tasman district council | Te Kaunihera o te tai o Aorere

Wastewater
Activity Management Plan
2021-2051

Quality Assurance Statement		
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Contents

1 Executive Summary

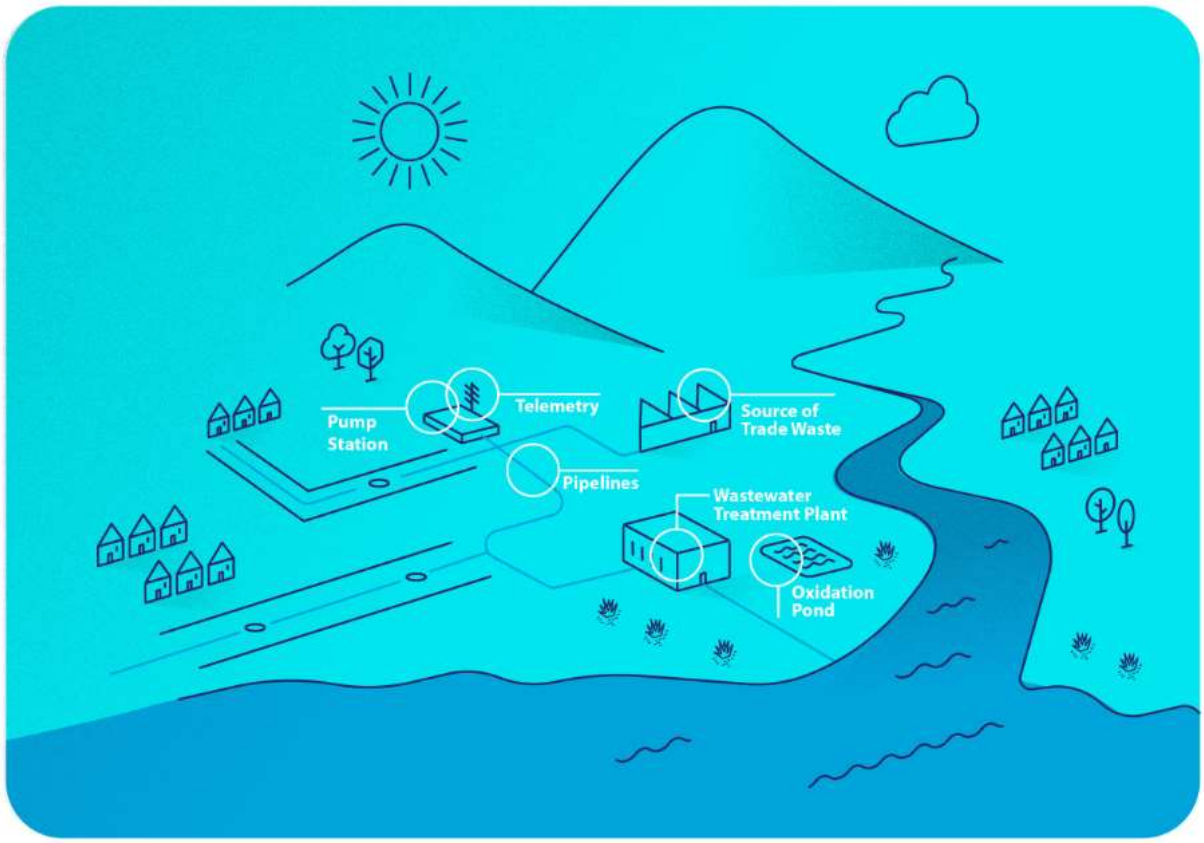
1.1 What We Do

We provide and manage wastewater collection, treatment, and disposal facilities for our residents connected to our eight wastewater networks. These networks convey wastewater to eight treatment plants, seven of which we own and manage. The largest treatment plant (at Bell Island) is owned by both Nelson and Tasman Councils on a 50:50 share basis and is managed by the Nelson Regional Sewerage Business Unit.

We own and operate eight wastewater networks and manage associated infrastructure. Networks include:

- Collingwood
- Motueka, Riwaka and Kaiteriteri
- Murchison,
- St. Arnaud,
- Tākaka, Pohara, Ligar Bay and Tata Beach
- Tapawera
- Upper Tākaka
- Waimea including Richmond, Hope, Brightwater, Wakefield and Māpua/Ruby Bay

Below is an overview of the key components of the wastewater activity.



1.2 Why We Do It

Activity Goal
We aim to provide cost-effective and sustainable wastewater systems to protect public health whilst meeting environmental standards.

The provision of wastewater services is a core public health function of local government. We promote and protect public health, community well-being, and our environment within our District by planning, implementing, and maintaining our wastewater services. This is one of our key duties as required by the Health Act 1956.

1.3 Levels of Service

The Council aims to provide the following levels of service for the Wastewater activity:

"Our wastewater systems do not adversely affect the receiving *environment*."	"Our wastewater systems reliably take out wastewater with a minimum of odours, overflows or disturbance to the public."	"Our wastewater systems are built, operated and maintained so that failures can be managed and responded to quickly."
"Our wastewater activities are managed at a level that satisfies the community."		

We will invest in increasing network capacity to assist in preventing overflows so that they do not adversely affect the environment. Major pump station and rising main upgrades will help mitigate overflows, particularly in Mapua and Pohara. These upgrades should improve our performance against our agreed level of service. We are also planning to mitigate overflows in Richmond through addressing inflow and infiltration issues.

1.4 Key Issues

The most important issues relating to this activity and how the Council is planning to respond are summarised in the Table below.

Table 1: Key Issues

Key issue	The Council Response
Ground and rainwater in the network Ground and rainwater entering the network is a significant issue in some settlements. Heavy or prolonged rainfall can overload our pipe networks and wastewater treatment plants. In turn, this restricts residential and commercial growth because it uses up available network capacity. We then pump, convey and treat the extra water, resulting in additional and unnecessary costs. Excessive levels may also dilute wastewater and lower the performance of our treatment plants.	• Invest in building hydraulic network models; • Install pipe flow meters and level sensors in storage chambers; • Invest in ongoing CCTV programme; • Invest in ongoing inflow and infiltration programme; • Refine pipe renewal programme; • Install low pressure pumped systems where appropriate; • Install emergency storage at key pump stations; • Continue to collect asset condition data to refine investment decisions;
Providing infrastructure to allow for new homes and businesses We expect that over the next 10 years, our population will grow by approximately 7,700 residents. To accommodate this growth, new houses will need to be built, most of which will need to be supplied with wastewater. We can supply some of this new demand where there is capacity in our existing infrastructure. Where capacity is not available, or if the infrastructure does not exist, we will need to provide upgraded or new infrastructure to enable growth.	• New bypass pump station with emergency storage in Brightwater (Lord Rutherford); • New rising main and pump station at Motueka West; • New rising main and pump station at Richmond South; • Staged upgrades to trunk main between Wakefield and Three Brothers Corner; • Upgrades to existing pump stations in Mapua; • Upgrades to existing pump stations and rising main in Richmond (Headingly Lane); • Upgrades to existing pump stations and rising main in Tarakohe and Pohara, • Investment contribution to NRSBU for additional capacity;

Key issue	The Council Response
Climate Change and Resilience The investment required to ensure our infrastructure can withstand the effects of climate change and natural hazard shock events will be significant. We plan to invest in emergency storage and standby power generation to ensure wastewater services can continue operating in the future and are adaptable to change. Sea level rise means some coastal wastewater infrastructure will become increasing vulnerable to inundation e.g. the Motueka Wastewater Treatment Plant.	• New inland wastewater treatment plant for Motueka; • New mobile generators; • Energy efficiency initiatives - installing a solar PV array on wastewater assets.

Three Waters Reform and new regulation.
The government's comprehensive reform of the Three Waters sector has prompted new legislation (*Taumata Arowai–the Water Services Regulator Act 2020*), with more expected in 2021 (*Water Services Bill*).
The three waters reforms involve regulatory and service delivery reform, both of which are essential for addressing a range of issues and opportunities, including infrastructure investment requirements; funding, affordability, capability and capacity challenges; water security; and issues highlighted by the Inquiry into Havelock North Drinking Water.
Some of the government's post Covid-19 stimulus funding to improve and maintain three waters infrastructure will go towards emergency storage and energy improvements for the wastewater activity.
In September 2020, the National Policy Statement for Freshwater Management and the National Environmental Standards for Freshwater came into force, providing direction and requirements for the Councils to improve freshwater management under the Resource Management Act 1991.
	• Dialogue with MOU-NCC neighbors about change.
	• The Council plan to work more closely with iwi/mana whenua partners to:
	  ○ Seek guidance on how to give effect to Te Mana o te Wai;
	  ○ Understand, support, and seek advice on how to enable the exercise of mātauranga Māori and tikanga Māori and kaitiakitanga;
	  ○ Ensure that wastewater discharges do not adversely affect cultural values and practices.

Key issue	The Council Response
Both the NPS and new water legislation requires the Council to give effect to Te Mana o te Wai. It is important in Māori culture to avoid contamination of water with wastewater (both treated and untreated). Treated wastewater is frequently discharged into, or nearby to, coastal and river environments. In the future, it is likely that we will have to improve treatment processes and the tolerance for wastewater overflows will decrease. The Climate Change Response Act 2002 provides a framework to develop and implement clear and stable climate change policies. We need to optimise our wastewater treatment plants' performance as wastewater treatment processes are our largest source of greenhouse gas (GHG) emissions and biggest consumer of electricity	

1.5 Operational Programme

The wastewater operations and maintenance programme covers all day to day activities that are required to manage the wastewater activity.

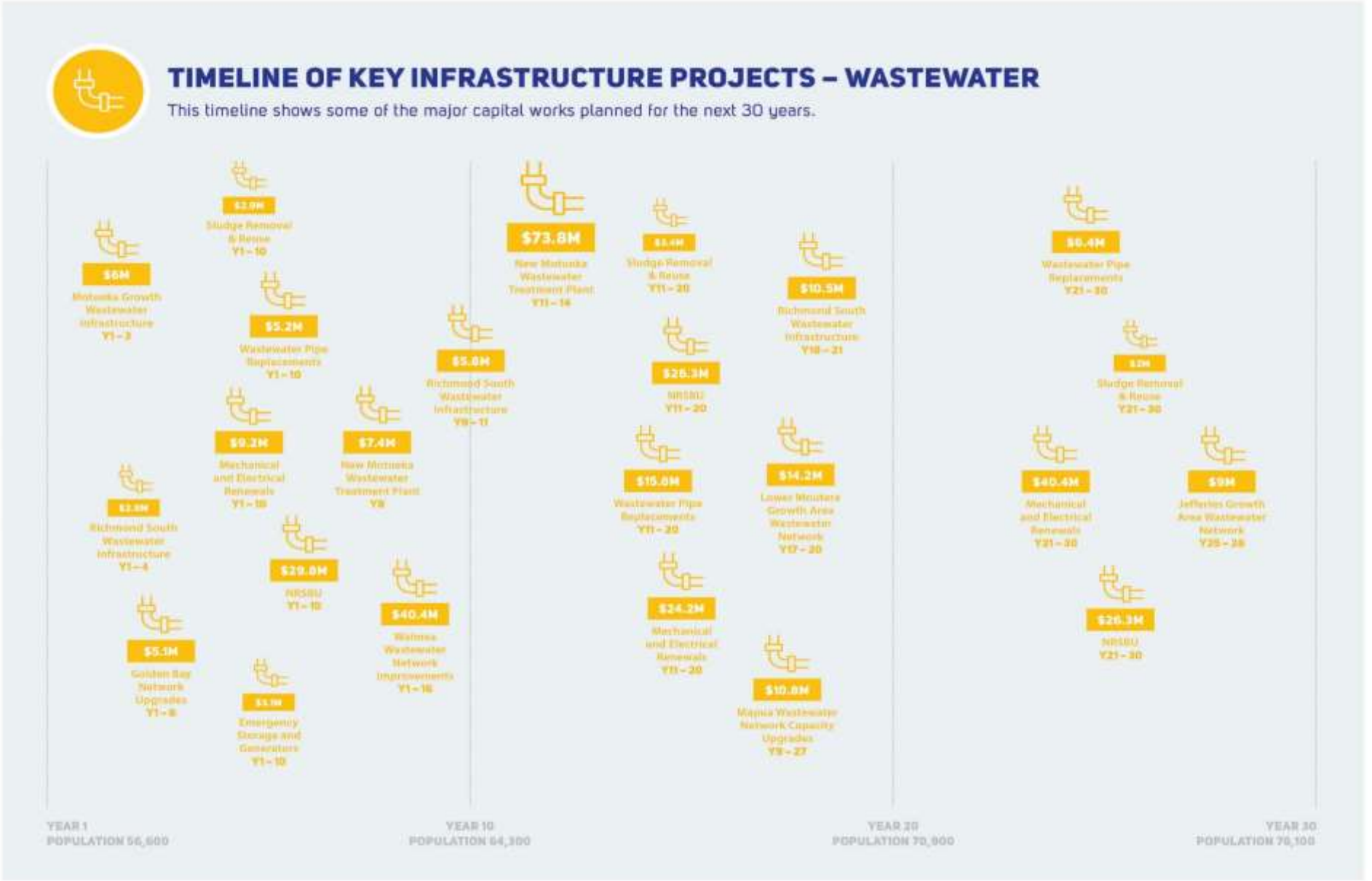
The operational programme covers all day to day activities that are required to manage the wastewater activity. The Council has planned to spend approximately $280 million (inflated) over the next 30 years to operate and maintain its wastewater networks efficiently.

The major activities in this programme and the forecast inflated budgets over 30 years are summarised below.

Routine & Reactive Maintenance	Operations	General Operating Costs	Professional Fees	NRSBU Costs
Reticulation, treatment, pump stations	SCADA/telemetry, inflow & infiltration, CCTV programme	Electricity, rates	Consultants, legal fees, strategic studies	Variable loading, fixed costs
$93m	$15m	$30m	$4.4m	$142m

1.6 Capital Programme

The Council plans to invest approximately $372 million over the next 30 years on wastewater capital improvements and renewals. Below are the key projects and investments that are planned. Values are inflated.


TIMELINE OF KEY INFRASTRUCTURE PROJECTS – WASTEWATER
This timeline shows some of the major capital works planned for the next 30 years.
$6M
Motueka Growth Wastewater Infrastructure
Y1 – 3
$2.9M
Sludge Removal & Reuse
Y1 – 10
$5.2M
Wastewater Pipe Replacements
Y1 – 10
$9.2M
Mechanical and Electrical Renewals
Y1 – 10
$2.9M
Richmond South Wastewater Infrastructure
Y1 – 4
$5.1M
Golden Bay Network Upgrades
Y1 – 8
$29.8M
NRSBU
Y1 – 10
$3.1M
Emergency Storage and Generators
Y1 – 10
$7.4M
New Motueka Wastewater Treatment Plant
Y8
$40.4M
Waimea Wastewater Network Improvements
Y1 – 16
$5.8M
Richmond South Wastewater Infrastructure
Y8 – 11
$73.8M
New Motueka Wastewater Treatment Plant
Y11 – 14
$3.4M
Sludge Removal & Reuse
Y11 – 20
$26.3M
NRSBU
Y11 – 20
$15.0M
Wastewater Pipe Replacements
Y11 – 20
$24.2M
Mechanical and Electrical Renewals
Y11 – 20
$10.5M
Richmond South Wastewater Infrastructure
Y18 – 21
$14.2M
Lower Moutere Growth Area Wastewater Network
Y17 – 20
$10.8M
Mapua Wastewater Network Capacity Upgrades
Y8 – 27
$6.4M
Wastewater Pipe Replacements
Y21 – 30
$2M
Sludge Removal & Reuse
Y21 – 30
$40.4M
Mechanical and Electrical Renewals
Y21 – 30
$26.3M
NRSBU
Y21 – 30
$9M
Jefferies Growth Area Wastewater Network
Y25 – 28
YEAR 1
POPULATION 56,600
YEAR 10
POPULATION 64,300
YEAR 20
POPULATION 70,900
YEAR 30
POPULATION 78,100

1.7 Key Changes

The following tables summarises the key changes to the operational and capital programmes:

Table 2: Summary of key changes to the operational programme

Operational Programme Key change	Reason for Change
Higher electricity costs	A new electricity supply contract came into effect in March 2020. Due to market conditions at the time of the renegotiation, the new rates were higher than previous ones.
Increased budgets for routine treatment plant maintenance	In 2018 we budgeted ~$275k pa for Treatment Plant Contract Routine but in 2021 we budgeted approximately $660, 000.
Decreased budgets for routine treatment plant maintenance	In 2018 we budgeted ~$410k pa for reticulation Contract Routine works but in 2021 we budgeted ~$100k pa.

Table 3: Summary of key changes to the capital programme

Capital Programme Key change	Reason for Change
Wakefield to Three Brothers Corner trunk main capacity upgrades	We have planned a staged programme of upgrades to accommodate growth in Brightwater and Wakefield. The upgrades include a new bypass pump station with storage in Brightwater, and gravity and pressure main capacity increases.
Sludge removal costs are higher	Sludge removal costs have increased as we now have a better understanding of sludge production and management requirements under stricter environmental standards.
Increased investment in Nelson Regional Sewerage Business Unit (NRSBU)	NRSBU have planned a more extensive capital work programme over the next 10 years. This increased investment will provide more capacity for us to discharge wastewater from the Māpua, Richmond, Hope, Brightwater and Wakefield areas to NRSBU.

1.8 Key Risks and Assumptions

We have made a number of assumptions in preparing the Activity Management Plan. The most significant assumptions and uncertainties for wastewater infrastructure are:

- As part of the Three Waters Review, the Government is considering reform of the current water service delivery models from council-owned authorities into larger scale multi regional model providers. How services may be delivered is uncertain. For the development of this LTP, we have assumed no change in service delivery for our wastewater activity.

- Currently, there are high levels of groundwater and stormwater entering the Motueka wastewater network. This takes up capacity that could otherwise be used by new connections. We have assumed that this issue will be addressed by continued pipe renewals and targeted repairs. We expect that this work will reduce demand enough to be able to provide capacity to support the level of growth predicted for Motueka (excluding Motueka West). It is possible for the works to achieve insufficient capacity, or for the rate of population growth to exceed the rate of repair in this area. If this is the case, we will need to programme additional pipe upgrades to enable growth, or potentially limit the rate and location of new connections.
- We prepared the wastewater programme based on the information that was available at the time. Over the next few years, we plan to do long term strategic studies and modelling for Motueka and the Waimea networks. This will provide new and up-to-date information that is likely to identify alternative options for the way the schemes could operate, and the associated budget requirements.
- We are uncertain about NRSBU costs because operational costs are based on the use of individual subscribers and this can be variable. Our budgets are based on historic usage. If usage is different to what was assumed, costs may increase or decrease.
- We increased trade waste charges in July 2018 and 2019. There is some uncertainty about associated income in the future. We assume trade waste volumes and income will be in line with historic usage and budgets.
- We are responsible for maintaining new low-pressure household pumping units (where a complete catchment is set up with pressure pumps). Maintenance largely depends on where and how fast growth occurs. We have assumed maintenance budgets based on growth occurring as per our growth model. If the rate and location of growth changes, we may need to amend maintenance budgets.

2 Introduction

The purpose of this activity management plan is to outline and to summarise in one place, the Council's strategic management and long-term approach for the provision and maintenance of its Wastewater activity.

2.1 Rationale for the Council Involvement

The provision of wastewater management services is considered to be a core service of local government and is something that the Council has always done. The service provides many public benefits and it is considered necessary to the community, so the Council undertakes the planning, implementation, and maintenance of wastewater services in the District. Territorial Authorities have numerous responsibilities relating to wastewater. One such responsibility is the duty under the Health Act 1956 to improve, promote and protect health within the District. This implies that, in the case of the provision of wastewater services, the Councils have the obligation to identify where such a service is required, and to either provide it directly themselves, or to maintain overview of the supply if it is by others.

2.2 Description of Assets and Services

Table 4~~Table 4~~ below provides an overview of the wastewater networks assets and valuation data (as of June 2020).

Table 4: Summary of the wastewater assets

Wastewater Assets		Replacement Value	Depreciated Value
	WWTP (8)	$61.4M	$41.8M
	50 % of NRSBU (Bell Island)	$47.8M	$31.5M
	TDC (7)	$13.6M	$10.3M
	78 pump stations	$43.9.4M	$29.3M

Wastewater Assets		Replacement Value	Depreciated Value
	3899 manholes	$25.9M	$19.1M
	366 km piped reticulation	$110.8M	$74.2M
	14,081 Wastewater Connections	$27.6M	$19.8M
	Other assets	$23.2M	$18.9M
TDC's 50% CONTRIBUTION TO NRSBU		$47.8M	$31.5M
TDC ASSETS		$245.0M	$171.6M
TOTAL VALUE OF WASTEWATER ASSETS		$292.8M	$203.1M

2.3 Wastewater Network System Descriptions

Table 5~~Table 5~~ below identifies the management status of the eight-wastewater networks.

Table 5: Wastewater Networks

Wastewater Network	Manages Reticulation	WWTP	Manages WWTP
Collingwood	Tasman District Council	Collingwood WWTP	Tasman District Council
Motueka (Riwaka & Kaiteriteri)	Tasman District Council	Motueka WWTP	Tasman District Council

Wastewater Network	Manages Reticulation	WWTP	Manages WWTP
Murchison	Tasman District Council	Murchison WWTP	Tasman District Council
St Arnaud	Tasman District Council	St Arnaud WWTP	Tasman District Council
Takaka (Pohara, Ligar Bay & Tata Beach)	Tasman District Council	Takaka WWTP	Tasman District Council
Tapawera	Tasman District Council	Tapawera	Tasman District Council
Upper Takaka	Tasman District Council	Upper Takaka	Tasman District Council
Waimea (Richmond, Hope, Brightwater, Wakefield and Mapua/Ruby Bay)	Tasman District Council	Bell Island WWTP	50:50 with NCC

The following sections provides a brief description of each network. Further details including network schematics and are available in Appendix C.

2.3.1 Collingwood

The Collingwood scheme was constructed in 1989 and services the Collingwood Township and parts along Collingwood-Bainham Main Road. Wastewater from the lower end of Beach Road drains into the Beach Road pump station, which discharges into a manhole further up Beach Road towards Elizabeth Street. This plus the remainder of the township drains into the Motel pump station (upgraded in 2010), which pumps on to the Wally's Rest pump station (upgraded in 2009).

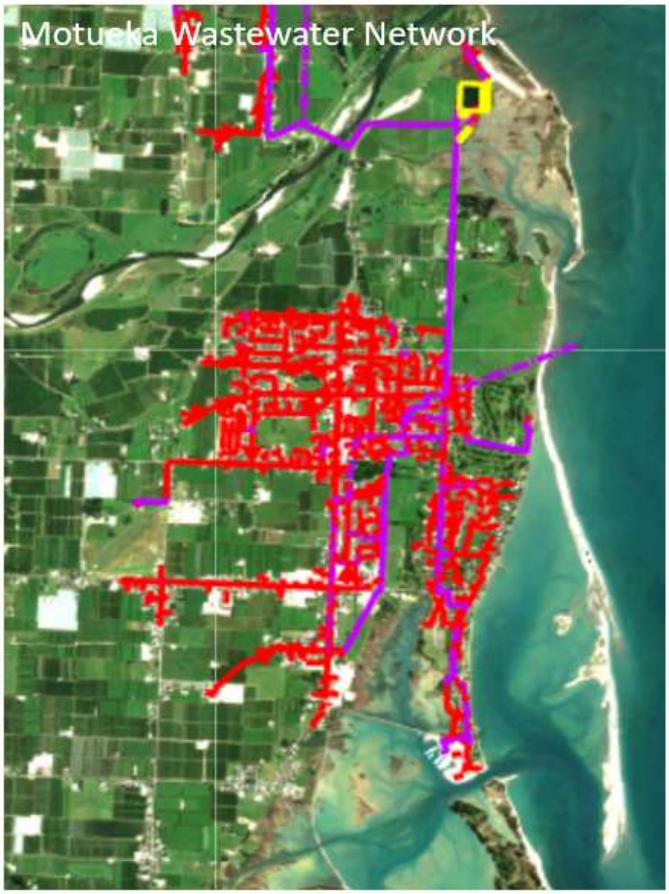
All pump stations have one duty and one standby pump with ultrasonic or hydrostatic level control. All pump station have digital telemetry. Wally's Rest and Motel pump station have emergency storage and flow meters.

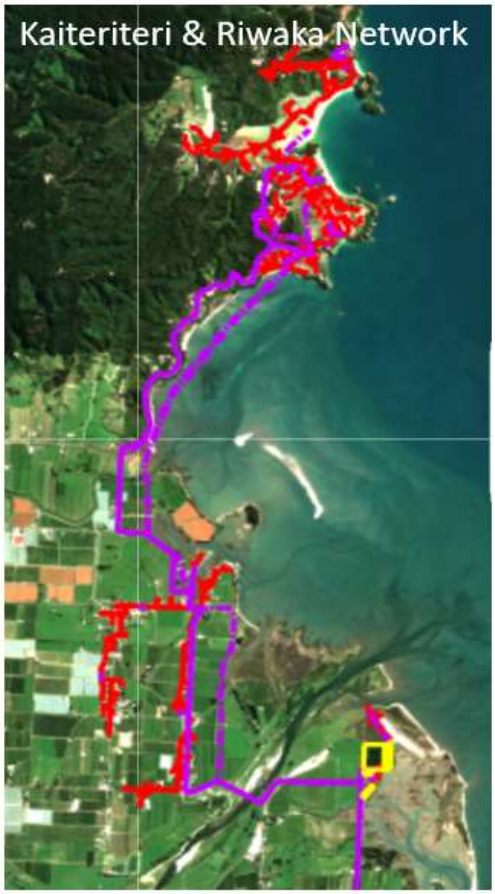
All wastewater from Collingwood is pumped from the Wally's Rest pump station to the WWTP. The treatment plant is located approximately 1.5km west of the town on the Collingwood-Bainham Main Road and comprises an inlet screen, aerated oxidation pond followed by constructed wetlands with UV disinfection and telemetry, and final discharge to the Burton Ale Creek. The WWTP is located on a terrace 11 metres above sea level. There is an iron pan approximately one metre below ground level which means much of the site is boggy in winter making grounds maintenance difficult, and stormwater drains need to be regularly maintained.

The wetlands underwent a major rehabilitation in 2015 to improve the flow through the wetlands, reinstate eroded embankments and provide flow buffering through all five wetland cells. Previously flow was restricted to 8l/s and the final cell was prone to overflow in sustained heavy rainfall events. Flows can now achieve 12.5l/s which is the limit of UV disinfection system. Collingwood is very close to an estuary and the sea. The risk of a sewage overflow or malfunction of the treatment ponds and pump stations have potentially significant effects that must be mitigated against and managed. This scheme operates well although there are issues with periodic high storm flows that cause the treatment plant to fill and re-suspended solids deposited in the wetlands. This causes high turbidity and reduces the effectiveness of the UV disinfection system. Since the upgrade of the Motel and Wally's Rest pump stations, there have been no overflows of the pump stations.

2.3.2 Motueka, Riwaka and Kaiteriteri Network

There are three settlements that discharge into the Motueka WWTP, including Motueka Township, Riwaka and Kaiteriteri.





2.3.2.1 Motueka

The Motueka wastewater network was initially constructed in the 1940s with untreated wastewater discharged to the coast until the WWTP, located just south of the Motueka River mouth, was constructed in 1980. The treatment plant has undergone several upgrades, the most recent in 2015/16. The WWTP has a resource consent that is due to expire in 2035. The Council is currently investigating alternative inland sites for a new WWTP because the current location is vulnerable to sea level rise and coastal inundation. The treatment plant comprises a mechanical inlet screen with odour treatment, an aerated lagoon (constructed in 1990), followed by an oxidation pond which is divided into three by two rock bunds. The rock bunds have a recirculation spray system installed on them, so the bunds act as trickling filters, converting ammonia-nitrogen into nitrate and nitrite. After this final pond, wastewater is pumped through a membrane treatment system and out to the coast via two subsurface duckbill diffusers.

The area serviced by this network is flat, low lying and has high ground water. It has both gravity reticulation and a series of 20 pump stations. The present network involves some pump stations injecting into the rising main to the treatment plant while other pump stations pass the wastewater along from one to another until it is eventually pumped into the rising main by one of the main pump stations. The pump stations are fitted with duty and standby pumps. Digital telemetry and alarm systems are included on all pumping stations and the treatment plant.

The wastewater flow from the Motueka Township is measured by a magflow meter as it enters the treatment plant and flows can be monitored in real time via the Council's telemetry system.

2.3.2.2 Kaiteriteri

The Kaiteriteri wastewater system consists of piped reticulation and seven pumping stations. Wastewater is conveyed to the Motueka WWTP for treatment. The Kaiteriteri system is made up of a number of sub-catchments and these relate to the various Bays plus the large campground.

The reticulation in Kaiteriteri gravitates to the main pumping station at Martin Farm Road (wastewater is also pumped from Honeymoon and Breaker Bay into this system). Wastewater is pumped up to a vessel on the hill above Tapu and Stephens Bays and a control valve on the Kaiteriteri pipeline automatically opens/closes when the level in the vessel rises/falls to set points so that the wastewater gravitates to the Motueka WWTP in a series of "pulses". From the vessel the wastewater then then gravitates in a new 280mm PE pipe that was installed in 2017/18 along Riwaka Kaiteriteri Road. This section of new pressure pipe replaced the 215mm PE pipe that went directly through Tapu Bay. Although this pipe is not in active service it can be used with written approval from iwi. There are four other small catchments that pump directly to the vessel; Stephens Bay, Tapu Bay (via Stephens Bay), Little Kaiteriteri and Talisman Heights.

There is emergency storage at Stephens Bay, Little Kaiteriteri, Tapu Bay and Talisman Heights pump stations as well as a large 100m³ storage tank on Inlet Road near the campground. A recent level survey found that only about half of this storage tank can be used, due to the low level of the manholes around the inlet near Bethany Camp. All seven-pump stations and the vessel can be monitored remotely via the digital telemetry network. Due to low flow into the Honeymoon Bay and Breaker Bay pump stations, regular flushing with clean water is required to prevent septicity, especially in summer. The pipeline from the vessel to the Motueka Treatment Plant is approximately nine kilometers long and over summer wastewater becomes septic and can cause odour issues at the WWTP. A chemical dosing system operates at the vessel, between 1 December and 26 February each year and works effectively to mitigate the seasonal issue.

2.3.2.3 Riwaka

The Riwaka serviced area is flat and low-lying. It consists of local gravity reticulation and a series of five pump stations. Pump stations pass the wastewater along from one to another until it reaches the Riwaka main pump station, which injects into the Kaiteriteri – Motueka WWTP rising main. The pump stations are fitted with duty and standby pumps and all can be monitored remotely via the digital telemetry network.

There is little or no emergency storage within the wastewater network and during heavy rain events the reticulation immediately upstream of the School Road pump station can overflow. This has led to the Council installing a non-return valve on the connection at 29 School Rd, to prevent flooding of the house from the wastewater network.

2.3.3 Murchison

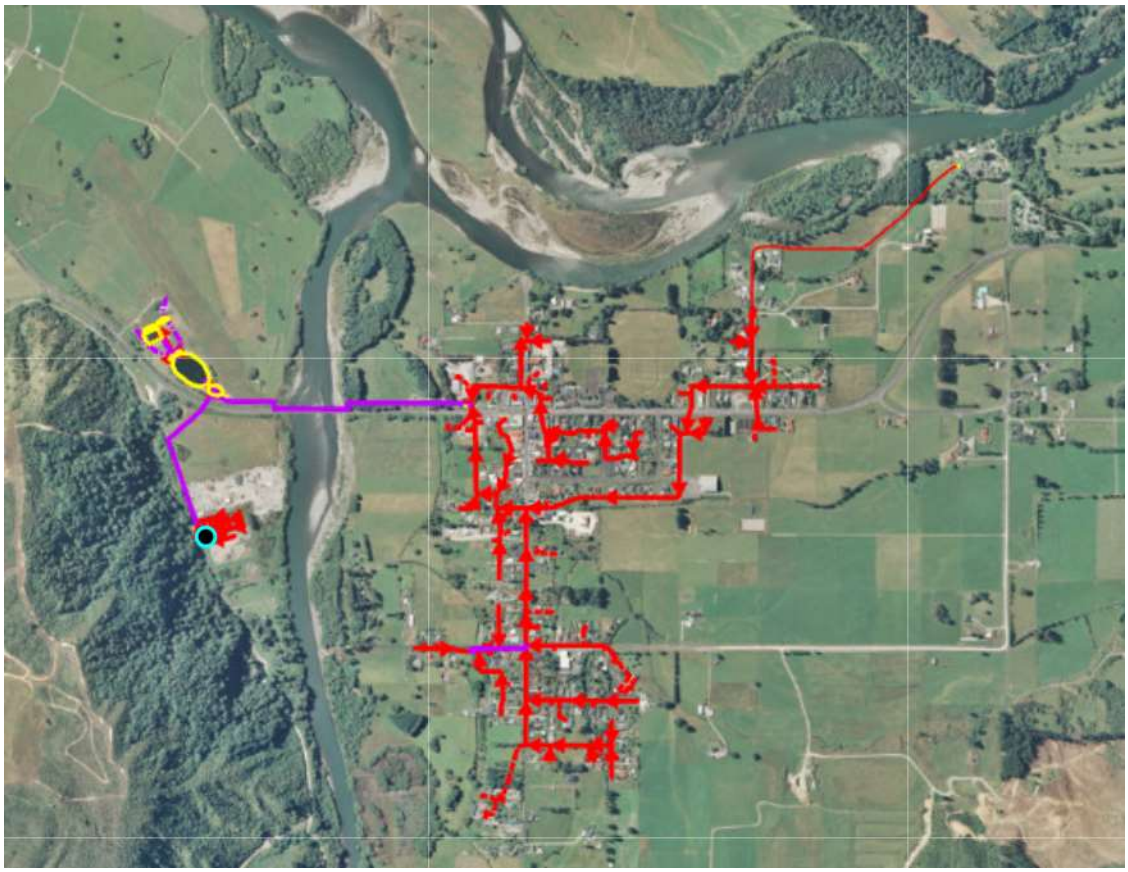
The Murchison wastewater scheme was initially built in 1989 and services the urban Murchison Township area. The gravity reticulation discharges to two pump stations, and a WWTP on the western side of the Matakitaki River.

The Hotham Street pump station collects flows from the river end of Hotham Street and discharges into the gravity system at the corner of Hotham and Fairfax Streets. The remaining system gravitates to the main pump station in Waller Street. The Waller Street pump station pumps all of Murchison's wastewater to the treatment plant. Both pump stations operates duty and standby pumps and are monitored remotely via the digital telemetry network. Both pump stations were upgraded in 2011 along with the rising main under the SH6 Bridge across Matakitaki River. The Waller Street pump station upgrade included 10 hours emergency storage and the disconnection of an overflow soakage pit, which discharged into the gravels and groundwater adjacent to the pump station. The Waller Street pumps operate on alternating duty and cannot be operated together. This is to prevent damaging the remaining original parts of the rising main to the WWTP as well as preventing overloading of the inlet screen at the WWTP.

Wastewater from the Council's Riverview campground is pumped into the gravity network and leachate from the closed Murchison landfill and the pit sump at the Resource Recovery Centre are pumped directly to the WWTP. The Council also operate a stock effluent dump point, located on State Highway 6 north of Murchison. The dump point in a Transportation asset but is operated by Utilities under the Three Waters Operations and Maintenance Contract. The dump point has sensors that monitor tanks levels and indicate when the maintenance contractor needs to send a sucker trunk to empty the tank.

The treatment plant was upgraded in 2006 when an aeration lagoon with mechanical inlet screen was added prior to the existing oxidation pond. The oxidation pond was desludged and two HDPE baffles installed across the pond to aid circulation. A fine bubble aerator has been installed on the oxidation pond to aid mixing and movement of sludge away from the inlet.

The original gravel filter was upgraded, and a second filter added with a pump station alternately dosing the gravel filters. The treated wastewater is then discharged from the gravel filters to ground via subsurface disposal beds constructed in 2011.



Due to the isolated location of Murchison, a mobile generator was purchased for operating both the water and wastewater supplies in the event of a power failure.

2.3.4 St Arnaud

The St Arnaud wastewater system including the WWTP was built in 1999 and serves the St Arnaud Township and the Department of Conservation (DoC) campgrounds at Kerr Bay and West Bay. Reticulation drains by gravity to three pump stations. The Kerr Bay pump station (No.1) pumps up the hill to Rotoiti Street where it discharges into the gravity network draining to the Alpine Lodge pump station (No.2). The Beechnest pump station, constructed as part of a subdivision in 2009, pumps into the reticulation which drains to the Alpine Lodge pump station. From there the entire catchment is pumped to the treatment plant at Teetotal Flats. The West Bay campground, operated by the Department of Conservation (DoC) is only open between December and April and waste is pumped direct to the WWTP, injecting into the rising main from Alpine Lodge just prior to the WWTP.

The Council pump stations have duty and standby pumps which are connected to the Council's digital telemetry system. The original two pump stations have six hours storage at peak occupancy while Beechnest has 10 hours storage at dry weather flows. A mobile generator is stored in St Arnaud in case of power failure, so the pump stations can be operated to prevent overflows into Lake Rotoiti or any of its tributaries. The generator can also be used to power the WWTP, although this can operate without electricity for many weeks.

The wastewater treatment plant is located on 17.9 hectares owned by DoC. This land is held as a local reserve specifically for wastewater treatment and the Council is appointed to control and manage the reserve. The treatment plant consists of an aerated oxidation pond, two wetland cells with treated wastewater dosed into the ground via a subsurface pressure system. The disposal pump station doses each of the four soakage trenches, in order, utilising an automated sequencing valve. Should there be a fault with the pump station, or a power failure, there is a gravity emergency bypass of the sequencing valve and pump station to all soakage trenches. The oxidation pond aerator is controlled by a dissolved oxygen probe. A gravel trap exists prior to the Kerr Bay and Alpine Lodge pump stations. These require regular checking and cleaning out. The potential of a sewage overflow into Lake Rotoiti is rated as an extreme risk that needs careful management. The pump station closest to the lake was located above known high lake levels. The gravity pipeline from the DoC toilet block by the lake edge at Kerr Bay has a manual valve on it that must be closed if lake rises sufficiently to flood the toilet block.

2.3.5 Takaka (Takaka, Pohara, Ligar Bay and Tata Beach)

The Takaka township wastewater scheme was initially constructed in the mid-1980s. The network has grown and now spans several settlements including Takaka, Pohara, Ligar Bay and Tata Beach and services several smaller communities in between. Most small communities have their own dedicated pump stations. The network is comprised of three main reticulated branches and 20 pump stations. All pump stations have telemetry although seven remain on the analogue network and are fitted with duty and standby pumps.

2.3.5.1 Tata Beach, Ligar Bay and Pohara

The largest branch pumps wastewater flows from Tata Beach, Ligar Bay, Tarakohe, Pohara, Clifton and Motupipi into Sunbelt pump station. This coastal length of trunk main is about 11km has 13 pump stations both inline and injection.

The Council's Resource Recovery Centre also pumps effluent into the pressure main just before Sunbelt pump station. At Sunbelt pump station, wastewater is pumped directly to the WWTP.

The section of pipe between Pohara Valley, Pohara campground and Richmond Road was constructed in 1994/95 connecting these communities to the Takaka wastewater scheme via a pumping/gravity main along Abel Tasman Drive. In 1995/96, further outlying areas were including Clifton, Pohara, Tarakohe, Ligar Bay and Tata Beach were connected.

A major upgrade to Four Winds PS was recently completed (2020) and the Council have planned several projects along the trunk main corridor including:

- relocating and upgrading Tarakohe PS with emergency storage and a new connecting rising main; and
- upgrading the existing Pohara PS.

These projects will provide for growth, improve network efficiency, and reduce the risk of overflows and odour.

2.3.5.2 Rototai

Flows from the small community of Rototai community including Takaka Primary School are intercepted and pumped to the Waitapu pump station. From here, wastewater is pumped along SH60 and Haldane Road to the Takaka WWTP. This short branch has only a few kilometers of pressures main and three pump stations. This systems was constructed in 2006.

2.3.5.3 Takaka and Takaka East

The third branch also built in 2006, pumps wastewater from Takaka East and the Dobson Road area including wastewater from the local hospital (Golden Bay Community Health) to Motupipi PS. This branch also conveys wastewater from Central Takaka in gravity or pressure pipes to either Motupipi or Hiawatha Lane pump stations and then pumps directly to the WWTP.

2.3.5.4 Takaka WWTP

The WWTP is located in the Takaka River flood plain. The pond embankments have been designed to withstand a Q50 flood event. A major upgrade of the WWTP was completed in June 2015 and the WWTP now consists of a mechanical inlet screen, two aerated oxidation ponds (one with a baffle to aid circulation), a floating wetland, a dosing pump station and eight rapid infiltration basins (RIB). A septage facility for accepting some specific trade waste was also included as part of the upgrade. The WWTP is split over two adjacent sites, with the inlet works and ponds on the original site and the new RIB on a two hectare site elevated on a slightly higher river terrace.

The floating wetland removes algae before the treated wastewater is discharged into one of eight RIBs. Treated wastewater then filters though the underlying gravels into the groundwater. The groundwater flows towards the Takaka River. Monitoring bores both upstream and downstream of the RIBs are sampled each month to confirm there is no bacterial contamination of the groundwater due to the discharge.

A weather station and telemetry were installed at the WWTP in 2014. The wastewater from all sources is measured by a magflow meter as it enters the treatment plant and flows can be monitored in real time via the Council's digital telemetry system.

When the Takaka River floods, access to the WWTP is cut off as there are two fords to cross. Flooding can occur several times each year.

2.3.6 Tapawera

The Tapawera wastewater scheme was originally installed by the New Zealand Forest Service in 1973. It services the residential area between Matai Crescent and Main Road Tapawera, including properties along Main Road Tapawera to the treatment plant. The service area includes the Tapawera Area School which has two swimming pools totaling 80m³ of water.

The Tapawera scheme comprises a gravity reticulation system that discharges to the treatment plant to the west of the town. There are no wastewater pump stations within Tapawera. The treatment plant was upgraded in 2008. The final treatment process consists of a mechanical inlet screen, an HDPE lined aerated oxidation pond with two baffles followed by a pumped discharge to four rapid infiltration basins. Telemetry was installed as part of the upgrade along with a flow meter on the discharge pipe.

The Tapawera treatment plant is located on the upper terraces of the Motueka River but within its flood plain. Any failure of the system may have a negative effect on the surrounding groundwater and potentially the river. Therefore, the plant is managed to mitigate this risk.

2.3.7 Upper Takaka

The original wastewater scheme serving the Upper Takaka village (which housed staff operating the Cobb Power Station) was operated under the ownership and control of Electricorp (previously NZ Electricity Department) since the early 1950s. In 1991, Electricorp upgraded the wastewater scheme and handed ownership over to Tasman District Council.

Wastewater gravitates to the only pump station on the north east corner of the village, which pumps to a treatment plant 600m to the north of the village. This plant comprises treatment in an oxidation pond followed by a wetland before discharging via overland seepage into the ground. There is no power at the WWTP site.

The wetland was replanted in 2008/09 and the soakage area was extended and renovated in 2008. The oxidation pond was desludged in 2008.

The pump station operates with a duty and a standby pump with remote monitoring via the Council's analogue telemetry system. The pump station, and treatment plant are on Council-owned land although surrounded by private farmland. Access to the treatment plant is via a right-of-way that passes through a ford. If the ford is flooded, there is an alternative route to the treatment plant through the farm, but the landowner must be consulted prior to use. The rising main passes through the farm and has been accidentally dug up on occasion.

2.3.8 Waimea (Brightwater, Wakefield, Hope, Richmond and Mapua/Ruby Bay)

These settlements are grouped together because they are all connected via a trunk main that discharges into the Beach Road pump station that is owned and operated by the Nelson Regional Sewerage Business Unit (NRSBU). From the pump station wastewater is pumped to Bell Island Wastewater Treatment Plant.

2.3.8.1 Wakefield to Brightwater

The entire Wakefield reticulation network operates under gravity, gravitating to the Brightwater Main pump station via a 200mm diameter trunk main laid in the former railway reserve. There is a flume flow meter on this trunk main at Bird Road so flows from the Wakefield catchment can be monitored. The Brightwater reticulation network consists of a gravity pipe network combined with four pump stations. The gravity system discharges into one of the three pump stations with all wastewater passing through the Brightwater Main pump station. Leachate from the Eves Valley Landfill discharges into the Waimea West pump station.

All Brightwater and Wakefield wastewater arrives at the Brightwater Main pump station within the Brightwater Engineering Ltd property. From there it is pumped up and over Burkes Bank to discharge into the manhole at the start of the gravity trunk main to Richmond. The Brightwater Main pump station is equipped with a standby diesel generator that automatically cuts in if the power supply fails. This pump station has duty and standby pumps. All four pump stations can be monitored via the Council's digital telemetry network.

The Council have identified that a new pump station and rising main connecting to the existing pump station is required to accommodate growth in Brightwater. The trunk main from Wakefield to Three Brothers Corner also needs greater capacity to cater for growth.

2.3.8.2 Hope to Richmond

Properties within the Hope area discharged into the trunk gravity main that runs along the disused railway reserve (from Burkes Bank to the Beach Road NRSBU pump station). This trunk main also carries all of the Wakefield and Brightwater wastewater.

The Richmond wastewater network is a gravity reticulation system originally installed in the 1950s. There is a small pump station on Hill Street South as well as a pump station near Headingly Lane, which serves the commercial/industrial area of Lower Queen Street and new residential developments in Richmond West. Both pump stations pump into the gravity network. The Richmond West area is anticipated to mainly include low pressure pumped systems, with individual house pump stations owned by the Council with power supplied by the property owner. With the forecast growth in Richmond West, the Council anticipates the Headingly Lane pump station and downstream rising main will need to be upgraded. There are several alternative options that the Council will assess with the NRSBU that could address the capacity issues in the short and long term.

The Council has spent two years investigating sources of inflow and infiltration in Richmond and found that it is the newer developments that are contributing the most stormwater and groundwater into the network. This corroborates the findings in the Mapua Rise subdivision. The volumes of water entering the wastewater network in rain events has resulted in frequent multiple-point overflows in the Beach Road/McPherson Street areas of Richmond.

While the trunk main between Three Brothers Corner and the Beach Road pump station has sufficient capacity, the Beach Road pump station and downstream rising mains don't. The flow rate into the Beach Road pump station is limited to 387 l/s, controlled by an electronic flow meter and automatic penstock valve, which are monitored remotely via the analogue telemetry network. During heavy or prolonged rainfall, the wastewater network in low lying parts of Richmond surcharges and can overflow for twelve hours or more. There are two gravel traps between the trunk main flow meter and the Beach Rd pump station that require regular clearing, particularly prior to and post significant rainfall events.

2.3.8.3 Mapua/Ruby Bay

Mapua was initially reticulated for wastewater in 1988 around the wharf area and the network has vastly expanded since. The reticulation network generally drains south and east via gravity, interspersed with pumping stations, delivering all wastewater to Mapua Wharf pump station. From the wharf, a rising main crosses the Mapua Channel to Rabbit Island and then to Bell Island WWTP. The Council's responsibility for this rising main ends at the connection to the NRSBU inlet works on Bell Island.

There are 12 pump stations in the Mapua/Ruby Bay network, all with duty and standby pumps, with corresponding controls and telemetry. The Mapua Wharf pump station was upgraded in 2012 and includes a backup generator, emergency storage tanks and an odour treatment system.

Operation of the pump station is monitored in real time by the Council's telemetry system, which can be viewed and interrogated by the Council staff and the maintenance contractor. This contractor is responsible for monitoring and responding to alarms and ensuring the pump stations operate. Eight of the 12 pump stations are on the digital network and the remaining ones will be converted as part of future upgrades. The injection trunk main running up Aranui Road and Stafford Drive was upgraded in 2020/21 and some pump stations have additional storage capacity upgrades.

The rising main under the Mapua Channel is a 250mm diameter PE pipeline. An additional unused polyethylene (PE) pipeline also crosses the channel, allowing for future growth in Mapua/Ruby Bay. The balance of the rising main to Bell Island WWTP is 355mm diameter PE and was installed in 2010. New housing developments in the area have put additional pressure on the network through poor quality plumbing, which allows surface and ground water to enter the wastewater network. This has led to the Council paying closer attention to plumbing work during building compliance inspections and educating local plumbers and drain layers on acceptable plumbing solutions.

The Council has made new developments in low-lying areas to install low pressure pump systems that are able to hold 24 hours of storage to help manage the network when overloaded during long or heavy rainfall.

3 Strategic Direction

Strategic direction provides overall guidance to the Council and involves specifying the organisation's objectives, developing policies and plans designed to achieve these objectives, and then allocating resources to implement the plans.

3.1 Our Goal

We aim to provide cost-effective and sustainable wastewater systems to protect public health whilst meeting environmental standards.

3.2 Contribution to Community Outcomes

Table 6: Summarises how the wastewater activity contributes to the achievement of the Council's Community Outcomes

Community Outcomes		How Our Activity Contributes To The Community Outcome	Significant Negative Effects
Social Well-being	Our communities are healthy, safe, inclusive and resilient	We aim to provide a service that is safe for our community. We provide quality treatment, minimise overflows, and ensure our infrastructure is resilient. We ensure wastewater is collected and treated without causing a hazard to public health or unpleasant odours.	Blockages and overflows can cause distress and are a public health risk.
Social Well-being	Our urban and rural environments are people-friendly, well planned, accessible and sustainably managed		Odour can cause distress to local residents. It can impact on how our residents live their lives, having to keep windows closed, and restrict outdoor activities. Non-compliant treated wastewater discharge may result in the degradation of water quality, preventing the use of groundwater, nearby rivers and beaches for 'all year-round bathing', and preventing the collection of shellfish.

Community Outcomes		How Our Activity Contributes To The Community Outcome	Significant Negative Effects
Social Well-being	Our communities have access to a range of social, cultural, educational and recreational facilities and activities	Wastewater is an essential service that supports other facilities and activities.	
Economic Well-being	Our region is supported by an innovative and sustainable economy	Wastewater supports our regional economy by providing and managing wastewater collection, treatment, and disposal. Sustainability is a key driver of our future planning.	
Economic Well-being	Our infrastructure is efficient, resilient, cost effective and meets current and future needs	We consider the wastewater activity to be an essential service that should be provided to properties within the urban areas and be sufficient in size and capacity.	Businesses, schools, and hospitals may need to close if they are unable to provide sanitary facilities or use the wastewater system because of disruption in the form of repairs, blockages, faults, or overflows. Odour can cause distress to local businesses as it may put off customers. Non-compliant wastewater treatment discharge may result in the degradation of water quality, preventing the use of groundwater or surface water for irrigation and preventing the harvest of shellfish from marine farms. Improving the level of service delivered can result in an increase in rates.

Community Outcomes		How Our Activity Contributes To The Community Outcome	Significant Negative Effects
HH Environmental Well-being	Our unique natural environment is healthy, protected and sustainably managed	All wastewater in the Council-owned schemes is treated and discharged into our environment. We sustainably manage this, so the impact of the discharges does not adversely affect the health and cleanliness of the receiving environment.	Untreated wastewater overflowing to our environment could result in health risks, contamination of waterways and/or beach closures, and could threaten natural habitats.
HH Cultural Well-being	Our communities have opportunities to celebrate and explore their heritage, identity and creativity		Operation, maintenance and construction of wastewater assets can potentially affect historic and culturally sensitive sites. The location of some wastewater assets, particularly through estuarine environments, is culturally offensive to iwi.
	Our Council provides leadership and fosters partnerships including swith iwi, fosters a regional perspective, and encourages community engagement	We have a regional partnership with Nelson City Council for the management of the Nelson Regional Sewerage Business Unit. We collaborate with iwi and site neighbours to identify issues and concerns; and when the opportunity arises, engage with the community for facility open days and plantings days.	

3.3 Infrastructure Strategy

The Council's Infrastructure Strategy covers the provision of the Council's water supply, stormwater, wastewater, rivers and flood control, and transportation services. The purpose of the Strategy is to identify the significant infrastructure issues for Tasman over the next 30 years, and to identify the principal options for managing those issues and the implications of those options.

The key infrastructure priorities included in the Strategy are:

- Providing infrastructure services that meet the needs of our changing population
- Planning, developing and maintaining resilient communities
- Providing safe and secure infrastructure and services
- Prudent management of our existing assets and environment.

The Council's Infrastructure Strategy and infrastructure activity management plans are directly linked. Information flows between the Strategy and the plans in both directions. The table below describes the structure of the Strategy and how it connects to the activity management plans.

Section	Section Overview	Connection to AMP
Executive Summary	A short consolidated summary of the current situation, investment priorities, key actions and total level of investment.	This section is intended to provide an outline of the Strategy to the reader. It does not have a direct connection to individual activity management plans.
Strategic Direction	Examines the context and issues surrounding the provision of infrastructure services. Sets the direction for infrastructure management and investment priorities. Sets out how the Council will: respond to growth or decline in demand; manage the renewal or replacement of existing assets over their lifetime; manage planned increases or decreases in levels of service will be allowed for, public health and environmental outcomes will be maintained or improved; and natural hazard risks will be addressed in terms of infrastructure resilience and financial planning.	This section provides direction to the Council staff who prepare activity management plans for the relevant infrastructure activities. Each activity management plan is expected to consider the key priorities and identify actions that are in alignment with those priorities. It also provides a consolidated summary of this information from within the activity management plans.
Activity Summaries	For each activity: Provides an overview of the assets and their condition and performance; Outlines the levels of service; Considers the options to address key	This section provides a concise summary of the activity management plan for the topics listed in this table.

Section	Section Overview	Connection to AMP
	issues/priorities and identifies the preferred option; Summarises investment in the activity for the next 10 and 30 years; Lists the key assumptions and uncertainties.	

3.4 Financial Strategy

The Financial Strategy outlines the Council's financial vision for the next 10 to 20 years and the impacts on rates, debt, levels of service and investments. It guides the Council's future funding decisions and, along with the Infrastructure Strategy, informs the capital and operational spending for the Long Term Plan 2021-2031.

The Financial Strategy outlines the Council's financial vision for the next 10 to 20 years and the impacts on rates, debt, levels of service and investments. It guides the Council's future funding decisions and, along with the Infrastructure Strategy, informs the capital and operational spending for the Long Term Plan 2021-2031.

Infrastructure expenditure forms a large proportion of the Council's spending being 38% of operational expenditure and 79% of capital expenditure over the next 10 years. Because of this, the Infrastructure Strategy and Financial Strategy are closely linked to ensure the right balance is struck between providing the agreed levels of service within the agreed financial limits.

Over the next 10 years, forecast rate income increases and debt levels are projected to be very near the Council's limits. The Council has had to work hard to prioritise and plan a work programme which addresses the most pressing key issues while staying within these limits. This means there is very little scope to add further work to the programme within the next five years.

3.5 Key Issues

The Council has identified key issues specific to the wastewater activity, which are summarised in Table 7~~Table 7~~ below. Each of these issues relate to the Council's infrastructure priorities. For the wastewater activity, key issues are interrelated and often, investing in solutions will likely to help address other issues to varying degrees.

For the wastewater key issues there is a close relationship between each of the issues. Often, implementing the preferred options is likely to help address the other issues to varying degrees. To help simplify the discussion, options have been allocated to the primary reason they have been considered.

Table 7: Key Issues for the Wastewater Activity

Key Issue	Discussion
Ground and rainwater in the network	Infiltration is the unintentional entry of ground water into the wastewater network and inflow occurs when rainwater enters the network. Common points of entry include broken pipe and defective joints, as well as cracked manholes. Inflow and infiltration. Ground and rainwater entering the network is a significant issue in some parts of our networks. Particularly problematic sub catchments include Sunview Heights in Richmond, Woodlands and Goodman Park in Motueka. Heavy or prolonged rainfall can overload our pipe networks and wastewater treatment plants. In turn, this restricts residential and commercial growth because it uses up available network capacity. We then pump, convey and treat the extra water, resulting in additional and unnecessary costs. Excessive levels may also dilute wastewater and lower the performance of our treatment plants. We have been investing in an ongoing CCTV programme and an inflow and infiltration programme over recent years and are making steady progress in identifying sources of inflow and infiltration and fixing them. These programmes help us collect condition and performance data that help inform our renewals programme. In cases, where I/I occur on private property, we serve notice to the owner. Where sources occur on the public network we either do spot pipes repairs and seal manholes or include problematic section of pipes in our renewals programme. We have recently built a hydraulic model of the Motueka network and are planning to build a model for the Waimea network (including trunk mains and parts of Richmond). We have addressed problematic areas in the Riwaka catchment and are currently working to fix areas of the Collingwood network.

Key Issue	Discussion
Providing infrastructure to allow for new homes and businesses	Enabling the construction of new subdivisions and associated infrastructure for our growing population is a priority for the Council. We expect that over the next 10 years, our population will grow by approximately 7,700 residents. To accommodate this growth, new houses will need to be built, most of which will need to be supplied with wastewater. We can supply some of this new demand where there is capacity in our existing infrastructure. Where capacity is not available, or if the infrastructure does not exist, we will need to provide upgraded or new infrastructure to enable growth. Growth is occurring faster than the Council previously anticipated in settlements such as Richmond, Mapau and Motueka, Brightwater and Wakefield. Furthermore, the Nelson-Tasman Future Development Strategy identified new settlements that will require significant infrastructure. In the near term, we are planning new pump stations and rising mains in Motueka West, Richmond South and Mapua. In the longer term we have planned for new pump stations and rising mains in Lower Moutere and the Jefferies Road area in Brightwater. In Brightwater and Wakefield the wastewater system is operating close to capacity and a new bypass pump station needs to be built to cater for growth in the Wakefield. Parts of the trunk main between Wakefield and Richmond will require upgrading. The Council applies development contributions to growth projects so that developers meet the cost of the growth component of some projects, rather than ratepayers.

Key Issue	Discussion
Climate Change and Resilience	The investment required to ensure our infrastructure can withstand the effects of climate change and natural hazard shock events will be significant. The Council expects changes to Tasman's climate will broadly include: • Changing temperatures and seasonality; • Changing rainfall patterns and intensity; and • Changes to sea level and coastal hazards. Tasman is susceptible to a range of natural hazards including: • Earthquakes, tsunami; • Flooding, slips, landslides; and • Coastal Inundation and salt water intrusion. The Council is responsible for providing wastewater infrastructure that is resilient to events that disrupts 'business as usual'. Examples of wastewater network disruption will likely include: • Overflows due to intense or prolonged wet weather; • Power failure causing the network to becomes overloaded; • A major break in wastewater pipes; and • Sea level rise and coastal inundation that cause assets to fail. All these types of events can limit our ability to provide adequate and reliable wastewater service to our community. Some pump stations within our networks have limited storage. This means at times of high flows due to prolonged or heavy rain, or during power outages, the network can only manage for a short period of time before we need to manage the overflow risk. As poor weather can bring both wind and rain, there are instances when high flows and power outages occur at the same time. To address this issue, we plan to invest in storage capacity so our network can handle higher flows or longer periods. This means our networks will be more resilient and less prone to overflows. We are also planning to invest in mobile generators to provide power to key pump stations during power outages enabling the network to continue operating. In Motueka, the wastewater treatment plant is located adjacent to the coast. The plant will be at increasing risk of coastal erosion and flooding due to the effects of climate change. In 2019 we commenced early engagement with iwi to consider a wastewater strategy for Motueka. Part of this work includes investigations into alternative sites for the wastewater treatment plant. A working group was formed including representatives from the Council, the Nelson Marlborough District Health Board, iwi, and Fish and Game. We are planning to continue this work and finalise the strategy and refine our timeframes and budgets for the plant and network changes.

Key Issue	Discussion
Three Waters Reform and new regulation	The government's comprehensive reform of the Three Waters sector has prompted new legislation (Taumata Arowai–the Water Services Regulator Act 2020), with more expected in 2021 (Water Services Bill). The three waters reforms involve regulatory and service delivery reform, both of which are essential for addressing a range of issues and opportunities, including infrastructure investment requirements; funding, affordability, capability and capacity challenges. The new legislation will provide Taumata Arowai with a national oversight role for wastewater however Regional councils will continue to regulate wastewater systems under the Resource Management Act. Taumata Arowai will be the watchdog. Taumata Arowai will publish an annual report on environmental performance of wastewater systems owned by territorial authorities and their compliance with requirements like resource consents. It will also highlight poor practice and recommend action. In September 2020, the National Policy Statement for Freshwater Management and the National Environmental Standards for Freshwater came into force, providing direction and requirements for the Councils to improve freshwater management under the Resource Management Act 1991. Both the NPS and new water legislation requires the Council to give effect to 'Te Mana o te Wai.' It is important in Māori culture to avoid contamination of water with wastewater (both treated and untreated). Treated wastewater is frequently discharged into, or nearby to, coastal and river environments. In Tasman. The reduction of wastewater overflows is a significant challenge particularly when the network is overwhelmed with stormwater. Environmental issues and funding challenge is becoming a challenge to many communities. In the future, it is likely that we will have to improve treatment processes and the tolerance for wastewater overflows will decrease. The Climate Change Response Act 2002 provides a framework to develop and implement clear and stable climate change policies. We need to optimise our wastewater treatment plants' performance as wastewater treatment processes are our largest source of greenhouse gas (GHG) emissions and biggest consumer of electricity. Some of the government's post Covid-19 stimulus funding to improve and maintain three waters infrastructure will go towards emergency storage and energy improvements for the wastewater activity.

3.6 Te Mana o te Wai

Through the National Policy Statement for Freshwater Management 2020 (Freshwater NPS) the Government has issued local authorities with new direction on how to manage freshwater under the Resource Management Act 1991. Central to this new direction is the concept of Te Mana o te Wai.

Te Mana o te Wai is a concept and framework which is derived out of Te Ao Māori (the Māori world view that acknowledges the interconnectedness and interrelationship of all living and non-living things) and reflects the recognition of freshwater as a natural resource whose health is integral to the social, cultural, economic and environmental wellbeing of communities.

The framework of Te Mana o te Wai is rooted in the development of the National Policy Statement for Freshwater Management since 2014 by the Iwi Leaders Group and has been a key part of the current NPS-FM since 2014. It establishes a set of guiding principles and a hierarchy of obligations, and refers to the essential value of water, and the importance of sustaining the health and wellbeing of water before providing for human health needs, and then to other uses.

It expresses the special connection all New Zealanders have with freshwater. By protecting the health and well-being of our freshwater we protect the health and well-being of our people and environments.

There is a hierarchy of obligations in Te Mana o te Wai that prioritises (in order) the:

- Health and well-being of water bodies and freshwater ecosystems
- Health needs of people (such as drinking water); and
- Ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

The six principles of Te Mana o te Wai in the NPS-FM 2020 inform its implementation, the principles include:

1. **Mana whakahaere:** the power, authority, and obligations of tangata whenua to make decisions that maintain, protect, and sustain the health and well-being of, and their relationship with, freshwater.
2. **Kaitiakitanga:** the obligation of tangata whenua to preserve, restore, enhance, and sustainably use freshwater for the benefit of present and future generations.
3. **Manaakitanga:** the process by which tangata whenua show respect, generosity, and care for freshwater and for others.
4. **Governance:** the responsibility of those with authority for making decisions about freshwater to do so in a way that prioritises the health and well-being of freshwater now and into the future.
5. **Stewardship:** the obligation of all New Zealanders to manage freshwater in a way that ensures it sustains present and future generations.
6. **Care and respect:** the responsibility of all New Zealanders to care for freshwater in providing for the health of the nation.

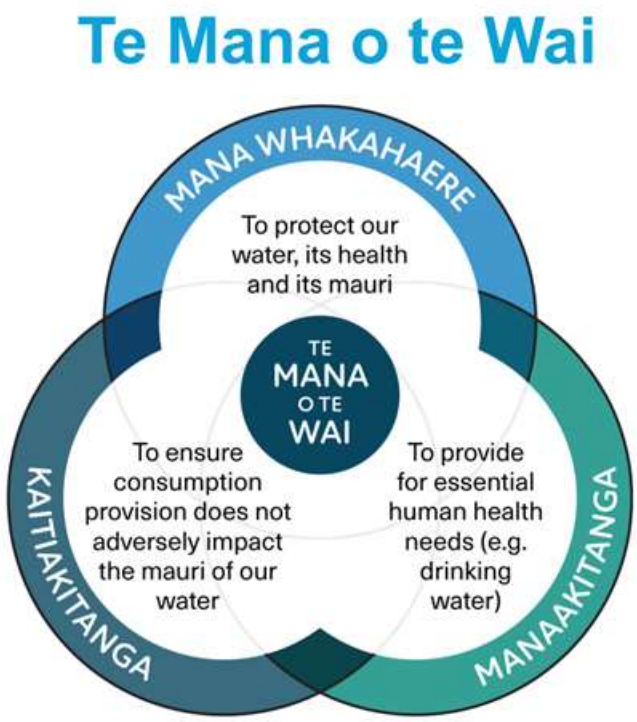


Figure 1: Illustrates the interconnected principles of Te Mana o te Wai

Section 3.2(2) NPS-FM 2020 states every regional Council must give effect to Te Mana o te Wai. This will have implications on how the Water Supply Activity is managed and will likely impact water takes and discharges in the future. There is a lot of uncertainty around how and when Te Mana o te Wai will be implemented across New Zealand and the Council will work with the Government and our treaty partners to better understand and implement Te Mana o te Wai.

3.7 Prioritisation

The Council provides many services on behalf of Tasman's residents and there is often competing demands for the Council's investment across and within these services. The Council needs to decide how much, and when, to invest in these services in a way that maintains affordability for customers and ratepayers.

There are multiple factors that affect the priority of individual projects or work streams. These include:

- The need to protect public health and safety
- The need to conserve and enhance the natural environment
- Statutory compliance
- Meeting the needs of tomorrow's population
- Readiness to implement works
- Co-funding opportunities
- Creating functional and attractive public places

- Benefits and risks
- District distribution
- Strategic fit

The Council has applied the following principles when developing its programme of works:

- To continue to meet its fiscal prudence, sustainability and environmental sustainability obligations
- To keep the medium to long term in focus i.e. rather than being overly diverted by the shorter term recovery from the Covid-19 pandemic
- To understand the trade-off's or benefits across all of the well-being domains (social, environmental, economic and cultural)
- To capitalise on the economic environment (i.e. enhanced borrowing terms, and increased labour and skills availability)
- To make the most of the enhanced opportunities of Government funding, subsidies and other incentives to advance the community outcomes
- To right size the Council staffing and operational expenditure.

The Council has taken all of the above into consideration in order to present a programme that is achievable and affordable. Generally, mandatory requirements such as statutory compliance take priority, and discretionary activities have been programmed second to this.

3.8 Strategic Approach for each Wastewater Network

Table 8: Strategic Approach for Wastewater Network

Network	Strategic Approach
Wakefield, Brightwater, Richmond/Hope, Mapua Ruby Bay	The issues facing this network include: • Rising costs of capital investment to increase capacity and treatment through NRSBU; • Sustained growth in all settlements is likely to lead to more frequent capacity issues in the Council's trunk mains and critical rising mains; • Ongoing need to reduce inflow and infiltration into the network; • Allowance for growth and infill capacity within the existing network; • Upgrading reticulation capacity, before, along-side or as part of growth to limit financial risk of development not occurring. • Existing wet weather overflows in Beach Road / McPherson Street area. • Spring tide surcharge over Beach Road and flood properties and inundate gulley traps); • Long term sustainability and capacity of Bells Island WWTP The strategic approach to this network is to: • Continue to identify and repair defects and sources of inflow and infiltration. • Build a hydraulic model to better understand and manage the Waimea section of the network. This will inform decisions on future upgrading needs to accommodate growth and intensification. • Complete the Waimea long term wastewater strategy in 2022/23 to confirm the long term upgrading requirements, triggers and timeframes; • Install Low Pressure Pumping Systems in areas of high ground water to service individual dwellings. These systems need to be controlled when they pump during heavy or prolonged rain fall events; and • Install Low Pressure Pumping Systems for intensification especially where no daytime capacity in the existing pipework exists.

Network	Strategic Approach
Motueka, Riwaka, and Kaiteriteri	The issues facing this network include: • Motueka West is growing and there is insufficient capacity in the existing network; • Parts of the Motueka reticulation system is known to have inflow and infiltration; • Lack of stormwater capacity leading to stormwater entering the wastewater network; • The Motueka WWTP is located in an area of significant risk which will increase as sea level rise occurs; • There are two sections of rising main between Kaiteriteri to the Motueka WWTP that need upgrading to allow for growth. (Motueka Bridge to Ponds and through the Hickmott Brothers property at 39 School Road) ; • Pressure from out of zone developments to join the network. The strategic approach to this network is to: • Continue investigations to identify and repair system defects and sources of inflow and infiltration. • Continue to develop the Motueka Long Term Wastewater Strategy; to determine the long term requirements of the network; • Long term, Motueka WWTP will be relocated away from the coast due to the impacts from sea level rise and river flooding. • Phase 1 is a strategic study to determine a suitable site; Phase 2 is designation (2024/25) and land purchase planned for 2028/29, Phase 3 is a WWTP construction budget planned for 2031-34. • The final section of rising main upgrades between Motueka Bridge and WWTP will be complete in 2022; • Continue to engage with iwi and other stakeholders by providing input to the decision-making process;

Network	Strategic Approach
Takaka, Pohara and Ligar Bay/Tata Beach	The issues facing this network include: • Odour issues in Ligar Bay and Pohara; Growth in Pohara exceeds existing capacity leading to overflows during wet weather; and • Sea level rise will impact coastal infrastructure. The strategic approach to these schemes is to: • Relocate and upgrade Tarakohe Pump Station and new rising main connection; • Re-purpose the existing pumping stations located at the Pohara Camping Ground and Pohara Valley to be injection pumping stations, into the new rising main from Tarakohe to Four Winds; • The Tarakohe Pump Station and new rising main project will enable growth, address odour, and provide additional storage in the re-purposed pumping stations. It will also provide greater resilience against sea level rise. • Continue to identify and repair defect and inflow and infiltration.
Collingwood	The main issues facing Collingwood network include: • an overflow can enter the coastal marine environment and the response to any failure of the system can take some time due its remote location; • High wet weather flows. The strategic approach for this system is to: • Continue to identify and repair defect and inflow and infiltration.
Upper Takaka	The Upper Takaka scheme is small and has had significant investment in the past. It is operating adequately.
Tapawera	The treatment plant was upgraded on the basis that there would be little population growth in population in Tapawera. The upgrade was aimed at improving environmental outcomes rather than increasing treatment capacity of the plant. The strategic approach going forward is to maintain performance. The Tapawera scheme is small and has had significant investment in the past. It is operating adequately.
St. Arnaud	The St Arnaud network is a relatively new and was designed to cater for the peak population within the network as at 1999. Generally, the treatment system performs well, but there is evidence of increasing inflow during rain events, likely associated with new developments.
Murchison	No formal assessment of the reticulation condition has been undertaken, but there are no known concerns regarding the condition of these assets. Most of the infrastructure is of an age (approximately 25 years old) where condition problems are not expected. The Council intends to continue operating the asset to minimise its impact on the community and the environment.

4 Key Linkages

There are multiple factors that influence how the Council manages this activity. They can be internal or external and include legislation, policies, regulations, strategies and standards. This section summarises these key linkages.

4.1 Overview

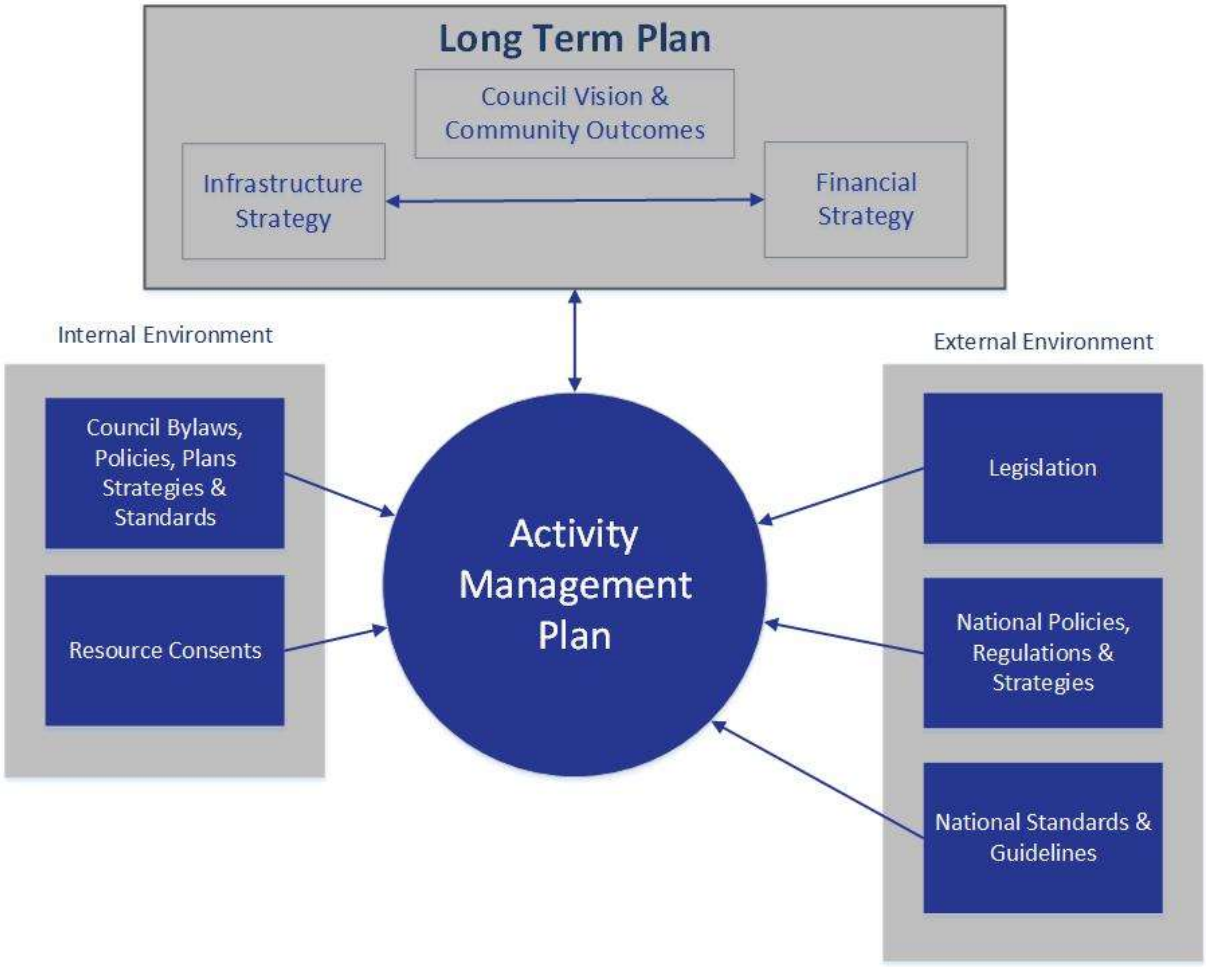


Figure 2: How the Wastewater Activity relates to Other Documents

4.2 Legislation

The Acts below are listed by their original title for simplicity, however all Amendment Acts shall be considered in conjunction with the original Act, these have not been detailed in this document. For the latest Act information refer to http://www.legistlation.govt.nz/.

Table 9: Legislative acts that influence the wastewater activity

Key Legislation	How it relates to Wastewater Activity
The Health Act 1956	The Council have the responsibilities under the Health Act 1956 to improve, promote, and protect public health within the District. Some Councils uses provisions in the Health Act as legal bases to issue I/I defect notices to property owners. I/I problems lead to sewer overflows which in turn poses a risk to public health. The Health Act includes some specific and some implied references to wastewater services including: Section 23 grants powers to local authorities to protect public health. Section 25 gives powers to the Ministry of Health to order local authorities to provide sanitary works for the benefit of the district. Section 39 requires all dwelling houses and commercial businesses to provide sanitation facilities. Section 60 makes it an offence to cause the pollution of a water supply. This may be invoked if wastewater is allowed to get into a source of water used as a water supply.
Local Government Act 2002	The Local Government Act requires local authorities to prepare a ten-year Long Term Plan and 30-year Infrastructure Strategy, which are to be reviewed every three years. The Act requires local authorities to be rigorous in their decision-making by identifying all practicable options and assessing those options by considering the benefits and costs in terms of the present and future well-being of the community. This activity management plan provides information to support the decisions considered in the Long Term Plan. The Local Government Act includes some specific and some implied references to wastewater services including: Section 11A states local authorities are required to provide 'core services'. Network services are listed as a core service. Section 125 requires the local authority to undertake an assessment of the water and sanitary services within its area. Section 126 states the purpose of an assessment is to assess the "adequacy of water and other sanitary services available to communities…" in terms of the quality of the service currently available; the potential health risks from the absence or deficiency of the service; the current and estimated future demand; and the potential consequences of discharges of sewage and stormwater. Section 146 and 148 give powers to territorial authorities to make bylaws for the control of waste, on-site wastewater systems and tradewaste.
Taumata Arowai—the Water Services Regulator Act 2020	The bill establishes Taumata Arowai - the Water Services Regulator as a new Crown Agent and provides for its objectives general functions, operating principles, and governance arrangements. Taumata Arowai is responsible for a small number of complementary functions relating to improving the environmental performance of wastewater networks.
Water Services Bill (2021)	The Bill contains all of the details of the new drinking water regulatory framework that Taumata Arowai will administer and is going through the parliamentary process, it will likely be enacted later in 2021.

Key Legislation	How it relates to Wastewater Activity
Infrastructure Funding and Financing Act 2020	Provides a new legislative tool to enable private capital to support the provision of new infrastructure for housing and urban development. The Act provides opportunities for local councils, Māori and iwi, and developers to partner and deliver infrastructure, free of the council's debt limits or from charging high upfront costs to developers.
COVID-19 Recovery (Fast-track Consenting) Act 2020	This Act shortcuts the current resource consent process under the RMA to support New Zealand's recovery from the impacts of COVID-19. The Act's purpose is to urgently promote employment to support New Zealand's recovery and the certainty of ongoing investment across New Zealand, while continuing to promote the sustainable management of natural and physical resources.
Resource Management Act 1991	The Resource Management Act 1991 (RMA) is the principal legislation that sets out how we manage our environment sustainably. As well as managing air, soil, freshwater and the coastal marine area (and the effects of human activity on these resources), the RMA regulates land use and the provision of infrastructure, which are integral components of New Zealand's planning system. Many sections of the Act are relevant to the control of wastewater discharges and the process for seeking consent to undertake the activity. Specific sections include: Section 13 places restrictions on certain uses of the beds of lakes and rivers, which can affect maintenance of wastewater reticulation located near watercourses. Section 15 does not allow the discharge of any contaminant into water or allow a contaminant to enter water unless the discharge is expressly allowed for by a national environmental standard or other regulations, a rule in a regional plan or a resource consent. Part 6 (sections 87A–165) describes the requirements for applying for resource consents and implementing resource consent processes.
Civil Defence Emergency Management Act 2002	Sets an expectation that the Council's lifeline utilities (which includes wastewater service) to prepare to function at the fullest possible extent during and after an emergency, even though this may be at a reduced level of service.
Health and Safety in Employment Act 1992 & 2015	Health and Safety legislation requires that staff and contractors are kept safe at work. New legislative changes to the act will mean improved health and safety measures will be required.
Utilities Access Act 2010	The processes and rules for coordinating work done in transport corridors by utility operators, or that affects utility operators' assets

Key Legislation	How it relates to Wastewater Activity
Te Tiriti o Waitangi – Treaty of Waitangi	The Treaty of Waitangi is an agreement between Māori and the Crown. Under Section 4 of the Local Government Act 2002, local authorities are required to 'recognise and respect the Crown's responsibility to take appropriate account of the principles of the Treaty of Waitangi and to maintain and improve opportunities for Māori to contribute to local government decision-making processes'. Sections 77 and 81 detail the scale of requirement for local authorities to seek contributions and involvement from Māori in consultation and decision-making processes.
Climate Change Response Act 2002	The Climate Change Response Act 2002 puts in place a legal framework to support New Zealand to respond to climate change and meet its international obligations. It also establishes the New Zealand Emissions Trading Scheme.
Water Services Bill	A separate Water Services Bill, containing the new regulatory framework that Taumata Arowai will administer, is awaiting its first reading.

4.3 Key Planning, Policies and Strategies

4.3.1 Key Local Bylaws, Polices, Plans, Strategies and Standards

Table 10: Local Documentation Bylaws, Polices, Plans, Strategies

The Council's Documents	How it relates to Wastewater Activity
Tasman District Council District Plan – Tasman Resource Management Plan (TRMP)	The Tasman Resource Management Plan (TRMP) provides a guideline and sets the rules about how the Council manages the districts natural and physical resources. Chapter 35 addresses the adverse effects of discharges to the coastal marine area and Chapter 36 defines rules in relation to discharges.
Tasman Regional Policy Statement (TRPS)	The Tasman Regional Policy Statement (TRPS) is the strategic resource management plan to promote sustainable resource management in the Tasman District. Part 9: Coastal Environment- addresses issues relating to the discharge into the environment and Part 10: Contamination & Waste – address issues relating to the adverse effects of discharges of contaminants.
Tasman District Council's Engineering Standards have been replaced by the Joint Tasman District Council and Nelson City Council- Land Development Manual	The Land Development Manual (LDM) sets out the requirements that all infrastructure must conform with. It is based on national guidelines and standards, but there are requirements that are specific to Tasman and ensures that the Council's infrastructure assets achieve acceptable levels of service, they are modern, cost-effective and durable. This document also dictates the standards that developers have to abide with when undertaking work that will be vested with the Council. The LDM is available on the Council's website.

The Council's Documents	How it relates to Wastewater Activity
Wastewater Bylaw (2015)	The Wastewater bylaw applies to all users of the wastewater system and includes trade waste and protection of the wastewater infrastructure. The bylaw sets out the requirements around connection and discharges to the wastewater system, the extent of public/private responsibilities, the prevention of inflow and infiltration, and working and building around wastewater reticulation.
Water Assessment Services Assessment (WSSA)	The Water and Sanitary Services Assessment is a Council/community review of how the Council provides water, wastewater, stormwater, solid waste (refuse), public toilets and cemetery services and explores options for managing them more sustainably.
Tasman District Council's Financial Strategy	Sets out the how the Council funds its activities, projected population growth rates, funding expenditure, projected debt levels and management of investments.
Tasman District Council's Infrastructure Strategy	Provides a look forward for 30 years at current and upcoming key infrastructure issues for the core engineering activities and significant projects and expenditure required to address them.
Long Term Plan	The Local Government Act 2002 requires the Council to produce a Long Term Plan (LTP) every three years. The LTP outlines activities and priorities for ten years, providing a long-term focus for decision-making.
Climate change and impacts on agriculture in Tasman (NIWA, 2019)	This report expands on the 2015 NIWA climate change report for Tasman District by introducing six additional climate change variables. These variables have been found to give the most accurate results when compared to historical climate and circulation patterns in the New Zealand and southwest Pacific region. The report describes changes that may occur to Tasman's climate over the next 80 years, and describes the impacts of these changes on agricultural systems.
Climate Change and Variability Report (NIWA, 2015)	In 2015, NIWA released a climate change and variability report for Tasman District Council. The report describes changes which may occur over the coming century in the climate of the Tasman region, and outlines some of the possible impacts of these changes.

4.3.2 Key National Policies and Strategies

National policy statements (NPS) are issued by central government to provide direction to the Councils about how they carry out their responsibilities under the Resource Management Act when it comes to matters of national significance.

Implementation of NPS will be through the Tasman Resource Management Plan (TRMP) and in resource consent conditions. Upgrades of wastewater treatment plants to process increasing volumes of wastewater will be required, particularly related to trade waste discharges from the industry and increasingly stringent standards for effluent discharges. Recognising and resolving cultural issues related to waste discharges to aquatic environments is another important factor.

Table 11: Key National Policies and Strategies that relate to this activity

Documentation	Affect on the Wastewater Activity
National Policy Statement on Urban Development Capacity 2016 (NPS-UDC)	Sets out the objectives and policies for providing development capacity under the Resource Management Act 1991 and came into effect on 1 December 2016.
National Policy Statements for Freshwater Management (NPS-FM)	The NPS-FM requires the Councils to set water quality limits for water bodies which (at least) meet the national objectives related to ecosystem health and human health for recreation. All regional (and unitary) Councils need to fully implement the objectives and policies in the NPSFM as promptly as is reasonable, and no later than December 2025. That means water quality objectives will be set for freshwater management units within the region which must reflect tangata whenua roles and interests. Under Policy A2, every Regional Council is: • to specify targets and implement methods (either or both regulatory and non-regulatory) in a way that considers the sources of relevant contaminants recorded under Policy CC1 (accounting for freshwater takes and contaminants), • to assist the improvement of water quality in the freshwater management units, and • to meet those targets within a defined timeframe. This requirement is particularly relevant for the Council's discharges of treated effluent to freshwater.

Documentation	Affect on the Wastewater Activity
New Zealand Coastal Policy Statement (NZCPS)	Guides local authorities in their day-to-day management of the coastal environment. Highlights declining coastal water quality because of contamination through stormwater and wastewater discharges. Policy 23 is particularly relevant to wastewater services. This policy does not allow the discharge of treated human sewage to water in the coastal environment unless there has been adequate consideration of alternative methods, sites and routes for undertaking the discharge; and the decision is informed by an understanding of tangata whenua values and the effects on them. In addition, objectives, policies and rules in plans (such as the TRMP) which provide for the discharge of treated human sewage into waters of the coastal environment must have been subject to early and meaningful consultation with tangata whenua. The NZCPS is likely to influence the outcome of the 20XX consent applications for the new Motueka Wastewater Treatment Plant.
National Environmental Standard Sources of Human Drinking Water	Guidelines intended to reduce the risk of contaminating drinking water sources by requiring regional councils to consider the effects of activities on drinking water sources in their decision making. Regulations 6, 7 and 8 apply to applications for discharge permits issued by regional councils.
The Local Government (Financial Reporting) Regulations 2011	Sets out the content of local authorities' annual reports and financial reporting framework and standards.
Sustainable Development for New Zealand - Programme of Action (Ministry of Social Development)	Sets out the Government's approach to achieving sustainable development and specifies an improved provision of infrastructure and services (including water supply, wastewater treatment transport, energy and housing).

4.3.3 Key National Standards and Guidelines

For all New Zealand standards refer to http://www.standards.co.nz

Table 12: National Standards and Guidelines

Standard	Affect on the Wastewater Activity
NZS 4404:2010	Land Development and Subdivision Infrastructure
AS/NZS ISO 9001:2016	Quality Management Systems
AS/NZS 3917:2013	Fixed Term Contract Management

Standard	Affect on the Wastewater Activity
ISO 24516-3:2017	Wastewater collection networks
NZS 9201.22:1999	Model general bylaws - Wastewater drainage
NZS 9201.23:2004	Model general bylaws - Trade waste
Water New Zealand's Infiltration and Inflow Control Manual	Provides information on inflow and infiltration and the corresponding issues, complexities, and good practice strategies to reduce and manage.
New Zealand Pipe Inspection Manual 3rd edition (2006)	An overview of tasks that can be completed using CCTV and how these activities can be used to manage wastewater and stormwater assets.
Ministry for the Environment: Coastal Hazards and Climate Change -Guidance for local government	A major review of the 2008 edition, updating scientific understanding and the legal framework. Introduces new material on hazard, risk and vulnerability assessments and collaborative approaches to engaging with communities. Also explains adaptive approaches to planning for climate change in coastal communities.
Office of the Auditor General publications: 1. Local government: Examples of better practice in setting local authorities performance measures. 2. Getting the right information to effectively manage public assets: Lessons from local authorities	Paper that promotes discussion about improvement of performance measures for various activities. Discussion paper examining how local authorities approach identifying and gathering the asset information.
Department of Internal Affairs publications: Supporting guidance for sewerage and the treatment and disposal of sewage (2014)	Guidance to help local authorities when setting levels of service and targets related to mandatory performance measures.
Sustainable Development for New Zealand - Programme of Action (Ministry of Social Development)	Sets out the Government's approach to achieving sustainable development and specifies an improved provision of infrastructure and services (including wastewater, wastewater treatment transport, energy and housing).
Pressure Sewer National Guidelines (Water New Zealand)	The guidelines provides advice and recommendations for: • Decision Tree Guide • Ownership Models & Policies • Technical Issues • Operation & Maintenance

Standard	Affect on the Wastewater Activity
Wastewater Renewals Framework – Gravity Pipelines (Quake Centre, IPWEA and Water New Zealand)	Framework and guidance resource to assist asset managers to make evidence-based decisions on the renewal of gravity wastewater pipelines. Concepts and recommendations could potentially be applied to water supply and stormwater networks.

4.4 Strategic Studies

Table 13: Strategic Studies related to Wastewater Activity

Network/Area	Strategic Studies	Date
Wakefield, Brightwater, Richmond/Hope and Mapua/Ruby Bay	Wakefield to Three Brothers Corner Wastewater Strategy	2020
	Hydraulic trunk main model for Richmond, Hope, Brightwater, Wakefield	2022-currently in development
	Mapua Wastewater Upgrade Strategy, MWH New Zealand Ltd	2009
	Programme Business Case – Mapua Water and Wastewater, Stantec New Zealand Ltd	2017
	Inflow and Infiltration: Assessment of Impacts and Drivers – Richmond Wastewater Catchment, MWH New Zealand Ltd	2010
	Inflow and Infiltration: Assessment of Impacts and Drivers – Motueka Wastewater Catchment, MWH New Zealand Ltd	2010
	Motueka Wastewater Network Modelling, WSP OPUS	2020
	Motueka WWTP Upgrade Design Report, Beca Ltd	2014
Takaka, Pohara and Ligar Bay/Tata Beach	Pohara/Tata Beach Sewerage Upgrade, MWH New Zealand Ltd	2006
District Wide	Trade Waste Implementation –The Council staff have compiled a list of likely trade waste dischargers and informed users of the need to apply for permits. Water and Sanitary Services Assessment (WSSA): is a Council/community review of how the Council provides water, wastewater, stormwater, solid waste (refuse), public toilets and cemetery services and explores options for managing them more sustainably. CCTV reports	Ongoing 2005 Ongoing

4.5 Planned Strategic Studies

Table 14: Summary of planned wastewater studies

Study Name	Brief Description	Planned
Sludge Management Strategy	Developing a strategy to manage sludge disposal or use from all WWTPs. Will be reviewed every 10 years.	2023/24
Waimea Long Term Wastewater Strategy	Strategic studies to consider the long term impact of climate change	2022/24
Motueka Long Term Wastewater Strategy	Strategic studies to consider the long term impact of climate change	2020/21 In development
Inflow and Infiltration Strategy and Programme	The Council has planned an annual programme to maintain a consistent proactive approach to this work. Staff are considering development of a strategy to document approach and direction.	Ongoing
Regional CCTV Inspections and Data Capture	The Council has planned annual programme to undertake CCTV around the District. Data and information gathered with inform renewals and modeling programmes.	Ongoing
Health and Safety Assessments and Review	The Council is currently focusing on health and safety risks at existing facilities. Each site will be assessed, and it is anticipated that modifications may be needed to mitigate or remove those risks. Changes to the way assets are maintained may also be needed. Hazard registers for each facility will be developed and reviewed every 5 years	5 yearly commencing 2021/22

5 Levels of Service

A key objective of this plan is to match the levels of service provided by the Wastewater activity with the agreed expectations of our customers and their willingness to pay for that level of service. These levels of service provide the basis for the life cycle management strategies and works programmes identified in this plan.

Levels of service can be strategic, tactical or operational. They should reflect the current industry standards and be based on:

- Customer Research and Expectations: information gained from stakeholders on expected types and quality of service provided
- Statutory Requirements: Legislation, regulations, environmental standards and the Council bylaws that impact on the way assets are managed (e.g., resource consents, building regulations, health and safety legislation). These requirements set the minimum level of service to be provided
- Strategic and Corporate Goals: Provide guidelines for the scope of current and future services offered and manner of service delivery, and define specific levels of service, which the organisation wishes to achieve
- Best Practices and Standards: Specify the design and construction requirements to meet the levels of service and needs of stakeholders.

5.1 Our Levels of Service

Table 15~~Table 15~~ summarises the levels of service and performance measures for the this activity. The light blue shaded rows show those that are included in the Long Term Plan and reported in the Annual Plan.

Table 15: Levels of Service

Levels of Service	We will know we are meeting the level of service if…	Current Performance	Future performance targets			
			Year 1 Target 2021/2022	Year 2 Target 2022/2023	Year 3 Target 2023/2024	By Year 10 2024 – 2031
Our wastewater systems do not adversely affect the receiving environment	Compliance with resource consents for discharges from wastewater systems is achieved. As measured by the number of: • abatement notices • infringement notices • enforcement orders • convictions • received in relation to those resource consents. (Mandatory measure 2)	2019/2020: no notices, orders, or convictions.	0 notices, orders, or convictions	0 notices, orders, or convictions	0 notices, orders, or convictions	0 notices, orders, or convictions
Our wastewater systems do not adversely affect the receiving environment	The number of times temporary wastewater overflow signs are erected at waterways is minimised. Measured by the number of contract job request.	2019/2020: 4 temporary overflow signs at waterways	<5	<5	<5	<5

Levels of Service	We will know we are meeting the level of service if…	Current Performance	Future performance targets			
			Year 1 Target 2021/2022	Year 2 Target 2022/2023	Year 3 Target 2023/2024	By Year 10 2024 – 2031
Our wastewater systems reliably take out wastewater with a minimum of odours, overflows or disturbance to the public.	The total number of complaints received about: • odour • system faults • system blockages The Council's response to issues within its systems is less than the target. (Expressed per 1,000 connections.) Measured by the number of contract job request. (Mandatory measure 4)	2019/2020: 1.5 complaints received (per 1,000 connections)	<35	<35	<35	<35
Our wastewater systems are built, operated and maintained so that failures can be managed and responded to quickly.	The number of dry weather overflows from the Council wastewater system (expressed per 1,000 connections to wastewater system) is less than the target. Dry weather is defined as a continuous 96 hours with less than 1mm of rain within each 24-hour period. Measured by the number of contract job request. (Mandatory measure 1)	2019/2020: 2.2 dry weather overflows (per 1,000 connections)	<5	<5	<5	<5

Levels of Service	We will know we are meeting the level of service if…	Current Performance	Future performance targets			
			Year 1 Target 2021/2022	Year 2 Target 2022/2023	Year 3 Target 2023/2024	By Year 10 2024 – 2031
Our wastewater activities are managed at a level that satisfies the community.	Percentage of customers (who receive a service) are satisfied with the wastewater service. Measured through the annual residents' survey.	2019/2020: 92%	>80%	>80%	>80%	>80%
Our wastewater systems are built, operated and maintained so that failures can be managed and responded to quickly	Overflows resulting from a blockage or other fault in the wastewater system are attended and resolved within the target timeframes. Attendance time - from the time the Council receives notification to the time that service personnel reach the site. Resolution time - from the time the Council receives notification to the time that the service personnel confirm resolution of the blockage or other fault. Measured by attendance and resolution times recorded in Confirm. (Mandatory measure 3)	2019/2020: Median Attendance time – 59 mins Median Resolution time – 4 hours	Median Attendance time ≤60 mins Median Resolution time ≤9 hrs	Median Attendance time ≤60 mins Median Resolution time ≤9 hrs	Median Attendance time ≤60 mins Median Resolution time ≤9 hrs	Median Attendance time ≤60 mins Median Resolution time ≤9 hrs

5.2 Level of Service Changes

The Council reviews its levels of service every three years, as part of the Long Term Plan development however as we undertook and comprehensive review in 2018, no changes are proposed in this AMP.

5.3 Levels of Service Performance and Analysis

Compliance with resource consents for discharges from wastewater systems is achieved.

This performance measure indicates how well the Council is managing the environmental impacts of its wastewater networks. Compliance with resource consents is 100%; with no notices requiring additional consents, abatement notices, or enforcement orders received during the last 5 years. The Department of Internal Affairs introduced this mandatory measure in 2015 and since then the Council has complied with it. The target will remain at 0. Minor breaches or technical non-compliances are not reported against this measure.

5.3.1 The number of times temporary wastewater signs are erected at waterways is minimised.

Waterways are highly valued by the community for many reasons including:

- Ecological and indigenous biodiversity
- Recreational and aesthetics purposes
- Source water for irrigation (for primary industries) and drinking water supply purposes.

Māori also place high cultural value on both freshwater and coastal and consider it a taonga (treasure) of huge significance. Keeping freshwater and coastal waters clean by minimising wastewater overflows is a priority for the Council.

Overflows pollute waterways and temporarily affect the ability of the community to use them.

This performance measure gives an indication about the number of overflows across the District.

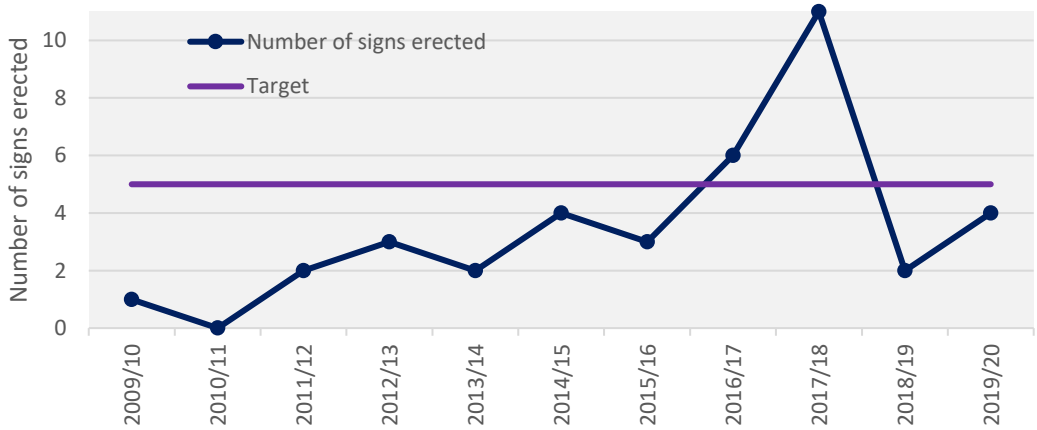


Figure 3: Number of temporary overflow signs erected at waterways

Figure 2 above shows there were 11 temporary overflows signs erected in 2017/18, the high number was directly related to the Moteuka network being overwhelmed during heavy rain during ex-tropical cyclone Fehi and Gita. In 2018/19 there were only two signs. In 2019/20 there were four signs erected during overflows, as a result of two rain events and two blockages.

In addition to using temporary signs to advise of wastewater overflows, the Council have started using social media to advise the public.

In 2017/18, temporary wastewater overflow signs were erected at waterways at 11 different locations. These overflows were the result of six rainfall events, including the two ex-cyclones, and one blockage. For one of the events, signs were erected as a precautionary measure however there may not have been an overflow.

In 2016/17, there were six wastewater overflows into waterways where warning signs were erected. Of these incidents, five affected the Pohara area. Two were the result of storm events overloading the wastewater network and three resulted from rising main breaks. The sixth overflow was in Kerr Bay adjacent to Lake Rotoiti. The manhole blockage may have been caused by rags wipes being dumped at the Department of Conservation caravan dump point as another blockage occurred a few months later, but did not result in an overflow to a waterway.

The Council has committed to significant infrastructure upgrades in Pohara to address capacity improvement and expects the number of overflows in the area to reduce over time.

For the short to medium term, the Council intend to hold the performance measure target at <5. The Council's longer-term strategic goal (within a 15-20 year timeframe) is to reduce the target to <2. Achievement of the target will be dependent on completion of planned pipeline and pump station upgrades.

5.3.2 The total number of complaints received about: odour, system faults, blockages, and the Council's response to issues within its system

This performance measure gauges the level of customer satisfaction and is a key indicator about the quality of our wastewater service. This helps inform the Council about the adequacy and reliability of our wastewater service. This measure also illustrates how satisfied customers are with the way in which the Council responds to requests to fix problems. The information may potentially identify areas where upgraded or new infrastructure may be required.

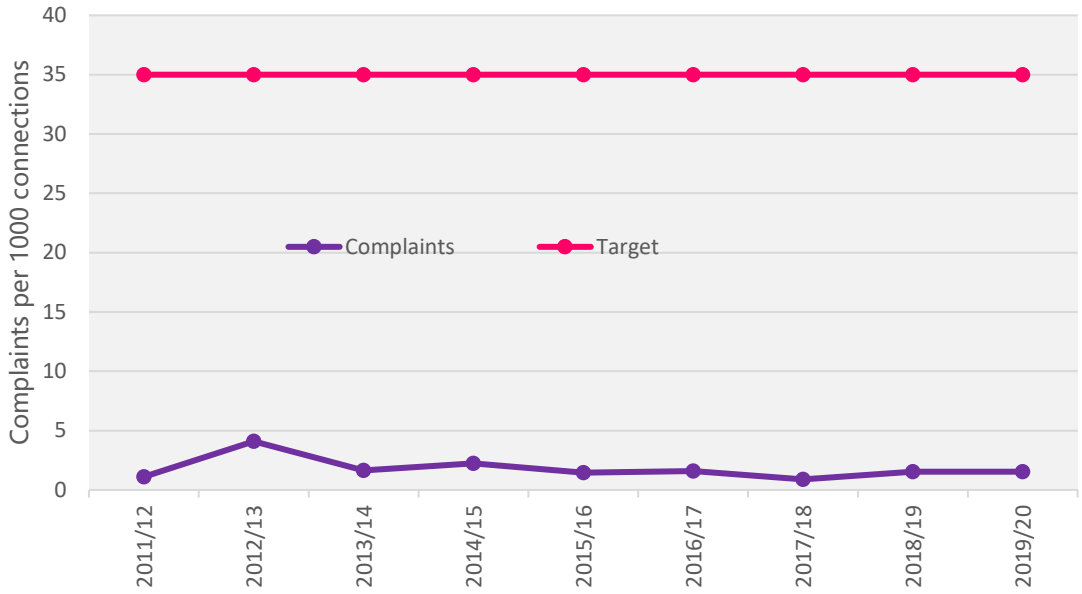


Figure 4: Total number of complaints per 1000 property connections

Figure 3 shows that the Council have a very low number of complaints in relation to the target. For the 2019/20 period we received 21 complaints, the same as 2018/2019. All were associated with odour. Most issues were resolved quickly.

Complaints are collected as part of the request for service processes by Customer Services or Call Care. There will be occasions where there is more than one complaint for a singular event. In such situations, each complaint is counted separately not each event or occurrence.

The calculation takes the total number of complaints divided by the number of rated properties and rounds to the nearest whole number for reporting purposes. The rated property numbers were calculated based on the number of first pans. Although the Council performs very well against this performance measure, the target will remain at 35 in line with the Department of Internal Affairs guidance.

5.3.3 The number of dry weather overflows from the Council's wastewater system (expressed per 1000 connections to wastewater system) is less than the target

Dry weather overflows represent a fundamental failure in a wastewater system under typical operating circumstances. Dry weather overflows can occur as a result of blockages in the network or mechanical faults such as pump failures or power outages. Blockages can occur as a result of tree roots making their way into wastewater pipes or the incorrect disposal of fats and other non-dispersible products such as wet wipes.

This performance measure indicates the effectiveness of the network; whether it has been adequately designed and is being operated in a way that minimises harm to the community and receiving environment.

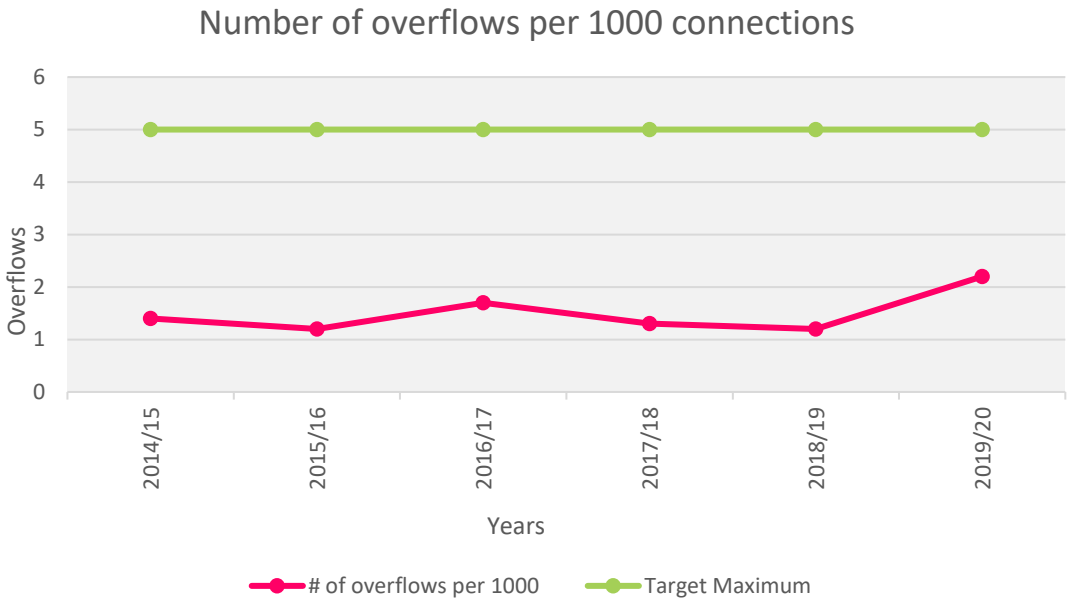


Figure 5: Number of dry weather overflows expressed per 1000 connections

Figure 5 above illustrates that our performance over the last six years (since the measure was introduced in 2015) is consistently tracking under the target rate and staff intend to maintain the target at less than five overflows per annum.

5.3.4 Percentage of customers satisfied with the wastewater service meets our targets

Figure 6 shows customer satisfaction trends over the last nine years. The graph illustrates that the Council have consistently maintained very good results as measured by the annual resident's survey.

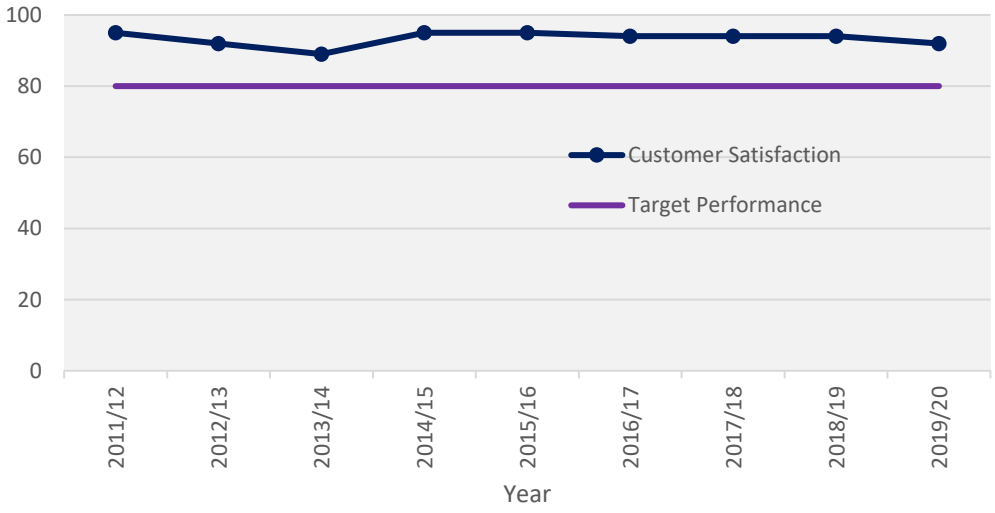


Figure 6: Customer satisfaction over time

Figure 6 above shows that 92% of customer who receive a wastewater service are either very or fairly satisfied. The Council consistently achieve very good results according to this performance measure, the Council will maintain the target of 80% satisfaction.

5.3.5 Attendance time frames for overflows resulting from a blockage or other fault in the wastewater system

Attendance and resolution timeframes are a Department of Internal Affairs mandatory measure. Historically, capturing these timeframes has been problematic to report because of software limitations. A system to record attendance and resolution times was implemented in 2016/17 and we started to report on a full set of data for 2017/18, however, flaws were identified where we could not extract meaningful data. This has since been remedied and in 2020 we able to report on this measure

Attendance time1 (median)	≤60 mins	59 mins	The median attendance time was just within the targeted 60 minutes.
Resolution time2 (median)	≤9 hours	4 hours	The overflow resolution result was significantly better than the target.

We expect data for response times for calls received within office hours to be reliable. We expect data for response times for calls received outside of office hours to be less reliable and we plan to refine the data collection process to improve data reliability.

To assist data improvements, the Council staff are providing a monthly feedback reports to the maintenance contractor to highlight any missing or incomplete information, so they can address data entry issues. Furthermore, staff are also developing a new interface for Call Care (out of hours customer service) so that call centre staff can enter enquiries directly into the asset management system (Confirm) and assign the correct start time.

5.3.6 All pump stations have standby pumps in case of mechanical failures

For the past six years, since this measure was introduced, all pump stations have had standby pumps on hand in case of mechanical failure. The Council will continue to maintain the target at 100%. Details of the individual pumps are provided in the asset register and further information of specific pumps are available in ActiveManuals™.

1 Attendance time – from the time Council receives notification to the time that service personnel reach the site.
2 Resolution time – from the time Council receives notification to the time that the service personnel confirm resolution of the blockage or other fault.

5.3.7 Our pump stations have storage or standby electrical generation in case of power failure.

This performance measure provides an indication of network resilience in the event of a power failure and is directly related to a key issue mentioned in section 3.5. In the past, the Council have not achieved the performance target of 50% emergency storage or standby electrical generation, as shown in Figure 7~~Figure 7~~. The Council intend to increase the level of service by lifting the future performance target and investing $2.7 million in a network resilience improvements programme, this includes:

- $1 million pump station and storage upgrades over the next six years in Mapua.
- $1.3 million of storage tanks installed at key sites across district over the five years.
- $370,000 for site dedicated and new mobile generators over the next 13 years.

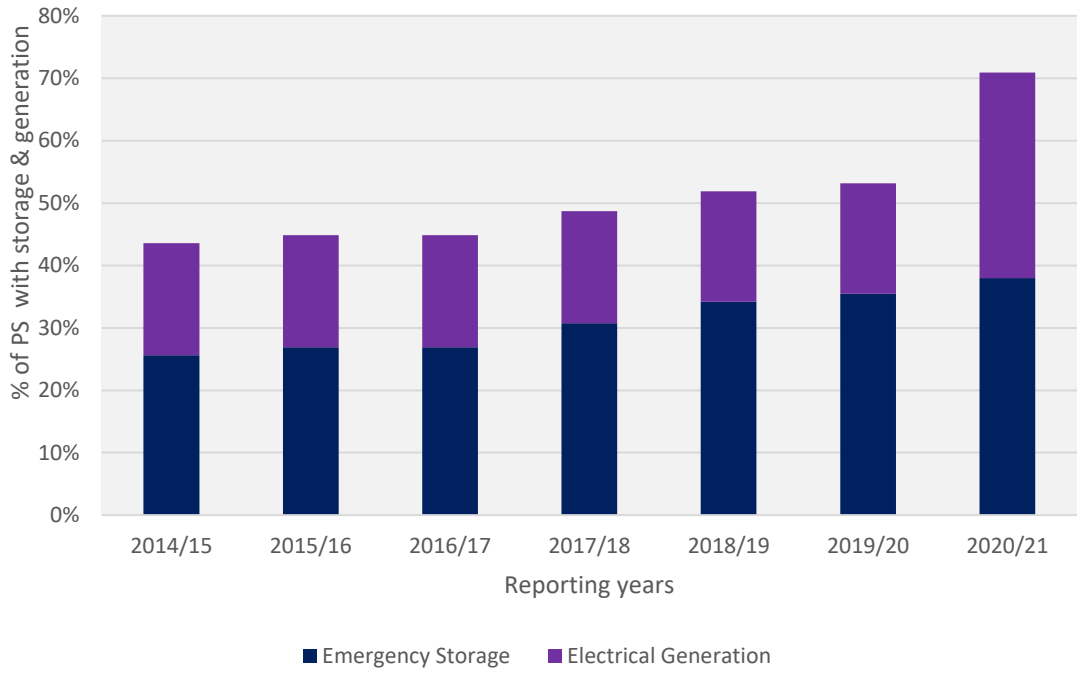


Figure 7: Pump station resilience (as measured by storage and generation)

6 Our Partners, Customers and Stakeholders

The Council engages and consults with iwi partners, customers, and stakeholders to gain an understanding of their needs, expectations and preferences. This enables the Council to provide outcomes that better meet the community's needs.

6.1 Iwi Partners

Māori are tangata whenua of Aotearoa / New Zealand. They have a long and rich association with Te Tauihu o te Waka-a-Māui (Te Tauihu) / the Top of the South Island. There are eight iwi that whakapapa and have Statutory Acknowledgements to places within Te Tauihu and Tasman District. They are represented by the following post settlement governance entities:

- Ngāti Apa ki te Rā Tō
- Ngāti Koata Trust
- Te Rūnanga o Ngāti Kuia Trust
- Te Rūnanga a Rangitāne O Wairau
- Te Rūnanga o Ngāti Rārua
- Ngāti Tama ki te Waipounamu Trust
- Te Ātiawa o te Waka-a-Māui
- Te Rūnanga o Toa Rangatira

Tasman District also covers the northern-western part of the Ngāi Tahu takiwā (tribal area/territory). Murchison is within the Ngāi Tahu takiwā and Ngāti Waewae are the Papatipu Rūnanga on this northwestern side.

Each iwi has their own unique history and association with places across Tasman District. These areas are not easily defined and do not match or stay entirely within the boundaries of Tasman District.

The Council expect iwi / Māori to have a strong interest in the planning and delivery of the following projects:

- Motueka Wastewater Strategy
- New Rising Main Motueka West to WWTP

The Council staff aim to engage with iwi / Māori on matters that are of interest and importance to them. For the above projects, extra care will be taken to consider and apply the principles of the Tiriti o Waitangi / Treaty of Waitangi. The Council acknowledge that it is important to agree the appropriate level of engagement with iwi / Māori at the outset of a project. This may range from informing through to opportunities for co-governance.

More information about iwi of Te Tauihu can be found on the Council's website at https://www.tasman.govt.nz/my-region/iwi/ and their own websites and social media channels.

6.2 Stakeholders

There are many individuals and organisations that have an interest in the management and / or operation of the Council's assets and services. The Council has a Significance and Engagement Policy which is designed to guide the expectations of the relationship between the Council and the Tasman community. The Council has made a promise to seek out opportunities to ensure the communities and people it represents and provides services to have the opportunity to:

- Be fully informed
- Provide reasonable time for those participating to come to a view
- Listen to what they have to say with an open mind
- Acknowledge what we have been told; and
- Inform contributors how their input influenced the decision the Council made or is contemplating.

Engagement or consultation:

- Is about providing more than information or meeting a legal requirement
- Aids decision making
- Is about reaching a common understanding of issues
- Is about the quality of contact not the amount; and
- Is an opportunity for a fully informed community to contribute to decision-making.

The key stakeholders the Council consults with about the wastewater activity are:

- Elected members (Community Board members)
- Regulatory (consent compliance, Public Health)
- Fisheries organisations
- Public Health Service (Nelson-Marlborough District Health Board)
- Heritage New Zealand
- Civil Contractors New Zealand (Nelson - Marlborough)
- Service providers / suppliers (Network Tasman, power companies)
- Affected or interested parties (when applying for resource consents); and
- Neighbours.

6.3 Consultation

6.3.1 Purpose of Consultation and Types of Consultation

The Council consults with the public to gain an understanding of customer expectations and preferences. This enables the Council to provide a level of service that better meets the community's needs.

The Council's knowledge of customer expectations and preferences is based on:

- Feedback from residents surveys
- Other customer/user surveys, such as Yardstick visitor measures
- Levels of service consultation on specific issues
- Feedback from staff customer contact
- Ongoing staff liaison with community organisations, user groups and individuals
- Public meetings
- Feedback from elected members, advisory groups and working parties
- Analysis of customer service requests and complaints
- Consultation via the Annual Plan and Long Term Plan processes.

The Council commissions residents surveys on a regular basis to assess the levels of satisfaction with key services, including provision of community facilities, and the willingness across the community to pay to improve services. Other informal consultation is undertaken with community and stakeholder groups on an issue by issue basis, as required.

6.3.2 Consultation Outcomes

The most recent survey was undertaken in May 2020. This asked whether residents were satisfied with the wastewater system and included residents that had a Council service and some that were not on a Council service. The results from this survey are discussed in section 5.3.4.

7 Current and Future Demand

The ability to predict future demand for services enables the Council to plan ahead and identify the best way of meeting that demand. That may be through a combination of demand management and investing in improvements. This section provides and overview of key drivers of demand and what demand management measures the Council has planned to implement.

7.1 Demand Drivers

Key factors driving demand for wastewater include:

- Residential use
- Industrial and commercial trade waste use
- Demographic changes
- Inflow and infiltration
- Climate change
- Customer expectations; and
- Political factors.

7.1.1 Residential Use

There is an increasing demand for wastewater services in some urban settlements and this is primarily driven by population growth. High population growth and residential development in Richmond, Brightwater, Wakefield, Motueka and Mapua/Ruby Bay has taken up significant capacity in the wastewater networks. Recently, the Council have approved several special housing areas. This will mean there will be some high-density housing areas on small lots (e.g. Richmond West). The Council is also proposing to change planning rules to encourage medium density housing in Richmond, close to the town center. New connections to some networks are not being permitted if they are not within a residential zone.

7.1.2 Commercial and Industrial Use

There is demand for new commercial wastewater connections associated with growing urban settlements.

There has been a reduction in projected commercial demand in Richmond West due to a plan change to incorporate a Special Housing Area. The Special Housing Area has gone in an area that was originally zoned for mixed business.

7.1.3 Industrial/Commercial Trade Waste Use

Generally, the industry type will determine the composition and amount of the trade waste that enters the network. Some of the major industries in the District are serviced by their own on-site treatment facilities (e.g., Fonterra at Takaka and Brightwater) or discharge direct to the NRSBU network (e.g. Nelson Pine Industries at Richmond). All industries connected to the Council's networks are subject to the Wastewater Bylaw, which came into effect on 1 July 2015. There is not expected to be any significant change in industrial demand on the wastewater system, although trade waste is now actively managed. Trade waste charges are due to significantly increase commencing July 2018 and again the following year (2019). All conditional trade waste dischargers have been advised.

7.1.4 Demographic Changes

Demographic changes will impact the demand for wastewater services. More people will create more wastewater. Also the predicted increase in the older portion of the populations will likely create the need for more single household units, which will have a higher per capita water consumption losing economies of scale and increasing wastewater discharge volumes. The key demographic assumptions affecting future growth are:

- Ongoing population growth over the next 30 years with the rate of growth slowing over time. The overall population of Tasman is expected to increase by ~~4,420~~ 7,700 residents between 2021 and 2031, to reach ~~64,300~~55,~~690~~.
- Higher growth in Richmond, Motueka, Mapua, Brightwater, and Wakefield for 20~~18~~21-20~~28~~31. For 20~~18~~21-20~~208~~31, the Council has used Statistics New Zealand's high growth projections for Richmond, Brightwater, Wakefield, Motueka, and Mapua/Ruby Bay, and medium growth projections for the rest of the District. Medium growth projections have been used for the whole District for 2028-2048.
- An ageing population, with population increases in residents aged 65 years and over. The median age of the Tasman District population is projected to increase from 44 years in 2013 to 54 years by 2043. The proportion of the population aged 65 years and over is expected to increase from 18% in 2013 to 37% by 2043.
- A decline in average household size, mainly due to the ageing population with an increasing number of people at older ages who are more likely to live in one or two person households.

7.1.5 Inflow and infiltration

Inflow and infiltration increases the demand for wastewater services and consumes network capacity causing network overloading during very heavy rainfall events. There have been instances of poor compliance with the building code requirements which has contributed to increases in inflow and infiltration from relatively new (less than 10 year old) subdivisions. The Utilities Team is targeting new subdivisions as part of its inflow and infiltration investigations and is working with drain layers and the Council's Building Services to improve compliance with the building code.

7.1.6 Climate change

Climate change is likely to exacerbate the impact of inflow and infiltration as a consequence of predicted increase in frequency and intensity of rainfall events. Sea level rise and the associated groundwater level rise is also likely to impact on inflow and infiltration. As a result some reticulated areas may be abandoned or manholes and pump station chambers raised above inundation levels. Several pump stations, pipelines and associated infrastructure are located in areas already subject to coastal erosion. These assets may need to be protected or relocated as necessary.

7.1.7 Tourism

Tasman District is a popular tourist destination and international and domestic tourist numbers are increasing over time. As a result, there has been a trend of increased seasonal demand for wastewater services in many coastal settlements due to an influx of visitors staying in baches, motels and campgrounds; in particular Pohara to Tata Beach, Kaiteriteri, Collingwood and St Arnaud. Murchison also experiences an increased demand for wastewater services in summer because of the increased visitors passing through on route to other South Island destinations. However the effects of COVID-19 have changed the shape and face of tourists in our area, and we will not know the effect of the pandemic on tourism until later in 2021.

7.1.8 Customer Expectation

Customers' expectations are changing over time. There is increasing awareness and support for environmental protection. As a result, customers and the wider public are less tolerant of wastewater overflows and expect higher treatment standards. Customers are also less tolerant of wastewater infrastructure (such as pump stations) being in close proximity to their private properties and want them moved or disguised.

7.1.9 Political Factors

Local and Central Government initiatives such as the Emissions Trading Scheme, Carbon Neutral Public Service programme and New Zealand's commitment to the Kyoto Protocol are driving the requirement to report on, manage and reduce emissions in relation to wastewater treatment plants. The Council acknowledges that WWTPs are energy intensive and contribute to the production of greenhouse gasses. The Council is open to exploring opportunities to improve energy efficiencies and make processes and facilities more resilient and this is a key consideration in the design of all new wastewater infrastructure. We are planning to spend $25,000 per annum in operational budgets to investigate energy efficiency initiatives and $25,000 per annum in the capital budgets for installing energy efficiency devices such as solar PV array on wastewater assets.

7.2 Assessing Demand

7.2.1 Current Demand

There are various methods for assessing current demand, the primary methods used to asses and analyse demand are:

- Theoretical assessment based on the number of connections with peak flows assumed to be six times the average dry weather flow (ADWF)
- Connection numbers are compared to the network flow meter readings and flow meters on large trade waste dischargers.

7.2.2 Future Demand

To identify the future wastewater demands, it is important that the current demands are accurately identified so that they can be used as a baseline for the future projections. The Council uses the following to determine future demand:

- The Council's Growth Supply Demand Model
- Population growth (Statistic New Zealand)
- Household dwelling growth derived from building consents numbers
- Research into growth expectation in industrial and commercial sectors
- Research into growth expectations in the rural
- Modelling that enables the Council to examine the potential effect of strategies on future demand

As a result of this projected growth, the Council has included following projects within the capital works programme:

Table 16: Capital Works Programme

AMP ID	Project Description
96028	Wakefield to 3 Brothers Corner Pipeline Upgrade
96029	Motueka Bridge to Motueka WWTP Rising Main Upgrade
96012	Aranui Road Pump Station Upgrade
96008	Higgs Road Pump Station Upgrade
96011	Ruby Bay Pump Station Upgrade and Storage
96007	New Stafford Dr Pump Station and Rising Main
96009	Toru Street Pump Station Upgrade and Storage
96013	New Rising Main Across Mapua Channel
96010	Aranui-Higgs Rd Pump Station Upgrade and Storage
96061	Upgrade of Mapua Rise Pump Station & Rising Main
96063	New Seaton Valley Road Pump Station & Rising Main
96064	New Rising Main Motueka West to WWTP
96015	New Brightwater North Pump Station & Rising Main
96058	Headingly Lane Pump Station & Rising Main Upgrade
96005	Ligar Bay Pump Station and Rising Main Upgrade
96006	Tata Beach Pump Station and Rising Main Upgrade
96022	Four Winds Pump Station and Rising Main Upgrade

7.2.2.1 New or Expanded Schemes

Projection for future growth in demand for wastewater schemes must take into account not only new developments but also existing residents from un-serviced areas connecting to the Council's services, especially where on-site systems are failing. The Council does not anticipate undertaking any new developments, instead the Council will work with developers to allow for future developments. The Council have not planned or budged for new reticulation and treatment infrastructure for areas like Marahau and Tasman, where there are known issues with onsite wastewater systems. These issues are dealt with the by the regulatory arm of the Council.

7.3 Demand Management

The objective of demand management (sometimes called non-asset solutions) is to actively seek to modify customer demands for services in order to:

- Optimise utilisation/performance of existing assets
- reduce or defer the need for new assets
- meet the Council's strategic objectives
- deliver a more sustainable service; and
- respond to customer needs

Prudent management includes managing water demand by best using the water that is already available. Water demand management involves the adoption of policies to control consumer demand or investment to achieve efficient water use by all members of the community.

7.3.1 The Council's Approach to Demand Management

7.3.1.1 Optimise telemetry to improve network management

By the end of 2017/18, the Council completed the installation of telemetry across all wastewater networks. This enables the Council to manage short-term capacity issues utilising existing emergency storage as buffering capacity during peak flow and significant rainfall events.

The Council use SCADA technology to send text message and email communication to notify large trade waste users that an impending storm event is expected. This signals the trade waste user to discharge waste into the network (at pre-agreed increased rate) allowing storage capacity to be freed up until the storm passes.

The Council is considering this approach as a short-term strategy to manage capacity issues at the Headingly Lane pump station until the pump station and rising main upgrade is completed. This is a not a sustainable management solution and is only used as short-term management measure.

7.3.1.2 Low pressure household storage

Where appropriate, the Council is requiring new houses in subdivisions on low-lying areas (and/or high groundwater) to install low pressure pumping units with 24-hour storage. The purpose of these systems is to prevent inflow and infiltration and allow discharge when gradients do not allow. An added advantage is storage capacity during rain events if required.

7.3.1.3 Trade waste load reduction and management

Although trade waste accounts for a small proportion of overall network load, it generates wastewater that has a high pollutant strength. There are two feasible mechanisms to manage demand, these include:

- Charging: setting the trade waste charges at an appropriate level to encourage waste minimisation and promote efficiencies. This also acts as an incentive for permit users to consider pre-treatment options.
- Conditions on trade waste permits: These conditions can include discharge limits and the requirement for flow buffering and wet weather storage. The Council liaise with permit holders and allow some flexibility in discharge rates before a significant weather event to maximize storage availability.

7.3.1.4 Inflow and infiltration control

The Council have planned an ongoing budget for an I/I Strategy and Programme and a complementary CCTV Inspections and Data Capture budget. These budgets will help identify problem areas, inform the location of repairs and develop the renewals programme. This should reduce current and future levels of I/I. The Council will also use section 459 of the LGA to target failing private laterals and illegal connections where I/I is an issue and free up capacity for customer demands.

7.3.2 Technological Changes

Technological change has the ability to impact the demand for a service. These changes can reduce or increase the demand for wastewater infrastructure. The Council assumes that the predicted technological changes will not have a significant effect on the assets in the medium-term. However, relevant considerations are:

- New or different treatment processes that provide a higher quality and more reliable discharge quality
- Better technology to measure flow and analyse system performance
- Better technology to rehabilitate pipelines (trenchless technology etc.)
- Improved IoT and telemetry technology for monitoring asset operation and performance
- Improved low flush/alternative toilet systems
- New water efficient industrial processes
- Demand for irrigation quality wastewater in water short areas.

8 Lifecycle Management

Lifecycle cost is the total cost to the Council of an asset throughout its life including, creation, operations and maintenance, renewal, and disposal. The Council aims to manage its assets in a way that optimises the balance of these costs. This section summarises how the Council plans to manage each part of the lifecycle for this activity.

8.1 Asset Condition and Performance

Asset condition surveys were completed on above ground assets in 2016/17 and the dataset is considered relatively complete. Default values have been assigned where there is still unknown condition data based on material, age and operational history and are generally condition Grade 3. This is clearly shown in Confirm. The overall asset condition of the Three Waters systems has been assessed as reasonable with most assets in condition Grade 3 or better.

Council's maintenance contractor undertakes asset condition assessments in accordance with the Three-Waters Operation and Maintenance, July 2018 as follows:

- Condition of all above ground assets is assessed every three years to confirm or otherwise determine their appropriate condition grading and update asset management systems as required.
- Assessing the condition of below ground assets is difficult due to the cost of excavating and the risk of introducing a contamination risk. Condition data will be progressively captured as part of the contractor's day-to-day operation and maintenance when excavation of buried assets occurs.
- Condition assessment for 33% of all manholes has been completed with the balance to be completed over the next two years.
- All new assets (less than six months old) and all assets with a condition grading of one or two are managed and maintained to at least condition Grade 2 or better.
- All other existing assets are managed and maintained to at least condition Grade 3 or better.

Council undertakes periodic sample audits of the condition assessments data provided by the contractor.

The following sections provide a high-level overview about the condition and performance of the water supply networks. Further details about specific assets is captured in Confirm and ActiveManuals™.

~~The Council needs to understand the condition of its assets as this helps inform renewal and upgrading decisions which feed into the Long Term Plan. Condition monitoring programmes consider how critical an asset is, how quickly it is likely to deteriorate, and the cost of data collection.~~

~~Above ground assets include items and equipment within pump stations and wastewater treatment plants that can be accessed or inspected without the need for digging. Below ground assets include pipelines, manholes and underground valves.~~

~~Currently, the Council has poor information on the condition of below ground assets and no formal process for gathering this data. Current practice is to assign wastewater assets a default grade of two unless the asset is less than five years old. Assets less than 5 years old have been assigned a grade of one. As new condition information is made available the gradings are amended.~~

~~Under the Three Waters Operation and Maintenance Contract which commenced 1 July 2018, improving knowledge of asset condition is a key objective. The contractor will:~~

- ~~Undertake condition assessments of all above ground assets to confirm or otherwise determine their appropriate condition grading every two years~~
- ~~Undertake condition assessments of all manholes within three years (33% per annum)~~
- ~~Manage and maintain all new assets (less than six months old) and all assets with a condition grading of one or two to at least condition grade two or better~~
- ~~Manage all other existing assets to at least condition grade three or better.~~

~~In the event of an asset failure, the contractor will assess the mode of failure and condition of the remaining asset (unaffected by the failure) and condition grading will be amended accordingly.~~

~~The Council will also undertake random audits of the condition data provided by the Contractor.~~

~~Once critical assets are defined, these will be assessed for condition, especially those assets which are approaching the end of their theoretical useful life. We are also looking at ways to make better use of current information that is gathered but not stored in the asset register.~~

~~Condition rating of gravity sewer pipes is conducted using CCTV surveys. The Council plans to incorporate this data into Confirm. Pipes have been rated both on structural (condition) and service (performance) defects basis. Sewer rising mains (pressure pipes) condition and performance have not been rated but will have a break record and some will have performance information recorded.~~

Where condition rating is done, a one-five scale is used, as per the NZQQA Infrastructure Asset Grading Guidelines, as shown in Table 17~~Table 17~~

Table 17: Asset Condition Rating Table

Condition Grade and Meaning	General Meaning
1 Very Good	Life: 10+ years. Physical: Fit for purpose. Robust and modern design. Access: Easy; easy lift manhole lids, clear access roads. Security: Sound structure with modern locks. Exposure: Fully protected from elements or providing full protection.
2 Good	Life: Review in 5 – 10 years. Physical: Fit for purpose. Early signs of corrosion/wear. Robust, but not latest design. Access: Awkward; heavy/corroded lids, overgrown with vegetation. Security: Sound structure with locks. Exposure: Adequate protection from elements or providing adequate protection.

Condition Grade and Meaning	General Meaning
3 Moderate	Life: Review in 5 years. Physical: Potentially impaired by corrosion/wear, old design or poor implementation. Access: Difficult: requires special tools or more than one person. Secure: Locked but structure not secure, or secure structure with no locks. Exposure: Showing signs of wear that could lead to exposure.
4 Poor	Life: Almost at failure, needs immediate expert review. Physical: Heavy corrosion impairing use. Obvious signs of potential failure. Access: Restricted, potentially dangerous. Secure: Locks and/or structure easily breeched. Exposure: Exposure to elements evident e.g. leaks, over heating.
5 Very Poor	Life: 0 years – broken. Physical: Obvious impairments to use. Heavy wear/corrosion. Outdated/flawed design/build. Access: Severely limited or dangerous. Security: No locks or easily breeched. Exposure: Exposed to elements when not specifically designed to be.

The following sections provide summary overview of each of the wastewater networks general condition.

8.1.1 Collingwood

Although no formal assessment of the reticulation condition has been undertaken, the Collingwood wastewater network performs adequately and is considered fit for purpose as there are limited blockages and failures. Both Wally's Rest and Motel Pump Stations are in good condition. Inflow and infiltration can be an issue during heavy rainfall events and the WWTP reaches its hydraulic capacity at least once a year and the consequence is short lived. Inflow and infiltration will be addressed in 2021. An inflow and infiltration survey was completed in late 2020. Any issues relating to Private drainage will be acted upon immediately. Issues identified with the Council's reticulation will be ranked and scheduled for repair/ replacement as part of the capital works renewals programme.

8.1.2 Mapua/Ruby Bay

The trunk main has been replaced from the Taits Pumping station to the Mapua Wharf Pumping station to cater for growth. The existing 102 Aranui and Aranui/Higgs pumping stations along the route have been upgraded and now injection into the new trunk main. The advantage of this change is better control of odour, additional capacity in the gravity sections of the reticulation and storage at each of the stations. The pumping main downstream from the Ruby Bay Pumping station has also been upgraded. The gravity network suffers from high wet weather flows due to inflow and infiltration problems. Due to budget constraints, Taits and Ruby Bay Pumping stations have not been fully upgraded and have no emergency storage.

8.1.3 Motueka, Riwaka, Kaiteriteri Network

8.1.3.1 Motueka

Reticulation

Overloading of the reticulation due to very low lying land, stormwater and groundwater infiltration has been a regular occurrence resulting in some pump stations running 24 hours a day for several days and high flows for weeks or months. The Asbestos Cement trunk main between Goodman Park pump station and the WWTP is very shallow but is assumed to be in a reasonable condition as it has no history of breakage. Inspections of two sections cut from the rising Mani confirm the pipe condition is good. Flow through the pipe is controlled by variable speed drives so flow and pressures spikes are minimised.

Much of the gravity system is laid at very flat grades which results in increased to blockages. There are also many areas where gully traps and manholes on private property are lower than pump station overflow heights, so if blockages or power failures do occur, overflows can occur on private property. A large proportion of the reticulation has undergone CCTV inspection which has resulted in numerous repairs, gravel removal and renewal of damaged or substandard pipe work. Much of the reticulation is very old (50 years +) and generally the older concrete pipes are in the worst condition through degradation of the pipe material. The earthenware pipes also suffer from significant groundwater infiltration, but this appears to be due more to the degradation of the joints rather than the pipe material itself. Subsequent property connections to these earthenware and concrete pipes were poorly constructed. A lot of the infiltration is believed to be generated from the laterals both the section owned by the Council and the private section.

There are various issues with pump stations. The main issue is lack of emergency storage to manage, planned and unplanned power outages and pump blockages (due to inappropriate material). There are also some issues with corrosion of pipe work and odour. Also 2 pumping stations are located on private property (13 Trewavas Street and 217 Thorp Street) which constrains upgrading.

Treatment and Disposal

The wastewater treatment plant was upgraded in 2015 and complies with most resource consent conditions (currently non-compliant for Total Nitrogen and Ammonia-N discharge concentration). Peak loadings at the WWTP occur in summer due to the large increase in holiday population, particularly in Kaiteriteri. While in the past this has led to overloading and nuisance odour affecting neighboring residents, usually between Christmas and mid-January, the upgrades and dosing at Kaiteriteri have significantly reduced these problems. Trade waste is discharged into the wastewater network. There is are a number of smaller dischargers as well as possibly some unidentified dischargers. Trade waste discharges have the potential to add to the seasonal high loadings and careful management is required to prevent overloading of the treatment system, recovery from which adds significant additional costs. The oxidation pond needs frequent de-sludging.

8.1.3.2 Riwaka

There are few blockages of the gravity network although it's condition is unknown. It is affected by inflow and infiltration and several repairs have been made that have reduced the groundwater infiltration significantly. School Road pump station suffers from a build-up of unidentified solids and requires regular wash down. There is no emergency storage at any pumping stations and tinkering is required during heavy rainfall. Riwaka is low lying with poor stormwater systems like Motueka.

Generally, Riwaka reticulation performs moderately well with limited blockages and failures. Although the system capacity of Riwaka is sufficient to prevent overflows, the pumping hours are considered high for the population served. This indicates that infiltration is occurring. The School Road pump station often requires a wash down due to a build-up of unidentifiable solids within the pumping station.

8.1.3.3 Kaiteriteri

Although no formal assessment of the reticulation condition has been undertaken, the Kaiteriteri part of the network performs adequately with limited blockages and failures. Although the infrastructure in Kaiteriteri is approximately 20 years old and condition problems are not expected, inflow during storm events is apparent.

The reticulation network within the settlement was designed in 1987 to cope with a fully developed network as per the current zoning so has no capacity issues. The trunk main between the Kaiteriteri Vessel and Goodall Road has been upgraded to allow growth within the current zoning. This leaves two sections of older pipe to be upgraded. Both sections are on private property, one in Riwaka and the other between the Motueka River (SH60) bridge and the WWTP.

The Little Kaiteriteri pump station is susceptible to inundation from the adjacent wetland during heavy rainfall events coinciding with high tides.

The Kaiteriteri system is reliant on telemetry to operate. The vessel has an operational volume of around 2m3 with minimal storage.

Because of the long distance from Kaiteriteri to the Motueka WWTP, the wastewater in the pipeline goes septic. This causes odours at the WWTP in summer as hydrogen sulphide gas is released at the inlet at the WWTP. This is exacerbated with the increase in population with flows increasing from 100 to 600+ m³ /day. Dosing of magnesium oxide at the Vessel from December to the end of February each year assists with minimising odours released at the WWTP,as does the new fully enclosed inlet at the WWTP.Because of the long distance from Kaiteriteri to the Motueka WWTP, the wastewater in the pipeline goes septic. This causes odours at the WWTP as hydrogen sulphide gas is released at the inlet in the WWTP. This is exacerbated in summer with the increase in population and flows increasing from 100 to 600+ m³ /day. Dosing of magnesium oxide (MagOx) at the vessel from December to the end of February each year assists with minimising odours released at the WWTP.

8.1.4 Murchison

Generally, the reticulation in Murchison performs adequately with limited blockages and failures. Asset condition information is relatively accurate. The reticulation network was constructed with cleaning eyes on bends in pipe work rather than manholes. Sometimes, this causes maintenance difficulties trying to investigate and clear blockages. Cleaning eyes are replaced with manholes as necessary. Improvements to stormwater drains have since helped mitigate the inflow issue during heavy rain. The WWTP was upgraded in 2006 and works well.

8.1.5 St Arnaud

The original wastewater network is nearly 22 years old (1999) it is in a good condition and performs well with limited blockages and failures. As the scheme is so young, the accuracy of asset information is very good. The WWTP meets all consent conditions. The deep water table means that there is unlikely to be any impact on the groundwater from the treated wastewater discharge.

8.1.6 Takaka, Pohara, Ligar Bay/Tata Beach Network

The wastewater pumping network from Pohara to Takaka WWTP preforms very well, although odour can be a problem around Delaneys pumping station in summer. The system has inherent operational difficulties with odour and septicity given the large distances to transfer wastewater and the relatively small population.

Dosing of magnesium oxide (Acti Mag) at the Tata Beach, Tarakohe Pumping stations occurs from December to the end of February each year assists with minimising odours issues.

Reticulation in the settlements of Pohara, Ligar Bay and Tata Beach was installed in the mid-1990s. The Pohara Valley pump stations was replaced in 2019/20 as the old Pumping station was severely corroded. Until the pumping main from Tarakohe to 4 winds is installed, capacity issues down-stream of the Pohara Camp pumping station could still lead to occasional overflows during wet weather. The gravity main between Nyhane Drive in Ligar Bay and the pumping station is very flat. Sand and fat accumulates in the line. A sand / grit trap has been installed and needs to be regularly cleaned out.

8.1.7 Takaka

Original sections of the Takaka wastewater network constructed in the early 1980s and some sections of the gravity reticulation were poorly laid with areas where grades are flat resulting in blockage problems. Access into the reticulation is poor due to a high number of cleaning eyes rather than manholes. This is an issue when trying to CCTV pipeline.

Pump station and rising main upgrades have resulted in a significant reduction in overflows due to heavy rain. However, this led to increased flows at the treatment plant, which has also been upgraded to cope with current and future flows. The ponds at the WWTP need more frequent desludging as a consequence of the up-grade lead to capacity issues.

8.1.8 Tapawera

Original parts of the Tapawera reticulation network were constructed in the 1970s. Although no formal assessment of the reticulation condition has been undertaken, it appears to be in good condition and performs well. There are no known specific concerns regarding the condition of these assets and there are very few blockages or other issues reported by residents. The aerial section of gravity reticulation along Tadmor Valley road is being replaced under-ground within the road corridor.

Because of the flat grades along Main Road Tapawera, the gravity main requires regular flushing to reduce the risk of blockages. The accuracy of the asset location data in Tapawera is very good. Monitoring of the groundwater downstream of the WWTP has shown little or no impact on the groundwater to date. The Tapawera WWTP was upgraded in 2009 and monitoring of the treatment process has shown good performance.

8.1.9 Upper Takaka

A significant part of the wastewater reticulation in Upper Takaka has been replaced, which has significantly reduced the impact of inflow and infiltration. At the WWTP the wetland area needs to be kept free of weeds and the soakage area mown by hand mower or weed eater. The scheme operates well.

8.1.10 Waimea: Wakefield, Brightwater, Richmond/Hope

Wakefield/Brightwater

Wakefield and Brightwater were originally reticulated in the late 1970s however, most development occurred the late 1980s. Although no formal assessment of the reticulation condition has been undertaken there are no concerns regarding the condition of these assets. Inspections by the Council staff, maintenance contractors and consultants have not identified any notable defects.

Most of the reticulation network is uPVC pipe and infiltration through pipe joints is not a significant problem. Currently there is no way to hold back the significant gravity flows from Wakefield from discharging into the Brightwater main pump station. There is insufficient storage capacity at the Brightwater main pump station and there is no safe way to undertake maintenance work within the wet well. Investigation work is underway looking at options to re-route the Wakefield gravity flows around Brightwater. This work would reduce the flows to the Brightwater main pumping station, providing additional capacity for growth in Brightwater.

8.1.11 Richmond/Hope

The original reticulation installed during the 1950s is in poor condition. Generally, the concrete pipes from the original network located in the low coastal areas are in the worst condition through pipe material degradation. The original earthenware pipes also suffer significant infiltration, but this appears to be due more to the degradation of the joints rather than the pipe material itself. Much of the remaining reticulation in Richmond and Hope is less than 30 years old due to the significant development of Richmond between the late 1980s to present day. This reticulation is in much better condition and performs adequately. However, recent inflow and infiltration investigations have found significant sources from homes constructed in the last 10 years attributed to poor installation of private pipe work.

8.2 Operations and Maintenance

8.2.1 Key Maintenance and Operational Themes

Pump Blockages

Typical maintenance activities involves responding to pump blockages, these are generally caused by inappropriate material (including excess debris fats oils and grease and raggage includes wet wipes) being disposed of into the wastewater network. Wet wipes are becoming a particular problem in some networks and low pressures pump systems. The Council tries to take an education approach to advise the public to only 'Flush the 3 P's'.

8.2.2 Rising Main Breaks

Routine maintenance issues associated with rising main breaks are typically caused from poor construction techniques such as:

- Poor design and construction techniques and supervision
- Inappropriate choice of material surrounding pipe
- Inappropriate or low grade/class of construction pipe material

8.2.3 General Blockages

General blockages in the gravity section of the wastewater reticulation are usually caused from inappropriate material being disposed of into wastewater network (e.g. rags and fat). Blockages also occur when tree roots enter either reticulation or the manhole. Occasionally there are blockages due to illegal disposals.

Electrical Failure components (e.g. variable speed drives, ultra-sonic, level transducer) typically have a short life span and as such these assets need to be replaced more frequently than other assets. Power surges caused by lightning strikes and power outages associated with storm events can cause failure to electrical assets.

8.2.4 Inflow and infiltration

We monitor wastewater volumes using flowmeters and ultra-sonic transducers and assess the catchment to determine whether flows are normal. If inflow or infiltration is suspected then field investigation are undertaken. Investiagtions can include:

- Visual inspections
- Visual inspection during wet weather on private and public assets
- CCTV of public assets
- DTS; and
- Smoke testing

8.2.5 Operations and Maintenance Contract

The operation and maintenance of the wastewater networks has been incorporated into a performance-based contract. The current maintenance contract was awarded to Downer New Zealand Ltd in 2007 and extended in 2013. the Council extended it again through to mid 2018 to allow for the procurement of a new contract.

The key outcomes of the new contract include:

- A high degree of reliability of all services, systems, network and supply
- Best value to the ratepayer
- Consistently meeting regulatory requirements – no breaches of resource consents
- High levels of customer satisfaction
- Assets sustainably maintained to meet asset condition ratings
- Innovations introduced that add value
- Accurate and timely reporting to meet statutory requirements and contract targets
- Up-to-date and accurate asset information.

8.2.6 Maintenance Strategies

There are different types of maintenance strategies and approaches for the wastewater activity. The two major maintenance categories include routine and reactive work. Typically, reactive work includes responding to day-to-day asset failures. Examples of this type of work includes rising main breaks, pump blockages and electrical failure etc. Generally, routine work is more proactive in nature and include activities outlined in

Table 18

~~Table 18~~ below.

Table 18: Summary of routine maintenance activities

Maintenance Activity	Description
Pre summer maintenance	The Council plan pre-summer maintenance scheduled for October-November for critical assets including: • Inlet screens at Motueka WWTP; • H_2S sensing equipment; • Odour equipment (carbon and bark filters are replaced Dosing systems are overhauled); and • DO sensors are calibrated.

Maintenance Activity	Description
Annual maintenance	• The Council conduct proactive maintenance such as regular flushing of some gravity mains (e.g. Motueka, Tapawera and Takaka) as a preventative measure to reduce the risk of blockages; and • Pump servicing.
Weather event maintenance	When a storm event is expected, precautionary maintenance activities are undertaken to reduce the effect of inflow and infiltration (e.g. the gravel trap at Beach Road Pump Station is cleaned out). • Motueka WWTP pond level is lowered to accommodate storm inflows into the plant; • Monitor Pumping station levels and flows; • Post weather event clean out of grit traps located within the reticulation; and • Post weather event review of the pumping stations "Programming Logic".

8.2.7 Forecast Operations and Maintenance Expenditure

The 10-year forecasts for operations and maintenance costs are shown in Figure 8 below. This includes the operation and maintenance cost of all wastewater networks. For detailed breakdown forecast operations and maintenance expenditure, see Appendix A.

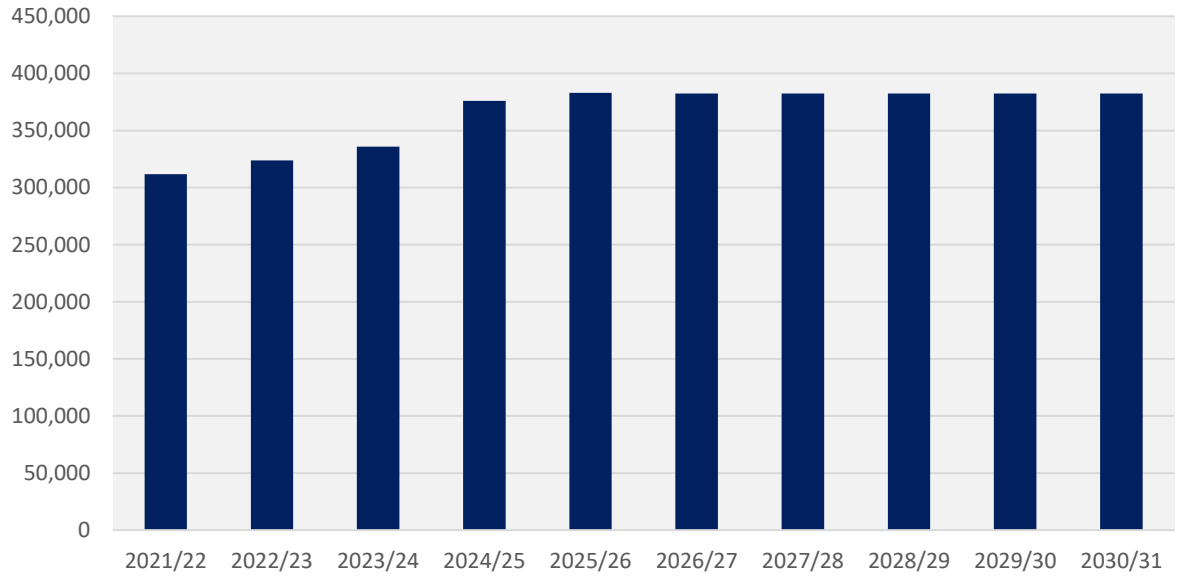


Figure 8: 2021– 2051 Direct Operation and Maintenance Expenditure Excluding Inflation

8.3 Asset Renewal/Replacement

Renewal expenditure is major work that does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. Work over and above restoring an asset to original capacity is new works expenditure.

8.3.1 Key Renewal Themes

Asset age, condition and performance

Asset age is the primary consideration for determining asset end of life cycles and driving the renewals programme. Other factors such as asset condition and performance are also considered when attempting to strike the optimal balance between maximising asset life (increased maintenance costs over time) and investment in replacing asset.

Historically, asset condition data has been poor, particularly for below ground assets. The Council is planning to improve the process of collating and populating condition data into the asset management system (Confirm). When routine pipe maintenance is done, the contractor has the opportunity to inspect the asset and provide condition data. This information combined with staff and operator knowledge can provide better information about assets. Condition data can also be gathered through CCTV inspection and will help inform the renewals and I/I programme. Sometimes growth drivers added an element of pressure to the renewals programme.

8.3.2 Inflow and Infiltration

Over time the renewals programme will address inflow and infiltration issues as aging and broken pipes will be replaced. This will be help address known issues in Motueka and Richmond.

8.3.3 Renewal Strategies

Renewal planning involves determining when renewal is the most appropriate intervention.

Assets are considered for renewal when:

- They near the end of their effective useful life
- The cost of maintenance becomes uneconomical and the whole-of-life costs are less to renew the asset than keep up maintenance
- The risk of failure of critical assets is unacceptable.

The renewal programme has generally been developed by the following:

- Taking asset age and remaining life predictions, calculating when the remaining life expires and converting that into a programme of replacements based on valuation replacement costs
- Reviewing and justifying the renewals forecasts using the accumulated knowledge and experience of asset operations and asset management staff. This incorporates the knowledge gained from tracking asset failures and performance through the asset management system
- The renewal programme is reviewed in detail every three years, by planning advisors, asset engineers and engineering management; and crossed referenced with other activities to determine if other projects are occurring in the same location. Timings may be tweaked to optimise overall programme to minimise disruptions to the public and realise potential costs saving in the reinstatement and preliminary and general works where possible
- Every year the annual renewal programme is reviewed and planned with the input of the maintenance contractor.

8.3.4 Management and Mitigation of Renewals

To improve the information base for the renewals strategy and replacement programme, the Council needs to focus on the following improvements:

- Updating the wastewater asset valuation
- Ensuring the operations and maintence contractor captures all data relating to the break (e.g. location , cause of failure, pipe material, etc.)
- Using complete data in Confirm;
- Critically assessing remaining life of pipelines with known condition problems – especially in the light of the increasing database of CCTV imagery
- Capturing asset data to reduce the amount of pipelines that have "Unknown" construction material;
- Using a risk-based approach to identify pipeline replacement programmes
- Improving condition knowledge of some of the "high risk" pipelines, especially to identify:
    - Asset condition may be worse than expected
    - Situations where remaining life is under-estimated

Some of the particular areas where the Council needs to improve their knowledge include:

- Inspecting the AC and earthenware pipelines in Richmond to assess remaining life and whether the pipelines will reliably provide 60 years of service life
- Inspecting the pre-1960 concrete pipelines in Richmond to assess remaining life and whether the pipelines will reliably provide another 30 or so years of service life
- Reflecting on the outcomes of CCTV inspections in Motueka and associated replacement and rehabilitation work that has been done, and determine the preferred ongoing strategy for replacing or renewing pipelines
- Inspecting the AC in Tapawera to assess remaining life and whether the pipelines will reliably provide 60 years of service life
- Inspecting the PVC gravity pipelines in Takaka to assess remaining life and whether the pipelines will reliably provide 80 years of service life
- Review of the remaining life assessments where it is known replacements are planned – eg, Kaiteriteri to Motueka pressure main, Pohara rising mains.

8.3.5 Delivery of Renewals

Minor renewal projects are typically carried out by the operations and maintenance contractor. Contracts for larger value renewal projects are tendered in accordance with the Procurement Strategy. Prior to the asset being renewed, the operations and maintenance contractor will inspect these assets to confirm whether renewal is actually necessary. In the event it does not need to be renewed, a recommended date of renewal is then entered back into the Confirm database. This new date will then be included in the next AMP update.

A rolling programme of CCTV investigation is currently in place progressing through each network. The programme targets sections of main for investigation based on the age and known problems. Many of the advanced pipeline renewals planned for Motueka and Richmond have been deferred for three years pending the outcome of a structured renewal programme. Historically the pipeline renewals programme focused on renewing rising mains with a history of high breakage or gravity mains where overflows were common. Most of these issues have been resolved and now the focus needs to be on investigating the unseen problems in gravity systems where inflow and infiltration is prevalent. The new renewal programme will prioritise renewals based on the greatest benefit/value for money and will more accurately plan future funding needs.

8.3.6 Deferred Renewals

Deferred renewal is the shortfall in renewals required to maintain the service potential of the assets. This can include:

- Renewal work that is scheduled but not performed when it should have been, and which has been put off for a later date (this can often be due to cost and affordability reasons)
- An overall lack of investment in renewals that allows the asset to be consumed or run-down, causing increasing maintenance and replacement expenditure for future communities.

Figure 9 shows there is a notable difference between planned renewals and forecast depreciation over 30 years. This divergence is mainly due to the long useful life and age profile of the current assets. Most of the wastewater assets are not due for replacement within the next 30 years. As new assets are constructed, it will also contribute to the divergence between renewals and depreciation. The new assets contribute to higher depreciation but most don't need replacing within the next 30 years. While not shown here, we have compared the likely renewal requirements for 100 years with depreciation over the same time. This assessment shows that the gap closes in the long-run.

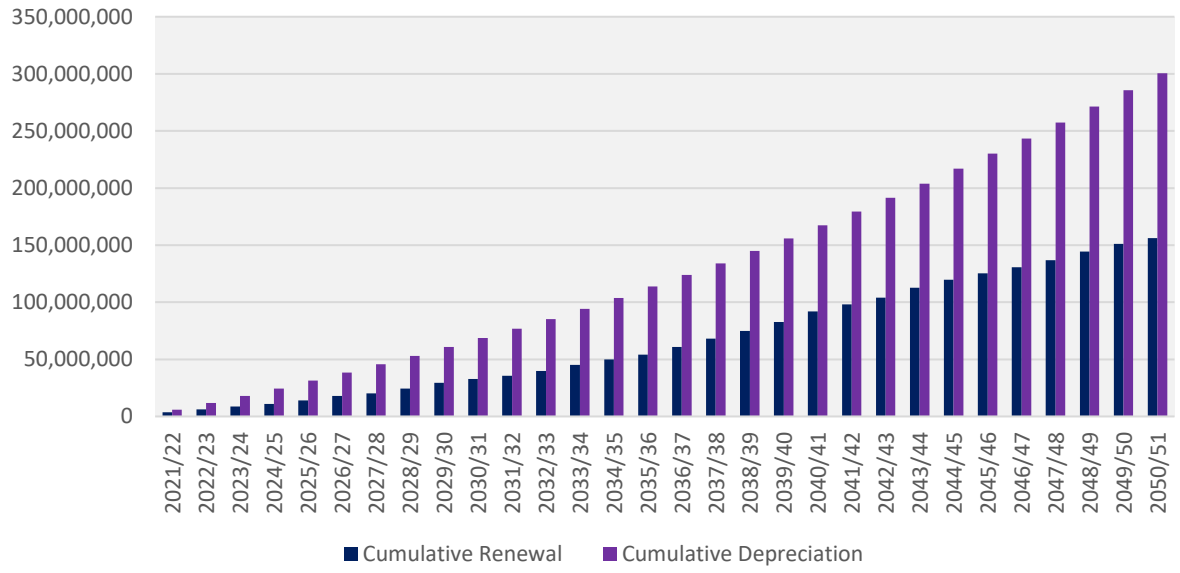


Figure 9: Cumulative Depreciation vs Renewal Comparison Including Inflation

8.3.7 Forecast Renewal Expenditure

Figure 10 shows a summary of the expenditure forecast for renewals over the next 30 years.

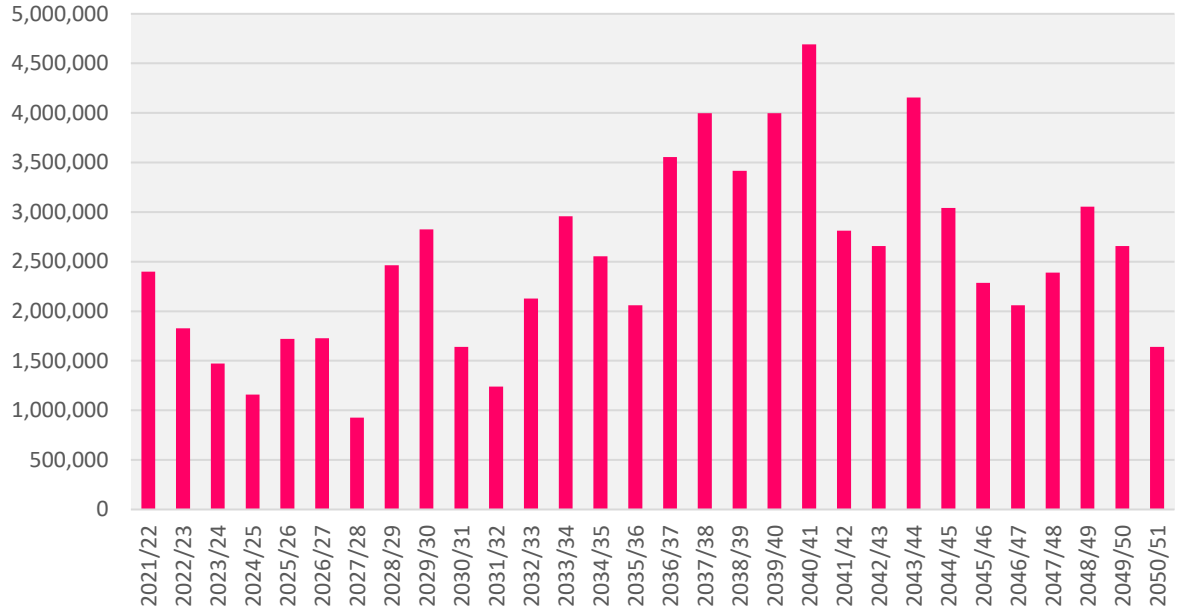


Figure 10: 2021 – 2051 Annual Renewal Expenditure Excluding Inflation

8.4 Asset Development

New capital expenditure is used to create new assets, expand or upgrade existing assets, or increase the capacity of existing assets beyond their original design capacity or service potential. This section summarises future new capital work requirements for this activity.

8.4.1 Key Asset Development Themes

8.4.1.1 Growth

Enabling growth is a Council priority. The Council plans to provide new infrastructure in Wakefield, Brightwater and Motueka.

Emergency Storage and Generators

The Council have planned the installation of new storage tanks at key sites across the District and a series of pump station upgrades that includes new storage tanks. The Council have also planned to invest in site-specific generators for WWTP and new mobile generators that can be used across the District.

8.4.1.2 Low-Pressure Pump Systems

The Council have recently trialed low-pressure pump systems with 24-hour storage as an alternative solution in subdivisions in low-lying areas (or areas with high groundwater). Developers install the assets and later vest them to the Council. It is expected that more of these new assets will be vested to the Council as areas like Richmond West develop over time.

8.4.1.3 Coastal Retreat

The Council is considering the long-term impact of climate change and plans to relocate the Motueka WWTP to a new inland location within 20 years. The Council need to consider other wastewater assets that are currently located close to the coast.

8.4.2 Projects to Support Increasing Levels of Service

- Aranui Higgs Pump Station Upgrade
- Ruby Bay Pump Station Upgrade and Storage
- New Mobile Generators
- New Motueka WWTP

8.4.3 Projects to Support Growth

- Wakefield to 3 Brothers Corner Pipeline Upgrade
- New Bypass Pump Station at Brightwater
- New Rising Main Motueka West to WWTP
- New Brightwater North Pump Station and Rising Main

8.4.4 Forecast New Capital Expenditure

The capital programme that has been forecast for this activity where the primary driver is classed as new works (i.e. growth or levels of service) and is shown in Figure 11~~Figure 11~~ below. The notable peak in 2035/36 and 2036/37 represents the construction of the new inland Motueka WWTP. Figures in the graph are uninflated.

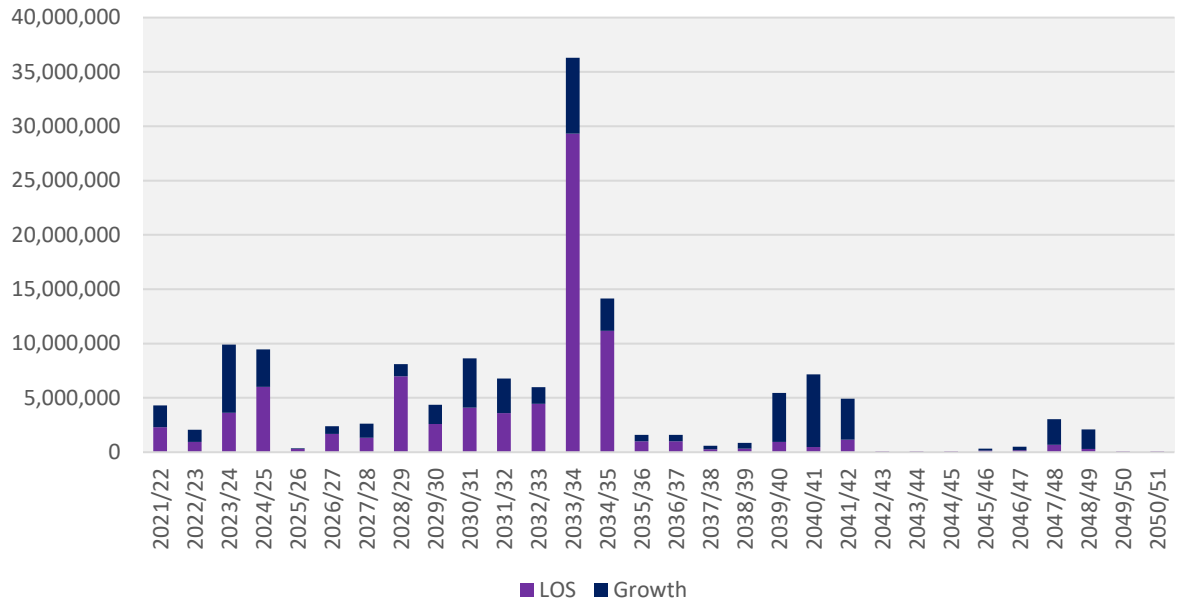


Figure 11: 2021 – 2051 New Capital Expenditure Excluding Inflation

8.5 Asset Disposal

The Council does not have a formal strategy on asset disposal and as such it will treat each asset individually on a case-by-case basis when it reaches a state that disposal needs to be considered.

Asset disposal is generally a by-product of renewal or upgrade decisions that involve the replacement of assets.

Assets may also become redundant for any of the followings reasons:

- Under-utilisation
- Obsolescence
- provision of the asset exceeds the required level of service
- uneconomic to upgrade or operate
- policy change
- the service is provided by other means (e.g. private sector involvement)
- potential risk of ownership (financial, environmental, legal, social, vandalism)

Depending on the nature, location, condition and value of an asset it is either:

- made safe and left in place
- removed and disposed of
- removed and sold
- ownership transferred to other stakeholders by agreement

In most situations assets are replaced at the end of their useful lives and are generally in poor physical condition. Consequently, the asset with be disposed of to waste upon its removal. In some situations, an asset may require removal or replacement prior to the end of its useful life. In this circumstance, the Council may hold the asset in stock for reuse elsewhere on the network. Otherwise, if this is not appropriate it could be sold off, transferred or disposed of.

When asset sales take place, the Council aims to obtain the best available return from the sale and any net income will be credited to that activity. The Council follows practices that comply with the relevant legislative requirements for local government when selling off assets.

9 Financials

The Council has planned a prudent financial approach to managing its assets and services. This section provides a summary of the total value of the activity and the investment that the Council has planned to make over the next 30 years.

9.1 Funding Sources

The Wastewater activity is funded through a mixture of the following sources. The sources and their proportion of contribution is shown in Figure 12~~Figure 12~~ below.

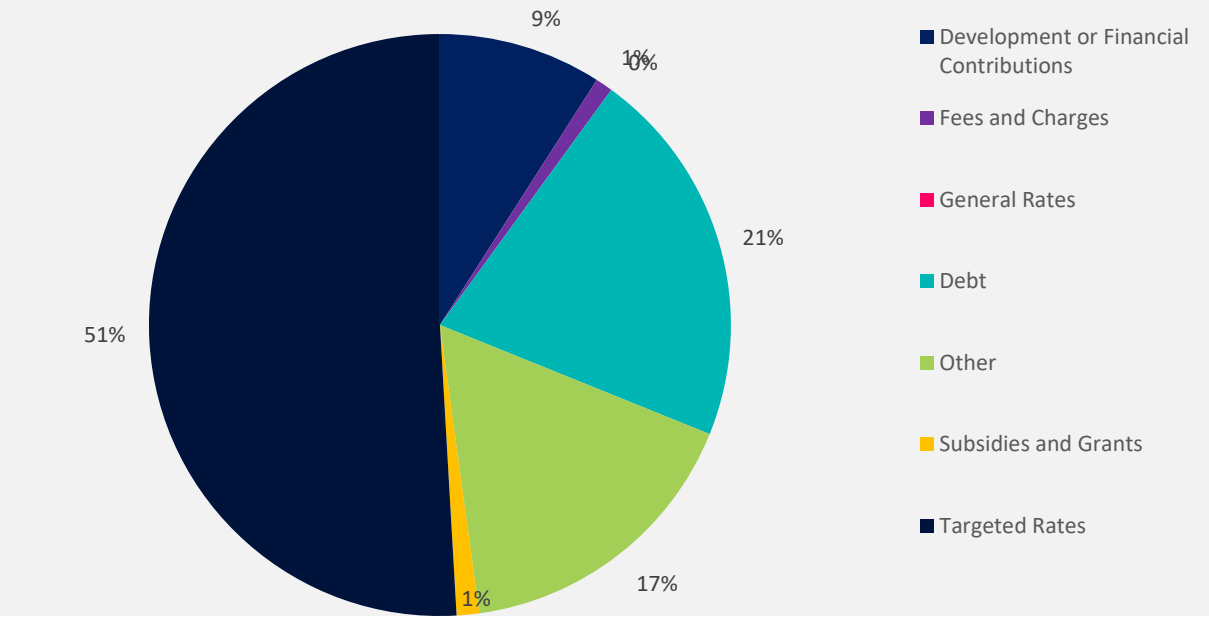


Figure 12: Sources of wastewater funding

9.1.1 Development Contributions

The Council's Development and Financial Contributions Policy can be found on our website at www.tasman.govt.nz/policy/policies/development-contributions-policy.

The next update of the Policy will be adopted in conjunction with the Council's Long Term Plan and will come into effect on 1 July 2021.

The Policy sets out the development contributions payable by developers, how and when they are to be calculated and paid, and a summary of the methodology and rationale used in calculating the level of contributions.

The key purpose of the Policy is to ensure that growth, and the cost of infrastructure to meet that growth, is funded by those who cause the need for and the benefit from the new or additional infrastructure, or infrastructure of increased capacity.

There are three wastewater development contributions in place. Which charge is applicable depends on what catchment the development is located in.

Table 19: Wastewater Development Contributions Charges as of July 2018.

Catchment	Development Contribution per HUD $ (incl GST) *
Waimea	$10,442
Motueka	$8,964
Golden Bay	$13,257
Rest of District	Nil

HUD = Household Unit of Demand

* The value of the Development Contribution shall be adjusted on 1 July each calendar year using the annual change in the Construction Cost Index.

9.1.2 Targeted Rates

The Council sets a targeted rate for the purpose of meeting the costs of the general wastewater account. Refer to the Council's Funding Impact Statement and Revenue and Financing Policy for further details.

9.1.2.1 Schedule of Fees and Charges

There may be a charge for the actual costs associated with a wastewater connection. Refer to the Council's Schedule of Fees and Charges for further details.

9.1.2.2 Trade Waste Charges

Trade waste charges are additional to the wastewater targeted rate because trade waste has characteristics that make it more difficult and costly to treat and/or convey than typical domestic wastewater.

The Wastewater Bylaw (2015) sets out three types of trade waste users: permitted, conditional and prohibited. Permitted trade waste is generally of small volume and will have a minor impact on the wastewater systems if it complies with the permitted waste conditions. Conditional trade waste will have a greater impact on the wastewater systems and needs to be more actively managed. Therefore, two different charging systems have been established to reflect the difference.

The Council implemented a two year stepped increase of trade waste charges in July 2018 and 2019 impacting only the conditional users. The Council informed affected users of the increase via letters and staff met with these trade waste users in late 2017 to discuss the change.

There is currently an annual charge only for permitted trade waste however staff are investigating options to remove this standard annual charge, replacing it with a user pays approach. Conditional trade waste dischargers are charged an annual fee as well as a conveyance and treatment charge, which is proportional to the volume and strength of the discharge.

The Council sets the conditional trade waste charges to recover the cost of conveyance and treatment of the waste. All trade waste charges are detailed in the Long Term Plan. The charges are reviewed each year and included in the Annual Plan.

9.2 Asset Valuation and Depreciation

The Local Government Act 1974 and subsequent amendments contain a general requirement for local authorities to comply with Generally Accepted Accounting Practice ("GAAP").

The Council requires its infrastructure asset register and valuation to be updated in accordance with Financial Reporting Standards and the AMP improvement plan.

The valuations summarised below have been completed in accordance with the following standards and are suitable for inclusion in the financial statements for the year ending June 2020.

- NAMS Group Infrastructure Asset Valuation Guidelines – Edition 2.0
- New Zealand International Public Sector Accounting Standard 17; Property, Plant and Equipment (PBE IPSAS 17) and PBE IPSAS 21 (Impairment of Non Cash Generating Assets).-

9.2.1 Latest Valuation

The wastewater assets are valued every three years and were last re-valued as at 30 June 2020. The valuation is reported under separate cover3. Key assumptions in assessing the asset valuations are described in detail in the valuation report.

The majority of information for valuing the assets was obtained from the Council's Confirm database. The data confidence is detailed in

Table 20

~~Table 20~~ below.

Table 20: Data Confidence

Asset Description	Confidence	Comments
Wastewater Assets	B - Good	The asset registers provide all the physical assets that make up each scheme. However, attribute information could be more detailed such as pipe and manhole depths, surface types etc.

Based on NZ Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2, Table 4.3.1: Data confidence grading system.

The Base Useful Lives for each asset type as published in the NZIAVDG Manual were used as a guideline for the lives of the assets in the valuation. Generally, lives are taken as from the mid-range of the typical lives indicated in the Valuation Manual where no better information is available. Lives used in the valuation are presented in

Table 21

~~Table 21~~ below.

Table 21: Asset Lives

[3] Tasman District Council Valuation of Wastewater Infrastructure Assets as at 1 April 2017

Item	Life (years)	Minimum Remaining Life (years)
Pipelines		
AC, EW pipe	60	5
Concrete, CI, DI, PVC, Steel, unknown pipe	80	5
PE pipe	120	5
Miscellaneous pipework's and fitting associated with treatment plants and pump stations	15	2
Valves	50	5
Cleaning eyes, inspection points, property connections	80	5
Manholes	100	5
Flow meters	15	2
Non Pipeline Assets		
Pump chambers	80	5
Variable speed drives, WWTP membranes	10	2
Low pressure pumps	25	2
Concrete structures	50	5
Buildings (all materials)	50	5
Oxidation pond earthworks	Not depreciated	
Small plant – pumps, aerators, odour control, generators	20	2
Electrical, telemetry, control cabinets	15	2

The optimised replacement value, optimised depreciated replacement value and annual depreciation of the wastewater assets are summarised in Table 22 and Table 22 below.

Table 22: Wastewater Asset Valuation Summary 30 June 2020

Asset Type	Optimised Replacement Value ($000)	Optimised Depreciated Replacement Value ($000)	Annual Depreciation ($000/yr)
Wastewater Pipes	113,779	76,614	1,360
Wastewater Non Pipe Assets	131,147	94,973	2,580
Nelson Regional Sewerage (half share)	47,809	31,524	Funded from users
Total	292,735	203,111	3,940

Table 23: 2017 / 2020 Wastewater Valuation Comparison excluding Nelson Regional Sewerage

Year	Optimised Replacement Value ($000)	Optimised Depreciated Replacement Value ($000)	Annual Depreciation ($000/yr)
2017	165,601	113,354	2,667
2020	292,735	203,111	3,940
% Increase	77%	79%	48%

Overall the optimised replacement value has increased by 77% since the 2017 valuation. The increase in the replacement values is due to the following reasons:

- Increase in the unit rates of assets over the period
- The addition of new assets to the utilities since 2017

The percentage increase in depreciation from 2017 to 2020 is lower at 48%. This is due to the high cost increase of longer life assets such as chambers and manholes.

9.2.2 Depreciation

Depreciation of assets must be charged over their useful life. The Council calculates depreciation on a straight-line basis on most infrastructural assets at rates which will write off the cost (or value) of the assets to their estimated residual values, over their useful lives.

9.3 Financial Summary

9.3.1 Funding Impact Statement

The Council's Funding Impact Statement (FIS) for this activity is included in the table below. It summarises in one place how this activity will be funded and how those funds will be applied over the next 10 years.

Table 24: Funding Income Statement for the Next 10 years

	2020/21 AP $000	2021/22 BUDGET $000	2022/23 BUDGET $000	2023/24 BUDGET $000	2024/25 BUDGET $000	2025/26 BUDGET $000	2026/27 BUDGET $000	2027/28 BUDGET $000	2028/29 BUDGET $000	2029/30 BUDGET $000	2030/31 BUDGET $000
SOURCES OF OPERATING FUNDING											
General rates, uniform annual general charges, rates penalties	0	0	0	0	0	0	0	0	0	0	0
Targeted rates	10,103	10,925	10,482	11,560	13,113	14,751	15,746	15,948	16,667	17,908	18,900
Subsidies and grants for operating purposes	0	0	0	0	0	0	0	0	0	0	0
Fees and charges	236	242	250	256	263	270	278	287	295	305	315
Internal charges and overheads recovered	0	0	0	0	0	0	0	0	0	0	0
Local authorities fuel tax, fines, infringement fees, and other receipts	3,316	3,551	3,710	3,924	4,320	4,930	4,850	4,961	5,293	5,676	5,963
Total operating funding	**13,655**	**14,718**	**14,442**	**15,740**	**17,696**	**19,951**	**20,874**	**21,196**	**22,255**	**23,889**	**25,178**
APPLICATIONS OF OPERATING FUNDING											
Payments to staff and suppliers	6,278	7,537	7,972	8,369	8,936	10,080	10,431	10,616	11,372	12,073	12,945
Finance costs	1,419	1,364	1,356	1,324	1,489	1,591	1,497	1,456	1,487	1,686	1,748
Internal charges and overheads applied	1,241	1,279	1,383	1,426	1,721	1,924	1,961	2,014	2,126	2,293	2,483
Other operating funding applications	0	0	0	0	0	0	0	0	0	0	0
Total applications of operating funding	**8,938**	**10,180**	**10,711**	**11,119**	**12,146**	**13,595**	**13,889**	**14,086**	**14,985**	**16,052**	**17,176**
Surplus/(deficit) of operating funding	**4,717**	**4,538**	**3,731**	**4,621**	**5,550**	**6,356**	**6,985**	**7,110**	**7,270**	**7,837**	**8,002**
SOURCES OF CAPITAL FUNDING											
Subsidies and grants for capital expenditure	0	2,090	1,500	0	0	0	0	0	0	0	0
Development and financial contributions	2,554	2,760	2,760	2,760	2,477	2,477	2,477	2,477	2,434	2,434	2,933
Increase (decrease) in debt	831	(50)	(889)	2,126	3,646	(2,581)	(125)	(2,760)	6,130	1,289	911
Gross proceeds from sale of assets	0	0	0	0	0	0	0	0	0	0	0
Lump sum contributions	0	0	0	0	0	0	0	0	0	0	0
Other dedicated capital funding	0	0	0	0	0	0	0	0	0	0	0
Total sources of capital funding	**3,385**	**4,800**	**3,371**	**4,886**	**6,123**	**(104)**	**2,352**	**(283)**	**8,564**	**3,723**	**3,844**
APPLICATIONS OF CAPITAL FUNDING											
Capital expenditure											
- to meet additional demand	3,010	1,325	274	4,270	0	0	0	0	0	0	0
- to improve the level of service	4,228	4,192	3,056	7,824	11,405	1,615	4,089	4,309	3,812	8,447	12,492

	2020/21 AP $000	2021/22 BUDGET $000	2022/23 BUDGET $000	2023/24 BUDGET $000	2024/25 BUDGET $000	2025/26 BUDGET $000	2026/27 BUDGET $000	2027/28 BUDGET $000	2028/29 BUDGET $000	2029/30 BUDGET $000	2030/31 BUDGET $000
- to replace existing assets	2,106	4,169	3,884	2,758	2,144	2,467	3,609	1,544	10,917	2,830	2,201
Increase (decrease) in reserves	(1,242)	(348)	(112)	(5,345)	(1,876)	2,170	1,639	974	1,105	283	(2,847)
Increase (decrease) in investments	0	0	0	0	0	0	0	0	0	0	0
Total applications of capital funding	**8,102**	**9,338**	**7,102**	**9,507**	**11,673**	**6,252**	**9,337**	**6,827**	**15,834**	**11,560**	**11,846**
Surplus/(deficit) of capital funding	**(4,717)**	**(4,538)**	**(3,731)**	**(4,621)**	**(5,550)**	**(6,356)**	**(6,985)**	**(7,110)**	**(7,270)**	**(7,837)**	**(8,002)**
Funding balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

9.3.2 Project Drivers

All expenditure must be allocated against at least one of the following project drivers.

- Operation and Maintenance: operational activities that do not involve the renewal or upgrade of assets, or work that is necessary in order to provide on-going services at the agreed levels
- Renewals: significant work that restores or replaces an existing asset towards its original size, condition or capacity
- Increase Level of Service: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance
- Growth: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance to provide for the anticipated demands of future growth.

This is necessary for two reasons as follows.

- Schedule 13(1) (a) and section 106 of the Local Government Act require the Council to identify the total costs it expects to have to meet relating to increased demand resulting from growth when intending to introduce a Development Contributions Policy
- Schedule 10(2)(1)(d)(l)-(iv) of the Local Government Act requires the Council to identify the estimated costs of the provision of additional capacity and the division of these costs between changes to demand for, or consumption of, the service, and changes to service provision levels and standards.

All new works have been assessed against these project drivers. Some projects may be driven by a combination of these factors and an assessment has been made of the proportion attributed to each driver.

9.3.3 Scope Risk and Funded Capital Programme

When developing this work programme, the Council needs to estimate how much to budget for each project. Often, the Council cannot be certain what the actual costs or scope of the project will be because the design is yet to be completed. Typically, the Council has more confidence in the cost and scope of projects that are planned within the first three years. After this, estimates are usually based on simple concept designs.

To address this uncertainty, the Council has incorporated funding of scope risk into capital project budgets. The amount of scope risk included varies from 10% to 40% of the project estimate, depending on the expected complexity of the individual project. Based on history, it is unlikely that all individual projects will need the full amount of allocated scope risk funding, in reality there will be some under and over spending.

It is also unrealistic to assume that we will deliver all of our projects on time. There are often delays associated with land access and consenting and other unforeseen issues that prevent us achieving on time delivery for some projects.

For the water, wastewater, stormwater, and rivers activities, we have made an overall downward adjustment to the total capital programme of 10% per year. This adjustment accounts for uncertainties in scope risk and programme delivery. By including this adjustment, we avoid over-funding the activities. Where we have applied the 10% adjustment, we refer to this adjusted budget as the total funded capital programme.

9.3.4 Total Expenditure

The estimated expenditure needs for the Wastewater activity have been prepared for the next 30 years. Figure 13~~Figure 13~~ and Figure 14~~Figure 14~~ show the total expenditure for the wastewater activity for the first 10 and 30 years respectively. Figures include inflation.

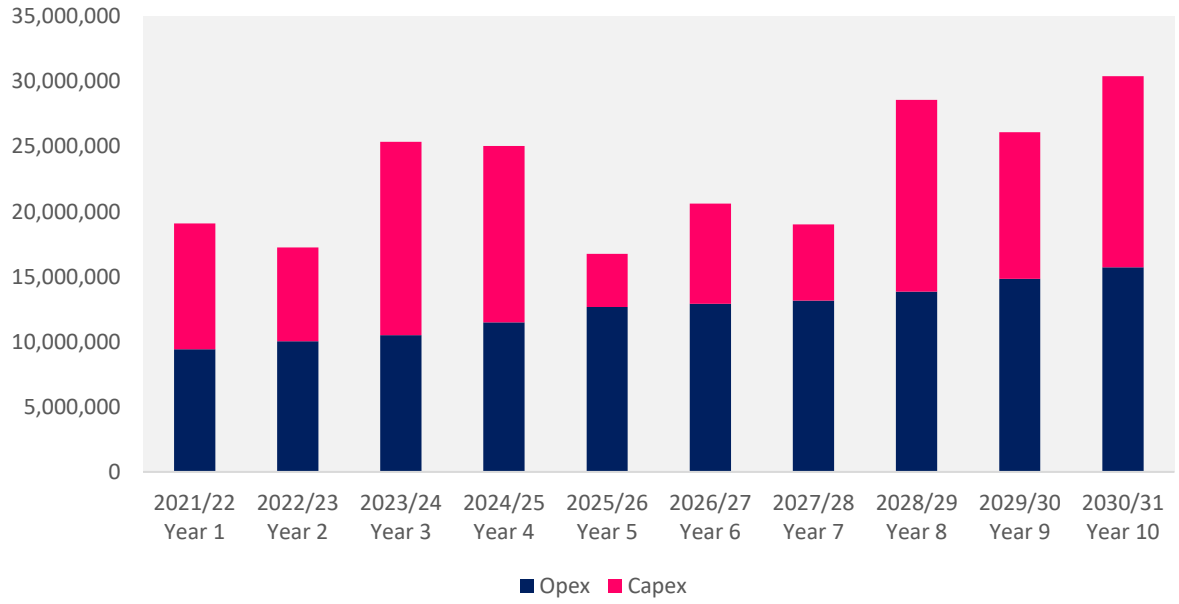


Figure 13: Total Annual Expenditure Year 1-10 including Inflation

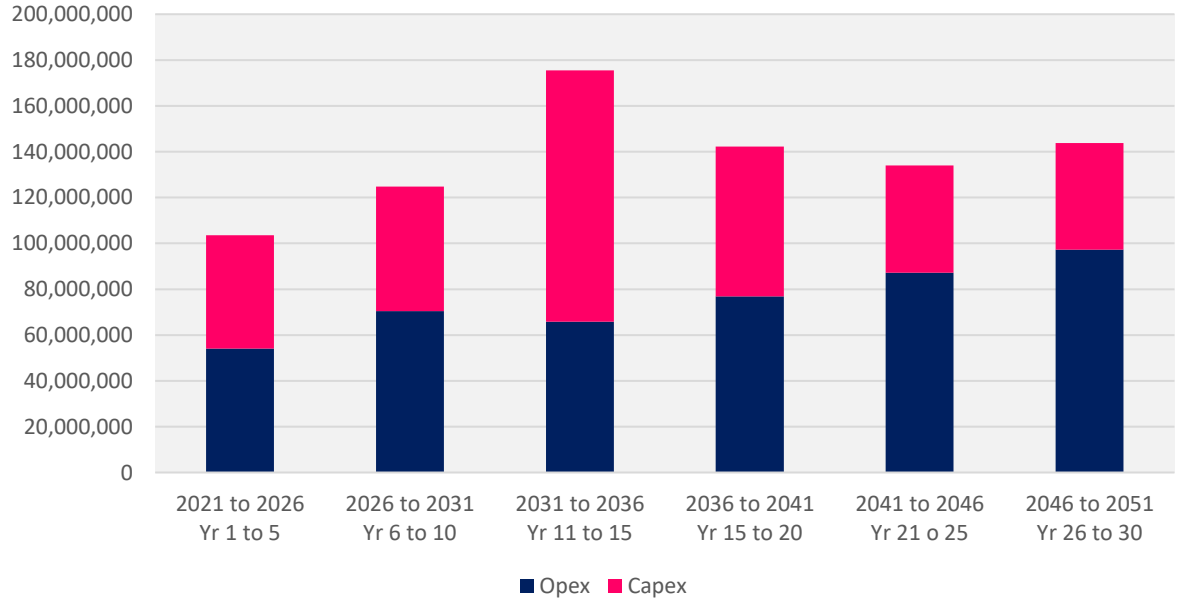


Figure 14: Five Yearly Total Expenditure Years 1 to 30 Including Inflation

9.3.5 Total Income

Figure 15~~Figure 15~~ and Figure 16~~Figure 16~~ show the total income for the wastewater activity for the first 10 and 30 years respectively.

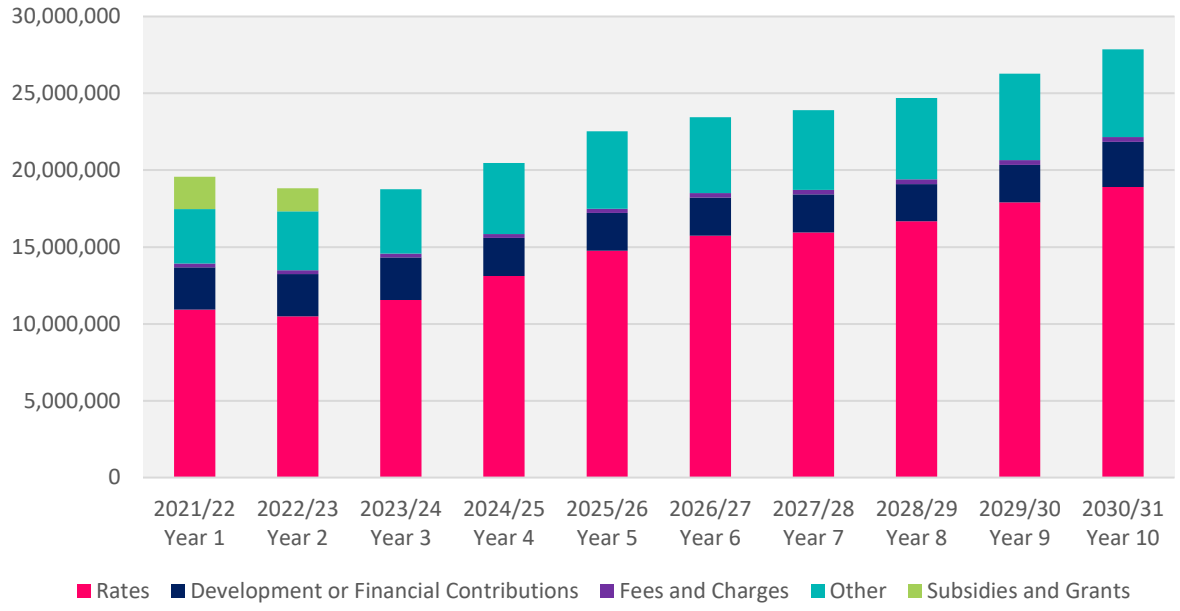


Figure 15: Total Annual Income Years 1 to 10

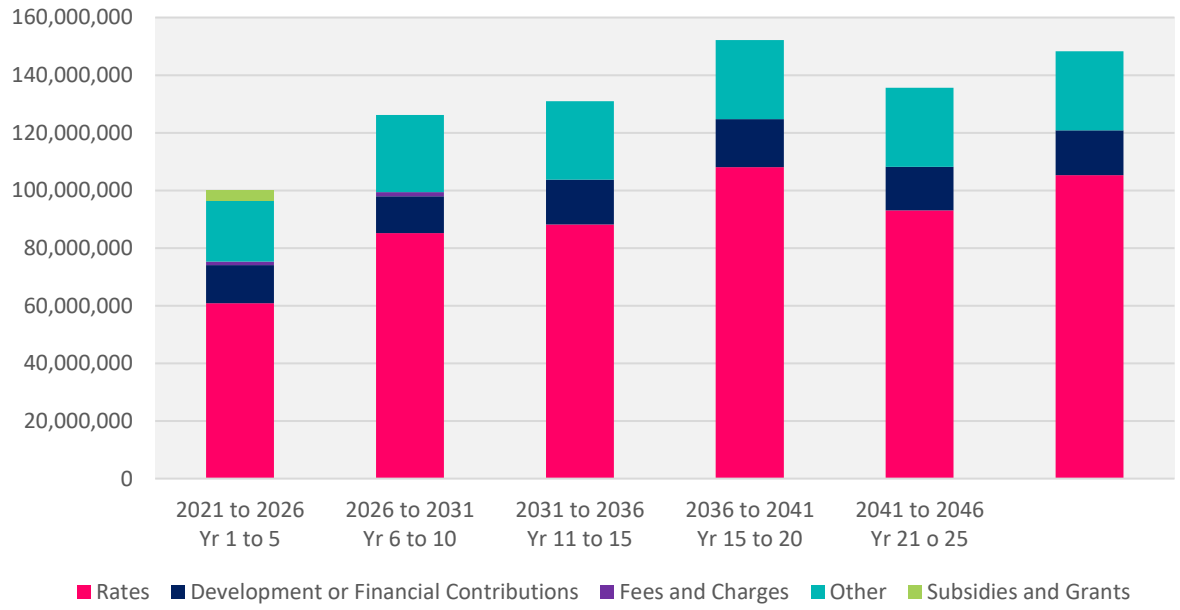


Figure 16: Five Yearly Total Income Years 1 to 30

9.3.6 Operational Costs

Figure 17~~Figure 17~~ and Figure 18~~Figure 18~~ show the total operating expenditure for the wastewater activity for the first 10 and 30 years respectively.

Operational costs for the wastewater activity are forecast to increase by an average of 6.7% per year for the first 10 years, and 3.9% per year over 30 years. Within the first 10 years, the most notable increases occur in direct costs. This is due to an increase in our share of operational costs from the Nelson Regional Sewerage Business Unit. Indirect costs increase primarily due to increasing loan interest costs associated with the capital programme for this activity. On top of this, both direct and indirect expenditure gradually increase due to inflation.

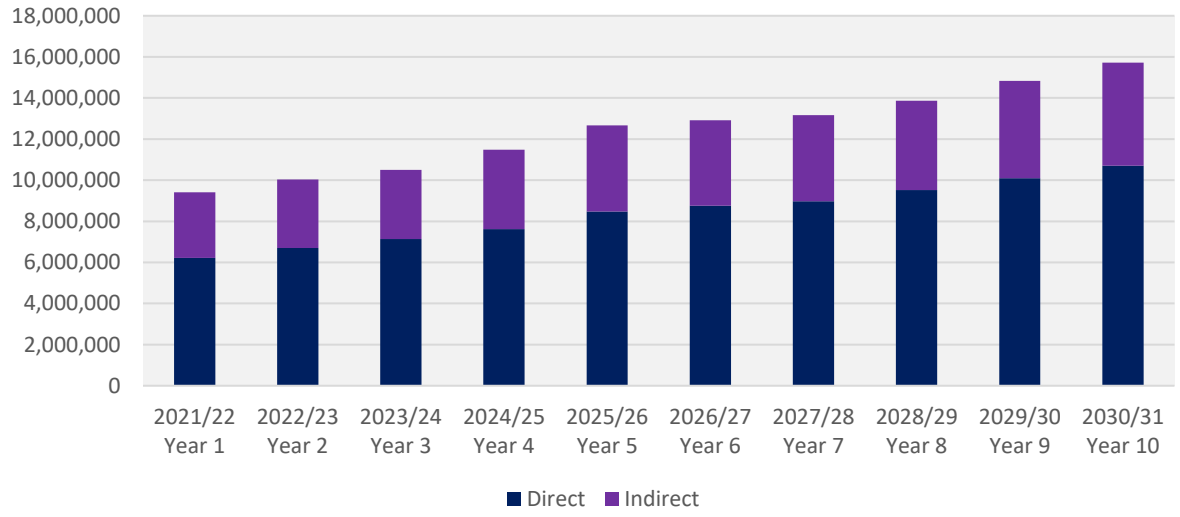


Figure 17: Total Annual Operating Costs Years 1-10 including Inflation

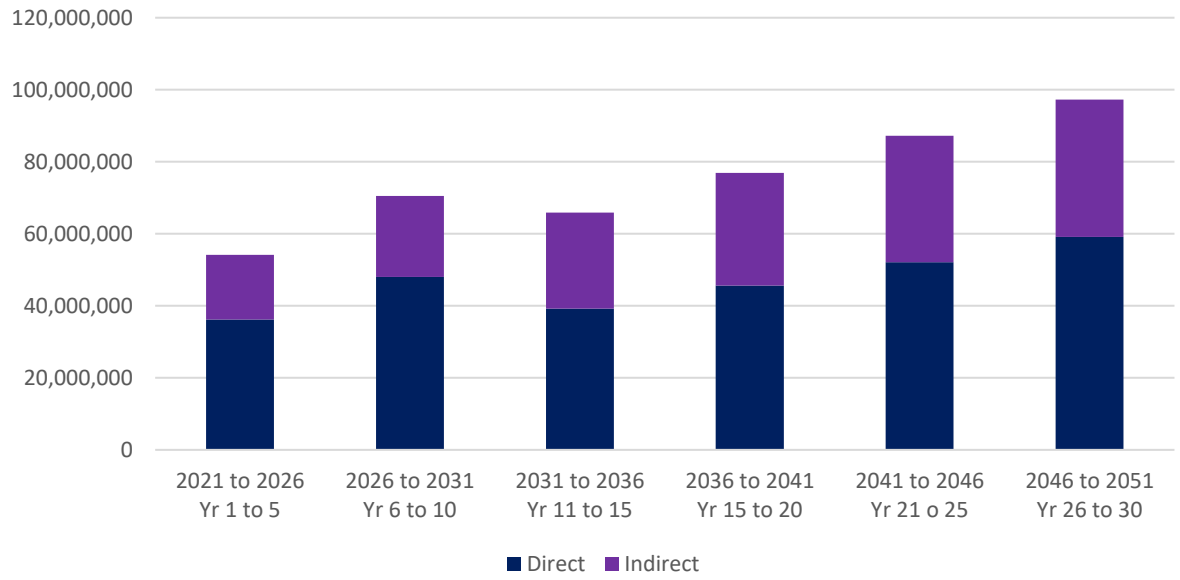


Figure 18: Five Yearly Operating Cost Years 1 to 30 Including Inflation

9.3.7 Capital Expenditure

The Council plans to spend around $104 million on capital improvements over the next 10 years. Of this 26% is attributable to growth, 45% for level of service improvements, and 29% for asset renewal. There is a notable increase in level of service expenditure between Year 11 and 15. This is associated with the construction of the new Motueka wastewater treatment plant.

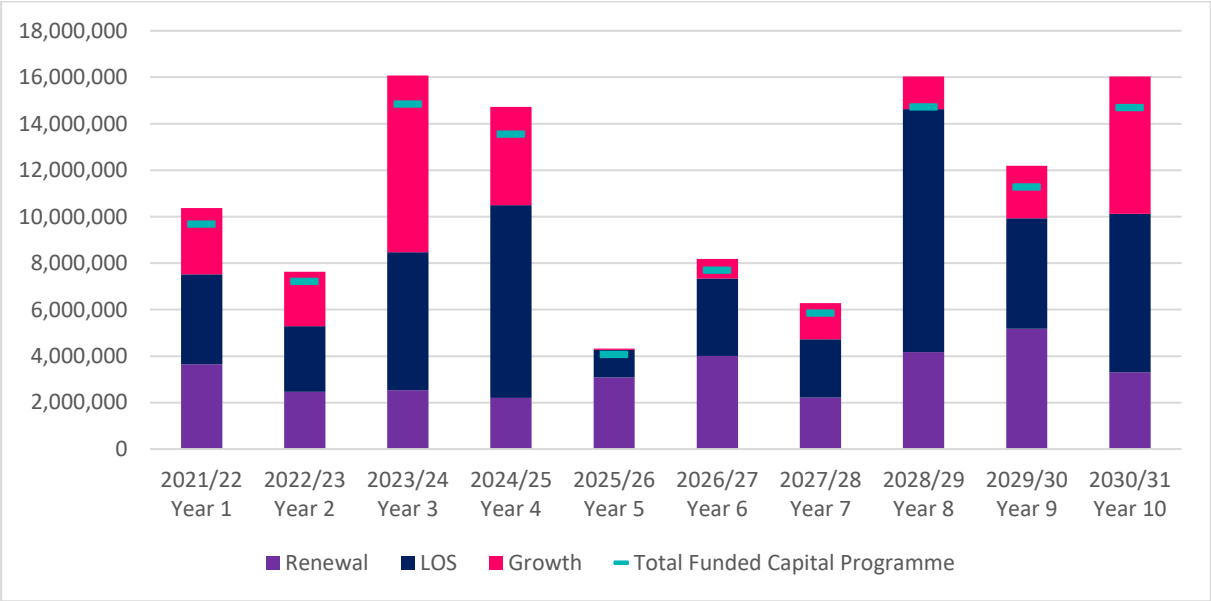


Figure 19: Annual Capital Expenditure Years 1 to 10 Including Inflation

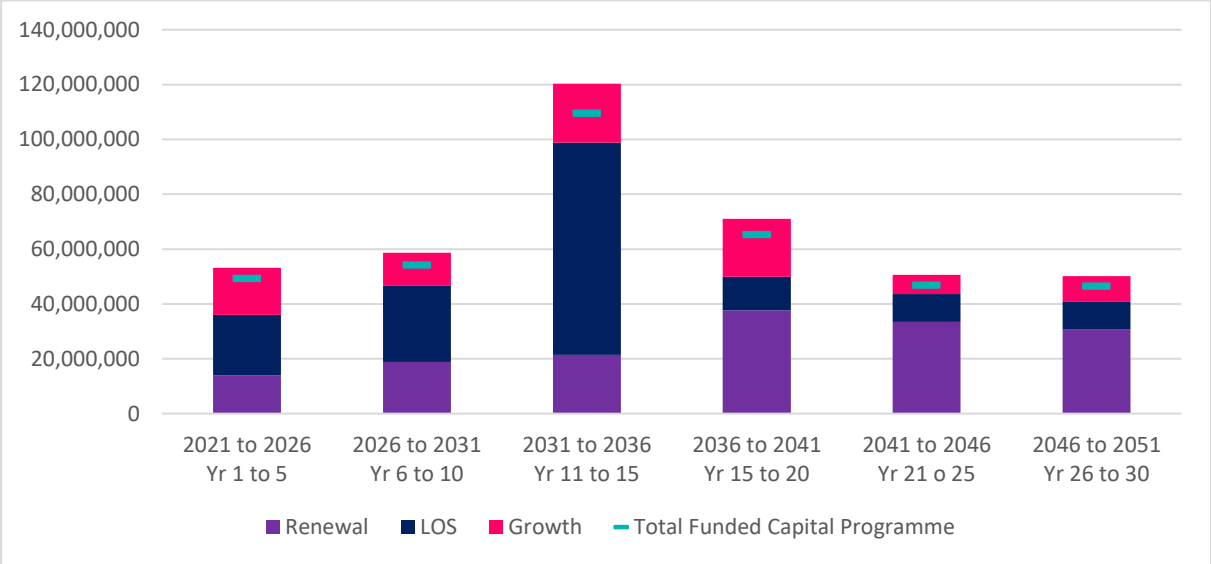


Figure 20: Five Yearly Capital Expenditure Years 1 to 30 Including Inflation

10 Sustainability

Sustainability means that we effectively balance the needs of present and future communities. From an asset management perspective, sustainability is critical, as many assets have a long lifespan and must be 'future-proofed'. The Council has a responsibility to manage this activity in way that supports the environmental, social, cultural and economic well-being of current and future generations. This section focuses on social, cultural and environmental sustainability.

The Local Government Act 2002 requires local authorities to take a sustainable development approach while conducting their business, taking into account the current and future needs of communities for good-quality local infrastructure, and the efficient and effective delivery of services.

Sustainable development is a fundamental philosophy that is embraced in the Council's Vision, Mission and Objectives, and is reflected in the Council's community outcomes. The levels of service and the performance measures that flow from these inherently incorporate the achievement of sustainable outcomes.

We measure sustainability against the triple bottom line framework that aims to create a balance between the three dimensions of performance, often referred to as people, planet and profit (3P's).

People – The effects of the activity on the social and cultural wellbeing of our community

The Council is guided by the Community Outcomes to assist in determining how our decisions affect the social wellbeing of our community. We undertake this activity to meet the level of service that is required to enhance community well-being

Planet – The effects of the activity on the environment

Our receiving environments are affected by discharges from our WWTPs. Urbanisation and increased trade waste volumes have led to increased amount of wastewater requiring treatment. This impacts on the ability to manage overflows and utilise our natural resources for amenity and food gathering purposes. We control our discharges through discharge consents that are required under the Tasman Resource Management Plan. We will encourage and practice implementation of our land development manual to protect and enhance our receiving environment.

Profit – The financial and overall long-term economic viability of the activity

The Council operates, maintains and improves the wastewater infrastructure assets on behalf of its ratepayers. The Council uses its Financial Strategy to guide the development of an affordable work programme. The Council's finances are managed within the set debt limits and rates income rises to ensure economic viability for current and future generations.

This section reviews both the positive and negative effects of the wastewater activity and ensure that the negative effects have adequate mitigation measures in place.

10.1 Potential Negative Effects

Potential significant negative effects and the proposed mitigation measures for the wastewater activity are listed below in Table 25.

Table 25: Negative Effects

Effect	Description	Mitigation Measures
Noise	Social Noise can originate from many sources but is usually temporary. If there are power outage generators may be used to operate plant. Construction machinery used during repairs or installation of new wastewater assets can be a nuisance to the local community.	Noise suppression is an important consideration for all generator purchases made by the Council. Maintenance work is undertaken during the day except in emergency situations.
Disruption to service	Economic Disruption to the wastewater service for a prolonged period may result in businesses having to close. Wastewater bylaw outlines that the Council does not guarantee continuity of service.	The operation and maintenance Contract has clear repair timeframes that must be adhered to. Quick temporary repairs may be made with permanent repairs made in consultation with affected people.
Wastewater blockages and overflows	Overflows are usually the result of a blockage, pump fault or power outage. Social Overflows can cause distress and a public health risk, especially when they occur on private property. Overflows on private property usually occur from gully traps as they should be the lowest point in the private reticulation system. Blockages, power outages, or pump faults may mean ablution facilities cannot be used without causing overflows, often affecting other downstream users. Economic	A CCTV programme is used to identify blockage risks such as root intrusion in pipes and structural defects. This means that root cutting, defect repair, and renewal programmes can be targeted. Inflow and infiltration issues are identified by monitoring flows to highlight problem catchments for further investigation and remedial action to eliminate inflow and infiltration. Emergency storage is provided at key pump stations and most have the ability to be powered by one of the Council's mobile generators. Several key pump stations have on-site generators.

Effect	Description	Mitigation Measures
	Businesses, schools and hospitals may need to close if they are unable to provide sanitary facilities or use the wastewater system because of blockages, faults or overflows. Environmental Wastewater overflowing to the surrounding environment could result health risks, contamination of waterways and/or beach closures and could threaten natural habitats.	
Wastewater odour	Social Odour can cause distress to local residents, as it can impact on how they live their lives, having to keep windows closed, and restricting outdoor activities. Economic Odour can cause distress to local businesses as localised odour may put off customers.	Developing a system specific Odour Management Plan detailing how odour will be managed and installing odour control systems at problematic air valves, pump stations and treatment plants. This can include chemical dosing to reduce the hydrogen sulphide produced in pipelines and carbon filters to reduce odours by neutralizing odourous gases.
Non-compliant WWTP discharge	Social May result in the degradation of water quality, preventing the use of groundwater, nearby rivers and beaches for 'all year round bathing', preventing the collection of shellfish. Economic May result in the degradation of water quality, preventing the use of groundwater or surface water for irrigation and preventing the harvest of shellfish from marine farms. Environmental May result in the degrading of water quality, preventing the use of groundwater, nearby rivers and beaches for 'all year round bathing', preventing the collection of shellfish and detrimentally affecting marine farms.	Upgrades of WWTPs to cater for growth is planned as part of the Activity Management Plan meet high flows, and upgrading current facilities.

Effect	Description	Mitigation Measures
Increase in rates	Economic Improving the level of service delivered can result in increases in rates	The Council uses competitive tendering processes to achieve best value for money for most capital works it undertakes.
Disturbance or destruction of historic and culturally sensitive sites	Operation, maintenance and construction of wastewater assets can potentially affect historic and culturally sensitive sites	The Council maintains a record of historic and culturally sensitive sites in the TRMP. The Council also undertakes consultation with affected parties prior to undertaking works, particularly in coastal areas or where it is suspected a site may have cultural significance. The Council liaises with Historic Places Trust and ensures Authorities are obtained where necessary.

Policies and strategies for mitigation, monitoring and reporting of those effects are at various stages of development. Where a specific resource consent is applicable, reporting is part of the consent process.

10.2 Potential Positive Effects

Potential significant positive effects are listed below in Table 26~~Table 26~~.

Table 26: Positive Effects

Effect	Description
Public health benefits	Spread of disease is limited and public health improved by having a public wastewater collection and treatment system.
Environment and water quality	Treated wastewater is frequently discharged into, or nearby to, coastal and river environments. By providing efficient and effective treatment the environmental impact from WWTP discharges is minimised. These natural amenities are still safe for use by the public and the environmental values of the receiving environment are protected.
Economic development	The Council's management of the wastewater activity uses best practice and competitive tendering to provide value for money for ratepayers and provides jobs for contractors. Providing a safe and efficient wastewater system allows for economic growth by providing for new developments where capacity exists.

10.3 Environmental Management

The statutory framework defining what activities require resource consent is the Resource Management Act (RMA) 1991. The RMA is administered locally by Tasman District Council, as a unitary authority, through the Tasman Resource Management Plan (TRMP). The following section discusses key consents that the Council holds in order to undertake this activity.

10.3.1 Resource Consents

The Council's Engineering Services Department has over 200 consents to manage and the number and type of resource consents relating to the wastewater activity has increased over recent years. Some consents require active management to ensure reporting and monitoring conditions are met allow the timely management for lodging new applications before existing consents expire. A register of all active consents including their conditions, compliance actions and expiry dates are managed in Bravegen.

Discharge Consent to Water, Land and Air

Under the RMA and TRMP, resource consents in the form of discharge permits are required for all discharges of treated wastewater and odours associated with wastewater activities. The Council needs to demonstrate compliance with the TRMP and, in particular, Part VI of that Plan: Discharges, Chapter 36. The Council has a legal obligation to manage adverse effects from wastewater discharges from its network. Limits and standards apply to most discharges and monitoring is required by the majority of the treatment plant discharge consents.

Land Use Consents

Resource consents may be required for installation and operation of wastewater infrastructure including WWTPs, pipelines and monitoring bores. The Council has designated most of the wastewater treatment plant (WWTP) sites, which is an alternative way under the RMA of authorising the land use aspects of public works. Outline plans are usually required prior to the installation of wastewater facilities on designated sites.

Coastal Occupation/Structure Consent

Part III of the TRMP applies to the coastal marine area and some wastewater infrastructure such as pipelines buried in an estuary require a costal permit to disturb and occupy the foreshore and seabed. A separate permit is required for constructing infrastructure and another permit is required to undertake maintenance and repair work to existing infrastructure (e.g. the NRSBU pipeline across Waimea Inlet).

10.3.2 Resource Consent Reporting and Monitoring

Environmental monitoring conditions are reported on quarterly, six monthly and/or annually as determined by the consent conditions. The Council has invested in a programme, Samplyzer which is used by the Council staff to produce chain of custody forms for all wastewater monitoring. This allows the Council, the operation and maintenance contractor and testing laboratories to all use the same sample identifiers. Samplyzer also allows the automated input of monitoring data direct from laboratory reports into Hilltop, the Council's database for storing monitoring data.

While this database has the ability to store data it has not proven useful for viewing, managing, or manipulating data. The Council continues to maintain a duplicate set of all monitoring data and use alternative software for managing the data. As each laboratory analysis report or field data sheet (collected by the operations and maintenance contractor), is received the data is checked for compliance with consent conditions.

Auditing

Regular site audits are completed to ensure the Council's maintenance contractor is operating in accordance with a number of key performance indicators aligned to any relevant consent conditions or other legislative requirements.

Environmental Reporting and Monitoring

The Council aims to achieve minimum compliance with all consents and / or operating conditions. Use of the Council's BraveGen database allows the accurate programming of all condition and actions required by the consents including renewal prior to consent expiry. Each consent has specific resource consents conditions. Any non-compliance incidents are recorded and notified to the Council's compliance team in accordance with pre-agreed notification procedures. Investigations, additional sampling or other mitigation measures may be undertaken depending on the potential impact on the receiving environment.

The Council's Annual Report

The extent to which the Council has been able to meet all of the conditions of each permit is reported in its Annual Report.

10.3.3 Property Designations

Designations are a way provided by the RMA of identifying and protecting land for future public works. There is a suite of designations are held in the TRMP and these allows the Council to plan and conduct wastewater activities. Once given effect, a designation remains valid for the life of the TRMP or until the requiring authority removes or alters the designation. It is not always necessary to retain the designations for sites where wastewater facilities have been developed, unless there is a likelihood of future expansion or other upgrades being required. Alterations to some designations (e.g., boundaries) and outline plans for proposed work may be required from time to time. Designations do not negate the ongoing need for regional resource consents (e.g., discharge permits) required for the designated site. Table 27~~Table 27~~ provides a summary of current designations. The Council have an indefinite designations for pump stations, WWTP, and pipelines.

Table 27: Summary of Wastewater Designations

ID	Location of Site	Site Name/Purpose
D176	121 Beach Road, Richmond	Beach Road Pump Station and Tanks
D177	Tapawera-Glenhope Road	Tapawera Wastewater Treatment Pond
D178	SH 6, Murchison	Murchison Wastewater Treatment Pond
D179	Thorp Street, Motueka	Motueka Wastewater Treatment Pond
D180	Haldane Road, Takaka	Takaka Wastewater Treatment Pond
D181	Collingwood/Bainham Road	Collingwood Wastewater Treatment Pond
D182	Patons Rock	Future Wastewater Treatment Pond
D203	3 Spencer Place, Brightwater	Brightwater Pump Station
D204	SH 60, Upper Takaka	Upper Takaka Wastewater Treatment Pond
D243	Headingly Lane, Richmond	Wastewater pipeline
D244	Lower Queen Street and McShane Road, Richmond	Wastewater pump station

The Council has planned strategic studies specifically for Motueka and Waimea to determine network requirements. The Council expects that designations will be required for a new inland WWTP in Motueka and other wastewater assets. The location of these will be determined by the strategy.

11 Risk Management and Assumptions

This AMP and the financial forecasts within it have been developed from information that has varying degrees of completeness and accuracy. In order to make decisions in the face of these uncertainties, assumptions have to be made. This section documents the uncertainties and assumptions that The Council considers could have a significant effect on the financial forecasts, and discusses the potential risks that this creates.

11.1 Our Approach to Risk Management

A risk is any event that has the potential to impact on the achievement of the Council's objectives. The potential impact of a risk is measured by a combination of the likelihood of the risk occurring, and the magnitude of its consequences on objectives if it does. The Council has adopted both a Risk Management Policy that aligns with the Australian/New Zealand Standard AS/NZ ISO 31000:2009, and a Risk Management Framework which provides guidance and tools to apply to ensure a consistent approach to analysing and managing risks across the organisation. All risks described and managed in this Activity Management Plan comply with the principles and requirements of the policy and framework.

11.2 Activity Risks and Mitigation

The key risks relevant to the wastewater activity are summarised in Table 28~~Table 28~~ below:

Table 28: Keys Risks

Risk Event	Mitigation Measures
Catastrophic failure of reticulation and plant due to a natural hazard	Current • Reactive inspection following extreme weather events • Emergency generation • Septic tankers • Some redundancy at WWTPs • Improved design standards for new assets
	Proposed • New assets designed to improved standard
Insufficient capacity to discharge responsibilities associated with managing wastewater infrastructure	Current • Training, conferences, networking • Multi skilling staff • System Operating Plans
	Proposed • Improving System Operating Plans Improving asset knowledge and data and systems that capture the data

Risk Event	Mitigation Measures
Inadequate knowledge of infrastructure	Current • System Operating Plans • As-builts • Confirm asset database
	Proposed • Improving System Operating Plans • Improving asset knowledge and data and systems that capture the data • Improving as-built data collection and verification
Ineffective stakeholder engagement e.g. iwi, Historic Places Trust, community groups	Current • The Council attends regular iwi meetings. • The Council's GIS software includes layers identifying cultural heritage sites and precincts. The Council staff apply for Historic Places Trust authorities there is a potential risk of damage or destruction of sites. • Project management processes and the Council's consultation guidelines are followed. • Involve key stakeholders at planning stages of projects
	Proposed • Engage and partner with iwi in a more meaningful way • Seek advice and guidance from iwi on how to give effect to Te Mana o te Wai

11.3 Assumptions and Uncertainties

This AMP and the financial forecasts within it have been developed from information that has varying degrees of completeness and accuracy. In order to make decisions in the face of these uncertainties, assumptions have to be made. This section documents the uncertainties and assumptions that the Council considers could have a significant effect on the financial forecasts, and discusses the potential risks that this creates.

Table 29: Generic Assumptions and Uncertainties

Type	Uncertainties	Assumption	Discussion
Financial	Unless stated it can be unclear whether financial figures include inflation or not, as well as whether GST has been included or not.	That all expenditure has been stated in 1 July 2020 dollar values and no allowance has been made for inflation and all financial projections exclude GST unless specifically stated.	The LTP will incorporate inflation factors. This could have a significant impact on the affordability of each activity if inflation is higher than allowed for. The Council is using the best information practically available from Business and Economic Research Limited (BERL) to reduce this risk.
Asset Data Knowledge	The Council has inspection and data collection regimes in place for assets. These regimes do not allow for entire network coverage at all times. The Council's aim is to strike the right balance between adequate knowledge and what is practical.	That the Council has adequate knowledge of the assets and their condition so that planned renewal works will allow the Council to meet the proposed levels of service.	There are several areas where the Council needs to improve its knowledge and assessments, but there is a low risk that the improved knowledge will cause a significant change to the level of expenditure required.
Growth Forecasts	Growth forecasts are inherently uncertain and involve many assumptions. The Council commissioned population projections for the LTP 2021-2031 as the basis for its growth planning. However, growth will vary depending on actual birth and death rates, as well as net migration.	That the district will grow or decline as forecast in the Council's Growth Model. The overall population of Tasman is expected to increase by 7,700 residents between 2021 and 2031, to reach 64,300. The District will experience ongoing population growth over the next 30 years but the rate of growth will slow over time. Based on these assumptions, the Council is planning a further 4,300 dwellings and 160 new commercial or industrial buildings will be required by 2031.	Growth forecasts are used to determine infrastructure capacity and when that capacity will be required. If actual growth varies significantly from what was projected, it could have a moderate impact on the Council's plans. If growth is higher than forecast, additional infrastructure may be required quicker than anticipated. If growth is lower, the Council may be able to defer the delivery of new or additional infrastructure.

Type	Uncertainties	Assumption	Discussion
Project Timing	Multiple factors affect the actual timing of projects e.g.: Consents Access to and acquisition of land Population growth Timing of private developments Funding and partnership opportunities	That projects will be undertaken when planned.	The risk of the timing of projects changing is high due to factors like resource consents, third party funding, and land acquisition and access. The Council tries to mitigate these issues by undertaking the investigation, consultation and design phases sufficiently in advance of when construction is planned. If delays occur, it could have an impact on the levels of service and the Council's financing arrangements.
Project Funding	The Council cannot be certain that it will receive the full amount of anticipated subsidy or contribution. It depends on the funder's decision making criteria and their own ability to raise funds.	That projects will receive subsidy or third party contributions at the anticipated levels.	The risk of not securing funding varies and depends on the third party involved. If the anticipated funding is not received it is likely that the project will be deferred which may impact levels of service.
Accuracy of Cost Estimates	Project scope is often uncertain until investigation and design work has been completed, even then the scope can change due to unforeseen circumstances. Even if the scope has certainty there can be changes in the actual cost of work due to market competition or resource availability.	That project cost estimates are sufficiently accurate enough to determine the required funding level.	The risk of large underestimation is low; however, the importance is moderate as the Council may not be able to afford the true cost of the project. The Council tries to reduce this risk by undertaking reviews of all estimates and including an allowance for scope risk based on the complexity of the project.

Type	Uncertainties	Assumption	Discussion
Land Access and Acquisition	Land access and acquisition is inherently uncertain. Until negotiations commence, it is difficult to predict how an owner will respond to the request for access or transfer.	That the Council will be able to secure land and/or access to enable completion of projects.	The risk of delays to projects or changes in scope is high due to the possibility of delays in obtaining access. Where possible, the Council undertakes land negotiations well in advance of construction to minimise delays and scope change. If delays do occur, they may affect the level of service that the Council provides.
Legislation Changes	Often Central Government changes legislation to respond to emerging national issues and opportunities. It is difficult to predict what changes there will be to legislation and their implications for the Council.	The Council assumes that it will be affected by changes to Government legislation. However, as the nature of these changes is not known no financial provision has been made for them except where noted elsewhere in the LTP 2021-2031 forecasting assumptions.	The risk of major changes that impact the Council is moderate. If major changes occur, it is likely to have an impact on the required expenditure. The Council has not planned expenditure to specifically mitigate this risk. It may be necessary for the Council to reprioritise planned work to respond to future legislation.
Emergency Reserves	It is impossible to accurately predict when and where a natural hazard event will occur. Using historic trends to predict the future provides an indication but is not comprehensive. The effects of climate change are likely to include more frequent emergency events.	That the level of funding reserves combined with insurance cover and access to borrowing capacity will be adequate to cover reinstatement following emergency events.	Funding levels are based on historic requirements. The risk of requiring additional funding is moderate and may have a moderate effect on planned works due to reprioritisation of funds.

Type	Uncertainties	Assumption	Discussion
Network Capacity	The Council uses a combination of as built data, network modelling and performance information to assess network capacity. The accuracy of the capacity assessment is based on the accuracy of asset and performance data.	That the Council's knowledge of network capacity is sufficient enough to accurately programme works.	If the network capacity is higher than assumed, the Council may be able to defer works. The risk of this occurring is low, however it should have a positive impact on the community because the level of service can be provided for longer before requiring additional capital expenditure. If the network capacity is lower than assumed, the Council may be required to advance capital works projects to provide the additional capacity sooner than anticipated. The risk of this occurring is low, however it could have a significant impact on expenditure.

Type	Uncertainties	Assumption	Discussion
Climate change	Continued greenhouse gas emissions will cause further warming and changes in all parts of the climate system. The level of continued emissions of greenhouse gases and the effectiveness of worldwide efforts to reduce them are not known. The full extent of the impacts of climate change and the timing of these impacts are uncertain.	The Council uses the latest climate predictions that have been prepared by NIWA for the Tasman District. The Council assumes that it is not possible to reduce the mid-century warming, due to the amount of carbon dioxide already accumulated in the atmosphere – i.e. that the projections for mid-century are already 'locked in'. As a consequence of climate change, natural disasters will occur with increasing frequency and intensity. The weather-related and wildfire events the District has experienced in recent years are consistent with predictions of climate change impacts. For low lying coastal land there will be increasing inundation and erosion from sea level rise and storm surge. Adaptation can help reduce our vulnerability and increase our resilience to natural hazards. We assume that sea levels will continue to rise and are likely to rise at an accelerated rate over time. Our plans assume a sea level rise (SLR) of up to 0.3m by 2045, 0.9m by 2090 and 1.9m to 2150 (metres above 1986-2005 baseline), in line with the Ministry for the Environment's Coastal Hazards and Climate Change Guidance (2017).	It is likely that risk of low lying land being inundated from the sea, and damage to the Council property and infrastructure from severe weather events, will increase. The Council will need to monitor the level of sea level rise and other impacts of climate change over time and review its budgets, programme or work and levels of service accordingly. The Council will continue to take actions to mitigate its own greenhouse gas emissions, to work with the community on responses to climate change and show leadership on climate change issues.

Type	Uncertainties	Assumption	Discussion
		For coastal subdivisions, greenfield developments and major new infrastructure, we are planning for 1.9m SLR by 2150. All sea-level rise assumptions are based on the RCP8.5H+ scenario set out in the MfE guidance (2017).	

Table 30 Wastewater Specific Assumptions and Uncertainties

Type of Uncertainty	Description
Inflow and infiltration and pipe renewals	Currently, there are high levels of inflow and infiltration in the Motueka and Richmond wastewater networks. This takes up capacity that could otherwise be used by new connections. The Council has assumed that this inflow and infiltration will be addressed by on-going pipe renewals and targeted inflow and infiltration repairs. The Council expects that this work will reduce demand enough to be able to provide capacity to support the level of growth predicted for Motueka (excluding Motueka West). It is possible for the works to achieve insufficient capacity, or for the rate of growth to exceed the rate of inflow and infiltration reductions. If this is the case, the Council will need to programme additional pipe upgrades to enable growth, or potentially limit the rate and location of new connections.
Renewals	The Council cannot be certain how long each individual asset will last. To address this uncertainty, the Council assigns an average expected life for types of assets to assist with renewal planning. Some assets will fail before reaching the end of their expected life useful life, and some will last longer. The Council has assumed that it will be able to manage this variance within its budges it set by prioritizing renewals annually.
Pipe renewals	The Council cannot be certain about how pipe rehabilitation technology will evolve in the future. The Council has planned the renewals programme based on fully replacing (excavating) aging and faulty pipes. Technology may evolve using new and trenchless construction methods that will reduce renewal budgets.
NRSBU costs	The Council is uncertain about NRSBU costs because operational costs are based on the use of individual subscribers and this can be variable. The Council has planned budgets based on historic usage. If usage is different to assumed, costs may change.
Low pressure pumping systems	The Council is responsible for maintaining low-pressure pumping system assets (where a whole catchment is serviced) and cannot be certain about the number of assets that will be vested in the future because it depends on where and how fast growth occurs. The Council has assumed maintenance budgets based on growth occurring as per the growth model. If the rate and location of growth exceeds the Council will need to programme additional maintenance budget.
Asset information	The Council is uncertain about the impact that improved asset information (condition & performance data) will have on asset management. The Council assumes that planned data, process and systems improvements will be realised. Improvements will likely affect the renewals budget and programme in the future.
Weather Patterns	The Council is uncertain about the frequency and duration of wet weather but assumes it will change in the future. If wet weather gets worse there will be implication from inflow and infiltration in the wastewater network.

Type of Uncertainty	Description
Sea Level Rise	The Council is uncertain about the precise nature of climate change. The Council assumes there will be sea level rise, increased wave height and storm surges in the future. Many wastewater assets are located close to the coast and the impact of sea level rise will influence the timing of capital works for new assets and facilities (e.g. Motueka WWTP). Furthermore, there may be projects required that the Council has not yet have identified.
Trade Waste	The Council increased the trade waste charges in July 2018 and 2019, however it is uncertain about the income in the future. The Council assumes trade waste volumes and income with be in line with historic usage and budgets.

12 Asset Management Processes and Practices

Good quality data and asset management processes are the heart of effective planning. This section describes our approach to asset management, defines the appropriate practice levels, and provides an overview of our asset management systems and data that underpins the wastewater activity.

12.1 Appropriate Practice Levels

The Office of the Auditor General (OAG) has chosen to use the International Infrastructure Management Manual (IIMM) as the benchmark against which New Zealand councils measure their activity management practices. There are five maturity levels in the IIMM: Aware, Basic, Core, Intermediate and Advanced. The IIMM sets out what the requirements are for each level against each area of the activity management system.

In February 2020, the Council reviewed its Activity Management Policy and adopted an updated version. The Policy sets out the Council's activity management objectives and appropriate levels of practice. For the wastewater activity, the Council has determined that the appropriate level of practice is an 'intermediate level' with 'advanced level' of practice for demand forecasting, asset register data and asset condition.

12.2 Service Delivery

12.2.1 Activity and Asset Management Teams

The Council has an organisational structure and capability that supports effective asset management planning. Multiple teams across the Council are responsible for the different aspects of activity and asset management. The focus of the teams ranges from a strategic focus at the Long Term Plan/Infrastructure Strategy level, which involves a cross-Council team, through to detail/operational focus at the Operational team level.

The Council acknowledge that as part of the Three Waters Review, the Government is considering reform of the current water service delivery models from the Council owned authorities into larger scale multi regional model providers. The nature of service delivery upon implementation of the reforms is uncertain. For the development of this LTP, we have assumed no change in service delivery for the water supply activity.

Within the Engineering Services department, the asset management planning function is managed by the Activity Planning team. Operations are the responsibility of the Utilities and Transportation teams, while Projects and Contracts are managed by the Programme Delivery team.

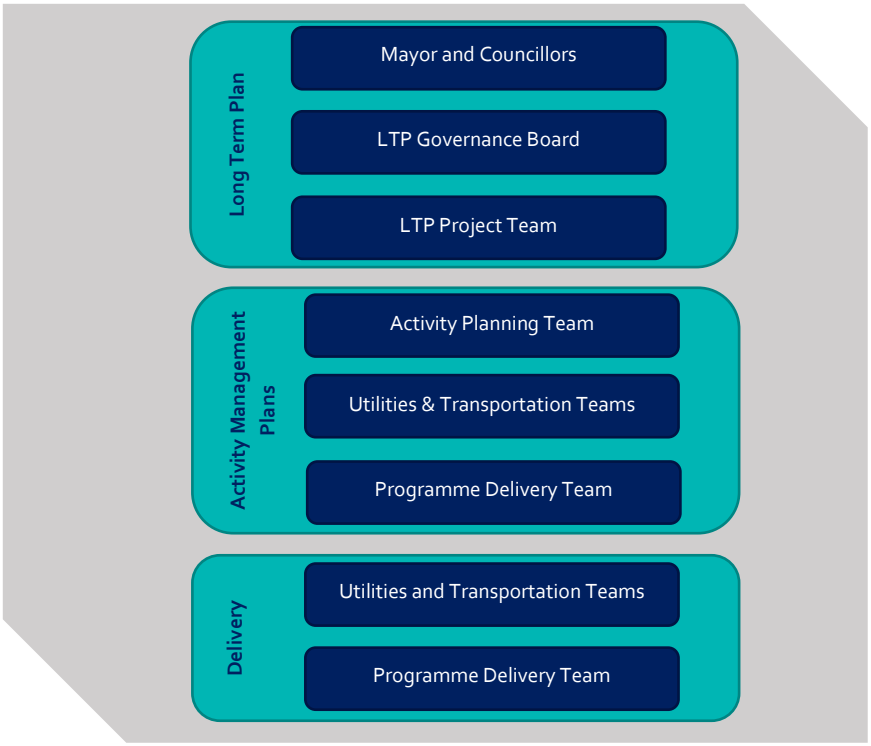


Figure 21: The Council teams for responsible for aspects of activity and Asset Management

The Activity Planning Team is responsible for the update of the activity management plans every three years, as well as implementation of the improvement plan. Each plan is assigned to the respective Activity Planning Advisor who is responsible for updating it. The Activity Planning Advisor works in with the activity's Asset Engineer to ensure that the current and future operating and maintenance aspects of the activities are adequately incorporated into the document. All activity management plans are reviewed by the Activity Planning Programme Leader who holds a National Diploma in Infrastructure Asset Management. The quality assurance process for the Engineering Services activity management plans is provided below.

- Preparation — Activity Planning Advisor
- Check — Utilities or Transportation Manager, and relevant Asset Engineer
- Review — Activity Planning Programme Leader
- Approve — Engineering Services Manager
- Adopt — Full Council

12.2.2 Staff Training

The Council maintains an annual budget for staff training that is managed by the Engineering Services Manager for the Engineering Services department. This budgets allows for continued development of staff to ensure that best practice is maintained and that the Council retains the skills needed to make improvements in asset management practices. This includes on-going technical and professional training as well as specific asset management training.

12.2.3 Professional Support

The Engineering Services Department has a need to access a broad range of professional service capabilities to undertake investigation, design and procurement management in support of its wastewater activity. There is also a need to access specialist skills for design, planning and policy to support the in-house management of the Council's networks, operations and maintenance.

To achieve this the Council went to the open market in late 2013 for a primary professional services provider as a single preferred consultant to undertake a minimum of 60% in value of the Council's infrastructure professional services programmes. The contract was awarded to MWH New Zealand Ltd (now Stantec NZ), beginning on 1 July 2014 with an initial three-year term and two three-year extensions to be awarded at the Council's sole discretion. In 2017, the first of these discretionary three-year extensions was granted, with the proportion of the Council's professional services programmes reduced to 50%. In addition to this, a secondary professional service panel was also appointed through an open market tender process for a period of three years, to provide professional services that will not be supplied by Stantec.

12.2.4 Procurement Strategy

The Council has a formal Procurement Strategy that it follows in order to engage contractors and consultants to assist the Engineering Services department. This strategy describes the procurement environment that exists within the Tasman District. It was developed following a three-year review of the strategy and was approved in November 2013. It principally focuses on Engineering Services and is consistent with whole-of-government procurement initiatives.

12.2.5 Service Delivery Reviews

In 2014, Section 17A was inserted into the Local Government Act, which requires the Council to review the cost effectiveness of its current arrangements for providing local infrastructure, services, and regulatory functions at regular intervals. Reviews must be undertaken when service levels are significantly changed, before current contracts expire, and in any case not more than six years after the last review. In addition to the regular reviews, the Act requires the Council to complete an initial review of all functions by August 2017.

Table 31~~Table 31~~ below summarises the review that have been completed to date and when the next review is required for this activity.

Table 31: Summary of Review

Scope of Review	Summary of Review	Review Date	Next Review
Three Waters Operations & Maintenance Contract	An initial review found that current operations & maintenance contract arrangements were appropriate and that the new contract would be procured on a similar basis. A full review is to be conducted in collaboration with Nelson City Council at a later date.	2017	2022

In addition to the Section 17A reviews, the Engineering Services department reviewed its current capability and capacity against the requirements of the future programmes of work set out in its activity management plans. To enhance the department's ability to deliver the capital works programme the following actions have been taken:

- undertaken a detailed review of the capital programme for the next five years to better understand project complexities and delivery requirements
- implemented Planview a new project management system to track and report project delivery progress
- increased the number of Project Managers from 4 to 5.5 full time equivalent staff resources
- introduced enhanced performance requirements for our lead technical consultant for delivery of technical advice and engineering design
- tendered for a new supporting professional services paned with enhanced performance requirements.

12.3 Asset Management Systems and Data

12.3.1 Information Systems and Tools

The Council has a variety of systems and tools that support effective operation and maintenance, record asset data, and enable that data to be analysed to support optimised life-cycle management. These are detailed below in Figure 22~~Figure 22~~ below. There is a continual push to incorporate all asset data into the core asset management systems where possible; where not possible, attempts are made to integrate or link systems so that they can be easily accessed.

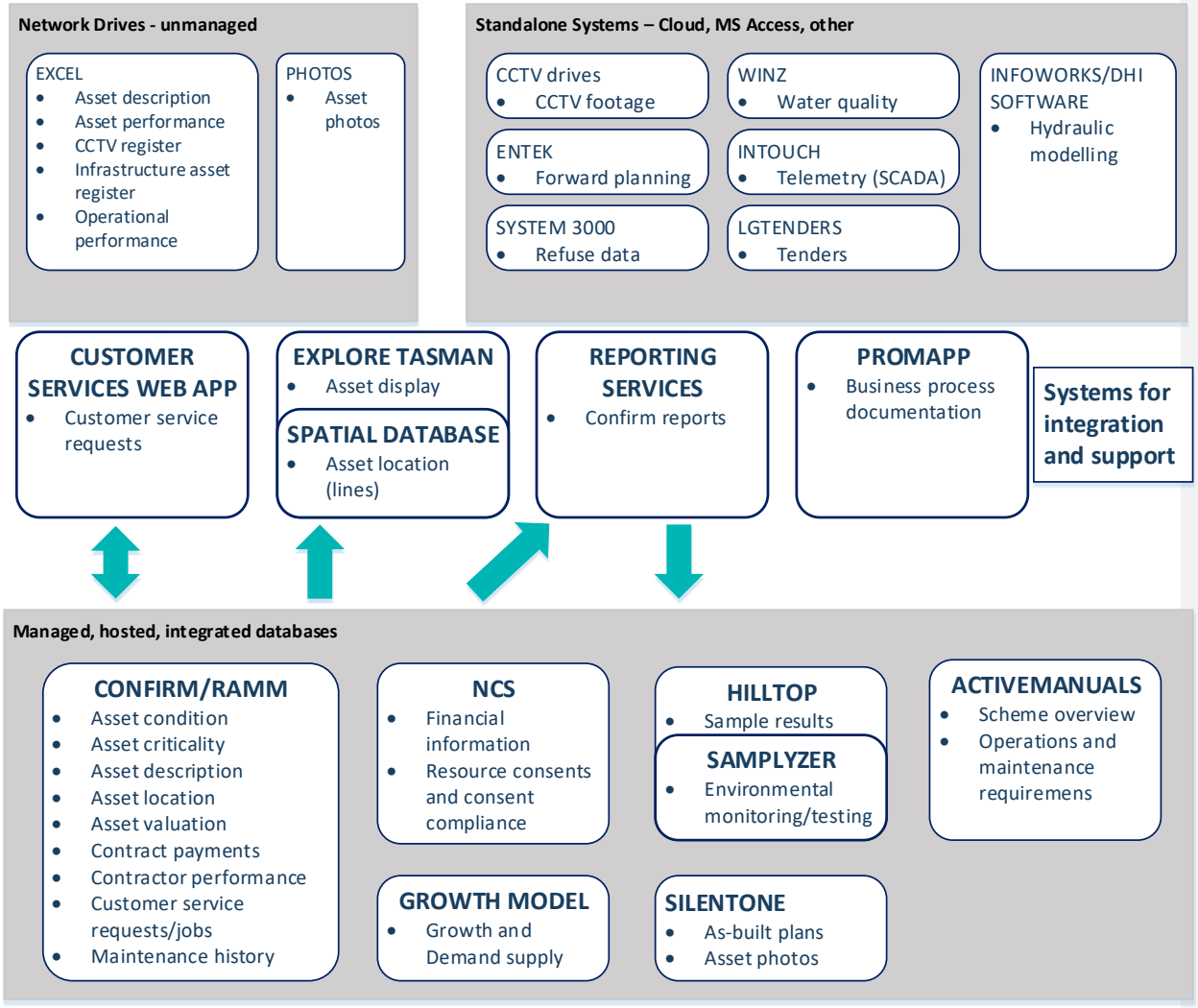


Figure 22: Systems Used for Asset Management

12.3.2 Asset Data

Formatt

~~Table 32~~ summarises the various data types, data source and how they are managed within the Council. It also provides a grading on data accuracy and completeness where appropriate.

Table 32: Data Types and Information Systems

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
As-built plans	DORIS (Digital Office and Record Information System)	As-built plans are uploaded to DORIS, allowing digital retrieval. Each plan is audited on receipt to ensure a consistent standard and quality.	2	2
Asset condition	Confirm	Assets are inspected by a consultant or staff and the inspection information in entered directly into Confirm using the Connect mobile application.	N/A	N/A
Asset criticality	Confirm	When a new asset is created, the activity planner and engineer will make an assessment on criticality. Criticality of asset can be modified by authorized users should circumstances change.	N/A	N/A
Asset description	Confirm / spreadsheets	All assets are captured in Confirms Site and Asset modules, from as-built plans and maintenance notes. Hierarchy is defined by Site and three levels of Asset ID (whole site, whole asset or asset). Assets are not broken down to component level except where required for valuation purposes. It is also possible to set up asset connectivity, but this hasn't been prioritised for the future yet. Detail on some datasets held in spreadsheets relating to Utilities Maintenance Contract 688; work is in progress to transfer this detail to Confirm as resourcing allows.	2	2
Asset location	Confirm (point data) / GIS (line data)	Co-ordinates for point data completely (NZTM) describe spatial location. Line data links to GIS layers that describe the shape.	2	2
Asset valuation	Confirm	Valuation of assets done based on data in Confirm and valuation figures stored in Confirm.	2	2
Contract payments	Confirm	All maintenance and capital works contract payments are done through Confirm. Data on expenditure is extracted and uploaded to NCS.	N/A	N/A

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Contractor performance	Confirm	Time to complete jobs is measured against contract KPIs through Confirms Maintenance Management module.	N/A	N/A
Corporate GIS browser	Explore Tasman	Selected datasets are made available to all the Council staff through this internal GIS browser via individual layers and associated reports.	N/A	N/A
Customer service requests	Customer Services Application / Confirm	Customer calls relating to asset maintenance are captured in the custom-made Customer Services Application and passed to Confirm's Enquiry module or as a RAMM Contractor Dispatch.	N/A	N/A
Environmental monitoring / testing	Hilltop / spreadsheet	Laboratory test results performed on monitoring and testing samples (from treatment plants and RRCs) are logged direct into Hilltop via an electronic upload from the laboratories. Due to historical difficulties in working with Hilltop data, it is duplicated in spreadsheets.	2	2
Financial information	NCS	The Council's corporate financial system is NCS, a specialist supplier of integrated financial, regulatory and administration systems for Local Government. Contract payment summaries are reported from Confirm and imported into NCS for financial tracking of budgets. NCS also holds Water billing information, while asset details and spatial component are recorded in Confirm and cross-referenced.	N/A	N/A
Infrastructure Asset Register	Spreadsheet	High level financial tracking spreadsheet for monitoring asset addition, disposals and depreciation. High level data is checked against detail data in the AM system and reconciled when a valuation is performed.	2	2
Forward planning	Spreadsheets, GIS Mapping	Forward programmes for the Council's activities are compiled in excel, These are loaded onto GIS based maps for information and in order to identify clashes and opportunities.	N/A	N/A

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Growth and Demand Supply	Growth Model	A series of linked processes that underpin the Council's long term planning, by predicting expected development areas, revenues and costs, and estimating income for the long term.	2	2
Hydraulic modelling	Infoworks / DHI Software	Models have been developed for a number of schemes and catchments. Copies of the models are held on the Council's network drives.	2	4
Maintenance history	Confirm	Contractor work is issued via Confirms Maintenance Management module. History of maintenance is stored against individual assets. Prior to 2007 it was logged at a scheme level.	2	2
Photos	Network drives / DORIS	Electronic photos of assets are mainly stored on the Council's network drives. Coastal Structures and Streetlight photos have been uploaded to DORIS and linked to the assets displayed via Explore Tasman.	N/A	N/A
Processes and documentation	Promapp	Promapp is process management software that provides a central online repository where the Council's process diagrams and documentation is stored. It was implemented in 2014 and there is a phased uptake by business units.	2	5
Resource consents and consent compliance	NCS	Detail on Resource Consents and their compliance of conditions (e.g. sample testing) are recorded in the NCS Resource Consents module.	2	2
Reports	Confirm Reports	Many SQL based reports from Confirm and a few from RAMM are delivered through Confirm Reports. Explore Tasman also links to this reported information to show asset information and links (to data in DORIS and NCS).	N/A	N/A
Tenders	LGTenders	Almost all New Zealand councils use this system to advertise their tenders and to conduct the complete tendering process electronically.	N/A	N/A

Data Type	Information System	Management strategy	Data Accuracy	Data Completeness
Operations & Maintenance Information	ActiveManuals™	ActiveManuals™ is a repository of operations and maintenance manuals, manufacturer manuals, technical documents, drawings and photographs. The system enables shared access for the Council staff and its partners responsible for operating and maintaining the Council assets.	N/A	Ongoing

Table 33: Data Accuracy and Completeness Grades

Grade	Description	% Accurate
1	Accurate	100
2	Minor Inaccuracies	+/- 5
3	50 % Estimated	+/- 20
4	Significant Data Estimated	+/- 30
5	All Data Estimated	+/- 40

Grade	Description	% Complete
1	Complete	100
2	Minor Gaps	90 – 99
3	Major Gaps	60 – 90
4	Significant Gaps	20 – 60
5	Limited Data Available	0 – 20

12.4 Critical Assets

Knowing what's most important is fundamental to managing risk well. By knowing this, the Council can invest where it is needed most, and it can tailor this investment at the right level. This will avoid over investing in assets that have little consequence of failure, and will ensure assets that have a high consequence of failure are well managed and maintained.

For infrastructure, this is knowing Tasman's critical assets and lifelines. These typically include:

- Wastewater treatment plants
- Trunk mains; and
- Main pump stations

During 2016, the Council in partnership with Nelson City Council, the Regional Civil Defence Emergency Management Group and other utility providers, prepared the Nelson Tasman Lifelines Report. This report summarises all lifelines within Nelson and Tasman. Within the report there was a number of actions identified to improve the Region's infrastructure resilience.

The Council also recently developed an asset criticality assessment framework for water supply, waste water and stormwater. The frameworks is defined by:

- A 'Criticality Score' from 1 (very low criticality asset) to 5 (very high criticality asset)
- A set of 'Criteria' against which each asset will be assessed and assigned a Criticality Score (see 1 above)
- A set of straightforward, logical rules, measures and proxies under each criteria that can be assessed for each asset and enable a criticality Score to be assigned in a spatial (i.e. GIS) context.

For each asset, the criticality has been assessed against the following five criteria:

1. Number of people that would be effected if the asset failed.
2. Asset failure would prevent/impair use of a critical facility.
3. Ease of access/complexity of repair.

4. Asset failure has potential for environmental/health/cultural impacts.

5. Asset failure has potential to initiate cascading failures and/or asset has interdependencies with other assets.

Based on the above, asset criticality has been assessed for all assets across the district and mapped spatially in a GIS viewer. The vulnerability of critical assets to natural hazards has been identified through the overlay of natural hazards information such as coastal inundation and sea level rise, stormwater and river flooding, fault lines, tsunami risk and liquefiable soils.

The asset criticality framework will help to ensure that the appropriate level of effort is being made to manage, maintain and renew them, and will extend to ensuring that the Council has adequate asset data to enable robust decisions to be made regarding the management of those assets.

12.5 Quality Management

The Council has not implemented a formal Quality Management system across the organisation. Quality is ensured by audits, checks and reviews that are managed on a case by case basis. Table 34 outlines the quality management approaches that support the Council's asset management processes and systems.

Table 34: Quality Management Approaches

Activity	Description
Process documentation	The Council uses Promapp software to document and store process descriptions. Over time, staff are capturing organisational knowledge in an area accessible to all, to ensure business continuity and consistency. Detailed documentation, forms and templates can be linked to each activity in a process. Processes are shown in flowchart or swim lane format, and can be shared with external parties.
Planning	The Long Term Plan and associated planning process are formalised across the Council. There is a LTP project team, LTP governance team, and AMP project team that undertakes internal reviews prior to the Council approval stages. Following completion of the AMPs, a peer review is done, and the outcomes used to update the AMP improvement plans.
Programme Delivery	This strictly follows a gateway system with inbuilt checks and balances at every stage. Projects cannot proceed until all criteria of a certain stage have been completely met and formally signed off.
Subdivision Works	Wastewater infrastructure is inspected throughout its installation and then CCTV'd and pressure tested before the Council sign-off and acceptance. Defects and poor workmanship will not be accepted. All work is bonded for a 2-year maintenance period.
Asset Creation	As-built plans are reviewed on receipt for completeness and adherence to the Nelson Tasman Land Development Manual. If anomalies are discovered during data entry, these are investigated and corrected. As-built information and accompanying documentation is required to accompany maintenance contract claims.

Activity	Description
Asset Data Integrity	Monthly reports are run to ensure data accuracy and completeness. Stormwater, water, wastewater, coastal structures, solid waste and streetlight assets are shown on the corporate GIS browser, Explore Tasman, and viewers are encouraged to report anomalies to the Activity Planning Data Management team.
Operations	Audits of a percentage of contract maintenance works are done every month to ensure that performance standards are maintained. Failure to comply with standards is often linked to financial penalties for the contractor.
Levels of Service	Key performance indicators are reported annually via the Council's Annual Report. This is audited by the Office of the Auditor General.
Reports to the Council	All reports that are presented to the Council by staff are reviewed and approved by the Senior Management Team prior to release.

13 Improvement Planning

The activity management plans have been developed as a tool to help the Council manage their assets, deliver on the agreed levels of service and identify the expenditure and funding requirements of the activity. Continuous improvements are necessary to ensure the Council continues to achieve the appropriate level of activity management practice along with delivering services in the most sustainable way while meeting the community's needs.

Establishment of a robust, continuous improvement process ensures that the Council is making the most effective use of resources to achieve an appropriate level of asset management practice.
Assessment of our Activity Management Practices

13.1 Maturity Assessments

In 2017, the Council undertook an assessment of its current asset management practices for the wastewater activity. This was a self-assessment with the targets developed in consultation with Waugh Infrastructure Management Ltd to ensure they were appropriate for the activity given:

- Criticality of the Assets;
- Value of the Assets;
- Value spent on maintaining the assets.

The maturity levels were based on the International Infrastructure Management Manual descriptions to maturity.

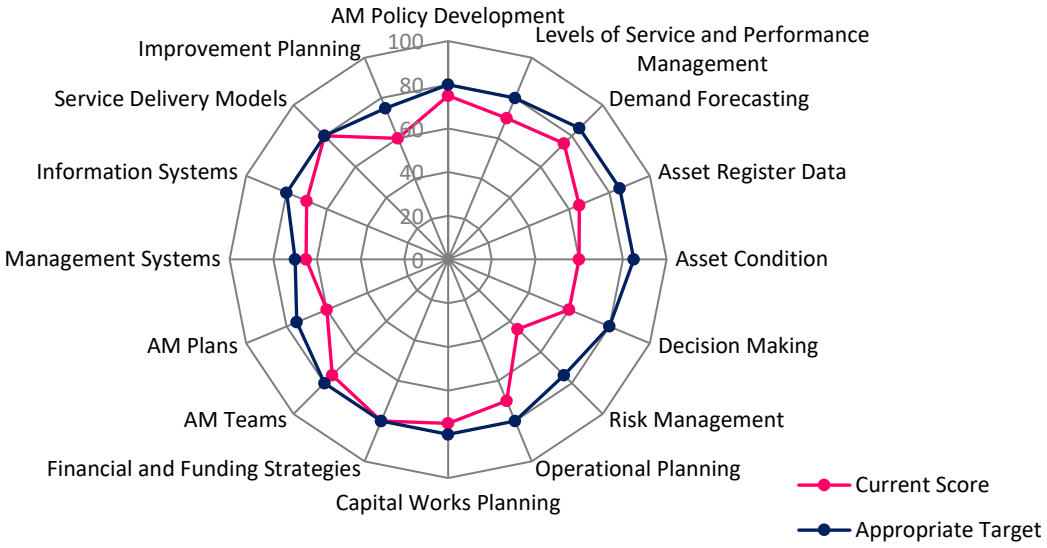


Figure 23: Wastewater Maturity Assessment Levels

Figure 27 shows there are some gaps between where the Council's current practice is and where it is desired to be. Focus areas for improvements are Asset Register Data, Asset Condition, Decision Making, and Risk Management. The actions required to close these gaps have been included in the Improvement Plan.

13.2 Peer Reviews

13.2.1 Waugh Review

In early 2018, the Council engaged Waugh Infrastructure Management Ltd to undertake a peer review on the consultation version of this activity management plan. The peer review considered all Engineering Services activities and included the following analysis:

- Overview analysis and consideration of AMP progress completed since the Waugh Infrastructure detailed 2011 AMP Compliance Report (in summary not detail)
- Review of AMPs against general industry practice as observed by Waugh Infrastructure in the past 12 months
- Review and commentary on the adequacy of the AMP structure against current industry practice and requirements, as set out in IIMM 2015, ISO 55000
- Analysis of AMP individual section strengths and emphasis, including analysis of overall AMP 'message' verses issues identified
- Overview analysis of AMP status against appropriate asset management practice levels adopted in the Council's Activity Management Policy (summary not detail)
- Analysis of the AMPs against Local Government Act 2002 amendment requirements, both 2012, and 2014 – identification of any issues or 'misses'
- Provide review comments of AMP strengths and weaknesses identified, with commentary on any suggested priority changes to be completed before LTP 2018.

It is important to note that the peer review only considered what was included in the consultation version of this activity management plan. There are aspects of the Council's asset management processes that are not discussed in this activity management plan and are therefore not incorporated into the scoring.

The overall findings of the Peer Review were that the Council's AMPs are well developed to support the Council's Long Term Plan. Some of the AMPs had sections that required completion, but overall missing elements noted were relatively minor.

The AMP template has been updated to incorporate recent Local Government Act changes. The AMP template developed and used by the Council has allowed clear, concise presentation of information in a logical manner.

The overall compliance status is shown below in Figure 24~~Figure 24~~.

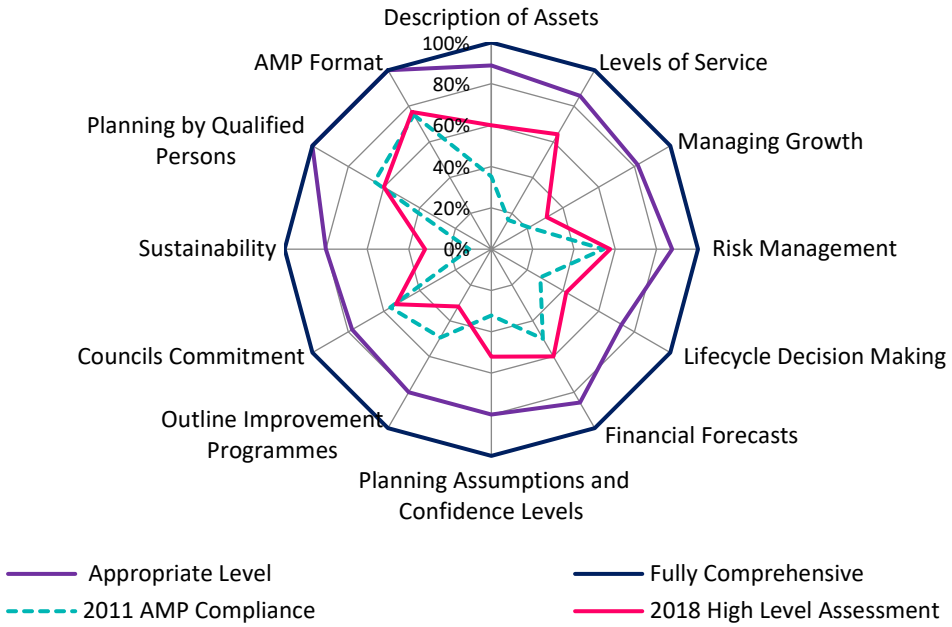


Figure 24: 2018 Peer Review Compliance Status Summary

The Council staff have reviewed and prioritised the feedback received in the peer review report. Improvements that could be made immediately have been incorporated into the final version of this activity management plan. Other improvements have been ranked and included in the Improvement Plan.

There has been a minor decrease in scores for Outline Improvement Programmes, the Council's Commitment, and Planning by Qualified Persons. This is not due to a change in the Council's practice or performance, but due to a change in the activity management plan template. After receiving the peer review feedback, additional discussion has been included in Section 12 and Section 13 to address these issues.

13.2.2 Water New Zealand's National Performance Review

The Council voluntarily participate in Water New Zealand's National Performance Review (NPR). It is an annual benchmarking exercise of the Three Waters (water supply, wastewater and stormwater) service delivery. NPR benchmarks are used to identify potential opportunities to improve service delivery and compare specific performance results against other District, City Council and Council-Controlled Organizations. The report provides decision makers and the public with a transparent picture of the Council's performance within the sector.

13.3 Improvement Plan

Based on the peer review by Waugh Infrastructure Management Ltd and internal evaluations and reviews, the Council has made improvements to its activity management plan and asset management processes. For the Wastewater activity, areas of strengths include:

- Asset descriptions
- Summary and discussion of key issues
- Discussion of levels of service and performance analysis

- Well documented assumptions, uncertainties and risks
- Well defined financial forecasting
- Identification of appropriate asset management maturity
- Sustainability is well defined, progressed and audited (including achievement of milestones)
- Acknowledgement of NZ Metadata Standard and progress of improving As-built standards.

13.3.1 Summary of Recent Improvement

Some of the Council's key achievements in the asset management process over the previous three years include:

- Continued to development of the System Operating Plans (available on ActiveManuals);
- Staff continued to undertake targeted CCTV survey inspections in areas where inflow and infiltration and blockages occur. An annual CCTV data collection and inflow and infiltration programme has been budgeted over the next 30 years to help address the issue.
- Trade Waste Implementation - approvals issued for the majority of the identified large (conditional) trade waste dischargers. Approvals issued for some of the registered dischargers and work is in progress for the remainder of the registered dischargers and the remaining smaller conditional dischargers.
- The renewed Operation and Maintenance contract results in better and more efficient asset management as well improved data collection.

13.3.2 Summary of Planned Improvements

A list of the Wastewater activity specific improvement items are summarised in Table 35~~Table 35~~ below.

Table 35: Wastewater Improvement Plan

Improvement Item	Further Information	Need for Improvement	Priority	Status	Expected Completion Date	Team Responsible	Cost / Resource Type
Improve asset condition data	New operations and maintenance contact set up includes more responsibility to contractor to collect and populate condition data	Some asset condition data is incomplete. Improved understanding of condition data will help the Council with the renewals programme.	High	Commences July 2018	Ongoing	Maintenance Contractor & Engineering Services (Activity Planning)	Maintenance Contract & Staff time
Improve data, processes and systems	The Council is planning to develop as built standards, and asset data and metadata standards	Improved data standards will enhance data reliability and accuracy.	Medium	Started	June 2019	Asset Information Team	Staff time
Create Critical Asset Framework	Describe in AMP how it is used to prioritise asset information and condition assessments, adjust economic lives (renewal profiles) prioritise renewals and expenditure, operation and maintenance	Only the initial assessment has been undertaken, the framework was never re-tested.	High	In Progress	June 2020	Activity Planning	Staff Time
Provide data confidence ratings for groups of assets within the valuation for each activity.		In the valuation reports, data confidence is only assessed across the activity and not for the different types of asset groups. It is likely that data confidence varies considerably between buried assets and above ground assets and this is not reflected in the reports.	Medium	Not started	June 2020	Utilities - Data Analyst	Consultants and staff time Budget $33,500 in 2019/20
Consider how levels of service options are presented to the community	Consider how to better engage the community in agreeing appropriate levels of service through specific work streams (e.g. Risk, Resilience, Recovery Planning).	Engagement is required to determine an appropriate level of service	Medium	Not started	2021	Activity Planning	Staff Time
Capture and track maintenance cost data	Historical costs should be analysed to calculate forward budgets	Improve the consistency and confidence when planning operations and maintenance budgets	Medium	Not started	Ongoing	Activity Planning and Utilities Data Analyst	Staff Time

Appendix A: Detailed Operating Budgets

ID	Name	Description	Total Budget	Financial Year Budget ($)										Total Budget	
			2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
92002	Legal Fees	Professional services associated with development and bylaws	150,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000	50,000
92003	Consultants	Consultants for expert advise where required	900,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000	300,000
92004	O&M Contract Tender	Every nine years 3 Waters contract is re-tendered	450,000	0	0	0	0	100,000	50,000	0	0	0	0	150,000	150,000
92007	AMP Operational Support	External assistance with AMP/LTP development and producing estimates	1,000,000	30,000	40,000	30,000	30,000	40,000	30,000	30,000	40,000	30,000	30,000	340,000	330,000
92008	Reticulation Other O&M	O&M to cover third party costs where The Council is at fault. (Overflows, blockages)	360,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	120,000	120,000
92009	Treatment Plant Other O&M	O&M for non-routine costs. (Non-contract - external consultants)	150,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000	50,000
92010	Pump Stations Other O&M	O&M to cover non-routine & unforeseen works (not associated with O&M Contract)	225,000	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	75,000	75,000
92011	WW Modelling	External expert advice and services for modelling networks	775,000	50,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000	250,000
92012	Reticulation Contract Routine	Routine Works under 3 Waters Contract	2,997,750	111,125	76,125	82,125	111,125	117,125	111,125	82,125	76,125	117,125	111,125	1,001,250	1,001,250
92013	Treatment Plant Contract Routine	Routine Works under 3 Waters Contract	21,250,000	675,000	650,000	675,000	650,000	675,000	650,000	650,000	650,000	675,000	650,000	7,150,000	7,500,000
92014	Pump Stations Contract Routine	Routine Works under 3 Waters Contract	8,170,950	259,000	256,500	259,600	265,950	270,400	277,150	274,900	270,900	273,650	270,900	2,710,250	2,781,750
92018	Reticulation Contract Reactive	Reactive works under 3 Waters Contract	9,447,300	325,200	325,200	300,000	318,900	337,800	337,800	318,900	300,000	315,750	331,500	3,151,200	3,085,050
92019	Treatment Plant Contract Reactive	Reactive works under 3 Waters Contract	5,550,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	185,000	1,850,000	1,850,000
92020	Pump Stations Contract Reactive	Reactive works under 3 Waters Contract	9,330,600	300,000	300,000	303,800	307,600	315,200	315,200	315,200	315,200	315,200	315,200	3,114,000	3,114,000
92021	Wastewater Electricity	General District Wastewater Electricity costs	11,600,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	4,100,000	4,500,000
92022	Wastewater Asset Insurance	The Council's insurances cover for damage	3,103,310	238,437	255,127	272,986	292,095	292,095	292,095	292,095	292,095	292,095	292,095	292,095	0
92023	Rates and Water	Rates and Water Usage	2,542,023	254,202	254,202	254,202	254,202	254,202	254,202	254,202	254,202	254,202	254,202	0	0
92024	General Operations	Specialist advice and support	1,200,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000	400,000
92025	SCADA/Telemetry	Telemetry and Scada Maintenance	900,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000	300,000
92026	Trade Waste Implementation	Trade waste implementation of bylaw. including admin and monitoring and audit- survey & data capture	300,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000	100,000
92027	Inflow & Infiltration Strategy & Programme	Inflow and Infiltration Strategy & Programme: Focus on Richmond, Motueka & Takaka	5,050,000	25,000	125,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000	1,750,000	1,750,000
92028	CCTV Inspections & Data Capture	CCTV Inspections and Data Capture	3,600,000	25,000	75,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	1,250,000	1,250,000

ID	Name	Description	Total Budget	Financial Year Budget ($)										Total Budget	
			2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
92029	Consent Monitoring	Specialist sampling and monitoring associated with resources consents	600,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000	200,000
92030	NRSBU User Charge	Nelson Regional Sewerage Business Unit- variable loading charges	40,370,903	1,438,204	1,427,436	1,438,646	1,541,896	1,794,121	1,851,056	1,842,206	2,000,916	2,088,236	2,268,186	11,340,000	11,340,000
92031	NRSBU Quota	Nelson Regional Sewerage Business Unit- agreed quota. Fixed costs	56,005,560	1,829,320	1,988,920	2,164,100	2,344,600	2,492,420	2,570,320	2,684,320	2,764,500	2,873,560	2,973,500	15,660,000	15,660,000
92034	Energy efficiency initiatives	Initiatives for downgrading electricity supply and fuse sizing	750,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000	250,000
92035	Valuations	Valuations conducted every 3 years for LTP, data required to set depreciation & renewal budgets	120,000	0	12,000	0	0	12,000	0	0	12,000	0	0	48,000	36,000
92036	Waimea Long Term Wastewater Strategy	Strategic studies to consider the long term impact of climate change and future population requirements	150,000	0	100,000	50,000	0	0	0	0	0	0	0	0	0
	Corridor Access / Easements	Activities associated with Corridor Access Requests (CAR) and easement consents	45,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	15,000	15,000
	Feasibility Studies	Feasibility Studies	105,012	52,512	0	0	0	0	16,500	0	0	0	0	36,000	0
	Low Pressure Household Systems Maintenance	Routine maintenance for low pressure pump systems	2,883,990	29,557	35,468	53,202	62,069	67,980	70,936	76,847	79,951	83,054	86,158	1,023,293	1,215,475
	Network level and flow sensors		300,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	100,000	100,000

Appendix B: Detailed Capital Budgets

ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget ($)										Total Budget	
			Growth	Inc LOS	Renewals	2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
96001	Retrofit Inspection Points on Wastewater Laterals	Retrofit inspection points at boundaries of properties in areas of high inflow and infiltration	0	100	0	750,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000	250,000
96002	Sludge Removal	The removal of sludge from all WWTPs	0	0	100	5,787,000	738,000	154,000	0	156,000	688,000	0	0	0	678,000	98,000	2,240,000	1,035,000
96006	Pohara Pump Station Upgrade	Upgrade capacity of pump station, install emergency storage, and connect to new trunk main. Raise valve chamber lids	19	81	0	1,000,000	0	0	0	0	100,000	900,000	0	0	0	0	0	0
96007	New Stafford Drive Pump Station	New PS at 69 Stafford Drive with storage, odour mitigation.	49	51	0	2,070,000	0	0	0	0	0	0	0	0	0	0	250,000	1,820,000
96008	Higgs Road Pump Station Upgrade		0	100	0	50,000	0	0	0	0	0	0	0	0	0	0	50,000	0
96010	Aranui-Higgs Rd Pump Station Upgrade and Storage	Upgrade of pumps in line with population growth, new storage chamber and odour control.	49	51	0	275,000	275,000	0	0	0	0	0	0	0	0	0	0	0
96011	Ruby Bay Pump Station Storage Upgrade	Install 68m³ of emergency storage capacity	49	51	0	665,000	0	0	0	0	0	70,000	595,000	0	0	0	0	0
96012	Mapua Stafford Drive Pump Station		49	51	0	30,000	30,000	0	0	0	0	0	0	0	0	0	0	0
96013	New Rising Main Across Mapua Channel	Directional drill a new 315 ID HDPE pipe from Mapua wharf area to Rabbit island	39	61	0	1,800,000	0	0	0	0	0	0	0	0	0	0	1,800,000	0
96014	New Mobile Generators	Purchase additional mobile generators that can be used across the District	0	100	0	260,000	0	0	0	0	52,000	0	52,000	0	52,000	0	104,000	0

ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget ($)										Total Budget	
			Growth	Inc LOS	Renewals	2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
96015	New Brightwater North Pump Station & Rising Main	New pump station and rising main connecting to existing pump station to accommodate growth	89	11	0	825,000	0	0	0	0	0	0	75,000	750,000	0	0	0	0
96018	District Wide Reticulation Renewals	Renewal of reticulation	0	0	100	17,650,000	300,000	375,000	375,000	300,000	300,000	550,000	550,000	550,000	550,000	550,000	10,000,000	3,250,000
96019	New Motueka WWTP - Designations and Land Acquisition	Secure designations and land for new inland WWTP	0	100	0	6,150,000	0	0	0	150,000	0	0	0	6,000,000	0	0	0	0
96020	New Motueka WWTP - Construction	Construct new inland WWTP	18	82	0	52,100,000	0	0	0	0	0	0	0	0	0	0	52,100,000	0
96021	Tarakohe Pump Station Upgrade	New pump station with emergency storage and 250mm rising main	15	85	0	3,615,000	110,000	120,000	880,000	2,505,000	0	0	0	0	0	0	0	0
96029	Motueka Bridge to Motueka WWTP Rising Main Upgrade	Replace 1200m of existing 200mm PVC with 280 OD PE rising main to provide capacity from Motueka West development	54	46	0	960,071	760,071	0	0	0	0	0	0	0	0	0	200,000	0
96036	Motueka WWTP - replacement membrane	Motueka WWTP membrane renewal (replaced on seven year interval)	0	0	100	1,026,000	0	513,000	0	0	0	0	0	0	513,000	0	0	0
96038	District Wide planting budgets	Amenity and screening planting at wastewater facilities and along cleared pipe routes.	0	100	0	99,000	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	33,000	33,000
96039	Renewals at Pump Stations & WWTPs	Renewals of all mechanical and electrical assets: pumps, valves, wet well and valve chamber pipework,	0	0	100	44,243,000	1,130,000	705,000	639,000	525,000	524,000	850,000	295,000	1,817,000	540,000	910,000	15,677,000	20,631,000

ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget ($)										Total Budget	
			Growth	Inc LOS	Renewals	2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
		odour mitigation, flow meters, electrical, telemetry and back flow																
96040	District Wide manhole lid replacements	Renewal of damaged manhole lids	0	0	100	2,296,000	82,000	82,000	82,000	0	0	82,000	82,000	82,000	82,000	82,000	820,000	820,000
96041	District wide carbon filters	Install carbon filters at key locations to address odour issues	0	100	0	260,000	60,000	65,000	0	0	0	35,000	65,000	35,000	0	0	0	0
96042	Wastewater Resource Consent Renewals	Renewal of resource consents for all wastewater facilities and assets	0	0	100	780,000	0	0	0	0	0	0	0	15,000	0	0	745,000	20,000
96043	Safety Improvements	Implement safety improvements, fall protection, bollards, other modifications at pump stations	0	100	0	908,000	77,250	66,750	66,000	68,000	70,000	61,000	58,500	50,500	90,000	90,000	210,000	0
96045	District wide sludge reuse or disposal	Reuse sludge on-site where testing meet acceptable conditions, dispose to landfill if sludge cannot be reused as soil conditioner.	0	0	100	3,737,000	150,000	0	375,000	179,000	209,000	244,000	0	0	463,000	0	1,117,000	1,000,000
96046	New Telemetry	Convert the last remaining sites from analogue to digital	0	100	0	1,500,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	500,000
96047	Richmond South - new pump stations and rising main	Staging of new pump station and rising main to accommodate growth in Richmond South	96	4	0	13,181,000	115,000	516,000	750,000	1,300,000	0	0	0	0	100,000	2,300,000	5,100,000	3,000,000
96048	Emergency Storage Tanks at Pump Stations	Installation of storage tanks at key sites across the District	0	100	0	2,538,600	800,000	0	0	856,600	0	0	0	0	0	882,000	0	0

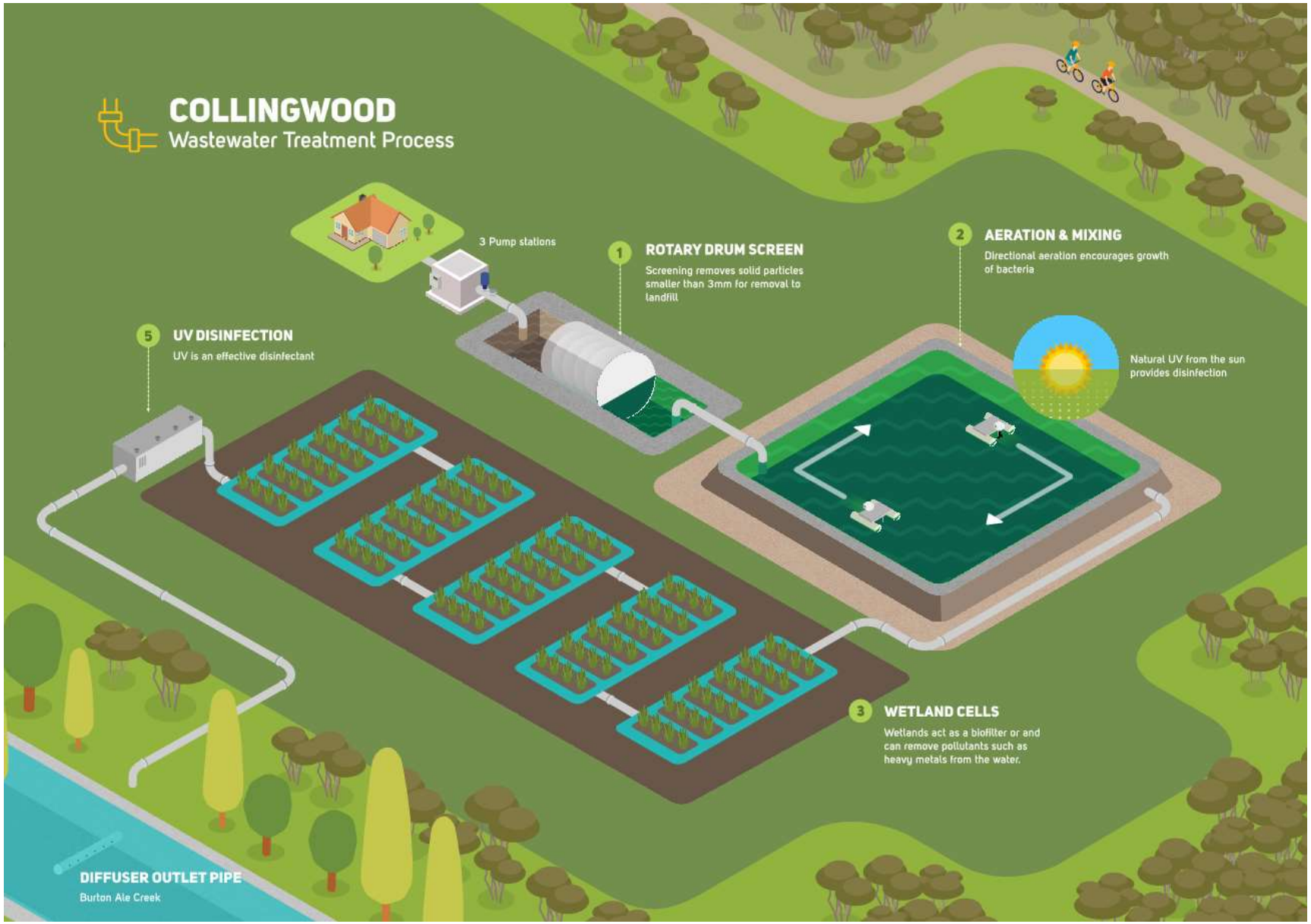
ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget ($)										Total Budget	
			Growth	Inc LOS	Renewals	2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
96049	Level Sensors in Storage Chambers	Install ultrasonic or pressure transducer to calibrate storage volumes, includes cleaning alarm	0	100	0	81,000	33,000	23,000	25,000	0	0	0	0	0	0	0	0	0
96053	Brightwater - Lord Rutherford Pump Station	New pump station with emergency storage and rising main to bridge	40	60	0	31,770,000	100,000	800,000	4,000,000	4,445,000	0	1,200,000	1,200,000	1,100,000	3,700,000	4,100,000	11,125,000	0
96055	Install Network Flow Meters and Sensors	Installation of flow meters at older pump stations, data helps assessing upgrade needs	0	100	0	475,000	305,000	80,000	90,000	0	0	0	0	0	0	0	0	0
96058	Headingly Lane Pump Station & Rising Main Upgrade	Upgrade of pump and rising main to accommodate growth in Richmond West area	90	10	0	600,000	600,000	0	0	0	0	0	0	0	0	0	0	0
96059	Climate Change Action Plan (Capital)	Energy efficiency initiatives - installing a solar PV array on wastewater assets	0	100	0	750,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000	250,000
96061	Upgrade of Mapua Rise Pump Station & Rising Main	Upgrade in line with development, including increase pumping capacity, additional storage and upgrade of odour control	100	0	0	30,000	30,000	0	0	0	0	0	0	0	0	0	0	0
96062	Higgs 3 Pump Station Decommissioning	Decommission Higgs 3 Wastewater Pump Station	0	100	0	50,000	0	0	0	0	0	0	0	50,000	0	0	0	0
96063	New Seaton Valley Road Pump Station & Rising Main	New pump station and rising main to accommodate future growth along Seaton Valley Road	58	42	0	2,625,600	0	15,600	0	0	0	0	0	0	290,000	1,120,000	0	1,200,000

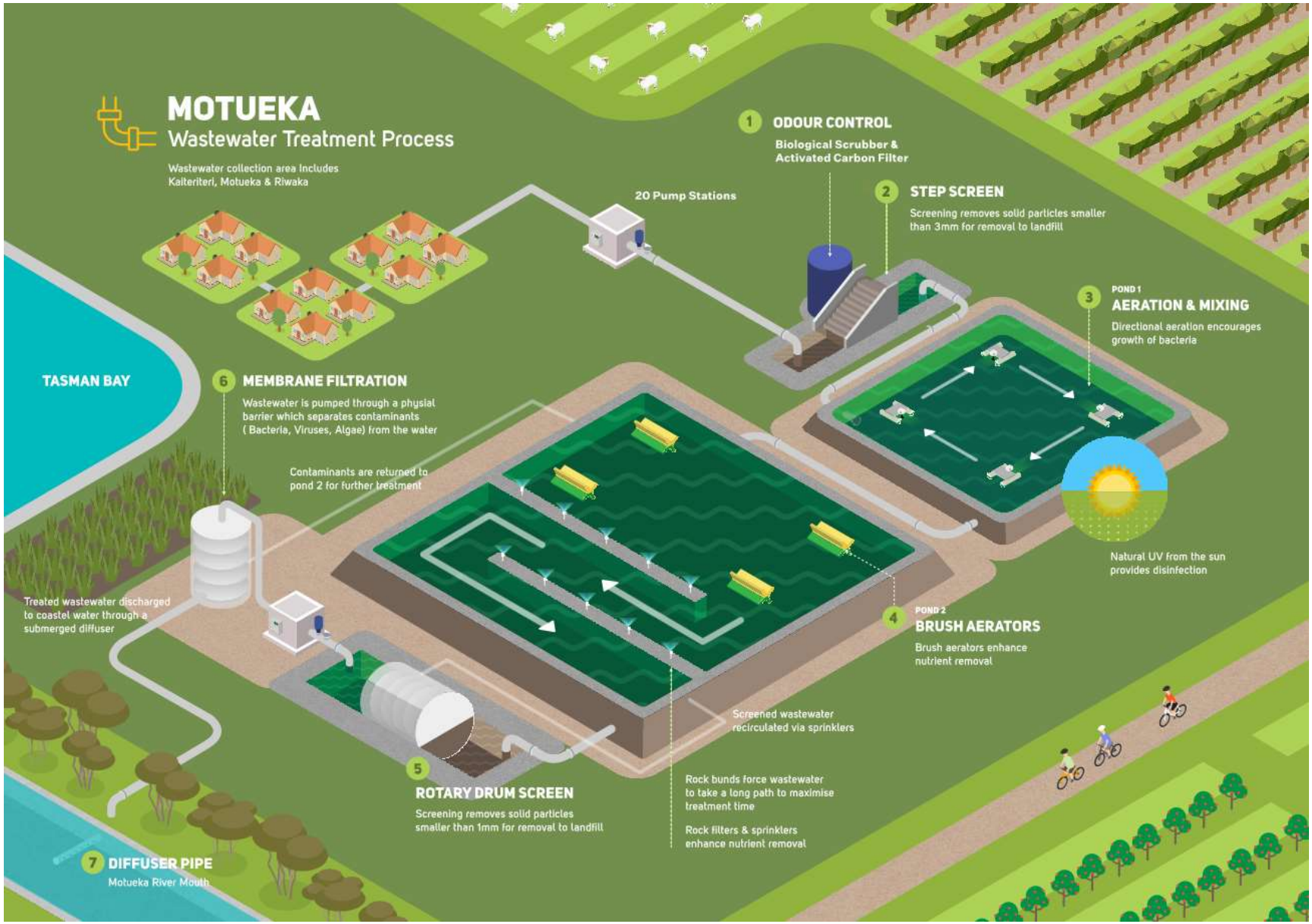
ID	Name	Description	Project Driver %			Total Budget	Financial Year Budget ($)										Total Budget	
			Growth	Inc LOS	Renewals	2021-51	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	3030/31	2031-41	2041-51
96064	New Rising Main Motueka West to WWTP	New150mm rising main from Motueka West to WWTP to accommodate growth	96	4	0	4,905,000	695,000	260,000	3,950,000	0	0	0	0	0	0	0	0	0
96065	Growth Allowance	Allowance for the addition of smart technology to low pressure pump systems	100	0	0	300,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	0	0
96070	Jefferies Road Growth Area	Pump station and rising main to enable growth	90	10	0	4,350,000	0	0	0	0	0	0	0	0	0	0	0	4,350,000
96071	Lower Moutere Growth Area	Pump stations, trunk mains and reticulation to enable growth	97	3	0	8,500,000	0	0	0	0	0	0	0	0	0	0	8,500,000	0
96072	Takaka - New Dump Station	New motorhome and caravan dump station on Motupipi Street	0	100	0	175,000	175,000	0	0	0	0	0	0	0	0	0	0	0
96073	Mapua Central - new gravity reticulation	New 200m gravity pipe connecting into Aranui Road trunk main	96	4	0	440,000	0	0	0	0	0	0	440,000	0	0	0	0	0
	Capital Programme Scope Risk Adjustment	Capital Programme Scope Risk Adjustment	0	100	0	-10,980,364	-334,931	-195,433	-568,265	-530,895	-103,815	-206,265	-177,290	-529,140	-359,565	-513,265	-5,553,550	-1,907,950

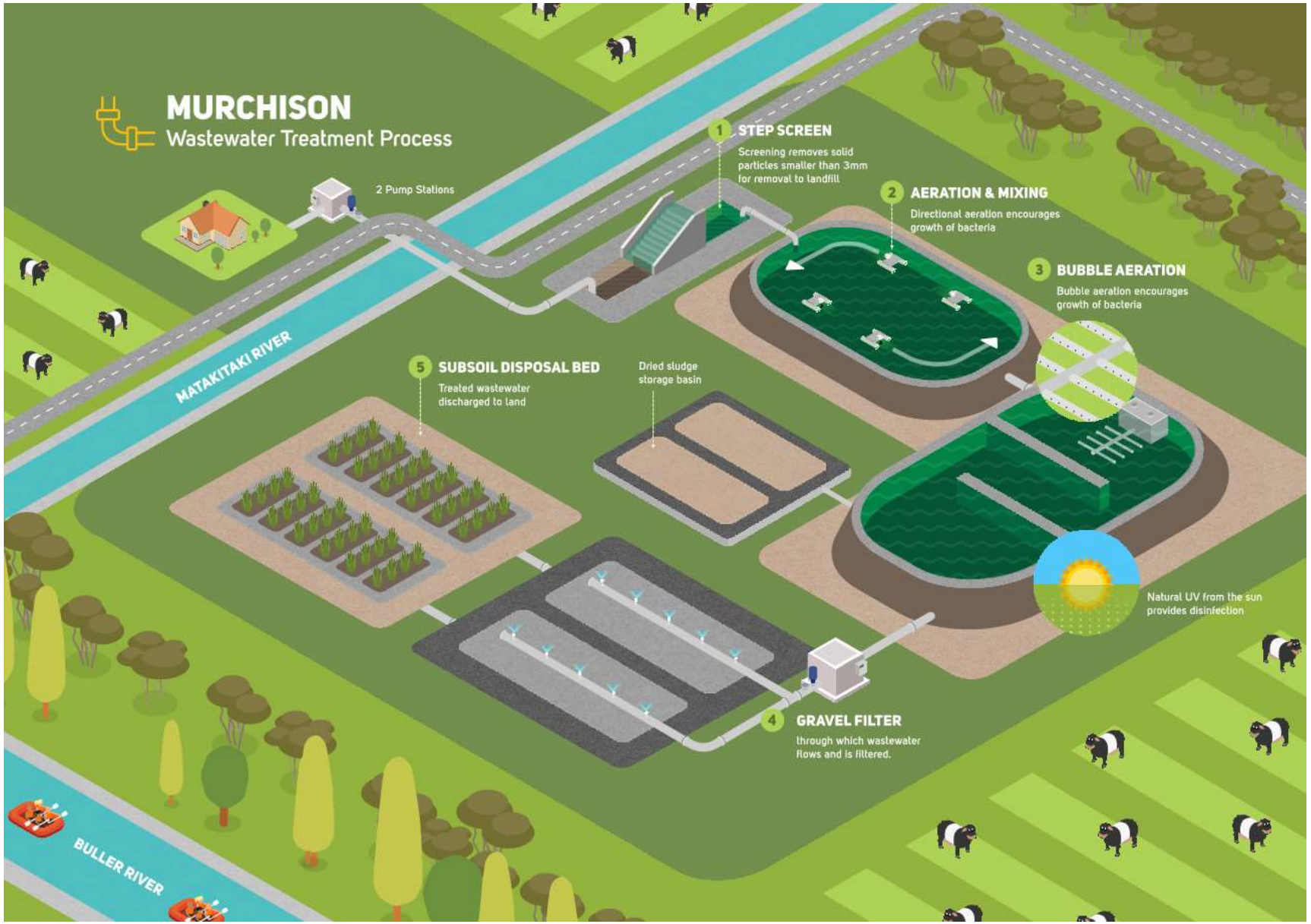
Appendix C: Wastewater Network Schematics

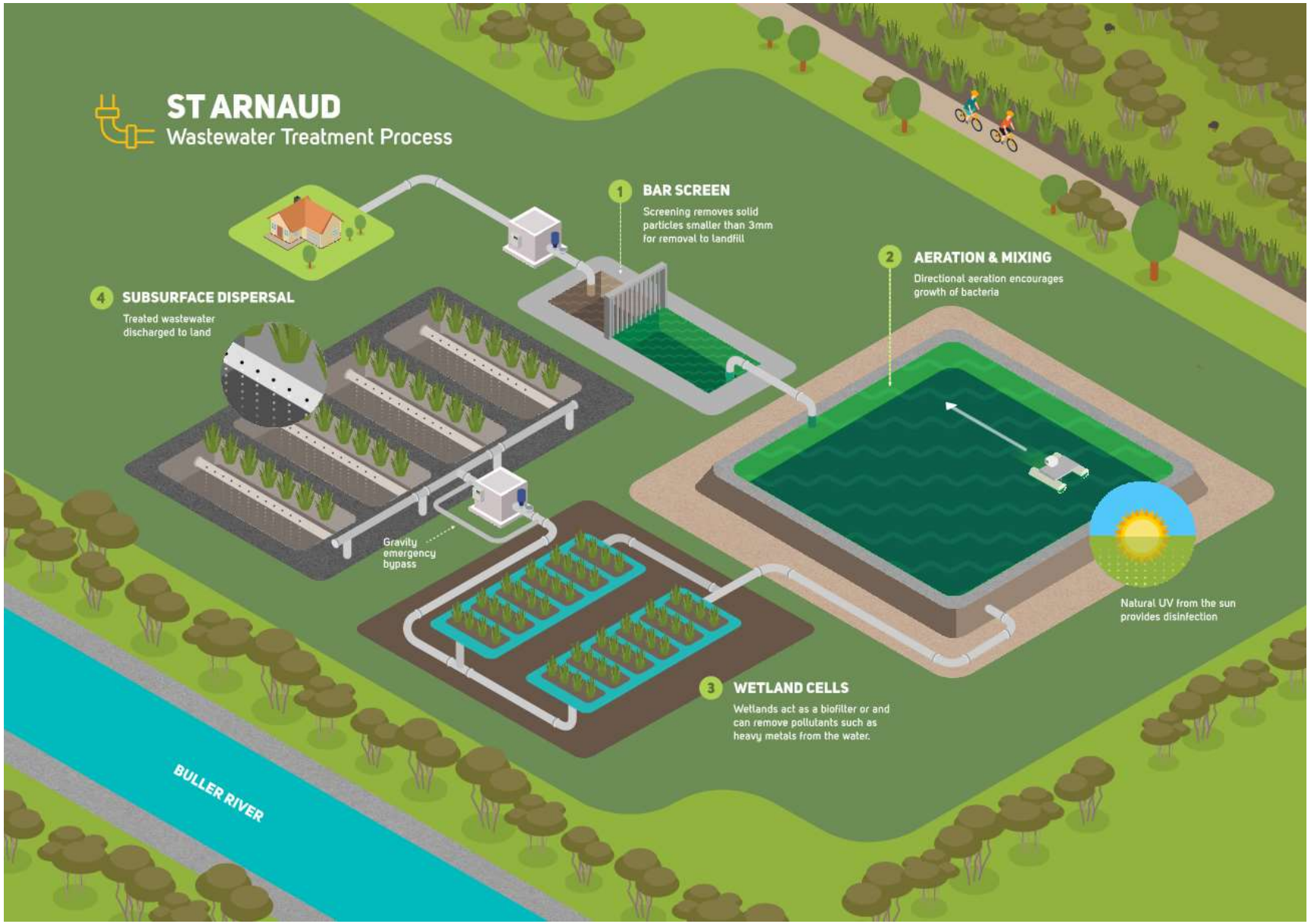
A network schematic has been produced for the following wastewater networks:

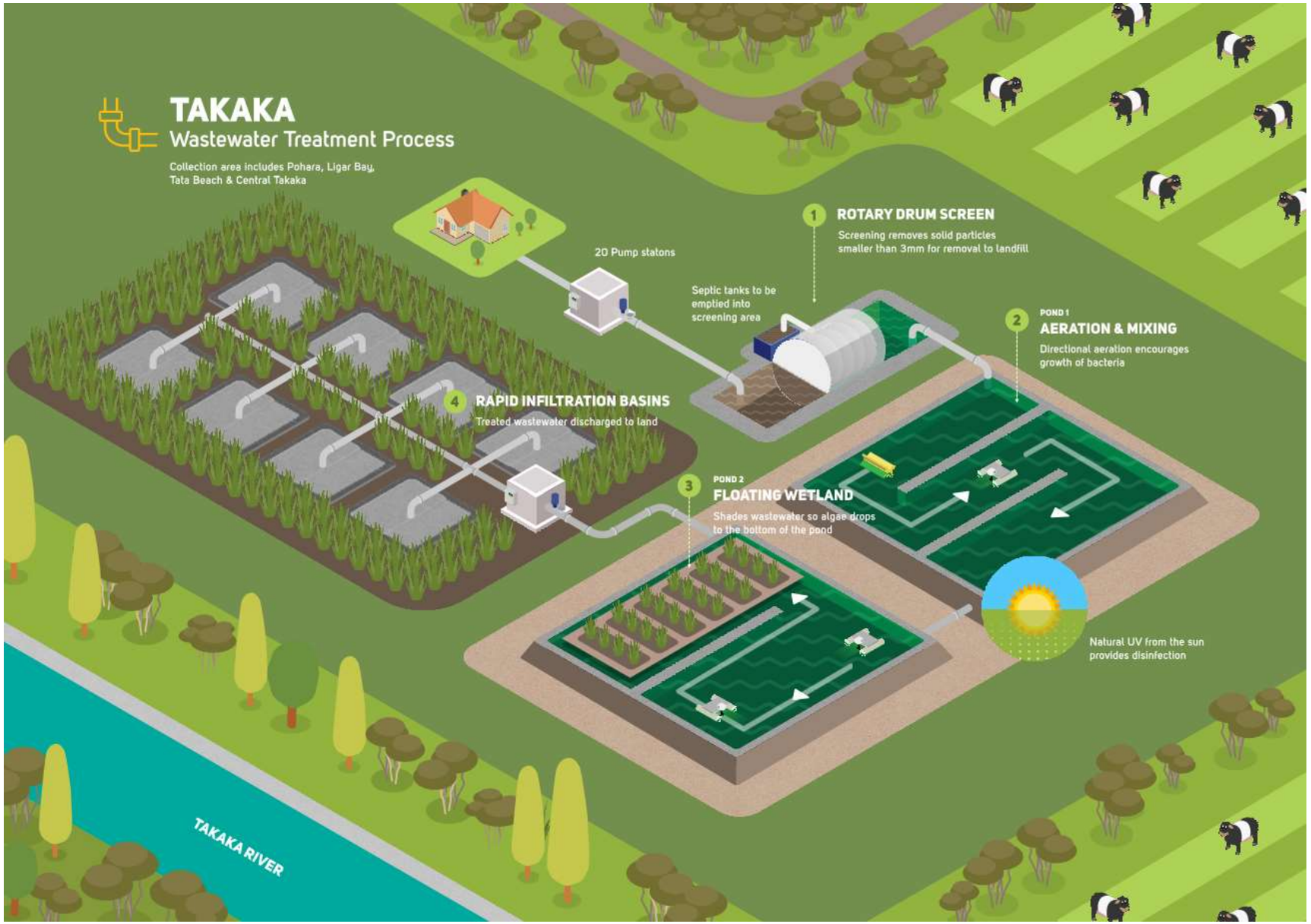
- Collingwood
- Motueka (includes Kaiteriteri and Riwaka)
- Murchison
- St Arnaud
- Takaka (includes Pohara, Ligar Bay and Tata Beach)
- Tapawera
- Waimea (includes Richmond, Brightwater and Wakefield)

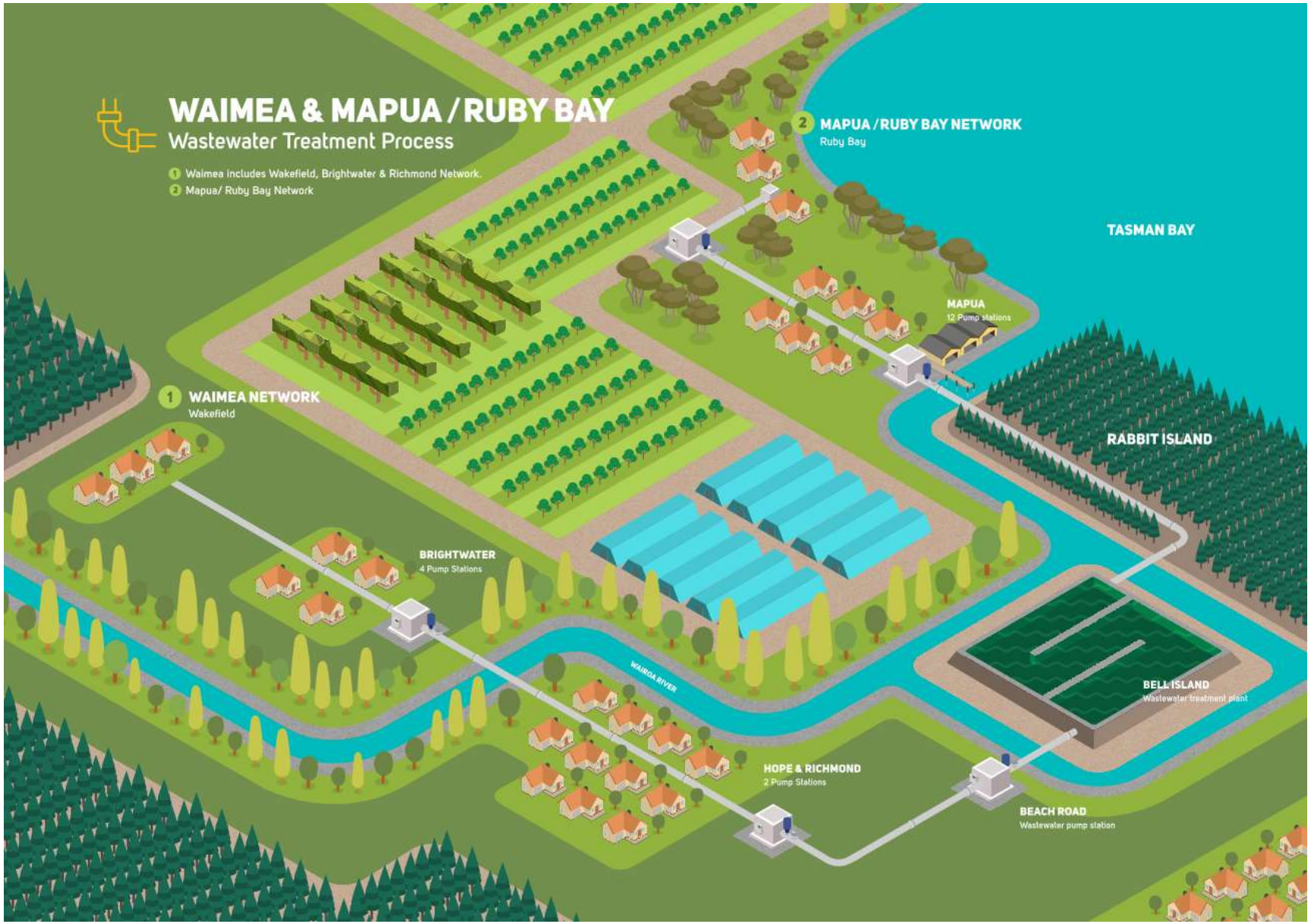

COLLINGWOOD
Wastewater Treatment Process
3 Pump stations
1
ROTARY DRUM SCREEN
Screening removes solid particles smaller than 3mm for removal to landfill
2
AERATION & MIXING
Directional aeration encourages growth of bacteria
Natural UV from the sun provides disinfection
5
UV DISINFECTION
UV is an effective disinfectant
3
WETLAND CELLS
Wetlands act as a biofilter or and can remove pollutants such as heavy metals from the water.
DIFFUSER OUTLET PIPE
Burton Ale Creek


MOTUEKA
Wastewater Treatment Process
Wastewater collection area Includes Kaiteriteri, Motueka & Riwaka
20 Pump Stations
1 ODOUR CONTROL
Biological Scrubber & Activated Carbon Filter
2 STEP SCREEN
Screening removes solid particles smaller than 3mm for removal to landfill
POND 1
3 AERATION & MIXING
Directional aeration encourages growth of bacteria
TASMAN BAY
6 MEMBRANE FILTRATION
Wastewater is pumped through a physial barrier which separates contaminants (Bacteria, Viruses, Algae) from the water
Contaminants are returned to pond 2 for further treatment
Natural UV from the sun provides disinfection
Treated wastewater discharged to coastel water through a submerged diffuser
POND 2
4 BRUSH AERATORS
Brush aerators enhance nutrient removal
Screened wastewater recirculated via sprinklers
5 ROTARY DRUM SCREEN
Screening removes solid particles smaller than 1mm for removal to landfill
Rock bunds force wastewater to take a long path to maximise treatment time
Rock filters & sprinklers enhance nutrient removal
7 DIFFUSER PIPE
Motueka River Mouth


MURCHISON
Wastewater Treatment Process
2 Pump Stations
1 STEP SCREEN
Screening removes solid particles smaller than 3mm for removal to landfill
2 AERATION & MIXING
Directional aeration encourages growth of bacteria
3 BUBBLE AERATION
Bubble aeration encourages growth of bacteria
MATAKITAKI RIVER
5 SUBSOIL DISPOSAL BED
Treated wastewater discharged to land
Dried sludge storage basin
Natural UV from the sun provides disinfection
4 GRAVEL FILTER
through which wastewater flows and is filtered.
BULLER RIVER


ST ARNAUD
Wastewater Treatment Process
1 BAR SCREEN
Screening removes solid particles smaller than 3mm for removal to landfill
2 AERATION & MIXING
Directional aeration encourages growth of bacteria
4 SUBSURFACE DISPERSAL
Treated wastewater discharged to land
Gravity emergency bypass
Natural UV from the sun provides disinfection
3 WETLAND CELLS
Wetlands act as a biofilter or and can remove pollutants such as heavy metals from the water.
BULLER RIVER


TAKAKA
Wastewater Treatment Process
Collection area includes Pohara, Ligar Bay, Tata Beach & Central Takaka
20 Pump statons
Septic tanks to be emptied into screening area
1 ROTARY DRUM SCREEN
Screening removes solid particles smaller than 3mm for removal to landfill
POND 1
2 AERATION & MIXING
Directional aeration encourages growth of bacteria
4 RAPID INFILTRATION BASINS
Treated wastewater discharged to land
POND 2
3 FLOATING WETLAND
Shades wastewater so algae drops to the bottom of the pond
Natural UV from the sun provides disinfection
TAKAKA RIVER


WAIMEA & MAPUA / RUBY BAY
Wastewater Treatment Process
1 Waimea includes Wakefield, Brightwater & Richmond Network.
2 Mapua/ Ruby Bay Network
2 MAPUA / RUBY BAY NETWORK
Ruby Bay
TASMAN BAY
MAPUA
12 Pump stations
1 WAIMEA NETWORK
Wakefield
RABBIT ISLAND
BRIGHTWATER
4 Pump Stations
WAIROA RIVER
BELL ISLAND
Wastewater treatment plant
HOPE & RICHMOND
2 Pump Stations
BEACH ROAD
Wastewater pump station