

Long Term Plan 2024-34 Joint development briefing

Aug 29, 2023

Long Term Plan 2024-34

- This briefing is one of a series held as part of the development of the Long Term Plan 2024-34.
- **All discussions involve draft material and reflect a position on the day.**
- Decisions will be set out in the draft Long Term Plan, which will be adopted for consultation in February 2024.
- This recording is intended to provide residents with an overview and understanding of the big picture issues, and therefore may not include all detail and matters discussed at the briefing.

Long Term Plan 2024-34 Activity Plan

Water Supply

- *Council water supplies are safe to drink*
- *Council provides high quality water*
- *Council operates water supplies in a reliable manner.*
- *Council operates water supplies in a responsive manner.*
- *Council water supply networks and operations are sustainable*

Adopted XX and XX June 2024

1. What this activity delivers

We're investing in Christchurch's future

This document explains what we propose to invest in over the next 10 years to manage the supply of water and ensure that it is safe to drink. This includes a summary of the investment required to meet future demand, undertake renewals, operate and maintain the infrastructure to deliver the services, and the steps we are taking to demonstrate safe drinking water in Christchurch and Banks Peninsula. It gives Christchurch residents the opportunity to join the conversation by telling us what matters to them.

What we provide

Christchurch City Council (Council) has a responsibility to ensure that its water services, infrastructure and water are managed in a way that supports the environmental, social, cultural and economic wellbeing of current and future generations. Council is responsible for the supply of water that is safe to drink.

The Council supplies water through approximately 170,000 residential and business connections, through seven urban water supply schemes and six rural water supply schemes. We supply in excess of 55 billion litres of water in a typical year, which is the equivalent of around 22,000 full Olympic size swimming pools.

This activity includes the following services:

	Council water supplies are safe to drink Water Safety Plans are used to demonstrate that the drinking water is safe. They assess and manage risks to the safety of drinking water associated with a particular drinking water supply. One of the biggest risks to our water supply is backflow. Backflow prevention devices prevent potentially contaminated water flowing from private property back into the public water supply.
	Council provides high quality water In the water industry, water quality refers to taste, smell and appearance. High quality drinking water therefore does not have any unpleasant taste or smell and appears clear. Council monitors performance through an annual resident satisfaction survey and also reports the number of customer complaints related to water clarity, odour and taste.
	Council operates water supplies in a reliable manner This means that water is available when users need it. This contributes to the community outcome of modern and robust city infrastructure and community facilities.
	Council operates water supplies in a responsive manner This means Council staff and contractors respond to customer feedback and quickly resolve issues as they arise. By operating in a responsive manner, Council can reduce the loss of water and the disruption caused to nearby residents.
	Council water supply networks and operations are sustainable Council seeks to operate water supply networks in a way that protects the environment through sustainable practices and demonstrating environmental stewardship. Council measures progress towards this outcome by monitoring and reporting the average consumption of drinking water per person, and the percentage of water lost through leaks in the water supply network. This contributes to the community outcome of the sustainable use of resources.



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

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 water supply activities that Council undertakes include:

Water supply pressure, flow and water source level monitoring

Ongoing monitoring for resource consent compliance, billing, network analysis, leak detection and transient mitigation.

Pressure management

Operating the networks within minimum and maximum pressures to balance customer water pressure, operational costs and sustainable water use.

Security of water supply

Water sources are managed, within consent limits, to ensure sufficient water is available to customers. This involves the management of long term water availability and also short term (seasonal) fluctuations. Informing customers of planned outages or any limitations on supply volumes.

Water meter management

Commercial and industrial water meters measure consumption so that customers can be charged appropriately. Water meter management includes meter reading, repair, and replacement. Replacing old meters with smart meters provides an opportunity to improve water demand management.

Water quality management

Routine sampling provides compliance with the Drinking-water Standards for New Zealand. Routine flushing is carried out in some parts of the network. Specific testing and flushing is done in response to water quality complaints or adverse sampling results.

Backflow prevention

Commercial and industrial customers require certified backflow prevention devices to prevent contaminants from entering the public water supply network. Backflow monitoring and enforcement forms a key part of New Zealand Drinking Water Standards and is a requirement of the Building Act.

Leak detection and management

Water loss in the network is managed by detecting and fixing leaks. Reducing leakage means that current supply volumes can reach more customers and demonstrates Council's approach to sustainable water use.

Laboratory services

Laboratory services analyse water samples to check treatment processes and demonstrate compliance with New Zealand Drinking Water Standards.

A snapshot of provision and use:



✓ Reticulation

- 1,839 km of water supply mains
- 1,731 km of water supply sub-mains
- 235 km of water supply laterals
- 15,267 fire hydrants
- 144,031 metered connections



✓ Station

- 689 pump sets
- 154 buildings/kiosks
- 170 wells and wellheads
- 155 reservoirs and tanks



✓ Treatment

- 6 Banks Peninsula Water Treatment Plants



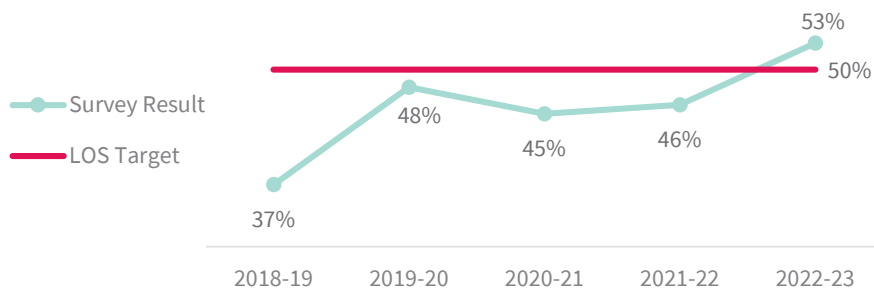
Example of the provision of water supply

Where we came from

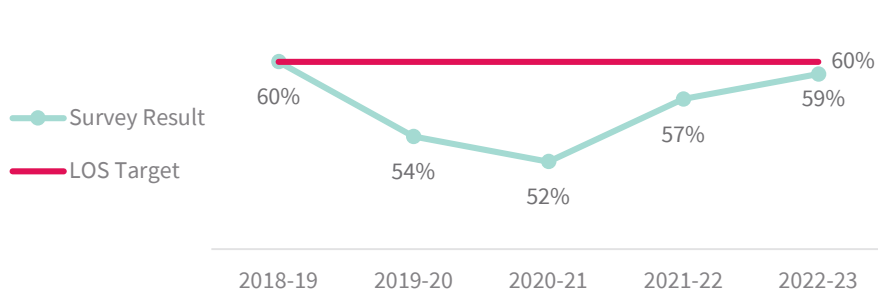
Christchurch's water supply has evolved from the various community schemes that began joining up with central reticulation in the early 1900s. Standardisation of water supply provision increased from 1989 when five local bodies merged into the new Christchurch City Council. Banks Peninsula water supplies came into Council stewardship in 2006 following amalgamation. Christchurch city has a decentralised system of multiple wells that provide high quality deep aquifer groundwater straight into the reticulation system for consumption. The Canterbury earthquakes of 2010 and 2011 Canterbury disrupted the water supply. Repairs and temporary solutions were completed rapidly to restore water supply provision, followed by a programme of assessment and rebuilding. This event increased awareness of the need for water supply resilience. In 2016 a water contamination event in Havelock North put a national spotlight on the risk of water supply contamination. Expert security assessments of our well heads in late 2017 found that none were secure. This cost Christchurch its secure bore status, which is needed if water is not treated. Since then much of the city and Brooklands/Kainga water supplies have been chlorinated to ensure we are compliant with regulations, while infrastructure upgrades are completed. A priority programme of work is now under way.

What our community is saying

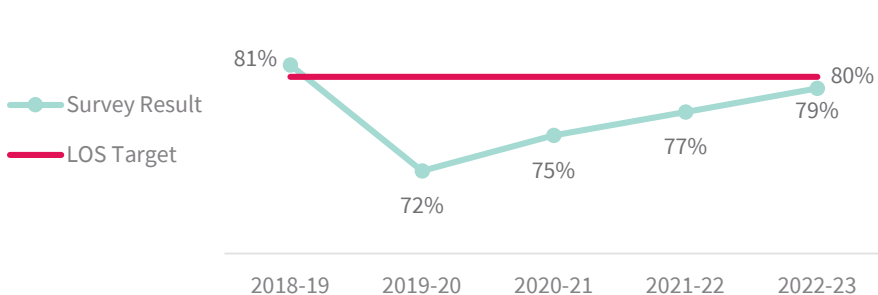
LOS 12.0.2.19 Proportion of residents satisfied with the quality of Council water Supplies



LOS 12.0.1.14 Proportion of residents satisfied with responsiveness of Council to water supply problems



LOS 12.0.1.13 Proportion of residents satisfied with the reliability of Council water supplies



53%-79% are satisfied with various aspects of water supply

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: Supply clean drinking water to protect the health of our community.

What residents think:

- 53% are satisfied with the quality of our drinking water supply.
- 59% are satisfied with the Council's responsiveness to water supply issues.
- 79% are satisfied with the reliability of the water supply.

What residents say:

- "It tastes ghastly, but it's always there."
- "Service calls reporting burst water mains or overflowing storm water have been quickly attended to, with follow-ups. Full marks to the team that does this!"
- "The works were shoddy because leaks appeared in about one in three [replaced water meters]."
- "Existing water quality generally is fantastic and reliable."

Community outcomes: Prosperous economy, resilient communities, healthy environment.

Source: <https://ccc.govt.nz/assets/Documents/The-Council/Reporting-Monitoring/General-Service-Satisfaction-Survey/Summary-of-General-Service-Satisfaction-Survey-Levels-of-Service-Results-Table-2023.pdf>

2. Why we deliver this activity

2.1. Community Outcomes: How this activity contributes

Community Outcomes	Contribution*	Key contributions to achieving our community outcomes
 A collaborative confident city Our residents have the opportunity to actively participate in community and city life, have a strong sense of belonging and identity, and feel safe	★★★★	We manage the public drinking water supplies to protect human health. In doing so we: • Protect the community from water-borne diseases • Provide the public with water supplies that meet safety and health risk standards • Provide public drinking that has no objectionable or offensive taste, odour or appearance
 A green, liveable city 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	★★★★	We sustainably manage drinking water sources by: • Limiting the quantity of water abstracted so as to prevent waterway health deterioration • Promoting sustainable use of drinking water through water conservation measures and education • Limiting resource use, both for water abstraction and for water treatment • Reducing operational carbon and lifecycle carbon
 A cultural powerhouse city 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'	★★★	We strive to increase engagement and collaboration with mana whenua by: • Reviewing and updating the 3W Strategy Implementation Plan with mana whenua
 A thriving prosperous city 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	★★★★★	We strive for a resilient public drinking water supply network, to support a healthy community, healthy environment and prosperous economy by: • Minimising damage from natural disasters by setting minimum requirements for new infrastructure • Gathering an evidence base to support asset lifecycle decision making • Performing lifecycle management to minimise whole of life costs • Minimising disruptions to the water supply service We strive to manage costs and intergenerational debt by: • Controlling costs to minimise rates increases • Maintaining networks to prevent future generations inheriting a network in need of significant expenditure
*Level of contribution – what this means		
★★★★★	This activity is critical to the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service	
★★★★	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	
★★★	This activity supports the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service if practicable	
★	This activity may provide incidental support to achieving this community outcome – it's not cost-effective to measure our impact	

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

Strategic Priorities		Contribution*	How our strategic priorities influence the way we work
	Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection	★★★★	- Supporting the Community Water Partnership, which educates and empowers communities to help resolve water issues - Supporting water management zone committee activities - Promote wellbeing through providing the community with clean and safe drinking water - Developing the infrastructure solutions that will benefit the future generations
	Champion Christchurch and collaborate to build our role as a leading New Zealand city	★★	- Lead the way in demonstrating safe drinking water to the national regulator and showcasing Christchurch's high water supply quality - Collaborate with other Councils to learn and share best practices - Show leadership within the proposed Entity boundaries in the delivery of water supply activity
	Build trust and confidence in the Council through meaningful partnerships and communication, listening to and working with residents	★★	- Increasing customer engagement and consultation through the Long Term Plan process and annual resident surveys to help inform levels of service - Providing regular updates/communication to general public - Meaningful partnerships/relationships/communication with consultants and contractors
	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.	★★	- Reduce emissions at the Council offices - Reduce emissions by focusing on the key greenhouse gas generators including electricity usage for activities such as pumping, construction of new infrastructure or renewal of existing infrastructure, and travel associated with operations and maintenance activities - Set realistic and measurable goals for lowering emissions - Continue to adhere to standards and regulations, for example ECAN resource consents, to protect our environment
	Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents	★★★★	- 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 - Controlling costs to minimise rates increases - Maintaining networks to prevent future generations inheriting a network in need of significant expenditure - Plan proactive investment to reduce what is spent in reaction to asset failures and disaster events
	Actively balance the needs of today's residents with the needs of future generations, with the aim of leaving no one behind	★★★★	- Planning for today's needs as well as the future, accounting for growth, asset deterioration, changing regulations, financial constraints and the changing climate - Continue to monitor and assess effects of the activity on the environment - Maintain networks to prevent future generations inheriting a network in need of significant expenditure - Continue applying excess water charging to manage high water demand and incentivise responsibility and stewardship of our resources

*Levels of contribution – what this means

★★★★	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

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

Net zero emissions Christchurch

	Key sources of greenhouse gas emissions from this activity includes: • Electricity usage for activities such as pumping • Construction of new infrastructure or renewal of existing infrastructure • Travel associated with operations and maintenance activities
	Water Supply are taking the following actions to reduce greenhouse gas emissions: Operational/embedded greenhouse gas emissions • Continue leakage monitoring and reduction programme • Continue to implement real-time sensors to enable network optimisation and increase power use efficiency • Include whole-of-life greenhouse gas emissions consideration in planning and design and construction phases • Consider ways to reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising water quality, reliability or resilience • Request environmental product declarations for chemicals used in the treatment process and investigate lower carbon chemical treatment options, where applicable Greenhouse gas emissions by users of the Water Supply activity • Reduce high peak demands through customer water metering and pricing incentives (excess water use charges) to reduce energy use • Adopt water efficient appliances • Encourage rainwater harvesting to support irrigation use • Encourage water heating via renewable energy such as solar

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

	Key climate risks for the Water Supply activity includes: • Sea Level Rise Related ○ Limitations in asset life due to corrosion from salt water intrusion for coastal infrastructure ○ More frequent, more extensive coastal inundation, contributing to service limitations and potentially health consequences ○ Potential increased need for pumping and associated energy costs due to need to retreat from coastal areas ○ Saltwater intrusion to water sources, causing more treatment requirements, noted as minor risk as work has been completed regarding security of bores • Rainfall and Flooding Related ○ Higher groundwater levels, making repairs difficult and requiring dewatering ○ Increased sediment, organic carbon, and nutrients due to flooding and event intensity ○ On-site flooding and damage to treatment plants during storm events – additional effect on staffing transport and supply of chemicals to plants ○ Changes in rainfall intensity and seasonality may mean reduced water availability, especially on Banks Peninsula ○ Heath risks from contamination during flood events • Heat, Drought, Fire Related ○ Higher water losses from vegetation absorption and evaporation due to higher temperatures ○ Potential reduced recharge of groundwater supply due to less surface runoff and snowmelt
--	--

- More frequent drought which may impact water source availability
- Increased peak water demand from customers due to prolonged dry periods
- Higher concentration of contaminants and pathogens in source water due to increased temperatures
- Increased firefighting demands and usage due to increased fire risk
- Other
 - Scarcity of water may lead to consideration of other technologies such as wastewater reuse
 - Increased requests for additional connections from non-connected properties due to inability to no longer self-sustain supply
 - Population growth from areas which are affected by climate related displacement requires additional service measures
 - Increased building intensification and land-use changes could increase demand
- See the [Asset Management Plan](#) for more details.

Options being considering to reduce the risks to the Water Supply activity and the community posed by those climate risks include:

- Promote sustainable use of drinking water through water conservation measures and education to ensure long-term sustainability objectives
- Implementation of “smart” metering which helps to improve understanding of current customer use patterns, avoid wastage, and manage future use
- Create a dynamic link between “smart” water metering and energy consumption to allow for proactive management of electricity usage
- Continue to implement and manage excess water use charges – initial data has demonstrated a reduction in peak water demand which contributes to the ability to minimise energy usage and increase efficiency
- Improve knowledge of network performance by continuing to use and maintain hydraulic models which consider current and future scenarios
- Proactively monitor and record usage information with the assistance of intelligent technology to enable informed decision making
- Automation of mechanical systems to more efficiently respond to future pressures – for example variable speed drives can help to reduce overall energy consumption
- Protection of groundwater sources and their vulnerability to contamination through targeted investigations, further implementation of source protection works, and restrictions on excavation below groundwater level
- Manage assets collectively to ensure future works maximise collaborative benefits across Council activities. This includes reviewing climate change risks, such as sea level rise extents, and incorporating the results into current and future planning and design works, noting management of climate related risks and reduction in vulnerability will likely include collaboration in multiple Council activity areas.

We are guardians of our natural environment and taonga

We will be undertaking two pilot projects in the next three years to further support climate change initiatives. These are:

Excess Water Use Charges

The excess water use charges were implemented in the network in late 2021. Results from the 2021 and 2022 financial year summaries showed a number of positive outcomes in terms of cost saving, greenhouse gas reduction, and climate reliance opportunities. Implementation of the charges resulted in a change in customer behaviour, which consequently reduced the Council’s peak day demand and peak instantaneous flow demand. Reduced water usage has the benefits of:

- Overall reduction in greenhouse gas emissions for the activity
- If the change in behaviour can be sustained and the reduced peak can be accepted as the new base demand, capacity would be released to accommodate growth, therefore contributing to increased resilience to the effects of climate change and unforeseen events
- Potential decreased necessary capital expenditure to upgrade system to meet future and current population growths

The continuation of the excess water use charges has benefits in the climate change space as well as economic advantages.



Smart Water Network

Use of smart technology including smart water meters has an economic impact as well as directly responds to the challenges faced by climate change by detecting and stopping leaks faster, therefore reducing water use, increasing resilience to the impacts of climate change on water availability, and consequently reducing greenhouse gas emissions through increased energy efficiencies.

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.

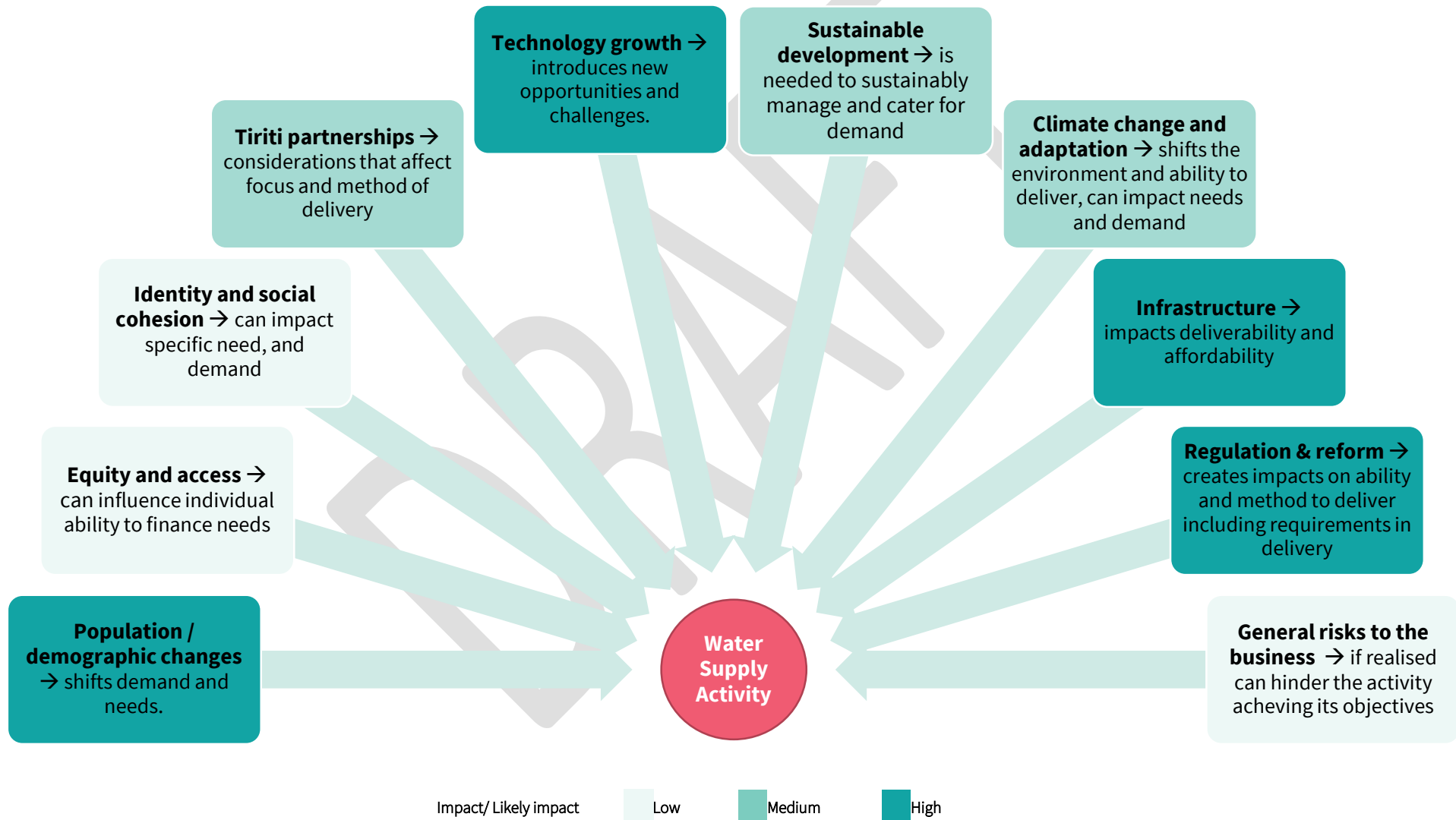
- Council water supplies are safe to drink
 - Water Safety Plans are a condition of the current level of service and address future risk to the source water. Updated plans can include special consideration for management of climate change effects
- Council operates water supplies in a reliable manner
 - The reliability measure of service is dependent on management of the activity to respond to climate change impacts
- Council water supply networks and operations are sustainable
 - Leak detection initiatives and water loss records are already being actioned in performance targets and contribute to reduction in greenhouse gas emissions and minimising the effects of climate change impacts
 - Use of excess water charges and smart water technology enable measuring of customer water use, which contributes to efficient use of water and enables data collection for effective decision making to respond to future climate challenges

As part of the ongoing work, it is important to form a detailed baseline of greenhouse gas emissions in the water supply activity through measurement in our services. This information can then be used for effective future decision making in an effort to reduce greenhouse gas emissions in a partial contribution towards Christchurch District and Christchurch City Council's emissions targets.

3. How we are planning for future impacts

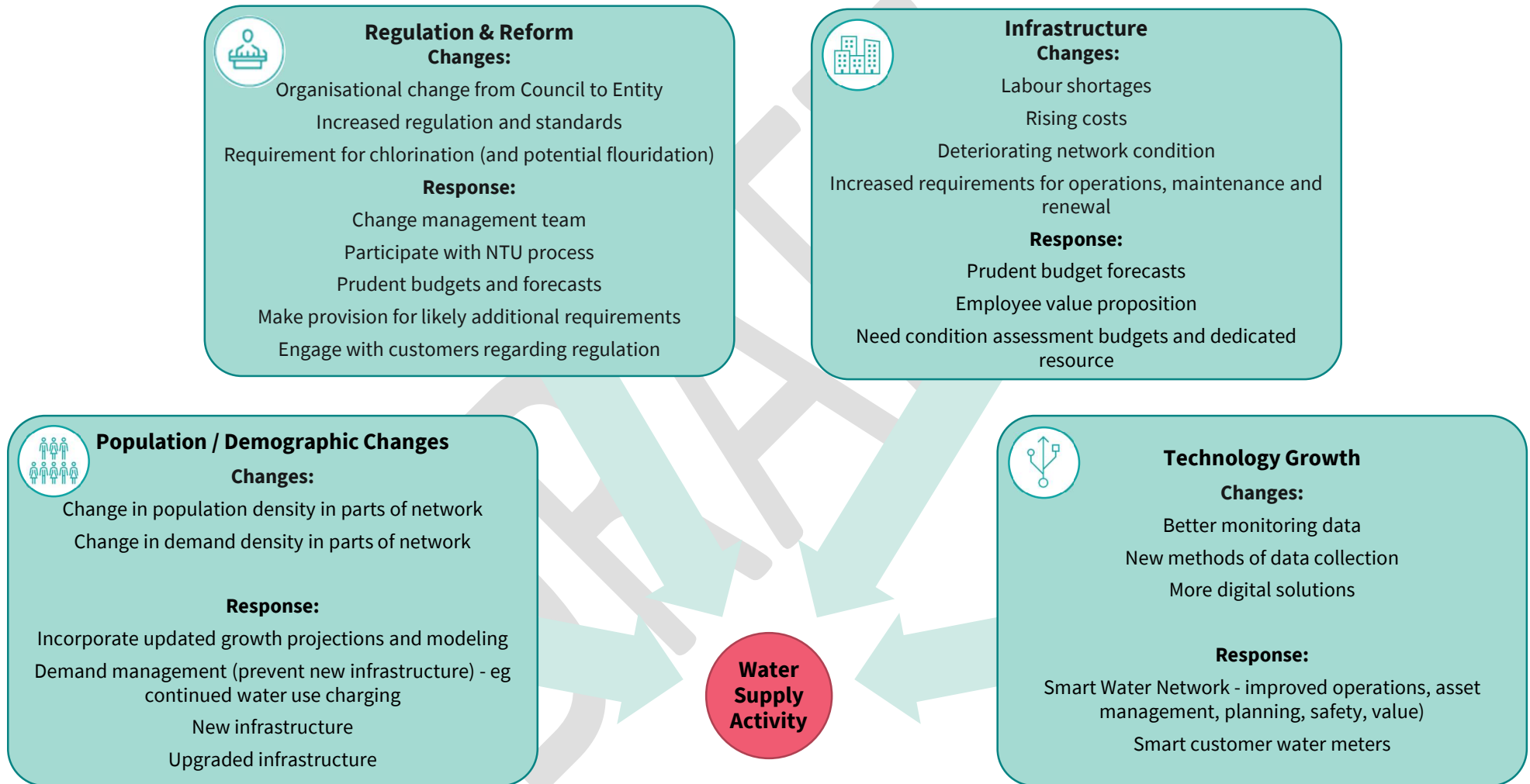
There are various factors influencing current and future demand for Council water supply facilities and the ability to deliver them. These are listed below.

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 & Levels of Service measurements

- ➔ Water supply has **16 Community (C) Levels of Service**. (These LOS community facing and will be published in our Statement of Service Provision)
- ➔ Water supply also has **16 Management (M) Levels of Service**. (These are LOS that are measured in the organisation to ensure service delivery)

 Council operates water supplies in a reliable manner		 Council provides high quality water	
Service contributes to: A thriving prosperous city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 2 Community and 3 Management LoS. - Weekly average of the number of unplanned interruptions of greater than 4 hours duration each year & number of unplanned interruptions per 1,000 properties served per year. - Proportion of residents satisfied with reliability of water supplies - Number of continuity of supply complaints per 1,000 properties served per year - Number of pressure or flow complaints per 1,000 connections per year	Service contributes to: A collaborative confident city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 2 Community and 3 Management LoS. - Proportion of residents satisfied with quality of Council water supplies - Total number of complaints received by Council about 6 aspects (drinking clarity, taste, and odour, and pressure/flow, continuity of supply and Councils' response to these issues) 3 targets for the number of water complaints per 1,000 connections per year (clarity, odour, and water taste)
 Council operates water supplies in a responsive manner		 Council water supplies are safe to drink	
Service contributes to: A thriving prosperous city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 5 Community and 1 Management LoS. 2 measures around median time from notification to attendance and resolution of urgent call-outs 2 measures around median time from notification to attendance and resolution of non-urgent call-outs - The proportion of residents satisfied with Council responsiveness to water supply problems	Service contributes to: A collaborative confident city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 5 Community LoS and 1 Management LoS. - Proportion of High Hazard commercial connections with compliant backflow prevention device tested within the last year - Proportion of Medium Hazard commercial connections >38mm diameter with compliant backflow prevention device tested within the last year

	Number of complaints regarding Council's response to complaints about drinking water taste, odour, clarity, pressure or flow, or continuity of supply per 1,000 properties connected to the Council's water supply system per year		- Water supplied is compliant with the DWQA Rules in the Distribution System (Bacteria compliance) - Water supplied is compliant with the DWQA Rules in the Treatment System (Protozoal compliance) - Proportion of customers connected to water supply zones with an up to date Water Safety Plan - Proportion of microbiological drinking water samples collected and analysed by an IANZ accredited and Ministry of Health registered laboratory
	Council water supply networks and operations are sustainable		
Service contributes to: A green, liveable city This is by generally increasing the targets of the levels of service promised.	Levels of Service This service has 2 Community and 6/7/8 Management LoS. - Average consumption of drinking water in litres per resident per day - Percentage of real water loss from Council's water supply reticulated network - Annual average power (kWh of electricity) used to pump each cubic metre of water - Number of infringement notices for major or persistent breaches of resource consents regarding the operation of the water supply network, as reported by ECan or Council - Total volume of water abstracted for urban water supplies in millions of cubic metres per year – (TBC) - Average Infrastructure Leakage Index (ILI) for all Council water loss zones - Peak day demand of drinking water in L per connection per day - Peak hour demand of drinking water in L per connection per hour 10 year rolling historic ratio of renewals to depreciation - Increase Water Supply Asset Management Maturity towards agreed, appropriate level (Advanced) – (TBC)		

5. How assets will be managed to deliver the services

The Water Supply portfolio is made up of reticulation, pump stations, treatment, and storage assets. The Asset value of this Activity is approximately \$3.7 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 submains).

The water activity is primarily the responsibility of Council's internal Three Waters Unit. Council's Three Waters Network Operations Team operates the

Looking forward

The longer-term strategic direction for water supply 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. Water supply asset management strategies are expected to align with the Integrated Water Strategy objectives.

The current context surrounding the water supply activity will continue to influence the current and future outlook. This includes new drinking water regulation, water industry service delivery reform, renewal of ageing infrastructure, responses to climate change, addressing risk and resilience, reducing water demand, 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 water supply 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 water supply 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 deliverable.

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

Christchurch water supply network with maintenance activities carried out by Citycare Limited. Councils Operations Team operate the Banks Peninsula schemes and treatment plants.

The Draft Infrastructure Strategy (IS) contains some key significant issues that affect our ability to manage ratepayer money wisely, including *“We need to improve our understanding of our infrastructure so we can make the best decisions for our community”*. This is an on-going issue that additional resource is 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.

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.

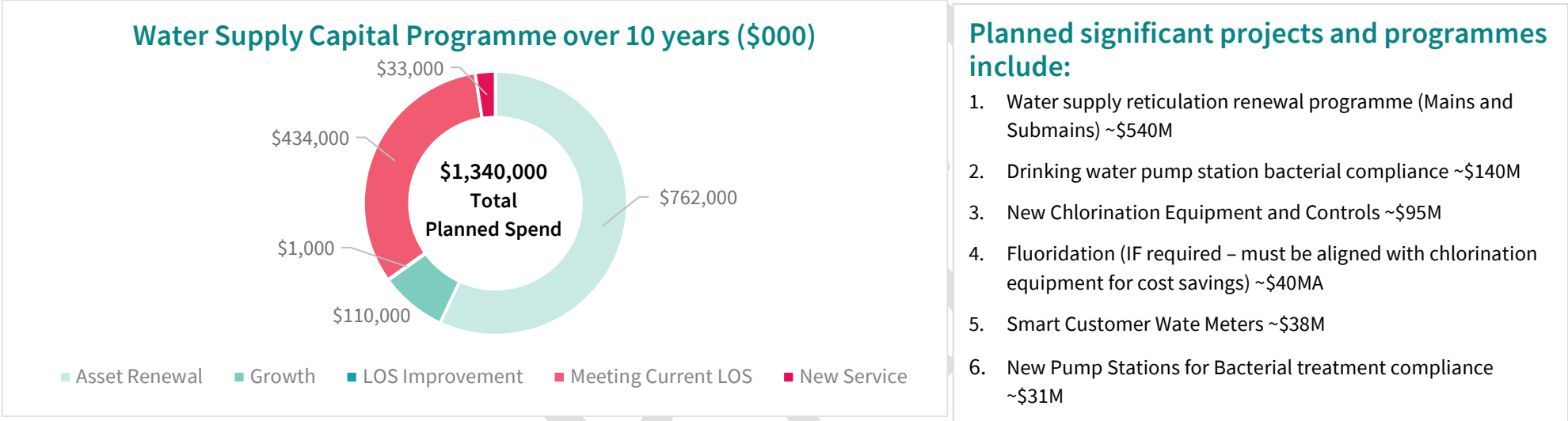
Reducing the capital program would increase the risk profile to Council. The program is developed to meet the level of service targets, avoid the sweating assets that would increase operational costs, and undertaking projects required to meet growth demands.

Currently the capital budget is used as the key performance indicator for the capital program. In measuring success, it is more appropriate to measure quality and delivery of planned capital projects in any given year. Focusing on spend drives poor outcomes and negates working smarter, improving procurement, and delivering what is most important – completed projects.

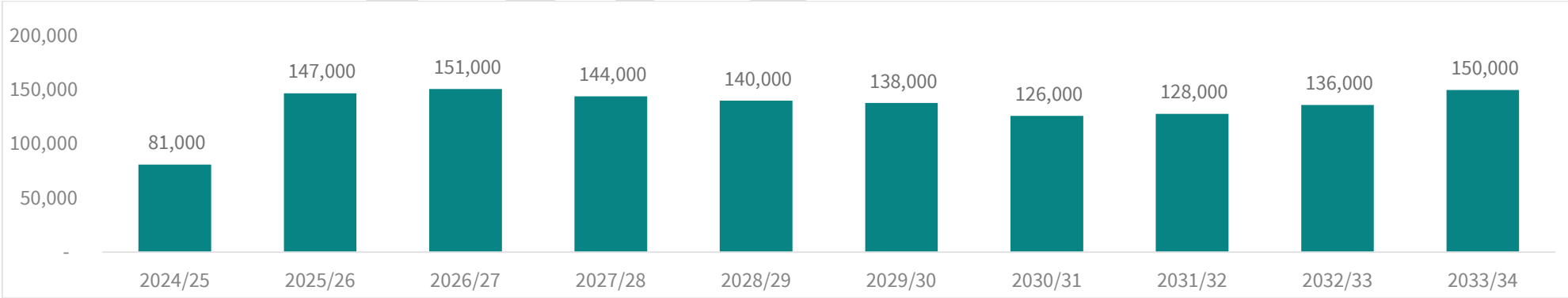
Please refer to the [Water Supply Asset Management Plan](#) for more information on these assets.

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.

Water Supply

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
Activity Costs Before Overheads by Service											
Water Supply	30,214	35,438	36,545	38,027	39,482	40,061	41,186	42,380	16,372	16,372	
	30,214	35,438	36,545	38,027	39,482	40,061	41,186	42,380	16,372	16,372	
Activity Costs by Cost Type											
Direct Operating Costs	9,321	11,419	11,812	12,156	12,498	12,750	13,044	13,320	2,019	2,019	
Direct Maintenance Costs	10,890	13,087	13,440	14,261	15,061	15,095	15,657	16,325	1,865	1,865	
Staff and Contract Personnel Costs	9,932	10,858	11,217	11,531	11,843	12,134	12,401	12,649	12,488	12,488	
Other Activity Costs	71	74	76	78	80	82	84	86			
Overheads, Indirect and Other Costs	16,465	17,485	18,557	18,916	19,823	20,853	21,251	21,712	6,341	6,192	
Depreciation	51,518	55,272	58,361	59,487	62,391	65,201	68,035	66,774	13,391	13,391	
Debt Servicing and Interest	6,171	8,000	9,794	11,188	12,327	12,940	13,273	12,966	6,790	6,852	
Total Activity Cost	104,368	116,194	123,256	127,618	134,023	139,055	143,745	143,832	42,893	42,806	
Funded By:											
Fees and Charges	7,323	5,553	5,737	5,897	6,057	6,202	6,338	6,465	(2,496)	(2,496)	
Grants and Subsidies											
Cost Recoveries	41	43	44	46	47	48	49	50			
Other Revenues											
Total Operational Revenue	7,364	5,596	5,781	5,943	6,103	6,250	6,387	6,515	(2,496)	(2,496)	
Net Cost of Service	97,004	110,598	117,474	121,675	127,920	132,805	137,357	137,317	45,388	45,302	
Funding Percentages											
Rates	93%	95%	95%	95%	95%	96%	96%	95%	106%	106%	100%
Fees and Charges	7%	5%	5%	5%	5%	4%	4%	4%	-6%	-6%	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%
Capital Expenditure											
Improved Service Levels	8,414	12,209	11,931	17,643	12,173	14,892	13,754	13,241			
Increased Demand	4,528	4,155	6,336	6,250	3,218	7,050	6,041	11,628			
Renewals & Replacements	42,742	39,151	51,380	62,421	77,018	75,385	75,226	71,816			
Total Activity Capital	55,684	55,515	69,647	86,313	92,409	97,327	95,021	96,685			

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 Water Supply 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 Water Supply Activity is a core service that 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
User-Pays <i>the degree to which the Activity can be attributed to individuals or identifiable groups rather than the community as a whole</i>	High	Fund from X
Exacerbator-Pays <i>the degree to which the Activity is required as a result of the action (or inaction) of individuals or identifiable groups</i>	Low	Fund from x
Inter-Generational Equity <i>the degree to which benefits can be attributed to future periods</i>	Low	Fund when
Separate Funding? <i>the degree to which the costs and benefits justify separate funding for the Activity</i>	High	Fund from x

Outcome: Funding for operating costs

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

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*
Renewal/replacement	<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>	High
Service improvement	<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>	Low
Growth	<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>	Low

Outcome: Initial funding for capital

Initial funding source	Proportion of capex funded*
Rates	High
Borrowing	-
Development Contributions	-
Grants and Other	Low

* 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
Social	
Chemical addition may be required (chlorination or fluoridation) as dictated by legislation and/or water quality	Respond to new Central Government legislation as required. Continue to chlorinate as required, while prioritising works to demonstrate where water safety can be achieved without chlorine. Fluoridate water if required by the Te Whatu Ora.
Economic	
Cost of operating a compliant potable water supply	Documented processes and maintenance systems control costs. Improve network efficiency through asset renewal. Water supply rezoning and pressure management to reduce operating and maintenance costs. Reduce demand through water conservation measures. Assess and report cost efficiency and affordability. Reduce wastage through pipe leaks.
Environmental	
Salt-water intrusion in coastal regions compromises water quality	Monitor well takes in coastal areas for salinity (conductivity) and investigate any changes. Long term strategy to move wells away from coast where salt-water intrusion may impact on quality.
Effects of water abstraction on the environment and future resourcing of water for the city	Network maintenance and water conservation measures to minimise wastage (leaks). Annual leak detection programme to monitor and reduce water loss. Maintain resource consent compliance and avoid over-abstraction. Establish infrastructure (e.g. suction tanks) to improve management of groundwater abstraction. Respond to notifications from Environment Canterbury regarding requests for new water takes.
Cultural	
Cultural impact of groundwater abstraction and network water losses	Work collaboratively with Ngāi Tahu and local rūnanga to find cost effective solutions that address cultural concerns.

Questions

Long Term Plan 2024-34 Joint development briefing

Aug 29, 2023

Long Term Plan 2024-34

- This briefing is one of a series held as part of the development of the Long Term Plan 2024-34.
- **All discussions involve draft material and reflect a position on the day.**
- Decisions will be set out in the draft Long Term Plan, which will be adopted for consultation in February 2024.
- This recording is intended to provide residents with an overview and understanding of the big picture issues, and therefore may not include all detail and matters discussed at the briefing.

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

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

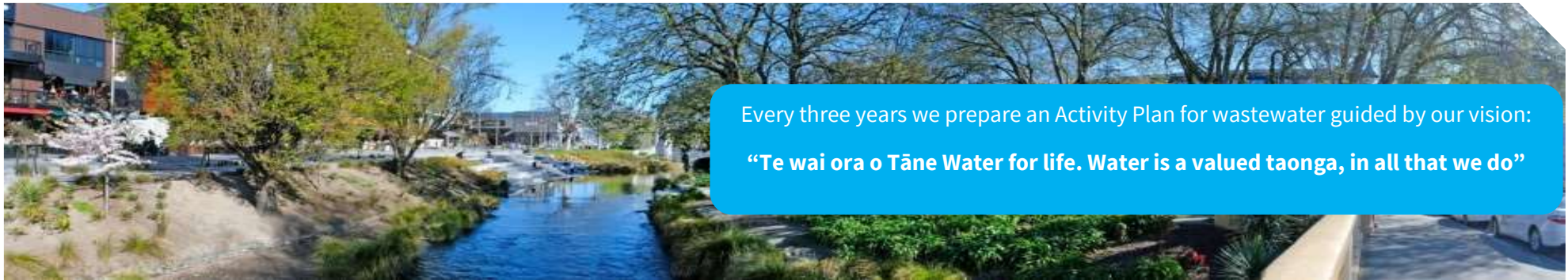
Wastewater is grey water and sewage collected from household drains, and commercial and industrial premises. It is conveyed through an underground network of pipes and pumped to treatment plants, where contaminants are removed before it is discharged safely back into the natural environment. The collection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

	Council operates wastewater services in a reliable manner Wastewater reliability is measured through resident satisfaction and the number of complaints received through the call centre.
	Council has high wastewater discharge quality 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.
	Council operates wastewater services in a responsive manner 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.
	Public health is protected from Council wastewater services 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.
	Council wastewater networks and operations are sustainable 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

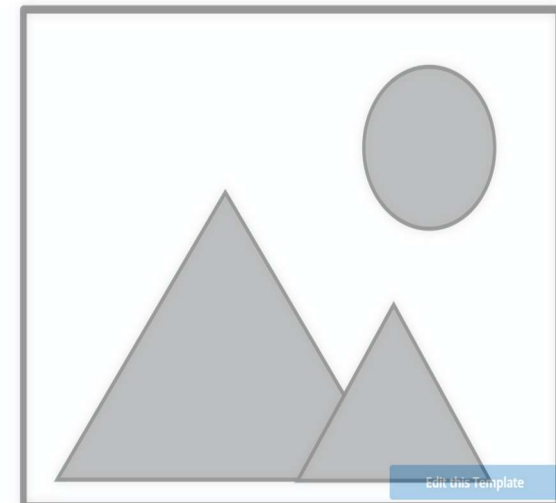
- ✓ 5 wastewater treatment plants
- ✓ 1 outfall pump station
- ✓ 3 ocean / harbour outfalls
- ✓ 2 land irrigation schemes

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.

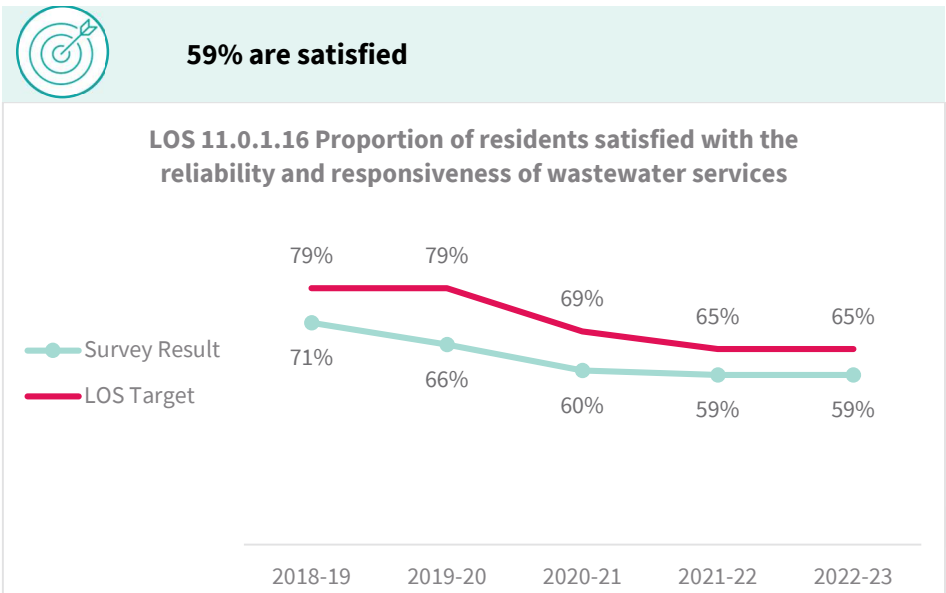
Our network and services were disrupted by the Canterbury earthquakes of 2010 and 2011. Significant assessment and rebuild work followed, under the Stronger Christchurch Infrastructure Recovery Team (SCIRT) alliance. This programme did not address all earthquake damage and many pipes with varying levels 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



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
 A collaborative confident city Our residents have the opportunity to actively participate in community and city life, have a strong sense of belonging and identity, and feel safe	★★★★	Protecting public health by limiting exposure to human waste in accordance with: • Health Act 1956 • Hazardous Substances and New Organisms Act 1996 • Resource Management Act 1991 • Health and Safety at Work Act 2015 • Water Supply, Wastewater and Stormwater Bylaw 2014 • Trade Waste Bylaw 2015
 A green, liveable city 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	★★★★	Reducing wastewater overflows to waterways: • Ensure infrastructure is resilient Limiting resource use and encouraging by-product re-use: • Use biogas production from wastewater treatment plant
 A cultural powerhouse city 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'	★★	Council response to mana whenua cultural objectives (land discharge of treated effluent): • Converting to land based discharges of treated effluent where possible • New Akaroa WW Reclaimed Water Treatment and Reuse Scheme • New Duvauchelle WW Reclaimed Water Treatment and Reuse Scheme Increased engagement and collaboration with mana whenua: • Review and update the 3W Strategy Implementation Plan with mana whenua
 A thriving prosperous city 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	★★★★★	We strive for a resilient wastewater network, to support a healthy community, healthy environment and prosperous economy by: • Minimising damage from natural disasters by setting minimum requirements for new infrastructure. • Gathering an evidence base to support asset lifecycle decision making. • Performing lifecycle management to minimise whole of life costs. • Minimising service disruptions. • Setting requirements for network condition and performance. We strive to manage costs and intergenerational debt by: • Controlling costs to minimise rates increases • Maintaining networks to prevent future generations inheriting a network in need of significant expenditure.
*Level of contribution – what this means ★★★★★ This activity is critical to the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service ★★★★ 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 ★★ This activity supports the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service if practicable ★ This activity may provide incidental support to achieving this community outcome – it's not cost-effective to measure our impact		

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

Strategic Priorities		Contribution*	How our strategic priorities influence the way we work
	Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection	★★★★	- Promote wellbeing through providing the community with clean and safe wastewater management - Developing infrastructure solutions that will benefit the future generations
	Champion Christchurch and collaborate to build our role as a leading New Zealand city	★★	- Collaborate with other Councils to learn and share best practices - Show leadership within the proposed Entity boundaries for the wastewater collection, treatment and disposal activity
	Build trust and confidence in the Council through meaningful partnerships and communication, listening to and working with residents	★★	- Increasing customer engagement and consultation through the Long Term Plan process and annual resident surveys to help inform levels of service - Providing regular updates/communication to general public - Meaningful partnerships/relationships/communication with consultants and contractors - Consult and work closely with the community surrounding the Christchurch wastewater treatment plant regarding impact of odours
	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.	★★★★	- Reduce emissions at the Council offices - Reduce emissions by focusing on the key greenhouse gas generators including - Processes and activities associated with wastewater treatment - Energy consumption in the form of electricity used for wastewater pumping, aeration, heating, etc. - Travel associated with operations and maintenance activities - Untreated wastewater overflows into the environment during high rainfall events (potential to increase with climate change) - Set realistic and measurable goals for lowering emissions - Continue to adhere to standards and regulations, for example ECAN resource consents, to protect our environment
	Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents	★★★	- 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 - Controlling costs to minimise rates increases - Maintaining networks to prevent future generations inheriting a network in need of significant expenditure. - Plan proactive investment to reduce what is spent in reaction to asset failures and disaster events

	Actively balance the needs of today's residents with the needs of future generations, with the aim of leaving no one behind		• Planning for today's needs as well as the future, accounting for growth, asset deterioration, changing regulations, financial constraints and the changing climate • Continue to monitor and assess effects of activity on the environment • Maintain networks to prevent future generations inheriting a network in need of significant expenditure
*Levels of contribution – what this means			
★★★★	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

	Key sources of greenhouse gas emissions from this activity includes: - Processes and activities associated with wastewater treatment, including: - Primary, secondary, and tertiary treatment within the treatment process – biological processes (~47% of total CWTP plant emissions) - Treated effluent discharged to ponds and to the marine environment (~49% of total CWTP plant emissions) - Biogas and biosolids production and disposal (~4% of total CWTP plant emissions) - Energy consumption in the form of electricity used for wastewater pumping, aeration, heating, etc - Travel associated with operations and maintenance activities - Untreated wastewater overflows into the environment during high rainfall events (potential to increase with climate change) Wastewater Collection, Treatment and Disposal are taking the following actions to reduce greenhouse gas emissions: Operational/embedded greenhouse gas emissions - Develop a monitoring plan and monitor emissions from the wastewater treatment plant at Bromley. - Consider and implement alternative treatment configurations which have lesser greenhouse gas emissions. - Develop a greenhouse gas emissions baseline for the wastewater service operations and maintenance function. - Explore renewable energy options such as solar power generation. - 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. Greenhouse gas emissions by users of Wastewater Collection, Treatment and Disposal activity - Don't flush wet wipes, sanitary products, rags, fats and oils, or other items which may cause blockages and increase operational interventions. - Regularly inspect and repair sewer drains to avoid inflow and infiltration which leads to wastewater overflows. - Follow-up on required inspections of septic tanks to ensure systems are fit for purpose and not discharging untreated flows to the environment. - Adopt water efficient appliances.
--	--

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

	Key climate risks for the Wastewater Collection, Treatment and Disposal activity includes: - Sea Level Rise Related - Some coastal wastewater assets may be at risk - Limitations in asset life due to corrosion from saltwater - Rainfall and Flooding Related - Increased inflow and infiltration due to more frequent storm events that could increase overflow frequency - Higher groundwater levels leads to increased infiltration that could increase overflow frequency - Heat, Drought, Fire Related - Increased odours in wastewater network because of higher temperatures and microbial activity - Other
--	--

	○ Increase in overflow events resulting in untreated wastewater flows to the environment have potential public health and environmental health impacts ○ 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 • Other impacts on assets and infrastructure (see the Asset Management Plan for more details).
	Options being considering to reduce the risks to the Wastewater Collection, Treatment and Disposal activity and the community posed by those climate risks include: • 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 • Provide educational resources and messaging relating to wastewater use best practices such as not flushing wet wipes and separation of fats and oils • Undertake a programme to identify and eliminate tree planting over pipes to avoid damage that leads to groundwater infiltration • Reduce stormwater and potentially seawater inflow and infiltration through continuance of renewals programme • Fund the implementation of projects identified to reduce the frequency of wastewater overflows • Explore options for increased resilience of the wastewater system against climate change impacts and fluctuating operational statuses.
We are guardians of our natural environment and taonga	
	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: 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: 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. 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. 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.

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.

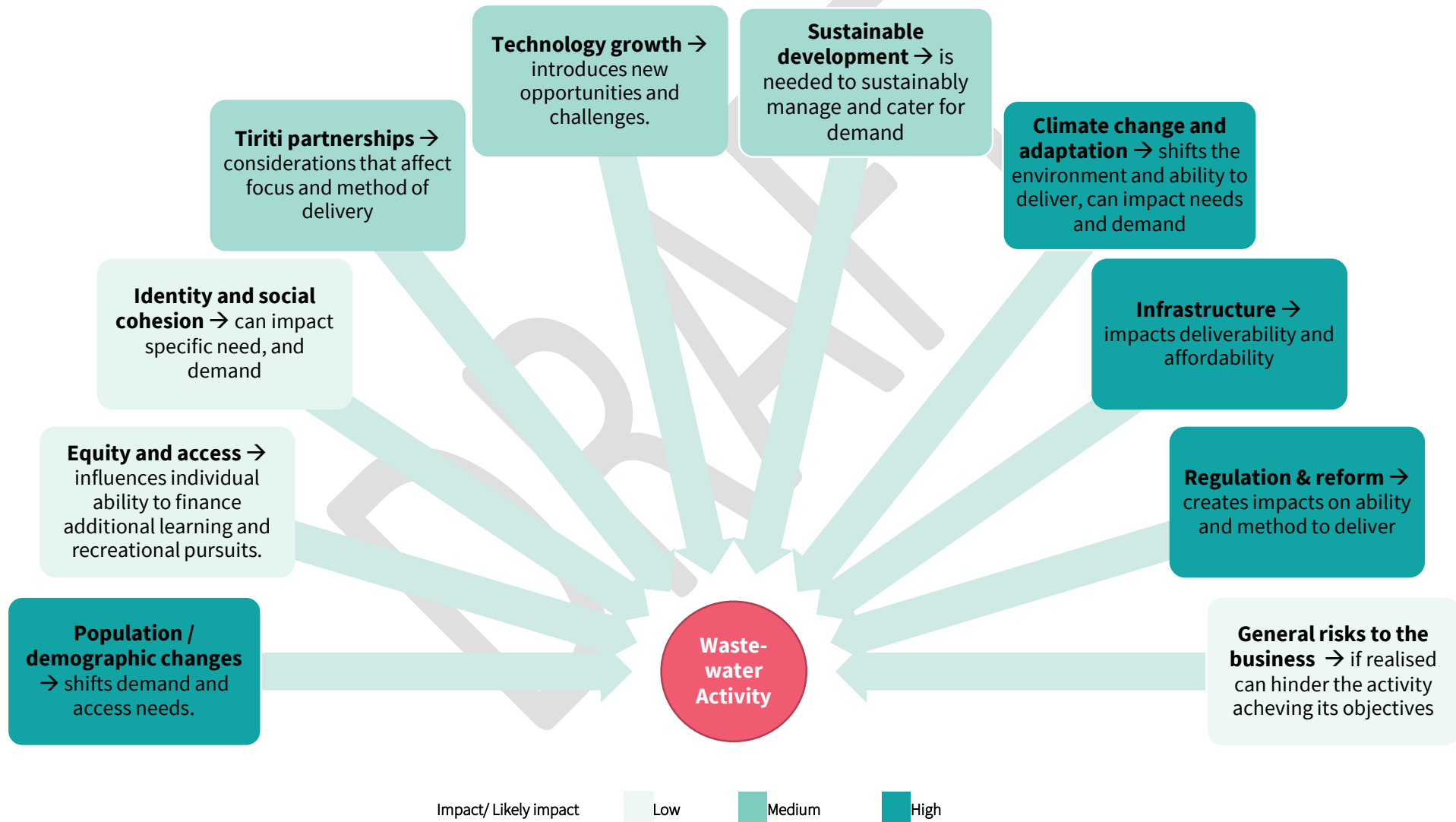
Commentary on how climate change is incorporated into the existing levels of service is outlined below. It is noted that future levels of service may be developed following the greenhouse gas emissions baseline:

- 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

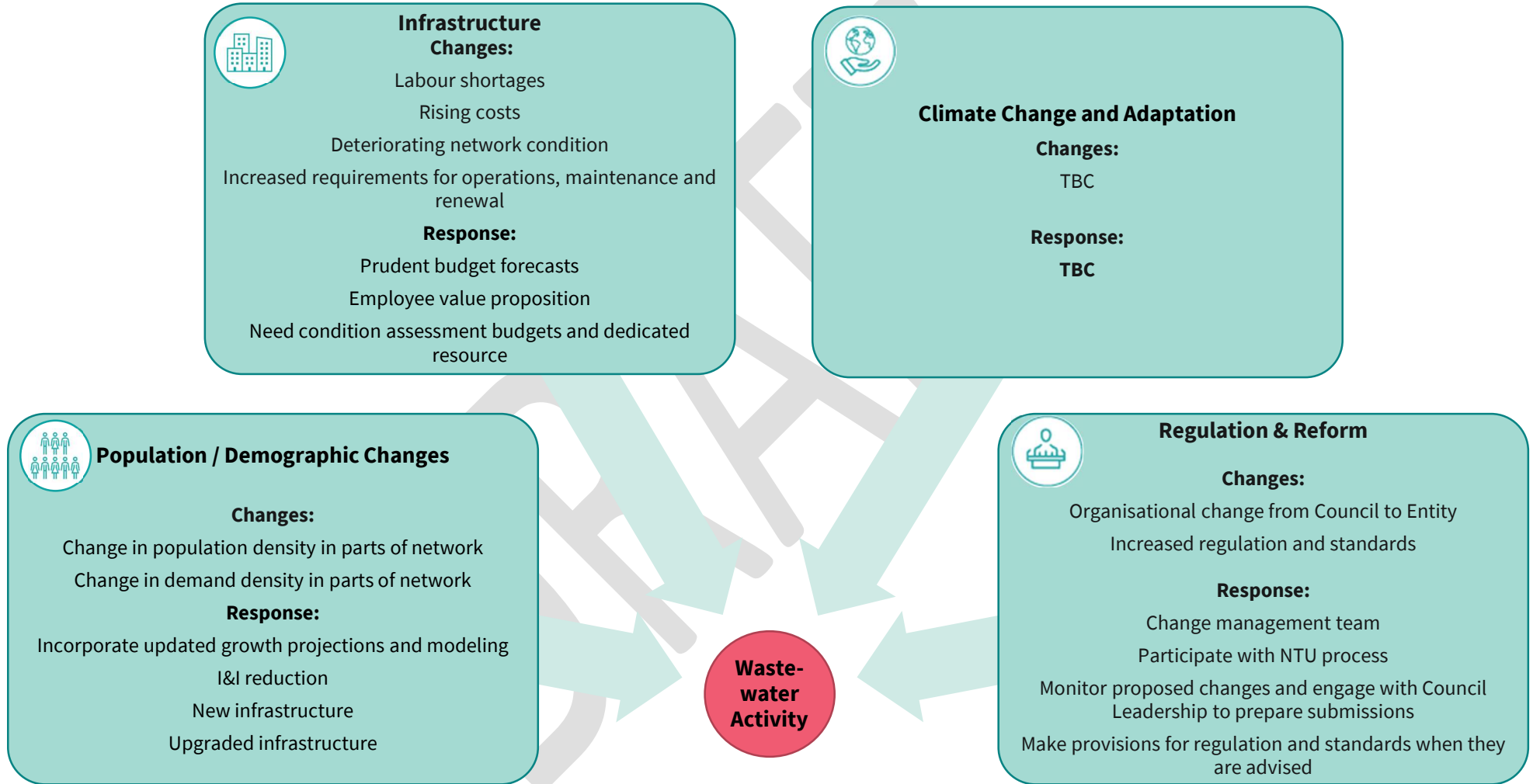
There are various factors influencing current and future demand for Council library facilities and the ability to deliver them. These are listed below.

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	
Service contributes to: A green, liveable city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 3 Community LoS and 5 Management LoS. - Proportion of residents satisfied with the reliability and responsiveness of wastewater services - 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) - Percentage of total wastewater gravity network pipework length at condition grade 5 (very poor) - Annual number of properties affected by wastewater blowbacks due to maintenance work carried out by the Council or its contractors - Number of complaints per 1,000 properties connected to the wastewater network per year for: - Wastewater odour - Wastewater system blockages - Wastewater system fault complaints - Percentage of wastewater mains with high or very high consequences of failure inspected as scheduled in their lifespan	Service contributes to: A collaborative confident city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 1 Community and 5 Management LoS. 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 - Proportion of externally reported sampling and testing completed by an IANZ accredited laboratory:

 Council operates wastewater services in a responsive manner		 Council wastewater networks and operations are sustainable	
Service contributes to: A green, liveable city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 6 Community and 1 Management LoS. 2 targets for median time (in hours) from notification to arrival on-site for urgent faults on rural wastewater networks and urban wastewater networks 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 2 targets for median time (in hours) from notification to attendance to resolution of overflows resulting from network faults - 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	Service contributes to: A green, liveable city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 6 Management LoS. - Power consumption - kWh of electricity per cubic metre wastewater treated at the Christchurch wastewater treatment plant - Power consumption - kWh of electricity per kilogram of chemical oxygen demand (COD) removed at the Christchurch wastewater treatment plant - Proportion of biosolids diverted from landfill (beneficially reused) - Proportion of electricity used at the Christchurch wastewater treatment plant that is self-generated from treatment by-products 10 year rolling historic ratio of renewals to depreciation (pipe reticulation) - Increase Wastewater Asset Management Maturity towards agreed, appropriate level.
 Public health is protected from Council wastewater services			
Service contributes to: A collaborative confident city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 1 Community LoS. Number of dry weather overflows from wastewater systems per 1,000 connected properties per year		

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:

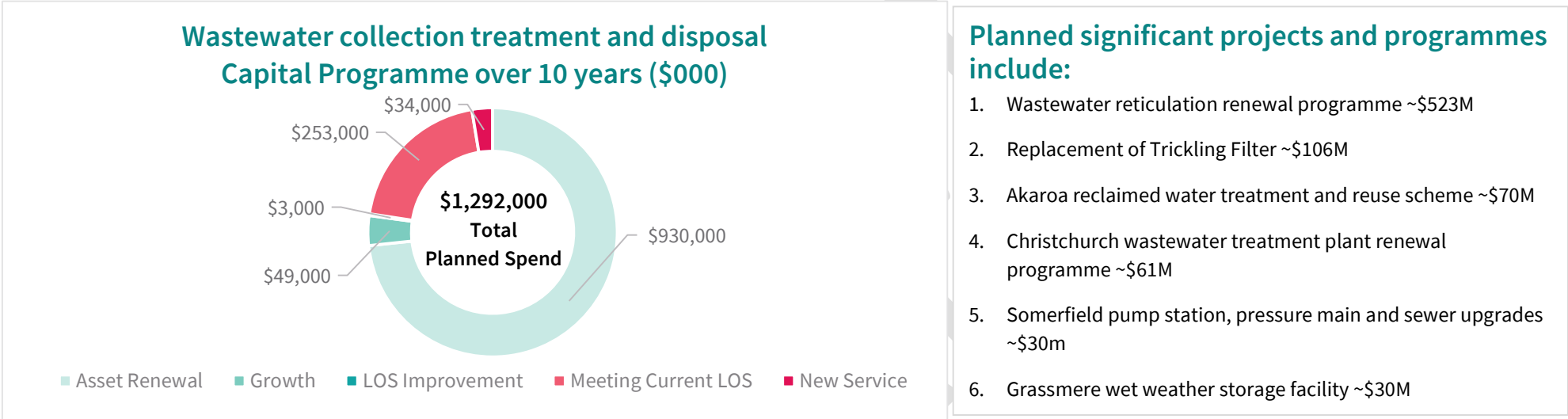
- Development of a 3-year delivery program
- Improved scheduling, resourcing and allocation
- Improved program management
- Pipe renewals delivered through a multi-year performance based contract with Tier 1 contractors
- Contingency funds to be held at program level for low risk projects
- Development 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.

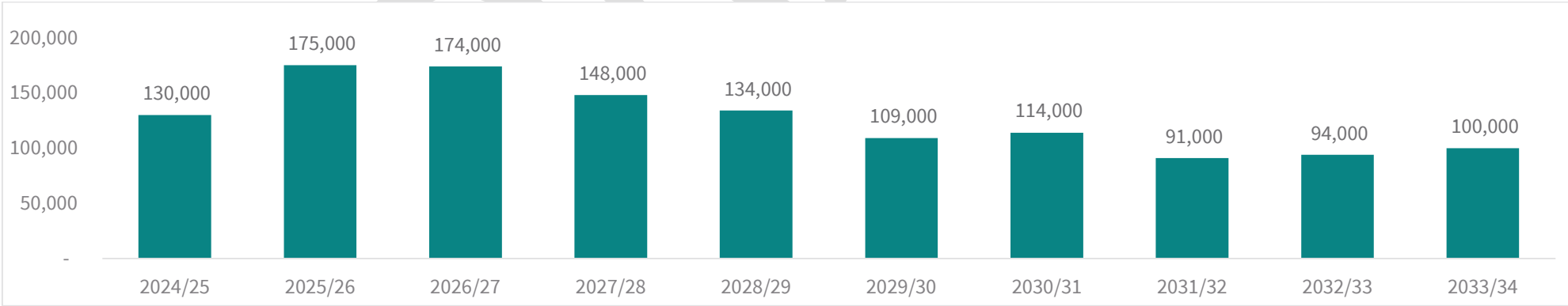
Please refer to the [Wastewater Asset Management Plan](#) for more information on these assets.

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
Activity Costs Before Overheads by Service											
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	
Activity Costs by Cost Type											
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	
Total Activity Cost	153,068	166,655	175,263	183,523	193,056	201,210	207,130	212,103	50,201	49,915	
Funded By:											
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											
Total Operational Revenue	7,369	7,460	7,707	7,922	8,136	8,332	8,515	8,685	(254)	(254)	
Net Cost of Service	145,699	159,194	167,556	175,601	184,920	192,878	198,615	203,418	50,456	50,170	
Funding Percentages											
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%
Capital Expenditure											
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			
Total Activity Capital	41,324	70,152	105,127	103,669	97,232	95,539	86,793	84,353			

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
User-Pays <i>the degree to which the Activity can be attributed to individuals or identifiable groups rather than the community as a whole</i>	High	
Exacerbator-Pays <i>the degree to which the Activity is required as a result of the action (or inaction) of individuals or identifiable groups</i>	Low	
Inter-Generational Equity <i>the degree to which benefits can be attributed to future periods</i>	Low	
Separate Funding? <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*
Renewal/replacement	<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%
Service improvement	<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%
Growth	<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
Social	
Social, cultural and environmental effects of wastewater overflows	Maintain resource consent compliance. Reduce overflows through projects identified in the city-wide wastewater optimisation project. Fully calibrate wastewater network models through using recent flow monitoring data. Increase flow monitoring on wastewater pump stations and trunk sewers. Continue to implement processes for erecting signage and public notification where overflows could result in health risks. Provide on-site attenuation where required in capacity constraint areas. Clean and maintain siphons and wastewater mains in accordance with maintenance plan. 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.
Impact of high numbers of midges at houses nearby to the Christchurch wastewater treatment ponds	Midge control programme: - Jet boat and midge dredge on the ponds every fortnight during breeding season - Midge traps deployed and weekly monitoring programme
Odour from wastewater networks and wastewater treatment plants	Odour control systems installed in problem areas. Operate odour control systems in accordance with procedures including regular maintenance to remove build-ups of odour causing compounds. Robust work planning at wastewater treatment plants to avoid odour events. Replacement of trickling filter at Christchurch wastewater treatment plant Good design of wastewater networks to prevent creation of anaerobic conditions / adequate ventilation. Enforce trade waste bylaws. Monitor and control illegal discharge of chemicals and toxins to the wastewater system.
Economic	
Cost of operating wastewater collection, treatment and disposal systems	Documented processes and maintenance systems control costs. Improve network efficiency through asset renewal.

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

Questions

Long Term Plan 2024-34 Joint development briefing

Aug 29, 2023

Long Term Plan 2024-34

- This briefing is one of a series held as part of the development of the Long Term Plan 2024-34.
- **All discussions involve draft material and reflect a position on the day.**
- Decisions will be set out in the draft Long Term Plan, which will be adopted for consultation in February 2024.
- This recording is intended to provide residents with an overview and understanding of the big picture issues, and therefore may not include all detail and matters discussed at the briefing.

Stormwater Drainage

- *Council responds to flood events, faults and blockages promptly and effectively*
- *Council maintains waterway channels & margins to a high standard*
- *Council manages the stormwater network in a responsible and sustainable manner.*
- *Stormwater network is managed to minimise risk of flooding, damage and disruption*
- *Implement Flood Plain Management Programme works to reduce risk of flooding to property and dwellings during extreme rain events*
- *Waterways are clean and pollution is minimised.*

1. What this activity delivers

The stormwater network collects and conveys stormwater during rainfall events. This is designed to work with secondary flow paths which can include roads in larger storm events.

In delivering this service the Council aims to provide a balanced mix of:

- maintenance and renewals to preserve the levels of service;
- managing the risk that is generated from stormwater runoff within the Christchurch urban area, whether conveyed or managed along pipes, roads, facilities or watercourses.
- capital investment to respond to increasing demands for growth (both greenfield and infill); and
- managing stormwater discharge quality and quantity to improve health of water bodies to sustain ecological health and avoid any overwhelming of the stormwater network and the receiving environment.

Council uses a multi-value approach to Stormwater, where the drainage value of the network is considered alongside other values such as ecology, culture, recreation, heritage and landscape. Together these are known as the 'six values' that Council utilises in Stormwater drainage and waterway management.

Council is developing and implementing Stormwater Management Plans (SMPs) across Christchurch City and Banks Peninsula where the Council has stormwater infrastructure. The SMPs aim to maintain and improve the six values for waterways. The SMP technical documents support and define how Council will comply with rules in stormwater discharge consents it has with Environment Canterbury.

This activity includes the following services:

	Council responds to flood events, faults and blockages promptly and effectively – We want to limit the impact of faults with the service on our customers.
	Council maintains waterway channels & margins to a high standard – Appropriate maintenance is a key part of ensuring our waterways remain healthy and an environment people want to interact with.
	Council manages the stormwater network in a responsible and sustainable manner – We need to ensure that our activity is carried out to the best environmental standards
	Stormwater network is managed to minimise risk of flooding, damage and disruption – We need to manage our assets to minimise the negative impacts on customers.
	Implement Flood Plain Management Programme works to Reduce risk of flooding to property and dwellings during extreme rain events – Ensures we work to reduce flooding – focussing on above residential floor flooding - across the city. This is planned for by updating and running catchment models representing existing development (ED) and maximum probable development (MPD) flooding. It is also key that we maintain our control structures, hydrometric equipment and our pump stations, to ensure that the risk of flooding is appropriately mitigated.
	Waterways are clean and pollution is minimised. – we need to ensure that values are restored to our waterways through correcting mistakes of the past and ensuring future works are the best they can be.

The key physical assets used to deliver this activity are:

- The underground stormwater conveyance networks (including approximately 915km of pipes and 20,000 manholes/sumps/inlets/outlets etc.)
- Pump stations and water flow control devices and structures such as valves, wetlands and basins
- Open channels and overland flow path (including 2,429km of natural waterways such as rivers, streams and creeks, 110km of constructed drainage channels using various bank lining materials (timber, rock, concrete), in-channel structures, weirs and retaining walls etc.)
- Treatment devices that are not within the Flood Protection and Control Works activity (i.e. where there is no flood protection component such as silt traps, gross debris traps or proprietary treatments devices such as the cartridge filters) and flow level control devices.
- hydrometric monitoring devices, measuring rainfall along with surface water, sea and groundwater levels.



Example of land drainage

Note: This activity is intrinsically linked to and interdependent with the Flood Protection and Control Works activity

A snapshot of provision and use:

- ✓ **Over 1000km of pipework**
- ✓ **Almost 30,000 nodes (manholes, inlets/outlets etc.)**
- ✓ **We have pipelines made of brick over 140 years old**
- ✓ **Our waterways have a mixture of timber or concrete linings, or are completely natural**
- ✓ **Council operates a vast network of treatment swales, basins and wetlands.**
- ✓ **One of the biggest risks to our waterways is urban encroachment**



A control structure at a facility to provide storage to mitigate flood flows.

Where we came from

The city's first known stormwater drainage was through a sewer discharging into Ihutai-Avon Heathcote Estuary via an outfall at Linwood Avenue. The main stormwater outfall, built between 1871 and 1874, has served the city since. The Christchurch Drainage Board, formed in 1876, decided to keep the city's stormwater and sewage disposal systems separate.

A complex system of drains, both open and piped, was created to carry stormwater from the city to the Linwood Avenue outfall. Natural streams and creeks were used, with many becoming boarded drains.

Early on, Christchurch had the country's highest rates of water-borne diseases but was later said to have the country's "first comprehensive, effective drainage system" one historian wrote.

In 1868 Christchurch was flooded by the Waimakariri River. This prompted the construction of flood protection works that started in the 19th century and continued well into the second half of the 20th century.

Christchurch remains vulnerable to surface flooding from large rainfall events, rivers spilling over their banks, and major storm events associated with high tides.

This was exacerbated by the Canterbury earthquakes of 2010 and 2011, substantially altered ground levels in parts of the city and flooding affected Mairehau, Richmond, St Albans and properties along the lower reaches of the Ōpawaho-Heathcote River.

In 2012 the Land Drainage Recovery Programme was established to assess the effects of the earthquakes on the land drainage network and prepare a programme of works to address them.

After a series of floods, a Mayoral Taskforce was set up in 2014 to grapple with this problem in the most vulnerable areas. It prioritised funding for mitigation projects, particularly in the Flockton area and the Heathcote catchment. The Land Drainage Recovery Programme was absorbed back into 'business as usual' works at the end of 2019.

Historically, work on Banks Peninsula focused on maintaining existing assets with an aim to reduce the risk of flooding where possible.

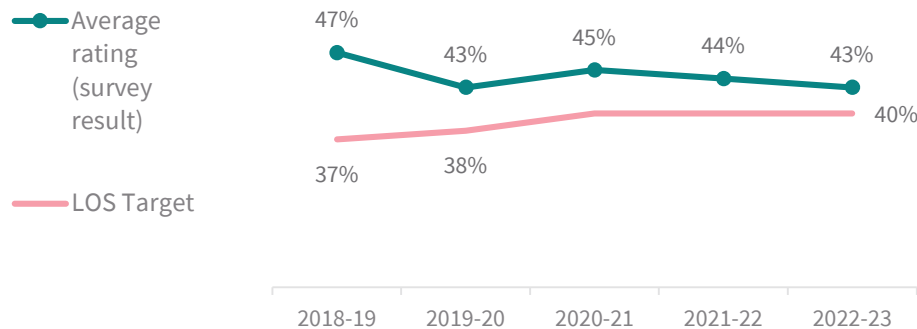
In the LTP2024, some services that had previously been sitting under the Flood Protection and Control Works Activity were re-classified into the Stormwater Drainage activity due to their Levels of Service being primarily for stormwater management purposes.

What our community is saying



43% are on average satisfied with Council's management of the stormwater network.

LOS 14.0.3 Council manages the stormwater network in a responsible and sustainable manner: Resident satisfaction with Council's management of the stormwater network (average rating)



Individual components	2018-19	2019-20	2020-21	2021-22	2022-23
Condition of Waterways	36%	30%	44%	38%	36%
Condition of Waterway Margins	52%	48%	45%	49%	47%
Appearance of Waterway Margins	53%	51%	50%	53%	50%
Stormwater system minimises flood risk	46%	41%	42%	40%	39%

Source: *Residents Survey*

Who our key customers are: All residents of the City and Banks Peninsula

Who our key stakeholders are: All residents of the City and Banks Peninsula

What residents say: “Stormwater upgrade ... making sure when there are huge rains that there is capacity to quickly move that water out of the drains.”

Community outcomes: 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
 A collaborative confident city Our residents have the opportunity to actively participate in community and city life, have a strong sense of belonging and identity, and feel safe	★	We aim to involve our communities with our green assets to change attitudes by: Working with community groups to engage with waterways through being part of activities such as community plantings along waterway margins. This is important for improving the connection of people with our waterways.
 A green, liveable city 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	★★★★	We strive to right past wrongs done and care for the environment by: - Appropriate stormwater management is a crucial part of keeping waterways healthy which are an important part of a healthy environment for a green, liveable city. Without suitable investment in growth and renewal projects, land use intensification negatively impacts water quality and the ecological health of our natural waterways. For water quality in our waterways, wetlands and estuaries to improve over time good stormwater management such as timely renewals, appropriate maintenance regimes and public education on “where stormwater goes” is required by everyone in the community. - Greening of our infrastructure can bring ecosystems right to the residents of our city, making it a much more pleasant place to live - The activity includes projects such as planting programmes to mitigate sediment migration from the hillside catchments, as well as provide for carbon sequestration to offset emissions.
 A cultural powerhouse city 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’	★★	We strive to include multiple values within our business by: One of the 6-values that Council aspires to include within capital works projects and the way it operates and maintains assets is culture. This can be often seen with the inclusion of items within treatment facilities (artifacts, storyboards etc.). We also look to carry out meaningful and sincere discussions with mana whenua to better understand cultural values.
 A thriving prosperous city 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	★★★	We strive to deliver cost effective solutions to improve the city by: - A key objective of this activity is to limit the effects of flooding on homes and Council infrastructure and ensure lifeline routes are available during an emergency response. - Through improved use of smart technology such as on-going ground water monitoring, Council is better able to inform strategic planning documents with hazard risk information. - Through careful planning, consultation and prudent financial investment, Council aspires to ensure Christchurch is well prepared for the impacts and consequences of climate change and our obligations to meet emissions targets.
*Level of contribution – what this means ★★★★ This activity is critical to the Council’s contribution to achieving this community outcome – we measure our impact with specific levels of service ★★★ 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 ★★ This activity supports the Council’s contribution to achieving this community outcome – we measure our impact with specific levels of service if practicable ★ This activity may provide incidental support to achieving this community outcome – it’s not cost-effective to measure our impact		

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

Strategic Priorities		Contribution*	How our strategic priorities influence the way we work
	Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection	★★★	- As a member of the Community Waterways Partnership Charter, Council work with other members to improve waterways, through delivery of education and awareness programmes to get the wider community working together to protect and improve waterways. - The more public are willing to interact with the water ways running within their properties and communities, the more likely waterway encroachment trends will start to reverse, and habit protection and enhancement will become normal.
	Champion Christchurch and collaborate to build our role as a leading New Zealand city	★★	By using our 6-values approach with drainage design and how Council views its waterways and waterway health, we have historically been able to be a leader in design and management of our drainage infrastructure.
	Build trust and confidence in the Council through meaningful partnerships and communication, listening to and working with residents	★★	We regularly partner with community and school groups to work on planting and education programmes to improve the health of our waterways. These exercises allow those groups to tell us what they see as priorities and how we can better work together.
	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.	★★★★	- The Stormwater Drainage activity is very aware of the effects of the changing climate on our asset base and the changes that will be required to manage rising ground water levels, rising sea levels, more intense rain events and times of drought. While not undertaken yet awaiting further strategic direction, there will need to be greater planning carried out how we will provide for resilience for our infrastructure which may require planning for pumped solutions, changing flow path directions reducing sub-catchment numbers requiring working with other council activities. We will need to address the potential for increased emissions that this will result in with real emission reduction strategies. - To regain a connection with a healthy environment and public well-being, it is essential that Council recognises that there are many unique landscapes needing to be protected, maintain and extended along with its indigenous biodiversity. As communities see and enjoy living with the natural environment across their city, the unique landscapes and indigenous biodiversity will become truly valued.
	Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents	★★★	- We aim to ensure that capital works projects are delivered in the best possible way to minimise expenditure which limits the amount of borrowing Council is required to undertake. - Operational expenditure is managed through the use of a multi-year maintenance contract. - The balancing act of managing the cost of renewals with increased operational cost is something that staff are mindful of when making financial decisions. We are ratepayers too.
	Actively balance the needs of today's residents with the needs of future	★★★★	Restoring the damage done by historical drainage practices are an on-going part of the activity to ensure we leave things in a better state for future generations.

	generations, with the aim of leaving no one behind		As discussed above climate adaptation and carbon emission reduction works are required considerations with many of the projects undertaken by the activity.
*Levels of contribution – what this means			
★★★★	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		

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

Net zero emissions Christchurch

	Key sources of greenhouse gas emissions from this activity includes: • Construction of new infrastructure • Decommissioning or renewal of existing infrastructure • Emissions from biologically enhanced stormwater treatment facilities • Potential waste product of captured pollutants • Electricity usage for activities such as pumping • Maintenance of infrastructure including travel emissions				
	Stormwater Drainage are taking the following actions to reduce greenhouse gas emissions: <table border="1"> <thead> <tr> <th data-bbox="206 544 1167 576">Operational/embedded greenhouse gas emissions</th><th data-bbox="1167 544 2110 576">Greenhouse gas emissions by users of the Stormwater Drainage activity</th></tr> </thead> <tbody> <tr> <td data-bbox="206 576 1167 865"> • Reduce the pollutant load by implementing source treatment and catchment management of pollutants to reduce maintenance costs for removal of accumulated sediment • Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising stormwater quality or reliability • Prioritise nature based solutions and encourage native plantings in infrastructure design </td><td data-bbox="1167 576 2110 865"> • Consider opportunities for stormwater / rainwater detention storage tanks to limit pressure on downstream network during periods of high flow. Co-benefits also include available water reuse. • Education in reduction of point source pollutants such as roofing material choices, brake pad material choices, environmentally friendly paint, etc • Encourage reduced impervious area in developments through alternative options </td></tr> </tbody> </table>	Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of the Stormwater Drainage activity	• Reduce the pollutant load by implementing source treatment and catchment management of pollutants to reduce maintenance costs for removal of accumulated sediment • Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising stormwater quality or reliability • Prioritise nature based solutions and encourage native plantings in infrastructure design	• Consider opportunities for stormwater / rainwater detention storage tanks to limit pressure on downstream network during periods of high flow. Co-benefits also include available water reuse. • Education in reduction of point source pollutants such as roofing material choices, brake pad material choices, environmentally friendly paint, etc • Encourage reduced impervious area in developments through alternative options
Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of the Stormwater Drainage activity				
• Reduce the pollutant load by implementing source treatment and catchment management of pollutants to reduce maintenance costs for removal of accumulated sediment • Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising stormwater quality or reliability • Prioritise nature based solutions and encourage native plantings in infrastructure design	• Consider opportunities for stormwater / rainwater detention storage tanks to limit pressure on downstream network during periods of high flow. Co-benefits also include available water reuse. • Education in reduction of point source pollutants such as roofing material choices, brake pad material choices, environmentally friendly paint, etc • Encourage reduced impervious area in developments through alternative options				

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

	Key climate risks for the Stormwater Drainage activity includes: • Sea Level Rise Related ○ Reduced conveyance capacity due to elevated groundwater table ○ Reduction in hydraulic capacity due to higher sea level at outfall ○ Increased flooding extent in coastal areas ○ Increased drainage time of detention / flood management ponds due to increased groundwater table, potentially leading to opportunities for unwanted insect growth • Rainfall and Flooding Related ○ Available ground soakage may change in seasons with greater average rainfall, contributing to more surface water runoff, resulting in greater flood flow volumes ○ More intense and frequent storms contribute to increased flood flows ○ More energy usage may be necessary to support pumping operations due to greater flood flows and reduced capacity ○ Higher peak inflows into treatment devices may render them not as effective for different frequency storms ○ Increased contaminant loading due to greater surface water runoff volume and frequency ○ Overland flow paths may change
--	---

- Heat, Drought, Fire Related
 - Increased contaminant and sediment concentrations during periods of low flow
 - Eutrophication of systems may occur which may adversely impact water quality
- Soil Erosion and Landslides Related
 - Increased scour and erosion during flood events due to increased flows
 - Frequent flooding could contribute to land and slope instability
- Other
 - Buildings, homes, and businesses may become inhabitable, unusable, or uninsurable
 - Alterations to river flows may result in changes to flood hazards
 - Damage from flooding could result in large amounts of hazardous waste requiring disposal
 - Flood waters can contain contaminants which can pose human health risks
 - Contaminants in flood waters can also impact social, recreational, and cultural values in surface water bodies and coastal areas
 - Flooding and erosion may lead to restricted road access and isolate affected communities
 - Infrastructure repairs may be required at a greater frequency due to increased number of flood events
- Other impacts on assets and infrastructure (see the [Asset Management Plan](#) for more details).

Options being considered to reduce the risks to the Stormwater Drainage activity and the community posed by those climate risks include:

- Require or incentivise practices such as hydraulic neutrality, minimum floor levels, setbacks from open streams, effects from change in land use in terms of sediment and pollutant loading, and protection of overland flow paths in new developments to enhance how the flood protection and control works respond to differing storm flow patterns and reduced hydraulic capacity and conveyance due to climate change
- Improve water quality through sediment control measures, use of wetlands and nature based design, improving resilience and effectiveness of source control of contaminants and pollutants to counter the effects of increased magnitude and frequency of rainfall, including retrofit water quality mitigation for existing developed areas
- Education surrounding litter, pollutant and contaminant reduction at source to counteract the changes in rainfall intensity and storm frequency due to climate change
- Encourage communal stormwater management approaches and/or on-site stormwater management at source to manage changes in storm frequency and intensity due to climate change
- Reduce dependence on piped infrastructure and instead prioritise nature based solutions, water sensitive urban design, and designated overland flow paths to maximise capacity and minimise conveyance route risks for greater flood flow volumes
- Improve knowledge of network performance by continuing to use and maintain hydraulic models which consider current and future climate-factor scenarios to enable informed decision making
- Managing assets collectively to ensure future works maximise collaborative benefits across Council activities. This includes reviewing climate change risks, such as sea level rise extents, and incorporating the results into current and future planning and design works, noting management of climate related risks and reduction in vulnerability will likely include collaboration in multiple Council activity areas.

We are guardians of our natural environment and taonga

We will be undertaking four pilot projects in the next three years to further support climate change initiatives. These are:

Project 1: Loaded Value Treatment – Conduct Multi-Value Analysis on Stormwater Treatment Methods and Technologies for Consideration in Future Projects



Carry out a multi-value analysis on stormwater treatment methodologies and technologies, which includes climate change emissions and vulnerability considerations. The work extent and outputs would include:

- Development of a total value analysis structure for evaluation of stormwater treatment options including consideration of economic, ecological, cultural, heritage, recreation, carbon footprint, land-uses and space requirements coupled with landscaping, hydraulic and drainage functionality, and others
- Gather environmental product declarations and emissions data on propriety treatment devices from suppliers and compare whole-of-life emissions across the treatment methodologies
- Use output information to support informed decision making for future investment

Project 2: Cleaning Our Roofs – Installation of Stormwater Treatment Devices to Reduce Metal Contaminant Discharge and Monitoring of Effectiveness

Install Storminator treatment devices on XX selected Council owned buildings within the XXX stormwater management zone and evaluate performance. Climate change means that storm event magnitudes and frequencies may change, potentially driving more frequent, more intense rainstorm events. In these events, there is likely to be more sediment and contaminants discharge due to erosion and/or less ground soakage contributing to increased runoff. Treatment devices or methodologies may not render as effective during these higher peak flows. Therefore, investigation into direct treatment of roof runoff could help to counteract the adverse effects of climate change. Some advantages of the project are:

- Opportunity to trial a retrofit solution and evaluate costing, ease of installation, maintenance, water quality improvement, etc.
- The results of this assessment would inform future investment strategies and design requirements. Point source pollution control could be implemented throughout the catchment and on new infrastructure.
- The proposal supports the legal requirements to provide treatment under the stormwater discharge consent.
- Contribution to water quality enhancement.

Project 3: Outfall Rehab, Let It Flow – Undertake Analysis of Stormwater Outfall Blockage and Discharge Potential Risks with Respect to Climate Change Effects and Identify Mitigation Solutions

Carry out an assessment climate change effects contribute to stormwater outlet discharge coupled with an assessment of mitigation solutions. The results of the assessment could inform future decision-making and investment strategies. Climate change effects may have an adverse effect on the ability for the outlet to drain, such as the effects listed below:

- Sea-level rise and/or groundwater rise can reduce the hydraulic gradient of the stormwater system and therefore limits discharge at the outfall.
- Potential increased deposition of material at outfall outlet with the potential to cause blockages due to less frequent minimum flushing velocities achieved due to reduced hydraulic gradient.
- Increased sediment concentration in stormwater flow from the catchment, increasing the potential for deposition at the outfall.

It is noted that mitigation solutions may include:

- Backflow prevention, coupled with consideration of limited outflow on upstream flood levels.
- Assessment of hydraulic gradient (or reduction of).
- Pumping feasibility.
- Investment strategies and consolidation of outlets from multiple sub-catchments.

Project 4: Drying Out Wet Feet – Identification of Properties At-Risk of Above Floor Flooding

Complete an assessment to quantify properties at-risk of flooding above floor level, primarily due to river flooding, coastal inundation, and groundwater rising effects. These results would be used for a variety of reasons including:

- Estimation of potential greenhouse gas emissions due to surface water damage
- Spatial correlation of funded projects with at-risk properties
- Provides tool / interface for consideration in identification of future project or at-risk areas
- Helps to outline appropriate level of service targets (long-term planning)
- Facilitation of collaborative planning with the Coastal Hazards Adaptation team with regard to future investment
- Allow for interaction with the insurance industry regarding assessment of risk to properties and infrastructure – subject to further review following tentative release of Toka Tū Ake EQC new Risk Portal – scheduled for 2023 release.
- Investing in identification of hazards to inform risk reduction and resilience initiatives is one of the most efficient and effective ways to reduce the impact of natural hazard risks on New Zealanders.

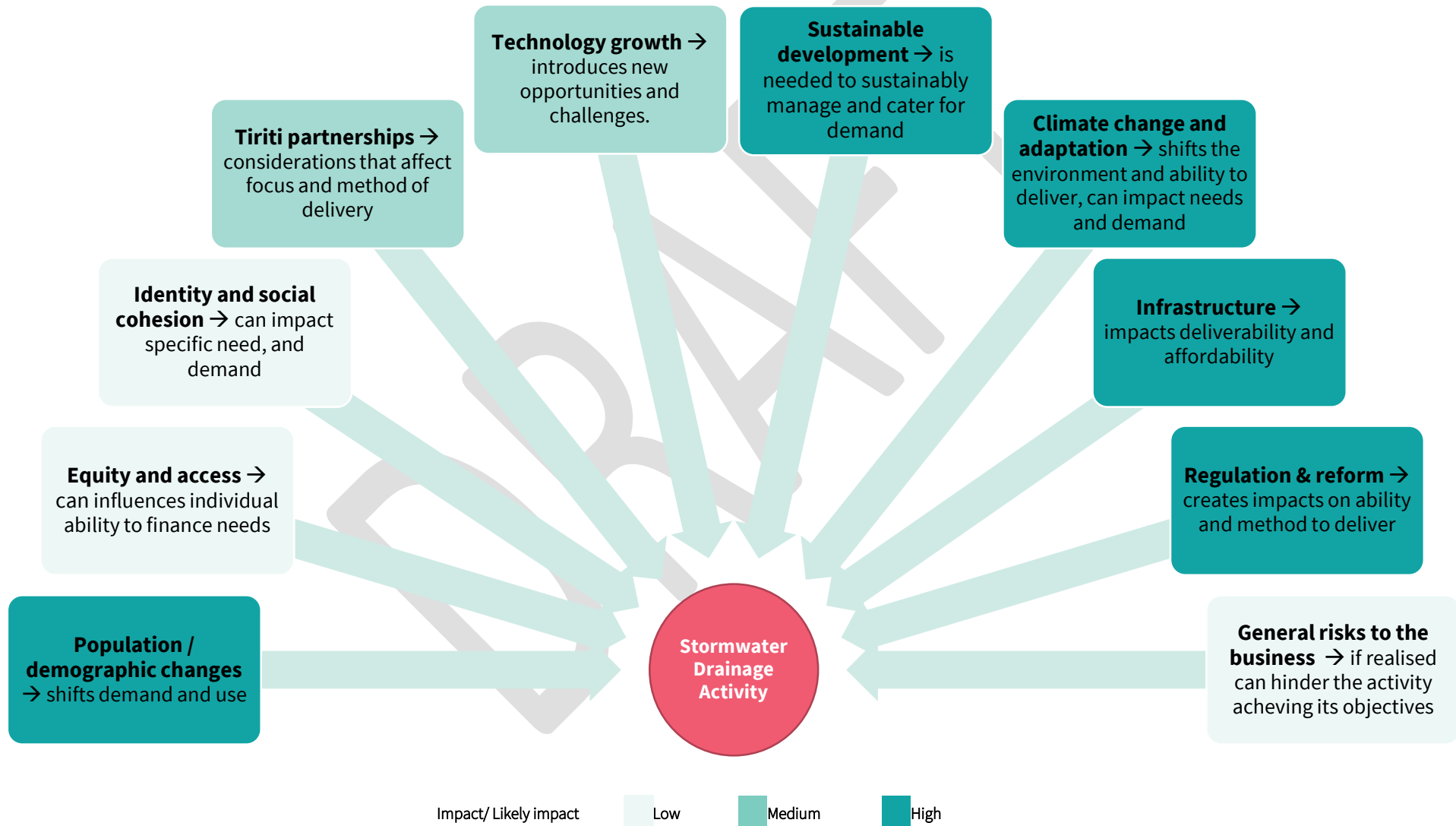
The current level of services set-out already begin to address accountability of the activity functions in relation to climate change vulnerability and greenhouse gas emissions.

- LOS: Council responds to flood events, faults and blockages promptly and effectively
 - This measure of service is reliant on the management of the activity to respond to climate change impacts.
- LOS: Council maintains waterway channels & margins to a high standard
 - A maintained stormwater drainage system is more effective at minimising adverse flooding and therefore contributes to reducing the vulnerability of those being serviced.
 - Design, material choice, fuel and electricity usage for maintenance activities would also be considered in efforts to minimise greenhouse gas emissions.
- LOS: Council manages the stormwater network in a responsible and sustainable manner
 - Management of the stormwater network contributes to benefits in reduction in sediment and pollutant loadings which minimises maintenance efforts.
 - Use of and continual maintenance of hydraulic models incorporating climate factors ensure decisions for current and future works are driven by evidence-based approaches to contribute to responsible management of the system.
 - This service also relates to compliance with discharge consent requirements which takes into account means to limit sediment volume which can have adverse effects on maintenance and greenhouse gas production.
- LOS: Stormwater network is managed to minimise risk of flooding, damage and disruption
 - Prioritising nature based solutions, water sensitive urban design, and allowing for overland flow paths ensures the system can better adapt to future climate change pressures for a sustainable future and minimise damages and disruptions.
- LOS: Reduce risk of flooding to property and dwellings during extreme rain events
 - Achievement of this measure of service is dependent on management of the activity to respond to climate change impacts
- LOS: Implement Flood plain Management Programme works to reduce flooding
 - The implementation of these works to reduce flooding helps to limit greenhouse gas emissions which would likely occur if flood protection is inadequate.
- LOS: Waterways are clean and pollution is minimised
 - Pollution minimisation initiatives are already being actioned in performance targets and contribute to reduction in greenhouse gas emissions

3. How we are planning for future impacts

There are various factors influencing current and future demand for Stormwater drainage 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.



Climate Change and Adaptability

→ there is a need to service communities with infrastructure that is safe, practical and cost effective.

This will **impact the community outcomes and strategic priorities** if being unable to meet levels of service.

Mitigating actions to ensure we manage this, if funded, include carrying out infrastructure planning for future climate scenarios, work with Strategic Hazard teams, avoid maladaptive projects while policy is developed.



Infrastructure

→ sufficient investment in asset renewals, protracted delivery process, lack of asset management tools is needed

This will **impact the community outcomes and strategic priorities** if money is not managing wisely to make a thriving prosperous city.

Mitigating actions to ensure we manage this, if funded, include improving asset management maturity, carrying out systemic process changes for delivery.



Population/Demographic Changes

→ can result in increased flooding or waterway contamination if not managed

This will **impact the community outcomes and strategic priorities** negatively.

Mitigating actions to ensure we manage this, if funded, include hydraulic modelling, planning for demand management, looking at increasing infrastructure run-off differently.



Sustainable development

→ development should not occur where it cannot be sustained long term due to climate adaptation.

If done, this can **impact the community outcomes and strategic priorities** providing infrastructure that will not meet its required asset life and incur excessive OPEX costs.

Mitigating actions to ensure we manage this include ensuring the effects of climate hazards are incorporated in design, work with Strategic Hazard teams, avoid maladaptive projects while policy is developed.

Stormwater Drainage activity

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 & Levels of Service measurements

- ➔ *Stormwater Drainage have **11 Community (C) Levels of Service.** (These LOS community facing and will be published in our Statement of Service Provision)*
- ➔ *This activity also has **13 Management (M) Levels of Service.** (These are LOS that are measured in the organisation to ensure service delivery)*

 Council responds to flood events, faults and blockages promptly and effectively		 Council maintains waterway channels & margins to a high standard	
Service contributes to: - A thriving prosperous city - A collaborative confident city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 2 Community and 2 Management LoS. - Percentage of calls responded to within 2 hours (urban) or 6 hours (rural). - Percentage of routine calls responded to within 5 working days. - Median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site. - Number of complaints received by a territorial authority about the performance of its stormwater system	Service contributes to: - A green, liveable city - A thriving prosperous city This is by generally maintaining the targets of the levels of service promised.	Levels of Service This service has 1 Community and 3 Management LoS. - Resident satisfaction with Council's management of the stormwater network. - Percentage of all aquatic weed diverted from landfill (mechanical and hand harvested). - Minimum length of 500m of bank naturalised per year (based on a single side of the waterway). - Ratio of the length of watercourse consented to be physically improved versus physically degraded in each year.
 Council manages the stormwater network in a responsible and sustainable manner.		 Stormwater network is managed to minimise risk of flooding, damage and disruption	
Service contributes to: - A green, liveable city - A thriving prosperous city This is by generally maintaining(?) the targets	Levels of Service This service has 4 Community and 2 Management LoS. 4 measures relating to the number of abatement notices, infringement notices, enforcement orders, and successful prosecutions a regarding Council resource consents related to discharges from the stormwater networks per year.	Service contributes to: - A green, liveable city - A thriving prosperous city This is by generally maintaining the targets of	Levels of Service This service has 3 Community and 2 Management LoS. - The number of flooding events that occur. - For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system). - Percentage of total stormwater gravity network pipework length at condition grade 5.

of the levels of service promised.	- Stormwater Service potential - 10yr rolling historic ratio of renewals to depreciation: The ratio of asset renewals to depreciation per year. - Increase Land Drainage Asset Management Maturity towards agreed appropriate level (Advanced 89).	the levels of service promised.	- Percentage of stormwater mains with high or very high consequences of failure inspected as scheduled in their lifespan. - Percentage of total Stormwater waterway linings at condition Grade 5.
 Implement Flood Plain Management Programme works to reduce risk of flooding to property and dwellings during extreme rain events		 Waterways are clean and pollution is minimised	
Service contributes to: - A collaborative confident city - A thriving prosperous city This is by generally maintaining (?) the targets of the levels of service promised.	Levels of Service This service has 2 Community and 1 Management LoS. - Catchment models are updated and run to represent existing development (ED) and maximum probable development (MPD) flooding, Ōtākaro Avon River and other models at required intervals not greater than every 5 years - Annual reduction in the modelled number of properties predicted to be at risk of habitable floor level flooding of the primary dwelling in a 2% AEP Design Rainfall Event of duration 2 hours or greater excluding flooding that arises solely from private drainage. - Number of surface water network monitoring sites (flow, level or rainfall)	Service contributes to: - A collaborative confident city - A green, liveable city - A thriving prosperous city This is by generally maintaining (?) the targets of the levels of service promised.	Levels of Service This service has 3 Management LoS. - Annual rolling average reduction in the discharge of zinc/copper/Total Suspended Solids (TSS) to be equal or greater than that required to meet the reduction set in the Comprehensive Stormwater Network Discharge Consent (CSNDC) for 2023 and 2028, derived through contaminant load reduction modelling of the stormwater treatment facilities which have been installed - Average annual of retrofit stormwater treatment to existing or brownfield development areas - Auditing of stormwater systems on industrial premises.

5. How assets will be managed to deliver the services

The Stormwater Drainage portfolio is made up of piped reticulation, waterway linings, open waterway structures, treatment facilities and monitoring equipment. The Asset value of this Activity is approximately \$2,903M

Managing our assets

Assets are provided by the activity by 3 key means: asset improvement/growth, renewals and vested assets from development. Development is unplanned and can be difficult to financially manage, especially OPEX funding, as the provision of the timing of delivery is out of council's hands. Improvement and growth works are generally required to meet compliance and regulatory requirements (Comprehensive Stormwater Network Discharge Consent (CSNDC), Freshwater NES) and climate change resilience projects. Renewal projects are required to ensure our asset based is replaced at a time that manages the cost of borrowing CAPEX funds to replace the asset compared to rates raising required for increased OPEX costs.

Given the size of the asset base, there are separate teams that manage the various provision of Assets. the various teams in this activity work well together.

There are three maintenance contracts for the maintenance and operation of the assets, with the main one being the CN4600003932 – “Stormwater and Waterways Maintenance Christchurch”. The funding for the maintenance activities are a mixture of planned works and reactive works. This allows the greatest flexibility for the funding provided and a mixture of works that are required to meet levels of service for amenity and public satisfaction as well as fault resolution.

Not all of the maintenance activities on waterways and treatment areas are carried out by the Land Drainage

Looking forward

The focus for the activity for this LTP period is consistent with other previous LTP's. There is always a focus on how best to prioritise the needs of the community, meeting our legal requirements and ensuring value for money. This LTP also needs to consider the cost implications of the changing economic situation with increasing inflation and cost escalation and finally looking at prioritising climate resilience with the attention that's been needed for some time. These competing priorities create some tension with the available funding that needs to be balanced across the 3 Waters activities and the wider organisation.

With the emphasis on Climate Resilience through the Strategic Priority of “*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 and enhancing our indigenous biodiversity, water bodies and tree canopy*”, there have been a number of pilot projects that have been identified and funding requested (CAPEX and OPEX). These projects include initiatives such as “Installation of Stormwater Treatment Devices to Reduce Metal Contaminant Discharge” and “Undertake Analysis of Stormwater Outfall Blockage and Discharge Potential Risks with Respect to Climate Change Effects” (see section 2.3 for further detail). This will have corresponding benefits with the “*A green, liveable city*” Community Outcome, which, as discussed in Section 2.1 above, is a key outcome for this activity.

There are a number of Council strategy documents that are important to the activity, with one of the key documents being “*Te Wai o Tane - Integrated Water Strategy (2019)*”. The strategy sets out 4 goals including; the value of water use by the community, the importance of water quality and ecosystem protection and enhancement, an understanding of the effects of climate change and assisting with community adaptation and the sustainable management of water in line with the principle of kaitiakitanga. Unfortunately, while there have been child water strategies prepared by the Water and Wastewater Planning team, this has not been done yet by the Land Drainage and Waterways Planning team due to other competing priorities for similar works (CSNDC work, Freshwater Action Plan, Stormwater Management Plans) and

operations team. Some of the maintenance activities are carried out by the Parks operations team. Given the planned water reform, there will either need to be a change in operation, or more detailed Service Level Agreements will be required.

As can be seen in “Section 6: Capital Expenditure and key capital projects”, the main spend for the Stormwater Drainage activity is Growth and Improvement. This is primarily due to the provision of treatment facilities both within and outside of the Ōtākaro Avon River Corridor (and associated land purchase). There is a large renewal required for lined drains as well.

The Draft Infrastructure Strategy (IS) contains some key significant issues that affect our ability to manage ratepayer money wisely, including “We need to improve our understanding of our infrastructure so we can make the best decisions for our community”. This is an on-going issue that additional resource is 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.

insufficient dedicated resource. The business has not able to make use of the “*Otautahi Christchurch Climate Change Strategy (2021)*” as there have been insufficient policy or guidance (or funding/resourcing) for the activity to work within the framework of goals and programmes in the strategy. Therefore, the emphasis of climate within this LTP is welcomed by the business.

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. 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.

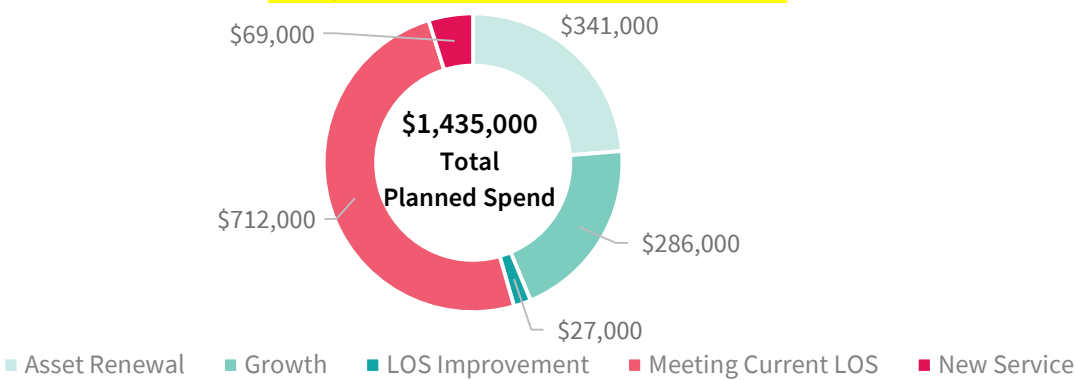
Reducing the capital program would increase the risk profile to Council. The program is developed to meet the level of service targets, avoid the sweating assets that would increase operational costs, and undertaking projects required to meet growth demands.

Please refer to the [Land Drainage 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. Note projection includes Stormwater Drainage AND Flood Protection and Control funding as the two activities are closely linked. Also 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 between 1 July 2024 and 1 July 2026.*

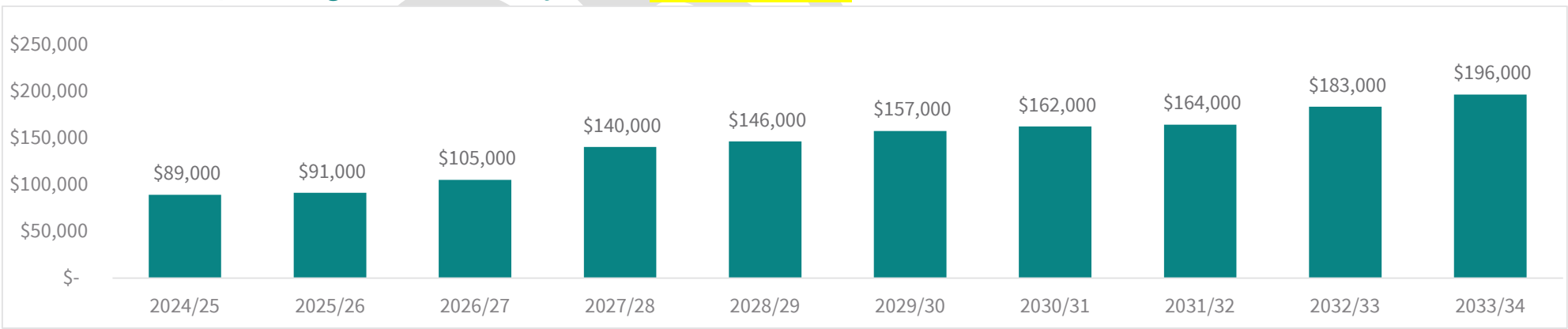
Stormwater Drainage & Flood Protection Capital Programme over 10 years (\$'000)



Planned significant projects and programmes include:

1. Ōtākaro-Avon River Corridor Programme ~\$90 – 180M
2. Waterway lining renewal programme ~\$112M
3. Stormwater reticulation renewal programme ~\$94M
4. Coastal Hazards Adaptation Planning Groundwater Management programme ~\$95M
5. Horners Kruses Basin ~\$45M
6. Addington Brook & Riccarton Drain Filtration Devices ~\$23M

Total Planned Capital Programme summary (\$'000) (To be updated)



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. **(table to be updated)**

Stormwater Drainage

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
Activity Costs Before Overheads by Service											
Stormwater Drainage	12,990	13,919	14,570	15,180	15,801	16,403	16,992	17,580	1,657	1,657	
	12,990	13,919	14,570	15,180	15,801	16,403	16,992	17,580	1,657	1,657	
Activity Costs by Cost Type											
Direct Operating Costs	2,519	2,468	2,567	2,657	2,748	2,834	2,918	2,998			
Direct Maintenance Costs	9,503	10,288	10,802	11,288	11,783	12,262	12,740	13,221	255	255	
Staff and Contract Personnel Costs	965	1,160	1,199	1,232	1,266	1,303	1,332	1,359	1,401	1,401	
Other Activity Costs	3	3	3	3	3	3	3	3			
Overheads, Indirect and Other Costs	12,283	13,271	14,017	14,426	15,065	15,739	16,097	16,545	6,001	5,944	
Depreciation	27,117	29,009	30,512	32,203	33,712	35,299	36,759	38,059	6,392	6,362	
Debt Servicing and Interest	3,240	4,182	5,093	6,016	6,603	6,936	7,092	7,301	3,001	3,013	
Total Activity Cost	55,629	60,381	64,192	67,826	71,181	74,376	76,941	79,486	17,052	16,975	
Funded By:											
Fees and Charges	16	16	17	17	18	18	19	19			
Grants and Subsidies											
Cost Recoveries	209	217	225	231	237	243	248	253			
Other Revenues											
Total Operational Revenue	224	234	241	248	255	261	267	272			
Net Cost of Service	55,405	60,147	63,951	67,577	70,926	74,115	76,674	79,214	17,052	16,975	
Funding Percentages											
Rates	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fees and Charges	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%
Capital Expenditure											
Improved Service Levels	6,232	4,131	4,826	3,707	3,549	4,853	4,990	5,814			
Increased Demand	3,052	2,396	295	58	61	56	55	55			
Renewals & Replacements	22,817	22,831	22,556	21,549	24,874	26,546	24,559	25,390			
Total Activity Capital	32,101	29,359	27,677	25,314	28,485	31,455	29,604	31,259			

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 Stormwater Drainage Activity predominately through the general rate. This means that most funding comes from General Rates , mostly on the basis of Property Value .

- **Operating expenditure** is largely funded through general rates as the Library 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 rates in the year the expenditure occurs as the capital expenditure is mostly on asset renewals.

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

Outcome: Funding for operating costs

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

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*
Renewal/replacement	<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>	81%
Service improvement	<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>	16%
Growth	<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>	3%

Outcome: Initial funding for capital

Initial funding source	Proportion of capex funded*
Rates	100%
Borrowing	
Development Contributions	
Grants and Other	

* 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
Social	
Social, cultural and environmental effects of construction works	Management of construction activities to minimise risk of non-compliance with relevant consent conditions.
Social, cultural and environmental effects of stormwater discharges into waterways	Ongoing education and works programme to reduce encroachment and degradation of waterways through development, flooding issues due to development within secondary flow paths and increasing contaminant loadings and quantities of run-off. Develop and deliver stormwater management plans that consider all six values and set appropriate, measurable performance targets. Monitor stormwater discharges and instigate appropriate remedial actions as may be necessary to address potential non-compliances.
Future risk to levels of service as climate change and sea level rise strain the effectiveness of stormwater system (projected increased stormwater volumes in more frequent, more extreme events and decreasing hydraulic gradient).	Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Engage community in cost vs level of service provision discussion. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken.
Social and economic effects of flooding caused by declining stormwater conveyance and flood storage capacity due to urban infill	Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement
Economic	
Cost to Council / ratepayers of operating stormwater drainage network	Follow documented procedures and industry best practice for cost minimisation. Follow technological developments and implement cost saving initiatives on a continuous improvement basis. Focus process of defining key performance indicators on cost efficiency. Ensure staff are kept updated with technological and operational best practice through attendance at conferences and participation in specialist industry working groups.
Cost to Council/ratepayers of future work needed to upgrade system in order to appropriately manage projected increased volumes of stormwater in more	Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken.

frequent, more extreme events and decreasing hydraulic gradient resulting from climate change and sea level rise.	
Meeting increasing community and regulatory requirements for improved stormwater quality requires ongoing CAPEX and OPEX commitment by Council	Ongoing education and works programme to reduce creation of stormwater contamination at source and reduce contaminant load, necessary to reduce the reliance on infrastructure for contaminant removal through provision of stormwater treatment facilities and devices. Provision of adequate CAPEX and OPEX to meet the regulatory requirements and community levels of service
Meeting community and regulatory requirements for management of stormwater quantity, including flooding and the effects on it from climate change, requires ongoing CAPEX and OPEX commitment by Council	Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement Timely development and implementation of an effective Council Climate Change Adaptation Plan Provision of adequate CAPEX and OPEX to meet the regulatory requirements and community levels of service
Environmental	
Embedded carbon in capital works contribute to council & district greenhouse gas footprint.	Take a whole-of life approach to greenhouse gases. Seek guidance on carbon pricing in order to affordably minimise embedded carbon in capital works. Train staff as necessary.
Urban development increases the contaminant load in stormwater discharges	Retrofit treatment of existing urban areas
Cultural	
Without suitable consideration for cultural values with how we renew, plan for, construct and operate our networks, Council will not meet central government legislation requirements.	By conserving and improving our landscapes and biodiversity which are taonga, mahinga kai will be enhanced through our activities. This can be achieved over time by ensuring that good stormwater management practice is carried out by Council in its planned works and maintenance activities, and by the community in general.

Questions

Long Term Plan 2024-34 Joint development briefing

Aug 29, 2023

Long Term Plan 2024-34

- This briefing is one of a series held as part of the development of the Long Term Plan 2024-34.
- **All discussions involve draft material and reflect a position on the day.**
- Decisions will be set out in the draft Long Term Plan, which will be adopted for consultation in February 2024.
- This recording is intended to provide residents with an overview and understanding of the big picture issues, and therefore may not include all detail and matters discussed at the briefing.

Long Term Plan 2024-34 Activity Plan

Flood Protection and Control Works

- *Major tidal river flooding flood protection and control works are maintained, repaired and renewed to key standards*

Adopted XX and XX June 2024

1. What this activity delivers

The flood protection and control works activity delivers floodplain and stormwater management plan objectives to reduce the harm from flooding to our community

The activity includes construction of new flood protection infrastructure and management of existing infrastructure including:

- water flow control devices and structures such as stopbanks, dams and tide gates,

Under this activity plan, protection and control works that are required to mitigate the effects from flooding of our tidal waterways, coastal and estuary areas within the Christchurch City Drainage boundary. Note: Banks Peninsula Waterways are administered by Canterbury Regional Council.

Therefore this activity excludes anything that provides flood mitigation against runoff that is generated by rainfall falling on urban “surfaces” such as roads, dwellings, commercial builds, parks etc. that is collected and discharged into our urban waterways within the current Christchurch City Drainage boundary.

Note: This activity is intrinsically linked to and interdependent with the Stormwater Drainage activity.

This activity includes the following services:



Major tidal river flooding flood protection and control works are maintained, repaired and renewed to key standards

This is to reduce risk of flooding to property and dwellings during extreme tidal flooding events – focussing on above residential floor flooding - across the city



Stopbanks along a stretch of the Avon River will contain a tide associated with a one in 100-year storm. (<https://www.stuff.co.nz/the-press/news/125656079/avon-river-stopbanks-will-protect-area-from-one-in-100year-tide>)

A snapshot of provision and use:

- ✓ We operate 12.1 kilometres of stop bank



Previous flooding around the Ōpāwaho Heathcote River

What our community is saying

Who our key customers are: All residents of the City and Banks Peninsula

Who our key stakeholders are: All residents of the City and Banks Peninsula

What residents say: “Our street has flooded multiple times and there seems to be nothing done to solve it.”

Community outcomes: A green, liveable city.

Where we came from

Christchurch City’s flooding and storm water draining has generally been interdependent and intrinsically linked.

A complex system of drains, both open and piped, have been created to carry stormwater from the city to the Linwood Avenue outfall. Natural streams and creeks have been used, with many becoming boarded drains.

In 1868 Christchurch was flooded by the Waimakariri River. This prompted the construction of flood protection works that started in the 19th century and continued well into the second half of the 20th century.

Christchurch remains vulnerable to surface flooding from large rainfall events, rivers spilling over their banks, and major storm events associated with high tides.

This was exacerbated by the Canterbury earthquakes of 2010 and 2011, substantially altered ground levels in parts of the city and flooding affected Mairere, Richmond, St Albans and properties along the lower reaches of the Ōpāwaho-Heathcote River.

In 2012 the Land Drainage Recovery Programme was established to assess the effects of the earthquakes on the land drainage network and prepare a programme of works to address them.

After a series of floods, a Mayoral Taskforce was set up in 2014 to grapple with this problem in the most vulnerable areas. It prioritised funding for mitigation projects, particularly in the Flockton area and the Heathcote catchment. The Land Drainage Recovery Programme was absorbed back into ‘business as usual’ works at the end of 2019.

Historically, work on Banks Peninsula focused on enclosing hillside streams for safety and land stability, and to improve drainage to the sea from Lake Forsyth to reduce the risk of flooding.

In the LTP2024, some services that had previously been sitting under the Flood Protection and Control Works Activity were re-classified into the Stormwater Drainage activity due to their Levels of Service being primarily for stormwater management purposes.

2. Why we deliver this activity

2.1. Community Outcomes: How this activity contributes

Community Outcomes	Contribution*	Key contributions to achieving our community outcomes
 A collaborative confident city Our residents have the opportunity to actively participate in community and city life, have a strong sense of belonging and identity, and feel safe	★	We aim to involve our communities with our green assets to change attitudes by: As part of what we do, community groups are able to engage with waterways through being part of activities such as community plantings. This is important for improving the connection of people with our waterways and the restoring the Mauri of water.
 A green, liveable city 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	★★★★★	We strive to provide appropriate measures for climate change adaptation by: Appropriate flood management is a crucial part of Council providing such measures within our control to ensure all communities with the city are provided with a liveable city. Council is cognisant of the effects of climate change and our adaptation responses need to consider the needs of our customers to provide the best informed solutions.
 A cultural powerhouse city 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'	★★	We strive to include multiple values within our business by: One of the 6-values that Council aspires to include within capital works projects and the way it operates and maintains assets is culture. This can be often seen with the inclusion of items within flood protection facilities (artifacts, storyboards etc.).
 A thriving prosperous city 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	★★	We strive to deliver cost effective solutions to improve the city by: - Developing flood mitigation strategies that are provide sufficient confidence to allow the city to grow and be productive. - Through careful planning, consultation and prudent financial investment, Council aspires to ensure Christchurch is well prepared for the impacts and consequences of climate change and our obligations to meet emissions targets.
*Level of contribution – what this means		
★★★★★	This activity is critical to the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service	
★★★★	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	
★★	This activity supports the Council's contribution to achieving this community outcome – we measure our impact with specific levels of service if practicable	
★	This activity may provide incidental support to achieving this community outcome – it's not cost-effective to measure our impact	

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

Strategic Priorities		Contribution*	How our strategic priorities influence the way we work
	Be an inclusive and equitable city which puts people at the centre of developing our city and district, prioritising wellbeing, accessibility and connection	★★	The provision of flood protection measures provides an element of safety to the residents that live in areas that are at risk of tidal flooding, both now and in the future. By working with communities in preparing for adaptation, which considers the well-being of our affected communities, it will hopefully provide more connection between Council and residents over the proposed works.
	Champion Christchurch and collaborate to build our role as a leading New Zealand city	★★	By being proactive with climate adaptation as related to sea level increases Council has the ability to be a leading New Zealand city. While council has the passionate and skilled staff to be able to deliver this work, it will require our elected members to commit the require expenditure in new assets (and further OPEX increases) to meet the ideal of our strategic priorities.
	Build trust and confidence in the Council through meaningful partnerships and communication, listening to and working with residents	★★	Though engagement with the community on climate change adaptation, and the proposed adaptation pathways, Council will be able to ensure that the residents concerns are addressed to build trust and confidence what we do.
	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.	★★★★	The Flood Protection & Control Structure activity is very aware of the effects of the changing climate on our asset base and the changes that will be required to manage rising ground water levels, rising sea levels, more intense rain events and times of drought. While not undertaken yet, as the business is awaiting further strategic direction, there will need to be greater planning carried out how we will provide for resilience for our infrastructure which may require planning for our approach for providing flood protection. We will need to address the potential for increased emissions that this will result in with real emission reduction strategies.
	Manage ratepayers' money wisely, delivering quality core services to the whole community and addressing the issues that are important to our residents	★★★★	- We aim to ensure that capital works projects are delivered in the best possible way to minimise expenditure which limits the amount of borrowing Council is required to undertake. - Operational expenditure is managed through the use of a multi-year maintenance contract. - The balancing act of managing the cost of renewals with increased operational cost is something that staff are mindful of when making financial decisions. We are ratepayers too.
	Actively balance the needs of today's residents with the needs of future generations, with the aim of leaving no one behind	★★★★	- The business is well aware of the requirement with providing suitable flood defences that are balanced between a suitable level of protection (which considers best estimates on the future climate scenarios) and the capital costs. This is why it is essential that Council continues essential projects such as the Multi Hazard Assessment works and providing additional OPEX funding to the Coastal Hazard Adaptation Planning team and the Stormwater and Waterways Planning teams. - As discussed above climate adaptation and carbon emission reduction works are required considerations with many of the projects undertaken by the activity.
*Levels of contribution – what this means			
★★★★	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		

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

Net zero emissions Christchurch

	Key sources of greenhouse gas emissions from this activity includes: • Construction of flood protection structures • Maintenance of flood protection assets including travel associated with operation and maintenance activities			
	Flood Protection and Control Works are taking the following actions to reduce greenhouse gas emissions: <table border="1"> <thead> <tr> <th data-bbox="206 352 981 780">Operational/embedded greenhouse gas emissions</th><th data-bbox="981 352 2110 780">Greenhouse gas emissions by users of the Flood Protection and Control Works activity</th></tr> </thead> <tbody> <tr> <td data-bbox="206 352 981 780"> • Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising level of flood protection </td><td data-bbox="981 352 2110 780"> • Reduce the need for relocation due to the effects of climate change and flood inundation due to adequate flood protection • Reduce carbon emissions during and following flood events by providing adequate flood defence. Emissions from adverse flood effects may include: ○ Use of diesel generators to provide temporary power to properties ○ Emergency responses and evacuations ○ Road closures leading to large diversions, increasing petrol use ○ Repairs to or replacement of flood damaged properties, structures, equipment, etc ○ Energy in drying processes (e.g. dehumidifiers, air blowers, etc) ○ Waste generation from flood damaged goods </td></tr> </tbody> </table>	Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of the Flood Protection and Control Works activity	• Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising level of flood protection
Operational/embedded greenhouse gas emissions	Greenhouse gas emissions by users of the Flood Protection and Control Works activity			
• Reduce our carbon footprint through changes in design, material choice and construction of new assets without compromising level of flood protection	• Reduce the need for relocation due to the effects of climate change and flood inundation due to adequate flood protection • Reduce carbon emissions during and following flood events by providing adequate flood defence. Emissions from adverse flood effects may include: ○ Use of diesel generators to provide temporary power to properties ○ Emergency responses and evacuations ○ Road closures leading to large diversions, increasing petrol use ○ Repairs to or replacement of flood damaged properties, structures, equipment, etc ○ Energy in drying processes (e.g. dehumidifiers, air blowers, etc) ○ Waste generation from flood damaged goods			

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

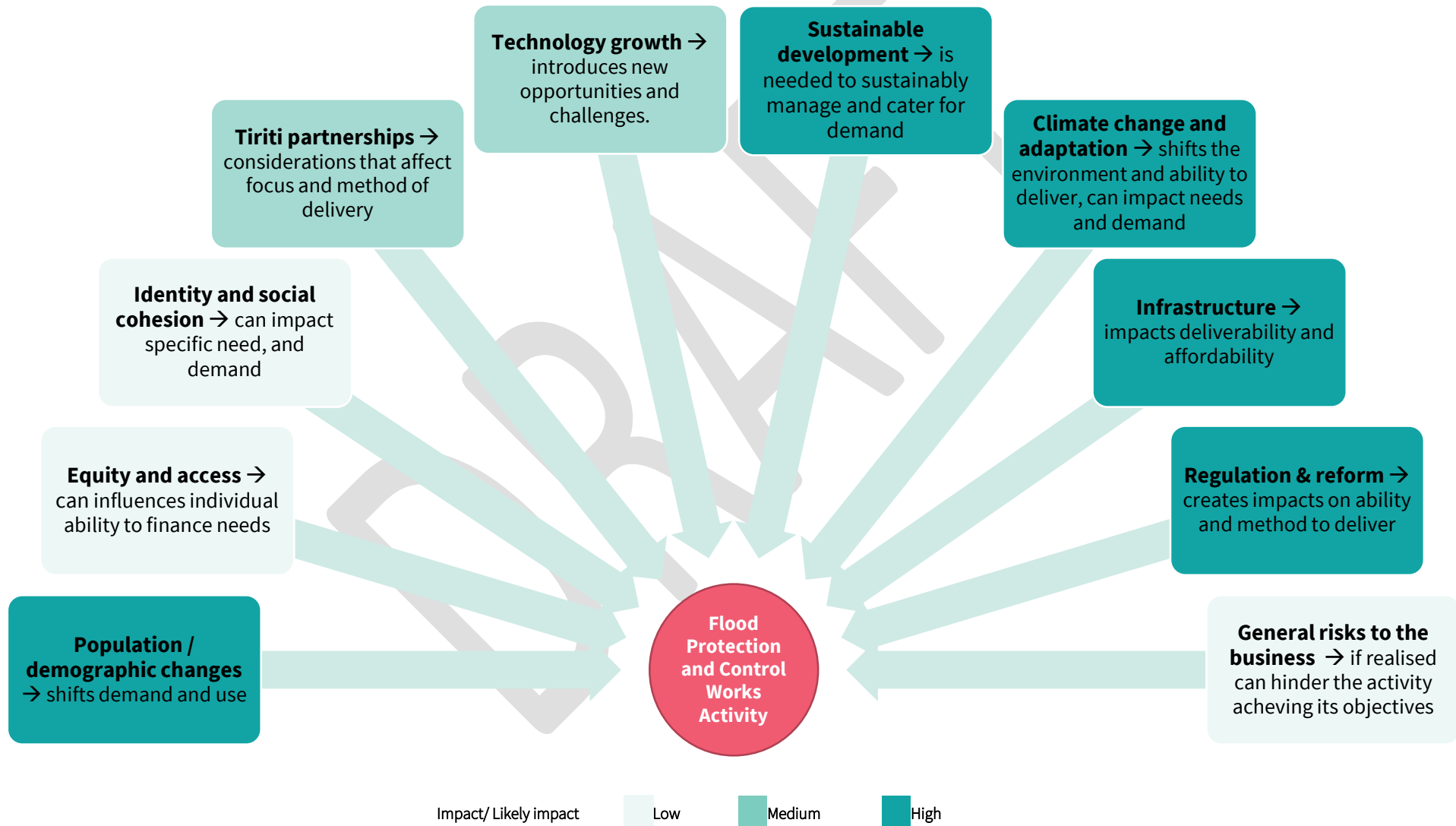
	Key climate risks for the Flood Protection and Control Works activity includes: • Sea Level Rise Related ○ Reduced system conveyance and flood management capacity due to either a raised groundwater table or decreased hydraulic gradient due to sea level rise ○ Salinity may affect vegetation health, leaving banks at higher potential for erosion ○ Increased flooding extent in coastal areas • Rainfall and Flooding Related ○ More intense and frequent storms contribute to increased flood flows ○ Rainfall amounts and seasonality changes may contribute to increased runoff volumes due to change in ground soakage capacity ○ Overland flow paths may change • Heat, Drought, Fire Related ○ Grass/vegetation die off along stop banks may lead to faster degradation and erosion • Soil Erosion and Landslides Related ○ Changes in seasonality of rainfall could cause effect on soil erosion on surfaces at different stages of vegetation life ○ Increased scour and erosion during flood events due to increased flows • Other ○ Buildings, homes, and businesses may become inhabitable, unusable, or uninsurable
--	--

	○ Alterations to river flows may result in changes to flood hazards ○ Damage from flooding could result in large amounts of hazardous waste requiring disposal ○ Flood waters can contain contaminants which can pose human health risks ○ Contaminants in flood waters can also impact social, recreational, and cultural values in surface water bodies and coastal areas ○ Flooding and erosion may lead to restricted road access and isolate affected communities ● Other impacts on assets and infrastructure (see the Land Drainage Asset Management Plan for more details).
	Options being considering to reduce the risks to the Flood Protection and Control Works activity and the community posed by those climate risks include: ● Improve knowledge of flood management system performance by continuing to use and maintain hydraulic models which consider current and future climate-factor scenarios to enable informed decision making ● Manage assets collectively to ensure future works maximise collaborative benefits across Council activities. This includes reviewing climate change risks, such as sea level rise extents, and incorporating the results into current and future planning and design works, noting management of climate related risks and reduction in vulnerability will likely include collaboration in multiple Council activity areas such as the Coastal Hazards Adaptation Programme. ● When considering replacement or upgrading of existing assets in current and future flood prone areas, consider the lifespan of the new asset and cost over its lifetime. Undertaking a lifespan cost assessment may highlight design options to reduce intergenerational burden.
We are guardians of our natural environment and taonga	
	We have selected a pilot project in the next three years support a strengthened resilience to climate change impacts. <u>Project 1: Mapping the Flood – Continued Development of Flood Hazard Models and Utilisation of Outputs for Decision-Making and Planning</u> Carryout project to update flood hazard mapping throughout the district for a range of current and future scenarios. Continued upgrade of flood models has the following benefits: ● Creation of updated district-wide comprehensive, dynamic flood models enable informed decision making based on the latest predictions and estimations ● Outputs from the flood model would be able to be incorporated into the climate risk explorer tool developed in the coastal hazard adaptation team and contribute to evidence-based decision making utilising a multi-hazard tool ● A detailed flood model can be used as the basis for providing forecasting and alerts when predicting effects and likely hazard areas for incoming storm events. Establishment of a model of this detail would enable consideration of flood management procedures such as temporary flood barriers and building design criteria. These types of solutions can enable cost-effective management while minimising the necessity for relocation. ● Enable a cost-effective way of testing and developing flood management designs which take into account the effects to the whole system and account for future climate change impacts such as sea level rise and increased rainfall. ● Contribute to the ongoing safety of residents by educating on existing flood risk locations and enabling development of whole of system designs which consider effects upstream and downstream. ● Are essential for contributing to the ongoing reduction of flood risk to the city by providing information on flood risk, notably when considering new housing areas or facilities or purchase of a property. The current level of service (LOS) set-out already begin to address accountability of the activity functions in relation to climate change vulnerability and greenhouse gas emissions as outlined below. ● LOS: Major flood protection and control works are maintained, repaired and renewed to key standards ○ A maintained system is more effective at minimising adverse flooding

3. How we are planning for future impacts

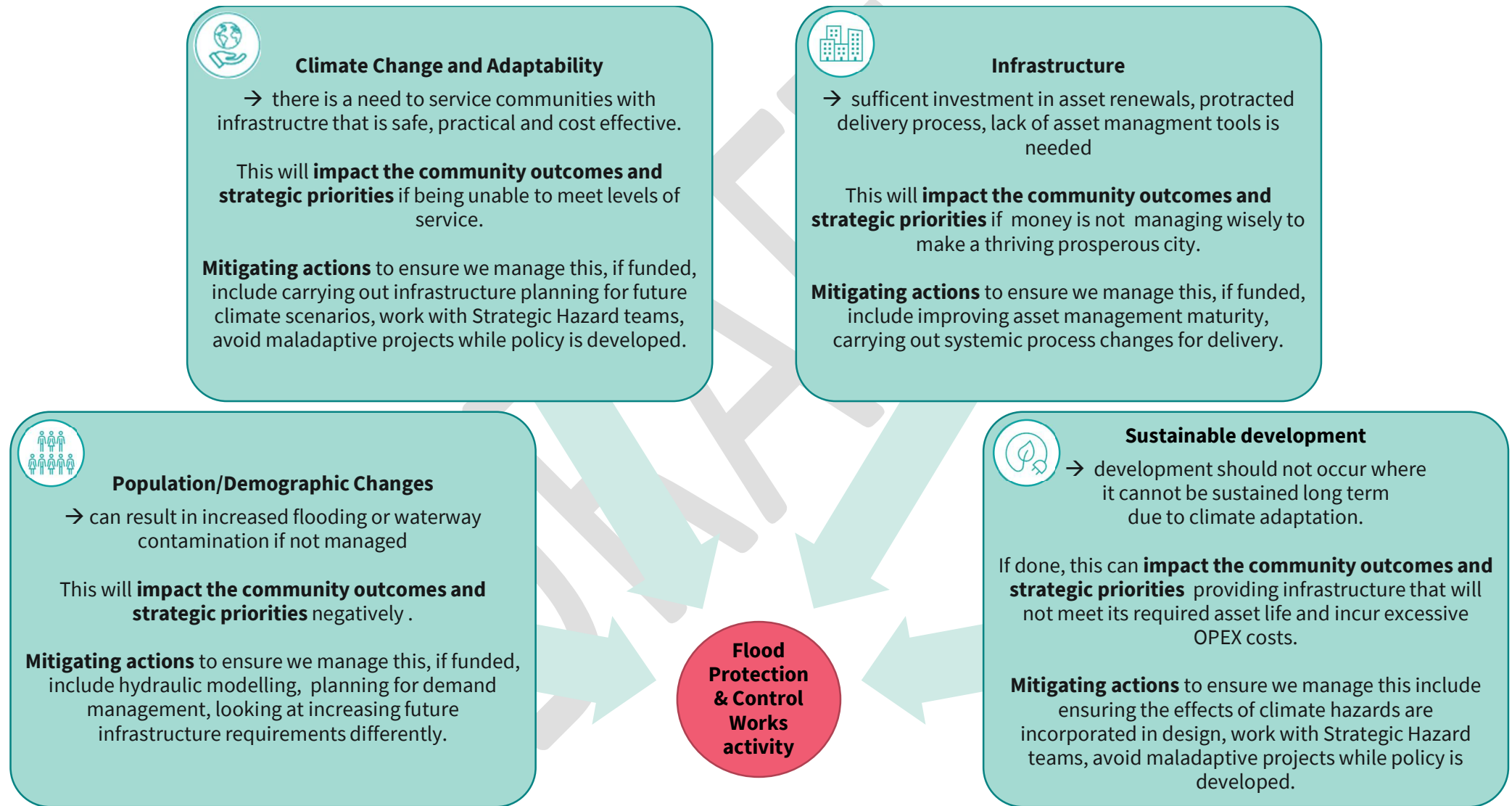
There are various factors influencing current and future demand for Flood Protection and Control Works and the ability to deliver them. These are listed below.

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 & Levels of Service measurements

- ➔ Flood Protection and Control Works have **3 Community (C) Levels of Service**. (These LOS community facing and will be published in our Statement of Service Provision)
- ➔ This activity also has **1 Management (M) Levels of Service**. (These are LOS that are measured in the organisation to ensure service delivery)

 Major tidal river flooding protection and control works are maintained, repaired and renewed to key standards	
Service contributes to: • A collaborative confident city • A thriving prosperous city This is by generally maintaining (?) the targets of the levels of service promised.	Levels of Service This service has 3 Community and 1 Management LoS. • Stopbank crest surveys are carried out at required intervals • Cross sectional surveys of selective waterways are carried out at required intervals • Stopbanks identified as not meeting the original design requirements for condition and/or height are repaired within 9 months • Stormwater attenuation facilities are compliant with New Zealand Dam Safety Guidelines 2015: % of Stormwater Attenuation Facilities assessed and compliant with New Zealand Dam Safety Guidelines 2015

5. How assets will be managed to deliver the services

The Flood Protection and Control Works portfolio is made up of flood protection structures such as the Woolston Barrage and stop banks. The Asset value of this Activity is approximately \$11M

Managing our assets

Assets are provided by the activity by 3 key means: asset improvement/growth, renewals and vested assets from development. Development is unplanned and can be difficult to financially manage, especially OPEX funding, as the provision of the timing of delivery is out of council's hands. Improvement and growth works are generally required to meet compliance and regulatory requirements (Comprehensive Stormwater Network Discharge Consent (CSNDC), Freshwater NES) and climate change resilience projects. Renewal projects are required to ensure our asset based is replaced at a time that manages the cost of borrowing CAPEX funds to replace the asset compared to rates raising required for increased OPEX costs.

Given the size of the asset base, there are separate teams that manage the various provision of Assets. the various teams in this activity work well together.

There are three maintenance contracts for the maintenance and operation of the assets, with the main one being the CN4600003932 – “Stormwater and Waterways Maintenance Christchurch”. The funding for the maintenance activities are a mixture of planned works and reactive works. This allows the greatest flexibility for the funding provided and a mixture of works that are required to meet levels of service for amenity and public satisfaction as well as fault resolution.

Not all of the maintenance activities on flood protection and control works are carried out by the Land Drainage operations team. Some of the maintenance activities are carried out by

Looking forward

The focus for the activity for this LTP period is consistent with other previous LTP's. There is always a focus on how best to prioritise the needs of the community, meeting our legal requirements and ensuring value for money. This LTP also needs to consider the cost implications of the changing economic situation with increasing inflation and cost escalation and finally looking at prioritising climate resilience with the attention that's been needed for some time. These competing priorities create some tension with the available funding that needs to be balanced across the 3 Waters activities and the wider organisation.

With the emphasis on Climate Resilience through the Strategic Priority of “*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 and enhancing our indigenous biodiversity, water bodies and tree canopy*”, there have been a number of pilot projects that have been identified and funding requested (CAPEX and OPEX). These projects include initiatives such as “Continued Development of Flood Hazard Models and Utilisation of Outputs for Decision-Making and Planning” and “Identification of Properties at-risk of Above Floor Flooding” (see section 2.3 for further detail). This will have corresponding benefits with the “*A green, liveable city*” Community Outcome, which, as discussed in Section 2.1 above, is a key outcome for this activity.

There are a number of Council strategy documents that are important to the activity, with one of the key documents being “*Te Wai o Tane - Integrated Water Strategy (2019)*”. The strategy sets out 4 goals including; the value of water use by the community, the importance of water quality and ecosystem protection and enhancement, an understanding of the effects of climate change and assisting with community adaptation and the sustainable management of water in line with the principle of kaitiakitanga. Unfortunately, while there have been child water strategies prepared by the Water and Wastewater Planning team, this has not been done yet by the Land Drainage and Waterways Planning team due to other competing priorities for similar works (CSNDC work, Freshwater Action Plan, Stormwater Management Plans) and insufficient dedicated resource. The business has not able to make use of the “*Otautahi*

the Parks operations team. Given the planned water reform, there will either need to be a change in operation, or more detailed Service Level Agreements will be required.

As can be seen in “Section 6: Capital Expenditure and key capital projects”, the main spend for Stormwater Drainage and Flood Protection activities is Growth and Improvement. This is primarily due to the provision of treatment facilities both within and outside of the Ōtākaro Avon River Corridor (and associated land purchase) and flood mitigation projects. There is a large renewal required for lined drains as well.

The Draft Infrastructure Strategy (IS) contains some key significant issues that affect our ability to manage ratepayer money wisely, including “We need to improve our understanding of our infrastructure so we can make the best decisions for our community”. This is an on-going issue that additional resource is 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.

Christchurch Climate Change Strategy (2021)” as there have been insufficient policy or guidance (or funding/resourcing) for the activity to work within the framework of goals and programmes in the strategy. Therefore, the emphasis of climate within this LTP is welcomed by the business.

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. 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:

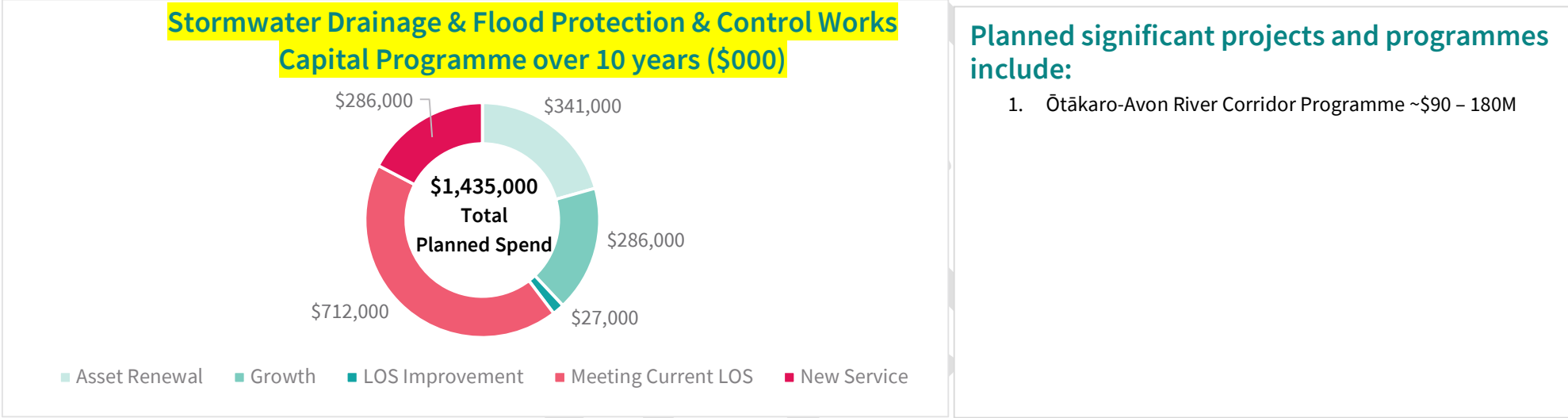
- Development of a 3-year delivery program
- Improved scheduling, resourcing and allocation
- Improved program management
- Pipe renewals delivered through a multi-year performance based contract with Tier 1 contractors
- Contingency funds to be held at program level for low risk projects
- Development 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.

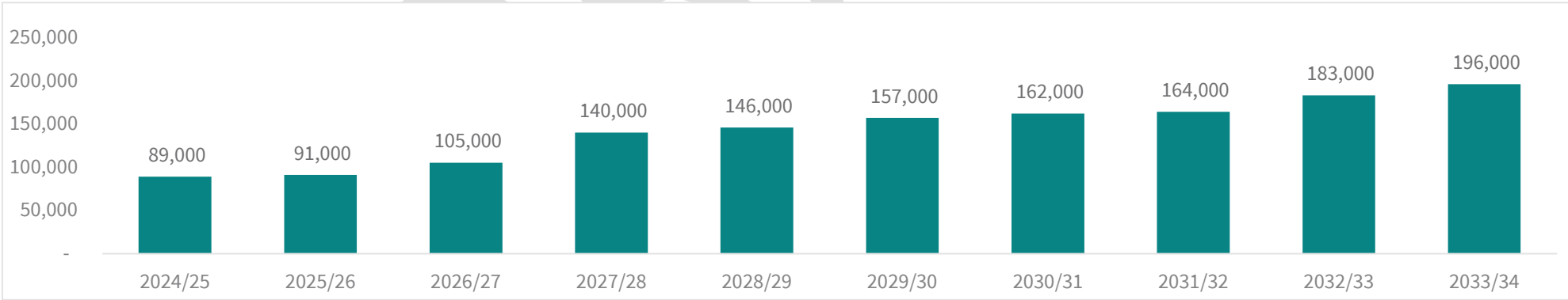
Please refer to the [Land Drainage Asset Management Plan](#) for more information on these assets.

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. (Note: Capital includes both Flood Protection and Control AND Stormwater Drainage and 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 between 1 July 2024 and 1 July 2026.*)



Total Planned Capital Programme summary (\$000) (to be updated)



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. **(table to be updated)**

Flood Protection & Control Works											
000's	Annual Plan 2020/21	LTP 2021/22	LTP 2022/23	LTP 2023/24	LTP 2024/25	LTP 2025/26	LTP 2026/27	LTP 2027/28	LTP 2028/29	LTP 2029/30	LTP 2030/31
<i>Activity Costs before Overheads by Service</i>											
Flood Protection	2,073	3,492	3,643	3,824	4,030	4,263	4,510	4,786	5,071	5,375	5,693
	2,073	3,492	3,643	3,824	4,030	4,263	4,510	4,786	5,071	5,375	5,693
<i>Activity Costs by Cost type</i>											
Direct Operating Costs	181	22	22	23	23	24	24	25	26	26	27
Direct Maintenance Costs	775	2,232	2,370	2,522	2,697	2,896	3,108	3,350	3,601	3,867	4,148
Staff and Contract Personnel Costs	1,116	1,238	1,251	1,279	1,310	1,342	1,378	1,411	1,445	1,482	1,519
Other Activity Costs	-	-	-	-	-	-	-	-	-	-	-
	2,073	3,492	3,643	3,824	4,030	4,263	4,510	4,786	5,071	5,375	5,693
Activity Costs before Overheads	2,073	3,492	3,643	3,824	4,030	4,263	4,510	4,786	5,071	5,375	5,693
Overheads, Indirect and Other Costs	218	348	371	378	392	427	431	452	486	489	509
Depreciation	300	348	612	878	1,104	1,364	1,581	1,742	1,926	2,147	2,294
Debt Servicing and Interest	26	29	50	72	107	150	201	237	277	311	335
Total Activity Cost	2,616	4,216	4,676	5,152	5,634	6,204	6,723	7,218	7,760	8,323	8,832
Funded By:											
Fees and Charges	34	35	35	36	37	38	39	40	41	42	43
Cost Recoveries	-	-	-	-	-	-	-	-	-	-	-
Total Operational Revenue	34	35	35	36	37	38	39	40	41	42	43
Net Cost of Service	2,582	4,181	4,641	5,116	5,597	6,166	6,684	7,178	7,720	8,281	8,789
Funding Percentages:											
Rates	98.7%	99.2%	99.2%	99.3%	99.3%	99.4%	99.4%	99.4%	99.5%	99.5%	99.5%
Fees and Charges	1.3%	0.8%	0.8%	0.7%	0.7%	0.6%	0.6%	0.6%	0.5%	0.5%	0.5%
Grants and Subsidies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost Recoveries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Capital Expenditure											
Replace Existing Assets	907	4,427	2,579	1,483	1,169	1,029	1,091	1,249	4,478	1,275	1,693
Improve the Level of Service	8,704	17,019	21,837	11,810	17,290	28,777	25,851	23,795	24,111	22,572	30,138
Meet Additional Demand	14,764	22,441	14,571	17,648	26,853	20,949	16,867	17,792	17,745	20,815	16,653
Total Activity Capital	24,376	43,886	38,988	30,941	45,312	50,754	43,809	42,836	46,334	44,662	48,485

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 Flood Protection and Control Works Activity predominately through the general rate. This means that most funding comes from <who?>, mostly on the basis of <what grounds>.

- **Operating expenditure** is largely funded through general rates as the 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 rates in the year the expenditure occurs as the capital expenditure is mostly on asset renewals.

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

Outcome: Funding for operating costs

Source	Proportion funded*	Funding Mechanisms
Individual / Group	x	How (x)
Community	x	How (x) How (x)

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*
Renewal/replacement	<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>	x
Service improvement	<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>	x
Growth	<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>	x

Outcome: Initial funding for capital

Initial funding source	Proportion of capex funded*
Rates	x
Borrowing	x
Development Contributions	x
Grants and Other	x

* 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
Social	
Social, cultural and environmental effects of construction works	Management of construction activities to minimise risk of non-compliance with relevant consent conditions.
Social, cultural and environmental effects of stormwater discharges into waterways	Ongoing education and works programme to reduce contaminant load. Develop and deliver stormwater management plans that consider all six values and set appropriate, measurable performance targets. Monitor stormwater discharges and instigate appropriate remedial actions as may be necessary to address potential non-compliances.
Future risk to levels of service as climate change and sea level rise strain the effectiveness of stormwater and flood management system (projected increased stormwater volumes in more frequent, more extreme events and decreasing hydraulic gradient). Risk to living assets through more frequent, more intense drought, higher temperatures and seasonal shifts.	Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Engage community in cost vs LOS discussion. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken.
Social and economic effects of flooding caused by declining stormwater conveyance and flood storage capacity due to urban infill	Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement
Economic	
Cost to Council / ratepayers of operating flood management system	Follow documented procedures and industry best practice for cost minimisation. Follow technological developments and implement cost saving initiatives on a continuous improvement basis. Focus process of defining key performance indicators on cost efficiency. Ensure staff are kept updated with technological and operational best practice through attendance at conferences and participation in specialist industry working groups.
Cost to Council/ratepayers of future work needed to upgrade system in order to appropriately manage projected increased volumes of stormwater in more frequent, more extreme events and decreasing hydraulic	Investigations to better understand how climate change will affect demand and capacity in order to maximise effectiveness of future investment and adaptation. Work with town planners and those engaged in community consultation on dynamic adaptive planning to ensure a holistic approach is taken.

gradient resulting from climate change and sea level rise. Risk of eutrophication of wetlands and waterways and devegetation of assets in drought.	
Meeting community and regulatory requirements for management of stormwater quantity, including flooding and the effects on it from climate change, requires ongoing CAPEX and OPEX commitment by Council	Appropriate provisions in the District Plan and the Stormwater Bylaw and increased provision of Council resources for community education, monitoring and enforcement Timely development and implementation of an effective Council Climate Change Adaptation Plan Provision of adequate CAPEX and OPEX to meet the regulatory requirements and community levels of service
Environmental	
Embedded carbon in capital works contribute to council & district greenhouse gas footprint.	Take a whole-of life approach to greenhouse gases. Seek guidance on carbon pricing in order to affordably minimise embedded carbon in capital works. Train staff as necessary.
Cultural	
Without suitable consideration for cultural values with how we renew, plan for, construct and operate our networks, Council will not meet runanga and central government legislation requirements.	By conserving and improving our landscapes and biodiversity which are taonga, mahinga kai will be enhanced through our activities. This can be achieved over time by ensuring that good stormwater management practice is carried out by Council in its planned works and maintenance activities, and by the community in general.

DRAFT

Questions