable goals for lowering emissions</li> <li>Continue to adhere to standards and regulations, for example ECAN resource consents, to protect our environment</li> </ul>
	<b>Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents</b>	★★★	<ul style="list-style-type: none"> <li>Financial decisions are prioritised using an evidence base that accounts for risk, public health and safety, security of supply, disruption to customers, and asset lifecycle cost considerations to optimises expenditure and minimises building intergenerational debt</li> <li>Controlling costs to minimise rates increases</li> <li>Maintaining networks to prevent future generations inheriting a network in need of significant expenditure.</li> <li>Plan proactive investment to reduce what is spent in reaction to asset failures and disaster events</li> </ul>

	<b>Actively balance the needs of today's residents with the needs of future generations, with the aim of leaving no one behind</b>		<ul style="list-style-type: none"> <li>• Planning for today's needs as well as the future, accounting for growth, asset deterioration, changing regulations, financial constraints and the changing climate</li> <li>• Continue to monitor and assess effects of activity on the environment</li> <li>• Maintain networks to prevent future generations inheriting a network in need of significant expenditure</li> </ul>
<b>*Levels of contribution – what this means</b>			
★★★★	This activity is critical to achievement of this strategic priority – we measure our impact with actions and levels of service in the Strategic Priorities Action Plan		
★★★	This activity strongly supports achievement of this strategic priority – we measure our impact with actions and levels of service in the Strategic Priorities Action Plan for important elements only		
★★	This activity supports achievement of this strategic priority - we measure our impact with actions and levels of service in the Strategic Priorities Action Plan if practicable		
★	This activity may provide incidental support for the achievement of this strategic priority – it's not cost-effective to measure our impact		


DRAFT


## 2.3. Climate Resilience Goals: How this activity supports climate resilience goals

### Net zero emissions Christchurch

	<p><b>Key sources of greenhouse gas emissions from this activity includes:</b></p> <ul style="list-style-type: none"> <li>Processes and activities associated with wastewater treatment, including:             <ul style="list-style-type: none"> <li>Primary, secondary, and tertiary treatment within the treatment process – biological processes (~47% of total CWTP plant emissions)</li> <li>Treated effluent discharged to ponds and to the marine environment (~49% of total CWTP plant emissions)</li> <li>Biogas and biosolids production and disposal (~4% of total CWTP plant emissions)</li> </ul> </li> <li>Energy consumption in the form of electricity used for wastewater pumping, aeration, heating, etc</li> <li>Travel associated with operations and maintenance activities</li> <li>Untreated wastewater overflows into the environment during high rainfall events (potential to increase with climate change)</li> </ul> <p><b>Wastewater Collection, Treatment and Disposal are taking the following actions to reduce greenhouse gas emissions:</b></p> <table border="1"> <thead> <tr> <th data-bbox="206 523 1167 975">Operational/embedded greenhouse gas emissions</th><th data-bbox="1167 523 2110 975">Greenhouse gas emissions by users of Wastewater Collection, Treatment and Disposal activity</th></tr> </thead> <tbody> <tr> <td data-bbox="206 523 1167 975"> <ul style="list-style-type: none"> <li>Develop a monitoring plan and monitor emissions from the wastewater treatment plant at Bromley.</li> <li>Consider and implement alternative treatment configurations which have lesser greenhouse gas emissions.</li> <li>Develop a greenhouse gas emissions baseline for the wastewater service operations and maintenance function.</li> <li>Explore renewable energy options such as solar power generation.</li> <li>Consider ways to reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising service quality, reliability and resilience.</li> </ul> </td><td data-bbox="1167 523 2110 975"> <ul style="list-style-type: none"> <li>Don't flush wet wipes, sanitary products, rags, fats and oils, or other items which may cause blockages and increase operational interventions.</li> <li>Regularly inspect and repair sewer drains to avoid inflow and infiltration which leads to wastewater overflows.</li> <li>Follow-up on required inspections of septic tanks to ensure systems are fit for purpose and not discharging untreated flows to the environment.</li> <li>Adopt water efficient appliances.</li> </ul> </td></tr> </tbody> </table>	Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of Wastewater Collection, Treatment and Disposal activity	<ul style="list-style-type: none"> <li>Develop a monitoring plan and monitor emissions from the wastewater treatment plant at Bromley.</li> <li>Consider and implement alternative treatment configurations which have lesser greenhouse gas emissions.</li> <li>Develop a greenhouse gas emissions baseline for the wastewater service operations and maintenance function.</li> <li>Explore renewable energy options such as solar power generation.</li> <li>Consider ways to reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising service quality, reliability and resilience.</li> </ul>	<ul style="list-style-type: none"> <li>Don't flush wet wipes, sanitary products, rags, fats and oils, or other items which may cause blockages and increase operational interventions.</li> <li>Regularly inspect and repair sewer drains to avoid inflow and infiltration which leads to wastewater overflows.</li> <li>Follow-up on required inspections of septic tanks to ensure systems are fit for purpose and not discharging untreated flows to the environment.</li> <li>Adopt water efficient appliances.</li> </ul>
Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of Wastewater Collection, Treatment and Disposal activity				
<ul style="list-style-type: none"> <li>Develop a monitoring plan and monitor emissions from the wastewater treatment plant at Bromley.</li> <li>Consider and implement alternative treatment configurations which have lesser greenhouse gas emissions.</li> <li>Develop a greenhouse gas emissions baseline for the wastewater service operations and maintenance function.</li> <li>Explore renewable energy options such as solar power generation.</li> <li>Consider ways to reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising service quality, reliability and resilience.</li> </ul>	<ul style="list-style-type: none"> <li>Don't flush wet wipes, sanitary products, rags, fats and oils, or other items which may cause blockages and increase operational interventions.</li> <li>Regularly inspect and repair sewer drains to avoid inflow and infiltration which leads to wastewater overflows.</li> <li>Follow-up on required inspections of septic tanks to ensure systems are fit for purpose and not discharging untreated flows to the environment.</li> <li>Adopt water efficient appliances.</li> </ul>				

### We understand and are preparing for the ongoing impact of Climate change

	<p><b>Key climate risks for the Wastewater Collection, Treatment and Disposal activity includes:</b></p> <ul style="list-style-type: none"> <li>Sea Level Rise Related             <ul style="list-style-type: none"> <li>Some coastal wastewater assets may be at risk</li> <li>Limitations in asset life due to corrosion from saltwater</li> </ul> </li> <li>Rainfall and Flooding Related             <ul style="list-style-type: none"> <li>Increased inflow and infiltration due to more frequent storm events that could increase overflow frequency</li> <li>Higher groundwater levels leads to increased infiltration that could increase overflow frequency</li> </ul> </li> <li>Heat, Drought, Fire Related             <ul style="list-style-type: none"> <li>Increased odours in wastewater network because of higher temperatures and microbial activity</li> </ul> </li> <li>Other</li> </ul>
--	--

	<ul style="list-style-type: none"> <li>○ Increase in overflow events resulting in untreated wastewater flows to the environment have potential public health and environmental health impacts</li> <li>○ Potential untreated overflow discharges into the ocean could cause beach closures or deterioration of water quality of receiving waters, impacting the mauri of the water for Māori and opportunities to practice mahinga kai</li> <li>• Other impacts on assets and infrastructure (see the <a href="#">Asset Management Plan</a> for more details).</li> </ul>
	<p><b>Options being considering to reduce the risks to the Wastewater Collection, Treatment and Disposal activity and the community posed by those climate risks include:</b></p> <ul style="list-style-type: none"> <li>• Request (in terms of the Water Supply and Wastewater Bylaw 2022) the inspection and repair of sewer drains on private properties to avoid rainwater or groundwater from entering the wastewater system</li> <li>• Provide educational resources and messaging relating to wastewater use best practices such as not flushing wet wipes and separation of fats and oils</li> <li>• Undertake a programme to identify and eliminate tree planting over pipes to avoid damage that leads to groundwater infiltration</li> <li>• Reduce stormwater and potentially seawater inflow and infiltration through continuance of renewals programme</li> <li>• Fund the implementation of projects identified to reduce the frequency of wastewater overflows</li> <li>• Explore options for increased resilience of the wastewater system against climate change impacts and fluctuating operational statuses.</li> </ul>
<b>We are guardians of our natural environment and taonga</b>	
	<p><b>Please describe a pilot project you will undertake in the next three years to increase understanding of emissions reduction options and building resilience to climate risks relevant to your activity:</b></p> <p>We have selected as a pilot project in the next three years to further support understanding and minimising greenhouse gas emissions and responding to climate change impacts as follows:</p> <p>Most of Christchurch’s wastewater is conveyed to and treated by the wastewater treatment plant at Bromley. In November 2021 there was a fire at the treatment plant which both trickling filter units which provided a critical portion of the wastewater treatment process. An interim solution utilising two of the four secondary clarifiers as activated sludge reactors has been implemented alongside increased aeration allowances. However, this is only a temporary solution as the infrastructure was not designed for this purpose. Council have engaged a consultant to investigate future options for the long-term plant recovery with a focus on options to deal to future population growth, modern technology, and a reduction in greenhouse gas emissions.</p> <p>Currently the plant is operating with no secondary treatment or clarifier redundancy and limited capacity to treat additional flow and/or pollutant load. Combined, these factors increase the vulnerability of the plant to impacts of unforeseen events and the effects of climate change. Again, it is critical to progress the process of selecting and implementing an option for the permanent recovery of the plant.</p> <p>As a whole, wastewater treatment is one of the largest greenhouse gas emitting sources within the Three Waters area. As a first, the programme involves development of a system to measure real time emissions from the plant and treatment processes with the goal of highlighting where the largest sources of emissions within the treatment process are occurring. Collecting this information presently in the temporary plant configuration will help to provide insight into potential cost-efficient and greenhouse gas reduction effectiveness of potential permanent recovery solutions. Continuance of the measuring and reporting of greenhouse gas emissions in the permanent recovery solution to provide detailed emissions reporting supports contribution towards Christchurch District and Christchurch City Council’s emissions targets. There is also an opportunity to consider embodied and operational carbon targets in the development of a permanent recovery preferred design option.</p>

**Please explain any levels of service changes in this LTP, or that may be required in the future as a result of climate change. Provide LOS change statement:**

The current level of services set-out already begin to address accountability of the activity functions in relation to climate change vulnerability and greenhouse gas emissions.

At present, efforts concerning greenhouse gas emissions reduction are to be focused on establishment of an emissions baseline through monitoring and data collection. This information can then be used for effective future decision making in an effort to reduce greenhouse gas emissions.

With regard to climate change impacts and vulnerabilities, it is noted that the risks with respect to climate change is dependent on a variety of factors, some which Council has influence over and others that are driven on a global scale. Therefore, there is some uncertainty associated with the funding and extent of work requirements to sustain and improve effectiveness of the wastewater collection, treatment, and disposal system. If climate change impacts are realised sooner or differently than predicted, there is a risk of lesser performance for some current levels of service such as an increased frequency of overflows.

**Commentary on how climate change is incorporated into the existing levels of service is outlined below. It is noted that future levels of service may be developed following the greenhouse gas emissions baseline:**

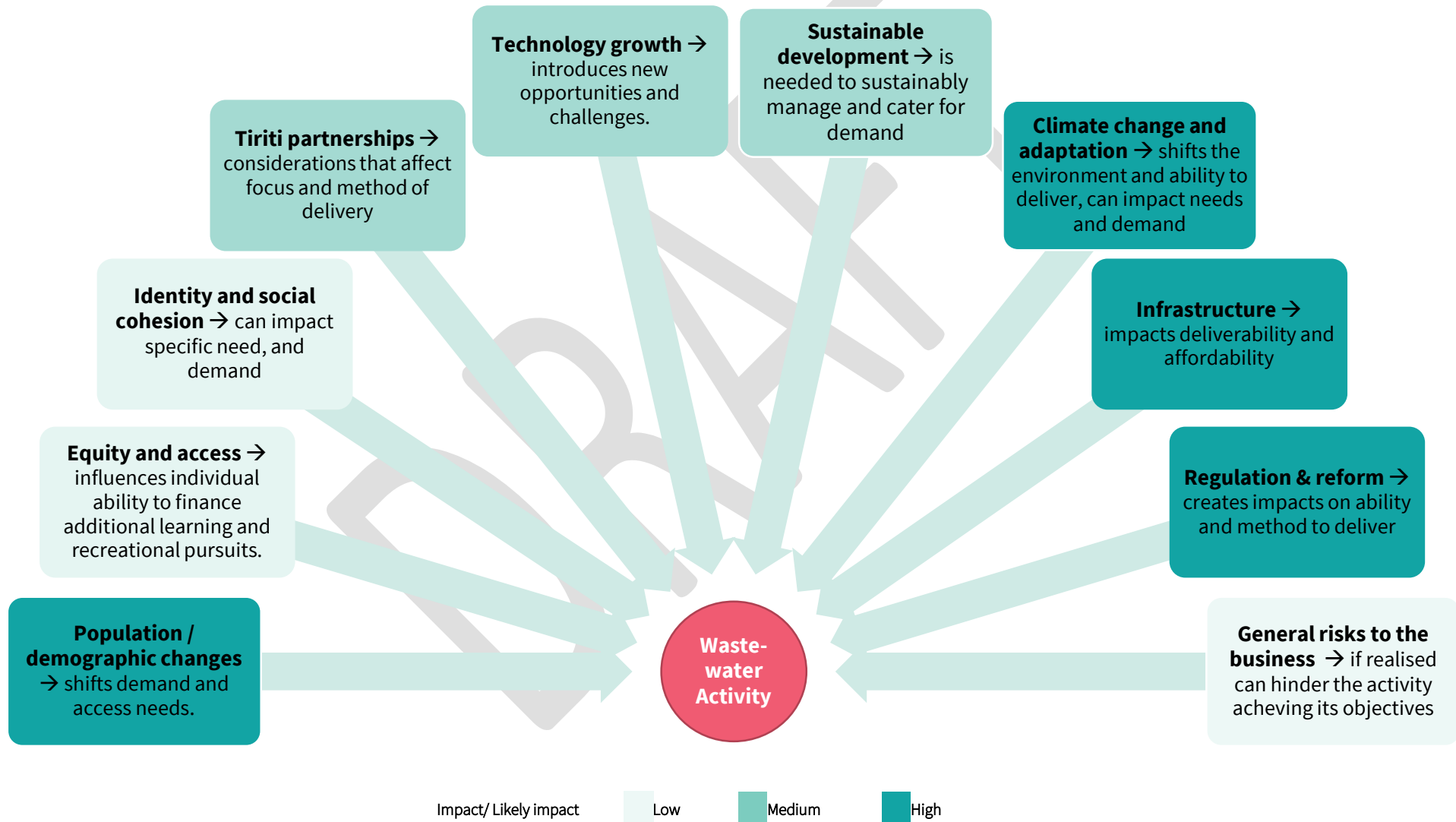
- Public health is protected from Council wastewater services
  - This level of service is centred on limiting dry weather wastewater overflows which are caused by blockages. Educational resources and messaging relating to wastewater use best practice also contribute to this service measure.
- Council operates wastewater services in a reliable manner
  - The reliability measure of service is dependent on management of the activity to respond to climate change impacts. It is noted that climate change may contribute to an increased number of complaints due to conditions such as greater odours due to temperature rises, and increased overflows due to flood events.
- Council has high wastewater discharge quality
  - During typical operation, wastewater is treated at the plant before being discharged to the environment. It is noted that climate change (particularly an increase in temperatures) may have a positive effect on the effectiveness of treatment processes and discharge quality. However, this element will be considered as part of the wastewater treatment plant permanent recovery work.
- Council operates wastewater services in a responsive manner
  - Climate change impacts include increased frequency and size of storm events which will likely contribute to an overwhelming of the wastewater network capacity and cause overflows. The current level of service aims to respond and notify overflows in a timely manner. Ongoing scheduled work to renew the network will help to address one of the contributing factors to the causes of overflows.
- Council wastewater networks and operations are sustainable
  - Adoption of processes to measure existing greenhouse gas emissions, considering options to reduce greenhouse gas emissions during the redevelopment of the wastewater treatment plant, and all contribute to this level of service.



### 3. How we are planning for future impacts

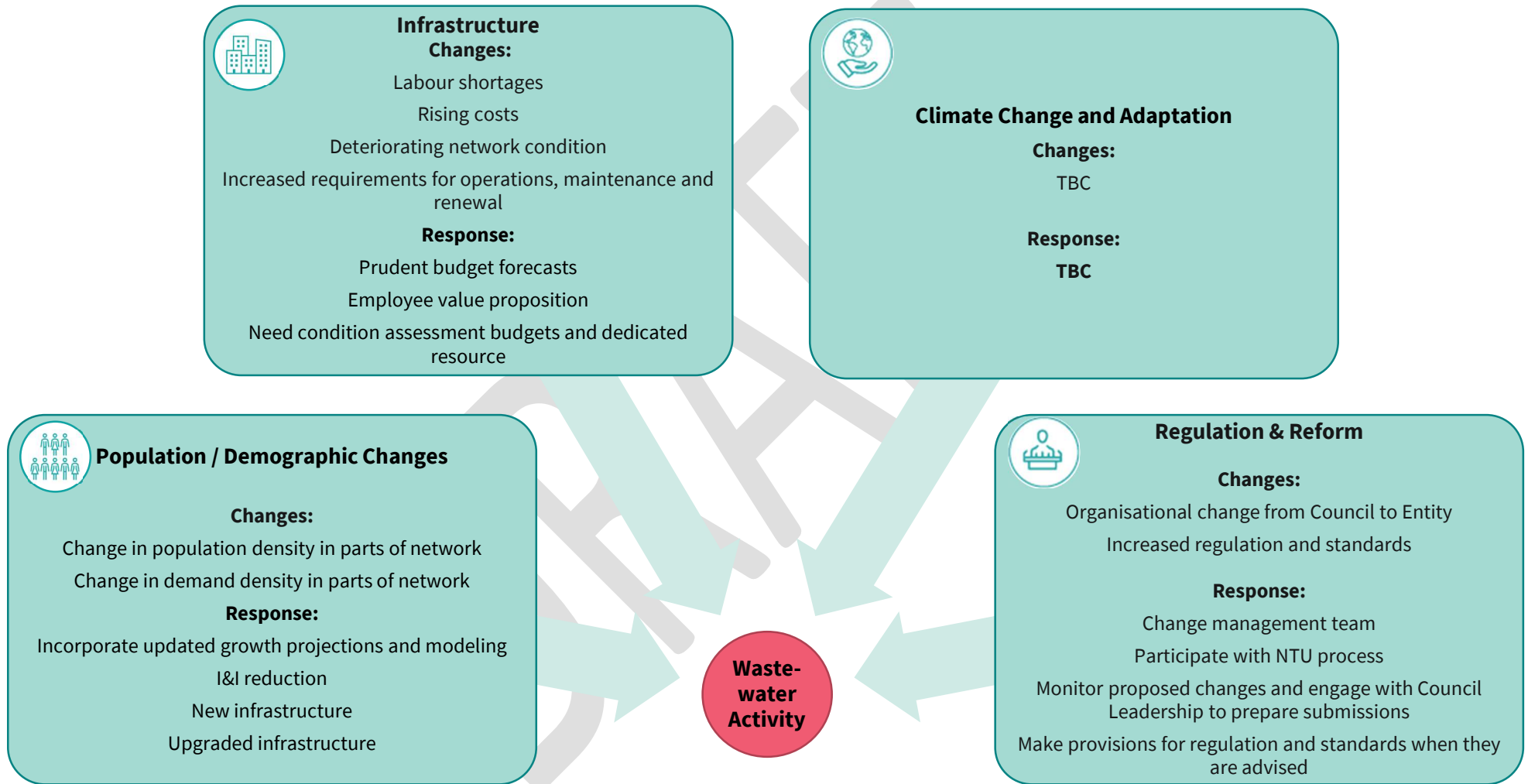
There are various factors influencing current and future demand for Council library facilities and the ability to deliver them. These are listed below.

#### 3.1. Issues impacting current and future activity demand and deliverability



## 3.2. The high impact issues and mitigations planned

The more prominent ones that in particular effect our Community Outcomes or Strategic Priorities are summarised on this page. For further details on issues, including the current status, future projections, likely impact and mitigations please see Appendix B.








## 4. Our levels of service

Council's Levels of Service (LoS) measures enable us to monitor and report against our outcomes and service performance. See Appendix A: Levels of Service Details for more detail.

### Services & Summary of Levels of Service

- ➔ Wastewater Collection, Treatment and Disposal have **11 Community (C) Levels of Service**. (These LOS community facing and will be published in our Statement of Service Provision)
- ➔ Wastewater Collection, Treatment and Disposal also have **17 Management (M) Levels of Service**. (These are LOS that are measured in the organisation to ensure service delivery)

 Council operates wastewater services in a reliable manner		 Council has high wastewater discharge quality	
<b>Service contributes to:</b> <ul style="list-style-type: none"> <li>A green, liveable city</li> </ul> <p>This is by generally maintaining the targets of the levels of service promised.</p>	<b>Levels of Service</b> This service has 3 Community LoS and 5 Management LoS. <ul style="list-style-type: none"> <li>Proportion of residents satisfied with the reliability and responsiveness of wastewater services</li> <li>Total number of complaints per 1000 properties received by Council per year about 4 aspects of waste water (odour, system faults, system blockages, and Council's response to any of these issues)</li> <li>Percentage of total wastewater gravity network pipework length at condition grade 5 (very poor)</li> <li>Annual number of properties affected by wastewater blowbacks due to maintenance work carried out by the Council or its contractors</li> <li>Number of complaints per 1,000 properties connected to the wastewater network per year for:               <ul style="list-style-type: none"> <li>Wastewater odour</li> <li>Wastewater system blockages</li> <li>Wastewater system fault complaints</li> </ul> </li> <li>Percentage of wastewater mains with high or very high consequences of failure inspected as scheduled in their lifespan</li> </ul>	<b>Service contributes to:</b> <ul style="list-style-type: none"> <li>A collaborative confident city</li> </ul> <p>This is by generally maintaining the targets of the levels of service promised.</p>	<b>Levels of Service</b> This service has 1 Community and 5 Management LoS. <ul style="list-style-type: none"> <li>5 measures regarding the number of abatement notices, infringement notices, enforcement orders and convictions regarding Council resource consents related to discharges from wastewater systems per year</li> <li>Proportion of externally reported sampling and testing completed by an IANZ accredited laboratory:</li> </ul>

 Council operates wastewater services in a responsive manner		 Council wastewater networks and operations are sustainable	
<b>Service contributes to:</b> <ul style="list-style-type: none"> <li>A green, liveable city</li> </ul> <p>This is by generally maintaining the targets of the levels of service promised.</p>	<b>Levels of Service</b> This service has 6 Community and 1 Management LoS. <ul style="list-style-type: none"> <li>2 targets for median time (in hours) from notification to arrival on-site for urgent faults on rural wastewater networks and urban wastewater networks</li> <li>2 targets for median time (in hours) from notification to arrival on-site for non-urgent faults on rural wastewater networks and urban wastewater networks</li> <li>2 targets for median time (in hours) from notification to attendance to resolution of overflows resulting from network faults</li> <li>Number of complaints regarding Council's response to issues with the Council wastewater system per 1,000 properties connected to the wastewater network per year</li> </ul>	<b>Service contributes to:</b> <ul style="list-style-type: none"> <li>A green, liveable city</li> </ul> <p>This is by generally maintaining the targets of the levels of service promised.</p>	<b>Levels of Service</b> This service has 6 Management LoS. <ul style="list-style-type: none"> <li>Power consumption - kWh of electricity per cubic metre wastewater treated at the Christchurch wastewater treatment plant</li> <li>Power consumption - kWh of electricity per kilogram of chemical oxygen demand (COD) removed at the Christchurch wastewater treatment plant</li> <li>Proportion of biosolids diverted from landfill (beneficially reused)</li> <li>Proportion of electricity used at the Christchurch wastewater treatment plant that is self-generated from treatment by-products</li> <li>10 year rolling historic ratio of renewals to depreciation (pipe reticulation)</li> <li>Increase Wastewater Asset Management Maturity towards agreed, appropriate level.</li> </ul>
 Public health is protected from Council wastewater services			
<b>Service contributes to:</b> <ul style="list-style-type: none"> <li>A collaborative confident city</li> </ul> <p>This is by generally maintaining the targets of the levels of service promised.</p>	<b>Levels of Service</b> This service has 1 Community LoS. <ul style="list-style-type: none"> <li>Number of dry weather overflows from wastewater systems per 1,000 connected properties per year</li> </ul>		

## 5. How assets will be managed to deliver the services

**The Wastewater portfolio is made up of reticulation (pipe and non-pipe assets), pump stations, lift stations, monitoring stations, odour control, and treatment assets. The Asset value of this Activity is \$5.6 Billion.**

### Managing our assets

Assets are provided by the activity by three key means: Asset improvement/growth, renewals, and vested assets from development. Development infrastructure is driven by private developers, meaning that the timing of new infrastructure, handover provisions and accounting for new operations and maintenance spending can be difficult to manage.

New and upgraded assets for growth and improved levels of service are generally required to meet compliance and regulatory requirements (eg the Water Services Regulator Act, the Water Services Act, the Water Services Entities Act, Freshwater NES) or in response to climate change or resilience to natural hazards.

Renewal projects are required to replace assets at the end of their useful lives to prevent critical and chronic asset failures and moderate the level of reactive operational and maintenance spending.

Council's largest capital expenditure category for this activity is for asset renewal, predominantly driven by the prioritised reticulation renewal programme (mains and sub-mains).

The Wastewater activity is primarily the responsibility of Council's internal Three Waters and Waste Unit. Council's Three Waters and Waste Network Operations Team operates the Christchurch Wastewater network and also operate the Banks Peninsula schemes and treatment plants. Maintenance activities on the network are carried out by Citycare Limited.

The Draft Infrastructure Strategy (IS) contains some key significant issues that affect our ability to manage ratepayer money wisely, including "*We need to*

### Looking forward

The longer-term strategic direction for wastewater collection, treatment and disposal is supported by Council's Te Wai o Tane - Integrated Water Strategy. This provides Council's vision, goals, objectives and suggested implementation actions for the city's water, wastewater and stormwater services. Wastewater asset management strategies are expected to align with the Integrated Water Strategy objectives.

The current context surrounding the wastewater activity will continue to influence the current and future outlook. This includes new water regulation, water industry service delivery reform, renewal of ageing infrastructure, responses to climate change, addressing risk and resilience, managing overflows, moving to data-rich smart technology solutions, engaging with customer expectations, and managing financial constraints.

The transition from Council delivery to a new Entity model as part of the ongoing water reforms will influence how the wastewater assets are managed going forwards. The new Entity is expected to be operational and responsible for service delivery by July 2026.

The new Entity will inherit the assets and the asset management practices of the wastewater activity, so Council's continuing focus on prudent investment and asset management over the period of transition is important for the long term success of the activity.

One of the key messages within the Infrastructure Strategy, Financial Strategy and the Mayors Letter of Expectation is ensuring that the capital programme is appropriate and deliverable.



*improve our understanding of our infrastructure so we can make the best decisions for our community*". This is an on-going issue with additional resource needed to make any improvements to data collection or management. There are a number of processes that need to be improved, for example the ability to collect and update condition data of our waterway linings to be able to create renewal models with accurate funding projections. Many of these issues are also reflected within the Risk Table of the Strategic Asset Management Activity Plan which is the key team responsible for guiding the organisation with all things asset management.

We acknowledge that while past performance is valuable for learning, it is crucial to focus on the changes required to enhance delivery processes and ensure the capital program's deliverability. Three Waters has and continues to make systematic changes to delivery that will enable the delivery of the Capital program. The following are changes being undertaken to improve the efficiency of capital delivery:

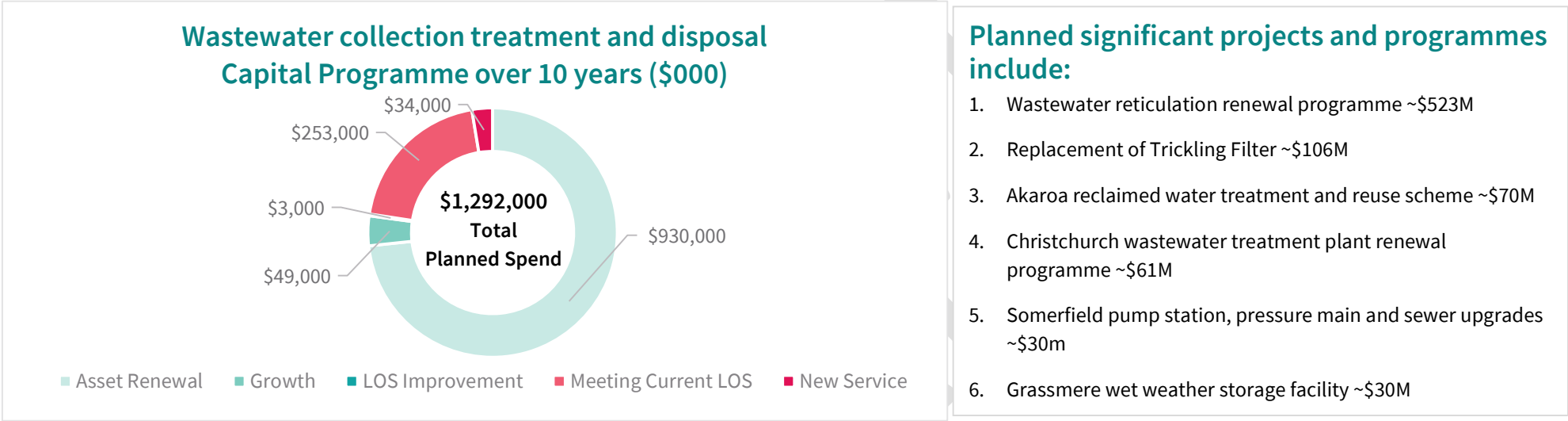
- Development of a 3-year delivery program
- Improved scheduling, resourcing and allocation
- Improved program management
- Pipe renewals delivered through a multi-year performance based contract with Tier 1 contractors
- Contingency funds to be held at program level for low risk projects
- Development of a capital works program that is agile and can react to project delays that will invariably occur on a capital works program of this size
- Increased investigations and designs ahead of plan, this will remove the risk of procurement delays impacting the capital program

By recognizing the need for improvement and implementing the necessary changes, we are confident in achieving successful outcomes for the program and it is deliverable. There are sufficient contractor resources in the market, the challenges in supply chain are being overcome through advanced planning, and design resources are available. This is all made possible with a well developed program and schedule, allowing our delivery partners to prepare and allocate resources to support our capital program. Reducing the capital program would increase the risk profile to Council. The program is developed to meet the level of service targets, avoid the sweating assets that would increase operational costs, and undertaking projects required to meet growth demands.

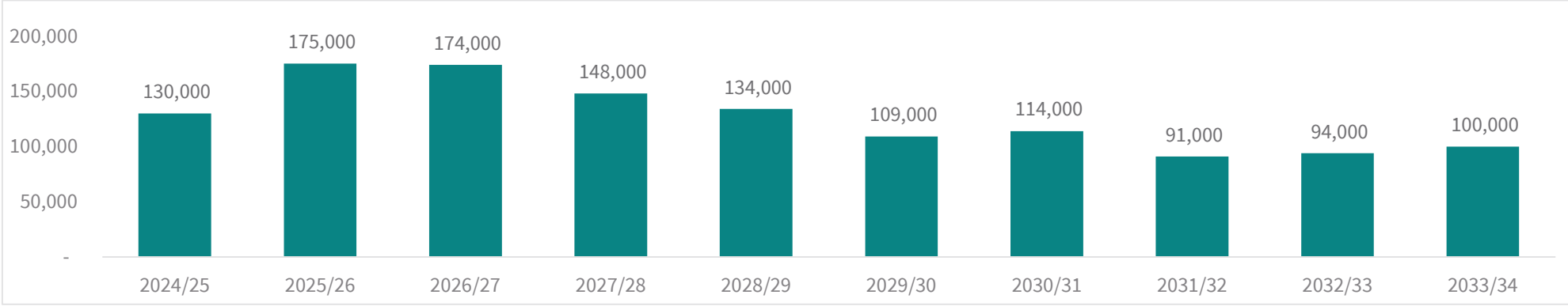
Please refer to the [Wastewater Asset Management Plan](#) for more information on these assets.

## 6. Capital expenditure and key capital projects

To ensure the continued ability to deliver on our activities and services, and contributing to our community outcomes and strategic priorities, projects have been planned and budgeted for the next 10 years. Please note this programme is based on the capital works programme provided to the National Transition Unit to reflect the unconstrained needs of the 3 Waters business with consideration for deliverability. *Note that Water Services Entities are expected to go live by July 2026.*



### Total Planned Capital Programme summary (\$000)



See [reference](#) for more detail on the Planned Capital Programme.

# 7. Financial resources needed

## 7.1. Resources needed

Indicative budgets are based on the 2023/24 Annual Plan projections for the balance of the current LTP. They are subject to year end capital carry forwards, and further refinement of inflation and other assumptions for the new LTP.

### WW Collection Treatment & Disposal

000's	Annual Plan 2023/24	LTP 2024/25	LTP 2025/26	LTP 2026/27	LTP 2027/28	LTP 2028/29	LTP 2029/30	LTP 2030/31	LTP 2031/32	LTP 2032/33	LTP 2033/34
<b>Activity Costs Before Overheads by Service</b>											
WW Collection, Treatment & Disposal	20,293	23,059	23,816	24,770	25,665	26,376	27,121	27,857	4,915	4,914	
	20,293	23,059	23,816	24,770	25,665	26,376	27,121	27,857	4,915	4,914	
<b>Activity Costs by Cost Type</b>											
Direct Operating Costs	6,248	7,642	7,918	8,165	8,411	8,251	8,460	8,658	1,293	1,293	
Direct Maintenance Costs	11,289	12,499	12,848	13,469	14,035	14,436	14,891	15,353	391	391	
Staff and Contract Personnel Costs	2,673	2,832	2,961	3,044	3,125	3,593	3,672	3,745	3,231	3,231	
Other Activity Costs	83	86	89	92	94	96	98	100			
Overheads, Indirect and Other Costs	35,067	37,040	38,950	39,982	41,686	43,477	44,405	45,548	19,735	19,564	
Depreciation	87,229	93,050	96,292	99,925	104,927	109,566	113,430	116,106	16,955	16,827	
Debt Servicing and Interest	10,479	13,506	16,205	18,847	20,778	21,790	22,174	22,593	8,597	8,610	
<b>Total Activity Cost</b>	<b>153,068</b>	<b>166,655</b>	<b>175,263</b>	<b>183,523</b>	<b>193,056</b>	<b>201,210</b>	<b>207,130</b>	<b>212,103</b>	<b>50,201</b>	<b>49,915</b>	
<b>Funded By:</b>											
Fees and Charges	6,649	6,710	6,931	7,125	7,318	7,493	7,658	7,811	(254)	(254)	
Grants and Subsidies											
Cost Recoveries	720	751	775	797	819	838	857	874			
Other Revenues											
<b>Total Operational Revenue</b>	<b>7,369</b>	<b>7,460</b>	<b>7,707</b>	<b>7,922</b>	<b>8,136</b>	<b>8,332</b>	<b>8,515</b>	<b>8,685</b>	<b>(254)</b>	<b>(254)</b>	
<b>Net Cost of Service</b>	<b>145,699</b>	<b>159,194</b>	<b>167,556</b>	<b>175,601</b>	<b>184,920</b>	<b>192,878</b>	<b>198,615</b>	<b>203,418</b>	<b>50,456</b>	<b>50,170</b>	
<b>Funding Percentages</b>											
Rates	95%	96%	96%	96%	96%	96%	96%	96%	101%	101%	100%
Fees and Charges	4%	4%	4%	4%	4%	4%	4%	4%	-1%	-1%	0%
Grants and Subsidies	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cost Recoveries	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other Revenues	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<b>Capital Expenditure</b>											
Improved Service Levels	8,367	26,491	45,766	48,261	33,390	18,413	1,262	2,936			
Increased Demand	1,446	1,371	1,637	620	1,663	1,580	1,188	1,301			
Renewals & Replacements	31,510	42,290	57,725	54,787	62,179	75,546	84,343	80,116			
<b>Total Activity Capital</b>	<b>41,324</b>	<b>70,152</b>	<b>105,127</b>	<b>103,669</b>	<b>97,232</b>	<b>95,539</b>	<b>86,793</b>	<b>84,353</b>			

## 7.2. Funding consideration and outcome

Section 101 Local Government Act 2002 - Funding Consideration. The following tables are based on the financials from the previous page.

Council funds the Wastewater Activity predominately through the general rate. This means that most funding comes from property owners, mostly on the basis of the rateable value of their property.

- **Operating expenditure** is largely funded through general rates as the Wastewater Activity benefits the community as a whole, and the benefits are received mostly in the same year the expenditure is incurred.
- **Capital expenditure** is largely funded from borrowing, with some funding from development contributions. Funding from rates is used to service the capital expenditure debt.

This funding approach is based on applying the following main funding principles to determine the funding policy.

### Funding principles considered for operating costs

Consideration for funding method	Result	Implication
<b>User-Pays</b> <i>the degree to which the Activity can be attributed to individuals or identifiable groups rather than the community as a whole</i>	High	
<b>Exacerbator-Pays</b> <i>the degree to which the Activity is required as a result of the action (or inaction) of individuals or identifiable groups</i>	Low	
<b>Inter-Generational Equity</b> <i>the degree to which benefits can be attributed to future periods</i>	Low	
<b>Separate Funding?</b> <i>the degree to which the costs and benefits justify separate funding for the Activity</i>	High	

### Outcome: Funding for operating costs

Source	Proportion funded*	Funding Mechanisms
Individual / Group	High	Targeted Rate (High) Fees & Charges (Low)
Community	Low	Grants & Other (Low)

### Funding of net capital expenditure

Net means after specific capital grants/subsidies/funding

Category of capex	How it is funded initially - Refer also to Financial Strategy	Proportion*
<b>Renewal/replacement</b>	<i>Mix of rates and debt, but mostly rates – because the renewal / replacement programme is continuous. In future years, debt repayment is funded by rates.</i>	71%
<b>Service improvement</b>	<i>Debt – because the benefits of capital expenditure on service improvement are received in future periods. In future years, debt repayment is funded by rates.</i>	27%
<b>Growth</b>	<i>Development contributions and debt – because the benefits of capital expenditure relating to growth are received in future periods. In future years, debt repayment is funded by a mix of development contributions and rates.</i>	2%

### Outcome: Initial funding for capital

Initial funding source	Proportion of capex funded*
Rates	96%
Borrowing	
Development Contributions	
Grants and Other	4%

\* Low = this source provides 0%-25% of the funding for this Activity, Medium = this source provides 25%-75% of the funding for this Activity, High = this source provides 75%-100% of the funding for this Activity

More information on the Council's Finance and Funding Policies can be found in the [Financial Strategy](#) and the [Revenue and Financing Policy](#)

## 8. Possible significant negative impacts on wellbeing



**This activity may have significant negative effects on social, economic, environmental or cultural wellbeing of the local community, now or in the future.**

Negative Effect	Mitigation
<b>Social</b>	
Social, cultural and environmental effects of wastewater overflows	<p>Maintain resource consent compliance.</p> <p>Reduce overflows through projects identified in the city-wide wastewater optimisation project.</p> <p>Fully calibrate wastewater network models through using recent flow monitoring data.</p> <p>Increase flow monitoring on wastewater pump stations and trunk sewers.</p> <p>Continue to implement processes for erecting signage and public notification where overflows could result in health risks.</p> <p>Provide on-site attenuation where required in capacity constraint areas.</p> <p>Clean and maintain siphons and wastewater mains in accordance with maintenance plan.</p> <p>Use flood modelling scenarios to identify areas at risk of inundation and undertake projects to reduce risk of flood water getting into the wastewater network.</p>
Impact of high numbers of midges at houses nearby to the Christchurch wastewater treatment ponds	<p>Midge control programme:</p> <ul style="list-style-type: none"> <li>- Jet boat and midge dredge on the ponds every fortnight during breeding season</li> <li>- Midge traps deployed and weekly monitoring programme</li> </ul>
Odour from wastewater networks and wastewater treatment plants	<p>Odour control systems installed in problem areas.</p> <p>Operate odour control systems in accordance with procedures including regular maintenance to remove build-ups of odour causing compounds.</p> <p>Robust work planning at wastewater treatment plants to avoid odour events.</p> <p>Replacement of trickling filter at Christchurch wastewater treatment plant</p> <p>Good design of wastewater networks to prevent creation of anaerobic conditions / adequate ventilation.</p> <p>Enforce trade waste bylaws.</p> <p>Monitor and control illegal discharge of chemicals and toxins to the wastewater system.</p>
<b>Economic</b>	
Cost of operating wastewater collection, treatment and disposal systems	<p>Documented processes and maintenance systems control costs.</p> <p>Improve network efficiency through asset renewal.</p>



	<p>Condition assessment and I&amp;I reduction to reduce operating and maintenance costs.</p> <p>Consider trenchless technology solutions during design phase decisions</p> <p>Assess and report cost efficiency and affordability.</p>
<b>Environmental</b>	
Potential for negative environmental effect of treated wastewater discharges	<p>Maintain resource consent compliance.</p> <p>Operate and maintain treatment plant and disposal services according to best practice.</p> <p>Monitor trade waste discharges to ensure unacceptable pollutants are not released to the WWTP.</p> <p>Monitor and control illegal discharge of chemicals and toxins to the wastewater system to avoid process failure.</p>
Dry and wet wastewater overflows	<p>Reduce overflows through projects identified in the city-wide wastewater optimisation project.</p> <p>Maintain / clean wastewater pipes that are prone to blocking.</p> <p>Repair or replace leaky wastewater pipes through renewal programme.</p>
Biosolids disposal to the environment	<p>Continue to dry biosolids to reduce volume, kill pathogens and enable reuse.</p> <p>Monitor trade waste discharges to ensure potential pollutants are not released to the wastewater treatment plants and carried over into the biosolids, maintaining quality of biosolids.</p> <p>Continue with beneficial reuse of biosolids.</p> <p>Implementation of biosolids master plan to reduce operational carbon</p>
Carbon generated from wastewater services	<p>Document Council's baseline emissions relating to wastewater collection and treatment.</p> <p>Implementation of biosolids master plan to reduce operational carbon</p>
<b>Cultural</b>	
Cultural impact of effluent discharge to water bodies	<p>Work collaboratively with Ngāi Tahu and local rūnanga to find cost effective solutions that address cultural concerns.</p> <p>Discharge treated wastewater from Akaroa and Duvauchelle to land instead of Akaroa Harbour.</p>

# Appendices

## A. Appendix A: Levels of Service detail

### A.1. Continuous Improvement Review (S17A) – Recommendations for change

No Continuous Improvement Reviews (S17A) have been identified for this Activity, noting that the Three Waters Reform programme is ongoing and that there will be a change to an entity model.

DRAFT

## A.2. Levels of Service: Performance measures in detail

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/ M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
Council operates wastewater services in a reliable manner										
11.0.1.16	C	Proportion of residents satisfied with the reliability and responsiveness of wastewater services	2023: TBD 2022: 59% 2021: 60% 2020: 66% 2019: 71%	Dunedin 67%	≥ 67%	≥ 67%	≥ 67%	≥ 67%	Resident satisfaction surveys	A green, liveable city
11.0.1.15	M	Annual number of properties affected by wastewater blowbacks due to maintenance work carried out by the Council or its contractors	2023: TBD 2022: 7 2021: 20 2020: 31 2019: 21	Blowbacks can occur in Christchurch wastewater network due to flat grades and remaining earthquake damage. No performance data found for blowbacks at other NZ Councils or wastewater service suppliers.	< 35	< 35	< 35	< 35	Count of total number of blowbacks due to maintenance work carried out by the Council or its contractors reported to the Council call centre in a financial year. Reported in monthly contract reports from the Contractor.	A green, liveable city
<div>Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.</div>										
11.0.1.10	C	Total number of complaints per 1000 properties received by Council per year about: a) Wastewater odour	2023: TBD 2022: 10.12 New measure in 2022 combining 4 individual performance measures	Medians from Water NZ National Performance Review 2021/22: 2.70 2018/19: 10.81 2015/16: 6	≤ 10.7	≤ 10.7	≤ 10.7	≤ 10.7	Total number of complaints received through Council’s call centre about odour, system faults, blockages or responses to complaints multiplied by 1000/number of connections.	A green, liveable city



LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
		b) Wastewater system faults c) Wastewater system blockages d) Council's response to any of these issues							Department of Internal Affairs, Wastewater Non-Financial Performance Measure 4.	
11.0.1.8	M	Number of wastewater odour complaints per 1,000 properties connected to the wastewater network per year	2023: TBD 2022: 0.62 2021: 0.06 2020: 0.41 2019: 0.36	2021/22: 0.58	≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6	The number of complaints about Council's wastewater network received through the call centre, expressed per 1,000 properties connected to the Council's wastewater system  Department of Internal Affairs, wastewater non-financial performance measure 4a	A green, liveable city
11.0.1.7	M	Number of wastewater system blockage complaints per 1,000 properties connected to the wastewater network per year	2023: TBD 2022: 1.74 2021: 0.18 2020: 1.88 2019: 4.17	2021/22: 1.61	≤ 6	≤ 6	≤ 6	≤ 7	The number of complaints about Council's wastewater system blockages received through the call centre, expressed per 1,000 properties connected to the Council's wastewater system  Department of Internal Affairs, wastewater non-financial performance measure 4c	A green, liveable city
11.0.1.9	M	Number of wastewater system fault complaints per 1,000 properties connected to the wastewater network per year	2023: TBD 2022: 7.76 2021: 0.58 2020: 3.30 2019: 0.56	2021/22: 0.51	≤ 4.0	≤ 4.0	≤ 4.0	≤ 4.0	The number of complaints about Council's wastewater network received through the call centre, expressed per 1,000 properties connected to the Council's wastewater system.	A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*



LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
									Department of Internal Affairs, wastewater non-financial performance measure 4b	
11.0.1.18	C	Percentage of total wastewater gravity network pipework length at condition grade 5 (very poor)	2023: TBD 2022: 11.54% Change in measurement method for 2021/22.	No comparable benchmarks found.	≤ 17%	TBC	TBC	≤ 26%	Lengths of pipe at condition grade 5 divided by total wastewater pipe length expressed as a percentage. Condition deterioration since inspection to be included when assigning a condition grade to a pipe.  Reported from Council asset management systems.	A green, liveable city
11.0.1.19	M	Percentage of wastewater mains with high or very high consequences of failure inspected as scheduled in their lifespan.	2023: TBD 2022: 66.7% Changed Metric in 2022 Past performance not comparable to new measurement methodology.	None found.	≥ 80%	TBC	TBC	≥ 80%	Considering only pipes scheduled for inspection in the CCTV inspection programme: Length of pipe inspected divided by total length of pipe.  Reported from Council Asset Management Systems.	A green, liveable city
Council has high wastewater discharge quality										
11.1.2.0	C	Number of abatement notices, infringement notices, enforcement orders and convictions regarding Council resource consents related to discharges from	2023: TBD 2022: 0 2021: 0 2020: 0 2020: 0 2019: 0	Average from Water NZ National Performance Review. 2015/16: 0.19	0	0	0	0	Resource consent compliance reports to ECan.  Department of Internal Affairs, wastewater non-financial performance measure 2.	A collaborative confident city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
		wastewater systems per year								
11.1.2.1	M	Number of abatement notices regarding Council resource consents related to discharges from wastewater systems per year	2023: TBD 2022: 0 2021: 0 2020: 0 2019: 0	Average from Water NZ National Performance Review. 2021/22: 22.5 2015/16: 0.15	0	0	0	0	Resource consent compliance reports to ECan. Resource consent compliance reports to ECan.  Department of Internal Affairs, wastewater non-financial performance measure 2a	A collaborative confident city
11.1.2.2	M	Number of convictions regarding Council resource consents related to discharges from the wastewater systems per year	2023: TBD 2022: 0 2021: 0 2020: 0 2019: 0	Average from Water NZ National Performance Review. 2021/22: ? 2015/16: 0	0	0	0	0	Resource consent compliance reports to ECan..  Department of Internal Affairs, wastewater non-financial performance measure 2d	A collaborative confident city
11.1.2.3	M	Number of enforcement orders regarding Council resource consents related to discharges from wastewater systems per year	2023: TBD 2022: 0 2021: 0 2020: 0 2019: 0	Average from Water NZ National Performance Review. 2021/22: 0 2015/16: 0	0	0	0	0	Resource consent compliance reports to ECan.  Department of Internal Affairs, wastewater non-financial performance measure 2c	A collaborative confident city
11.1.2.4	M	Number of infringement notices regarding Council resource consents related to	2023: TBD 2022: 0 2021: 0 2020: 0 2019: 0	Average from Water NZ National Performance Review. 2021/22: 5	0	0	0	0	Resource consent compliance reports to ECan. Department of Internal Affairs, wastewater non-financial performance measure 2b	A collaborative confident city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
		discharges from wastewater systems per year		2015/16: 0.04						
11.1.4	M	Proportion of externally reported sampling and testing completed by an IANZ accredited laboratory:	2023: TBD 2022: 100% 2021: 100% 2020: 100% 2019: 100%	Watercare Laboratory is IANZ accredited. Wellington Water uses IANZ accredited laboratories.	100%	100%	100%	100%	Number of samples tested by an IANZ accredited lab divided by total number of samples tested expressed as a percentage.	A collaborative confident city
Council operates wastewater services in a responsive manner										
11.0.1.1	C	Median time (in hours) from notification to arrival on-site for urgent faults on rural wastewater networks	2023: TBD 2022: 1 hour 3 minutes New measure in 2022	Median from Water NZ National Performance Review (combined urban and rural attendance times) 2018/19: 0.50 2015/16: 0.92	≤ 2	≤ 2	≤ 2	≤ 2	The median attendance time measured from the time that the Council receives notification of the fault to the time that service personnel confirm resolution of the fault. Reported in monthly contract reports from the Contractor. Department of Internal Affairs, wastewater non-financial performance measure 3a	A green, liveable city
11.0.1.2	C	Median time (in hours) from notification to arrival on-site for urgent faults on urban wastewater networks	2023: TBD 2022: 31 minutes New measure in 2022	Median Results from Water NZ National Performance Review (combined urban and rural response times) 2018/19: 0.50 2015/16: 0.92	≤ 1	≤ 1	≤ 1	≤ 1		A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
11.0.6.3	C	Median time (in hours) from notification to arrival on-site for non-urgent faults on rural wastewater networks	2023: TBD 2022: 71 hours 31 minutes 2021: 3 days 2 hours 47 minutes 2020: 1 day 13 hours 57 minutes 2019: 2 hours 15 minutes	Median from Water NZ National Performance Review (combined urban and rural attendance times)	≤ 120	≤ 120	≤ 120	≤ 120	The median attendance time measured from the time that the Council receives notification of the fault to the time that service personnel confirm resolution of the fault. Reported in monthly contract reports from the Contractor. Department of Internal Affairs, wastewater non-financial performance measure 3a	A green, liveable city
11.0.6.2	C	Median time (in hours) from notification to arrival on-site for non-urgent faults on urban wastewater networks	2023: TBD 2022: 28 hours 47 minutes 2021: 12 hours 7 minutes 2020: 2 days 11 hours 7 minutes 2019: 2 hours 17 minutes	Median Results from Water NZ National Performance Review (combined urban and rural response times)	≤ 120	≤ 120	≤ 120	≤ 120	The median attendance time measured from the time that the Council receives notification of the fault to the time that service personnel confirm resolution of the fault. Reported in monthly contract reports from the Contractor. Department of Internal Affairs, wastewater non-financial performance measure 3a	A green, liveable city
11.0.1.5	C	Median time (in hours) from notification to attendance of overflows resulting from network faults	2023: TBD 2022: 34 minutes 2021: 0.53 hours 2020: 0.54 hours 2019: 0.55 hours	Median Results from Water NZ National Performance Review. 2021/22: 0.33 2018/19: 0.55 2015/16: 0.92	≤ 1	≤ 1	≤ 1	≤ 1	The median response time measured from the time that the Council receives notification of the overflow to the time that service personnel reach the site. Reported in monthly contract reports from the Contractor. Department of Internal Affairs, wastewater non-financial performance measure 3a	A green, liveable city
11.0.1.6	C	Median time (in hours) from notification to resolution of	2023: TBD 2022: 2 hours 15 minutes 2021: 2.1 hours	Water NZ National Performance Review 2021/22: 3.3	≤ 12	≤ 12	≤ 12	≤ 12	The median resolution time measured from the time that the Council receives notification of the overflow to the time	A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
		overflows resulting from network faults	2020: 1.9 hours 2019: 2.41	2018/19: 2.8 2015/16: 3.0					that service personnel confirm resolution of the overflow. Reported in monthly contract reports from the Contractor. Department of Internal Affairs, wastewater non-financial performance measure 3b	
11.0.6.4	M	Number of complaints regarding Council's response to issues with the Council wastewater system per 1,000 properties connected to the wastewater network per year	2023: TBD 2022: No data found 2021: 0.014 2020: 1.88 2019: 0.10	2021/22: 2.70	≤ 1	≤ 1	≤ 1	≤ 1	The number of complaints about Council's wastewater system blockages received through the call centre, expressed per 1,000 properties connected to the Council's wastewater system Department of Internal Affairs, wastewater non-financial performance measure 4d	A green, liveable city
Public health is protected from Council wastewater services										
11.0.5.2	C	Number of dry weather overflows from wastewater systems per 1,000 connected properties per year	2023: TBD 2022: 0.43 2021: 0.52 2020: 0.60 2019: 0.54	Median from Water NZ National Performance Review. 2021/22: 0.1 2018/19: 0.99 2015/16: 1.56	≤ 0.7	≤ 0.7	≤ 0.7	≤ 0.8	Number of dry weather overflows per 1,000 properties connected to the wastewater network. Reported in resource consent compliance reports to ECan. Department of Internal Affairs, wastewater non- financial performance measure 1	A collaborative confident city
Council wastewater networks and operations are sustainable										
11.1.5.1	M	Power consumption - kWh of electricity per cubic metre wastewater treated	2023: TBD 2022: 0.236 2021: 0.22 2020: 0.23 2019: 0.22	None found	≤ 0.24	≤ 0.24	≤ 0.24	≤ 0.24	Total power consumption for the year to date divided by the volume of wastewater treated for the year to date.	A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
		at the Christchurch wastewater treatment plant								
11.1.5.2	M	Power consumption - kWh of electricity per kilogram of chemical oxygen demand (COD) removed at the Christchurch wastewater treatment plant	2023: TBD 2022: 0.399 2021: 0.339 2020: 0.35 2019: 0.36	None found	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	Total power consumption for the year to date divided by the mass of chemical oxygen demand removed in the year to date.	A green, liveable city
11.1.3.1	M	Proportion of biosolids diverted from landfill (beneficially reused)	2023: TBD 2022: 100% 2021: 97.6% 2020: 100% 2019: 96.1%	None found.	≥ 95%	≥ 95%	≥ 95%	≥ 95%	Mass of biosolids sent for beneficial reuse divided by total mass of biosolids produced expressed as a percentage.	A green, liveable city
11.1.6	M	Proportion of electricity used at the Christchurch wastewater treatment plant that is self-generated from treatment by-products	2023: TBD 2022: 61% 2021: 66.7% 2020: 60.7% 2019: 74%	Watercare: 26.7%	≥ 65%	≥ 65%	≥ 65%	≥ 65%	kWh of electricity used that is self-generated divided by the total power use in kWh expressed as a percentage.	A green, liveable city
11.1.10	M	10 year rolling historic ratio of renewals to depreciation (pipe reticulation)	2023: TBD 2022: 53.2% New measure added in 2022	100%: Institute of Public Works Engineering Australasia (IPWEA) Asset	≥ 45%	TBC	TBC	≥ 50%	Historic 10yr average renewals expenditure / Historic 10yr average depreciation	A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*



LOS number	C/M	Performance Measures Levels of Service (LOS)	Historic Performance Trends	Benchmarks	Future Performance Targets				Method of Measurement	Community Outcome
					Year 1 2024/25	Year 2 2025/26	Year 3 2026/27	Year 10 2033/34		
				management financial indicator						
11.1.11	M	Increase Wastewater Asset Management Maturity towards agreed, appropriate level.	2023: TBD 2022: 81 New measure added in 2022 2021: No data found 2020: 81	NZ Treasury Investor Confidence Rating (ICR) Asset Management Maturity Assessment (AMMA) Tool	≥ 81	≥ 81	≥ 81	≥ 90	Conduct assessment on alternate years Asset Management Maturity assessment (AMMA) to be conducted every two years by an external assessor until appropriate level of maturity target is achieved.	A green, liveable city

*Note: All Water Services Entities are expected to go live between 1 July 2024 and 1 July 2026. LOS targets may not be applicable beyond year 2 of this plan.*

DRAFT

## A.3. Levels of Service changes from Long-term Plan 2021-31, and why

### Deletions

This Activity has no deleted levels of service.

### New

This Activity has no new levels of service.

### Amendments

Activity / Level of Service	Change from 2021-31 LTP	Reason/Rationale	Options for Consultation
LoS 11.0.1.16 - Proportion of residents satisfied with the reliability and responsiveness of wastewater services Previous target: $\geq 65\%$ for 2023/24 and $\geq 60\%$ for 2030/31	Increase the LTP2024 targets to $67\%$ for all years	This would bring the metric in line with other examples found from other Councils. It is also a percentage score that has been exceeded in recent years so should be achievable with appropriate funding.	N/A
LoS 11.0.6.4 - Number of complaints regarding Council's response to issues with the Council wastewater system per 1,000 properties connected to the wastewater network per year Target: $\leq 1$	Change all LTP targets to $\leq 1$ .	This brings the target metric closer to recorded benchmark figures. It is also a target that has been exceeded in recent years so should be achievable with appropriate funding.	N/A
LoS 11.1.10 - 10 year rolling historic ratio of renewals to depreciation (pipe reticulation) Previous 2023/24 target: $\geq 50\%$	Change the 2024/25 target to $\geq 45\%$ .	This brings the metric in line with the current predicted 10 year rolling average of the ratio of renewals to depreciation.	If the communities want this target to be higher, then there will need to be a corresponding increase in renewal budgets.

## B. Appendix B: Possible issues impacting the Activity & the mitigations planned

### B.1. Changing customer needs

#### Population / demographic changes (high impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans/actions
Population growth	389,300 in 2022	<ul style="list-style-type: none"> <li>Council's wastewater master plan is based on a population projection of 450,000 in 2068.</li> </ul>	<ul style="list-style-type: none"> <li>Existing wastewater pipes and pump stations to be upgraded to accommodate growth</li> <li>If upgrades do not occur in line with growth, the wastewater system will be overloaded and can lead to overflows into the environment</li> </ul>	<ul style="list-style-type: none"> <li>Fund WW network and pump station upgrades as aligned to the growth projection</li> <li>Incorporate updated growth projections and modelling into planned wastewater works</li> </ul>
Population growth (general and in specific areas)		<ul style="list-style-type: none"> <li>High demand for intensification in the Shirley and Aranui vacuum sewer catchment areas</li> </ul>	<ul style="list-style-type: none"> <li>The Shirley and Aranui vacuum sewer systems do not have capacity to accommodate growth</li> <li>The problem is exacerbated by high inflow and infiltration from private properties</li> </ul>	<ul style="list-style-type: none"> <li>Apply an infrastructure qualifying matter in areas where capacity has already been exceeded and where funding not assigned to upgrade infrastructure (vacuum sewer systems)</li> <li>Allow only like-for-like development</li> <li>Initiate infrastructure planning to determine the options and costs for increasing capacity to allow intensification in these areas</li> <li>Encourage inspection and repairs of private sewer drains</li> </ul>

Ageing population		•	• Recognized but limited impact on wastewater demand	•
Family/household structure		•	• Recognized but limited impact on wastewater demand	•
Diversity		•	• Zero impact on wastewater demand	•
Shifts within city (e.g., growing communities, possible future managed retreat)		<ul style="list-style-type: none"> <li>It is considered that changes will be seen in the number and location of growth as a result of Plan Change 14 (Housing and Business Choice Plan Change) and concurrent spatial planning activities;</li> <li>It is as yet uncertain what the quantum and rate of intensification will be across the City</li> </ul>	<ul style="list-style-type: none"> <li>Growth may exceed the capacity of infrastructure at a localised level – and can result in wastewater overflows;</li> <li>The WW Master Plan on which this Activity Plan is based does not provide adequately for the upgrades that may be needed to accommodate growth</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater master planning to be reviewed and updated with population growth changes</li> <li>The wastewater master plan to be extended to consider the upgrade requirements of the local pipe network (DN150 pipes) to accommodate intensification</li> </ul>

### Equity and access (low impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Incomes/discretionary income	In 2019, the city's median equivalised household income was \$62,300	<ul style="list-style-type: none"> <li>Rising cost of living putting pressure on rates increases</li> </ul>	<ul style="list-style-type: none"> <li>Reduction in levels of service if required funding is not in place</li> </ul>	<ul style="list-style-type: none"> <li>Front foot public debate and engage with customers regarding the value of wastewater services</li> </ul>
Growing gap rich and poor	The bottom 20% of households had a median income of \$32,300. The top 20% of households had a median income of \$105,700.	<ul style="list-style-type: none"> <li>Household charges subject to change with new legislation</li> </ul>	<ul style="list-style-type: none"> <li>Change in funding model and perception will bear differently on different customers</li> </ul>	<ul style="list-style-type: none"> <li>Any changes in charging mechanisms will be led by new legislation and water service Entity</li> </ul>
Physical access		•	• No significant impact	•
Equity access across city		•	• No significant impact	•

## Identity and social cohesion (low impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Cultural identity		<ul style="list-style-type: none"> <li>Council response to mana whenua cultural objectives (land discharge of treated effluent)</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Converting to land based discharges of treated effluent where possible</li> <li>New Akaroa WW Reclaimed Water Treatment and Reuse Scheme</li> <li>New Duvauchelle WW Reclaimed Water Treatment and Reuse Scheme</li> </ul>
Sense of place and community		<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>No significant impact</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
Rising crime, rallies, protests (safety)		<ul style="list-style-type: none"> <li>Increased vandalism and theft</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Acknowledge need to invest in security features</li> </ul>
Safety staff and public		<ul style="list-style-type: none"> <li>Increased risk for frontline staff and contractors</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Acknowledge need to invest in training and staff safety protocols</li> <li>Budget for additional operational costs</li> </ul>

## B.2. Tiriti Partnerships (medium impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Mana whenua cultural awareness		<ul style="list-style-type: none"> <li>Increased engagement and collaboration with mana whenua</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Review and update the 3W Strategy Implementation Plan with mana whenua</li> </ul>
Te mana o te wai		<ul style="list-style-type: none"> <li>Changes required to give effect to Te mana o te wai</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Review and update 3W Strategy Implementation Plan with respect to Te mana o te wai</li> </ul>

				<ul style="list-style-type: none"> <li>Increased level of engagement and planning on individual project levels</li> </ul>
--	--	--	--	---

### B.3. Technological growth (medium impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Changing technology		<ul style="list-style-type: none"> <li>Better monitoring data</li> <li>New methods of data collection</li> <li>More digital solutions</li> <li>Alternate pipe network solutions</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Smart Water Network - improved operations, asset management, planning, safety, value)</li> <li>Smart customer water meters</li> <li>Smart local pressure sewer systems</li> <li>Vacuum sewer monitoring system</li> </ul>
Digital divide		<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>No significant impact</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
Digital security		<ul style="list-style-type: none"> <li>More wastewater data available and administered by Council</li> <li>More sophisticated hacking and cyber-attack technology and techniques</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Maintain separate operations communication network</li> <li></li> </ul>

### B.4. Resilience and environmental considerations

#### Climate change & adaptation (high impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
--------------	------------------	--------------	--------------------	------------------



Sea Level Rise		<ul style="list-style-type: none"> <li>Some coastal wastewater assets may be at risk</li> <li>Limitations in asset life due to corrosion from saltwater</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<p>Options being considering to reduce the risks to the Wastewater Collection, Treatment and Disposal activity and the community posed by those climate risks include:</p> <ul style="list-style-type: none"> <li>Request (in terms of the Water Supply and Wastewater Bylaw 2022) the inspection and repair of sewer drains on private properties to avoid rainwater or groundwater from entering the wastewater system</li> <li>Provide educational resources and messaging relating to wastewater use best practices such as not flushing wet wipes and separation of fats and oils</li> <li>Undertake a programme to identify and eliminate tree planting over pipes to avoid damage that leads to groundwater infiltration</li> <li>Reduce stormwater and potentially seawater inflow and infiltration through continuance of renewals programme</li> <li>Fund the implementation of projects identified to reduce the frequency of wastewater overflows</li> <li>Explore options for increased resilience of the wastewater system against climate change impacts and fluctuating operational statuses.</li> </ul>
Rainfall and Flooding		<ul style="list-style-type: none"> <li>Increased inflow and infiltration due to more frequent storm events that could increase overflow frequency</li> <li>Higher groundwater levels leads to increased infiltration that could increase overflow frequency</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	
Heat, Drought, Fire		<ul style="list-style-type: none"> <li>Increased odours in wastewater network because of higher temperatures and microbial activity</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	
Extreme rainfall events		<ul style="list-style-type: none"> <li>Increase in overflow events resulting in untreated wastewater flows to the environment have potential public health and environmental health impacts</li> <li>Potential untreated overflow discharges into the ocean could cause beach closures or deterioration of water quality of receiving waters, impacting the mauri of the water for Māori and opportunities to practice mahinga kai</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	
Population movement due to managed retreat and adaptation		<ul style="list-style-type: none"> <li>Yet to be advised</li> </ul>	<ul style="list-style-type: none"> <li>Dependent on decisions</li> <li>Some wastewater assets in coastal environment may have</li> </ul>	General summary

			to be relocated (Rapaki, Cass Bay)	An initial focus on infrastructure that supports: <ul style="list-style-type: none"> <li>• Short-term (now, and LTP years 1-3)</li> <li>• Medium term (LTP years 4-6)</li> <li>• Longer term (LTP years 6 – onwards)</li> </ul>
Increasing numbers of extreme weather events change utilisation of physical and digital assets		•	<ul style="list-style-type: none"> <li>• Higher frequency of wastewater flows</li> <li>• Under sizing of projects to reduce wastewater overflows</li> </ul>	<ul style="list-style-type: none"> <li>• Fully calibrate wastewater network models through using recent flow monitoring data.</li> <li>• Increase flow monitoring on wastewater pump stations and trunk sewers.</li> <li>• Regular updates to the wastewater optimisation master plan to consider climate change impacts</li> </ul>
Increased community expectations of information and engagement		•	•	•

### Sustainable development (medium impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Managing GHG emissions (per table above)		<p>Key sources of greenhouse gas emissions from this activity includes:</p> <ul style="list-style-type: none"> <li>• Processes and activities associated with wastewater treatment, including: <ul style="list-style-type: none"> <li>○ Primary, secondary, and tertiary treatment within the treatment process – biological processes (~47% of total CWTP plant emissions)</li> </ul> </li> </ul>	•	<p>Wastewater Collection, Treatment and Disposal are taking the following actions to reduce greenhouse gas emissions:</p> <p>***As per table (Section 2.3)</p>

		<ul style="list-style-type: none"> <li>○ Treated effluent discharged to ponds and to the marine environment (~49% of total CWTP plant emissions)</li> <li>○ Biogas and biosolids production and disposal (~4% of total CWTP plant emissions)</li> <li>• Energy consumption in the form of electricity used for wastewater pumping, aeration, heating, etc</li> <li>• Travel associated with operations and maintenance activities</li> <li>• Untreated wastewater overflows into the environment during high rainfall events (potential to increase with climate change)</li> </ul>		
Ethical markets & procurement		<ul style="list-style-type: none"> <li>• Change in political and cultural expectations about how procurement happens (local and mana whenua suppliers)</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Use indicator score for measuring local supply chain including community benefits</li> <li>• 3 Waters reform will likely prompt change that comes with new Entity, water regulator, and economic regulator</li> </ul>
Resilience & risk		<ul style="list-style-type: none"> <li>• Increased expectation for climate resilient to be built into infrastructure solutions</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	Develop 3 waters climate change resilience framework
Natural hazards		<ul style="list-style-type: none"> <li>• Flood, earthquake, tsunami, and fire risk continue to be planned for – with an increasing hazard impact exacerbated by climate change</li> <li>• Increasing design and planning parameters to further include climate change predictions</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	Maintain natural hazard risk and resilience framework, and incorporate 3 waters climate change resilience framework

Triple bottom line		<ul style="list-style-type: none"> <li>Increased expectation for financial, social and environmental bottom line reporting</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	Continue to incorporate triple bottom line analysis and reporting at a strategic planning level
--------------------	--	---	--	---

## B.5. Infrastructure (high impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Delivering on what we say and looking after what we've got		<ul style="list-style-type: none"> <li>Increased labour shortages</li> <li>Rising costs</li> <li>Increases in operations and maintenance, and renewals due to ageing asset base</li> </ul>	<ul style="list-style-type: none"> <li>Reductions in levels of services</li> </ul>	<ul style="list-style-type: none"> <li>Prudent budget forecasts</li> <li>Improve employee value proposition</li> <li>Streamline processes to deliver maintenance and renewal</li> </ul>
Resilience to impacts of climate change		<ul style="list-style-type: none"> <li>Increased infiltration and inflow (rising groundwater/high intensity rainfall events)</li> <li>Uncertain scenarios around coast area servicing and/or retreat. Waiting for policy direction</li> <li>Unknown extent of climate change impacts but future policy, actions and directives are inevitable</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure capacity issues</li> <li>Unfeasible to service some areas</li> </ul>	<ul style="list-style-type: none"> <li>Continue to prioritise renewals around I&amp;I risks</li> <li>Increasing renewal programme</li> <li>Waiting on Central Government direction. Then developing and following policy on managed retreat</li> </ul>
Planning and investing for growth		<ul style="list-style-type: none"> <li>Population increase</li> <li>Population intensification in parts of the network</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure capacity issues</li> </ul>	<ul style="list-style-type: none"> <li>I&amp;I reduction</li> <li>New infrastructure to increase capacity</li> <li>Upgrade existing infrastructure to increase capacity</li> </ul>
Understanding and maintaining the condition of our infrastructure		<ul style="list-style-type: none"> <li>Deterioration of network condition</li> <li>Increased percentage of pipes with a condition grade of 4 or 5 (poor and very poor)</li> </ul>	<ul style="list-style-type: none"> <li>Increased failures</li> </ul>	<ul style="list-style-type: none"> <li>Prudent budget forecasts</li> <li>Sufficient capital expenditure for renewal</li> </ul>

				<ul style="list-style-type: none"> <li>Acknowledge the need for specific condition assessment budgets and a dedicated resource</li> </ul>
--	--	--	--	---

## B.6. Regulations & reform (high impact)

Issue/driver	Present Position	→ Projection	Impact on services	Mitigating plans
Three Waters reform		<ul style="list-style-type: none"> <li>Organisational change and upheaval with move from Council delivery to new Entity model</li> <li>Increased wastewater regulation and standards</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Change management team</li> <li>Participate with the National Transition Unit Process</li> <li>Monitor proposed changes and engage with Council Leadership to prepare submissions</li> <li>Make provisions for regulation and standards when they are advised</li> </ul>
Resource Management reforms		<ul style="list-style-type: none"> <li>Unknown state</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>To be developed</li> </ul>
Future for Local government		<ul style="list-style-type: none"> <li>Unknown state</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>To be developed</li> </ul>

## B.7. Identified Business Unit Risks

The main risks to the activity have been discussed in Section 3.XX of the Wastewater Asset Management Plan. Below are some risks that are more general and affect the 3-Waters Business. Risks are recorded and periodically reported to the Executive Leadership Team and the Audit and Risk Management Committee.

Strategic priorities risk is associated with	Risk Description	Assessed Risk Level			Controls / Mitigations	Residual Risk Rating
		Impact	Likelihood	Inherent Risk Level		
<ul style="list-style-type: none"> <li>Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents.</li> </ul>	<p><b>Economic Environment on Capital Programme</b></p> <p>There have been significant financial increases affecting Council due to changes in the current economic environment that started with the onset of the Covid-19 Pandemic.</p> <p>There is a risk of:</p> <ul style="list-style-type: none"> <li>Capital programme forecasts will be underdeveloped requiring additional funding.</li> <li>Inability to source key materials/products.</li> <li>Failure to meet levels of service</li> <li>Inability to meet compliance requirements (CSNDC conditions for water quality)</li> </ul>	Moderate	Highly Likely	7	<ul style="list-style-type: none"> <li>Ensure realistic contingency amounts are included in the project/programme estimates.</li> <li>Ensure that suitable escalation calculations are carried out and used.</li> <li>Ensure projects are carried out in a timely fashion to prevent undue escalation during the design phase of the project.</li> <li>Consider having a stand-alone "escalation" budget that can be called upon to top up projects if needed over the financial year and returned to the general Council funds if not required.</li> </ul>	Medium
<ul style="list-style-type: none"> <li>Manage ratepayers' money wisely, delivering quality core services to the whole</li> </ul>	<p><b>Three waters reform</b></p> <p>There is still general uncertainty on the reform process, what staff will be affected, what positions will be required in the new entity</p>	Moderate	Likely	6	<ul style="list-style-type: none"> <li>More open and transparent information to be provided from staff.</li> <li>Increased involvement of key 3-waters staff with NTU workshops.</li> <li>Allow NTU staff to liaise directly with staff rather than the reform team.</li> </ul>	medium



Strategic priorities risk is associated with	Risk Description	Assessed Risk Level			Controls / Mitigations	Residual Risk Rating
		Impact	Likelihood	Inherent Risk Level		
community and addressing the issues that are important to our residents.	<p>and how work flows will be managed in the future.</p> <p>There is a risk of:</p> <ul style="list-style-type: none"> <li>Staff well-being and stress levels as the process continues</li> <li>Disengagement of staff.</li> <li>Loss of institutional knowledge if staff leave.</li> <li>Lack of advice from the National Transition Unit (NTU) to give and surety to staff.</li> <li>Continuation of the current process with lack of key 3-waters staff involvement in meetings/workshops led by NTU may lead to staff feeling disconnected with the reform process.</li> </ul>				<ul style="list-style-type: none"> <li>More staff involvement in the processes of e.g. data provision and high level meetings.</li> <li></li> </ul>	
<ul style="list-style-type: none"> <li>Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing,</li> </ul>	<p><b>Staff wellbeing</b></p> <p>If the level of organisational demands continues to be highly ambiguous and reactive, then staff will feel pressured and have unreasonable workloads.</p> <p>There is a risk of:</p>	Moderate	Highly Likely	7	<ul style="list-style-type: none"> <li>Increased leadership engagement with teams on wellbeing</li> <li>Increased EAP, People and Culture connections</li> <li>Wellbeing activities embedded into day-to-day working culture.</li> <li>Development of unit programme of work to prioritise activities and manage individual workloads.</li> <li></li> </ul>	Medium

Strategic priorities risk is associated with	Risk Description	Assessed Risk Level			Controls / Mitigations	Residual Risk Rating
		Impact	Likelihood	Inherent Risk Level		
<b>accessibility and connection.</b> <ul style="list-style-type: none"> <li>• <b>Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Staff burnout and related health issues</li> <li>• Absenteeism and productivity impacts</li> </ul> <p>Increased recruitment costs if retention impacted</p>					
<ul style="list-style-type: none"> <li>• <b>Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection.</b></li> <li>• <b>Manage ratepayers' money wisely, delivering</b></li> </ul>	<p><b>Recruitment and retention of skilled staff</b></p> <p>If Council and the activity have a high level of staff turnover, then there is less skilled and experienced staff to deliver the activities.</p> <p>There is a risk of:</p> <ul style="list-style-type: none"> <li>• Staff wellbeing negatively impacted by workload changes.</li> <li>• Level of service achievement is impacted.</li> </ul>	Moderate	Likely	6	<ul style="list-style-type: none"> <li>• Increased staff wellbeing programmes</li> <li>• Work with staff on personal development opportunities including internal secondments.</li> <li>• Use exit interviews to identify opportunities for improvement.</li> <li>• Development of leadership opportunities and training</li> <li>• Increase remuneration to closer match the private sector.</li> </ul>	Low

Strategic priorities risk is associated with	Risk Description	Assessed Risk Level			Controls / Mitigations	Residual Risk Rating
		Impact	Likelihood	Inherent Risk Level		
quality core services to the whole community and addressing the issues that are important to our residents.	Increased cost of external resourcing to achieve schedule requirements					
<ul style="list-style-type: none"> <li>Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents.</li> </ul>	<p><b>Asset Management Policy advice and performance</b></p> <p>If Asset Management advice is not understood and taken into consideration across the organisation, then Elected Members and Community expectations of Council Assets will not be met.</p> <p>There is a risk of;</p> <ul style="list-style-type: none"> <li>Clear asset management priorities will not be embedded at the needed operational level to see the required changes.</li> <li>Decision-making is not informed by evidence-based advice.</li> <li>The necessary investment into asset management will not occur.</li> </ul>	Major	Highly Likely	8	<ul style="list-style-type: none"> <li>Develop a comprehensive communication plan to ensure that Asset Management advice is effectively communicated to all relevant stakeholders, including elected members, staff, and the community.</li> <li>Use clear and concise language to explain Asset Management principles, objectives, and benefits. Avoid jargon and technical terms that may hinder understanding.</li> <li>Foster a collaborative culture by creating forums, workshops, or focus groups where stakeholders can exchange ideas, share experiences, and contribute to Asset Management discussions.</li> <li>Provide training programs and resources to enhance the knowledge and skills of staff members and elected members regarding Asset Management principles, processes, and decision-making frameworks</li> </ul>	High

Strategic priorities risk is associated with	Risk Description	Assessed Risk Level			Controls / Mitigations	Residual Risk Rating
		Impact	Likelihood	Inherent Risk Level		
	Councils Asset management will not align with national legislation or best practice					