Three Waters
Draft Asset Management Plan

2024

Preface

This document has been prepared as an Addendum to the Entity J Asset Management Plan as part of the previous Labour Governments ‘Affordable Waters’ reform.

Those reforms are currently on hold by the current government.

This document can be regarded as a summary of relevant information for planning purposes.

1. Introduction

1.1 Council Overview

Invercargill City is located at the South end of the South Island. It lies on flat river plains extending from Bluff in the South northwards to Makarewa, east to Kennington and west to Ōreti Beach. It also includes the outer suburb of Ōtatara, which is 'bush like' in nature, of substantial population but largely un-serviced by three waters. Most of its population resides in the urban areas. It includes the aluminium smelter at Tiwai Point and industrial plants for meatworks and milk treatment. Those industries, with the exception of the aluminium smelter, receive three waters services.

Water Supply - There is only one water source, the Ōreti River. Water is treated at the abstraction location. Both Invercargill City and Bluff are reticulated. Ōtatara is not.

Wastewater - A wastewater treatment plant at Clifton receives and treats sewage from the urban and industrial area of Invercargill. Sewage at Bluff is treated at Bluff. Parts of Ōtatara have a reticulated ww network. Sewerage from the small community of Ōmaui is also treated.

Stormwater - Both Invercargill and Bluff have a storm water pipe network. Ōtatara has road-side ditches. Urban Invercargill has tidal flood bank protection. Protection from river flood inundation by flood bank/detention pond system managed by Environment Southland

1.2 Community Outcomes

- One Community – Our youth, older people, different neighbourhoods and communities' basic needs are met, and they feel valued and proud to live here.
- A vibrant, safe city centre which meets our people's diverse cultural needs.
- A future focussed economy delivered through innovation and partnership and supported by appropriate infrastructure.
- A healthy, resilient environment where the city is well positioned to navigate climate change.

1.3 Challenges

Water supply (WS)
- Dependence on a single water source. An alternative water source needs development to provide resilience for security of the water supply system.
- Backflow protection. This is now a legal requirement.
- Drinking water standards change.

Waste water (WW)
- Change for effluent discharge to be land instead of water (Clifton and Bluff plants)
- Sea level rise. The main plant, Clifton, is 3 metres above mean sea level.

Storm water (SW)
- Treatment to meet yet to be defined environmental standards.
- Obstruction of outfalls to estuary due to silt build up.

1.4 Key Facts and Figures

Area	49,142 hectares
Population	57,100 (2023)
Residential Properties	21,979 (2023)
Residential water connections	20,360 (2023)
Non-residential connections	1,400 (2023)
Greenhouse Emission Targets	Refer section 6.2

56

62

59

Average age of water pipelines (years)

Depreciated Replacement Value

Combined Depreciated Replacement value
$547 M

1.5 Data Confidence and Reliability

Dataset	Asset Register	Asset Valuations	Asset Condition	Asset Criticality	LOS	Performance measures	Resource Consents	Demand Projections	Risk and Resilience	CAPEX Forecast	OPEX Forecast	Renewals
WS	B	B	D	B	B	C	A	B	B	C	B	B
WW	B	B	D	B	B	C	A	B	B	C	B	B
SW	B	B	D	B	B	C	A	B	B	C	B	B

A - Very High	B - High	C - Medium	D- Low	E - Very Low

Overall Rating for Invercargill Council is C (Medium) – the target is for B (High) more resources are needed in the area of Asset Condition assessment.

2. Stakeholders

2.1 Mana Whenua Engagement

Council's overall approach towards engagement with Maori is set down in its Significance and Engagement Policy as described in its long term plan.

Council recognises the special connection of Takata Whenua and their culture and traditions with their ancestral lands, water, sites, sacred places- (wāhi tapu), valued flora and fauna and other treasured possessions (taoka). The role of Maori and Ngāi Tahu Tahu /Kāi Tahu, as Takata Whenua, as represented by Waihōpai Runaka and Te Rūnanga o Awarua, is recognised. This takes the form of a charter of understanding "A Pathway for Generations Coming Through (He Huarahi mō Nga Uri Whakatupu)". It is the fundamental document in the establishment and the support towards giving Mana Whenua a voice in the affairs concerning three waters environmental issues within Council. The charter is between councils within the Murihiku Takiwā and Te Ao Marama Inc, the management organisation whose role it is to look after Takata Whenua interests in resource management plus other aspects relating to local government in the region.

Under the charter, council provides financial support annually to Te Ao Marama Inc. to assist in building their capacity towards responding to requirements of the various signatory councils. Council also has representation on a joint management committee, Te Roopu Taiao, comprising the local councils and the Takata Whenua of Murihiku including other local Maori who are not Ngāi Tahu Tahu. The committee primarily deals with higher level decision making concerning environmental issues within local government and meets four times a year.

There are Mana Whenua representatives on major committees of council, including the Infrastructure Committee, who have full voting rights thus enabling their voice in matters involving council's three waters issues.

In regard to Te Mana o Te Wai initiatives, this is an emerging challenge, to date council has received:

- The Ngāi Tahu Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008 ("The Cry of the People - Te Tangi a Tauira") and so is aware of their approach to management of water.
- Outcomes from a southland regional forum – Wai Ngāi Tahu Tahu ki Murihiku report on tangata whenua values.

2.2 Key Customers and Stakeholders

External Stakeholders	Interest Area	Engagement
Audit New Zealand	Governance and operation	Audit
Contractors, Consultants	Construction and maintenance works	Contract
Invercargill Community	Water quality and quantity	Liaise
Invercargill Ratepayers	Rates impact and level of service	Consultation and Liaison
Iwi Groups	Culture/environment/sustainability	Liaise
Beyond 2025 Southland Regional Long Term Plan	Regional development	Liaise with Executive
Taumata Arowai	Water quality	Liaise
Environment Southland	Ōreti River environment	Resource consent
Fire Emergency NZ	Pipe network hydraulic performance	Liaise
Visitors	Water quality	Liaise

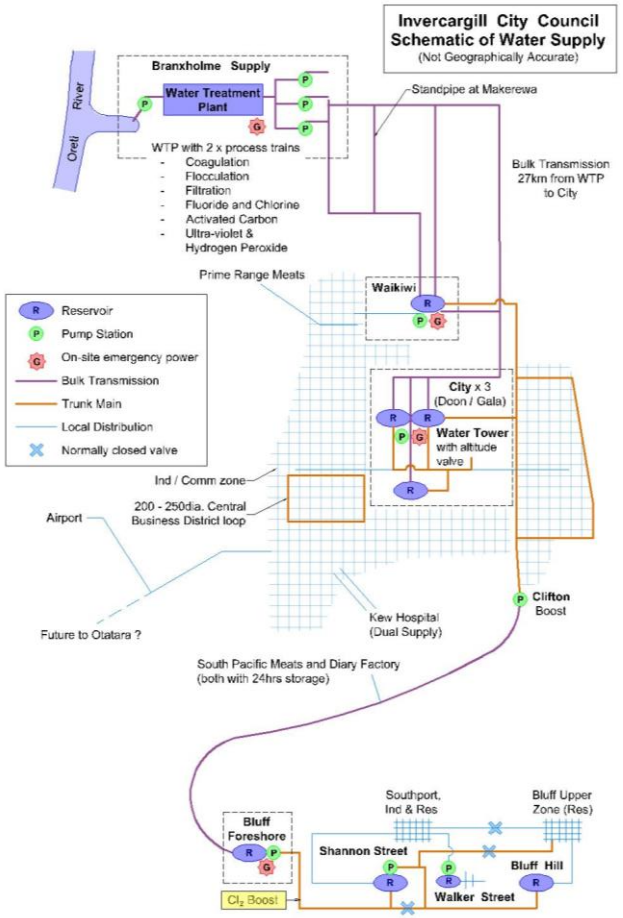
Internal Stakeholders	Interest Area	Engagement
Councillors, Group Managers	Governance and leadership	Report
Finance and Assurance	Financial assistance and direction	Liaise
Information Services	Technical support	Liaise
Planning and Environment Services	Compliance / Local development	Liaise
Staff	This plan	Liaise

3. Our services and assets we manage

3.1.1 Water Supply

One supply source from the Ōreti River, known as the Branxholme Water Supply scheme, serves the city of Invercargill and the port of Bluff. Established in the late 1950's the scheme is capable of processing up to 45,000 metres per day.
The water supply assets consists of

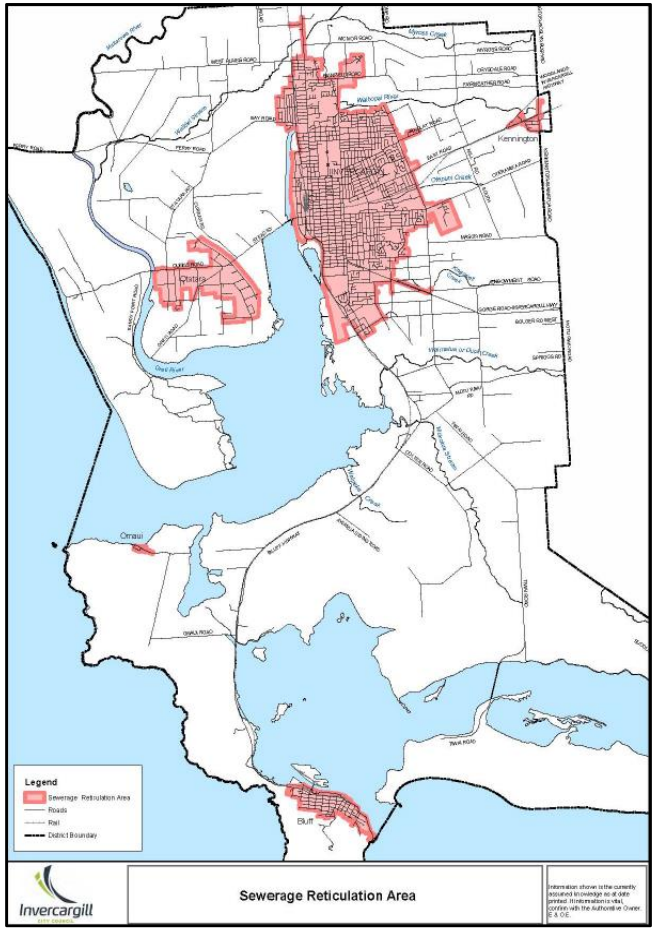
- 1 Treatment plants
- 6 Pump Stations
- 9 reservoirs
- 422 Kms of reticulation (pipe network)



3.1.2 Wastewater

The Invercargill wastewater networks are located at Ōmaui, Bluff and Invercargill. The City has three wastewater networks Clifton Wastewater Treatment Plant; Ōmaui Oxidation Pond; Bluff Wastewater Treatment Plant.
The wastewater assets consist of

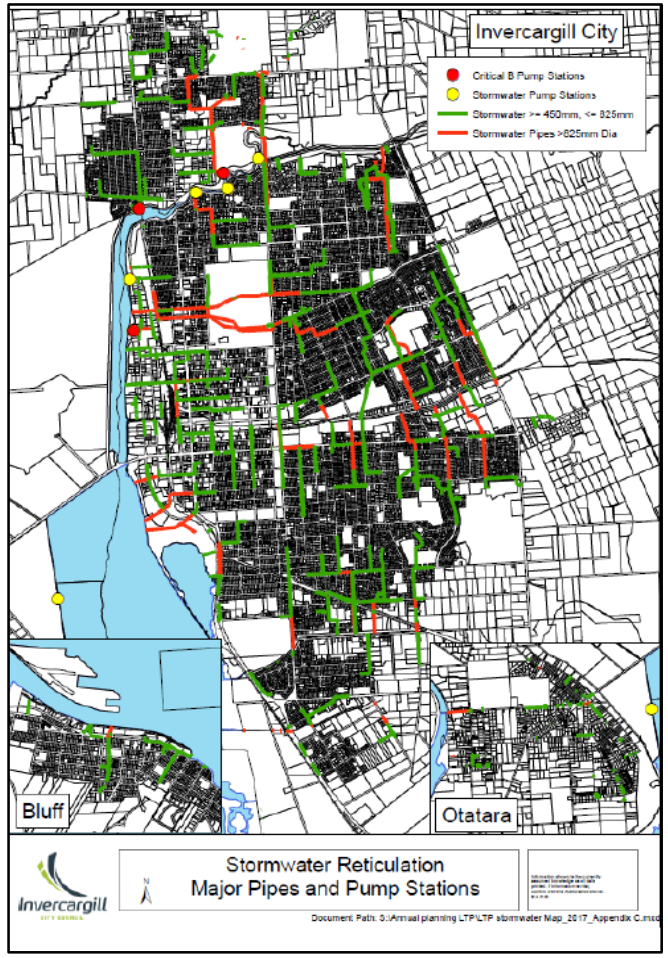
- 376 km of public wastewater network
- 3 treatment plants, 31 pump stations



3.1.3 Stormwater

The piped stormwater catchments in the City are short, with the largest catchment having a maximum flow time (time of concentration) of less than forty minutes, the system has been designed for short duration high intensity storms.
Stormwater assets include;

- 8 pump stations
- 12 sw/ld treatment sites (retentions and basins)
- 417 km of public stormwater network



3. Our services and assets we manage (cont.)

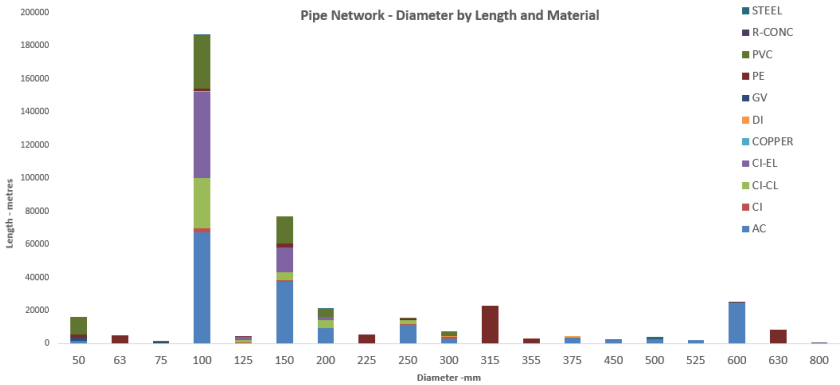
3.1.1 Water Supply

River water is treated at Branxholme, 17kms north of Invercargill and is pumped into reservoir storage in Invercargill. From here, water is pumped at higher pressure into the distribution pipe network to individual consumers. Invercargill's reticulation connects with the Bluff trunk main which supplies the consumers of Bluff plus industry enroute. A 'Boost' chlorination dose is applied at Bluff.

Branxholme Treatment

Branxholme is a conventional coagulation/flocculation / filtration plant whose prime function is to provide a succession of barriers to organisms which are harmful to health, especially Giardia and Cryptosporidium, and to clarify or remove suspended particles from its raw water source; the Ōreti River. The first barrier is the chemical process of coagulation/flocculation which removes the majority of suspensions and the bacterial load. The filters provide a second barrier to bacteria and harmful organisms, and further clarify the water. Post filtration water is disinfected by passage through an ultraviolet reactor and chlorinated to provide a residual disinfectant, bringing the total number of barriers to harmful organisms to four. Fluoride is dosed for dental health, and lime for pH and alkalinity control.

Pipe Network



The network is composed mainly of 100mm diameter of material types: Asbestos Cement (AC); Cast Iron (CI) and Polyvinyl Chloride (PVC). The large diameter mains are trunks between Branxholme Water Treatment Plant and Invercargill and Invercargill and Bluff. There is also a large diameter ring main around the eastern side of Invercargill. Most of the Cast Iron pipework has been cleaned and relined with service connections replaced over the 1990 to 2010 period.

3.1.2 Wastewater

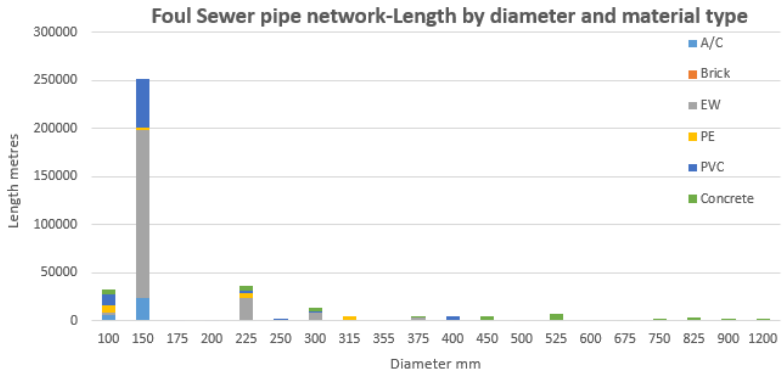
The three wastewater treatment plants produce high quality effluent, and Council has discharge consents which will be current until 2025 for the Bluff plant and 2029 for the Ōmaui and Clifton (Invercargill) plants.

Effluent from the Clifton and Bluff Plants discharge to water. The Ōmaui Oxidation pond discharges to land adjacent to the pond.

Treatment Processes

Clifton: Primary sedimentation, secondary trickling filters, tertiary facultative ponds and aerated basins to treat industrial effluent.
Bluff: Aerated lagoon, clarification and UV disinfection.
Ōmaui: Oxidation pond.

Pipe Network



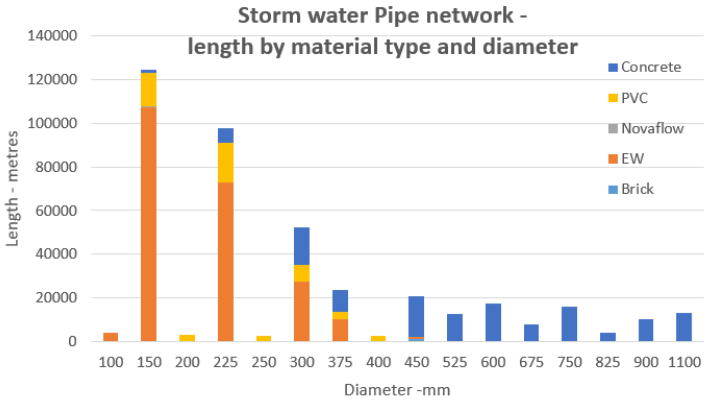
67% of the network is 150mm mostly of earthen ware material that was laid before 1970.

3.1.3 Stormwater

In 1985, following widespread flooding in 1984, a new design standard was adopted and a major upgrading of the stormwater system began. The adopted design standard was for a five year return period storm (20% Annual Exceedance Probability (AEP)), with the focus of upgrading being on areas flooded in 1984, and the major stormwater outlets to natural waterways. Although the stormwater upgrade programme ended in 2005, pipes serving a large part of the City are still sized at old design standards, and these are being upgraded progressively as part of the asset renewal programme.

No other communities within the councils territory are supplied with a storm water disposal service other than the urban communities of Invercargill, Ōtatara, Bluff and a number of rural drainage districts. Property owners outside of those areas are responsible for the provision and maintenance of drainage systems through their property and within roadways adjacent to the property.

Pipe Network



56% of the network is of 225mm diameter or smaller mostly of earthen ware material laid before 1970. Parts of the network have no manhole access. These are in pre-1950s sections predominantly in South Invercargill and Bluff.

3.2 State of the assets – Water Supply

Asset Quantity and Values

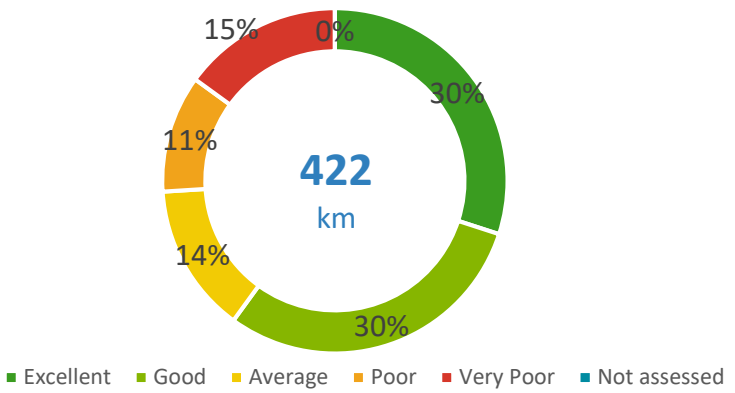
As at 30th June 2022

Water Assets	Quantity	Optimised replacement cost	Depreciated replacement cost	Annual financial depreciation
Reticulation				
Hydrants	3070	$11,046,619	$2,792,294	$174,317
Mains (metres)	420882.76	$251,116,442	$106,102,652	$3,422,193
Manholes	28	$98,879	$79,934	$1,648
Meters	1452	$1,758,354	$408,930	$97,859
Service Lines	20357	$38,866,928	$17,267,001	$647,679
Water Valves	24519	$22,425,172	$14,685,384	$355,415
Sub total		***$325,312,394***	***$141,336,195***	***$4,699,111***
Utilities & Equipment				
Misc.	various	$653,374	$320,066	$24,580
Pump Stations	6	$5,680,546	$1,958,611	$246,173
Reservoirs	9	$56,468,085	$15,969,204	$707,880
Treatment Plants	1	$31,902,358	$23,124,454	$641,442
Sub total		***$94,704,363***	***$41,372,335***	***$1,620,075***
Building & Site Improvements				
Bluff Hill - Reservoir	1	$226,000	$72,000	$3,078
Bluff Main - Water Pump Station	various	$336,100	$69,650	$5,423
Branxholme Water Treatment Plant	various	$7,035,200	$2,267,100	$119,052
Doon St - Water Tower Pump Station	various	$2,688,800	$218,000	$24,843
Shannon St - Pump Station	various	$153,000	$119,000	$3,096
Waikiwi Water - Pump Station & Reservoir	various	$1,313,800	$155,200	$19,246
Sub total		***$11,752,900***	***$2,900,950***	***$174,738***
Grand total		**$431,769,657**	**$185,609,480**	**$6,493,924**

Asset Condition

Above Ground Assets
6% of Water supply above ground assets are in poor or very poor condition.

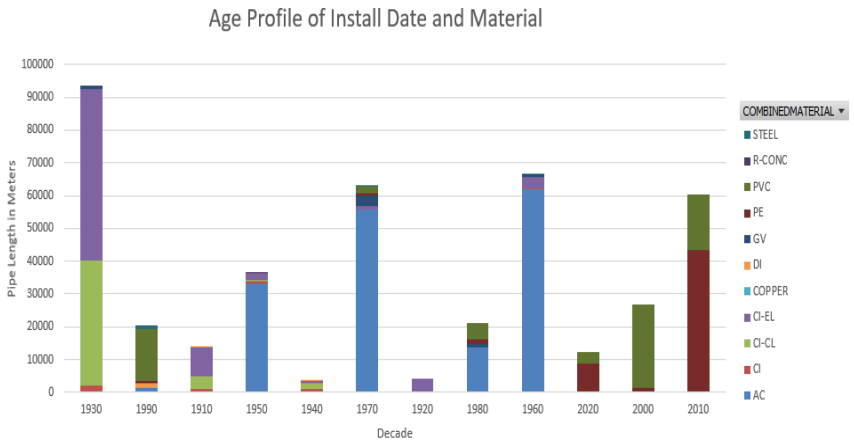
Below Ground Assets
15% of Water Supply below ground assets are in poor or very poor condition.



List of Critical Assets

- Intake from Ōreti River
- Branxholme WTP
- Single pipeline supplying City Reservoirs downstream of Waikiwi Reservoir Bluff Pipeline
- Waikiwi and City Reservoirs and pump stations
- Control systems for WTP, pump stations and reservoirs

Asset Age Profile



Condition of Critical Assets

While those assets which are considered critical have been identified their condition has not been determined. Condition Rating of critical assets will form part of the continuous improvement process.

Commentary

Above ground assets including electromechanical plant have collectively (e.g. a pump station has been assessed as a whole unit rather than separate assessments of its component parts) been visually assessed and assigned a rating of 1 – 5; 1 being 'excellent' and 5 being 'needs replacement'.

This is considered sufficient to gauge whether or not there are any immediate problems in condition.
Surveys on samples of asbestos cement pipe have shown a wide variation in remaining life and thus condition with no apparent pattern. This is likely to be the case for all pipe network assets. In the absence of any other method, condition assessment for the pipe network assets have been assigned according to the assessed remaining life according to IPWEA Condition Assessment & Asset Performance Guidelines Practice note 7 v2 2014 Water Supply & Sewerage Table 9-2.

The average age of the Invercargill CC water pipe network is 56 years. Sixty percent of the network has received a grade of above average indicating that the network is in good condition. This has been influenced though by considering the rehabilitated cast iron pipe as being returned to 'as new' condition and so its remaining life has been calculated from its rehabilitation date, not its installed date. Whereas the average age of the network has been determined from the actual install date, not the rehabilitation date.

3.2 State of the assets – Wastewater

Asset Quantity and Values

As at 30th June 2022

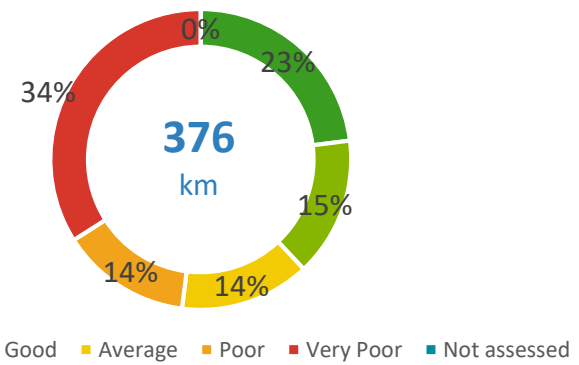
Sewer Assets	Quantity	Optimised replacement cost	Depreciated replacement cost	Annual financial depreciation
Reticulation				
Sewer Cleaning Eye	641	$961,521	$446,824	$10,558
Sewer Mains (metres)	377237.8	$334,831,048	$118,607,960	$3,837,549
Sewer Manholes	3690	$36,037,091	$11,441,455	$426,503
Sewer Inlets	5	$16,557	$9,678	$221
Sewer Outlets	2	$6,623	$3,249	$88
Sewer Valves	117	$2,152,377	$1,312,247	$41,391
Sub total		***$374,005,217***	***$131,821,413***	***$4,316,310***
Utilities & Equipment				
Wastewater Pump Stations	31	$14,095,914	$5,815,363	$484,346
WW TP-Omaui	various	$600,251	$312,590	$17,656
WW TP-Clifton	various	$59,782,824	$30,468,376	$2,390,485
WW TP-Bluff	various	$3,675,037	$1,883,943	$446,458
Sub total		***$78,154,026***	***$38,480,272***	***$3,338,945***
Building & Site Improvements				
Bluff Wastewater Treatment Plant	1	$514,700	$239,900	$12,475
Bluff Sewage Pump House	1	$336,100	$69,650	$5,423
Clifton Wastewater Treatment Plant	1	$8,714,500	$2,363,100	$166,368
Clyde St - Pump Shed	1	$50,800	$2,800	$653
Lindisfarne St - Pump House	1	$452,400	$87,600	$6,731
Mersey St - Sewer Pump Station	1	$683,200	$138,700	$9,884
Preston St - Foulsewer Pump Station	1	$424,400	$86,600	$6,231
Sub total		***$11,176,100***	***$2,988,350***	***$207,765***
Grand total		**$463,335,343**	**$173,290,035**	**$7,863,020**

Asset Condition

Above Ground Assets

The pump stations and their mechanical and electrical plant vary in age up to approximately 30 years. Buildings, structures and plant at each of the three Treatment Plants are regularly inspected, and an assessment made of maintenance and renewal requirements made on an annual basis. Subject to the continuing maintenance and renewal programme, the plants are in good operating condition.

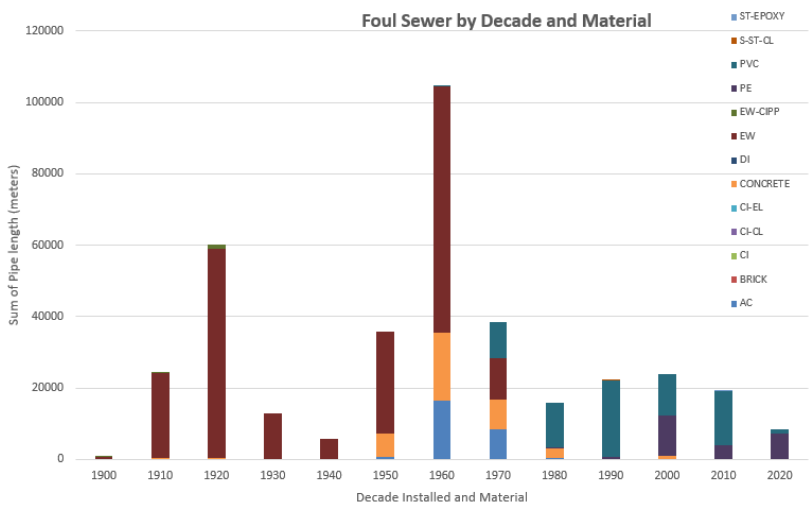
Below Ground Assets



List of Critical Assets

- Mersey Pump Station rising main
- Clifton Wastewater Treatment Plant
- Major pump stations – Mersey, Preston, Lindisfarne, Bluff Main and Kekeno
- Bluff Wastewater Treatment Plant pond bank
- Bluff Wastewater Treatment Plant

Asset Age Profile



Condition of Critical Assets

While those assets which are considered critical have been identified their condition has not been determined. Condition Rating of critical assets will form part of the continuous improvement process.

Commentary

The average age of the Invercargill CC waste water pipe network is 62 years. Twenty two percent of the pipe network has been cctved and condition rated in accordance with the New Zealand Gravity Pipe Inspection Manual. The cctv survey did proportionally represent the network in terms of diameter and material types but as applied over the whole network is considered to overstate an apparent large proportion as being in less than average condition for the reasons of:

- It includes those pipes known to have problems.
- The application of a condition rating over a whole street when a defect may have been localised.

The resultant distribution of condition is markedly different from that recorded previously. Those assessments were from a desktop exercise based on experienced personnel's 'feel' for the network based on maintenance experience. That assessment recorded a value of 25% of the network being less than average condition whereas that indicated by the cctv is 48%. Continuation of this programme will provide longer term validation of results.

The relatively low number of blockages and high availability of the network indicate that for its age the network is performing satisfactorily. However, a flow monitoring programme indicates a high infiltration and potential for overflow in parts of the system.

3.2 State of the assets – Stormwater

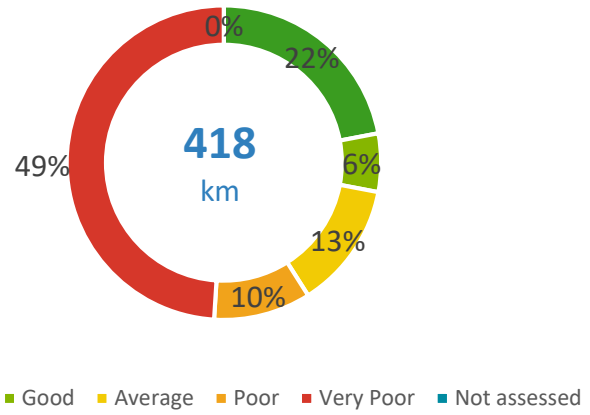
Asset Quantity and Values

As at 30th June 2022

Storm Water Assets	Quantity	Optimised replacement cost	Depreciated replacement cost	Annual financial depreciation
Reticulation				
Storm Cleaning Eye	408	$596,564	$337,866	$6,599
Storm Mains (metres)	418221.247	$349,477,295	$156,501,879	$3,541,055
Storm Manholes	3595	$36,029,430	$19,870,889	$359,601
Storm Levees	2	$16,222,196	$6,164,417	$161,957
Storm Inlets	495	$2,080,537	$1,231,009	$28,126
Storm Outlets	624	$1,068,794	$494,583	$16,307
Storm Valves	6	$28,309	$18,483	$377
Sub total		***$405,503,125***	***$184,619,126***	***$4,114,022***
Utilities & Equipment				
Stormwater PS	8	$5,404,213	$3,213,031	$225,385
Sub total		***$5,404,213***	***$3,213,031***	***$225,385***
Building & Site Improvements				
Drury Ln - Pump Station Building	various	$131,200	$36,600	$2,074
Prestonville - Stormwater Pump Station	various	$221,800	$47,000	$3,506
Sub total		***$353,000***	***$83,600***	***$5,580***
Grand total		**$411,260,338**	**$187,915,757**	**$4,344,987**

Asset Condition

Below Ground Assets



List of Critical Assets

- Top four pump stations – Prestonville, Drury Lane, Beatrice Street and Bill Richardson Drive
- Floodbanks
- Culverts under railways
- Pipes under buildings
- Sealed pipes > 600 mm
- Mid-size pump stations – Russell Street and Gladstone Terrace
- Floodgates
- Safety grilles
- SCADA

Commentary

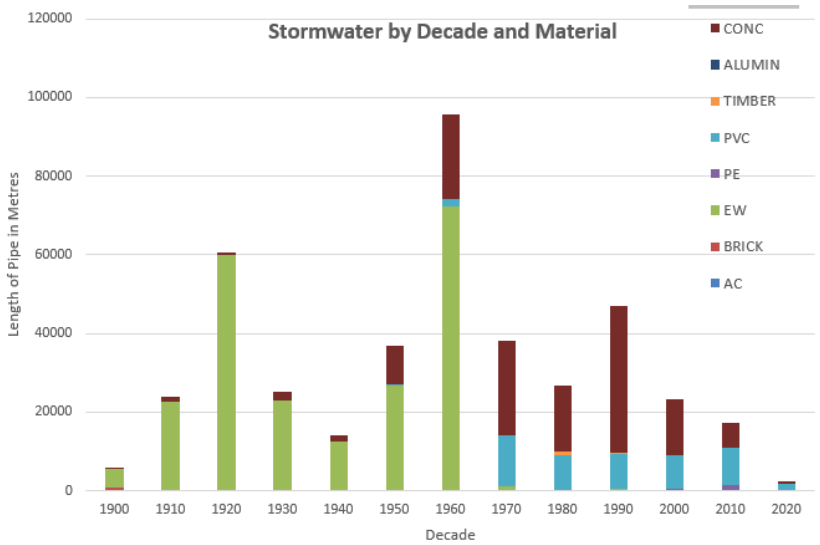
The average age of the Invercargill CC storm water pipe network is 59 years. Seven percent of the network has been surveyed by cctv and condition rated in accordance with the New Zealand Gravity Pipe Inspection Manual. The cctv survey did proportionally represent the network in terms of diameter and material types but when applied across the whole network is considered to overstate an apparent large proportion as being in less than average condition for the reasons of:

- It includes those pipes known to have problems.
- The application of a low condition rating over a whole street when a defect may have been localised.

The resultant distribution of condition is markedly different from that recorded previously. Those assessments were from a desktop exercise based on experienced personnel's 'feel' for the network based on maintenance experience. That assessment recorded a value of 26% of the network being less than average condition whereas that indicated by the cctv is 59%.

Stormwater complaints are low being 2.478/1000 properties in the 21/22 year.

Asset Age Profile



Condition of Critical Assets

While those assets which are considered critical have been identified their condition has not been determined. Condition Rating of critical assets will form part of the continuous improvement process.

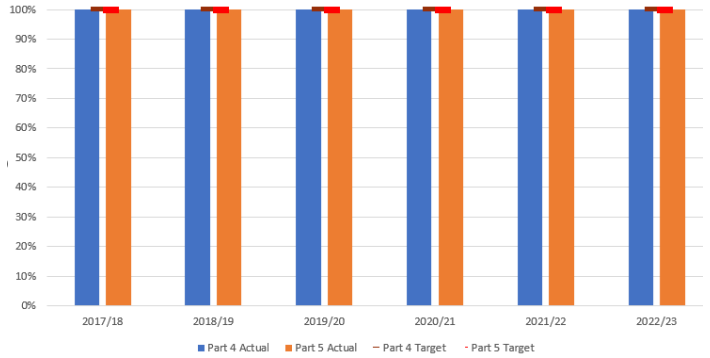
4. Current Level of Service and Performance

Linkages to relevant Community Outcomes are identified below.
1. One Community – Our youth, older people, different neighbourhoods and **communities' basic needs are met**, and they feel valued and proud to live here.
2. A **healthy,** resilient **environment** where the city is well positioned to **navigate climate change**.

Water Supply Safety of drinking water

1) The extent to which the local authority's drinking water treatment complies with the Drinking Water Quality Assurance Rules - rule T3 -Bacterial Rules for Water Disinfected with Chlorine. And
2) The extent to which the local authority's drinking water treatment complies with the Drinking Water Quality Assurance Rules rule T3 - Protozoal Rules for Coagulation, Flocculation, Sedimentation and Filtration and & rule T3 Protozoal Rules for Ultraviolet Light Disinfection [minimum 4 log in total]

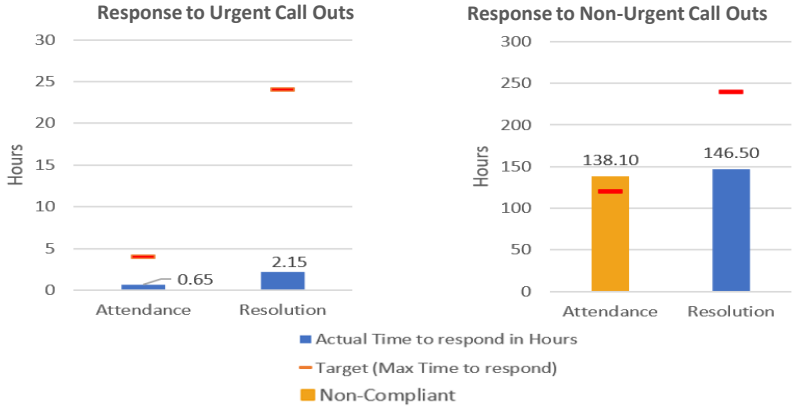
Linked to community outcome 1



Water Supply (3) - Fault Response Times

Median times to attend and resolve call-out in response to a fault or unplanned interruption to its networked reticulation system (2022-2023):

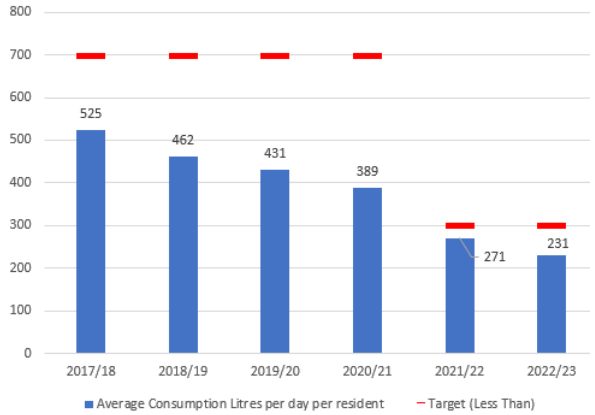
Linked to community outcome 1



Water Supply (5) – Demand Management

The average consumption of drinking water per day per resident within the territorial authority district.

Linked to community outcome 2

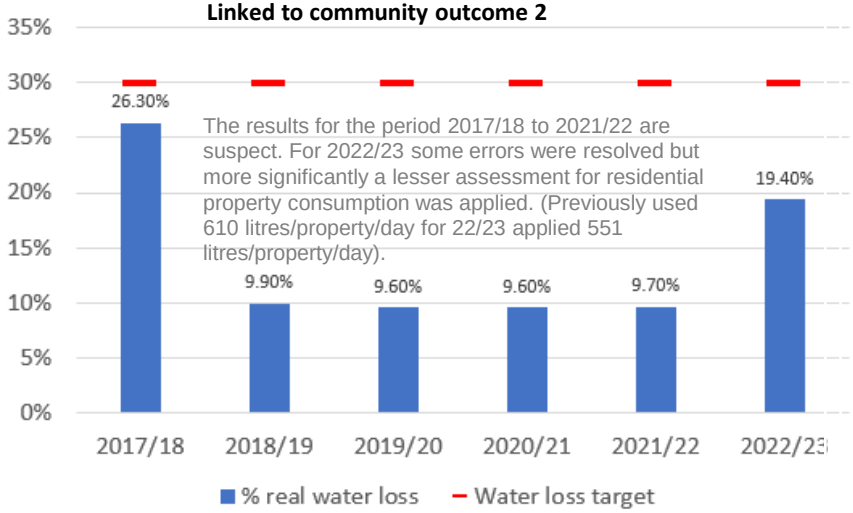


Note – Up to and including 2020/21 consumption included all consumption (i.e. industrial and domestic). Since 2020/21 consumption is the assessed domestic consumption only. Hence the lowering of the target value.

Water Supply (2) - Maintenance of the reticulation network

The percentage of real water loss from the local authority's networked reticulation system (including a description of the methodology used to calculate this).

Linked to community outcome 2



The results for the period 2017/18 to 2021/22 are suspect. For 2022/23 some errors were resolved but more significantly a lesser assessment for residential property consumption was applied. (Previously used 610 litres/property/day for 22/23 applied 551 litres/property/day).

Water Supply (4) – Customer Satisfaction

The total number of complaints received by the local authority about any of the following: (a) drinking water clarity, (b) drinking water taste, (c) drinking water odour, (d) drinking water pressure or flow, (e) continuity of supply, and (f) the local authority's response to any of these issues - expressed per 1000 connections to the local authority's networked reticulation system.

Linked to community outcome 1

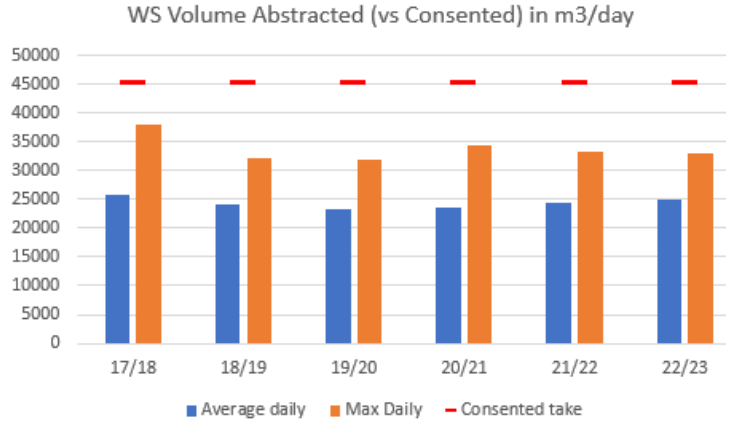
The target for 2021/22 was Less than 10 complaints per 1000 connections

The result for 2021/22 was **2.11 complaints per 1000 connections.**

The results for 2017 to 2021 are shown in next page. It shows the complaint type separately when each had its own measurement. Year 2021/22 is collective result of all complaints.

Water Supply – Volume of water abstracted vs. Consented take quantity

Linked to community outcome 2

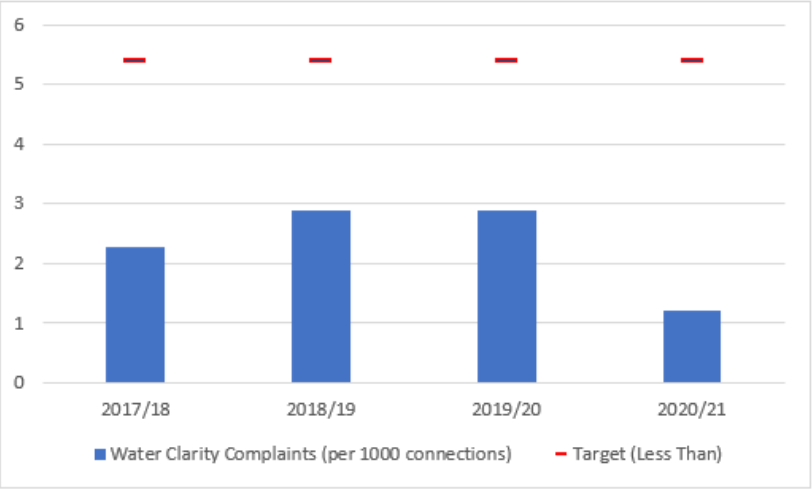


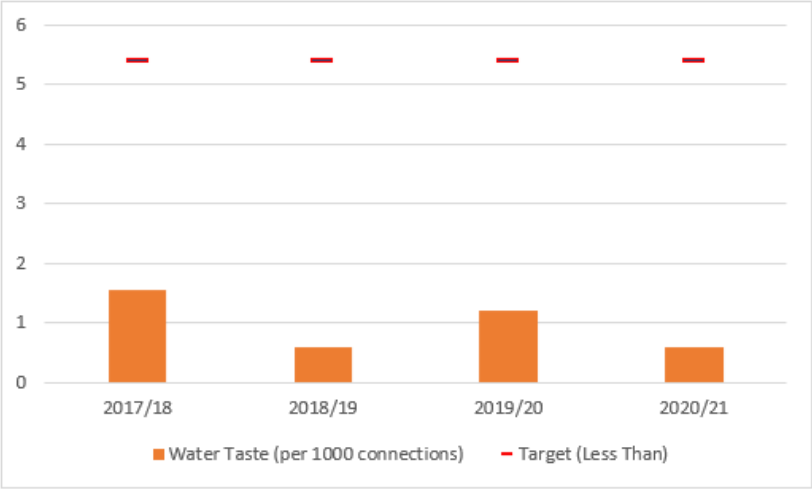
4. Dashboard – Water Supply - Customer Satisfaction breakdown

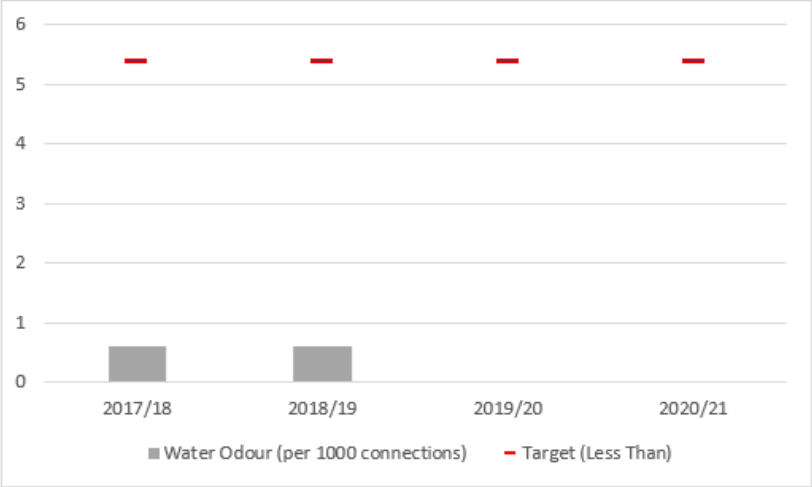
Water Supply (4) – Customer Satisfaction

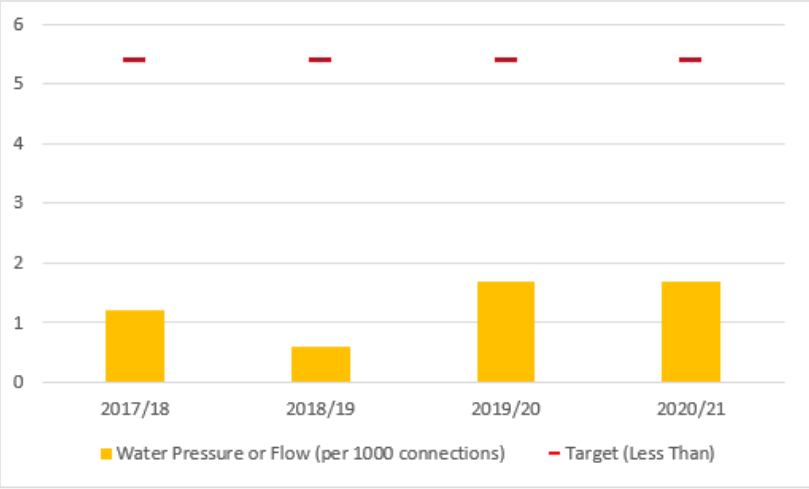
Linked to community outcome 1

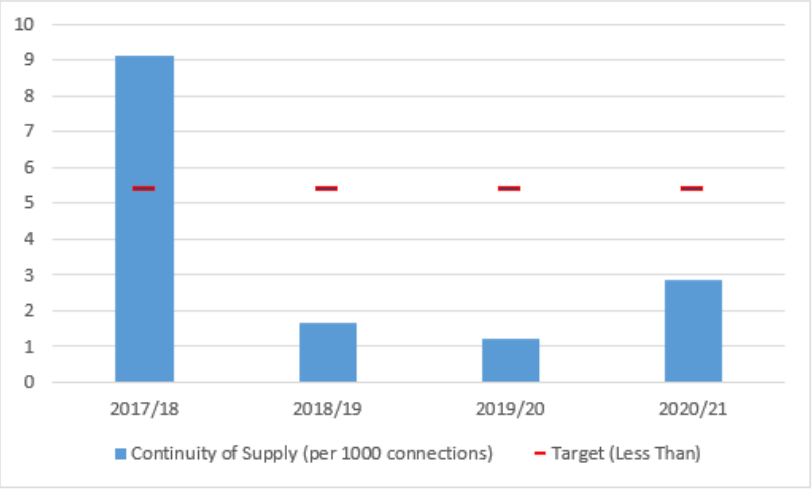
The total number of complaints received by the local authority about any of the following: (a) drinking water clarity, (b) drinking water taste, (c) drinking water odour, (d) drinking water pressure or flow, (e) continuity of supply, and (f) the local authority's response to any of these issues - expressed per 1000 connections to the local authority's networked reticulation system.
Results for 2017/18 to 2020/21 are as under

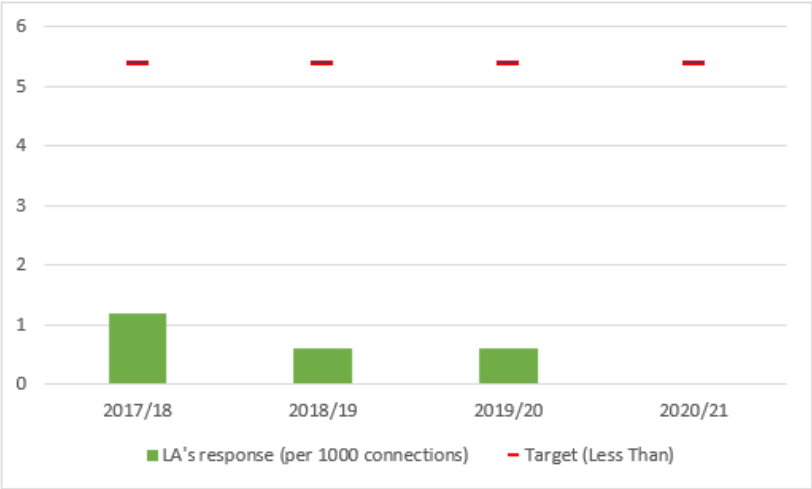






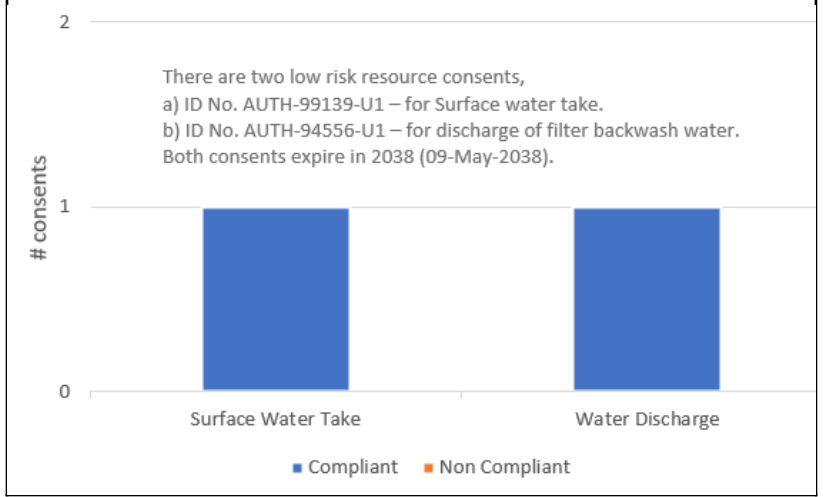






4. Dashboard – Water Supply

Water Supply – Consent Compliance and expiry

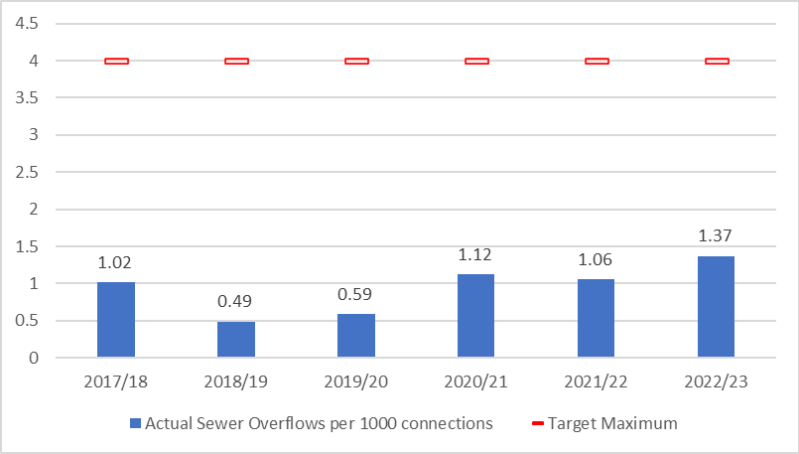


4. Dashboard – Wastewater

Wastewater (1) – System and Adequacy

The number of dry weather sewerage overflows from the territorial authority's sewerage system, expressed per 1000 sewerage connections to that sewerage system.

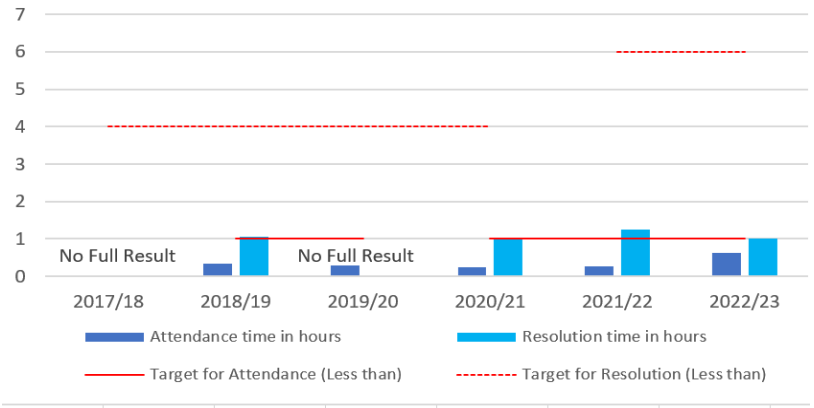
Linked to community outcome 1 & 2



Wastewater(3) - Fault Response Times

Median response times to attend to sewerage overflows resulting from a blockage or other fault in the territorial authority's sewerage system, (a) attendance time and (b) resolution time

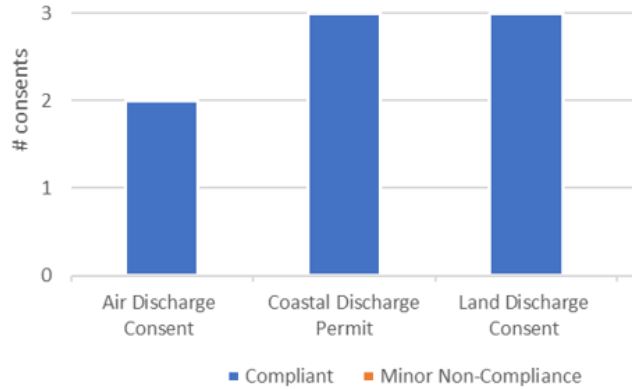
Linked to community outcome 1



Wastewater– Resource Consent Compliance

Status of Wastewater resource consents. Moderate risk coastal discharge consent (ID: AUTH-98236) due to expire in 2025.

Linked to community outcome 2



Wastewater (2) – Discharge Compliance

Compliance with TA's Resource Consent conditions measured by number of abatement notices, infringement notices, enforcement orders, and convictions

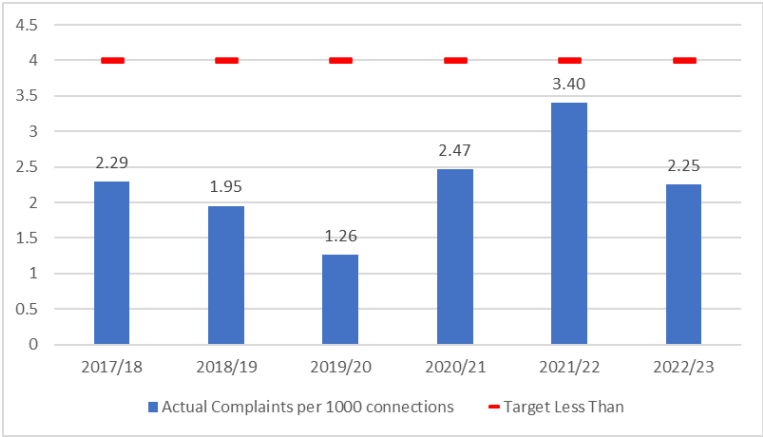
Linked to community outcome 2

Types of Non-Compliance	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Abatement notices	0	0	0	0	0	0
Infringement notices	0	0	0	0	0	0
Enforcement orders	0	0	0	0	0	0
Convictions	0	0	0	0	0	0

Wastewater (4) – Customer Satisfaction

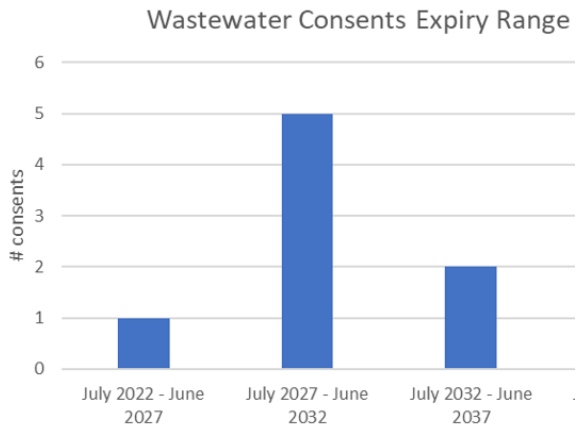
The total number of complaints received by the territorial authority about any of the following: (a) sewage odour (b) sewerage system faults
(c) sewerage system blockages, and (d) the territorial authority's response to issues with its sewerage system, expressed per 1000 connections to the territorial authority's sewerage system.

Linked to community outcome 1



Wastewater – Resource Consent Compliance

One consent expires before June 2027

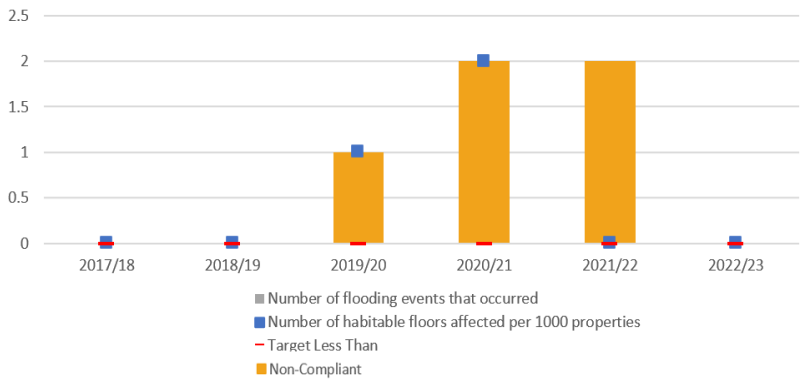


4. Dashboard – Stormwater

Stormwater (1) – System and Adequacy

(a) The number of flooding events that occur in a territorial authority district.
(b) For each flooding event, the number of habitable floors affected.
(Expressed per 1000 properties connected to the territorial authority's stormwater system.)

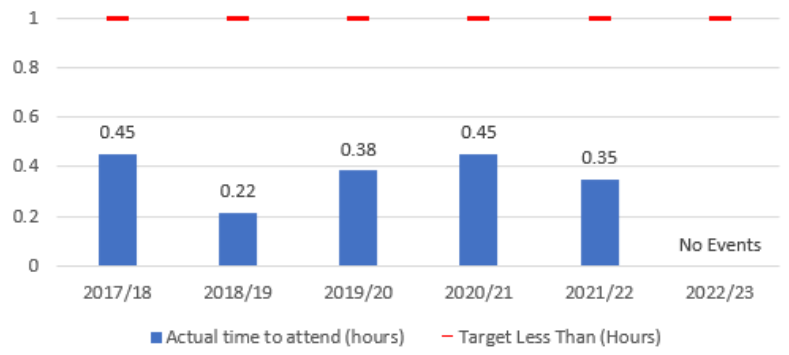
Linked to community outcome 1



Stormwater(3) - Response Times

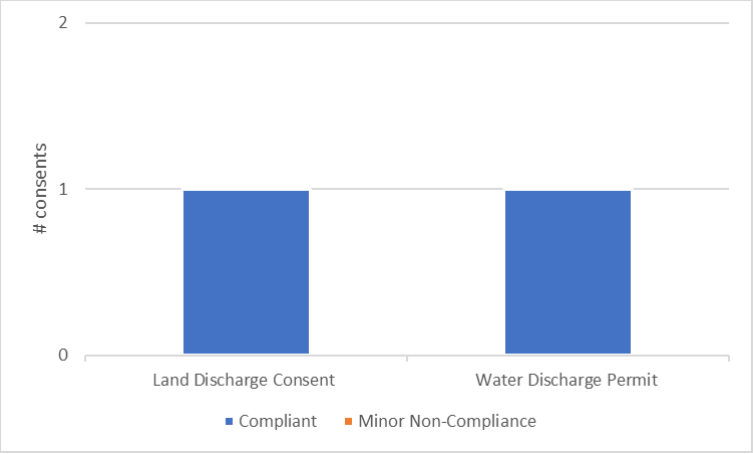
The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site.

Linked to community outcome 1



Stormwater – Resource Consent Compliance

Status of Stormwater resource consents. Low risk Land Drainage consent AUTH-20136275-V2 due to expire 2029.



Stormwater (2) – Discharge Compliance

Compliance with TA's Resource Consents for discharge from its stormwater system, measured by number of a) abatement notices, b) infringement notices, c) enforcement orders, and d) convictions received by the territorial authority in relation to those resource consents.

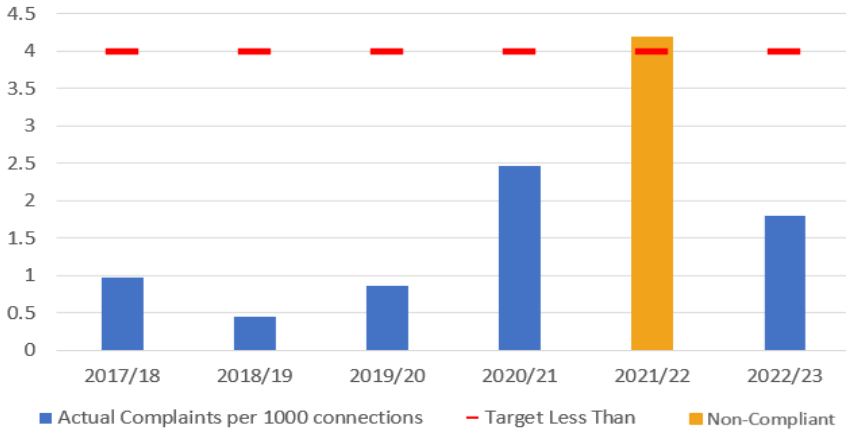
Linked to community outcome 2

Types of Non-Compliance	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Abatement notices	0	0	0	0	0	0
Infringement notices	0	0	0	0	0	0
Enforcement orders	0	0	1	0	0	0
Convictions	0	0	1	0	0	0

Stormwater (4) – Customer Satisfaction

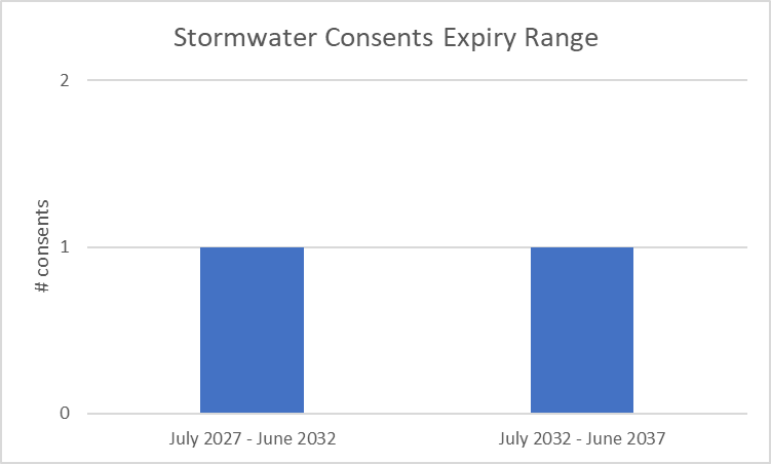
The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system.

Linked to community outcome 1



Stormwater – Date range of consents expiry

One consent expires before June 2032



4. Current Level of Service and Performance

Areas of concern and mitigation options

Currently, service levels relate to:

- Meeting customer expectations (customer satisfaction and response times to faults)
- Environmental considerations.(Often in the form of whether or not resource consent conditions have been met.)

Performance is gauged on whether or not the targets, key performance indicators (KPI's) have been met.
Service levels listed are those that are mandatory as a requirement of the Local Government Act 2002, section 261B plus those that relate to resource consent compliance.
A general area of concern is that in the future KPI's may be reset to align with a higher standard of performance. This could result in a future gap in service performance.

Service	Current Level of Service Gaps	Possible Responses to Gaps
WS	Customer Satisfaction : Response to non-urgent call outs	Historically this has been an ongoing issue. Investigation by discussion with the maintenance contractor is required. (However it should be noted that resolution of non-urgent callouts has been accomplished by the target time.)
WS	Environmental : % Real Water Loss	While there is currently not a gap, the accuracy of the calculation needs to be checked.
WW	Customer Satisfaction	No Gaps
WW	Environmental	No gaps currently but resource consent renewals for sewage disposal are due for renewal soon. Current means of disposal is to discharge to water whereas the current nationally favoured means is disposal to land which has large cost implications. Also, the conditions pertaining to the new consent are unknown thus KPI's and their targets associated with discharge compliance cannot be determined.
SW	Customer Satisfaction : ➢ Flooding Events ➢ Complaints	Although there were no flooding events and consequent flooding of habitable floors in 2022/23, there were over the preceding three years. The mitigation measure is to continue with storm water capacity upgrade works with regard to: • Review drainage design criteria to accommodate higher receiving water levels. • Partner with Environment Southland to review Flood Protection infrastructure. • Consider retreat from areas most susceptible to flooding. Complaints: For all years except 21/22 the number of complaints received was well below the maximum target. 21/22 was just over the max. No response necessary
SW	Environmental : Discharge Compliance	Council Storm water consent is non-complaint as per our consent conditions. We are compliant except for condition 2a that states we may not allow any discharge of any pollutants to the receiving environment. This includes accidents, deliberately releasing of hazardous substances, nor wash-down of such substances. Unfortunately these events are beyond our control. The occurrence of the enforcement order and subsequent conviction in 2019/20 related to a constructed sewer overflow connected to the storm water system. Such constructed sewer connections to the storm water network have been disconnected and sealed off. Currently the ICC does not provide significant treatment to storm water before discharging into Invercargill's receiving waters. During renewals of the storm water network, ICC engineers have been asked to allow for the possibility of future treatment devices to be added where applicable. An annual budget has been created to allow for storm water treatment throughout the City with areas of high risk for contamination being selected first. The ICC will continue to work on a 'worst first' basis when it comes to storm water treatment around the City and will: • Identify contamination sources and require on-site correction of drainage defects. • Education of public on behaviour change to reduce contamination. • Target repair / renewal of drainage systems to reduce cross contamination.

5. Planning for the future

5.1 Relevant Strategic Documents

- Beyond 2025 Southland Regional Long Term Plan
- 2024 2034 – LTP Development Update Strategic Plan

5.2 Demand Drivers

Population growth - As at 30 June 2023, the estimated population of Invercargill is approximately 57,900. The population is projected to increase over the next ten years but growth will depend significantly on whether the Tiwai Point smelter closes or remains open, and whether or not various industries are developed as envisaged in the Beyond 2025 Regional Long Term Plan.

Socio-economic - Inflation will continue to squeeze household budgets and impact abilities to pay rates. Inflation is expected to stay above 3% until 2025/2026.

Environmental –

- **Mean annual and extreme temperature** (days where temp. exceeds 25C) are expected to increase with time:
  - By 2040: mean annual temperature increase of 0.5-1.0C with 0-10 more hot days per annum.
  - By 2090: mean annual temperature increase of 0.7-3.0C, with 5-55 more hot days per annum
- **Annual rainfall is expected to increase**
  - By 2040: +0-10%
  - By 2090: +5-20%
  - Increased frequency of high rainfall days, i.e. Increase in intensity of rainfall.
- **Mean sea level is expected to rise**
  - By 2040: 0.2-0.3m
  - By 2090: 0.4-0.9m
- **Natural disaster**
  - Extreme weather events are happening more frequently and this trend is likely to continue due to climate change. There is a 75% probability of the Alpine Fault rupturing within the next 50 years.

Leakage (Water Supply) - Leakage in the water network is assessed as just below 20%. It is likely that in the future lower leakage rates will be enforced to promote efficiency in the use of the water resource.

Infiltration (Waste Water) - After heavy rainfall, ground water seeps into earthernware pipe joints causing overload on the Waste Water Treatment Plant.

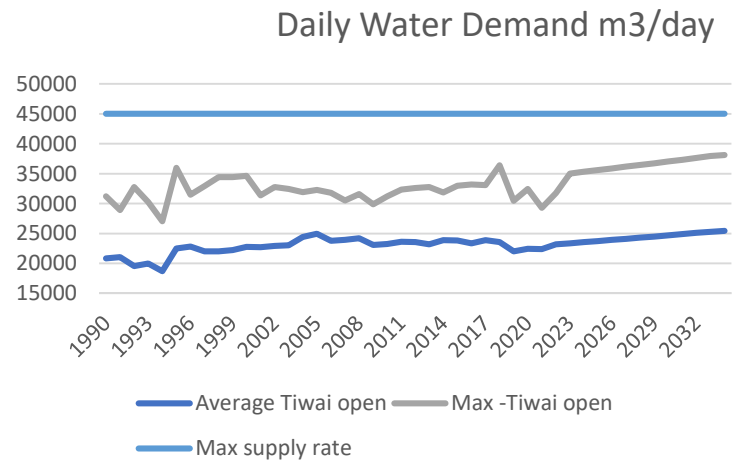
Legislative changes - As a consequence of the change of Government, the legislation supporting the previous Governments "Affordable Waters" is to be repealed. Clarification as to what this will mean has yet to be declared. There may be changes to legislation that have an impact on how Council will provide services. These changes may affect Council organisational structure but not change the level of service received by the customer/ratepayer in the first three years of the plan.

Consents - Council will continue to carry out legislation-directed ordinary functions while factoring in an increase to required quality for consent conditions. Consent processes at Bluff and Clifton Water Treatment Plants have commenced, although under an increased level of uncertainty as a result of the reform programme. Any impact on the consent process as a result of this uncertainty would be significant.

5.3 Demand Projections

WS - The Water Activity can meet the anticipated demand according to the change in population trend. The graph below shows the trend assuming Tiwai stays open and uses a maximum demand to average daily demand multiplier of 1.5 for the projection onward from 2023. (Historically the actual ratio averages 1.42 but in deference to climate change when drought can be expected to happen more frequently it is likely that maximum demand will increase) Demand does fluctuate according to the weather i.e. a dry summer will elevate demand significantly.

The most significant influence in increasing sustained demand is likely to be due to the successful attraction of industry. As detailed in the Infrastructure Strategy, expansion of infrastructure will be managed so that it does not exceed that which is currently serviced or outlined in the District Plan. There is land identified for a planned subdivision of 600 houses in the South East of the city. That demand has not been included in the graph below but will easily be accommodated by the 7,000 cubic metres per day 'head room' between the current maximum supply rate of 45,000 cubic metres per day and anticipated demand from the current trend at the end of this plan period.



5. Planning for the future (cont.)

5.1 Relevant Strategic Documents

5.2 Demand Drivers

Asset life - Assets will remain useful until the end of their average useful life, noting this requires underlying assumptions regarding asset condition to be correct.
Infrastructure installed in the 1920s is nearing end of life and require renewal within the term of the Infrastructure Strategy.
Infrastructure network development - It is anticipated that a 1% extension of the network (roading, three waters) will be required to service forecast growth needs of business and/or residential property. Locations are not yet known so more accurate forecasts are not possible.
Asset revaluation - Asset values will increase by the accumulated Local Government Cost Index inflation forecast by BERL on the last valuation value. Revaluation occurs in 2024/25 and every third year thereafter. Changes in valuation (cost price) or life of Council assets have a significant impact on Council's financial management and capital programme. Council will continue on the planned pathway for the Capital Works programme and monitor after each revaluation cycle.
Interest rates – Borrowing - Expected interest rates on borrowing will be 4.0%.A significant change in interest rates and the cost of borrowing would have a significant impact on Council budgets. Changes to services or the Financial Strategy would need to be considered.

A full list of Assumptions for the Invercargill City Council Long-term plan 2024-2034 is available online.

5.3 Demand Projections

WW.
The trunk sewerage pipes and treatment plants are of sufficient capacity to accept sewage from a significantly larger population than is expected, and a need for upgrading due to population growth is not anticipated.
There will remain a demand for rural residential options, but Council does not intend to extend the sewerage network to service these properties, and will expect them to provide suitable on-site effluent disposal systems.
There is an issue at Makarewa with faecal contamination thought to be caused by inadequate septic tank discharge dispersal.

SW
Climate change is likely to bring heavier rainfall events more frequently than has been historically experienced.
Un-serviced areas will be developed in accordance with Low Impact Design principles, either directly to waterways, or to Council managed networks at the developers cost. The requirement for higher quality storm water discharges will lead to a focus on sources of contamination and a resolve to reduce these effects both within the existing network and any new reticulation which may be added.

5.4 Managing Demand (Mitigation Measures)

Meeting Existing Demands

Meeting Future Demands

Water Supply

5.4.1 Possible Demand Related Responses

In the unlikely event that demand outstrips supply capacity, then increased effort into reducing water loss due to leakage will be made. Additionally, the introduction of universal water metering will be considered to suppress demand. Accordingly the following budgets have been included in the capex programme.

- Leakage detection programme -$100,000 each year
- Universal metering - $8.8 million over this plan period.

Wastewater

5.4.1 Possible Demand Related Responses

No specific programmes are proposed for growth and demand related works, as low levels of growth are expected in Invercargill during the life of the Plan. However it is intended to address the Makarewa sewerage contamination issue. In regard to:

- Residential development. The provision of sewerage reticulation will be part of the subdivision development and funded by the developer. As part of subdivision assessment, the adequacy of infrastructure into which the subdivision feeds will be considered, and, if necessary, upgraded as part of development.
- Industrial development. The Council has rezoned land at Awarua for Industrial Development, and it is expected that industry wishing to establish in the area will require effluent treatment. Council intends to collect and convey effluent to the Clifton Treatment Plant, and, depending on strength, effluent may be pre-treated at Awarua either by the industry or by Council. Because industry requirements vary considerably, it is intended to consider and provide services in negotiation with industry as they establish, with funding to be recovered as a cost against the development, including the costs of pre-treatment systems at Awarua, or of capacity upgrades of the Clifton Treatment Plant.

Accordingly the following budget have been included in the capex programme.

- Makarewa sewerage contamination - $2.64 million in 2033/34.

Stormwater

5.4.1 Possible Demand Related Responses.

Legislation and Resource Consents

- Renewal programme to reduce cross contamination of drainage networks.
- Maintenance and Operations programmes to identify emerging issues with pump stations and pipe network.
- Increase in the water quality monitoring and sample site collection programmes.
- Promote “Low Impact” Stormwater Design Features.
- Provide source and end of line stormwater treatment.
- Prevent unsuitable roof types to be used in new development, i.e. copper and zinc (galvanised) roofing.
- Behaviour Change Programme to discharge deliberate contamination of stormwater.
- Industrial Property Audits to identify and correct practices causing stormwater contamination.
- Develop a stormwater bylaw to allow limit to be set on the type of stormwater discharges into Council’s network.

Climate Change

- Collaborate with Environment Southland to improve flood protection infrastructure to a consistent level of service.
- To accommodate higher receiving water levels and greater intensity rainfall events, designs will be prepared for a storm rainfall event of 5 year return period using rainfall intensities for a residual concentration pathway (RCP) of 4.5 for the year 2100.
- Consider retreat from areas susceptible to flooding as a result of sea level rise

Population Growth

- Ensure Greenfield development provide the necessary stormwater infrastructure, including stormwater treatment.
- Design stormwater renewals to accommodate infill development where serviced by an existing stormwater network.
- Ensure impermeable areas in infill development are limited to no more than 70%, i.e. minimum 30% permeable area.
- Where an existing network is identified to be constrained and infill development is planned require onsite attenuation.

Accordingly there is no budget included in the capex programme for growth.

6 Risk Management

6.1 Risk Management Approach and Key Risks

Council is committed to acting in a manner that enables it to reliably achieve objectives, address uncertainty, and act with integrity.

To support these outcomes Council is developing an approach which provides integrated governance management and assurance of performance, risk and compliance. The approach taken by Council is set out in the Risk Management Framework – Policy and Process.

Council manages the strategic risks associated with the assumptions identified in the preparation of the Long-term Plan. Council also manages a range of other risks, including Health and Safety. These risks are managed through its risk management register as contained in Process Manager.

6.2 Building Resilience

The working definition of resilience to the Invercargill City Council is the organisation and community's ability to survive a crisis and adapt to uncertainty. Resilience considers both the risks we face and adaptive capacity. In this latter context, resilience relates to our capacity to adapt (rather than preparedness or recovery), which is the capacity of people, the community and systems to adapt in the face of predictable or unpredictable events or trends, including the 'unknown unknowns'. Resilience provides a different perspective to the "risk matrix", putting less emphasis on likelihood and a focus on consequence to address "what if" questions.
The need to build a resilient community is learning from events such as the earthquakes in Christchurch, Kaikōura and Wellington, and recent major storm events in New Zealand and across the world. Invercargill City Council is seeking to make the City and its infrastructure more resilient as part of the review of risk management being undertaken.
With regard to a carbon policy, this is a developing area for this council. Council has commissioned a Greenhouse Gas, (GHG), inventory report for the year 2023. The report identified total emissions for the whole organisation as being 19,253 tonnes of carbon dioxide, (tCO2e) equivalent for emission categories 1,2,3 and 4. The Clifton waste water treatment plant (CWWTP) was as major contributor accounting for 36% of the total. Council intends to reduce its GHG from the CWWTP and has proposed an indicator for emissions for categories 1,2 and 3 as per the table below. This will be reported outside its statement of Service Performance.

	Year			
	2024/25	2025/26	2026/27	2027 - 2034
Maximum CWWTP emissions for categories 1-3 (tCO2e)	9845	9646	9449	2% annual reduction

6 Risk Management

6.3 Risk Management Approach and Key Risks

Network	High Level Risk/Issue Title	Caused by	Impacts	Current Controls and Mitigation	Proposed further response/ Recommended Actions
WS	Loss of sole water source / Ōreti River source is unavailable or restricted	Drought / contamination / earthquake	Loss of water supply to whole community after two day reservoir storage is exhausted	Investigation into alternative water source to act at least as an emergency supply	• Development of the alternative source - project # 100549 • Treatment – project # - 100528 • Reservoir/pump station - project # - 100812 part • Trunkmain – project # - 100814
	Structural collapse / Water Tower strengthening	Earthquake	Potential loss of life/damage to surrounding infrastructure	Structure declared Earthquake prone, no public admittance	Seismic strengthening to 67% of new building standard – project # - 100545
	Bluff township flood / rain water retention dams failure	Landslip/earthquake	Flooding	Inspect/maintain	Condition assessment fund out of opex budget
	Contamination of water supply / backflow programme	Flow from property flowing into the distribution network	Degradation of water quality/potential poisoning.	Install backflow prevention devices on all new/renewed connections	Establish a Backflow protection programme and purpose built tanker fill station – project # - 100528 part
	Inefficient water use / leakage programme	Poor pipe condition	Inefficient expenditure/inefficient use of water resource	Pipe renewal programme	Area water metering followed by universal metering - project # -100528 part
	Resilience in water trunkmain system / Resilience	Lack of redundancy. • Single manifold at Branxholme for pumping into two trunkmains. • Only one trunkmain from Waikiwi – City reservoir/pump station sites	Loss of supply to main pumping station at Doon Street	Lower distribution supply pressure	• Construct Branxholme duplicate Manifold/pump station – project # - 100812 part. • Duplicate pipe line between Waikiwi and Doon street reservoirs – project # - 100057
WW	Resilience in Rising mains / Resilience	Lack of redundancy in critical infrastructure	Sewerage overflow/environmental non - compliance prosecution	Emergency response – repair pipe	Duplicate rising mains. Project #: 100807
	Pipe blockage	Obstruction in pipe/tree root intrusion/pipe collapse due to poor condition	Sewerage overflow/environmental non - compliance prosecution	Emergency response – repair pipe	CCTV survey continuance done out of opex budget
	Unknown outcome of discharge consent renewals / consent renewals	Discharges may need different/improved treatment	Cost increase due to elevated environmental standards	Renew consent	Project # - 100805 part
	Cessation of pumping/Loss of pumping	Power loss to stations without onsite diesel generation	Sewerage overflow/environmental non - compliance prosecution	Deploy trailer mounted diesel generator to site – emergency response	No further action
SW	Pipe blockage	Obstruction in pipe/tree root intrusion/pipe collapse due to poor condition	Flooding	Emergency response – repair pipe	CCTV survey continuance done out of opex budget
	Pipe collapse	Poor pipe condition	Ground settlement	Emergency response – repair pipe	CCTV survey continuance done out of opex budget
	Pipe network capacity overload	Exceedance of design capacity	Flooding	Check storm water inlets are clear	Review design standards

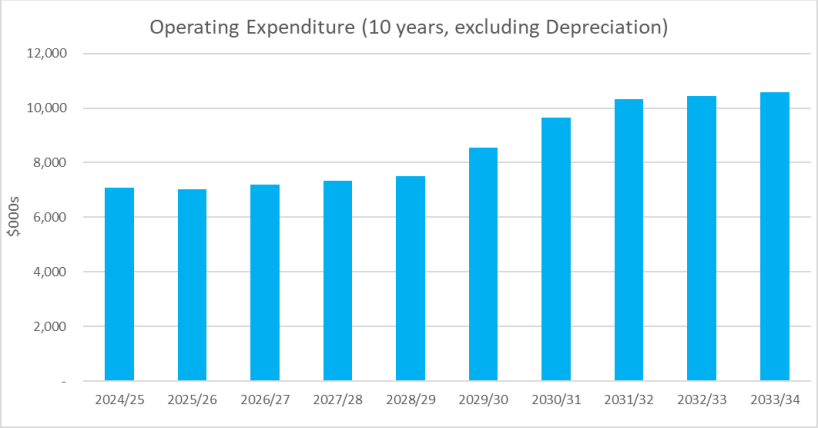
7 Asset Operations and Maintenance

7.1 Operations and Maintenance Requirements (WHY)

WS - Council's water system is there to provide safe drinking water to the residents of Invercargill and to maintain provision for firefighting capacity.

We have only a one treatment located at Branxholme that with plans to investigate and develop an alternative water source at Awarua. Our reservoirs and pump station are unmanned site.

We manage our network as per Councils Water Safety Plant that is a requirement of Taumata Arowai (Water Regulator)



7.2 Key Operational Processes and Asset Maintenance (WHAT)

WS - Council has a number of key activities that manager the water network which include the mechanical /electrical aspect and the pipe reticulation networks.

The electrical and mechanical networks includes treatment plant, reservoirs and pump station which is monitored and controlled by a Council's team of qualified staff assisted by our SCADA system (Supervisory Control and Data Acquisition). This system provides up to date information on the condition of the equipment and provides alarm when the process goes out of pre-set limits. At these time staff will intervene to rectify the problems. There work includes the monitoring and allocation of chemical required to run the plant which includes but not limited to lime, PACL, polyelectrolyte, Peroxide, fluoride and Chlorine.

The treatment process also produces waste by the way of sludge that need to be disposed annually. This product has a high concentration of aluminium which now cannot be disposed at a clean fill site an alternative site need to be investigated.

Council operators are based at the water treatment plant at Branxholme and our electrical / mechanical contractor carry out preventative daily inspections at our two major reservoirs and pump station (Doon St and Waikiwi) to ensure that it is working to its best efficiently. Council also carries out annual inspection of all our site which is done with the aid of our Maintenance Contractor.

The pipe reticulation system is mainly maintained on a reactive basis where faults are identified by Council staff, contractor and or the general public. Preventative activities such as hydrant flow testing and flushing of selected main are carried out to provide data on asset condition and water quality. This data is utilised in the repairs and long term capital replacement of the network

Water backflow protection is a critical activity in protecting our community health and safety and Council is committed to this process.

7.3 Operations and Maintenance Plan (HOW)

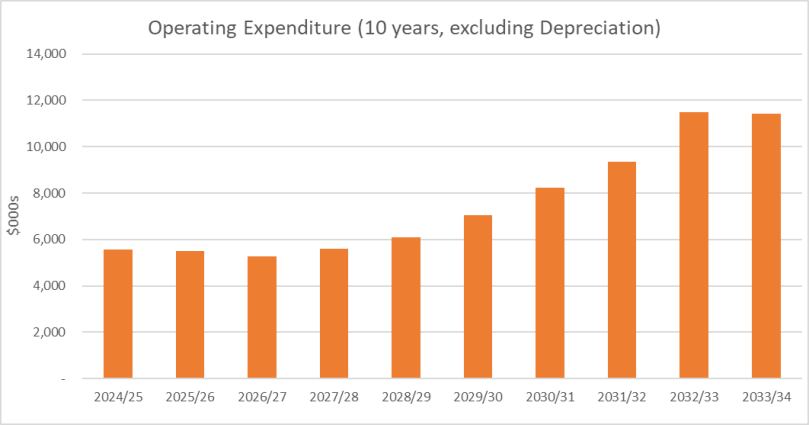
WS - Councils has its own qualified operators at the Branxholme plant that monitor and carry out the day to day operation of the plant that include chemical handling and minor maintenance work. They are supported by our electrical / mechanical contractor where specialised work is required to be done.
The sludge disposal from our treatment plant is required to be disposed at a consented site and we are currently looking for alternative site and or reviewing of our consent condition. We are currently managing this sludge on site until suitable sites become available. Specialised contractors are used in the removal, drying and transportation of this material.
Council has two main maintenance contractors which specialise in the activity of either electrical /mechanical or pipe reticulation. These Contract are not exclusive and we use specialised contractors as and when required.
Under our electrical / mechanical contract, our contractor provides qualified staff for both preventative and reactive work. Their specialised knowledge and industry purchasing powers provide Council with economical benefits.
Our pipe reticulation maintenance preventative and reactive work is also carried by an external contractor
Both contracts have detailed work schedules and KPI indicator that ensure both price and performance is provided. The council manages these contracts through IPS that issues the work orders, records data, processes payment and holds has our asset register. These records is linked to our GIS that can be accessed within limits to the general public through a web interface.
Council is in the process of amending the water bylaw to regulate the installation of backflow protection within the Invercargill area, to date we have started the process of requiring all new connection to have a backflow prevention installed at the property boundary. This cost is included within a new connection fees. Where existing connection are being replaced backflow manifold are being installed at this time. This bylaw change may result in addition staff to manage this process.

7 Asset Operations and Maintenance (cont.)

7.1 Operations and Maintenance Requirements (WHY)

WW - Council's wastewater system is there to protect the residents of Invercargill from health issues and the receiving environment from adverse effects due to non-compliant discharges. We have an aging network that need continual maintenance to perform to the high standard required.

Our treatment plants currently operate within their current consent condition, this is due to the high levels of skilled operation staff and regular on-going preventative and reactive maintenance and capital replacements



7.2 Key Operational Processes and Asset Maintenance (WHAT)

WW - Council has a number of key activities that manages the waste water network which include the mechanical /electrical aspect and the pipe reticulation networks.

The electrical and mechanical networks includes treatment plants and pump station which is monitored and controlled by a Council's team of qualified staff assisted by our SCADA system (Supervisory Control and Data Acquisition). This system provides up to date information on the condition of the equipment and provides alarm when the process goes out of pre-set limits. At these time staff will intervene to rectify the problems.

Council staff also carries out preventative inspection on a day to day basis of the plant to ensure that it is working to its best efficiently. Council also carries out annual inspection which is done with the aid of our Maintenance Contractor.

The pipe reticulation system is mainly maintained on a reactive basis where faults are identified by Council staff, contractor and or the general public. Preventative activities like CCTV (closed circuit VT) is used to provide condition assessment that is utilised in the repair and long term capital replacement of the network. More investment in CCTV inspections is considered necessary to identify and prolong the life of the network. The removal of stormwater from entering the sewer network is also a major factor by reducing the potential overflows, help in the health and safety of the public and the environment that it could discharge to.

7.3 Operations and Maintenance Plan (HOW)

WW - Council has two main maintenance contractors which specialise in the activity of either electrical /mechanical or pipe reticulation. These Contract are not exclusive and we use specialised contractors as and when required.

Council has its own qualified operators at the treatment plant (supported by our laboratory staff) to maintain all of the treatment plants and pumping stations. They carry out inspections and minor works and where major maintenance are required additional assistances is provided by our electrical / mechanical contractor.

Under our electrical / mechanical contract, our contractor provides qualified staff for both preventative and reactive work. Their specialised knowledge and industry purchasing powers provide Council with an economical benefits. Our pipe reticulation maintenance is also carried by an external contractor.

Both contracts have detailed work schedules and KPI indicators that ensure both price and performance is provided. The council manages these contracts through IPS software that issues the work orders, records data, processes payment and holds has our asset register. These records is linked to our GIS that can be accessed within limits to the general public through a web interface.

Managing infiltration of stormwater into the sewer network is a process updating our hydraulic model, celebrating it to events and carrying out site inspection. These activities require specialised resources and time to determine the location and extent.

Closed circuit television (CCTV) survey will continue to investigate pipe condition and the presence /build up of blockages

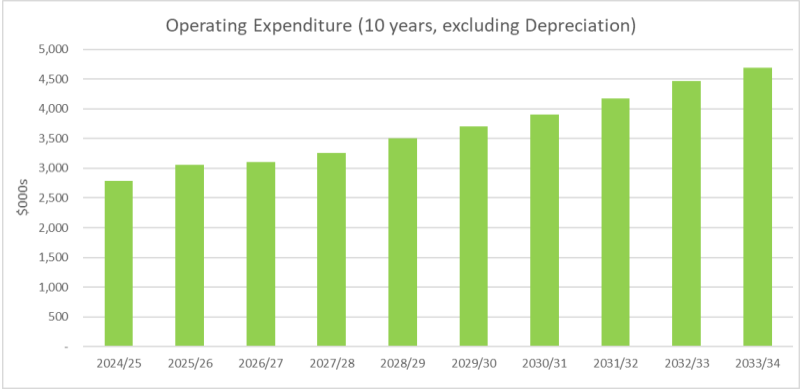
All this information is used to assist the develop of the Council capital and maintenance works plans

7 Asset Operations and Maintenance (cont.)

7.1 Operations and Maintenance Requirements (WHY)

SW - Council's stormwater system is there to protect the residents of Invercargill from flooding of dwelling due to high rainfall events, this involves the primary pipe network including network ditches. Council also shall protect the receiving environment from adverse effects due to non-compliant discharges. We have an aging network that need continual maintenance to perform to the high standard required.

We have a number treatment options currently operating within our current consent condition, which will grow over time



7.2 Key Operational Processes and Asset Maintenance (WHAT)

SW - Council has a number of key activities that manages the stormwater network which include the mechanical /electrical aspect and the pipe reticulation networks.

The electrical and mechanical networks includes pump station which is monitored and controlled by a Council's team of qualified staff assisted by our SCADA system (Supervisory Control and Data Acquisition). This system provides up to date information on the condition of the equipment and provides alarm when the process goes out of pre-set limits. At these time staff will intervene to rectify the problems.

Council staff also carries out preventative inspection on a day to day basis of the plant to ensure that it is working to its best efficiently. Council also carries out annual inspection which is done with the aid of our Maintenance Contractor.

New and existing treatment devices require on-going maintenance for the disposal of stormwater to the receiving environment. These include ponds, rain gardens, wetlands and treatment structures. These devices are relatively new to the stormwater network and are being assessed as to the level of maintenance required. This will be developed over the coming year bases on location and pollutants loadings

The pipe reticulation system is mainly maintained on a reactive basis where faults are identified by Council staff, contractor and or the general public. Preventative activities like CCTV (closed circuit TV) is used to provide condition assessment that is utilised in the repair and long term capital replacement of the network. More investment in CCTV inspections is considered necessary to identify and prolong the life of the network.

The removal of sewerage from the entering the stormwater network is also a major concern, this has a risk to in the health and safety of the public and the environment that it discharge too.

7.3 Operations and Maintenance Plan (HOW)

SW - Council has two main maintenance contractors which specialise in the activity of either electrical /mechanical or pipe reticulation. These Contract are not exclusive and we use specialised contractors as and when required. Council has its own qualified operators to maintain all of the pumping stations. They carry out inspections and minor works and where major maintenance are required additional assistances is provided by our electrical / mechanical contractor.

Under our electrical / mechanical contract, our contractor provides qualified staff for both preventative and reactive work. Their specialised knowledge and industry purchasing powers provide Council with economical benefits.

Our pipe reticulation maintenance is also carried by an external contractor. This contractor will be engaged to provide assistance to our treatment devices as and when require.
Both contracts have detailed work schedules and KPI indicators that ensure both price and performance is provided. The council manages these contracts through IPS software that issues the work orders, records data, processes payment and holds has our asset register. These records is linked to our GIS that can be accessed within limits to the general public through a web interface.

Managing discharges of sewerage to stormwater network is a function of Council staff. These events are identified through regular monitoring and testing of our outfall and or reactive response to illegal / accidental pollutants discharges. These can involve detailed site investigation to identify the root cause of the discharge or a simple clean-up of an accident site. This work normally involves our pipe reticulation maintenance contractor to assist directly or indirectly. Stormwater flooding that exceed the capacity of the stormwater can have a direct impact on the sewer network that may result in potential sewerage being spilled to the environment. These events are infrequent but have major concerns to Council.

Closed circuit television (CCTV) survey will continue to investigate pipe condition and the presence of blockages. This information will assist in forming maintenance and capital work programmes.

8. Asset Renewals

Renewal Approach

8.1 Water Supply

For the Water Activity there are two distinct approaches proposed depending on the criticality of the asset:

- For critical assets – programme their replacement before expiry of their nominal service life.
- For non critical assets – financially plan for their replacement at the expiry of their most optimistic service life but physically undertake the replacement upon complete failure or when economic analysis confirms that ongoing repair costs outweigh the cost of renewal.

8.2 Wastewater

This renewal programme is intended to maintain the overall standard of the sewerage system at a level which reflects its age profile by providing for the rehabilitation or replacement of individual assets as they reach the end of their useful life. It must be funded adequately to maintain current levels of service and the overall quality of the network. The level of expenditure on cyclic asset renewal will vary from year to year, reflecting the remaining life profile of the assets within the sewerage network.

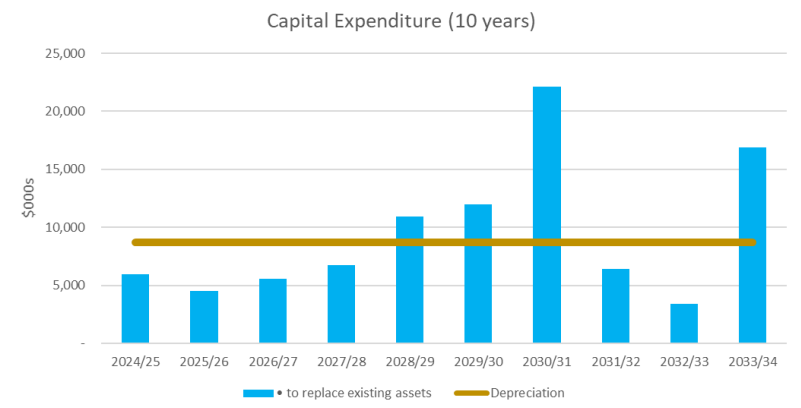
8.3 Stormwater

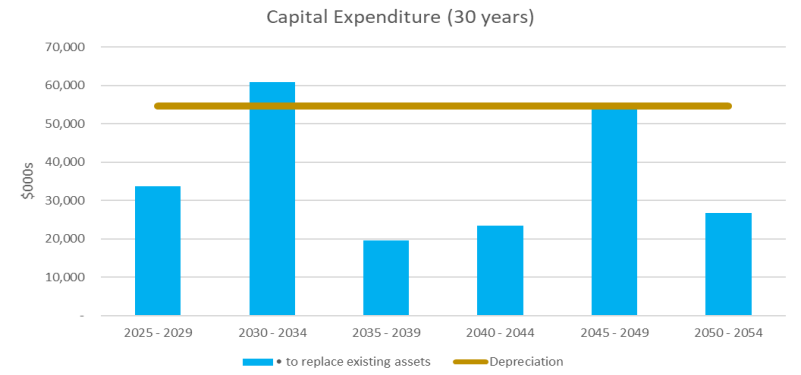
This renewal programme is intended to maintain the overall standard of the stormwater system at a level which reflects its age profile by providing for the rehabilitation or replacement of individual assets as they reach the end of their useful life. It must be funded adequately to maintain current levels of service and the overall quality of the network. The level of expenditure on cyclic asset renewal will vary from year to year, reflecting the remaining life profile of the assets within the stormwater network.

8. Asset Renewals (cont.)

Renewal Plan

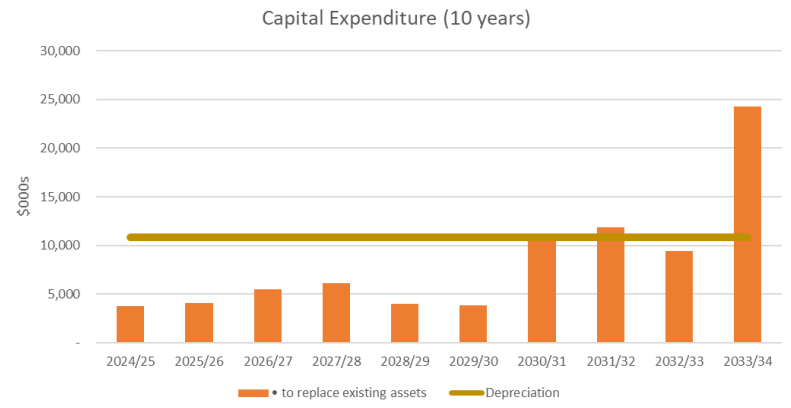
8.1 Water Supply

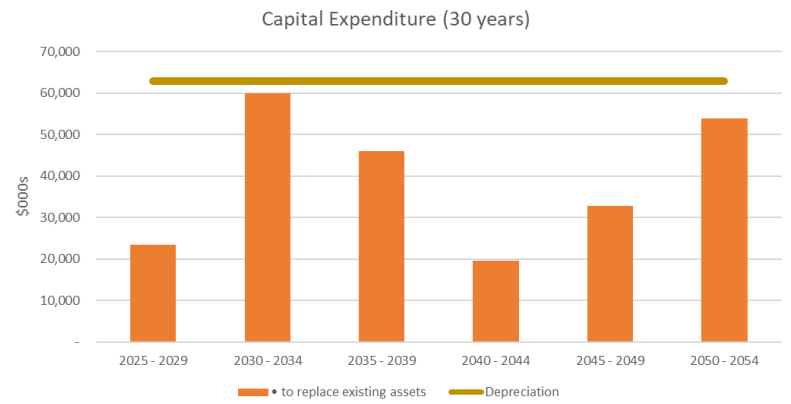




Renewal expenditure is mainly composed of replacement of asbestos cement pipe within the reticulation pipe network which has been "smoothed" to address a backlog of pipe which has reached its nominal life expectancy. That programme reduces after 2029/30. Over the first ten years spikes in expenditure are:
2030/31 - commencement of the project to duplicate the Waikiwi/Doon Street trunkmain ($7.9M) plus the renewal of the Doon Street reservoir ($6.6M).
2033/34 – universal water metering.
Over the thirty year period the spike over the 2045-2049 period is due to the renewal of the Waikiwi reservoir/pump station ($21.5M). As demonstrated by both graphs, expenditure is less than depreciation. However it is possible that the nominal service life on which depreciation is based is actually longer than assessed. To date the number of asbestos cement main failures is less than could be anticipated from the expiry of their nominal life expectancy indicating that the nominal life is greater than has been assigned. Continued observation of maintenance trends will determine if that is so.

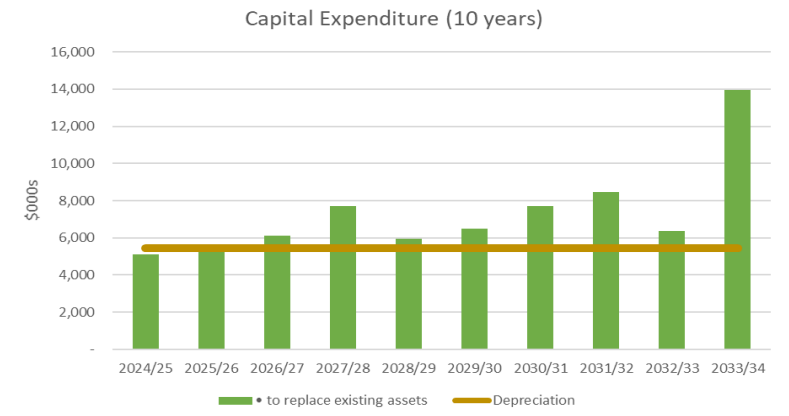
8.2 Wastewater

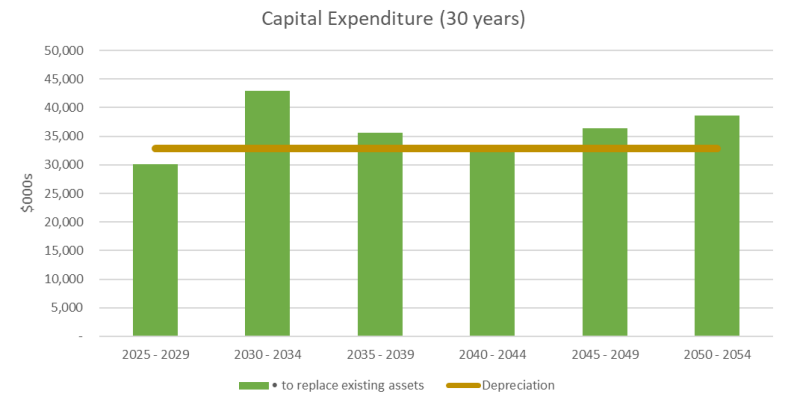




Renewal expenditure is mainly composed of pipe renewals at a fairly steady commitment over the thirty year term. The spike in 2033/34 is new to replacement of pump stations that are at locations where there is potential for soil liquification after a seismic event.
As demonstrated by both graphs, expenditure is less than depreciation. However it is possible that the nominal service life on which depreciation is based is actually longer than assessed.

8.3 Stormwater





Renewal expenditure is mainly composed of pipe renewals at a fairly steady commitment over the thirty year term. The spike in 2033/34 is new to replacement of pump stations that are at locations where there is potential for soil liquification after a seismic event.
As demonstrated by both graphs, expenditure is less than depreciation. However it is possible that the nominal service life on which depreciation is based is actually longer than assessed.

9. Asset Improvements and Disposals

9.1 Asset Improvements

WS

- Security of continuance of supply is enhanced by:
  - Having redundancy for single item critical assets. This plan includes the duplication of the Branxholme trunkmain between the Waikiwi and Doon Street reservoirs.
  - The installation of valves of reservoir outlets which activate to close in the event of an earthquake thus preserving reservoir storage.
- The protection of public health through the installation of backflow protection devices on service connections.
- A leakage detection programme plus metering to drive efficiency in the use of water.
- Vibration analysis on pumps and motors to lead preventative maintenance therefore mitigating against mechanical breakdown. Similarly infrared survey on electrical switchboards.

WW

- Prevention of sewerage spills by the duplication of major rising mains therefore avoiding adverse environmental impacts and prosecution.
- CCTV survey to determine pipe condition to lead pipe renewal programmes
- Pipe renewals are done using sealed joints to prevent infiltration.
- Centralised treatment of Makarewa septic tank outfalls to prevent sewerage contamination.
- Vibration analysis on pumps and motors to lead preventative maintenance therefore mitigating against mechanical breakdown. Similarly infrared survey on electrical switchboards

SW

- Treatment of stormwater discharges to improve the quality of the receiving waters.
- CCTV survey to determine pipe condition to lead pipe renewal programmes

9.2 Asset Disposals

WS

There are no disposal plans for water supply assets (Headworks and Treatment Plants, Reservoirs and Pump Stations) as disposal of the complete entity is not envisaged. If significant civil assets within that category need disposal, they will be demolished and if need be, rebuilt in a form appropriate to the then-current requirement. Various pieces of plant and equipment (as they come to be renewed) that have a market value will be sold to the highest bidder or disposed of as scrap.

The pipe network disposal is an emerging issue which has not yet been fully resolved. Historically, the disused pipe has been disconnected from the network and left in the ground. However should at sometime in the future there be a requirement that disused pipe is to be exhumed and disposed of then there would be a significant cost increase particularly in regard to asbestos cement pipe.

Income from the disposal of assets is considered to be insignificant.

WW & SW

The Wastewater and Stormwater assets are intended to operate in perpetuity to provide a continuing sewerage drainage service to the developed areas of the City, it is intended that individual assets will only be disposed of at the end of their service life, at which time they will be replaced with new assets, or become obsolete as part of new development projects. In general, where assets are in the same location, the old asset will be removed as part of the renewal project.

10. Investment Forecasts

10.1 Total Investment

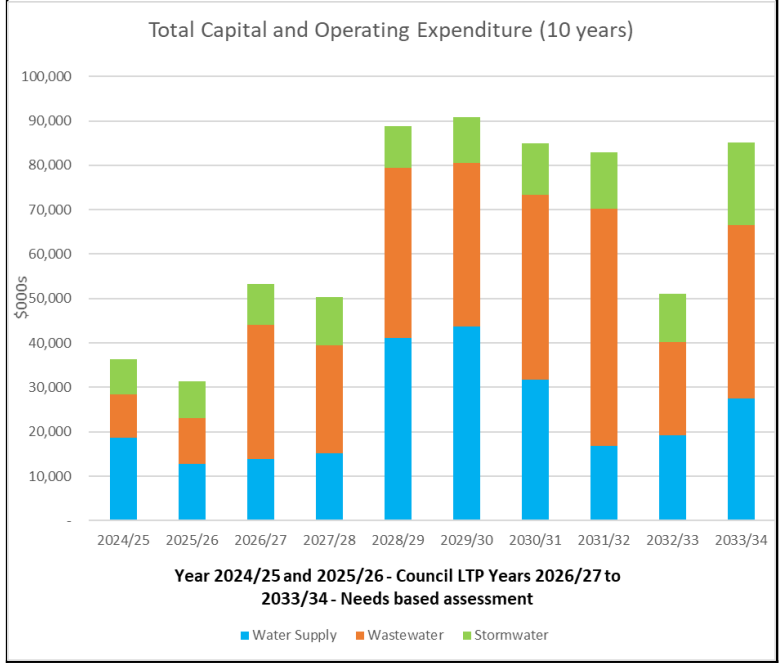
Investment forecast for the 3 activities for the first 3 years of the LTP is $121.0 million, with the net operational expenditure projected at $46.7 million (net cost of service) and capital expenditure at $74.4 million (total capital spend).
The below figure estimates the total investment profile necessary to deliver the following community outcomes.

- Communities basic needs are met.
- A healthy environment with the city well positioned to navigate climate change.

This investment plan has been informed by, and is consistent with each Council's planning assumptions:

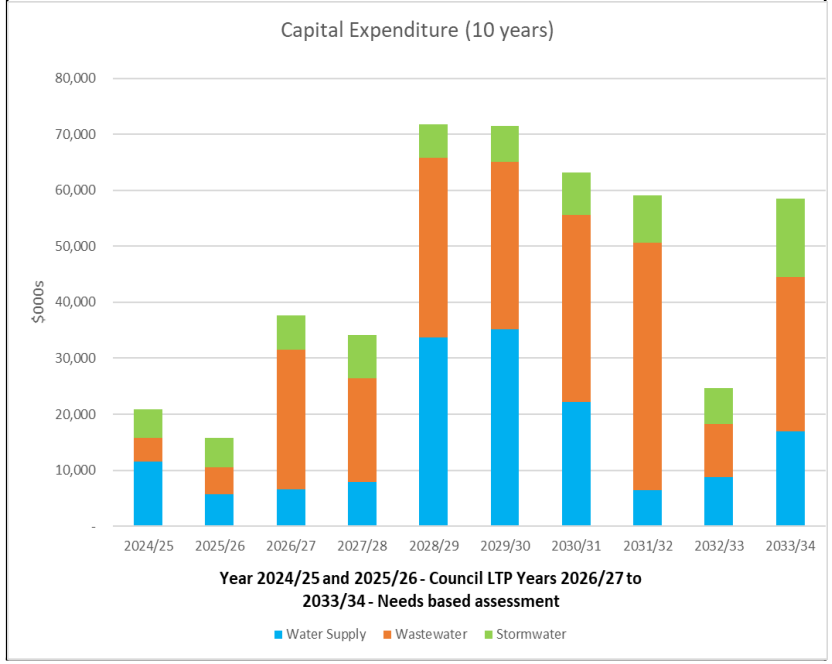
- depreciation rates and asset lives;
- population growth/decline;
- demand.

It has been programmed to smooth economic impact and represents the 'unconstrained' concept of what is required to operate the assets in perpetuity.



10.2 Capital Investment

The below figure estimates the overall Capital investment profile for the first 3 years of the LTP is $74.4 million.
The CAPEX forecast for 10-year is $457 million.
The programme has been planned so that it is with consideration of the capacity and capability of both council and contractor resources.
Renewals are mainly pipe renewals which are business as usual and have been undertaken for several years now although the amount of works increases over time within this plan. Works related to level of service improvement are more specialized in nature and will depend on the outcome of decisions yet to be reached. This is particularly relevant to resource consent renewals for sewerage discharge and the outcome of the investigations into the suitability of the alternative water supply. However preliminary works have already commenced on both projects with their actual development planned from the mid term of this plan by which time capacity and capability of the various parties involved will have been brought up to speed.
The below figure estimates the overall capital investment profile.

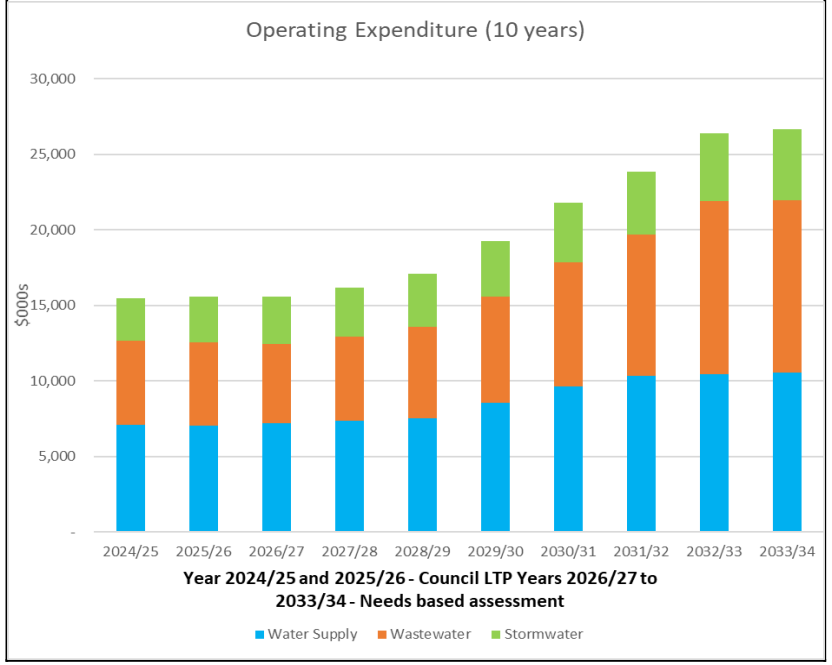


10.3 Operational Investment

The figures below present the break-up of operational investments for three water activities profile for the first 3 years of the LTP is $46.7 million.

The operational expenditure is broken down to $21.3 million (46%) on water supply, $16.4 million (35%) on wastewater and $9.0 million (19%) on stormwater.

The below figure estimates the overall direct operational investment profile

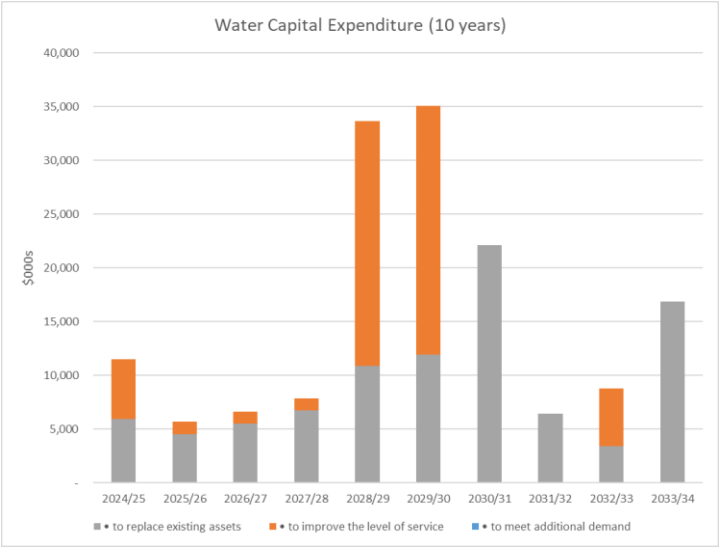


10. Investment Forecasts (cont.)

10.2 Water Capital Investment

The graph below demonstrates that the expenditure programme:

- Has no allowance for growth
- Has regular and is predominantly renewal expenditure.
- There is provision for level of service improvement but only in specific years for specific projects. i.e. In the 2024/25 year the expenditure is for the completion of the Branxholme main project already well advanced. In the years 2028/29 and 2029/30 the expenditure relates to the development of an alternative water supply. In the year 2032/33 the strengthening of the water tower against seismic loading is planned.



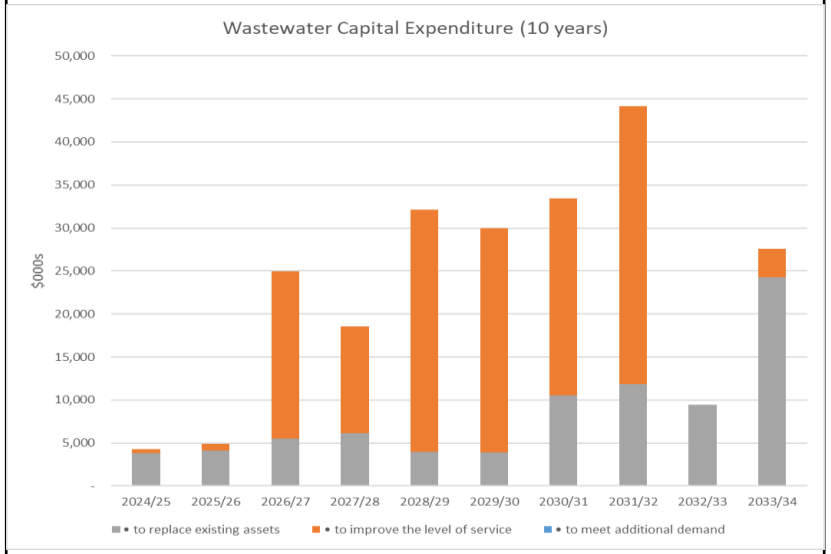
Funding for Water Supply Activity

Activity	Source of Funding				
	User Charges / Fees	Subsidy	General Rate	Targeted Rate	Loans
Operational	✓			✓	
Capital				✓	✓

10.2 Wastewater Capital Investment

The graph below demonstrates that the expenditure programme:

- Has no allowance for growth.
- Has provision for asset renewals generally increasing over the plan period.
- Has large provision for level of service improvements which predominately relate to resource consent renewal and consequent construction to meet elevated environmental performance.



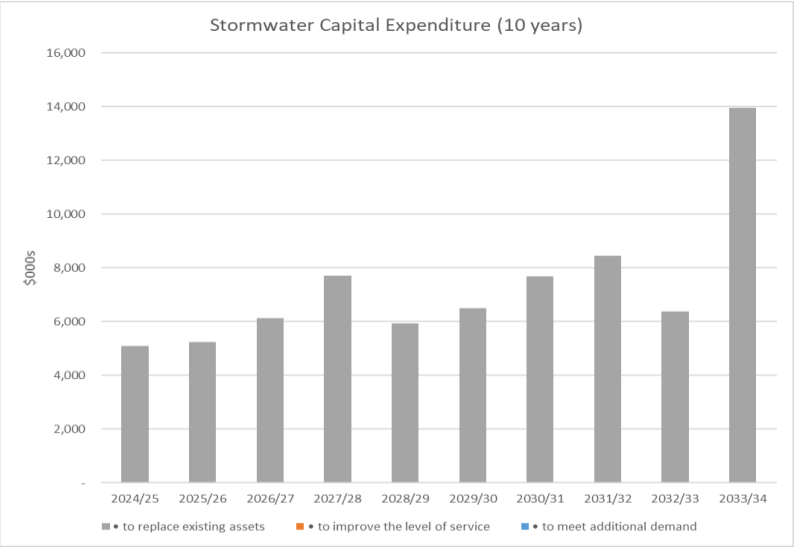
Funding for Sewerage Activity

Activity	Source of Funding				
	User Charges / Fees	Subsidy	General Rate	Targeted Rate	Loans
Operational	✓			✓	
Capital				✓	✓

10.2 Stormwater Capital Investment

The graph below demonstrates that the expenditure programme:

- Has no allowance for growth.
- Has provision for asset renewals at a fairly constant level throughout the plan period.



Funding for Stormwater Activity

Activity	Source of Funding				
	User Charges / Fees	Subsidy	General Rate	Targeted Rate	Loans
Operational	✓		✓	✓	
Capital			✓	✓	✓

11. Key Projects

11.1 Key Water Supply Projects

##	Project	Primary Driver	Year/s	Costs (2023 dollars)	Financial Data Confidence (Uncertainty)	Description and Objectives of the project	Benefits/Justification of the project	Project Stage
100545	Water Tower Strengthening	LOS (Health & Safety)	2032/33	$4.4	Engineers Estimate "C" ± 10-25%	Strengthen earthquake prone building to comply with legislation	Lowers the risk of catastrophic failure and preserves a heritage building	Design
100349	Branxholme Supply Main Renewal	Renewal (End of services life)	2024/25 – 2025/26	$5.7	Contract unit rates "B" ± 2-10%	Completion of renewal of main trunk supply line to the city	Existing main is prone to failure and cannot be operated at its design pressure. Renewal will decrease disruptions to supply.	Construct
100549	Alternative Water Supply	LOS (Health & Safety)	Spread over period 2024/25 through to 2029/30	$22.4	Staff Estimate "D" ± 25-50%	Develop an alternative water supply	Risk of being solely dependant on the Ōreti River/Branxholme will be eliminated	Planning
100528	Supply development - Awarua Treatment	LOS (Health & Safety)	2028/29 – 2029/30	$10.0	Engineers Estimate "C" ± 10-25%	Treatment to NZ Drinking Water Standard of the alternative supply	Alternative water supply will be safe to consume.	Planning
100814	Awarua Industrial Trunk main - Pipe network-Trunk main to/from Awarua	LOS (Health & Safety)	2028/29 – 2029/30	$15.0	Staff Estimate "D" ± 25-50%	Conveyance of water from the Awarua source through to city storage	Links Awarua supply to water distribution system	Planning
100812	Skye Street Reservoir and pump station	LOS (Health & Safety)	2028/29 – 2029/30	$5.9	Staff Estimate "C" ± 10-25%	Receiving reservoir for Awarua supply	Enables distribution of Awarua supply	Planning
100057	Duplication of supply line between Waikiwi and Doon Street reservoirs	LOS (Resilience)	2030/31 – 2031/32	$10.0	Staff Estimate "C" ± 10-25%	Duplication of supply line between Waikiwi and Doon Street reservoirs	Eliminates the risk of having only one supply line through to the main city storage pumping station	Planning
100812	Branholme Duplication Manifold and pump station	LOS (Resilience)	2024/25 – 2025/26	$1.2	Engineers Estimate "C" ± 10-25%	Independent operation of the two supply lines from Branxholme WTP	Duplicates the delivery operation from Branxholme and eliminates the sole dependence on the dependence of the single critical control point (existing pump manifold)	Planning
100528	Backflow Protection Programme	LOS (Health & Safety)	annual	$0.1	Staff Estimate "B" ± 2-10%	Prevention of potentially harmful backflow back into the distribution system. (Now a legislative requirement)	Protection of public health	Planning

11. Key Projects

11.1 Key Water Supply Projects

##	Project	Primary Driver	Year/s	Costs (2023 dollars)	Financial Data Confidence (Uncertainty)	Description and Objectives of the project	Benefits/Justification of the project	Project Stage
100528	Water metering	LOS (Environmental)	Spread from 2025/26 through to 2033/34	$8.8	Staff Estimate "B" ± 2 -10%	Firstly area metering developing to universal metering	Will better define water losses due to leakage plus ultimately enable charging by measured consumption	Planning
100528	Tanker fill station	LOS (Health and Safety)	2024/25	$0.5	Staff Estimate "C" ± 10 -25%	Purpose built dispensing station for water tankers to fill from	Will comply with current legislation which now prohibits tankers from drawing from hydrants	Planning
100061	Water pumping station renewals	Renewal (End of services life)	Spread irregularly over the plan period	$7.3	Engineers Estimate "C" ± 10-25%	Routine replacement of electro/mechanical plant. Includes major item of the Doon Street reservoir renewal	Asset management practice to prevent failure.	Planning
100061	Reservoir earthquake valves	LOS (Resilience)	2033/34	$3.0	Staff Estimate "D" ± 25-50%	Special valves fitted onto reservoir outlets to prevent water loss in the event of an earthquake	Preservation of reservoir storage in the event of an earthquake	Planning
100057	Reticulation Renewals	Renewal (End of services life)	Annual but irregularly spread	$52.8	Staff Estimate "B" ± 2-10%	Routine replacement of reticulation pipe network.	Asset management practice to prevent failure.	Project/programme continuation
100059	Water Treatment plant renewals	Renewal (End of services life)	Annual but irregularly spread	$1.3	Engineers Estimate "C" ± 10-25%	Routine replacement of plant items	Asset management practice to prevent failure.	Planning
100059	Branxholme sludge processing	LOS (Environmental)	2030/31	$2.6	Staff Estimate "D" ± 25-50%	Dewater /treat sludge to enable disposal to land fill	Environmental compliance	Planning

11. Key Projects

11.2 Key Wastewater Projects

##	Project	Primary Driver	Year/s	Costs (millions 2023 dollars)	Financial Data Confidence (Uncertainty)	Description and Objectives of the project	Benefits/Justification of the project	Project Stage
100807	Rising Main Duplication - Mersey Street	LOS (Resilience)	Spread over 2025/26 to2027/28	$19.9	Staff Estimate "C" ± 10-25%	Duplicates major trunkmain	Avoids environmental prosecution in the vent of the existing single trunk main failure	Planning
100805	Makarewa Treatment Plant	LOS (Environmental)	2033/34	$2.6	Staff Estimate "D" ± 25-50%	Eliminates sewerage contamination	Public health protection	Planning
100805	Clifton upgrade (consent)	LOS (Environmental)	Spread irregularly from 2025/25 to 2031/32	$89.2	Engineers Report "D" ± 25-50%	Renewal of WWTP consent as the current consent expires 2029	Meets a legislative requirement to have a current consent which will likely have more stringent conditions relating to sewage disposal.	Planning
100807	Rising Main Duplication - Lindisfarne	LOS (Resilience)	Spread 2029/30 to 2030/31	$5.0	Staff Estimate "C" ± 10-25%	Duplicates major trunkmain	Avoids environmental prosecution in the vent of the existing single trunk main failure	Planning
100067	Replacement of Ross and Gladstone pump stations	LOS (Health and Safety)	2033/34	$2.0	Staff Estimate "C" ± 10-25%	Relocates new pump station out of the carriageway	Safety for servicing personnel	Planning
100067	Replacement of pump stations in liquification areas	LOS (Resilience)	2033/34	$9.2	Staff Estimate "C" ± 10-25%	Replacement of pump stations out of liquification areas	Maintenance of service continuation during/after an earthquake event	Planning
100807	Rising main duplication - Ōtatara (Stead Street)	LOS (Resilience)	Spread irregularly 2026/27 – 2027/28	$2.0	Staff Estimate "C" ± 10-25%	Duplicates main	Avoids environmental prosecution in the vent of the existing single trunk main failure	Planning
100087	Preston Street rising main duplication	LOS (Resilience)	Spread irregularly over 2026/27 to 2029/30	$1.2	Staff Estimate "C" ± 10-25%	Duplicates major trunkmain	Avoids environmental prosecution in the vent of the existing single trunk main failure	Planning
100805	Bluff Upgrade (consent)	LOS (Environmental)	Spread irregularly from 2024/25 to 2026/27	$7.2	Engineers Report "D" ± 25-50%	Renewal of WWTP consent as the current consent expires 2025	Meets a legislative requirement to have a current consent which will likely have more stringent conditions relating to sewage disposal.	Planning
100069	Pipe network renewals	Renewal (End of services life)	Spread irregularly throughout the plan period	$74.7	Staff Estimate "B" ± 2-10%	Routine replacement of reticulation pipe network.	Asset management practice to prevent failure.	Project/programme continuation
100067	Pumping station renewals	Renewal (End of services life)	Spread irregularly throughout the plan period	$3.0	Consultants report "C" ± 10 -25%	Routine replacement of electro/mechanical plant.	Asset management practice to prevent failure.	Planning
100065	Treatment plant , plant renewals	Renewal (End of services life)	Spread irregularly throughout the plan period	$4.0	Consultants report "C" ± 10 -25%	Routine replacement of plant items	Asset management practice to prevent failure.	Planning

11. Key Projects

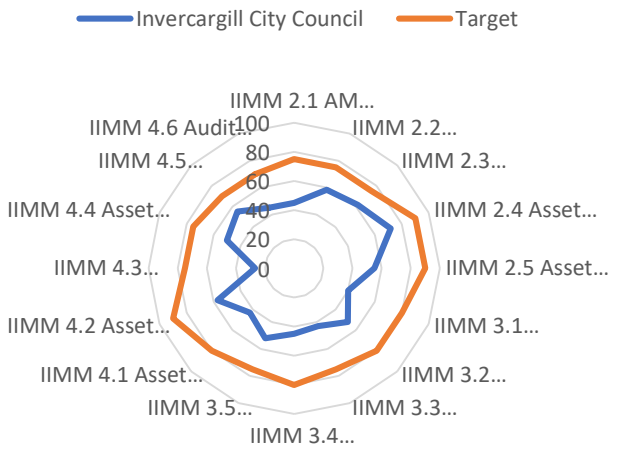
11.3 Key Stormwater Projects

##	Project	Primary Driver	Year/s	Costs (millions) (2023 dollars)	Financial Data Confidence (Uncertainty)	Description and Objectives of the project	Benefits/Justification of the project	Project Stage
100073	Pipe network renewals	Renewal (End of services life)	Spread irregularly throughout the plan period	$75.4	Staff Estimate "B" ± 2-10%	Routine replacement of reticulation pipe network.	Asset management practice to prevent failure.	Project/programme continuation
100071	Pumping Station renewals	Renewal (End of services life)	Spread irregularly throughout the plan period	$0.9	Consultants report "C" ± 10 -25%	Routine replacement of electro/mechanical plant.	Asset management practice to prevent failure.	Planning
100071	Relocation of pump stations in liquification areas	LOS (Resilience)	2033/34	$5.9	Staff Estimate "C" ± 10- 25%	Replacement of pump stations out of liquification areas	Maintenance of service continuation during/after an earthquake event	Planning
100810	Stormwater treatment	LOS (Environmental)	Spread irregularly throughout the plan period	$3.8	Staff Estimate "D" ± 25-50%	Storm water discharge consent requires as a condition the imposition of a storm water management plan. That plan requires that consideration be given towards the inclusion of treatment of the discharge if practical.	Improved quality of the receiving waters.	Planning

12 Continual Improvement

12.1 Asset Management Maturity

As per Council's Asset Management Policy, the proposed asset maturity level for each of the three water AM planning is Intermediate as defined by the International Management Manual (IIMM) 2015 section 4.2. A self-assessment exercise scored various aspects of asset management as per the graph below. Each aspect had similar scores across each of the three waters, the average score across all three is shown in the graph below.



An independent review of the draft 2020 AMP's for each water was less critical making the following assessments according to the IIMM2015 AMP maturity criteria.

Water Supply – "…generally at the Intermediate level with minor gaps."
Waste Water – "… lies between Core and Intermediate."
Stormwater – "…generally at the Intermediate level."

12.2 Improvements Based on Peer Review of Draft

The peer reviewer made recommendations as to improvements to align with best practice. Various attributes were scored on a basis of :
1- Aware
2-Developing
3 – Fully meets requirements
4 – Exceeds requirements.
A score of 3 has been interpreted as being equivalent to 'Intermediate" standard.
The table below lists those items common to all three waters which scored below 3.

Item description	Opportunities for Improvement	Progress
Service Statements and Levels of Service	Provide a cost/benefit study of different levels of service	Nil
Justification for Maintenance Programmes	• Strengthen the linkage and potential risks and consequences of not carrying out sufficient O&M activity • Identify the impact any upgrade works will have on the O&M activity. • Split O&M costs into planned and reactive programmes	Nil
Justification for asset Renewal Programme	• Split programme to differentiate between critical and non critical assets. • Split renewals programme into major asset types	Nil
Data	• Develop a data improvement programme based on a functional assessment of data needs for AM • Review the implementation of computer hydraulic modelling and its inclusion in the improvement programmes	Nil
Sustainable Funding	• Improve linkages throughout the plans showing how programmes have been built up. • Provide commentary of depreciation with asset renewal expenditure	Done

12.3 Asset Management Improvement Plan

The proposed improvement plan picks up on recommendations from the peer review of the draft 2020 AM plans, where progress is still to be made. Additionally, items not covered but mentioned elsewhere in this plan are also included.

Item	Improvement Activity	Time Frame	Budget	Responsibility
Understanding and Defining Requirements				
Levels of Service and Performance Management	• Investigate potential alternative level of service options and assess the relative costs and benefits. • Using the above, determine consumer preferences by consultation with customer groups, including ratepayers and stakeholders such as Taumata Arowai and FENZ.	30 June 2024	Internal	• 3 Waters Operations Manager in consultation with Corporate Planner / Communications
Asset Register Data	• Check all asset data on above ground assets. • Develop system for registration of data on all new assets. • Develop Infor Public Sector (IPS) asset management system to provide reports on asset: condition, performance and maintenance costs. • Apply criticality assessment to assets within the water treatment plants and pump stations / reservoirs. • Data confidence update, including data improvement plan based on a functional assessment of data needs for asset management.	30 June 2025	Internal with some external budget where required (allow say $20k)	• Manager Strategic Asset Planning in consultation with 3 Waters Operations Manager
Asset Condition Assessment	• Continue with condition assessment by CCTV survey for WW and SW pipe network. Investigate methods for condition assessment for water supply pipe network. • Include aspects such as fault rates of critical structures, plant, and equipment at the treatment plant and pump stations.	30 June 2026	Internal	• Manager Strategic Asset Planning in consultation with 3 Waters Operations Manager
Risk Management	• Review and update Corporate risk matrix and definitions • Review risk register annually and consider risks in terms of gross risk (pre-mitigation / treatment) and residual risk (post-current mitigation / treatment), and then to determine the effectiveness of the actions and whether further action is required. • Make explicit the impact of risks on activity objectives – this could be done in the risk register and/or summary tables. • Confirm the current status of the Water Tower in relation to earthquake strengthening.	Ongoing	Internal with some external budget where required (allow say $5k pa)	• Corporate • Manager Strategic Asset Planning in consultation with 3 Waters Operations Manager

12.3 Asset Management Improvement Plan

Item	Improvement Activity	Time Frame	Budget	Responsibility
Life Cycle Decision Making				
Decision Making	• Develop and apply formal decision making and work priority techniques to all expenditure programmes. • Carry out sensitivity analysis on estimates by testing critical assumptions and their influence on the result.	30 June 2026	Internal	• Corporate
Operational Planning and Reporting	• Develop and test emergency response and business continuity plans.	30 June 2025	Internal	• 3 Waters Operations Manager
Maintenance Planning	• Strengthen the linkage and potential risks and consequences of not carrying out sufficient O&M activity • Identify the impact any upgrade works will have on the O&M activity. • Split O&M costs into planned and reactive programmes	30 June 2025	Internal	• Manager Infrastructure Operations
Asset Disposals	• Quantify and determine whether significant expenditure is required for the disposal or treatment of assets abandoned from the pipe network.	30 June 2025	Internal	• Manager Engineering Services
Asset Management Enablers				
Asset Management Teams	• Identify and provide for relevant training for those in asset management roles.	Ongoing	Internal with external budget for training where necessary	• Manager Strategic Asset Planning
Asset Management Plans	• Continue to enhance the AMP to achieve a minimum maturity level of Intermediate in accordance with IIMM levels. • This is to include more graphical information relating to the assets and clearly demonstrate the build-up of the financial case for investment at a more detailed level of granularity than at present.	30 June 2026	Internal with some external budget where required (allow say $10k pa)	• Manager Strategic Asset Planning
Information Systems	• Develop Infor Public Sector (IPS) asset management system to provide reports on asset: condition, performance and maintenance costs.	30 June 2026	Internal	• Manager Infrastructure Operations in consultation with Manager Strategic Asset Planning
Service Delivery Models	• Develop internal service agreements with all internal service providers.	30 June 2026	Internal	• Manager Infrastructure Operations in consultation with 3 Waters Operation Manager and Manager Strategic Asset Planning
Quality Management	• Develop a clear policy and quality management system. • Document all asset management activity processes to show compliance with the quality management system.	30 June 2026	Internal	• Manager Infrastructure Operations

Improvement Planning	• Update (or use a different tool) the 2017 AMMAT self-assessment to provide an up-to-date view of AM maturity against the IIMM across the Water Supply activity, identifying any additional AM improvements that may be needed.
	• Develop for all key improvement actions:
	  ○ Project brief.
	  ○ Allocation of resources.
	  ○ Formal reporting programme to the Executive team.
		30 June 2026	Internal with some external budget for review (allow say $10k)	• Manager Strategic Asset Planning

12 Continual Improvement (cont.)

12.3 Asset Management Improvement Plan

Item	Improvement Activity	Time Frame	Budget	Responsibility
Other Items contained in this plan not specifically addressed above				
Vulnerability due to single water source	• Assess the feasibility and options relating to the development of an emergency water supply.	For 2026 AMP	Investigations only	• 3 Waters Operations Manager
Losses due to water leakage	• Improve assessment of leakage losses – leak detection programme feeding into Renewals programme	Ongoing	$100,000 pa	• 3 Waters Operations Manager
Backflow contamination	• Engage in backflow prevention programme	Ongoing	$100,000 pa	• 3 Waters Operations Manager
Sustainability	• Develop Sustainability Strategy at Council level. • Quantify sustainability issues where possible to enable assessment of costs and benefits and widen the scope of decision making beyond a local perspective to that of an overall global and intergenerational sustainability mindset.	Ongoing	Internal process. External where physical works investment is involved.	• Corporate • Manager Strategic Asset Planning
Resilience	• Assess the current level of resilience of the water supply network to natural hazard events and determine whether the level of risk is acceptable. • If improvement in resilience is considered necessary, scope and develop a programme of improvements for consideration in the 2023/24 AMP.	For 2023 AMP	Internal with some external budget (allow say $20k)	• 3 Waters Operations Manager in association with other infrastructure managers and CDEM staff (ICC and ES)