Tasman District Council

Wastewater
Activity Management Plan

2015 - 2045

February 2015

Quality Assurance Statement		
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For full Quality Assurance Statement, Refer Appendix Z

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 ACTIVITY DESCRIPTION

1.1 What We Do

Tasman District Council is responsible for the provision and management of wastewater treatment facilities and sewage collection and disposal to the residents of 14 Wastewater Urban Drainage Areas (UDA's). The assets used to provide this service include approximately 380km of pipelines, 3,470 manholes, 74 sewage pump stations, seven wastewater treatment plants and the relevant resource consents to operate these assets.

Tasman District Council owns, operates and maintains 12 sewerage systems conveying wastewater to eight wastewater treatment and disposal plants (WWTPs).

Tasman District Council is a 50 percent owner of the Nelson Regional Sewerage Business Unit (NRSBU). Nelson City Council owns the remaining 50 percent. The NRSBU operates the Bell Island treatment plant which treats wastewater from most of Nelson City, Richmond, Mapua, Brightwater, Hope and Wakefield.

A complete description of the assets included in the wastewater activity is in Appendix B.

1.2 Why We Do It

The provision of wastewater services is a core public health function of local government and is something that the Council has always provided. By undertaking the planning, implementation and maintenance of wastewater services the Council promotes and protects public health within 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 public health within the district.

2 COMMUNITY OUTCOMES AND OUR GOAL

The community outcomes that the wastewater activity contributes to most are shown in Table 2-1

Table 2-1: Community Outcomes

Community Outcomes	How Our Activity Contributes to the Community Outcome
Our unique natural environment is healthy and protected.	All wastewater in the Council-owned schemes is treated and discharged into the environment. This activity can be managed so the impact of the discharges does not adversely effect the health and cleanliness of the receiving environment.
Our urban and rural environments are people-friendly, well-planned and sustainably managed.	The wastewater activity ensures our built urban environments are functional, pleasant and safe by ensuring wastewater is collected and treated without causing a hazard to public health, unpleasant odours and unattractive visual impacts.
Our infrastructure is efficient, cost effective and meets current and future needs.	The wastewater activity is considered an essential service that should be provided to all properties within the urban drainage areas in sufficient size and capacity. This service should also be efficient and sustainably managed.

2.1 Our Goal

We aim to provide cost-effective and sustainable wastewater systems in a manner that meets environmental standards and agreed levels of service.

3 KEY ISSUES FOR THE WASTEWATER ACTIVITY

The most important issues relating to the wastewater activity are shown below in Table 3-1.

Table 3-1: Key Issues for the Wastewater Activity

Key Issue	Description
Infiltration into the wastewater network.	Stormwater and groundwater infiltration is a significant issue for some wastewater networks, causing the overloading of pipe networks and wastewater treatment plants during very heavy rainfall events. This may result in occasional overflows from the sewer network, breaches of resource consent conditions and potential public health risks.
Aging infrastructure.	Some of the pipe networks in the district are approaching the end of their useful life. Maximising the economic life of the assets and determining the optimal time for replacement are important challenges. Council undertakes CCTV inspections of assets to help determine the optimal time for replacement.
Mapua wastewater upgrade.	The current Mapua wastewater system is operating close to capacity. None of the existing pump stations have sufficient capacity to handle future growth. The Council has outlined a programme of upgrades and reconfiguration of the network to accommodate this future growth.
Meeting growth needs.	There are a number of projects planned that are driven fully or partially by the need to cater for future growth. Council applies development contributions to these projects so that developers meet the cost of the growth component of the projects, rather than ratepayers. The cost of development contributions can act as a disincentive for growth.
Nelson Regional Sewerage Business Unit (NRSBU) budgets.	The NRSBU is proposing major capital expenditure to upgrade the pipelines and Bell Island treatment plant in coming years. The wastewater budgets contained in the Long Term Plan contain an allowance for Council's contribution to the costs of the NRSBU. If Council's contribution to the costs of the NRSBU is different from the projections, the actual pan charges may vary each year from those contained in the Long Term Plan.
Odour from wastewater assets.	Long pipelines for raw wastewater with pump stations in series can lead to development of hydrogen sulphide gas and odours. These odours can be disruptive to the public if air release valves, pump stations, or wastewater treatment plants are close to residential properties. There are existing programmes to monitor hydrogen sulphide levels in high risk locations to warn of likely odour issues. There is also an Odour Management Plan that is reviewed and implemented each summer for the Pohara and Kaiteriteri networks. Key assets such as air valves and pump stations have carbon filters and chemical dosing installed. The Motueka WWTP has a biological scrubber and carbon filter to treat gas extracted from the inlet works.
Lack of telemetry.	Many of the smaller or more remote pump stations do not have telemetry so the Council is reliant on the public to advise of alarms or issues. This can lead to overflows occurring before the site can be attended to. A lack of telemetry also means there is very little operational information to make good decisions about operational changes or upgrading.
Lack of as-built and operational information.	Historically the Council has relied on the knowledge of operators to know where assets are, how they operate and what the maintenance needs are. However in recent years there has been a higher turnover of operators and this knowledge has been lost. It is clear that the Council's records are incomplete and in many cases incorrect. This leads to higher operational costs and has lead to unnecessary overflows.

Key Issue	Description
	The Council has been working to improve the as-built information obtained from repairs, new connections, new assets as well as developing some rudimentary System Operating Plans for most wastewater networks. The Council will continue to improve and expand these Plans.

4 OPERATIONS, MAINTENANCE AND RENEWALS STRATEGY

4.1 Operations and Maintenance

The day to day operation, inspection and maintenance of the wastewater systems is carried out by Downer NZ Ltd under the maintenance contract C688. This maintenance contract is managed and administered by the Council with MWH New Zealand Ltd acting at the Engineer to the Contract. The contract will end on 30 June 2017.

The contract is primarily based on a comprehensive schedule of rates and a combination of lump sum payments. This provides all parties involved with a vested interest in optimising both pro-active and reactive maintenance requirements. Although it is not specifically set up as one, the contract is similar to a partnering agreement with all parties working closely together with the same goal in mind, ie. delivering a high level of service and providing value for money for the Council ratepayers.

Some of the key aspects of this contract are:

- performance based;
- emphasis on proactive maintenance;
- programme management;
- quality management;
- detailed schedule of works;
- measurement of performance;
- team approach to problem-solving.

Operation and maintenance is discussed in detail in Appendix E.

4.2 Renewals

Renewal expenditure is major work that does not increase asset 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.

Assets are considered for renewal as they near the end of their effective working life, or where the cost of maintenance becomes uneconomical and when the risk of failure of critical assets is sufficiently high.

The renewal programme has been developed by the following:

- taking asset age and remaining life predictions from the valuation data in Confirm, 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 through the Customer Services System, the GPS locating of pipe breaks and overflows, and contract reporting structures;
- undertaking a review to identify opportunities for bundling projects across assets, optimised replacement, timing across assets – especially between pipe upgrades and roading works, and smoothing of expenditure;
- undertaking CCTV recordings of pipelines to better understand the condition of the asset;

- the renewal programme is reviewed in detail at each Asset Management Plan (ie. three yearly), and every year the annual renewal programme is reviewed and planned with the input of the maintenance contractor.

Renewals are discussed in detail in Appendix I.

5 EFFECTS OF GROWTH, DEMAND AND SUSTAINABILITY

5.1 Population Growth

A comprehensive Growth Demand and Supply Model (GDSM or growth model) has been developed for the Tasman District. The growth model is a long term planning tool, providing population and economic projections district wide. The population projections in the growth model have been taken from Statistics New Zealand population projections derived from the 2013 census data, using a "medium" growth rate projection for all settlement areas (see Figure 5-1).

The supply potential is assessed as well as demand, and a development rollout for each settlement is then examined. The ultimate outputs of the GDSM include a projection of the district's population, and forecast of where and when new dwellings and business buildings will be built and a forecast of the number of new stormwater connections. The development rollout from the Growth Model informs capital budgets (new growth causes a demand for network services) which feed into the AMPs and in turn underpin the Long Term Plan and supporting policies e.g. Development Contributions Policy. This 2014 growth model is a fourth generation growth model with previous versions being completed in 2005, 2008 and 2011. The Growth Demand and Supply Model is described in brief in Appendix F and in more detail in a separate model description report.

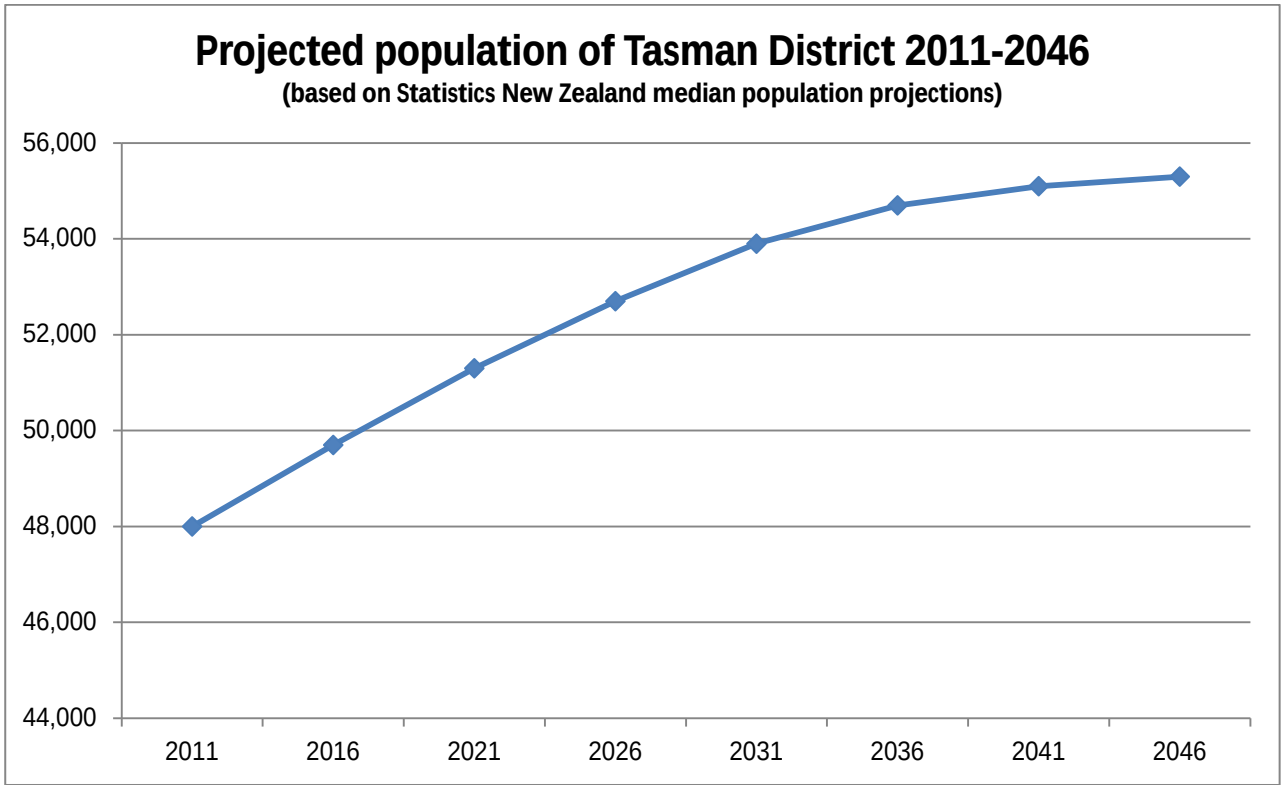


Figure 5-1: Projected Population Growth for Tasman District

Tasman District is a popular destination for the older age group or "retirees". A high proportion of growth results from people moving to the Tasman District from elsewhere, rather than from current residents having children. The growth modelling shows that older people moving to the Tasman District are choosing to live in larger centres with easier access to services, hence the large settlements are growing and the smaller ones are not. Richmond Brightwater and Wakefield are predicted to grow the most.

While there is little population growth predicted for the summer coastal holiday spots such as Pohara and Kaiteriteri, there is predicted growth in the number of lots developed, mainly for holiday homes. These lots will need to be serviced by the wastewater network. Therefore this growth has been factored into the wastewater activity.

As Tasman's population increases, the Council needs to provide more services. However, many of the retired population will be on fixed incomes and unable to pay for increases in services (rates are a tax on property, not income, and if a property value is high the rates can take a significant portion of this fixed income payment). Council's Growth Strategy considers whether our community can afford to support growth in all 17 settlements and what form this growth will take.

Communities with an older population are likely to have different aspirations to the communities with a younger median age. This may include:

- where they wish to live, possibly closer to main settlement areas where medical and social services are more readily available;
- an increase in the demand for smaller properties and a decrease in the demand for lifestyle or larger properties, particularly given the projected increase in the number of single households;
- their ability and willingness to pay for services and facilities may be lower, given that incomes are expected to be lower.

The Council has taken these factors into account in the development of this AMP and the LTP.

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

Many of the Council's cross-organisational initiatives are shaped around the community well-being (economic, social, cultural and environmental) and take into consideration the well-being of future generations. This is demonstrated in:

- the Council's Integrated Risk Management approach which analyses risks and particularly risk consequences in terms of community well-being;
- the Council's Growth Demand and Supply Model which seeks to forecast how and where urban growth should occur taking into account opportunities and risks associated with community well-being;
- the Council adopting a 30 year forecast in the Activity Management Plans and the 30 year plus Infrastructure Strategy, to ensure the long term financial implications of decisions made now are considered;
- the adoption of a Strategic Challenges framework and work programme that includes consideration of natural hazards, financial sustainability and growth in the District.

At the activity level, a sustainable development approach is demonstrated by the following:

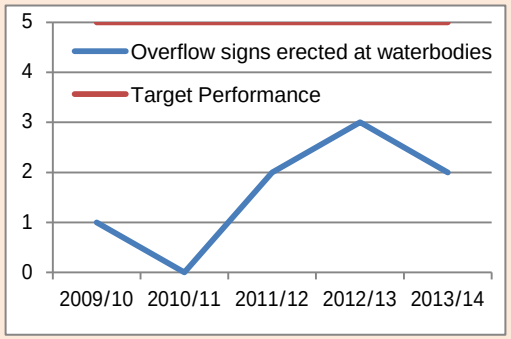
- co-ordinating boundary wastewater activities with Nelson City Council through the Nelson Regional Sewerage Business Unit;
- considering options for repair of existing sewers instead of replacement to maximise the economic life of the existing assets;
- involving key stakeholders in working groups prior to identifying solutions for wastewater treatment plant upgrades;
- planning for the use of pressure sewer systems to provide wastewater reticulation in low lying, high groundwater, estuarine environments;
- paying careful attention to the importance of fully complying with resource consent conditions to ensure natural watercourses are protected and conserved;

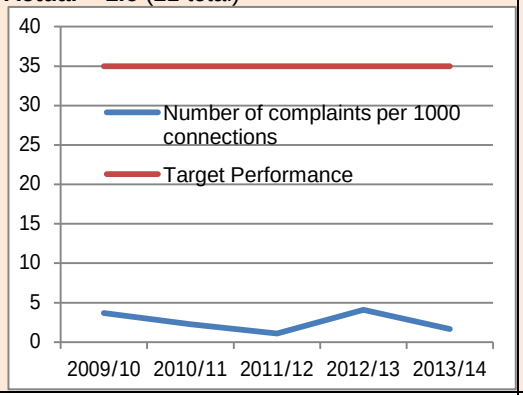
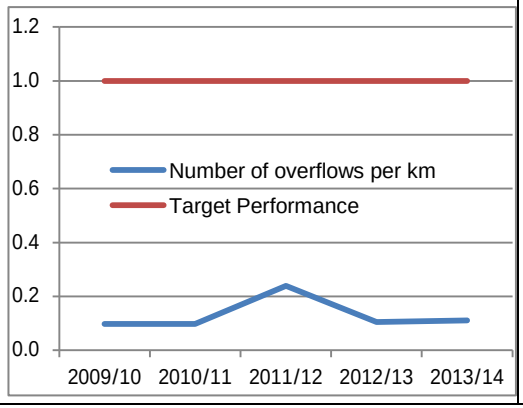
- ensuring that the District's likely future wastewater requirements are identified at an early stage and that they and the financial risks and shocks are competently managed over the long term without the Council having to resort to disruptive revenue or expenditure measures (ie. financial sustainability);
- working with developers so the design of new infrastructure will allow for future nearby development, either allowing for simply retrofitting or expansion to increase capacity as needed, rather than completely separate developments.

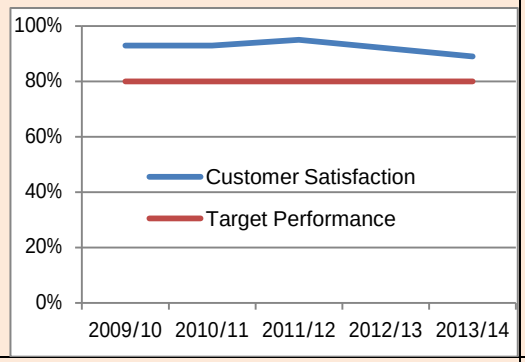
6 LEVEL OF SERVICE AND PERFORMANCE MEASURES

Table 6-1 summarises the levels of service and performance measures for the wastewater activity. Development of the levels of service is discussed in detail in Appendix R. The shaded rows are the levels of service and performance measures that are included in the Long Term Plan. The current performance is based on the 2013/14 financial year.

Table 6-1: Levels of Service

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2024/25
				Year 1	Year 2	Year 3	
				2015/16	2016/17	2017/18	
Community Outcome: Our unique natural environment is healthy and protected.							
1	**Our wastewater systems do not adversely affect the receiving environment.**	All necessary consents are held. Measured by resource consents held in Council's NCS database.	**Actual = 100%**	*100%*	*100%*	*100%*	*100%*
2		The number of times temporary wastewater overflow signs are erected at waterways is minimised. Measured by the number of contractor job requests.	**Actual = 2** 	*<5*	*<5*	*<5*	*<5*
3		Compliance with resource consents for discharges from wastewater systems is achieved. Measured by the number of: · abatement notices · infringement notices · enforcement orders · convictions.	**Actual = 0** **Actual = 0** **Actual = 0** **Actual = 0**	≤1 0 0 0	≤1 0 0 0	≤1 0 0 0	≤1 0 0 0

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2021/22
				Year 1	Year 2	Year 3	
				2012/13	2013/14	2014/15	
Community Outcome: Our urban and rural environments are pleasant, safe and sustainably managed.							
4	**Our wastewater systems reliably take our wastewater with a minimum of odours, overflows or disturbance to the public.**	The total number of complaints received about: odour, system faults, blockages, and Council's response to issues for each 1000 properties connected to the wastewater system is less than the target.	**Actual = 1.6** (21 total) 	*≤35*	*≤35*	*≤35*	*≤35*
5		The number of overflows resulting from faults in Council's wastewater systems. Measured by the number in Confirm.	**Actual = 0.11** (42 overflows with a total of 380 km) 	*<1 per km*	*<1 per km*	*<1 per km*	*<1 per km*

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2021/22
				Year 1	Year 2	Year 1	
				2012/13	2013/14	2012/13	
6		The number of dry weather wastewater overflows from all wastewater systems, expressed per 1000 wastewater connections in Tasman District. Dry weather is defined as a continuous 96 hours with less than 1mm of rain within each 24 hour period.	This cannot currently be measured.	<5	<5	<5	<5
7		The number of overflows from pump stations with operational telemetry shall be less than the target. As recorded in Confirm.	This cannot currently be measured.	<2	<2	<2	<2
Community Outcome: Our infrastructure is safe, efficient and sustainably managed.							
8	**Our wastewater activities are managed at a level that satisfies the community.**	Percentage of customers satisfied with the wastewater service meets out targets. As measured through the annual residents' survey.	Actual = 89%  	*80%*	*80%*	*80%*	*80%*
9	**Our systems are built, operated and maintained so that failures can be managed and responded to quickly.**	Overflows resulting from blockages or other faults in the wastewater system are responded to within the target timeframes. As recorded in Confirm. **Attendance time** - from the time Council received notification of the fault to the time that service personnel reach the site, and **Resolution time** - from the time notification is received to the time that the service personnel confirm resolution of the blockage or other fault.	This cannot currently be measured	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2021/22
				Year 1	Year 2	Year 1	
				2012/13	2013/14	2012/13	
10		All pump stations have standby pumps in case of mechanical failures. As detailed in the asset register.	**Actual = 100%** The spare Boyle Street pump is stored at the Takaka WWTP.	100%	100%	100%	100%
11		Our pump stations have storage or standby electrical generation in case of power failure. As detailed in the Asset Register.	**Actual = 23%** of pump stations have emergency storage. Three pump stations also have on-site standby electrical generation. However, there are two portable generators available which are able to serve up to 53% of pump stations.	50%	50%	50%	70%
12		Our pump stations have telemetry to allow automatic communication of failures. As detailed in the Asset Register.	**Actual = 68%** 53 of the 78 pump stations have telemetry.	70%	70%	70%	100%
13		Critical assets are identified and included in the Activity Risk Register.	**Actual = In place** Where mitigations measures are required, they have been included for action in the AMP.	In place	In place	In place	In place

7 CHANGES MADE TO ACTIVITY OR SERVICE

Table 7-1 summarises the key changes to the management of the wastewater activity since the 2012 Activity Management Plan.

Table 7-1: Key Changes

Key Change	Reason for Change
Operations and maintenance of the wastewater asset is now managed in house by Council's Engineering staff.	Improve institutional knowledge of the activity and significant long term cost savings.
All Urban Drainage Area operation and maintenance budgets have had growth allowances removed.	Specific budgets have been included for expected new facilities instead.
Deferral of Motueka pipeline renewals.	The priority pipelines that suffer from groundwater infiltration have been replaced. The Council has deferred further renewals for three years while a new programme of work can be developed. The programme will be based on condition investigations and risk assessments with the most suitable, cost effective method of repair or replacement selected.
Eliminated advanced pipeline renewals in Brightwater, Mapua/Ruby Bay and Takaka.	Due to revised population growth projections.
Any new pump station and rising main needed for new development in Motueka West.	This will be paid for by the developer.
Routine inflow and infiltration investigations have been removed.	Assessing and planning the most cost effective solution to pipeline renewals to reduce inflow and infiltration in Year 1 – Year 3.
Tarakohe/Pohara pump station and rising main upgrades deferred for four years.	Due to revised population growth projections.
New Stafford Drive pump station (replacing Taits pump station) and rising main deferred for three years.	Due to revised population growth projections.
Tata Beach and Ligar Bay pump station and rising main upgrades deferred for four years.	Due to revised population growth projections.
Brightwater to Burkes Bank trunk main upgrade deferred for six years.	Due to revised population growth projections.
Tarakohe/Pohara pump station and rising main upgrades deferred for four years.	Due to revised population growth projections.

8 KEY PROJECTS

Table 8-1 details the key capital and renewal work programmed for years 2015 to 2025. A full list of capital and renewal projects for the 30 year period is included in Appendix F and I respectively.

Table 8-1: Significant Projects

Project Name	Description	Year 1 ($)	Year 2 ($)	Year 3 ($)	Years 4 to 10 ($)	Project Driver[1]
Motueka WWTP upgrade.	WWTP upgrade.	2,700,000				G/LoS/R
Tapu Bay pipeline.	Replace estuary pipeline with land based pipeline.	755,040	1,510,080	1,510,080		G/LoS
Ruby Bay to Mapua rising main and pump station upgrades.	Progressively upgrade rising mains and pump stations, including emergency storage, from Stafford Drive to Mapua Wharf.			300,723	3,728,768	G/LoS
Pohara to Tarakohe rising main and pump station upgrades.	Progressively upgrade rising mains and pump stations, including emergency storage, from Four Winds to Tarakohe pump stations.			260,980	4,344,980	G/LoS/R
Wakefield to Three Brothers Corner trunk main upgrade.	Upgrade the trunk main.				$2,259,100	G

Note:

1. All values are uninflated.
2. See Appendix F for a full detailed list of new capital works projects driven by growth (G), renewals (R) and or an increase in level of service (LoS).
3. See Appendix I for a full detailed list of renewal projects.

[1] R = Renewal, LoS = Levels of Service, G = Growth

9 MANAGEMENT OF THE ACTIVITY

9.1 Management

The strategic approach to management of the wastewater activity is diagrammatically represented below in Figure 9-1 below.

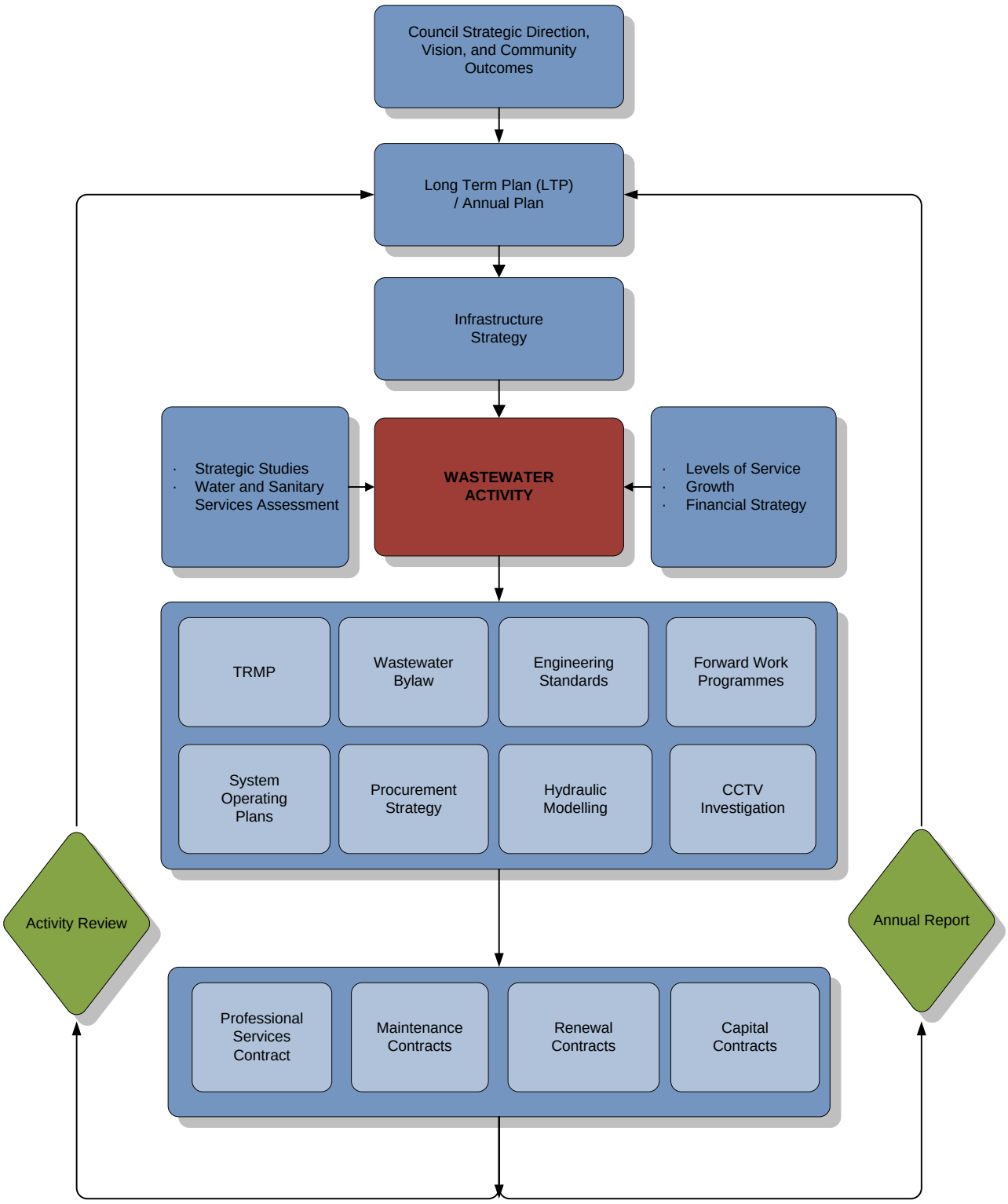


Figure 9-1: Hierarchy of Council Policy, Strategy and Planning for the Wastewater Activity

9.2 Service Delivery Review

Section 17A of the Local Government Act 2002 requires all local authorities to review the cost-effectiveness of its current arrangements for delivering good quality local infrastructure, local public services, and performance of regulatory functions at least every six years.

The Council engaged Morrison Low to review its delivery of services provided by its Engineering Department in 2012. The review recommended a re-organisation of the department to reduce the proportion of asset management services that were provided by external consultants. The re-organisation was implemented during 2013 and has provided cost savings to the Council, an increase in asset knowledge, and greater interaction with customers.

In addition to this review, the Council reviews how it procures and delivers its wastewater services at the time of renewing individual maintenance and renewal contracts. These reviews include consideration of the maintenance specification, how work is packaged together e.g. the number of assets included and extent of contact area.

For example, the current operation and maintenance contract for the three water assets expires on 30 June 2017. Prior to tendering for a replacement contract the Council will go through a process to determine:

- which assets to include;
- whether a single or multiple contracts is appropriate;
- the most suitable contract model, performance based, prescriptive, or other;
- which conditions of contract to use;
- what is the most suitable contract term.

The Council is also aware of other opportunities to maximise efficient delivery of services, for example combined contracts or partnerships with Nelson City Council.

9.3 Significant Effects

The potential significant negative and significant positive effects and mitigation measures used are detailed in Appendix P. The significant negative effects relating to the wastewater activity include:

- noise;
- disruption to service;
- blockages and overflows;
- odour;
- non compliant treated wastewater discharge;
- increase in rates;
- disturbance or destruction of historic or culturally sensitive sites.

The potential significant positive effects relating to the wastewater activity include:

- public health benefits;
- minimising environmental effects;
- supporting economic development.

9.4 Assumptions

Council has made a number of assumptions in preparing the Activity Management Plan. These are discussed in detail in Appendix Q. Table 9-1 lists the major assumptions and briefly outlines the impact of the assumption.

Table 9-1: Significant Assumptions

Assumption Type	Assumption	Discussion
Financial assumptions.	That all expenditure has been stated in 1 July 2014 dollar values and no allowance has been made for inflation and all financial projections are GST exclusive. That the NRSBU business plan forecasts of operating expenditure and surpluses are correct.	The LTP will incorporate inflation factors. This could have a significant impact on the affordability of the plans if inflation is higher than allowed for, but Council is using the best information practically available from Business and Economic Research Limited (BERL). If NRSBU operating expenditure increases, funding for this change may result in the deferral of some strategic studies and/or operation and maintenance.
Asset data knowledge.	That Council has adequate knowledge of its assets to adequately forecast planned renewal works 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.	A reasonable degree of reliability can be placed on the population and other growth projections that have been used as forecast priority assumptions for the wastewater activity. However, these are projections and need to be carefully tracked to ensure that they continue to be a reliable indicator of future trends.	If the growth is significantly different it will have a significant impact. If higher, the Council may need to advance capital projects. If it is lower, the Council may choose to defer planned works.
Timing of capital projects.	That capital projects will be undertaken when planned.	The risk of the timing of projects changing is high due to factors like, resource consents, funding and land purchase. The Council tries to mitigate this issue by undertaking consultation, investigation and design phases sufficiently in advance of the construction phase. If delays occur, it could have major effects on the level of service.
Accuracy of capital project cost estimates.	That the capital project cost estimates are sufficiently accurate to determine the required funding level.	The risk of large under estimation is low; however the potential impact is moderate as the Council may not be able to afford the true cost of the projects. The Council tries to reduce the risk by including a standard contingency based on the projects lifecycle. Inflation adjustments are provided for in the Long Term Plan budgets.
Land purchase and access.	That Council will be able to purchase land to undertake the capital works projects.	The risk of delays to project timing or changes in scope is high due to the possiblity of delays in obtaining land. Where possible the Council undertakes negotiations well in advance of construction to minimes delays. If delays occur, it may influence the level of service the Council can provide.

Assumption Type	Assumption	Discussion
Changes in legislation and policy.	That there will be no major changes in legislation or policy.	The risk of major change is high due to the changing nature of the government and politics. If major changes occur it is likely to have an impact on the required expenditure. The Council has not mitigated the effect of this.
Resource consents.	That Council will be granted resource consent for key capital projects and renewal of existing resource consents for existing assets.	In the event a consent is not granted, then this can significantly affect the future of the project, cost and timing. If a consent is not renewed, then a new capital project may be required to replace the existing asset.
Disaster fund reserves.	That the level of funding held in Council's disaster fund reserves and available from insurance cover will be adequate to cover reinstatement following emergency events.	The risk of inadequate reserves and recovery from insurance claims would mean deferral of future capital projects to provide any financial shortfall required to cover reinstatement costs.
Network capacity.	That Council's knowledge of network capacity is sufficient to accurately programme capital works.	If the network capacity is less than assumed, the Council may be required to advance capital works projects to address this issue. The risk of this occurring is low; however the impact on expenditure could be large. If the network capacity is greater than assumed, the Council may be able to defer works. The risk of this occurring is low and is likely to have little impact.
Pipeline renewals.	That pipeline renewals expenditure is sufficient to address an aging network.	Pipeline renewals programmes are generally based on asset age rather than condition. The Council is improving its use of asset condition assessment to better identify a programme of renewals.
Inflow and infiltration.	That identifying and resolving all inflow and infiltration issues will not offset efficiencies in operational costs with the capital costs invested.	A major risk is that major capital investment to resolve some issues will not recoup any financial benefit for the community. The Council intends to tackle th inflow and infiltration issues that are easy to identify and offer quick returns once resolved.
Motueka WWTP.	That Council will be able to obtain resource consents with appropriate conditions within a suitable time period. That the level of treatment identified in the project estimating will meet resource consent conditions and environmental requirements.	These assumptions underpin the cost estimate and timing of this project. Any variance to these may result in major changes to the design, cost or timing of the project which in turn will impact on the ability to meet levels of service.

The major capital projects and their main uncertainties are listed in Appendix Q.

9.5 Risk Management

The Council's risk management approach is described in detail in Appendix Q.

The risk assessment framework was developed in 2011 to be consistent with AS/NZS IS 4360:2004 Risk Management. It assesses risk exposure by considering the consequence and likelihood of each risk event. Risk exposure is managed at three levels within the Council organisation:

- Level 1 – Corporate Risks;
- Level 2 – Activity Risks;
- Level 3 – Operational Risks.

At an activity level (Level 2), the Council has identified key risks to the activity. These are listed in Table 9-2.

Table 9-2: Significant Risks and Control Measures

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.
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.

The Council has also identified and assessed critical assets (Level 3), the physical risks to these assets and the measures in place to address the risks to the asset. This has led to a list of projects to mitigate the risks to acceptable levels as detailed in Appendix Q.

The specific risk mitigation measures that have been planned within the 30 year wastewater programme include:

9.5.1 Asset Management Activity

- Asset revaluations.
- Developing, improving and updating System Operating Plans.

9.5.2 Operational Project

- Desludging of oxidation ponds.
- Health and safety assessment and minor retrofitting of pumping stations.
- Regular odour management strategy reviews.
- Inflow and infiltration repairs.
- Implement the Trade Waste Bylaw and review regularly.

9.5.3 Capital Project

- Upgrade critical rising mains and pump stations in Pohara and Mapua to match population growth.
- Upgrade the Motueka WWTP.
- Continue with digitising telemetry installations and installing telemetry are all pumping stations.
- Upgrade pipelines with existing capacity issues.
- Upgrade the trunk main between Wakefield and Hope to match population growth.
- Prioritise and undertake renewals based on condition and risk.

9.5.4 Strategic Study

- Develop a new inflow and infiltration programme for the Motueka network.
- Wastewater network modelling.
- Identify critical assets.

9.6 Improvement Plan

This Activity Management Plan document was subject to a peer review in its draft format by Waugh Infrastructure Management Ltd in February 2015. The document was reviewed for compliance with the requirements of the LGA 2002. The findings and suggestions will be assessed and prioritised by the asset management team and either implemented in the final version of this document or added to the Improvement Plan.

The Improvement Plan is currently under development and will be included in Appendix V in the final version of this document.

10 COST SUMMARY FOR ACTIVITY

The following figures have been generated from the Funding Impact Statement held in Appendix L and the Public Debt and Loan Servicing Cost information held in Appendix K. Further detail is held in Appendix E, F and I for operating and maintenance, new capital and renewal costs respectively. All of the following graphs include inflation.

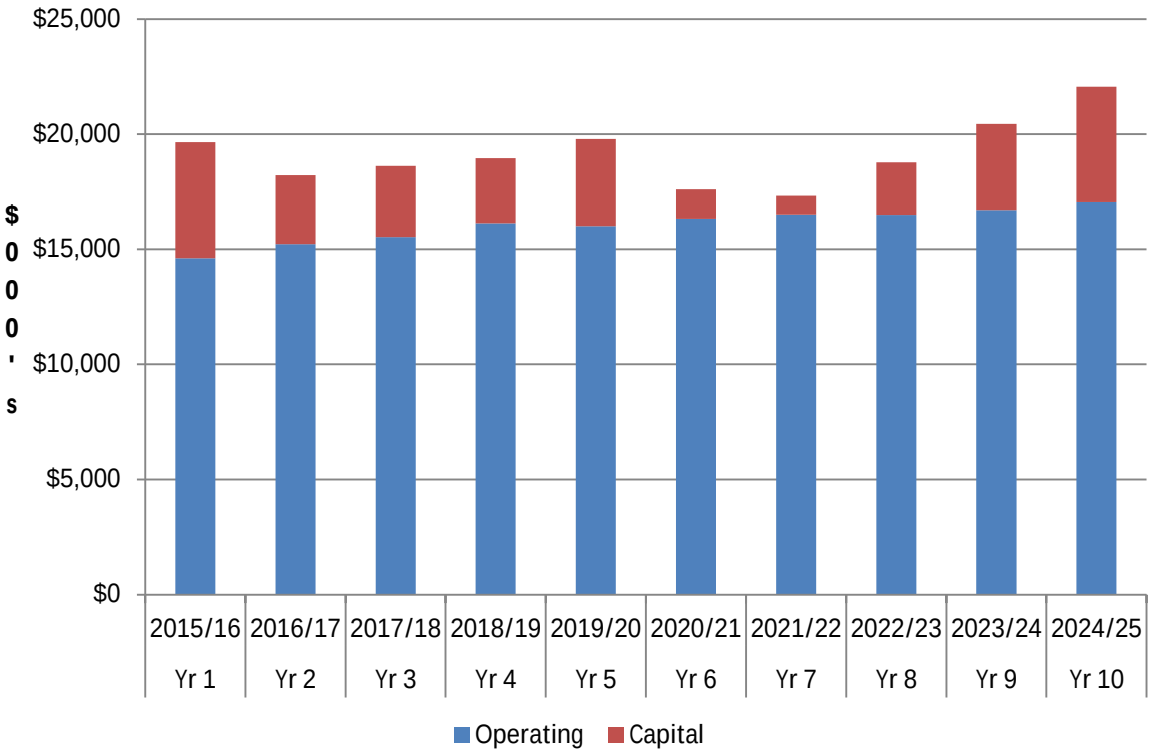


Figure 10-1: Total Annual Expenditure

The capital expenditure fluctuates over the 10 year period. The notable peaks in years 2015/16, 2019/20 and 2024/25 are due to the Motueka WWTP upgrade, the new Stafford Drive pump station and rising main and the replacement of the Pohara to Tarakohe pump stations and rising mains.

Operating expenditure increases from $14.6 to $17.1 million over the 10 year period. This is due to inflation, increasing loan servicing costs and network growth.

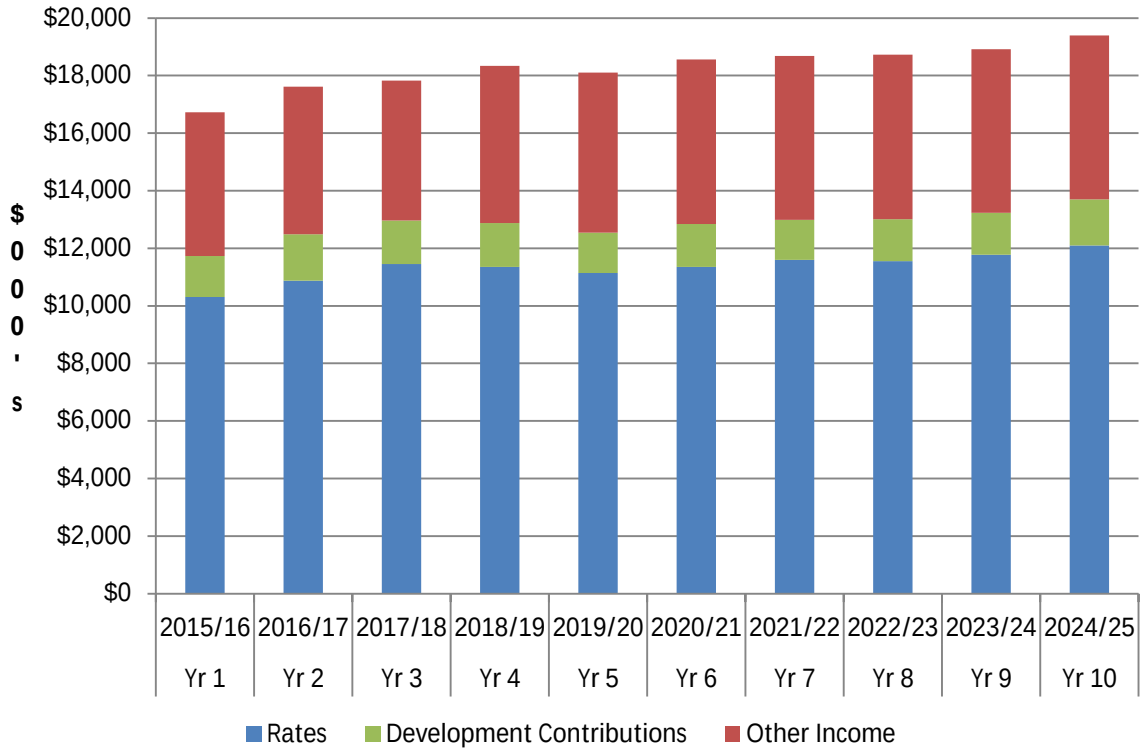


Figure 10-2: Total Annual Income

Rates account for the majority of income, increasing over the first three years before levelling out for the following seven years. Development contributions are consistent over ten years while other income increases in year four due to expected income from trade waste charges.

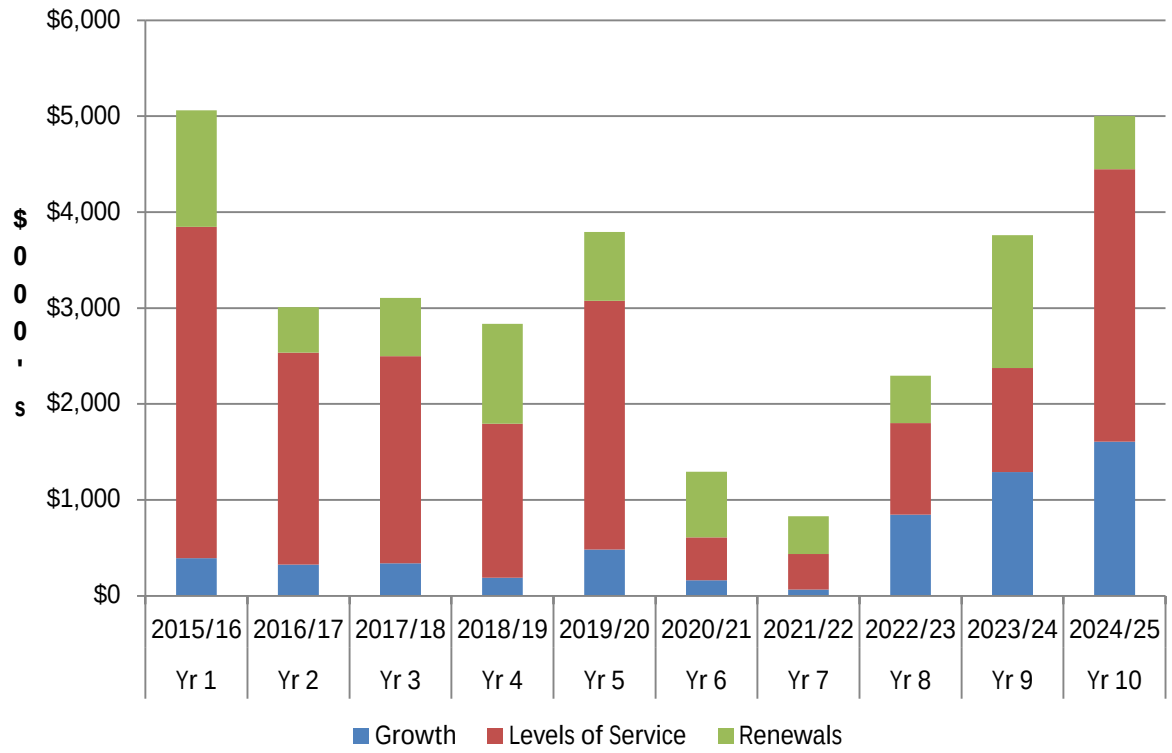


Figure 10-3: Total Annual Capital Expenditure

Capital expenditure is highly variable over the 10 year period totalling around $31m. Most expenditure is for level of service improvements associated with resource consents requirements or reducing the risk of overflows. In the longer term the focus of the programme changes to undertaking renewals as many of the district's wastewater pipes and manholes become due for replacement.

Key capital projects include:

- Motueka WWTP Upgrade, year 2015/16 - $2,700,000;
- Tapu Bay Pipeline (Kaiteriteri) replacement, years 2015 – 2018 - $3,775,200;
- new Stafford Drive (Ruby Bay) pump station and rising main to Mapua Wharf, years 2016 – 2020 - $3,165,491;
- Four Winds (Pohara) pump station and rising main upgrade, year 2018/19 - $1,304,270;
- Brightwater to Burkes Bank trunk main upgrade, years 2023 to 2025 - $2,259,100;
- Pohara/Tarakohe pump station and rising main upgrades, years 2023 – 2026 - $4,715,800.

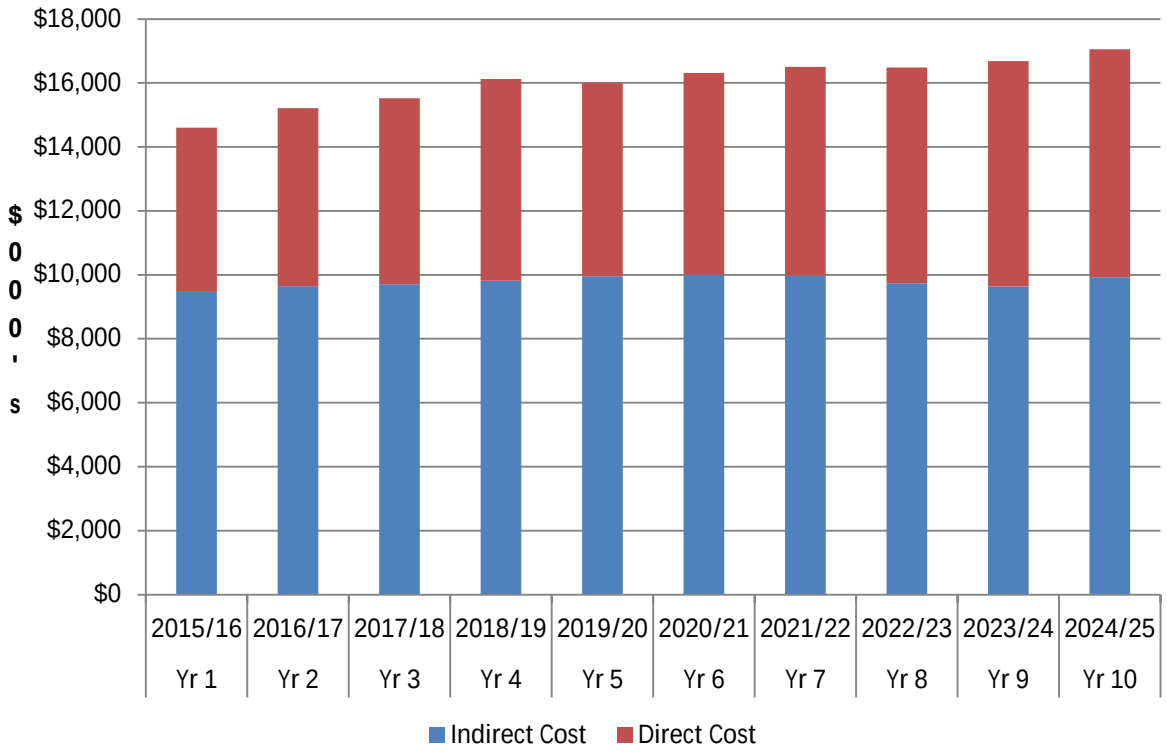


Figure 10-4: Annual Operating Expenditure

Operating expenditure is forecast to rise modestly, from $14.6 to $17 million over ten years. This represents an increase of less than 2% per annum. Cost increases in the longer term are higher at around 2.46% per annum. These increases are less than the cost of inflation, meaning the "real" costs of operating the wastewater network is forecast to fall over time.

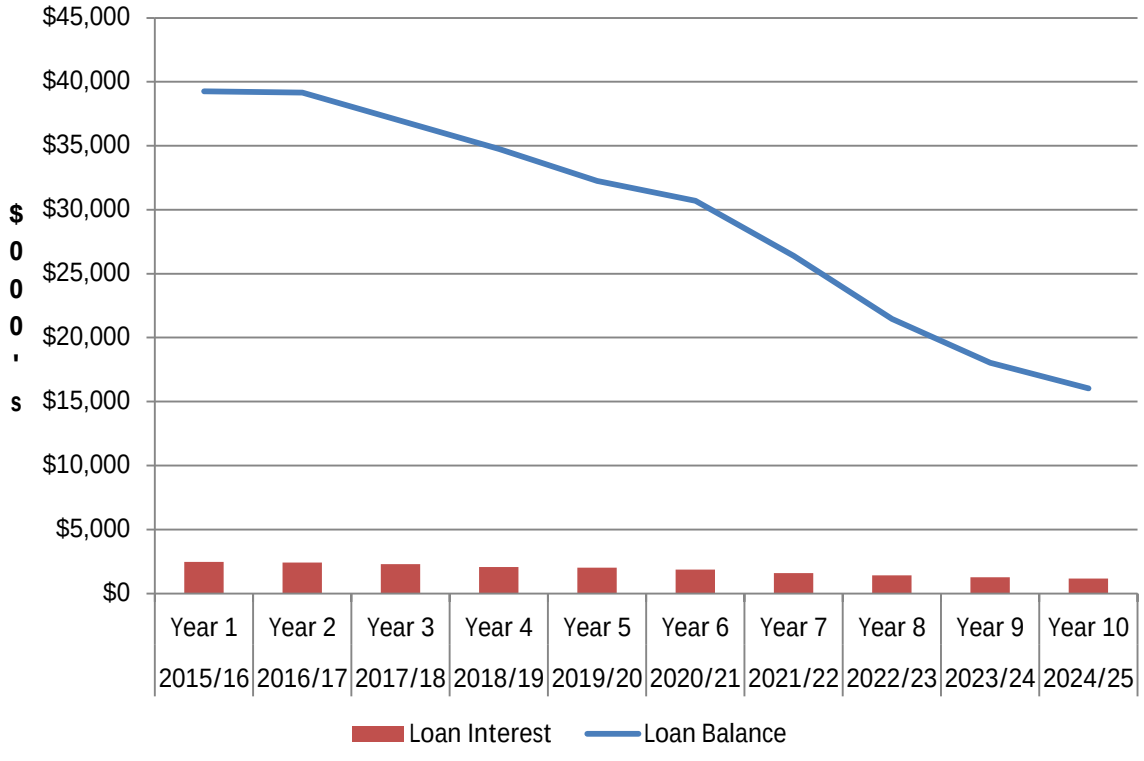


Figure 10-5: Loan Forecast

The loan balance associated with the wastewater activity is forecast to decrease from $39.2 to $16.0 million over the next 10 years. This leads to a reduction in the annual loan interest costs as shown in Figure 10-6.

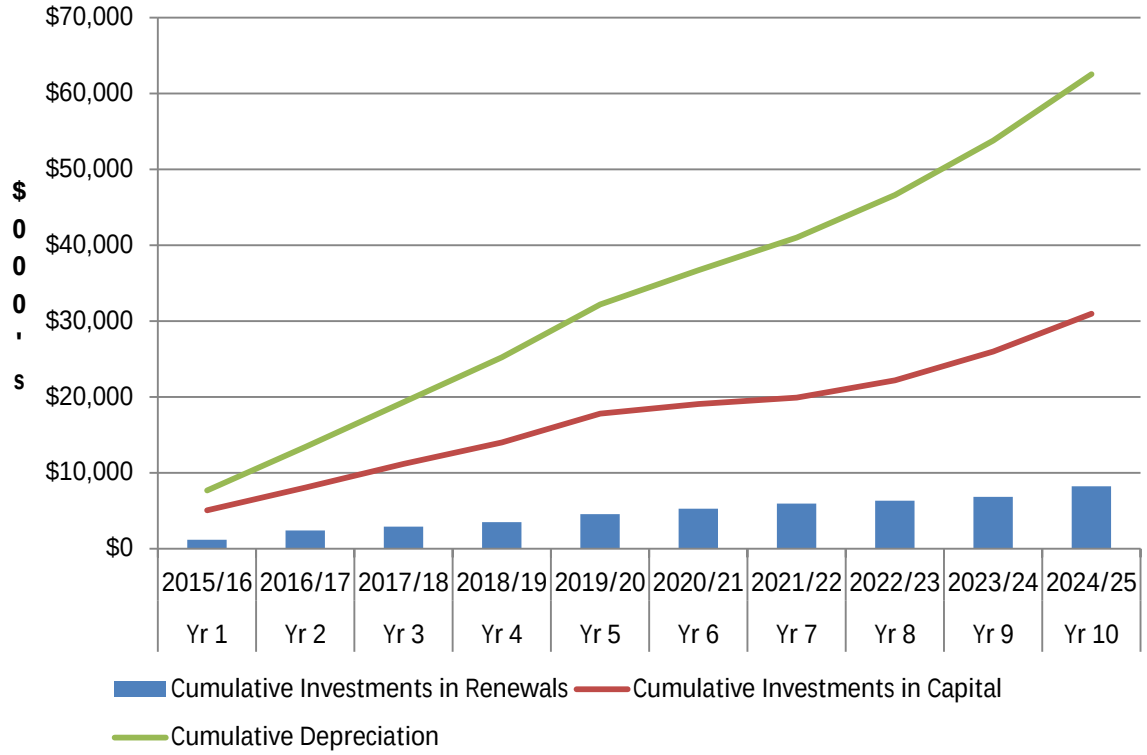


Figure 10-6: Investment in Renewals

Figure 10-6 compares the total cumulative investment in renewals and the total cumulative depreciation for the wastewater activity for the first 10 years. It shows that the Council is not investing in renewals at anywhere near the level of depreciation. This would indicate that the assets are being consumed.

However, many wastewater assets have a life expectancy of 80 years and much of the network is still young so there is not a great need to renew them. To be investing in renewals would be spending money on sound assets with limited real benefit. As the Council shifts to cash fund depreciation the difference between renewals expenditure and depreciation will reduce debt associated with the activity and enable the Council to fund renewals when needed later.

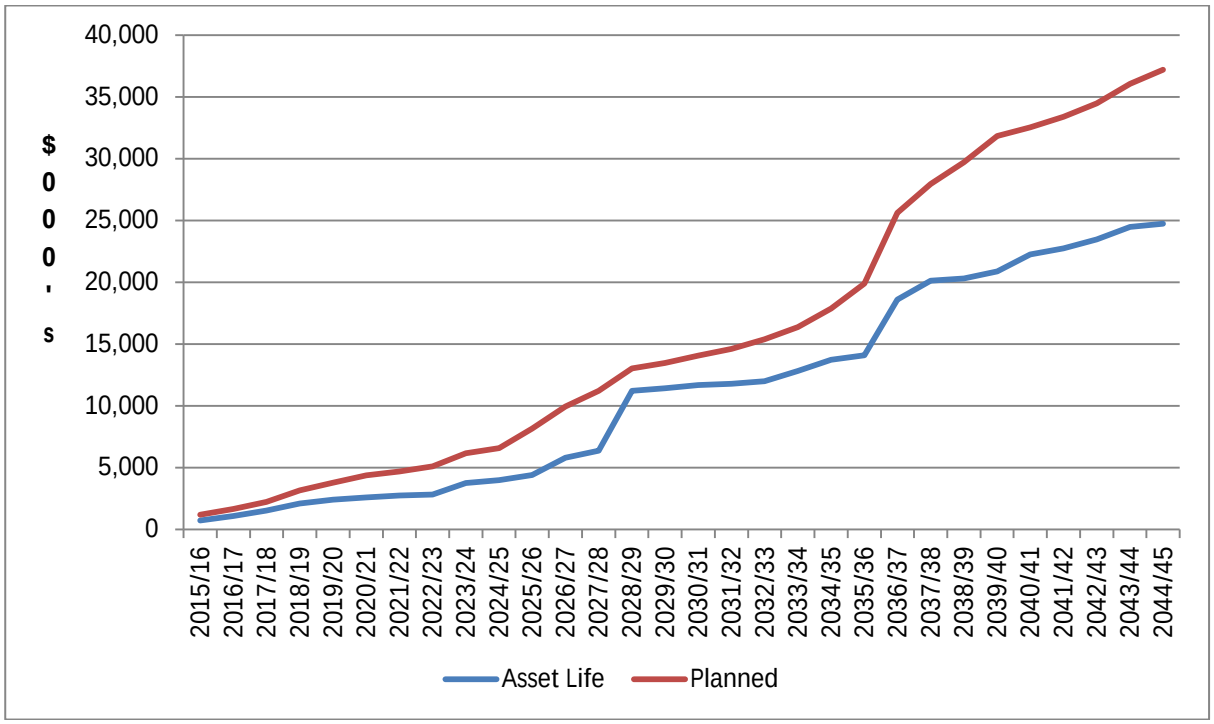


Figure 10-7: Comparison of Renewals Based on Asset Life with Planned Renewals

The value of renewals based on asset life has been compared to planned renewals in Figure 10-7. The annual renewal expenditure trends are similar, although planned expenditure is greater than renewals based on asset life indicates is necessary. The main reasons for the differences are:

- some assets require replacement ahead of the end of asset life, usually due to poor condition or because a need to increase capacity as a result of growth;
- estimated renewal cost is greater than the valuation replacement value;
- new assets constructed within the 30 year programme are excluded for the current valuation so have no replacement value and may have an asset life for less than 30 years;
- assets with a short asset life may need to be renewed two or three times within the 30 year programme but are only included once in the current valuation.

Appendix I provides more details on the differences between renewals based on asset life and planned renewals.

APPENDIX A. LEGISLATIVE AND OTHER REQUIREMENTS AND RELATIONSHIPS WITH OTHER PLANNING DOCUMENTS AND ORGANISATIONS

A.1 Introduction

The purpose of this Activity Management Plan (AMP) is to outline and summarise in one place, the Council's strategic and long-term management approach for the provision and maintenance of its wastewater assets.

The AMP demonstrates responsible management of the district's assets on behalf of customers and stakeholders and assists with the achievement of strategic goals and statutory compliance. The AMP combines management, financial, engineering and technical practices to ensure that the levels of service required by customers is provided at the lowest long term cost to the community and is delivered in a sustainable manner.

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, 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.

The target audience of this AMP is the Tasman District community, Tasman District Councillors and Council staff. The appendices provide more in depth information for the management of the activity and are therefore targeted at the Activity Managers. The document is publicly available on the Council's website.

In preparing this AMP the following have been taken account of:

- **National Drivers** – for example the drivers for improving asset management through the Local Government Act 2002;
- **Local Drivers** – for example the Community Outcomes determined through consultation with the public, and change in rules and environmental standards in the Tasman Resource Management Plan (TRMP);
- **Industry Guidelines and Standards** – Biosolids Guidelines;
- **Linkages** – the need to ensure this AMP is consistent with all other relevant plans and policies;
- **Constraints** – the legal constraints and obligations Council has to comply with in undertaking this activity.

The main drivers, linkages and constraints are described in the following sections.

A.2 Key Legislation, Industry Standards and Statutory Planning Documents

A.2.1. 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://wwww.legistlation.govt.nz/.

- Local Government Act 2002 especially:
  - Part 7;
  - Schedule 10;
  - the Trade Waste provisions (Sections 148 and 196);
  - the requirement to consider all options and to assess the benefits and costs of each option (see Appendix F);
  - the consultation requirements (see Appendix U).

- Construction Contracts Act 2002
- Building Act 2004
- Civil Defence Emergency Management Act 2002 (Lifelines)
- Climate Change Response Act 2002
- Health Act 1956
- Health and Safety in Employment Act 1992
- Local Government Act 1974 (Part XXXI)
- Local Government (Rating) Act 2002
- Resource Management Act 1991

A.2.2. National Policies, Regulations and Strategies

- The Government's Sustainable Development Action Plan
- The New Zealand Coastal Policy Statement 2010 http://rma.govt.nz
- existing established policies of the Council (outside those contained in this Activity Management Plan itself) regarding this activity
- existing policies (or requirements) of the Unitary Council that might impinge on the activity.
- The Building Regulations http://www.legislation.govt.nz/
- The Local Government (Financial Reporting) Regulations 2011 http://www.legislation.govt.nz/
- NAMS Manuals and Guidelines http://www.nams.org.nz
- Office of the Auditor General's publications http://www.oag.govt.nz
- New Zealand Standard SNZHB 4360:2000 'Risk Management for Local Government'

A.2.3. Standards New Zealand

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

- AS/NZS ISO 31000:2009 Risk Management Principles and Guidelines;
- NZS 4404:2010 Land Development and Subdivision Infrastructure;
- AS/NZS ISO 9001:2008 Quality Management Systems;
- AS/NZS 4801:2001 Occupational Health and Safety Management Systems.

A.2.4. Local Policies, Regulations, Standards and Strategies

- Tasman District Council District Plan – Tasman Resource Management Plan (TRMP) http://www.tasman.govt.nz;
- Tasman Regional Policy Statement (TRPS) http://www.tasman.govt.nz;
- Tasman District Council Engineering Standards and Policies 2013 http://www.tasman.govt.nz;
- Tasman District Council Procurement Strategy;
- Wastewater Activity Management Plan 2012;
- Regional Growth Strategy and any Regional Coastal Policies;
- Tasman District Council's Wastewater Bylaw 2015;
- Nelson Tasman Joint Waste Management and Minimisation Plan;
- any existing established policies of the Council (outside those contained in this Activity Management Plan itself) regarding this activity;

· any existing strategies or policies (or requirements) of the Council that might impinge on the activity.

A.3 Links with Other Documents

This AMP is a key component in the Council's strategic planning function. Among other things, this plan supports and justifies the financial forecasts and the objectives laid out in the Long Term Plan (LTP). It also provides a guide for the preparation of each Annual Plan and other forward work programmes.

Figure A-1 depicts the links between the Council's Activity Management Plans to other corporate plans and documents.

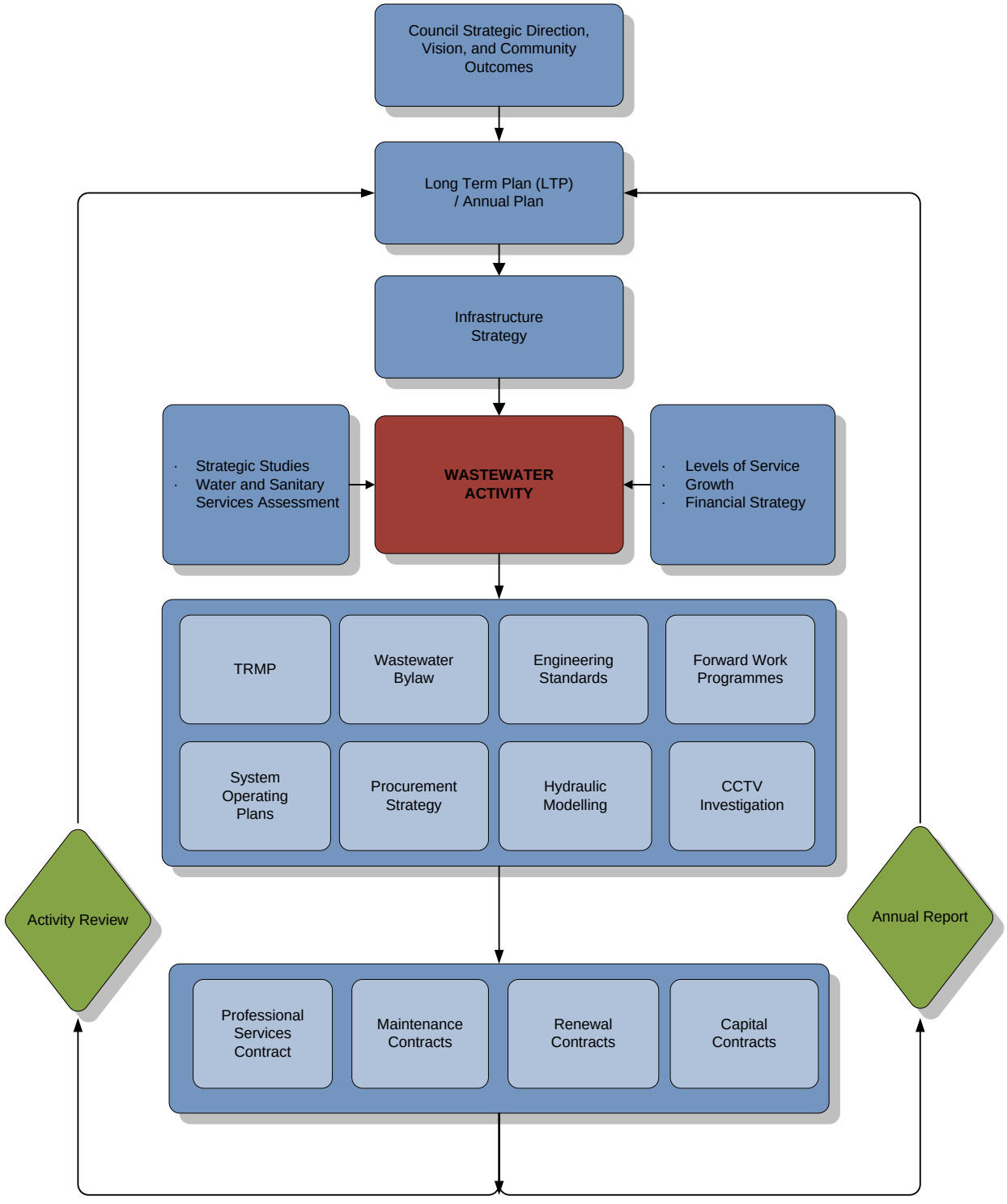


Figure A-1: Hierarchy of Council Policy, Strategy and Planning

A.4 Strategic Direction

Council's strategic direction is outlined in the Vision, Mission and Community Outcomes.

Vision: Thriving communities enjoying the Tasman lifestyle.

Mission: To enhance community well-being and quality of life.

Community Outcomes:

Table A-1 shows the community outcomes and how the wastewater activity relates to them

Table A-1: How the Wastewater Activity Contributes to Community Outcomes

Community Outcomes	How Our Activity Contributes to the Community Outcome
Our unique natural environment is healthy and protected.	All wastewater in the Council-owned schemes is treated and discharged into the environment. This activity can be managed so the impact of the discharges does not adversely effect the health and cleanliness of the receiving environment.
Our urban and rural environments are people-friendly, well-planned and sustainably managed.	The wastewater activity ensures our built urban environments are functional, pleasant and safe by ensuring wastewater is collected and treated without causing a hazard to public health, unpleasant odours and unattractive visual impacts.
Our infrastructure is efficient, cost effective and meets current and future needs.	The wastewater activity is considered an essential service that should be provided to all properties within the urban drainage areas in sufficient size and capacity. This service should also be efficient and sustainably managed.

The following table outlines the strategic documents utilised by the Council as part of the planning process.

Table A-2: Strategic Documents used in the Planning Process

Long Term Plan (LTP)	The LTP is the Council's 10-year planning document. It sets out the broad strategic direction and priorities for the long term development of the District; identifies the desired community outcomes; describes the activities the Council will undertake to support those outcomes; and outlines the means of measuring progress.
Activity Management Plan (AMP)	AMPs describe the infrastructural assets and the activities undertaken by the Council and outline the financial, management and technical practices to ensure the assets are maintained and developed to meet the requirements of the community over the long term. AMPs focus on the service that is delivered as well as the planned maintenance and replacement of physical assets.
Annual Plan	A detailed action plan on the Council's projects and finances for each financial year. The works identified in the AMP form the basis on which annual plans are prepared. With the adoption of the LTP, the Annual Plan mainly updates the budget and sources of funding for the year.
Financial and Business Plans	The financial and business plans requirement by the Local Government Amendment Act. The expenditure projections will be taken directly from the financial forecasts in the AMP.
Contracts and agreements	The service levels, strategies and information requirements contained in the AMP are the basis for performance standards in the current Maintenance and Professional Service Contracts for commercial arrangements and in less formal "agreements" for community or voluntary groups.

Operational Plans	Operating and maintenance guidelines to ensure that the asset operates reliably and is maintained in a condition that will maximise useful service life of assets within the network.
Corporate Information	Quality asset management is dependent on suitable information and data and the availability of sophisticated asset management systems which are fully integrated with the wider corporate information systems (eg. financial, property, GIS, customer service, etc). The Council's goal is to work towards such a fully integrated system.

A.4.1. Our Goal

We aim to provide cost-effective and sustainable wastewater systems in a manner that meets environmental standards and agreed levels of service.

APPENDIX B OVERVIEW OF ALL COUNCIL OWNED AND OPERATED WASTEWATER SYSTEMS IN THE DISTRICT

B.1 Introduction

The Urban Drainage Areas (UDAs) in the Tasman District are detailed in the following sections:

- B2 – Wakefield, Brightwater, Richmond/Hope, Mapua/Ruby Bay;
- B3 – Motueka, Riwaka, Kaiteriteri;
- B4 – Takaka, Pohara, Ligar Bay/Tata Beach;
- B5 – Collingwood;
- B6 – Upper Takaka;
- B7 – Tapawera;
- B8 – St Arnaud;
- B9 – Murchison.

B.1.1. Plans of Catchment Areas

Plans of the UDA boundaries and the main components of the systems are shown in Appendix Y.

B.1.2. Levels of Service

A detailed profile of the Levels of Service the Council intends to meet can be found in Appendix R. The levels of service apply to all customers though the significance differs from area to area.

B.1.3. Possible Future Developments

Comprehensive growth modelling has been undertaken to project population growth and related property/dwelling growth for the next 20 years and beyond. This is summarised in Appendix F. The growth analyses have included projecting growth across the district, on a settlement-by-settlement basis, balancing demand and supply factors to get a distributed growth forecast. They have then been used as the basis for future forecasts of demand for wastewater infrastructure and, in turn, have determined the planned asset capacity requirements. The projected growth of wastewater pan numbers due to the projected population growth is shown in Appendix F.

Although this AMP focuses on the next 30 years, the asset designer has to consider at least the next 50 years. This is because most wastewater asset components have a life-cycle of somewhere between 20 and 80 years.

B.1.4. Relationship with Iwi

The Council and Manawhenua ki Mohua (iwi with rangatira status and kaitiaki role in Golden Bay) signed a Memorandum of Agreement in 2008. The Agreement sets up a Golden Bay Sewerage Liaison Group which includes representatives of Manawhenua ki Mohua and the Council and meets at least annually.

The group's purpose is to review the performance of all Golden Bay WWTPs and make recommendations on the scope and adequacy of environmental monitoring, the state of the WWTPs, and opportunities for improvement and enhancement that reduce cultural and environmental impacts of the WWTPs.

The agreement also documents timeframes and the scope of reviews and reports required for the Takaka WWTP.

While the Council has no formal agreement with Tiakina te Taiao (iwi with rangatira status and kaitiaki role in Tasman Bay) the Council liaises and works with them in a similar way for wastewater systems in Tapawera, St Arnaud and Motueka.

B.1.5. Asset Valuation

Assets are currently valued collectively for all catchments. The details are provided in Appendix D.

B.2 Wakefield, Brightwater, Richmond/Hope and Mapua/Ruby Bay

These four UDAs are grouped together because they all discharge to the Bell Island WWTP managed by the Nelson Regional Sewerage Business Unit (NRSBU). The NRSBU holds resource consents granted in 2003 for the wastewater treatment plant on Bell Island. Permits allow the discharge of treated effluent to sea, valid for a period of 15 years until 2018. Other permits include a discharge to air and consents for various upgrades to the treatment plant.

B.2.1. Wakefield and Brightwater

B.2.1.1 System Description

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 three 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. See Figure B-1 for an overall schematic of the system.

All Brightwater and Wakefield wastewater arrives at the Brightwater main pump station adjacent to Brightwater Engineering Ltd where 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 three pumps; duty, standby and the third is connected to the generator circuit and only operates if the pump station high level alarm is triggered, which starts the generator. The site operation is monitored by telemetry.

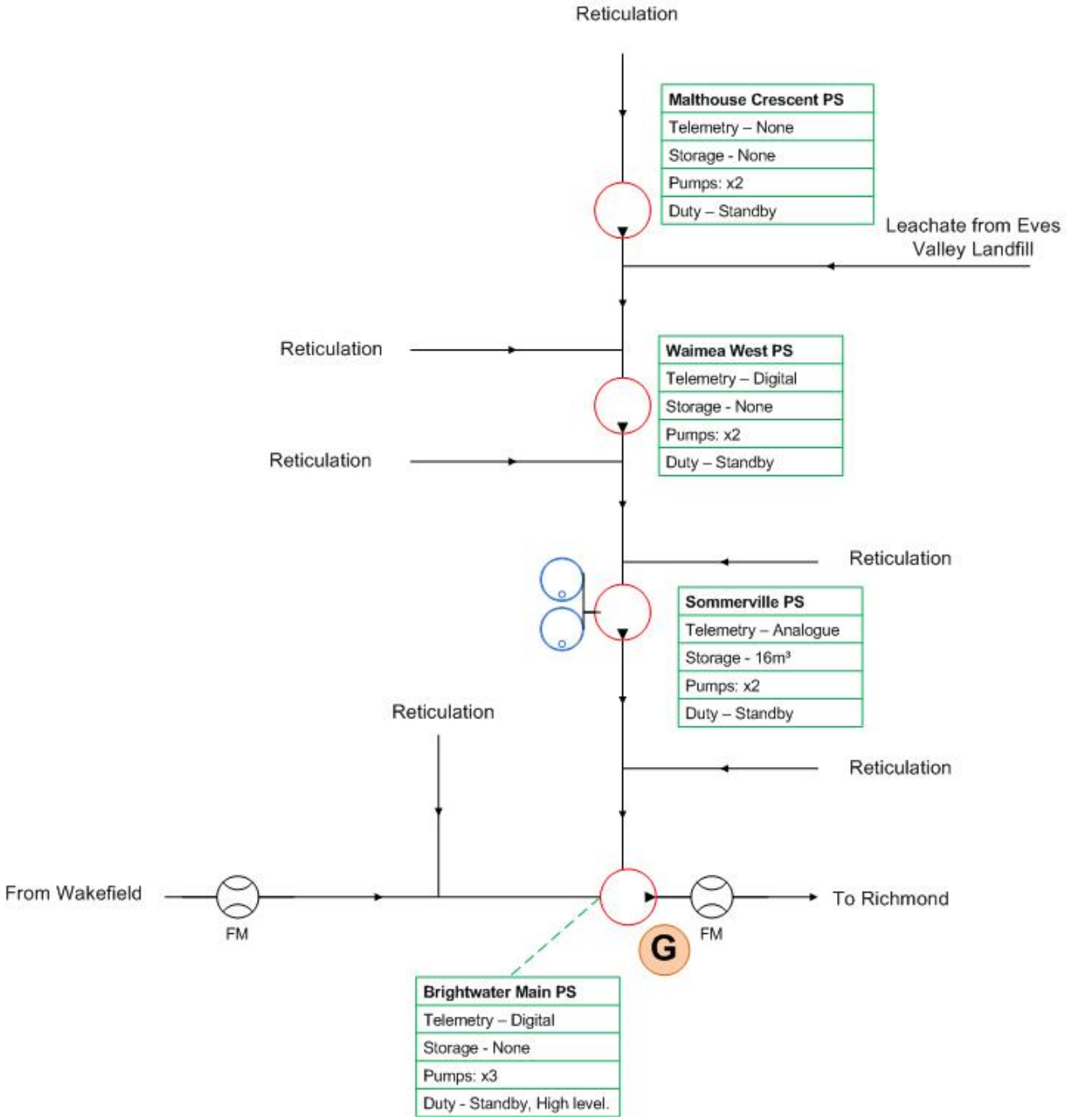


Figure B-1: Overall Schematic for Wakefield/Brightwater

Table B-1 below summarises the assets within the UDA.

Table B-1: Assets within the Wakefield and Brightwater UDA

Pump Stations		Treatment Plants	Reticulation	Other Assets
Brightwater Main Bryant Road Waimea West Road Malthouse Crescent	2 x Pumpex K89 12.5kW 1 x Emergency pump 2 x Pumpex K80 F-VA197-2 2.7kW 2 x Flygt CP3085 MT4611.3kw 2 x Sarlin	Bell Island WWTP (NRSBU)	**Brightwater** Gravity pipes: 80mm - 7110m 100mm - 3670m 150mm - 8620m 200mm - 3610m 250mm - 1420m 300mm - 40m	Cleaning eyes 246 Generator 1 Manholes 297

Pump Stations	Treatment Plants	Reticulation	Other Assets
		Laterals: 100mm - 1770m Pressure pipes: 80mm - 160m 100mm - 60m 225mm - 1640m **Total – 28,100m** **Wakefield** Gravity pipes: 100mm - 2540m 150mm -11350m 200mm - 2240m Laterals: 100mm -1820m 150mm - 20m **Total – 17,970m**	

B.2.1.2 Asset Condition

Wakefield and Brightwater were originally reticulated in the late 1970s however, most development didn't occur until the late 1980s. Apart from the earliest pipes, which were asbestos cement, most of the reticulation network is uPVC pipe. Therefore infiltration through pipe joints is not a significant problem. No formal assessment of the reticulation condition has been undertaken. However, there are no known specific concerns regarding the condition of these assets. Inspections by Council staff, maintenance contractors and consultants have not identified any specific defects.

The Wakefield and Brightwater gravity systems run relatively trouble free. There have been recent capacity issues as a result of storm events causing large volumes of leachate at Eves Valley Landfill, greater than the existing pumping system can cope with. Therefore leachate is also tankered from the landfill to the Brightwater main pump station which has caused some minor overflows immediately upstream of the pump station.

Overland flows originating in the Mount Heslington Road area, as a result of heavy rainfall, have led to inflow into the Brightwater system causing overflows. A budget has been included in the stormwater AMP to prevent overland flows into the wastewater system.

Currently there is no way to hold back the significant gravity flows from Wakefield from discharging into the Brightwater main pump station. Therefore there is no safe way to undertake maintenance work within the wet well.

Telemetry is needed at the Malthouse Crescent pump station so it can be monitored remotely.

B.2.1.3 Future Demand

There are no significant issues identified with the capacity of the reticulation except for the existing trunk mains' capacity which was found to be inadequate when tested against the projected growth in these two townships. Upgrading of the trunk main from Wakefield through to Three Brothers Corner has been included, starting with the Wakefield to Brightwater section in 2022/23, as this has the greatest risk.

B.2.2. Richmond/Hope

B.2.2.1 System Description

Properties within the Hope UDA discharge into the trunk gravity main in 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 are two small pump stations on Hill Street that pump into the gravity system which discharges to the Beach Road pump station at the northern edge of the town, near the coast. The Beach Road pump station and all downstream reticulation is operated by the NRSBU.

There is also a pump station near Headingly Lane which serves the commercial/industrial area of lower Queen Street. The Headingly Lane pump station pumps to the existing gravity reticulation near the Beach Road pump station.

There is no telemetry at either of the Hill Street pump stations; Sunview Heights and 423 Hill Street, so they cannot be monitored remotely. Each pump station relies on neighbours calling the Council if the flashing fault light is going.

The wider reticulation network suffers from stormwater and groundwater infiltration during storm events. Water enters the system through eroded rubber ring joints in some of the older reticulation. Pipeline replacements have relieved most of the capacity bottlenecks and have significantly reduced the occurrence of overflows. Modelling of the reticulation network has identified several areas that need upgrading to meet the demands of stormwater flows and population growth.

The main trunk gravity line from Three Brothers Corner to Beach Road was upgraded in 2007 and has sufficient capacity for future development.

Some of Richmond's public reticulation is on private property and manholes can become buried under gardens, making emergency access difficult.

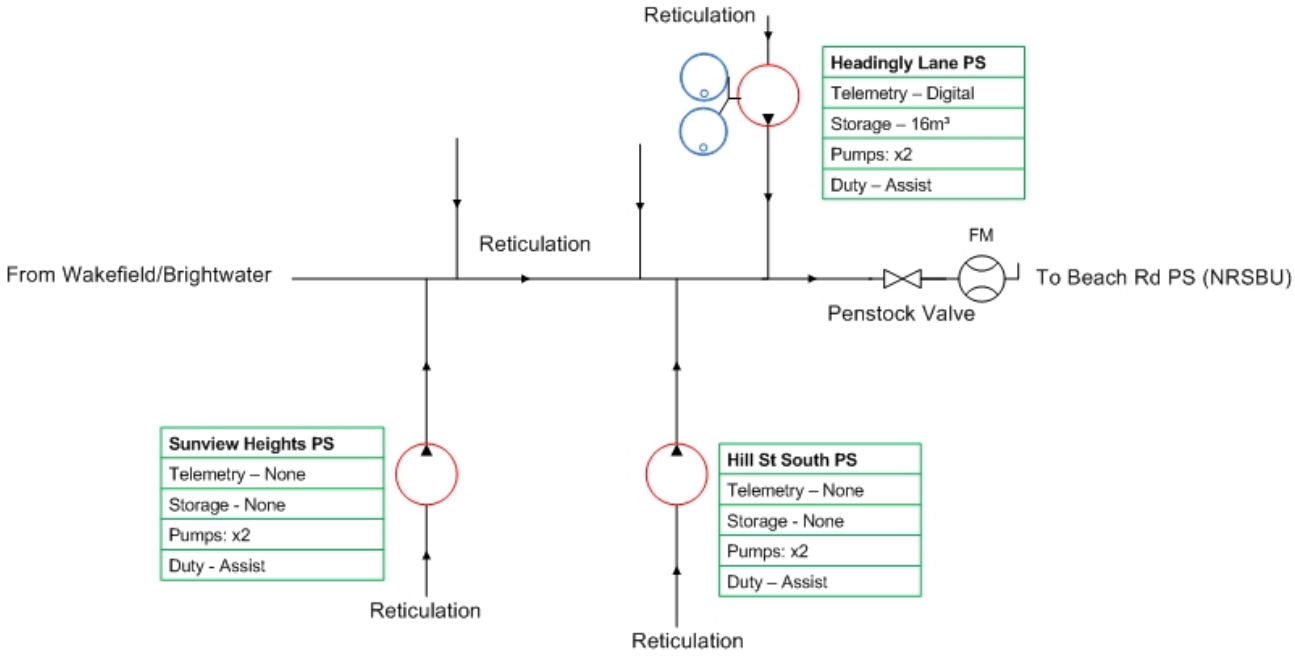


Figure B-2: Overall Schematic for Richmond/Hope

Table B-2 below summarises the assets within the UDA.

Table B-2: Assets within the Richmond/Hope UDA

Pump Stations	Treatment Plants	Reticulation	Other Assets
423 Hill Street 2 x Jung UAK 08/2MS0.8kW Sunview Heights 2 x Jung UAK 35/2M 3.5kW Headingly Lane 2 x Flygt NP 3127-181-SH7.4kW	Bell Island WWTP (NRSBU)	**Richmond** Gravity pipes: 100mm - 3450m 150mm - 66360m 200mm - 4580m 225mm - 6850m 250mm - 370m 300mm - 4700m 375mm - 480m 400mm - 880m 450mm - 50m 475mm - 260m 525mm - 1250m 675mm - 1340m 750mm - 90m Laterals: 100mm - 8470m 150mm - 450m Pressure pipes: 50mm - 190m 100mm - 30m 140mm -1290m **Total – 102,530m** **Hope:** Gravity pipes: 100mm - 2870m 150mm - 5890m 250mm - 2380m 300mm - 1450m Laterals: 100mm - 190m Pressure pipes: 50mm - 360m 225mm - 390m **Total – 13,530m**	Cleaning eyes: 423 **Richmond** Manholes: 1,602 **Hope** Manholes: 54

B.2.2.2 Asset Condition

Much of the reticulation is less than 30 years old due to the significant development of Richmond during the late 1980s and 1990s. However, the original reticulation installed during the 1950s is in poor condition. Generally the concrete pipes from the original scheme are in the worst condition through degradation of the pipe material. The original earthenware pipes also suffer significant infiltration but this appears to be due more to the degradation of the rubber joints rather than the pipe material itself. Recent improvements in the main problem areas have reduced the frequency of overflows during heavy rainfall events however, there are still significant capacity issues due to groundwater infiltration, especially for the central and southern lower parts of the reticulation.

B.2.2.3 Future Demand

Modelling of the Richmond/Hope reticulation network has confirmed the theoretical capacity of the pipes and identified where significant capacity issues exist. Improvements in the network are being made to accommodate future growth in the UDA and new assets are been identified.

Capacity in Hope has been improved with the upgrading of the Richmond trunk main and should meet the long-term requirements for Hope.

B.2.3. Mapua/Ruby Bay

B.2.3.1 System Description

Mapua and Ruby Bay were reticulated for wastewater circa 1988. The reticulation network generally drains south and east via gravity, interspersed with pumping stations, delivering all wastewater to the 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 UDA, all with duty and standby pumps with corresponding controls.

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 Council staff and the Council's maintenance contractor. This contractor is responsible for monitoring and responding to alarms and ensuring the pump station operates.

The rising main under the Mapua Channel is a 250mm diameter PE pipeline. An additional unused 160/200mm diameter polyethylene 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.

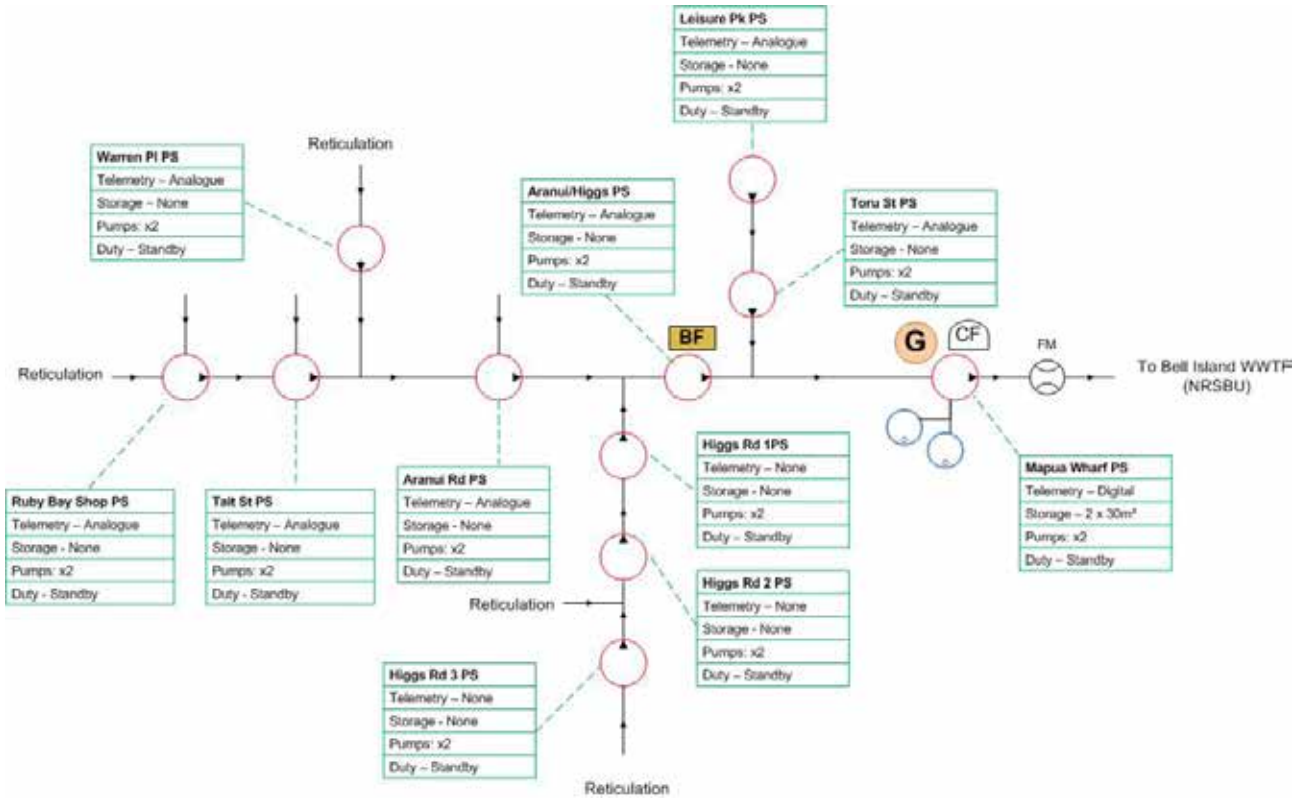


Figure B-3: Overall Schematic for Mapua/Ruby Bay

Table B-3 below summarises the assets within the UDA.

Table B-3: Assets within the Mapua/Ruby Bay UDA

Pump Stations		Treatment Plants	Reticulation	Other Assets
Mapua Wharf	2 x Flygt NP3301.185 HT 70kW	Bell Island WWTP (NRSBU)	Gravity pipe 100mm - 6470m 150mm - 11690m 200mm - 920m 300mm - 30m Lateral 100mm - 1380m Pressure pipe 50mm - 590m 80mm - 1520m 100mm - 950m 150mm - 790m 200mm – 8940m 300mm - 8090m **Total – 41,370m**	Cleaning eyes: 118 Biofilters: 2 Manholes: 222
Aranui-Higgs Road	1 x Grundfos SEV80.802.2kW 1 x Pumpex K80 2.7kW			
Leisure Park	1 x Pumpex K89 2.5kW 1 x Jung UAK 25/2512.6kW			
Toru Street	2 x Sarlin SV014 BL1.65kW			
Higgs Road No 1	1 x Jung VAK 35/2513.7kW 1 x Jung VAK 25/2M2.2kW			
Higgs Road No 2	2 x Jung VAK 25/2512.6kW			
Higgs Road No 3	2 x Jung VAK 25/2512.6kW			
Aranui Road 109	1 x Sarlin SV014 BL1.65kW 1 x Pumpex K80 2.7kW			
Stafford Drive (Tait)	1 x Flygt M18-10-2AL4.4kW 1 x Jung 35/251 3.7kW			
Ruby Bay Shop	2 x Jung 25/251 2.6kW			
Warren Place	2 x Jung 25/251 2.2kW			

B.2.3.2 Asset Condition

The Mapua/Ruby Bay reticulation network suffers from high wet weather flows due to infiltration problems. The pump stations are a very basic design with no storm or emergency storage and non-return valves in many of the pump stations restrict flow and cause blockages.

Frequent blockages occur at the Aranui-Higgs Road pump station due to rag, including towels and clothing, being dumped in the upstream network.

B.2.3.3 Future Demand

The reticulation network has been modelled and the capacity of the existing pipework and pump stations is known. Most of the trunk mains and pump stations do not have sufficient capacity for future long term growth so a progressive upgrade of the network is planned.

All the main pump stations and rising mains in Mapua/Ruby Bay require significant upgrade except for the Mapua Wharf pump station. A strategy which identifies the extent of the upgrades required has been completed. The strategy includes constructing a new pump station to replace Stafford Drive (Tait) pump station, upgrading five existing pump stations, and upgrading or replacing rising mains.

B.2.4. Key Lifelines

The Nelson Tasman Engineering Lifelines report, 2009, confirms the pump stations and trunk mains from Wakefield to Richmond's Beach Road pump station are at a high to extreme risk of failure from earthquake shaking and/or liquefaction.

B.2.5. Strategic Approach

The issues facing these schemes include:

- the rising costs of treatment through the NRSBU;
- growth in all schemes is likely to lead to more frequent capacity issues in trunk mains and critical rising mains, except for Richmond.

The strategic approach to these schemes is to:

- continue to construct and upgrade the trunk main systems to provide capacity to accommodate growth in new areas;

- continue to investigate reticulation systems to identify and repair defects and sources of wet weather inflow into the sewers;
- review hydraulic models to confirm which of the levels of service can be achieved.

The key existing strategic studies and models within the UDA include:

- Hydraulic models for Richmond, Hope, Brightwater, Wakefield and Mapua/Ruby Bay;
- Mapua Wastewater Upgrade Strategy, MWH New Zealand Ltd, 2009;
- Inflow and Infiltration: Assessment of Impacts and Drivers – Richmond Wastewater Catchment, MWH New Zealand Ltd, 2010;
- CCTV reports.

B.3 Motueka, Riwaka, and Kaiteriteri

There are three wastewater systems that discharge into the Motueka Wastewater Treatment Plant (WWTP), Motueka, Riwaka and Kaiteriteri. The Motueka WWTP currently has discharge permits for treated wastewater and odour which will expire in 2018. These consents were granted for a short six year term to allow for investigations, design and new consents to be completed for an upgraded WWTP. The Council lodged new consents for an upgraded WWTP in December 2014.

The discharge consent limits the maximum daily discharge and sets limits on the overflow discharge to the south channel of the Motueka River. Currently there is frequent non-compliance with the limits. Some of the non-compliance is due to climatic conditions and others are exacerbated by the large numbers of wild fowl that inhabit the WWTP ponds.

A System Operating Plan that fulfils the role of the management and contingency plans required by the consent also describes operational and maintenance responsibilities, checks, inspections all the environmental and plant performance monitoring.

The Tapu Bay pipeline has a series of consents associated with it, all expiring in October 2018:

- NN010307C – Coastal Permit;
- NN010406L – Land Disturbance Permit;
- NN010407L – Land Use Permit.

As a result of an Environment Court decision relating to these consents, the Council entered a Memorandum of Agreement with local iwi. This formed the basis for the Motueka Wastewater Task Group responsible for making recommendations to the Council concerning the future of wastewater services between Motueka and Marahau. One of the recommendations of the task group was the replacement of the Tapu Bay pipeline with a land-based system prior to expiry of the current consent. The Council has included the replacement of the pipeline in its 30 year financial plan.

Refer to Appendix H for all resource consents relating to wastewater assets in these UDAs.

B.3.1. Motueka

B.3.1.1 System Description

The Motueka Wastewater system was 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 comprises a mechanical inlet screen with odour treatment, an aerated lagoon (constructed in 1990), followed by an oxidation pond from where wastewater discharges to polishing ponds (former sand soakage beds) and a wetland. Treated wastewater then either soaks into groundwater (estimated at approximately 14%) with the majority overflowing into the south channel of the Motueka River, where it meets the coast.

The area serviced by this system is flat and low lying, so consists of local gravity reticulation and a series of 20 pump stations, see Figure B-5. The present system 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 operated by their respective float switches. Telemetry and alarm systems are included on all the larger pumping stations.

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.

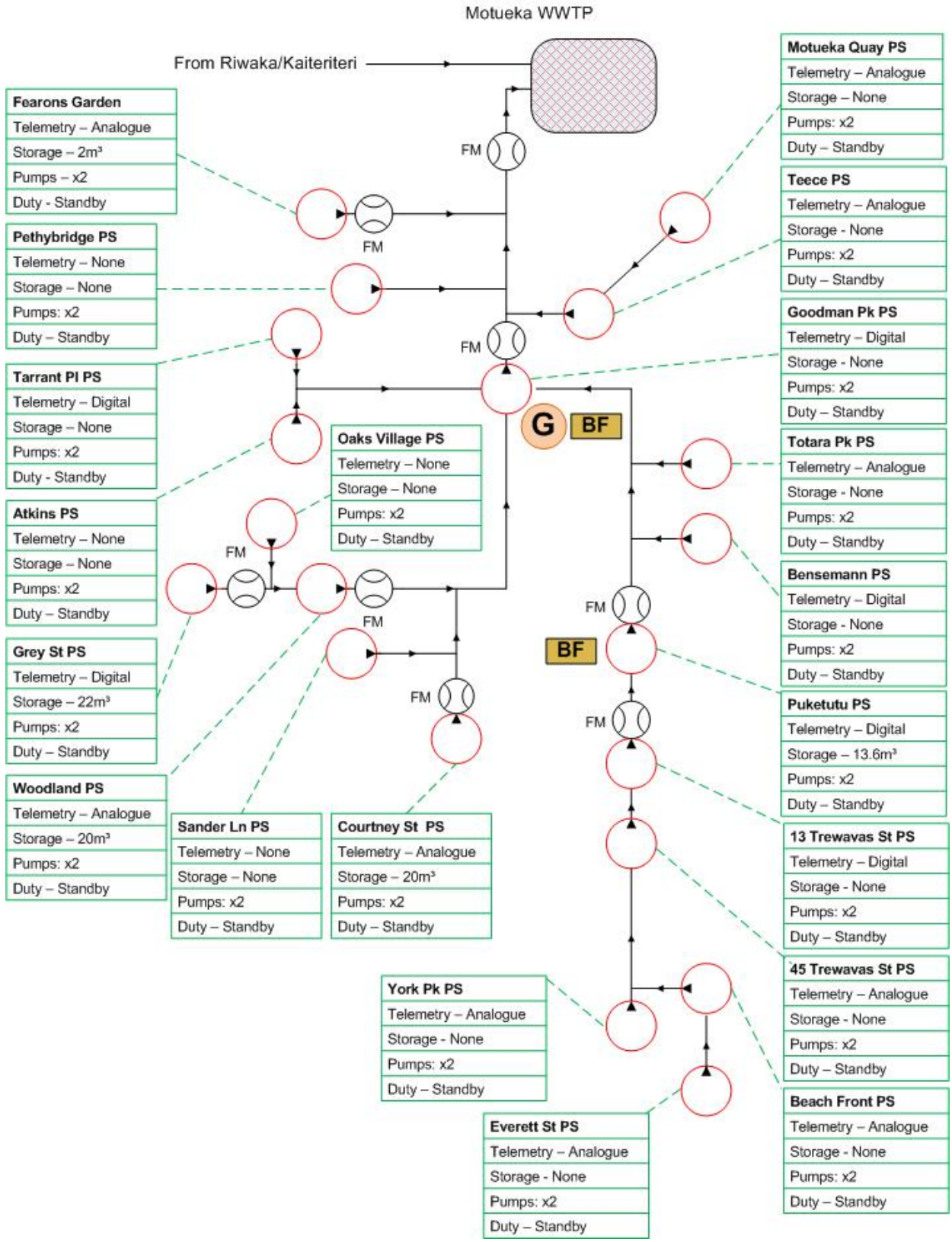


Figure B-4: Overall Schematic for Motueka

Table B-4 below summarises the assets within the UDA.

Table B-4: Assets within the Motueka UDA

Pump Stations		Treatment Plants	Reticulation	Other Assets
Goodman Park	2 x Flygt NP3201 30kW	Motueka WWTP	Gravity pipes:	Generator: 1
Woodlands Avenue	2 x Grundfos SE1.80.100.75.4.50B.B7.5kW	3mm mechanical inlet step screen, H2S sensor, inlet odour treatment system	75mm - 210m 80mm - 120m 100mm - 2490m 150mm - 34490m 160mm - 130m 200mm - 10m 225mm - 3970m 300mm - 1950m 375mm - 40m	Cleaning eyes: 363
Courtney Street	2 x Flygt NP3153 9kW			
Tarrant Place	2 x Flygt EMU FA 05-128 2.6kW			Biofilter: 2
Pethybridge Street	2 x Flygt CP 3126 H17.4kW			
Teece (81 Thorp St)	2 x Flygt C3102 3.1kW			Manholes: 627
Motueka Quay	2 x Jung UAK 25/2M 2.2kW			
Totara Park	2 x Jung UAK 35 3.7kW			
Bensemann	2 x Pumpex PX1-70-2-33.5kW			
13 Trewavas St	2 x Pumpex K83 3.8kW			
45 Trewavas St	2 x Lowara DLV1201.85kW			
York Park	2 x Lowara DLV140			
Beach Front	2 x Lowara DLV1201.85kW			
Everett Street	2 x Grundfos SEV.65.65.40.EX.2.50B4.8kW			
Oaks Village	Type and size unknown			
Atkins Street	Jung UAK 25/2M 2.6kW			
Sanderlane Drive	1 x Flygt 3102.1803.1Kw 1 x Grundfos SE1.80.100.40.4.50B 4.9kW			
Fearons Garden	2 x Grundfos SEV 80.80.40.2.50B 4.8kW			
Puketutu	2 x Flygt NP3085.183 SH254 2.4kW			
Grey St	2 x Flygt NP3085 MT SH465 2.0kW			
		6,000m³ aeration pond with four 7.5kW aerators and 2.2kW fine bubble aerator, dissolved oxygen (DO) probe	Laterals: 100mm - 9620m 150mm - 160m	
		Penstock and motorised valve	Pressure pipes: 40mm - 40m 50mm - 940m 70mm - 100m 80mm - 880m 90mm - 20m 100mm - 690m 150mm - 2140m 200mm - 1020m 225mm - 2290m 375mm - 2830m	
		5 hectare oxidation pond		
		Polishing ponds with overflow discharge to surface water		
		Datran telemetry system		
		Weather Station	**Total 64,200m**	

B.3.1.2 Asset Condition

Reticulation

Overloading of the reticulation due to stormwater and groundwater infiltration has been a regular occurrence during wet weather, resulting in some pump stations running 24 hours a day for several days.

The remaining asbestos cement (AC) rising main along Thorp Street is very shallow and is protected by concrete. The condition of this pipe is unknown but is expected to be in reasonable condition based on New Zealand studies into the expected life of AC pipe. The flow through the pipe is controlled by variable speed drives so flow and pressures spikes are minimised. Some of the gravity mains are laid on very flat grades and are prone 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 occur, overflows can occur on private property.

Several injection pump stations are not able to inject into the Thorp Street rising main when flows through the Goodman Park pump station are high.

A large proportion of the reticulation has undergone CCTV inspection which has resulted in numerous repairs and renewal of damaged or substandard pipe work. Much of the reticulation is very old (50 years +) and generally the concrete pipes from the original scheme are in the worst condition through degradation of

the pipe material. The original earthenware pipes also suffer from significant groundwater infiltration but this appears to be due more to the degradation of the rubber joints than the pipe material itself.

There are various issues with pump stations, from undersized wet well pipe work, corrosion, de-lamination of wet well concrete, lack of telemetry, and pump stations located on private property.

Treatment and Disposal

The wastewater treatment plant has insufficient and disposal capacity. Peak loadings at the WWTP occur in summer due to the large increase in holiday population, particularly in Kaiteriteri. This leads to overloading and nuisance odour affecting neighbouring residents usually between Christmas and mid-January.

It is unknown how much trade waste enters the wastewater system but monitoring and investigations indicate trade waste is regularly discharged into the wastewater network. From time-to-time high loadings cause overloading of the treatment system which requires careful management and significant additional cost to aid recovery of the pond systems.

During winter the high inflow and infiltration into the Motueka reticulation exceeds the disposal capacity of the treatment plant as well as reducing the treatment effectiveness. The original sand soakage beds have progressively clogged over the last 15 years due to flows exceeding the capacity of the soakage area and not allowing resting of beds between flooding events. As a result the soakage beds are permanently inundated and overflow to an adjacent back beach area (3.5ha) which has become a permanent wetland over the last nine years.

During dry summers significant portions of this wetland area can dry out due to high evaporation rates. However this is occurring less frequently as the base of the wetland becomes clogged. In recent years a continuous overflow has formed to the south channel of the Motueka River.

The treatment plant is located on the coast at the mouth of the Motueka River and there is a significant risk of inundation from flooding of the Motueka River as well as coastal erosion due to sea level rise. The dune between the wetland and the coast has been eroding for the last 10 years and has accelerated in the last three years. The fore-dune is frequently overtopped during storm events and large tides. It is expected that sections of the fore-dune will be breached in the near future and the wetland will not be able to form part of the treatment process.

B.3.1.3 Future Demand

There is significant development planned in Motueka West and new infrastructure will be required to allow for this to happen. The Council has assumed this will be constructed by developers but has budgeted for growth, which may require upgrades to existing assets to increase system capacity.

The WWTP is currently scheduled to be upgraded in 2015/16 but the Council recognises there are significant increasing risks with the WWTP remaining at its current location. It is anticipated that within 30 years it will be uneconomic to continue to operate the WWTP at the existing site due to the increasing impact of sea level rise. Therefore, the 30 year work programme includes investigating options for an alternative treatment plant site. The impact of sea level rise on the site will be monitored and the timing of relocation the WWTP will be reassessed every three years when the AMP is reviewed and updated.

B.3.2. Kaiteriteri/Riwaka

B.3.2.1 System Description

The Kaiteriteri wastewater system consists of reticulation and pumping stations only. 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 motor camp.

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 Bay and then gravitates across Tapu Bay to Riwaka via a 215mm dia PE pipe. An abandoned 100mm dia main across Tapu Bay could also be used in an emergency. Valves at the Kaiteriteri end of the Tapu Bay pipeline automatically open/close 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”. See Figure B-6 for a schematic of the reticulation network.

There are three other small boosted areas that either pump directly to the vessel; Stephens Bay, Tapu Bay and Little Kaiteriteri. There are emergency storage tanks at Stephens Bay and Little Kaiteriteri pump stations as well as a large 100m³ storage tank on Inlet Road near the motor camp.

Due to low flow into the Honeymoon Bay and Breaker Bay pump stations regular flushing with clean water is required to prevent septicity. Neither pump station has telemetry and if the pump stations stop operating for any reason overflows often go unreported for days if no one is living in the bays. Over peak summer periods these systems can cause nuisance odour, venting from the reticulation at the top of the Breaker Bay hill.

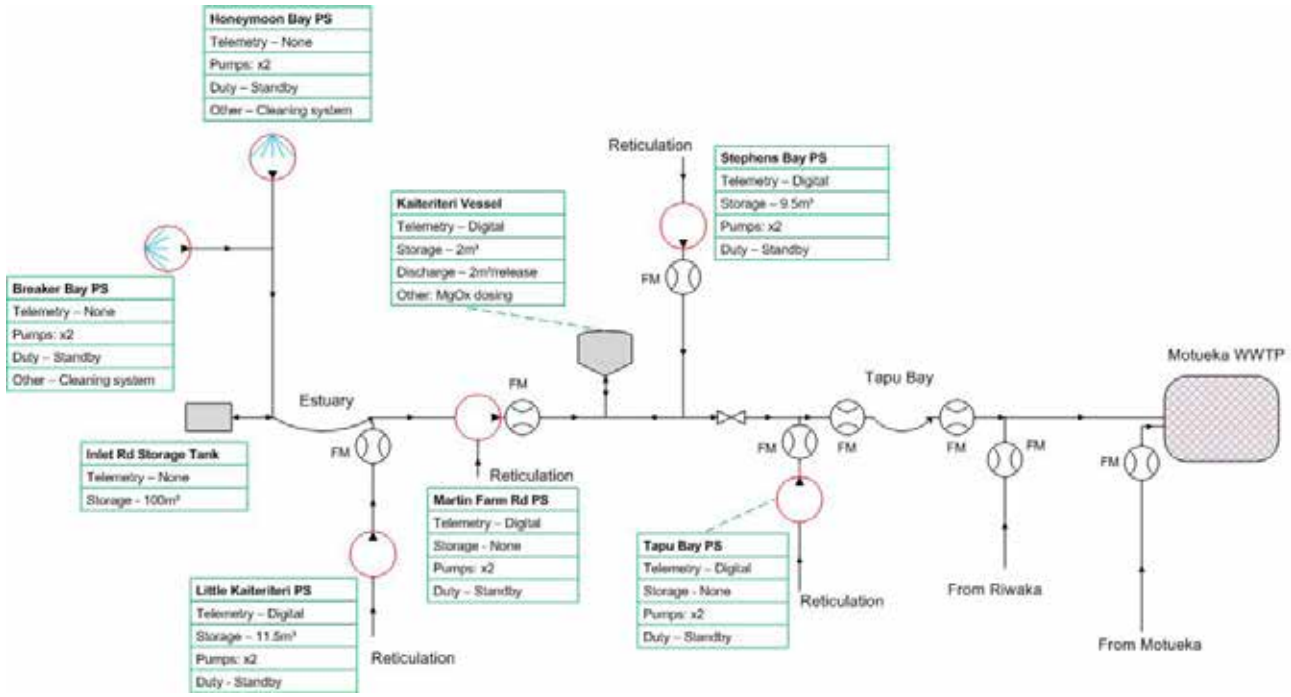


Figure B-5: Overall Schematic for Kaiteriteri

Table B-5 below summarises the assets within the UDA.

Table B-5: Assets within the Kaiteriteri UDA

Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets
Honeymoon Bay	2 x Flygt MP3102-170	4.4kW	Motueka WWTP	Gravity pipe		Cleaning eyes: 102
Breaker Bay	1 x Jung UAK 35/251	3.7kW		100mm	4750m	
	1 x Jung UAK 35/2 M5	3.7 kW		150mm	7590m	
Martin Farm Road	2 x Flygt CP3201SH263	30kW		160mm	250m	Control Vessel: 1
Little Kaiteriteri	2 x Pumpex K85	11kW		225mm	10m	
Stephens Bay	2 x Homa V2346-P122	25.2kW		250mm	1090m	
Tapu Bay	2 x Homa A70-160E 11/2a	11kW		300mm	10m	Manholes: 163
				Lateral		
				100mm	710m	
				Pressure pipe		
				65mm	50m	
				80mm	260m	
				100mm	2750m	
				150mm	860m	
				200mm	4140m	
				Total	**22,470m**	

B.3.2.2 Asset Condition

The reticulation was designed in 1987 to cope with a fully developed UDA as per the current zoning so has no capacity issues.

Most of the rising main from Tapu Bay to the Motueka WWTP has been upgraded to cater for growth; however two sections of older pipe remain. Both sections are on private property, one in Riwaka and the other between the Motueka River (SH60) bridge and the WWTP. The section in Riwaka is susceptible to breakage and both sections have insufficient capacity for the expected growth in Kaiteriteri.

The Kaiteriteri system is totally reliant on the telemetry system to operate and is located in an environmentally sensitive area in which no wastewater discharge is acceptable. The vessel has an operational volume of around $2m^2$ with minimal storage. If the telemetry system malfunctions and the downstream valve isn't signalled to open an overflow is imminent, if the rest of the pump stations continue to operate. Therefore constant monitoring and maintenance is required. The Kaiteriteri telemetry system was one of the first to be upgraded to digital and has proven more reliable than the analogue system.

No formal assessment of the reticulation condition has been undertaken. However, there are no known specific concerns regarding the condition of these assets, although the Little Kaiteriteri pump station is susceptible to infiltration.

Most of the infrastructure is of an age (approximately 15 years old) where condition problems are not expected. Inspections by Council staff, maintenance contractors and consultants have not identified any specific problems.

Because of the long distance to the Motueka WWTP the wastewater in the pipeline between the vessel and the treatment plant goes septic. This causes odours at the WWTP as hydrogen sulphide gas is released at the inlet to the WWTP. This is exacerbated in summer with the increase in population and flows increasing from 100 to $600m^3$/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.

B.3.2.3 Future Demand

The reticulation was designed in 1987 to cope with a fully developed UDA as per the current zoning so has no capacity issues. Due to the high tourist population the peak summer flows far exceed the average flows.

B.3.3. Riwaka

B.3.3.1 System Description

The Riwaka serviced area is flat and low lying, so consists of local gravity reticulation and a series of five pump stations, see Figure B-6. 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 operated by their respective float switches. Only the Riwaka Main pump station has telemetry.

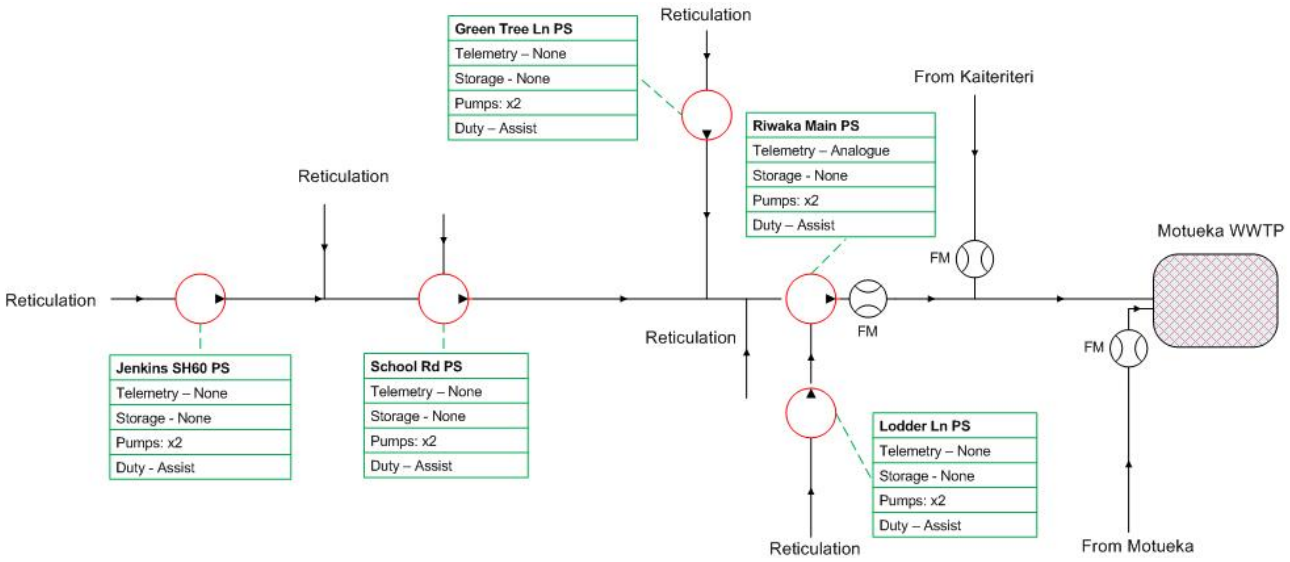


Figure B-6: Overall Schematic for Riwaka

Table B-6 below summarises the assets within the UDA.

Table B-7: Assets within the Riwaka UDA

Pump Stations		Treatment Plants	Reticulation	Miscellaneous Assets
Riwaka Main	1 x Homa A70–160E 11/2a 11kW 1 x Grundfos S1124AH1B513Z012 12.5kW	Motueka WWTP	Gravity pipe 100mm 1040m 150mm 5790m	Cleaning eyes 39
Jenkins SH60	2 x Grundfos SEV.80.80.22.4.50B 2.2kW		200mm 10m	Manholes 40
School Road	2 x Sarlin SV014BL 1.65kW		Lateral 100mm 660m	
Green Tree Lane	2 x Sarlin SV014B 1.65kW		150mm 20m	
Lodder Lane	2 x Grundfos SEV 80.80.22.4.50B 2.2kW		Pressure pipe 80mm 840m 100mm 1010m 200mm 1520m 250mm 2350m	
			Total 13,240m	

B.3.3.2 Asset Condition

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 solids within the wet well.

B.3.3.3 Future Demand

No increase in growth is projected for Riwaka so the existing system is sufficient to meet levels of service.

B.3.4. Key Lifelines

The Nelson Tasman Engineering Lifelines report 2008, confirmed sections of the network identified from the Vulnerability Assessment to be at critical risks are:

- Motueka WWTP is at extreme risk to flooding and/or inundation;
- Motueka WWTP ponds and pipelines at extreme risk due to earthquake, ground shaking and/or liquefaction.

B.3.5. Strategic Approach

The issues facing these schemes are:

- the Motueka reticulation system is old and is known to have high winter flows due to groundwater infiltration;
- the Motueka WWTP, which also serves Kaiteriteri and Riwaka needs to be upgraded;
- the Motueka WWTP is located in an area of significant risk which will increase as sea level rises;
- there are two section of rising main from Kaiteriteri to the Motueka WWTP that need upgrading;
- the Tapu Bay pipeline resource consents expire in 2018.

The strategic approach to these schemes is to:

- continue field investigations and modelling of the reticulation to identify and repair system defects;
- upgrade the treatment plant to improve the treatment capacity and the disposal system for the medium term (30 years);
- the Motueka WWTP will be relocated away from the coast as the impacts from sea level rise mean it becomes uneconomic to continue operating at the site;
- the final two section of rising main, between Kaiteriteri and the Motueka WWTP, are planned to be upgraded;
- continue to involve iwi and other stakeholders by providing input to the treatment plant upgrade decision-making process;
- continue to involve iwi and other stakeholders in developing a route for the land based replacement of the Tapu Bay rising main, to be constructed prior to consent expiry in October 2018.

The key existing strategic studies within the UDA include:

- Inflow and Infiltration: Assessment of Impacts and Drivers – Motueka Wastewater Catchment, MWH New Zealand Ltd, July 2010;
- Motueka Hydraulic Model;
- CCTV reports;
- Motueka WWTP Upgrade Design Report, Beca Ltd 21 November 2014.

B.4 Takaka, Pohara and Ligar Bay/Tata Beach

There are three wastewater systems that discharge into the Takaka WWTP – Takaka, Pohara and Ligar Bay/ Tata Beach. The Takaka WWTP has discharge permits for treated wastewater and odour which were granted in 2013.

The discharge permits have conditions for pre- and post-upgrade of the WWTP. The WWTP is currently being upgraded and is expected to be completed by 30 June 2015. The consent focuses on protecting quality of the groundwater downstream of the WWTP and the Takaka River. Nuisance odour is not permitted beyond the boundary of the site.

Refer to Appendix H for all resource consents for these UDAs.

B.4.1. System Description

The original Takaka township sewerage scheme was constructed in the mid 1980s. Wastewater from the central township area gravitates and pumps to either the Waitapu Road pump station at the northern end of town or Hiawatha Lane pump station in the centre of town. Wastewater is pumped from Waitapu Road along SH60 and Haldane Road to the Takaka WWTP from the north. Wastewater is pumped from Hiawatha Lane via Roses Road to the WWTP from the south.

During 1994 and 1995 Pohara Valley, Pohara campground and Richmond Road were connected to the Takaka sewerage scheme via a pumping/gravity main along Abel Tasman Drive. In 1995 and 1996 further outlying areas were connected to the Takaka scheme including Clifton, Pohara township, Tarakohe, Ligar Bay and Tata Beach. In 2006 a further reticulation extension was completed to both the north and south of

Takaka township, including Park Avenue, Dodson Road, Central Takaka, Motupipi and Three Oaks. This was completed with subsidy from the Ministry of Health and included four new pump stations.

Flows from the settlement of Rototai to the northeast of Takaka are intercepted and pumped into the Waitapu pump station in Takaka. The coastal community is served by nine major pumping stations, which transfer wastewater along a distance of approximately 11km from Tata Beach to Sunbelt Crescent pump station which pumps directly to the WWTP. Wastewater from Central Takaka is pumped to Motupipi Street pump station which pumps directly to the WWTP.

Pumps stations are fitted with duty and standby pumps and 11 pump stations are now connected to the Council's telemetry system as well as the WWTP. An overall schematic of the wastewater system is included as Figure B-7

The WWTP is located in the Takaka River flood plain. The pond embankments have been designed to withstand a Q_{50} flood event. Once the upgrade of the WWTP is completed in June 2015 it will consist 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. The upgrade has been designed for accepting some specific trade waste as well as the expected peak summer loadings. The WWTP is split over two adjacent sites, with the inlet works and ponds on the original site and the new rapid infiltration basins (RIBs) on a two hectare site elevated on a slightly higher river terrace.

The floating wetland has been designed to remove 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 telemetry system.

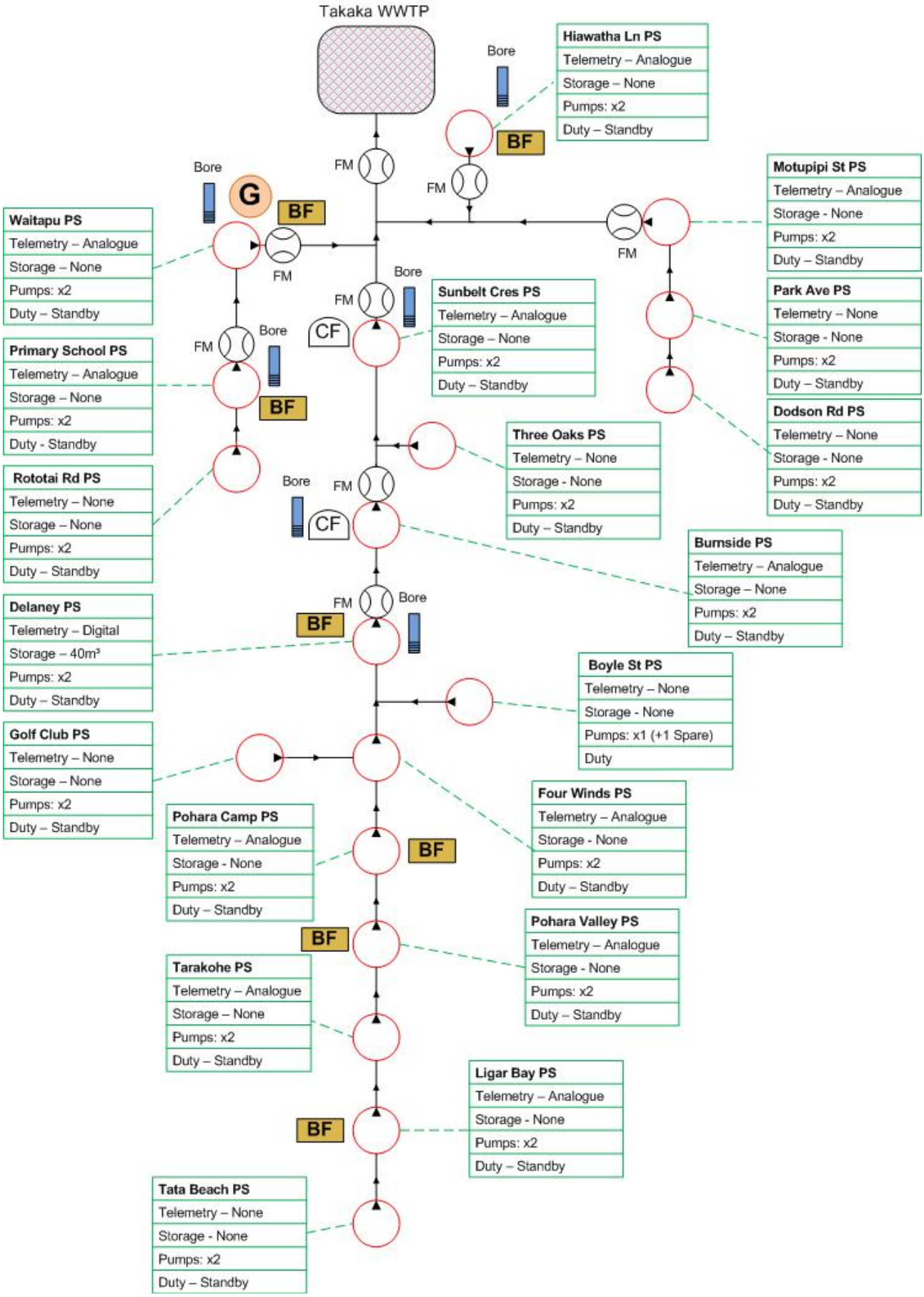


Figure B-7: Overall Schematic for Takaka/Pohara/Ligar Bay/Tata Beach

Table B-7 below summarises the assets within the UDA.

Table B-7: Assets within the Takaka, Pohara and Ligar Bay/Tata Beach UDA

Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets
Takaka			Takaka WWTP	**Takaka/Pohara/Ligar Bay/ Tata Beach**		Cleaning eyes 239
Waitapu	2 x Grundfos S1224H1B					
Hiawatha Lane	2 x Grundfos SV152H1	15kW	0.93 hectare oxidation pond (Pond No 1)	Gravity pipes:		Biofilters 8
	1 x Grundfos SQE 5-50 (BP)	1.06kW		100mm	4100m	
Motupipi Street	2 x Grundfos 212H1	21kW		110mm	106m	Carbon filters 2
	1 x Grundfos SQE 5-50 (BP)	1.06kW	0.82 hectare oxidation pond (Pond No 2)	150mm	25620m	
Primary School	2 x Grundfos Sev65.65.40.2			160mm	1670m	Manholes 383
Rototai Road	2 x Pumpex KL81/2130	3.0kW		180mm	290m	
Park Avenue	2 x Pumpex K87	6.3kW	2 sets of four wetland cells	225mm	700m	
Dodson Road	2 x Pumpex K63	2.2kW		300mm	1140m	
Sunbelt Crescent	2 x Grundfos S1504H1	50kW	2 soakage infiltration ditches	Laterals:		
	1 x Grundfos SQE 5-50 (BP)	1.06kW		100mm	2040m	
Pohara			Telemetry	110mm	50m	
Three Oaks	2 x Pumpex KL83	3.8kW		150mm	160m	
Burnside	2 x Grundfos S1404H1A		Weather station			
Delaney	2 x Flygt NP 3202.180 HT	37kW		Pressure pipes:		
Boyle Street	2 x Jung UAK 08M	1.2kW		50mm	330m	
Golf Club	2 x Pumpex KL81-2130	3.0kW		80mm	4200m	
Four Winds	2 x Pumpex KL85 FF80	7.0kW		100mm	5610m	
Pohara Camp	2 x Pumpex KL 81 KLF	3.0kW		110mm	640m	
Pohara Valley	2 x Pumpex KL 81 KLF	3.0kW		125mm	540m	
Tarakohe	2 x Pumpex KL 81-2150	3.0kW		150mm	1250m	
Ligar Bay/Tata Beach				225mm	2280m	
Ligar Bay	2 x Pumpex KL 85-2185	7.0kW		250mm	4320m	
Tata Beach	2 x Pumpex KL 81-2150	3.0kW		Total	57,020m	

B.4.2. Asset Condition

The system has inherent operational difficulties given the large distances to transfer wastewater and the relatively small population. Difficulties are mostly in terms of odour and septicity and large increases in average daily flows from the seasonal impact of tourism in this area. There are no flow meters in the Pohara/Tata Beach pump stations, the first one is at the Delaney pump station. This means it is difficult know how much flow can be attributed to each settlement and makes summer dosing (for managing H_2S and odour) difficult.

The Pohara pump stations have a history of unreliability with frequent call-outs to pump overloads and burst pipelines. Improvements to deal with heat and moisture have not completely fixed the problems. Most of the problematic rising mains have been replaced except for the Four Winds pump station to Clifton section which suffers from frequent breaks, mainly during the peak summer season. Telemetry has been installed at many of the Pohara pump stations as the visual flashing light alarms were vulnerable to vandalism.

The Pohara Camp suffers from high volumes of fat and sand during peak season and the Pohara Valley has been identified as having infiltration issues.

Parts of the Takaka 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 the pipeline. The December 2011 storm event caused a slip below Paradise Way which damaged a section of gravity pipe. The slip continued to be unstable so a temporary above ground pipe have been laid as a replacement. This section needs to be checked after heavy rainfall events to ensure no further damage has occurred.

Stormwater infiltration in the older sections of Takaka township is a problem that has resulted in numerous overflows in the past. Pump station and rising main upgrades have resulted in a significant reduction in overflows. However this has led to increased flows at the treatment plant which lead to capacity issues. The upgrade of the WWTP will be completed by June 2015 and will have sufficient capacity for the foreseeable future.

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.

B.4.3. Future Demand

The capacity of the existing systems is known. The rising mains and pump stations in coastal areas are generally at capacity over peak summer. While there has been little growth since the global financial crisis, growth is predicted to increase over the next ten years for these areas. Therefore the existing programme of progressively upgrading pump stations and rising mains from Takaka towards Tata Beach will continue.

All systems have to be designed to cater for the summer peak population rather than the normally resident population.

B.4.4. Strategic Approach

The issues facing these schemes are as follows:

- the Takaka gravity reticulation is in a poor condition which is giving rise to high flows during wet weather;
- odour issues along the Pohara scheme;
- the Pohara scheme pumping mains were constructed using pipe that has been found to be unsuitable for this application, resulting in high number of bursts;
- the growth along the Pohara/Tata Beach coast is threatening to overload the system;
- uncontrolled trade waste is discharge into the wastewater network.

The strategic approach to these schemes is to:

- major upgrades are planned for the whole Pohara scheme starting with Four Winds pump station, this should assist with combating growth, odour, reliability and rising main breaks;
- CCTV pipelines within Takaka and make improvements where necessary;
- implementation of the Trade Waste Bylaw.

The key existing strategic studies within the UDA include:

- Pohara/Tata Beach Sewerage Upgrade, MWH New Zealand Ltd, June 2006;
- CCTV reports.

B.4.5. Key Lifelines

The Nelson Tasman Engineering Lifelines report 2008, confirmed sections of the network identified from the Vulnerability Assessment at critical risks are:

- Takaka WWTP is at extreme risk to flooding and/or inundation;
- pump stations and the trunk main system between Takaka and Pohara are at a high risk of failure/overflow due to flooding/inundation/power failure.

B.5 Collingwood

The Collingwood WWTP has discharge permits for treated wastewater and odour. The odour discharge permit expires in October 2019 while the treated wastewater discharge permit expires in July 2034.

The treated wastewater discharge consent permits the maximum daily discharge of 1,070m^3 to Burton Ale Creek. Other conditions require:

- recording of daily discharge volume;
- environmental and performance monitoring (limits apply);
- maintaining a complaints register;
- submission of an annual monitoring report;

- monitor the UV transmittance and UV dose continuously;
- operation and maintenance shall be carried out as described in the Collingwood Wastewater System Operating Plan;
- review and updating of Collingwood Wastewater System Operating Plan.

Refer to Appendix H for details of all resource consents for this UDA.

B.5.1. System Description

The Collingwood scheme was constructed in 1989 and services the Collingwood Urban Drainage Area. 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 float actuated controls. Wally's Rest and the Motel pump stations have telemetry, additional storage and flow meters whilst Beach Road pump station only has telemetry.

All wastewater from Collingwood is pumped from the Wally's Rest pump station onto 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 which means much of the site is boggy in winter making grounds maintenance difficult, also stormwater drains need to be regularly maintained.

Collingwood is very close to an estuary and the sea, and 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 wetlands to fill to overflowing. Since the upgrade of the Motel and Wally's Rest pump stations there have been no overflows of the pump stations.

B.5.2. Schematic Drawings

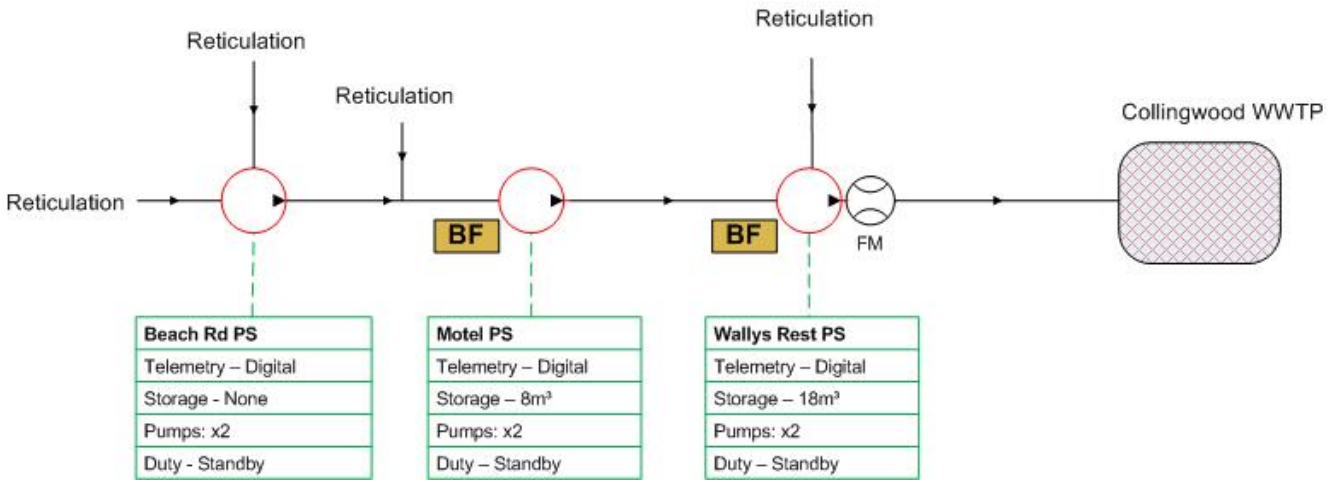


Figure B-8: Overall Schematic for Collingwood

Table B-8 following summarises the assets within the UDA.

Table B-9: Assets within the Collingwood UDA

Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets
Beach Road	2 x Sarlin SV072 BH	1.65kW	Collingwood WWTP	Gravity pipes:		Cleaning eyes 35
Motel	2 x Pumpex K87	6.3kW		100mm	1410m	
Wally's Rest	2 x Grundfos SEV.80	12.6kW	A 3mm mechanical inlet screen	150mm	3590m	Biofilter 1
				175mm	10m	
			0.32 hectare oxidation pond			Manholes 52
				Laterals:		
			2 x 7.5kW aspirator aerators	100mm	640m	
				Pressure pipes:		
			5 constructed wetlands	80mm	290m	
				100mm	1000m	
			UV disinfection system with recirculation pump and flow meter	125mm	130m	
				150mm	890m	
				Total	**7,960m**	
			Discharge pipe and diffuser in Burton Ale Creek			

B.5.3. Asset Condition

No formal assessment of the reticulation condition has been undertaken although both Wally's Rest and Motel pump stations are in good condition given recent upgrading. Inflow and infiltration is an issue during heavy rainfall events and the WWTP reaches its hydraulic capacity at least once a year. However the impact is short lived and no growth is expected.

The wetland distribution pipe work has failed and water levels within individual cells cannot be controlled. The replacement of this pipe work and reinforcing of eroded embankments is planned to be carried out in 2015/16.

The current accuracy of the asset information for Collingwood is good.

B.5.4. Future Demands

No recent formal assessment of the reticulation condition has been undertaken however the existing system currently copes with the summer peak population. The treatment plant is approaching its design capacity but should be able to accommodate the current low growth predictions. From time-to-time storm flows are abnormally high and inspections often reveal stormwater being piped directly into the wastewater network. This has proved to be a cost effective way of ensuring peak flows are within the capacity of the WWTP.

B.5.5. Key Lifelines

The Nelson Tasman Engineering Lifelines report, 2008 has not highlighted any key asset as being vulnerable to earthquake, ground shaking and liquefaction, flooding and overflow.

B.5.6. Strategic Approach

The main issues facing Collingwood sewerage system are:

- the treatment plant is approaching its design capacity;
- the pipe work connecting the wetlands has failed and does not have sufficient capacity for high wet weather flows;
- the reticulation network suffers from high wet weather flows during heavy rainfall;

- the shellfish industry, and the high social, environmental and cultural value of the environment makes it very sensitive to overflows from wastewater assets;
- an overflow can enter the coastal marine environment and the response to any failure of the system can take some time.

The strategic approach for this system is to:

- increase treatment capacity if population exceeds the predicted value, although growth is not expected;
- improve hydraulic capacity of wetland pipework;
- identify then repair sources of inflow/infiltration as necessary.

The key existing strategic studies within the UDA include:

- CCTV reports.

B.6 Upper Takaka

The Upper Takaka WWTP has a discharge permit for treated wastewater and odour which expires in July 2042. The treated wastewater discharge consent permits the maximum daily discharge of $35m^3$ to land with the 30 day average dry weather flow of not more than $12m^3$/day. The consent sets out several limits for compliance including wastewater sampled at the wetland discharge shall not exceed the following:

- 5000 cfu/100ml;
- 50 g/m^3 $BOD_{5;}$
- 50 g/m^3 total suspended solids.

The consent prohibits the acceptance of trade waste at the WWTP.

Refer to Appendix H for details of all resource consents for this UDA.

B.6.1. System Description

The original sewerage scheme servicing 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 sewerage 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 wastewater 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 on float switches with a duty and a standby pump. Telemetry was installed at the pump station in 2007.

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 which 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 by the farmer on occasion.

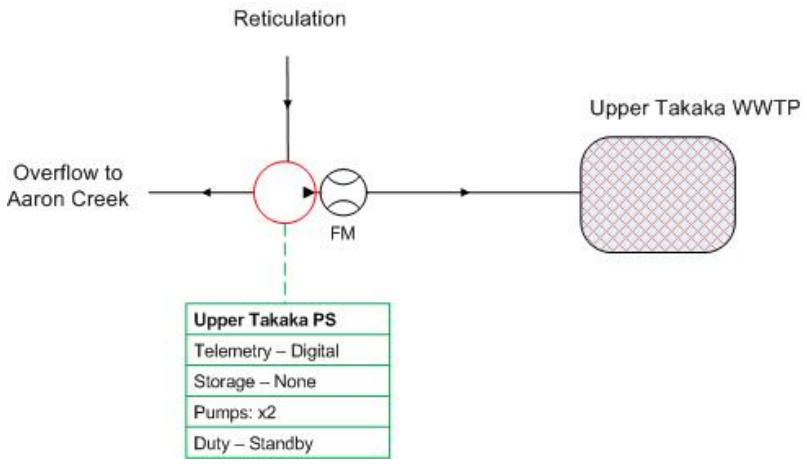


Figure B-9: Overall Schematic for Upper Takaka

Table B-9 below summarises the assets within the UDA.

Table B-9: Assets within the Upper Takaka UDA

Pump Stations	Treatment Plants	Reticulation	Other Assets
Upper Takaka 2 x Jung UAK 25/2m 1.3kW	Upper Takaka WWTP 0.04 hectare oxidation pond 290m² wetland 225m² land soakage area with containment bund	Gravity pipes: 100mm 270m 150mm 160m Laterals: 100mm 50m Pressure pipes: 50mm 550m **Total 1,030m**	Cleaning eyes 2 Manholes 11

B.6.2. Asset Condition

The sewerage scheme is around 40 years old and the Council has replaced most of the earthenware pipes with uPVC because of significant infiltration through pipe joints. There are still significant amounts of infiltration from groundwater when the water table rises after prolonged rainfall. Most of the ongoing infiltration is suspected to come from private house connections which are still the original earthenware pipes. The Council completed further infiltration investigations in 2008 and is currently working to eliminate the major sources of the infiltration.

The wetland area needs to be kept free of weeds at all times and the soakage area mown by hand mower or weed eater because no vehicles are permitted to drive across the soakage area as this compacts the soil, reducing its permeability.

During the oxidation pond desludging operation it was noted that there were large volumes of pine needles in the pond. As a result the pine trees adjacent to the WWTP were removed in late 2008 and the embankment replanted with natives.

During the extension of the soakage slope in 2008 an iron pan was discovered in the embankment above the WWTP which creates a perched water table that is intercepted by the extended soakage slope. Therefore when the pine trees were removed a cut-off drain was constructed across the embankment to prevent groundwater ponding on the soakage slope.

B.6.3. Future Demand

No growth is expected for Upper Takaka and there is sufficient capacity within the existing reticulation network for the current. If the volume of groundwater infiltration can be reduced significantly then the WWTP will have sufficient capacity for the current population and will better achieve compliance with consented discharge volumes.

B.6.4. Key Lifelines

The Upper Takaka system is not vulnerable to earthquake, ground shaking and liquefaction, flooding and overflow.

B.6.5. Strategic Approach

The main issue facing Upper Takaka is:

- high inflow and infiltration from private sewer laterals.

The strategic approach to this system is to:

- work with the community to resolve this issue.

The Upper Takaka scheme is small. The treatment plant is operating satisfactorily now and the strategic approach is to maintain this performance. The public reticulation system has been investigated and the majority of defects have been addressed.

B.7 Tapawera

There are two discharge consents for the Tapawera WWTP, for the discharge of treated wastewater to land and the discharge of odour. Both consents were granted on 12 February 2008 and expire on 31 July 2042.

The treated wastewater discharge permit allows a maximum discharge of 500 m^3/day and there shall be no offensive or objectionable odour discharged beyond the WWTP property boundary.

B.7.1. System Description

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 totalling 80m^3 of water.

The Tapawera scheme comprises a gravity reticulation system which discharges to the treatment plant to the west of the town. 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 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.

As there are no pump stations within Tapawera, no schematic drawing has been produced.

Table B-10 below summarises the assets within the UDA.

Table B-10: Assets within the Tapawera UDA

Pump Stations	Treatment Plants	Reticulation	Other Assets
No pump stations on this scheme	Tapawera WWTP 3mm mechanical inlet screen 0.4 hectare lined oxidation pond and 1kW aerator 2 pond baffles 1 disposal pump station 4 rapid infiltration basins 6 groundwater monitoring wells. Telemetry	Gravity pipes: 100mm 30m 150mm 3290m 200mm 530m Laterals: 100mm 200m 150mm 10m Total 4,060 m	Cleaning eyes 7 Manholes 64

B.7.2. Asset Condition

The reticulation network is nearly 30 years old or older and no formal assessment of the reticulation condition has been undertaken. However, there are no known specific concerns regarding the condition of these assets. There are very few blockages or other issues reported by residents.

Because of the flat grades along Main Road Tapawera, the gravity main requires regular flushing to reduce the risk of blockages.

The Tapawera Area School swimming pools are connected to the sewerage scheme and have historically been emptied without warning, generally in the spring. The volume of water discharged can be significant at over three times the average daily flow. This impacts the treatment performance. The Council has requested that the school contact the Council prior to each empty but to date this has not occurred.

The accuracy of the asset location reference data is very good as Tapawera was a pilot area for the implementation of the Confirm asset information management system.

Monitoring of the groundwater downstream of the treatment plant has shown little or no impact on the groundwater to date. Monitoring of the treatment process has shown good performance.

B.7.3. Future Demand

The theoretical capacity of the pipes has not been established. However there are no known issues with the capacity of the reticulation. A slight decline in resident population has been predicted for Tapawera so the current infrastructure will be sufficient for many years.

The Wastewater and Trade Waste Bylaw will provide the Council with a means to manage the discharge from the school pool once it is approved.

B.7.4. Key Lifelines

The Nelson Tasman Engineering Lifelines report, 2008 confirms that the Tapawera WWTP and pipelines are at extreme risk due to earthquake, ground shaking and/or liquefaction.

B.7.5. Strategic Approach

The treatment plant was upgraded on the basis that there would be little growth in population in Tapawera. The upgrade was aimed at improving environmental outcomes rather than increasing treatment capacity of the plant and this is the strategic approach going forward.

The key existing strategic studies within the UDA include:

- CCTV reports.

B.8 St Arnaud

The St Arnaud wastewater scheme was granted new resource consents in April 2013. These consents expire in 2038. The land use permit granted to legalise the use of land within the Conservation Zone for the wastewater scheme is unlimited and does not need to be renewed in future.

Consent conditions require:

- odour assessments;
- environmental and performance monitoring (limits apply);
- maintaining an incident and complaints register;
- submission of an annual monitoring report;
- five yearly review and updating of Operation and Maintenance Plan.

Refer to Appendix H for details of all resource consents for this UDA.

B.8.1. System Description

The St Arnaud wastewater system including the WWTP was built in 1999 and services the St Arnaud township. The scheme covers the township, the campground at Kerr Bay and the Department of Conservation (DoC) campground at 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. See Figure B-10 for a schematic of the wastewater system.

The pump stations have duty and standby pumps controlled by probes and are linked to the Council's telemetry system. The original two pump stations have six hours storage at peak occupancy while Beechnest has 10 hours storage at normal 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. The generator can also be used to power the WWTP.

The wastewater treatment plant is located on 17.9 hectares owned by DoC. This land is held as a local purpose 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 ground via a subsurface pressure system. The disposal pump station doses each soakage trench, 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 pump stations No. 1 and No. 2. This requires regular checking and cleaning out. "Pigging" of rising mains is also required regularly.

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.

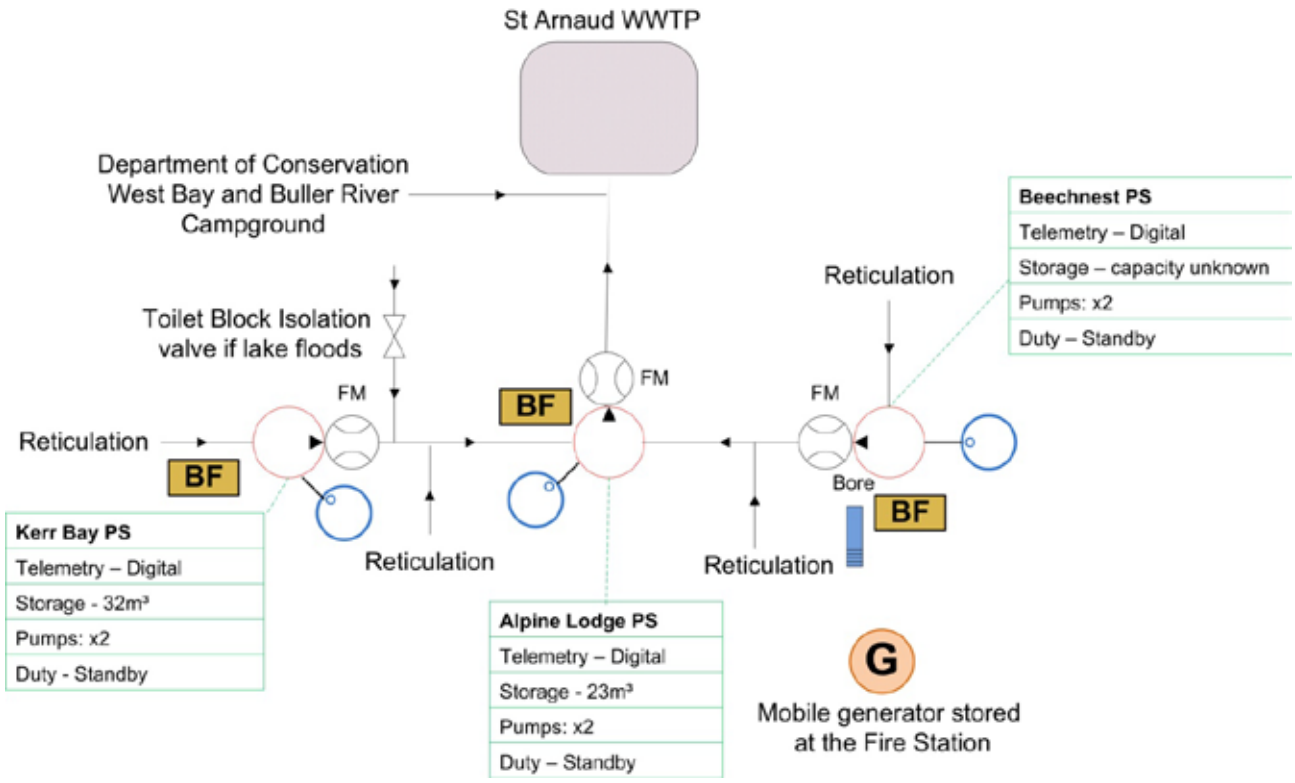


Figure B-10: Overall Schematic for St Arnaud

Table B-11 below summarises the assets within the UDA.

Table B-11: Assets within the St Arnaud UDA

Pump Stations			Treatment Plants	Reticulation	Other Assets
Kerr Bay	1 x Jung UAK 75/2M 1 x Flygt MP3127 LT210	6.8kW 7.4kW	St Arnaud WWTP 0.85 hectare oxidation pond with 4kW aspirator aerator and manual inlet bar screen 2 surface flow wetlands 1 disposal pump station 1 sequencing valve set 4 subsurface disposal trenches 4 groundwater monitoring bores Weather station Rainfall collection system and water supply	Gravity pipes: 50mm 180m 65mm 150m 100mm 4700m 150mm 5430m Laterals: 100mm 760m Pressure pipes: 50mm 150m 63mm 310m 125mm 420m 140mm 2530m **Total 14,720m**	Cleaning eyes 97 Generator 1 Biofilters 3 Manholes 112
Alpine Lodge	2 x Flygt CP3127 HT250	7.4kW			
Beechnest	Flygt MP 3068 HT 170				

B.8.2. Asset Condition

Accuracy of asset information is very good because the scheme is only 16 years old.

Analysis of the monitoring results indicates that the treatment plant meets consent conditions. The deep water table (greater than 14m below ground) means that there is unlikely to be any impact on the groundwater from the treated wastewater discharge.

The impact of a caravan dump point, owned and maintained by DoC in Kerr Bay, on loadings at the WWTP is unknown however an assessment will be made as part of the implementation of the Wastewater Bylaw.

B.8.3. Future Demand

The wastewater system was designed for the maximum population of the UDA in 1999. Since then land, including the Beechnest subdivision, was rezoned residential and included in the UDA. Fortunately St Arnaud has a small resident population and this is expected to continue. During the peak summer periods the flows and loading from the settlement have not exceeded the design capacity of the system. However, the connection of the West Bay campground has increased peak summer loadings although it is unlikely that the camp will be at full capacity for more than a week over Christmas and New Year.

DoC were required to include flow meters on their pump stations at West Bay to allow the Council to determine the impact of the campground on the wastewater system, however there have been issues with the reliability of the meters. Therefore the work programme allows for a flow meter to be installed on the rising main at the WWTP.

B.8.4. Key Lifelines

The Nelson Tasman Engineering Lifelines report, 2008 confirms that St Arnaud WWTP and pipelines are at extreme risk due to earthquake, ground shaking and/or liquefaction.

B.8.5. Strategic Approach

The St Arnaud scheme is a relatively new scheme and was designed to cater for the peak population within the UDA as at 1999. Generally the treatment system performs well and the scheme does not suffer from infiltration. With recent developments, peak flows and loadings need to be monitored and system capacity reassessed as development within the Beechnest subdivision occurs.

No recent strategic studies have been undertaken for the St Arnaud UDA.

B.9 Murchison

The Murchison WWTP was granted resource consents for the discharge of odour and treated wastewater to land in March 2011. These consents expire in June 2041.

The maximum discharge permitted by consent is 500m³/day (excluding rainfall) as measured by the Waller Street pump station flow meter.

Other consent conditions require:

- monitoring of groundwater at various bores;
- submitting an annual report;
- recording and investigating complaints;
- regular updating and complying with the System Operating Plan.

Refer to Appendix H for details of all resource consents for this UDA.

B.9.1. System Description

The Murchison Wastewater Scheme was built around 1989 and services the Murchison UDA. The reticulation consists of two pump stations and a wastewater treatment plant 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.

Waller Street pump station pumps all Murchison wastewater to the treatment plant. Both pump stations are controlled by float switches operating duty and standby pumps and are monitored by telemetry. Both pump stations were upgraded in 2011 along with the rising main under the SH6 bridge across Matakitaki River. The Waller St 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.

The treatment plant was upgraded in 2006 where 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.

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.

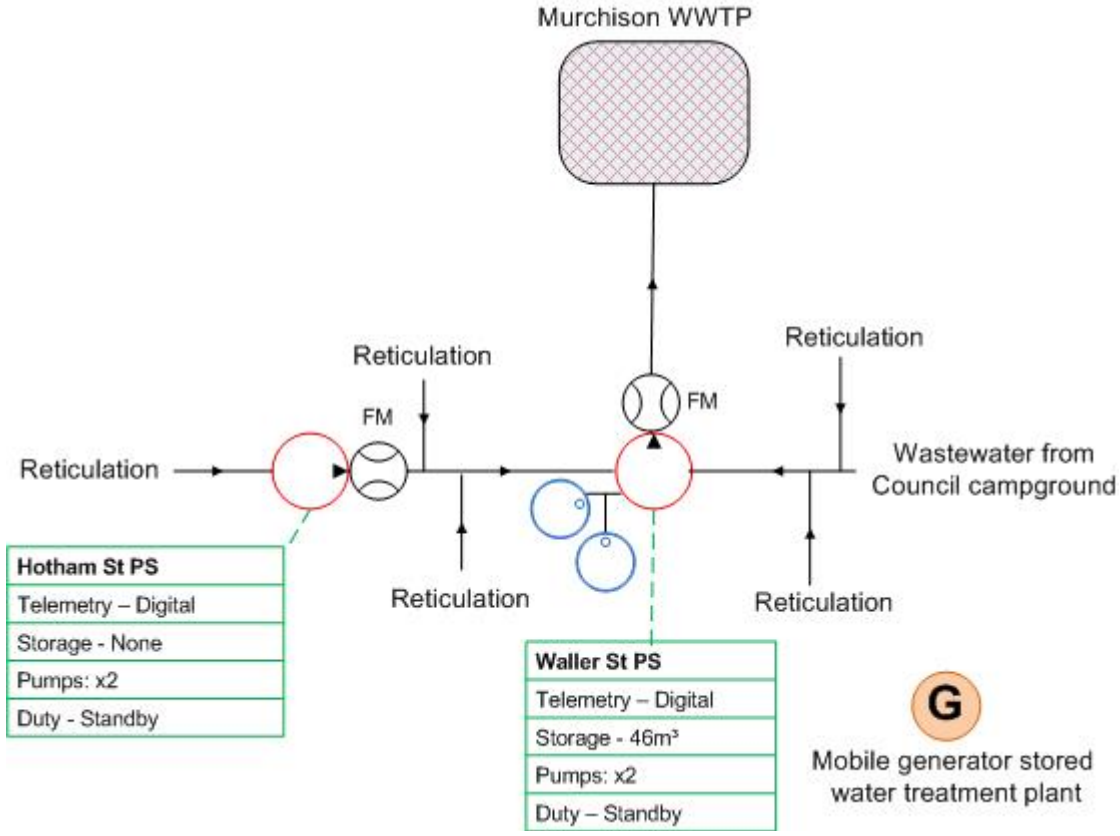


Figure B-11: Overall Schematic for Murchison

Table B-12 below summarises the assets within the UDA.

Table B-10: Assets within the Murchison UDA

Pump Stations			Treatment Plants	Reticulation	Other Assets
Waller Street	2 x Pumpex K87	6.2kW	Murchison WWTP	Gravity pipes:	Cleaning eyes 50
				100mm 3440m	
Hotham Street	2 x Jung UAK 25/2M	2.6kW	3mm mechanical step screen	150mm 3160m	Biofilter 1
				175mm 10m	
			aeration basin with 4 x 4kW aspirator aerators	200mm 20m	Manholes 40
				225mm 20m	
			0.5 hectare oxidation pond with 2 baffles	250mm 90m	
				300mm 100m	
			1 disposal pump station	375mm 20m	
				Laterals:	
			2 gravel filters	100mm 360m	
			2 subsoil soakage trenches.	Pressure pipes:	
				50mm 480m	
			14 groundwater monitoring bores	80mm 160m	
				100mm 690m	
			1 water supply bore and water pump	**Total 8,550m**	

B.9.2. Asset Condition

Asset condition information is relatively accurate. The reticulation network was constructed with cleaning eyes on bends in pipe work rather than manholes. This causes maintenance difficulties trying to investigate and clear blockages. Cleaning eyes are replaced with manholes as necessary.

The rising main from the Waller Street pump station to the oxidation pond requires “pigging” at least once a year to reduce the likelihood of pipe blockages. Since the rising main and pump station upgrades, the system has operated trouble free apart from during flood events. On two occasions surface flooding caused flooding of the wastewater network. Improvements to the stormwater drains have subsequently stopped this flooding and more work is planning in future to provide a long term solution.

B.9.3. Future Demand

The capacity of the reticulation network is unknown, however few overflows occur and projected future growth is minimal in the UDA.

B.9.4. Key Lifelines

The Nelson Tasman Engineering Lifelines report, 2008 has not highlighted any key asset as being vulnerable to earthquake, ground shaking and liquefaction, flooding and overflow.

B.9.5. Strategic Approach

No formal assessment of the reticulation condition has been undertaken, but there are no known specific 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.

Existing strategic studies within the UDA include:

- CCTV reports.

APPENDIX C ASSESSMENT OF ALL WASTEWATER SYSTEMS IN THE DISTRICT

Tasman District Council carried out the Water and Sanitary Services Assessments (WSSA) in 2005 and evaluated all Council-owned, community and some private wastewater services. The WSSA is a two-volume document:

Volume 1: An overview of the water and sanitary services in Tasman District with recommendations and priority rankings for future improvements

Volume 2: The detailed assessments.

The WSSA documents were made available to the public for consultation purposes and a special meeting was held in June 2005 to review public submissions.

The Council approved the WSSA documents in June 2005 in compliance with the Local Government Act 2002.

Recent changes to the Local Government Act 2002 now require the Council to identify in the Long Term Plan any significant variation between the proposals in that plan and the Council's assessment of water and sanitary services and its waste management and minimisation plan (clause 6 of Schedule 10 of the Act).

Sections 126 – 129 of the Local Government Act have been repealed. This means that while the Council still needs to undertake water and sanitary services assessments within the district, the process for undertaking the assessments and the extent of information required are no longer dictated.

An amendment to Section 125 of the Act now means that an assessment may be included in the Council's long-term plan, but, if it is not, the Council must adopt the assessment using the special consultative procedure. The majority of information in the WSSA, in respect of Council-owned and operated services, is now included in Appendix B of this Activity Management Plan. The Council is under an obligation to assess privately owned services from time to time. There is no guidance to the timelines associated with these assessments, however the Council has made financial provision in this 10 year forecast to carry out assessments in 2021/2022.

Key variations since the adoption of the WSSA in 2005 are noted below:

- The Council is progressing with an upgrade of the Motueka Wastewater Treatment Plant and will continue to undertake improvements to the Council's systems as identified in this AMP. The Takaka Wastewater Treatment Plant was upgraded in 2014/15 (due for completion in June 2015).
- The WSSA identified and prioritised non-reticulated communities. The priority ranking was based on the ability of the systems to treat and dispose of the wastewater into the environment in a manner that meets environmental compliance criteria; and minimises risk to public health, and the impact to the environment. The Council has made provisions for reticulating Marahau and Tasman Village in this AMP, but these projects are beyond the 10 year period covered by the Long Term Plan.

APPENDIX D ASSET VALUATIONS

D.1 Background

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

The Financial Reporting Act 1993 sets out a process by which GAAP is established for all reporting entities and groups, the Crown and all departments, Offices of Parliament and Crown entities and all local authorities. Compliance with the 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) is one of the current requirements of meeting GAAP.

The purpose of the valuations is for reporting asset values in the financial statements of Tasman District Council.

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 2012.

- 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 IPSAS 21 (Impairment of Non Cash Generating Assets).

D.1.1. Depreciation

Depreciation of assets must be charged over their useful life.

- *Depreciated Replacement Cost* is the current replacement cost less an allowance for physical deterioration and optimisation for obsolescence and relevant surplus capacity. The *Depreciated Replacement Cost* has been calculated as:

$$\frac{\text{Remaining useful life}}{\text{Total useful life}} \times \text{Replacement cost}$$

- *Depreciation* is a measure of the consumption of the economic benefits embodied in an asset. It distributes the cost or value of an asset over its estimated useful life. Straight-line depreciation is used in this valuation.
- *Total Depreciation to Date* is the total amount of the asset's economic benefits consumed since the asset was constructed or installed.
- *The Annual Depreciation* is the amount the asset depreciates in a year. It is defined as the replacement cost minus the residual value divided by the estimated total useful life for the asset.
- *The Minimum Remaining Useful Life* is applied to assets which are older than their useful life. It recognises that although an asset is older than its useful life it may still be in service and therefore have some value. Where an asset is older than its standard useful life, the minimum remaining useful life is added to the standard useful life and used in the calculation of the depreciated replacement value.

D.1.2. Revaluation

The revaluations are based on accurate and substantially complete asset registers and appropriate replacement costs and effective lives.

(a) The lives are generally based upon NZ Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2. In specific cases these have been modified where in our, and Council's opinion a different life is appropriate. The changes are justified in the valuation report.

(b) The component level of the data used for the valuation is sufficient to calculate depreciation separately for those assets that have different useful lives.

D.2 2012 Valuation- Wastewater

The wastewater assets are valued every three years and were last re-valued in June 2012. The valuation is reported under separate cover[1]. Key assumptions in assessing the asset valuations are described in detail in the valuation report.

D.2.1. Asset Data

The majority of information for valuing the assets was obtained from the Council's Confirm database. This is the second time the database has been used to revalue the Council's assets. In the past, asset registers based on excel spreadsheets have been used. The data confidence is detailed in Table D-1 below.

Table D-1: Data Confidence

Asset Description	Confidence	Comments
Wastewater Assets	B - Reliable	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.

D.2.2. Asset Lives

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 D-2 below.

Table D-2: Asset Lives

Item	Life (years)	Minimum Remaining Life (years)
Pipelines		
AC, Cu pipe, unknown pipe	60	5
Concrete pipe (stormwater)	120	5
Concrete pipe (wastewater)	80	5
EW pipe	60	5
PVC pipe	80	5
PE pipe	80	5
DI, CI Steel pipe	80	5
Miscellaneous pipeworks and fitting associated with treatment plants and pump stations	50	5
Valves, hydrants	50	5
Manholes	80	5
Water meters, restrictors	15	2
Non Pipeline Civil Assets		
Borewells	60	5
Civil pump chambers	80	5
Civil concrete structures	80	5

[1] Utilities Asset Revaluation 2012, August 2012 – MWH New Zealand Ltd report for Tasman District Council

Item	Life (years)	Minimum Remaining Life (years)
Civil buildings (all materials)	50	5
Civil pipework and fittings	50	5
Soakpit	80	5
Reservoirs (all materials)	80	5
Tanks (concrete, plastic, fibreglass)	50	5
Landscaping/fencing	20	5
Oxidation pond earthworks	Not depreciated	
Mechanical Assets		
Small plant – pumps, blowers, chlorinating/UV equipment, aerators, screens	20	2
Electrical and Telemetry Assets		
Electrical/Controls	20	2
Telemetry/SCADA	20	2

D.2.3. 2012 Valuation

The optimised replacement value, annual depreciation and optimised depreciated replacement value of the wastewater assets are summarised in Table D-3, Table D-4 and Table D-5.

Table D-3: Wastewater Asset Valuation Summary 30 June 2012

	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation to Date ($)	Annual Depreciation ($/yr)
Wastewater Pipes	103,601,839	74,567,380	29,034,460	1,314,200
Wastewater Surface features	42,760,447	29,780,636	12,979,811	827,178
Total	**146,362,286**	**104,348,015**	**42,014,270**	**2,141,378**

Resource consents were included in the previous (2009) valuation and accounted for $1,063,000 of the total optimised replacement value. Resource consents were not valued in the 2012 revaluation and have been removed from the asset register. It is difficult to value these accurately because there is uncertainty around:

- whether the consent was notified or not;
- whether a consultant was used to obtain the consent or it was prepared in house;
- whether submissions were made and hearings or pre hearing meetings were needed.

Resource consents held by Tasman District Council are listed in Appendix H.

Table D-4: 2009 / 2012 Wastewater Valuation Comparison

	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation to Date ($)	Annual Depreciation ($/yr)
Wastewater 2009	99,716,673	71,286,693	28,429,981	1,648,637
Wastewater 2012	146,362,286	104,348,015	42,014,270	2,141,378
% Increase	46.8%	46.4%	47.8%	29.9%

Overall the optimised replacement value has increased by 46.8% since the 2009 valuation. The increase in the replacement values is due to the following reasons:

- inflation over the two year period (ie. % as calculated by the construction fluctuation adjustment);
- the addition of new assets to the utilities since 2009;
- migration of data from asset registers contained in spreadsheets into the Confirm database and subsequent updating of the data resulting in the improved accuracy of the captured data. Some asset categories have increased in size by an average of 38%.

Table D-5: 2009/2012 Wastewater Valuation Pipes Comparison

Asset Group	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation to Date ($)	Annual Depreciation ($/yr)
Wastewater Pipes 2009	71,458,377	51,854,482	19,603,895	906,807
Wastewater Pipes 2012	103,601,839	74,567,379	29,034,459	1,314,200
% Increase	45.0%	43.8%	48.1%	44.9%

Overall wastewater pipes optimised replacement value increased by 45.0%.This is due to the unit replacement rate increasing on average by 33%. There were also 30 kilometres of additional pipe valued.

Table D-6: 2009/2012 Wastewater Valuation Surface Features Comparison

Asset Group	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation to Date ($)	Annual Depreciation ($/yr)
Wastewater Surface Features 2009	27,195,296	18,939,034	8,256,262	544,554
Wastewater Surface Features 2012	42,760,447	29,780,636	12,979,811	827,178
% Increase	57.2%	57.2%	57.2%	51.9%

Surface features are all other wastewater assets and include manholes, cleaning eyes, valves, pumps and all plant assets. Overall the optimised replacement value of this group of assets has increased by 57.2%.

APPENDIX E MAINTENANCE AND OPERATING ISSUES

E.1 Maintenance Contract

The operation and maintenance of the wastewater systems has been incorporated into a single performance-based contract, C688. The current maintenance contractor is Downer NZ Ltd (awarded in 2007). The initial contract duration was for three years with two potential extensions of three years followed by a further four years. The final four year extension has been awarded and the contract will end on 30 June 2017. Some of the key aspects of this contract are:

- performance-based;
- emphasis on proactive maintenance;
- programme management;
- quality management;
- detailed schedule of works;
- measurement of performance;
- team approach to problem solving.

The implementation of the routine proactive maintenance work is managed in the following ways.

1. The contractor prepares an Annual Maintenance Programme that consists of a variety of programmes of all routine proactive maintenance and reporting deadlines.
2. The Engineer to the Contract (Council's consultant MWH) in conjunction with the Council reviews the programme against the budgets and then negotiates with the contractor to agree any deferrals or amendments.
3. The contractor then implements the work according to the schedules.

There are two other areas of maintenance; Non Routine Proactive Maintenance and Reactive Maintenance. Budgets for these have been set based on historical spending sums and projected future system maintenance requirements.

The Non Routine Proactive Maintenance covers maintenance such as mains flushing and checks on mechanical equipment. These are programmed and carried out annually with a report submitted to the Engineer on completion.

The Reactive Maintenance covers all wastewater reticulation repairs including pipes and pump stations through to, and inclusion of, the treatment plants.

The maintenance contract also covers works related to new facilities such as new manholes, pipe work and other related wastewater assets. These new facilities are usually related to minor system improvements and extensions.

While MWH acts as Engineer to the Contract, the Council's Engineering staff manage the day-to-day implementation of the contract.

E.1.1. Maintenance Standards

The maintenance and operation standards for all work activities are specified in the maintenance contract, with performance measures including response times. The Asset Manager may request variances to these through the Engineer, depending on changes to the level of service or budgeting constraints.

All work is performed, and materials used, to comply with the latest edition of the following standards:

- this AMP;
- Contract 688 – Water Utilities Operations and Maintenance;
- Tasman District Council Engineering Standards and Policies.

E.1.2. Deferred Maintenance

Deferred maintenance is defined as follows:

- the shortfall in rehabilitation or refurbishment work required to maintain the service potential of the asset;
- maintenance and renewal work that was not performed when it should have been, or when it was scheduled to be and which has therefore been put off or delayed for a future period.

The current budget levels are believed to be sufficient to provide the intended level of service even though some maintenance work has been deferred.

Deferrals include renewals for pumps, electrical and telemetry upgrades, CCTV inspections and network modelling.

Other maintenance works have been removed from budgets including root cutting/pipe cleaning and inflow and infiltration investigations.

E.1.3. Increase in Network Size through Development

When new developments such as subdivisions are completed, any new wastewater assets constructed by the developer are accepted once it is proven the asset meets the Council standards. Once vested as the Council's assets they are included in the wastewater network and routine maintenance is undertaken through the operations contract. The maintenance budgets have some allowance for network growth particularly in relation to WWTP upgrades which often have the greatest impact on maintenance budgets.

E.1.4. Database

Customer Service Requests (CSR) and Work Orders (WO) are sent to the contractor via the Confirm database.

Downer service personnel receive WOs via laptops and mobile handheld devices. WOs are loaded against individual assets (where possible) and processed for payment with the monthly progress claim. All CSRs and WOs are allocated a response time in accordance with the contract. Response and resolution times are monitored with contractor performance assessed on a monthly basis.

E.2 Engineering Studies

A number of studies and activities have been allocated to the operations and maintenance budget. These are summarised in Table E-1 below. A detailed forecast is shown in Table E-2.

Table E-1: Summary of Engineering Studies included in this AMP

Study Name	Brief Description
Water and Sanitary Services Assessment	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. This assessment is completed periodically.
Trade Waste Implementation	It is anticipated that a new Wastewater Bylaw, which includes trade waste, will become operative on 1 July 2015. During the first year the Council will compile a list of likely trade waste dischargers and inform them of the need to apply for permits. Staff will work with dischargers to have permits in place so charging can commence from July 2016. Some testing and investigations will be needed to assist with confirming trade waste dischargers. Ultimately the bylaw will assist with ensuring there is full cost recovery from the trade waste dischargers.
Wastewater Bylaw Review	In accordance with the Local Government Act 2012, this bylaw will need to be reviewed no later than 10 years after the Council last reviewed it.

Study Name	Brief Description
Sludge Management	Developing a strategy to manage sludge disposal or use from all WWTPs.
District Model Maintenance	The hydraulic models assist with assessing the capacity and deficiencies within the reticulation networks, this includes pipes and pump stations. Hydraulic models exist for Hope, Brightwater, Wakefield, Motueka, Mapua and Richmond. This study allows for maintaining these models, however this has been deferred for three years.
I & I Reduction Programme Planning	Inflow and infiltration (I/I) is an issue in many UDAs across the district. Reducing I/I will reduce the flow demand at the WWTP, reduce overflows and increase the capacity of the pipe. This budget allows for better understanding of where I/I is occurring and undertaking minor repairs where necessary. This knowledge will also feed into capital projects.
Regional CCTV	CCTV will be undertaken around the district and will feed into a variety of sources including, renewal of sewers, hydraulic modelling and maintenance. Only minimal amounts of CCTV work will be undertaken in the first four years due to reduced budgets.
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 require review from time-to-time and expert assistance may be needed.

E.3 2015 – 2045 Wastewater Operation and Maintenance Forecast

Thirty year forecasts for operations and maintenance costs are shown in Figure E-1 and Table E-2. Figure E-1 compares the operation and maintenance cost of each wastewater network. The NRSBU charges make up approximately 50% of the total budget. The “Other” category includes budgets for:

- data capture, I/I investigations, electricity costs, telemetry, desludging of oxidation ponds, rates, insurance;

as well as for external consultants for:

- modelling, asset revaluations, Bylaw reviews, Operation and Maintenance Contract retendering.

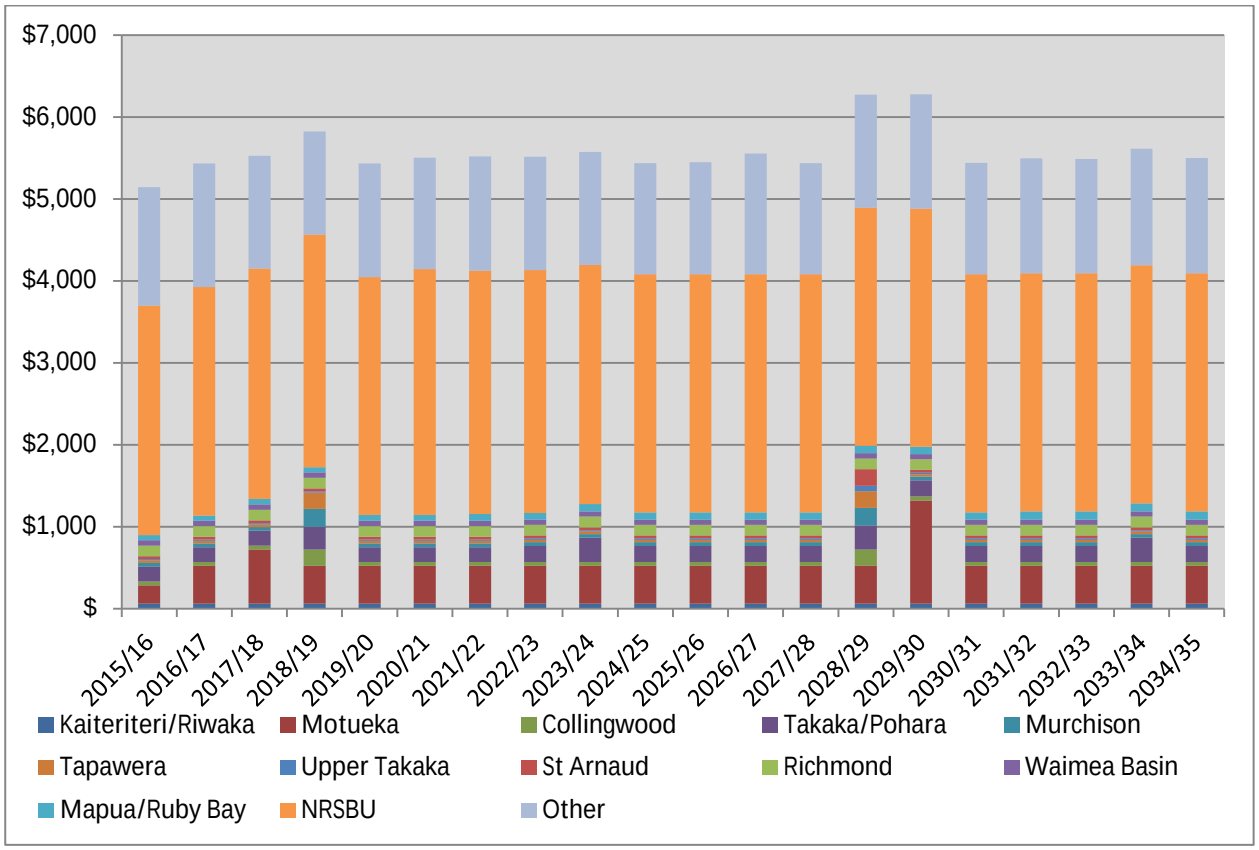


Figure E-1: 2015 – 2045 Wastewater Operation and Maintenance Forecast

Table E-2: 2015 – 2045 Wastewater Engineering Operations and Maintenance Expenditure ($000)

ID	Project Name	Project Description	Category	GL Code	% O&M	O&M Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140058	Desludge Collingwood WWTP	Dewater and dispose of sludge	Collingwood	0901240123	100%	450	450	-	-	-	150	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	150	-
140059	Desludge Motueka WWTP	Dewater and dispose of sludge	Motueka	0901240119	100%	1,800	1,800	-	-	200	-	-	-	-	-	-	-	-	-	-	-	800	-	-	-	-	800	-
140060	Desludge Murchison WWTP	Dewater and dispose of sludge	Murchison	0901240120	100%	510	510	-	-	-	170	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	170	-
140061	Desludge St Arnaud WWTP	Dewater and dispose of sludge	St Arnaud	0901240121	100%	170	170	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-
140062	Desludge Tapawera WWTP	Dewater and dispose of sludge	Tapawera	0901240122	100%	510	510	-	-	-	170	-	-	-	-	-	-	-	-	-	170	-	-	-	-	-	170	-
140063	Desludge Takaka WWTP	Dewater and dispose of sludge	Takaka	0901240118	100%	600	600	-	-	-	100	-	-	-	-	100	-	-	-	-	100	-	-	-	-	100	200	-
140064	Desludge Upper Takaka WWTP	Dewater and dispose of sludge	Upper Takaka	0901240124	100%	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-
140065	Adverse Event	Repairs resulting from an adverse event	General District	0901240125	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140066	Sludge Management Strategy Review	Review sludge strategy	Asset Management	0901252614	100%	30	30	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	10	10	-
140067	Odour Management Strategy Review	Review odour strategy	Asset Management	0901252615	100%	50	50	-	-	-	-	-	-	-	10	-	-	-	-	10	-	-	-	-	10	-	-	20	-
140068	Health and Safety Assessments and Review	Develop hazards register and review every 5 years	Asset Management	0901252617	100%	130	130	40	40	-	-	-	-	10	-	-	-	-	10	-	-	-	-	10	-	-	-	20	-
140069	Wastewater Bylaw Review	Wastewater Bylaw Review	Asset Management	0901252616	100%	60	60	-	-	-	-	20	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-	20	-
140070	SEW Richmond Maintenance	SEW Richmond Maintenance	Richmond	09012401	100%	3,900	3,900	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	1,300	-
140071	SEW Motueka Maintenance	SEW Motueka Maintenance	Motueka	0901240102	100%	13,562	13,562	222	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	4,600	-
140072	SEW Takaka Maintenance	SEW Takaka Maintenance	Takaka	0901240103	100%	5,731	5,731	180	180	180	180	180	180	180	194	194	194	194	194	194	194	194	194	194	194	194	1,944	-
140073	SEW Waimea Basin Maintenance	SEW Waimea Basin Maintenance	Brightwater	0901240104	100%	1,919	1,919	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	640	-
140074	SEW Mapua/Ruby Bay Maintenance	SEW Mapua/Ruby Bay Maintenance	Mapua / Ruby Bay	0901240105	100%	2,660	2,660	65	65	65	65	72	72	82	82	89	89	89	89	89	89	89	89	99	99	99	99	986	-
140075	SEW Kaiteriteri/Riwaka Maintenance	SEW Kaiteriteri/Riwaka Maintenance	Kaiteriteri	0901240106	100%	1,800	1,800	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	600	-
140076	SEW Murchison Maintenance	SEW Murchison Maintenance	Murchison	0901240107	100%	1,380	1,380	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	460	-
140077	SEW Collingwood Maintenance	SEW Collingwood Maintenance	Collingwood	0901240108	100%	1,489	1,489	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	496	-
140078	SEW Tapawera Maintenance	SEW Tapawera Maintenance	Tapawera	0901240109	100%	905	905	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	302	-
140079	SEW Upper Takaka Maintenance	SEW Upper Takaka Maintenance	Upper Takaka	0901240110	100%	497	497	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	166	-
140080	SEW Pohara Maintenance	SEW Pohara Maintenance	Pohara	0901240111	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140081	SEW General Maintenance	SEW General Maintenance	General District	0901240112	100%	9,000	9,000	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	3,000	-
140082	SEW St Arnaud Maintenance	SEW St Arnaud Maintenance	St Arnaud	0901240113	100%	1,050	1,050	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	350	-

ID	Project Name	Project Description	Category	GL Code	% O&M	O&M Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140083	SEW Datran Maintenance	SEW Datran Maintenance	General District	0901240114	100%	900	900	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	300	-
140084	I/I Investigations and Repair	I/I Investigations and Repair	General District	0901240117	100%	2,625	2,625	-	-	-	25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	-
140085	SEW CCTV Inspections and Data Capture	SEW CCTV Inspections and Data Capture	General District	0901240115	100%	3,720	3,720	115	115	115	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	1,250	-
140086	Wastewater Electricity	Wastewater Electricity	General District	09012505	100%	8,752	8,752	233	237	240	244	248	251	255	259	263	267	271	275	279	283	287	292	296	300	305	309	3,359	-
140087	SEW NRSBU Treatment Costs	SEW NRSBU Treatment Costs	General District	09012608	100%	87,043	87,043	2,799	2,786	2,816	2,840	2,903	3,000	2,972	2,963	2,917	2,907	2,907	2,907	2,907	2,907	2,907	2,907	2,907	2,907	2,907	2,907	29,070	-
140088	SEW General P/S Consultants	SEW General P/S Consultants	General District	09012203	100%	1,650	1,650	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	550	-
140089	Operational Support	Operational Support	Asset Management	0901220310	100%	300	300	-	10	20	-	10	20	-	10	20	-	10	20	-	10	20	-	10	20	-	10	110	-
140090	Wastewater Modelling	Wastewater Modelling	Asset Management	0901252601	100%	140	140	-	-	-	20	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	-	-	-
140091	Asset Revaluations	Asset Revaluations	Asset Management	0901252603	100%	200	200	-	20	-	-	20	-	-	20	-	-	20	-	-	20	-	-	20	-	-	20	60	-
140092	O&M Contract Retender	O&M Contract Retender	General District	0901252605	100%	300	300	-	100	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	100	-
140093	Sanitary Services Assessments	Sanitary Services Assessments	Asset Management	0901252606	100%	80	80	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-
140094	Sewer Network Operational Plan	SOP Updating	Asset Management	0901252613	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140095	Wastewater Remissions	Wastewater Remissions	General District	09012309	100%	3,750	3,750	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	1,250	-
140096	Wastewater LAPP Insurance	Wastewater LAPP Insurance	General District	09012506	100%	2,711	2,711	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	904	-
140097	SEW Rate Payments	SEW Rate payments	General District	09012508	100%	345	345	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	115	-
140098	AMP Improvement Plan Implementation	AMP Improvement Plan	Asset Management	0901252608	100%	550	550	-	-	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	200	-
140099	Trade Waste Implementation	Survey and data capture	Asset Management	0901252604	100%	70	70	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140100	I/I Reduction Programme	Plan and implement I/I reduction programme	Asset Management	0901252610	100%	495	495	165	165	165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140101	Root Cutting and Pipe Cleaning	Root Cutting and Pipe Cleaning	General District	0901262614	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140102	Trade Waste Income (Estimate)	Income from Trade Waste	General District	0901100103	100%	-7,990	-7,990	-	-90	-200	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-3,000	-
140103	Utility Rate Payment	Utility Rate Payment	General District	0901250801	100%	6,276	6,276	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	209	2,092	-
	TOTALS					159,772	240,490	5,142	5,340	5,324	5,521	5,130	5,201	5,216	5,215	5,271	5,135	5,149	5,253	5,137	5,971	5,975	5,139	5,193	5,188	5,312	5,197	53,763	-

NB does not include inflation

APPENDIX F DEMAND AND FUTURE NEW CAPITAL REQUIREMENTS

F.1 Growth Demand and Supply Model (GDSM)

F.1.1. Model Summary

A comprehensive Growth Demand and Supply Model (GDSM or growth model) has been developed for Tasman District. The growth model is a long term planning tool, providing population and economic projections district wide. The supply potential is assessed as well as demand, and a development rollout for each settlement is then examined. The development rollout from the Growth Model informs capital budgets (new growth causes a demand for network services) which feed into the AMPs and in turn underpin the Long Term Plan and supporting policies eg, Development Contributions Policy.

The 2014 growth model is a fourth generation growth model with previous versions being completed in 2005, 2008 and 2011. In order to understand how and where growth will occur, the growth model is built up of a series of Settlement Areas which contain Development Areas. A Settlement Area (SA) is defined for each of the main towns and communities in the district. There are 17 Settlement Areas for the present version of the growth model. Each Settlement Area is sub-divided into a number of Development Areas. Each Development Area is defined as one continuous polygon within a Settlement Area that if assessed as developable, is expected to contain a common end-use and density for built development.

The growth model organises and integrates the assessments of demand and supply of built development. The development is categorised as residential or business demand and supply, with business including all industrial, commercial and retail uses.

For residential demand and supply:

- the ‘demand’ for residential buildings (dwellings) is assessed from population and household growth forecasts based on Statistics New Zealand’s latest Census release;
- the ‘supply’ of lots for future dwellings is assessed from analysis of the Development Areas in each Settlement Area and how many lots could feasibly be developed for residential end use over a 20 year time period, after accounting for a number of existing characteristics of the Development Area.

For business demand and supply:

- the ‘demand’ for business premises is assessed from economic and employment growth forecasts, and associated land requirements;
- the ‘supply’ of lots for future business premises is assessed from analysis of the Development Areas in each Settlement Area over time in a similar way as that for future dwellings.

The Development Areas and Settlement Areas are the building blocks that allow the growth model to spread demand for new dwellings and business premises, and assess where there is capacity to supply that demand.

The growth model is not just an isolated tool that calculates a development forecast. It is a number of linked processes that involve assessment of base data, expert interpretation and assessment, calculation and forecasting. The key input data, assessment and computational processes, and outputs of the growth model are captured in a database called the Growth Model Database.

The outputs of the growth model are located on a shared browser site that all Council staff have access to. The browser contains:

- all the various input data sets and calculated outputs;
- maps defining the Settlement Areas and Development Areas within those;
- an updated model description describing the model working in detail, assumptions and planned improvements.

The review process is also mapped in ProMapp.

F.1.2. Overall Population Growth and Trends

Richmond is the largest and fastest growing town in the District with an estimated 13,606 residents, as at 2014. Motueka is the next largest town, with 6,687 residents. Another five settlements are relatively small, with populations ranging from 1239 in Takaka up to 2,498 in the Coastal Tasman area. Nine have populations of less than 500 people.

Tasman District is a popular destination for older age group or "retirees". A high proportion of population growth results from people moving to the Tasman District from elsewhere, rather than from current residents having children. The growth modelling shows that older people moving to the Tasman district are choosing to live in larger areas with easier access to services, hence the larger settlements are growing and the smaller ones are not. As shown in Table F-1, Richmond, Brightwater and Wakefield are predicted to grow by 500 people or more over the next 25 years. Overall, Tasman's population is expected to increase by 7,700 people by 2039. Council's planning also takes into consideration the decrease in the number of persons per household and provides for an increase in the number of holiday homes. The latter is particularly important for holiday settlements such as Kaiteriteri and Pohara/Ligar Bay.

The population projection in the growth model has been taken from Statistics New Zealand population projections derived from the 2013 census data, using a "medium" growth rate projection for all settlement areas (refer Table F-1). The population projections are used to determine a demand for new dwellings in each settlement area.

Table F-1: Population Projections Used in the Growth Model

Settlement Area	Population in 2014	Population projection for 2039	Increase or decrease in people by 2039
Brightwater	1835	2412	577
Coastal Tasman Area	2498	2903	405
Collingwood	232	250	18
Kaiteriteri	377	382	5
Mapua/Ruby Bay	2028	2506	478
Marahau	119	120	1
Motueka	6687	6810	123
Murchison	413	365	-48
Pohara/Ligar Bay/Tata Beach	543	583	40
Richmond	13606	16396	2790
Riwaka	591	636	45
St Arnaud	101	93	-8
Takaka	1239	1056	-183
Tapawera	284	320	36
Tasman	189	210	21
Upper Moutere	148	177	29
Wakefield	1939	2471	532
Ward Remainder (Area Outside Ward Balance)	282	303	19
Ward Remainder Golden Bay	3023	3248	225
Ward Remainder Lakes Murchison	2418	2722	304
Ward Remainder Motueka	3096	3597	501
Ward Remainder Moutere Waimea	4248	4937	689
Ward Remainder Richmond	1612	2704	1092
Total for District	**47508**	**55201**	**7693**

Projected Population data derived from Statistics NZ 2013 Census Data (adjusted for Growth Model). Base projection series applied = medium

Table F-2 summarises some key statistics for Tasman's population, based on Statistics New Zealand medium growth projections (2006 base, updated in June 2013).

Table F-2: Population Change in Tasman District

Key Statistics	2006	2013	2031
Population	45,800	48,800	53,900
Median age (years)	40.3	44.2	47.3
Proportion of population aged over 65	13.6%	17.9%	29.1%
Number of households	17,900	18,261	23,500
Working age population	29,810	30,500	29,170

Additional information from the 2013 census about Tasman District:

- Tasman's population is 1.1% of New Zealand's total population;
- 93.1% of population is European;
- 7.6% of population is Māori;
- 20% of population aged under 15 years;
- 75% of households in occupied private dwellings owned the dwelling or held it in a family trust (this is the highest rate of home ownership in New Zealand).

As shown in Table F-2, Tasman's population is expected to be about 53,900 by 2031. Like the rest of New Zealand, the median age of Tasman's population is also increasing. The first of the baby boomers (those born between 1946 and 1964) commenced retiring in 2011 and fertility rates have also decreased over the last 20 years. The median age is projected to increase from 44.2 in 2013 to 47.3 in 2031. By 2031, the number of people aged over 65 in Tasman is projected to comprise 29.1 percent of the population, compared to 17.9 percent in 2013. Twenty years ago the figure was less than 10 percent. These demographic changes raise a number of challenges for the Council.

As Tasman's population increases, the Council needs to provide more services. However, many of the retired population will be on fixed incomes and unable to pay for increases in services (rates are a tax on property, not income, and if a property value is high the rates can take a significant portion of this fixed income payment). The Council's Growth Strategy considers whether our community can afford to support growth in all 17 settlements and what form this growth will take.

Communities with an older population are likely to have different aspirations to the communities with a younger median age. This may include:

- where they wish to live, possibly closer to main settlement areas where medical and social services are more readily available;
- an increase in the demand for smaller properties and a decrease in the demand for lifestyle or larger properties, particularly given the projected increase in the number of single households;
- the type of facilities and the levels of service requested, including more informal recreation facilities and the increased demand for "free" or low cost services such as libraries;
- their ability and willingness to pay for services and facilities may be lower, given that incomes are expected to be lower.

The Council has taken these factors into account in the development of this AMP and the LTP.

F.1.3. Business Forecast

The last major review of business demand was undertaken as part of the 2008 growth model. Three economic demand assessments were used to build a quantitative picture of business growth in terms of employment growth and linked growth in demand for business space. Each study provided different datasets, but an aggregate picture of estimated business land demand in the Tasman district, including, Motueka and environs, Golden Bay, and Tasman district balance (including Richmond).

For the 2011 and 2014 growth models a high level consideration of business growth opportunities showed that in the two main demand areas (Richmond as part of the eastern sub regional demand catchment of Nelson-Tasman, and at Motueka as the centre of the western sub regional demand catchment), there is a large business land supply capacity becoming available for business development. This includes the current deferred business zonings in both the Richmond West Development Area and draft deferred zonings in Motueka West Development Area. It was considered this amount of supply capacity will meet the expected needs of business growth for at least 50 years (well beyond the 20 year projection). On this basis, the 2014 review of the growth model simply adopted the data and assumptions in the 2008 growth model, but updated the datasets by extrapolation for a further three years (2032 to 2035).

Looking ahead, there are three main difficulties with relying on the historical demand assessments as the basis for business growth demand forecasts:

- the economic modelling by the consultants used two different sets of now-dated census data for economic and employment growth;
- the demand assessment methods have yielded results of limited reliability at the level of individual settlement areas, as the areas assessed yielded aggregate results from an undisclosed simulation economic modelling routine, that have then been apportioned and subject to a number of simplifying assumptions;
- the worked done by the consultant is not in a Council-managed information system and does not provide a confident results in a regional (Nelson-Tasman) context especially for future Nelson-Richmond urban area forecasting.

Notwithstanding that the last study is now six years old, the information used for business demand is considered sufficient as for part of this time the global financial crisis also reduced local demand for new business land, and since this time many “new” businesses have been established on current business properties (brown fields development). What is required is the development of a regional (Nelson-Tasman) economic simulation model capable of yielding results at the settlement area level, and suitably populated with current data, to yield more reliable segmented business land demand estimates, for each settlement area. This is a strategic priority for further work after the completion of the 2014 growth model review.

F.1.4. Rollout Assessment

Once the analysis of demand for residential dwellings and buildings in each settlement area has been completed and when the supply potential for new subdivision and dwelling/building construction has been assessed for each development area, the rollout analysis is done. This seeks to forecast when and if the demand for dwelling and business premises will be met and, if so, where and when. This results in a forecast for each development area of:

- the number of new residential dwellings that will be created through subdivision or building on vacant lots;
- the number of new business buildings that will be created through subdivision or building on vacant lots.

This information is then used to plan how and where network infrastructure needs to be developed including what capacity.

F.2 Projection of Demand for Wastewater Services

F.2.1. Forecast Growth in Demand from GDSM

The forecast growth in demand from the GDSM growth forecasts is shown in the following tables (Table F-3 to Table F-5).

Table F-3: Forecasted New Connections per UDA

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Urban Drainage Area (UDA)	**Parameter**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Brightwater	Forecasted new connections	14	16	15	11	10	11	10	11	11	15
Collingwood	Forecasted new connections	2	4	2	2	1	1	1	1	1	1
Kaiteriteri	Forecasted new connections	6	8	6	3	2	2	2	2	2	4
Mapua/Ruby Bay	Forecasted new connections	16	17	16	18	16	17	16	17	17	15
Motueka	Forecasted new connections	37	39	38	32	32	32	32	32	32	37
Murchison	Forecasted new connections	2	4	2	3	0	1	0	0	0	2
Pohara/Tata Beach/ Ligar Bay	Forecasted new connections	8	11	11	5	3	5	3	4	4	9
Richmond	Forecasted new connections	70	74	71	100	100	100	100	100	100	100
Riwaka	Forecasted new connections	0	0	0	0	0	0	0	0	0	0
St Arnaud	Forecasted new connections	2	3	3	3	1	2	1	2	2	2
Takaka	Forecasted new connections	6	7	7	1	0	1	0	0	0	1
Tapawera	Forecasted new connections	3	3	3	3	0	3	0	2	2	4
Upper Takaka	Forecasted new connections	0	0	0	0	0	0	0	0	0	0
Wakefield	Forecasted new connections	14	18	18	14	12	14	12	14	14	14

Table F-4: Total New Connections

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
New Connections	**Parameter**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Total	First water closet or urinal	180	204	192	195	177	189	177	185	185	204
Total	2 to 10	52	69	64	35	19	28	19	25	25	40
Total	11 plus	25	32	29	18	8	15	8	12	12	19

Table F-5: Total Pans

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Pans	**Parameter**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Total	First water closet or urinal	13,086	13,266	13,470	13,662	13,857	14,034	14,223	14,400	14,585	14,770
Total	2 to 10	2,896	2,948	3,017	3,081	3,116	3,135	3,163	3,182	3,207	3,232
Total	11 plus	1,311	1,336	1,368	1,397	1,415	1,423	1,438	1,446	1,458	1,470

F.2.2. Effect of Population Growth on Wastewater Systems

The population growth anticipated in the district will have a significant impact on the sewerage system assets. Concentration of population growth in particular areas in the district will put pressure on the existing sewerage systems. In terms of the major components, the potential effects are as follows.

- Reticulation Systems: Several reticulation systems are already suffering from high inflow and infiltration problems that reduce the available capacity to cater for additional growth. The implications are that either larger assets are required, or inflow and infiltration needs to be reduced. The Council is continuing to focus on reducing inflow and infiltration.
- Treatment Plants: Several treatment plants have ongoing problems in terms of consistently meeting performance levels, particularly during high rainfall events and to a lesser extent during the peak summer period. Adding higher loads to the treatment plants adversely affects performance.

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

- the upgrade at Motueka WWTP will be undertaken within the next year;
- upgrade of the wetlands at Collingwood WWTP;
- pump stations and rising mains will be upgraded in Ruby Bay and Mapua;
- the pumping system through Pohara, Ligar Bay and Tata Beach will be upsized and modified;
- the trunk mains between Wakefield, Brightwater and Richmond will be upgraded.

F.2.3. 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 rather the Council will work with developers so new systems will allow for future developments without needing major upgrades. For example a new pump station that will allow for future additional storage and larger pumps without a second pump station being needed.

F.2.4. Implications of Changes in Community Expectations

Community expectations vary geographically and over time. Key trends in community expectations that the Council recognises include those listed in Table F-6.

Table F-6: Trends in Community Expectations

Trends in Community Expectations	Implications for Wastewater Systems	How the Council Plans to Address the Issues
Environmental awareness is leading to a demand for higher treatment standards.	The Council needs to be seen as a leader in sustainable practices and wastewater treatment so there is a need to improve treatment.	It is not anticipated that public expectation will exceed legislative requirements in the near future. Continue to identify opportunities for preventing breaches of resource consents.
Increased demand for public wastewater services.	Public systems may be demanded as an alternative to on-site treatment and disposal systems especially in areas with difficult soil conditions.	Council will consider options and alternatives as communities identify a need for public wastewater services.

Trends in Community Expectations	Implications for Wastewater Systems	How the Council Plans to Address the Issues
Customers are becoming more aware of the need for improved water conservation.	Improved water conservation by the public will lead to a reduction in wastewater flows per connection. This will extend the capacity of existing conveyance and treatment systems.	Council will promote water conservation.
Customers and communities are becoming less tolerant of sewage overflows, odours or mechanical noise at pump stations and treatment plants.	Upgrades are needed to reduce overflows and odours. Also need to take steps to improve reliability of assets to minimise the number of shutdowns and service faults.	Increase storage and conveyance capacities. Improve visibility and control of assets. Improve odour management systems.
Residents have expressed interest in alternative systems such as composting toilets or small community systems.	Reduce flows in existing systems. Reduce need for rural extensions and offers an alternative to conventional on-site systems.	Council will address alternatives on a case by case basis.

F.2.5. Implications of Industrial Demand

The major industries in the district are serviced by their own on-site treatment facilities (eg, Fonterra at Takaka) or discharged to the NRSBU owned Bell Island WWTP (eg, Nelson Pine Industries, at Richmond).

All industries will be subject to the Trade Waste Bylaw which is planned to come 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 will be more actively managed and charges will be applied.

F.2.6. Implications of Technological Change

Technological change has the ability to impact on the demand for a service. These changes can reduce or increase the demand for wastewater infrastructure. It has been assumed that the predicted technological changes will not have a significant effect on the assets in the medium-term. However, relevant examples 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 telemetry technology for monitoring asset operation and performance;
- low flush/alternative toilet systems;
- new, water efficient, industrial processes;
- biofuel manufacture from oxidation pond algae;
- demand for irrigation quality wastewater in water short areas.

It is important to be aware of continued technological changes to adequately predict demand trends and the effect on infrastructure requirements.

The potential impact of these technologies is currently unquantifiable so no direct allowances have been made in this AMP.

F.2.7. Implications of Legislative Change

Legislative change can significantly affect the Council's ability to meet minimum levels of service and can require improvements to infrastructure assets. Mandatory performance measures have been introduced that

will require some improvements to reporting and asset data systems. All mandatory performance measures have been included in the levels of service in Appendix R.

F.3 Assessment of New Capital Works

During 2014, a number of workshops with the asset managers and the Council's operations and maintenance team were held to identify new works requirements.

New works were identified by:

- reviewing levels of service and performance deficiencies;
- reviewing risk assessments;
- reviewing previously completed investigation and design reports;
- using the collective knowledge and system understanding of the project team.

Each project identified was developed with a scope and a project cost estimate. Common project estimating templates were updated with current cost rates to ensure consistent estimating practices were used. This is described in Appendix Q.

The project estimate template includes:

- physical works estimates;
- professional services estimates;
- consenting and land purchase estimates;
- contingencies for unknowns.

All estimates are documented and the files are held by the Council. The information from the estimates has then been entered into the capital forecast spreadsheet/database that enables listing and summarising of the capital costs per project, per scheme, per project driver and per year. This has been used as the source data for input into the Council's financial system for financial modelling.

F.4 Determination of Project Drivers and Programming

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

Operation and Maintenance:	operational activities which have no effect on asset condition but are necessary to keep the asset utilised appropriately and on-going day-to-day work required to keep assets operating at required service levels[1].
Renewals:	significant work that restores or replaces an existing asset towards its original size, condition or capacity[2].
Increase Level of Service:	works to create a new asset to upgrade or improve an existing asset beyond its original capacity or performance to improve the level of service provided to existing customers.
Growth:	works to create a new asset to upgrade or improve an existing asset beyond its original capacity or performance to provide for the anticipated demands of future growth.

[1] Definition from International Infrastructure Management Manual – Version 3.0, 2006, pg 3.114
[2] Definition from International Infrastructure Management Manual – Version 3.0, 2006, pg 3.114

This is necessary for two reasons:

a) Schedule 13(1) (a) of the Local Government Act requires the local authority 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.

b) Schedule 10(2)(1)(d)(l)-(iv) of the Local Government Act requires the local authority 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. A guideline was prepared to ensure a consistent approach to how each project is apportioned between the drivers.

Some projects may be driven fully or partly by needs for renewal. These aspects are covered in Appendix I.

The projects have been scheduled across the 30 year period, primarily based on their drivers. Projects from all other engineering activities were compared for any programme clashes or optimisation opportunities. This is discussed further in Section F-7.

F.4.1. Project Prioritisation

Project prioritisation is built on the “non-discretionary” or “discretionary” system employed in 2012; where: a non-discretionary investment is one that relates to:

- a critical asset, that without investment is likely or almost certain to fail within the next three years, with a medium, major or extreme impact;
- any asset that has a regulatory requirement to make the proposed investment.

A discretionary investment is one that relates to:

- a non-critical asset with no regulatory requirement to make the proposed investment;
- a critical asset where asset failure is possible, unlikely or very unlikely to occur within the next three years with no regulatory requirement to make the proposed investment;
- a critical asset where asset failure has only a negligible or minor impact with no regulatory requirement to make the proposed investment.

Further review of priorities included consideration of:

- growth influences;
- a review of the criticality framework;
- cost-effectiveness reviews.

F.5 Developer Created Assets

Generally private developers construct new subdivisions with consent from the Council. It is very seldom that the Council itself constructs new subdivisions to service growth. The Council is normally responsible for the upgrading/upsizing of existing assets to provide for increased volumes associated with growth.

The Council does oversee the subdivision process from consenting through to construction and handover to the Council. The Council’s engineers inspect design plans and finished works to ensure the asset meets the required standards and is in an acceptable condition as a Council-owned asset. Should any work not meet the required standards the Council will require the developer to remedy the issue prior to accepting ownership.

F.6 Cross Activity Projects

There are several projects that span across more than one of the Engineering Departments activities. These projects are strongly linked either because one project causes the need for another or because it makes sense to undertake the projects either sequentially or in parallel. By managing related projects as a group

the Programme Delivery team ensures that the overall cost and disruption caused by the works is minimised. Highlighting the linkages also helps to reduce the risk of a dependant project being rescheduled independently.

Table F-7 summarises cross activity projects including the predominant year of physical works and project cost.

Table F-7 : Cross Activity Projects

Project ID	Activity	Project Description	Year	Project Cost ($)
Richmond Town Centre Projects				**8,916,490**
110077	Transportation	Upgrade of the Richmond Town Centre (Queen Street) to provide improved traffic calming and shared spaces	2016/17	4,653,000
150129	Water	Renewal of existing 300mm and 100mm diameter pipes	2016/17	1,837,000
160036	Stormwater	Renewal of existing pipes, plus additional capacity to reduce CBD flooding	2016/17	2,214,000
140035	Wastewater	Upgrade of pipes from 202 Queen Street to Sundial Square	2016/17	212,490
Oxford Street – Richmond				**3,714,268**
160033	Stormwater	Partial pipe upgrade	2022/23	1,754,924
110093	Transportation	Widening of Oxford Street between Wensley Road and Gladstone Road	2022/23	872,000
140034	Wastewater	Pipeline upgrade	2022/23	772,600
150126	Water	Replace 100mm with 150mm main Wensley Road to Gladstone Road	2022/23	314,744
Queen Street and Salisbury Road Intersection – Richmond				**1,716,055**
110096	Transportation	Upgrade intersection to improve efficiency	2019/20	1,041,000
160073	Stormwater	Rework stormwater at intersection	2016/17	432,004
150131	Water	Rework water at intersection	2019/20	243,051
Salisbury Road – Richmond				**1,240,476**
160076	Stormwater	Extend pipe to William Street	2021/22	640,476
110095	Transportation	Upgrade intersection to improve efficiency	2021/22	550,000
150246	Water	Renew old copper laterals	2021/22	50,000
Gladstone Road – Richmond				**1,983,670**
150118	Water	New 250mm main from Queen Street to Three Brothers Corner	2026/27	1,651,370

Project ID	Activity	Project Description	Year	Project Cost ($)
140031	Wastewater	Upgrade from WWSF-1709 to WWSF-1708	2026/27	332,300
Pipe Works – Mapua				**4,200,000**
150237	Water	Replace existing water pipe in the same trench	2027/28	3,700,000
140017	Wastewater	New rising main along Aranui Road and across channel	2027/28	500,000
Flood Mitigation Works – Brightwater				**2,535,534**
160002	Stormwater	Mt Heslington stream diversion	2020/21	2,235,534
160138	Stormwater	Drainage repair works	2020/21	300,000
130020	Rivers	Removal of the railway embankment	2020/21	80,000
Murchison Town Centre Projects				**1,344,000**
160019	Stormwater	Ned's Creek flood mitigation works	2019/20	750,000
110084	Transportation	Town centre upgrade (potential link)	2023/24	594,000
160070	Stormwater	Pipe renewals	2020/21	200,000

F.7 2015 – 2045 New Capital Works Forecast

The capital programme that has been forecast for this activity where the primary driver is classed as New Works (ie, growth or levels of service) is shown in Figure F-2 to Figure F-5 and Table F-8.

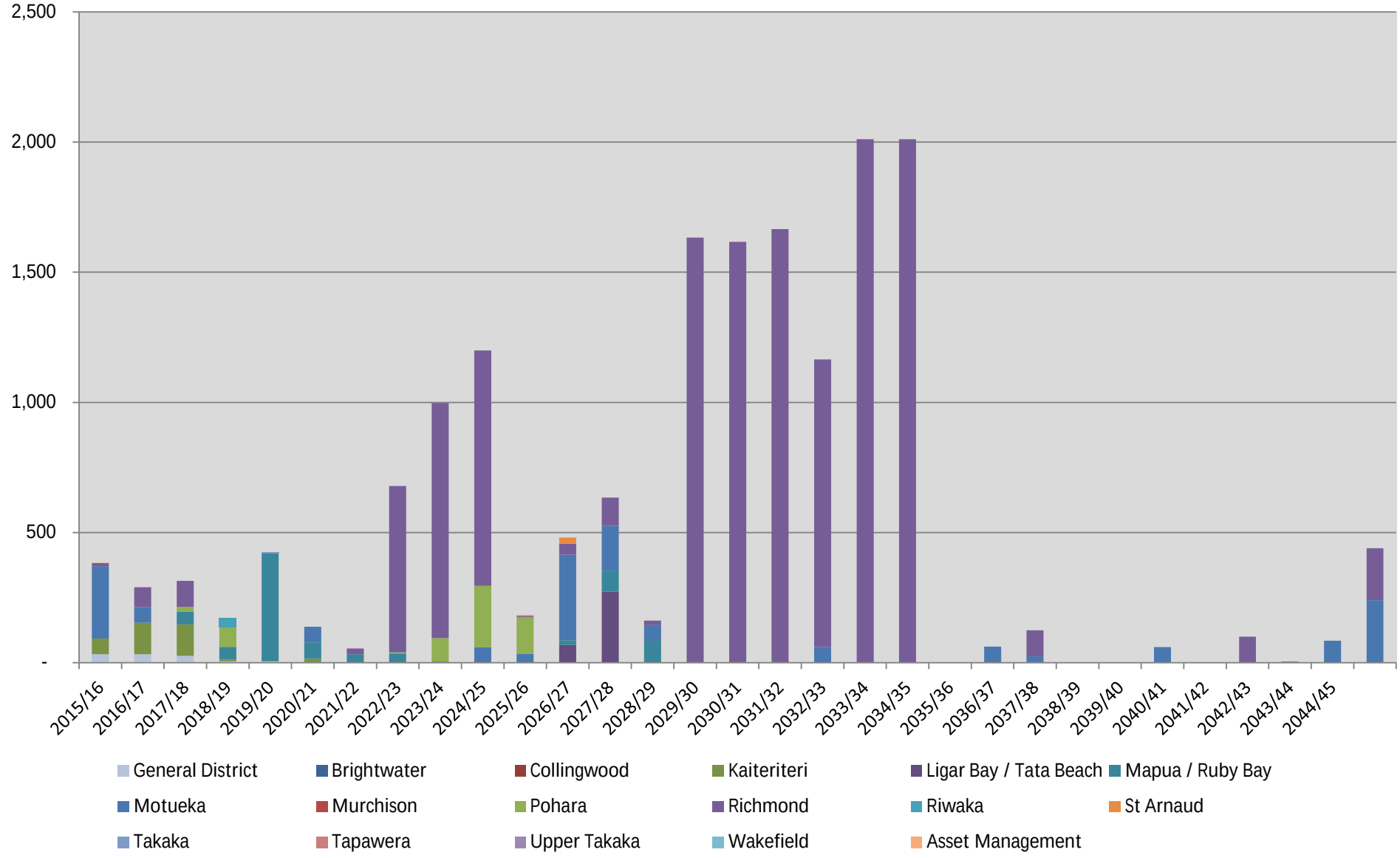


Figure F-1: 2015 – 2045 Wastewater Growth Expenditure ($000)

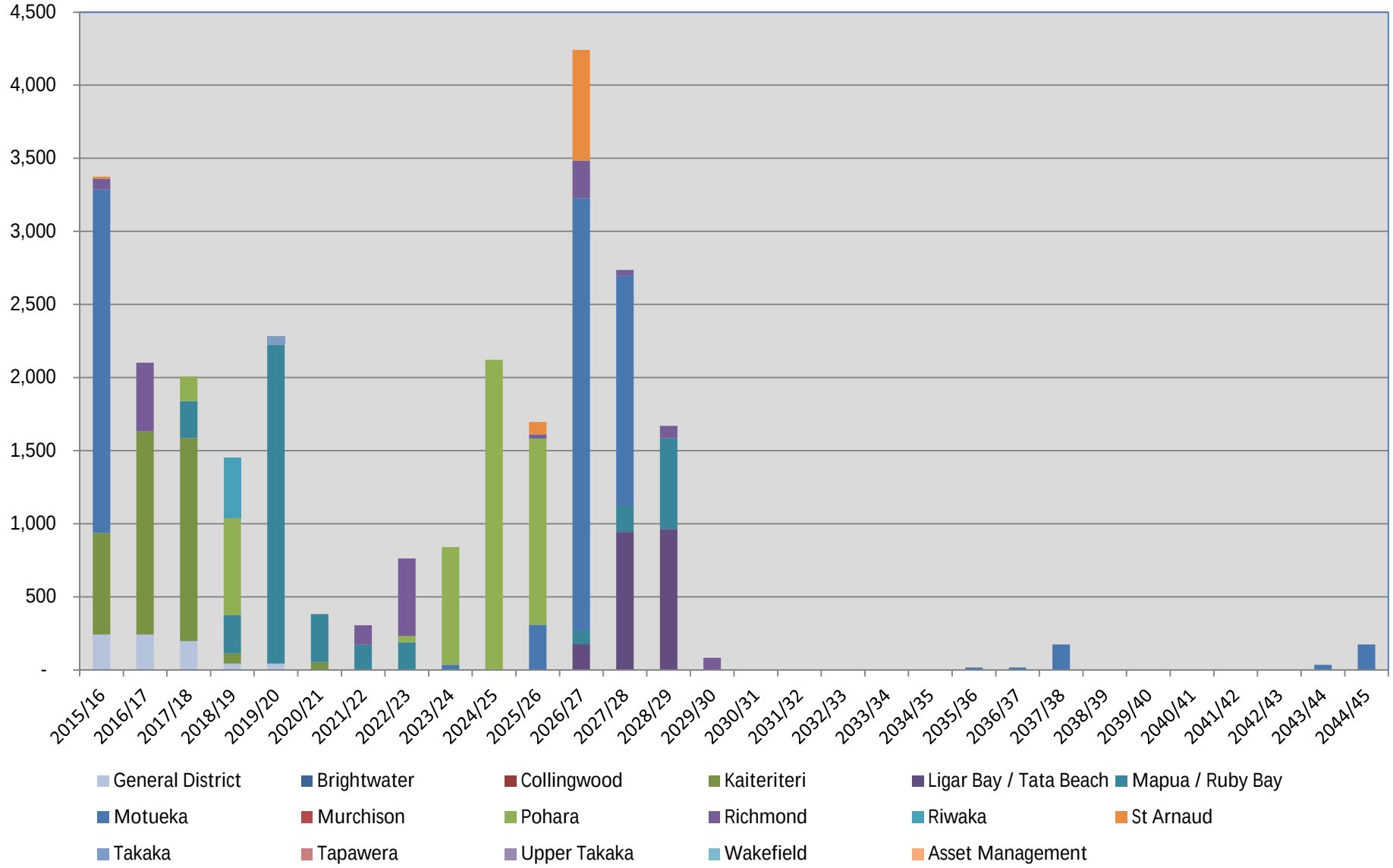


Figure F-2: 2015 – 2045 Wastewater Increased Level of Service Expenditure ($000)

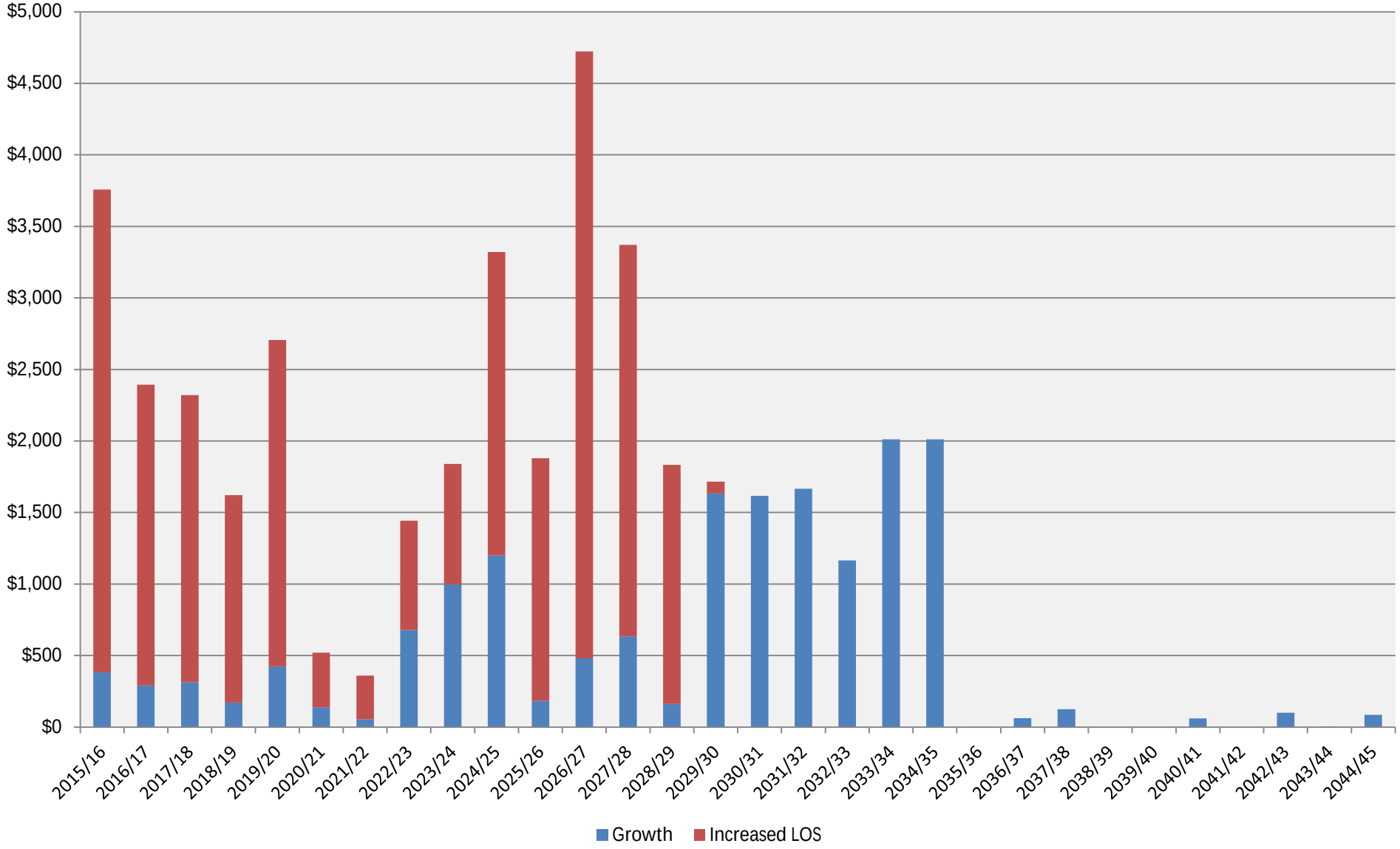
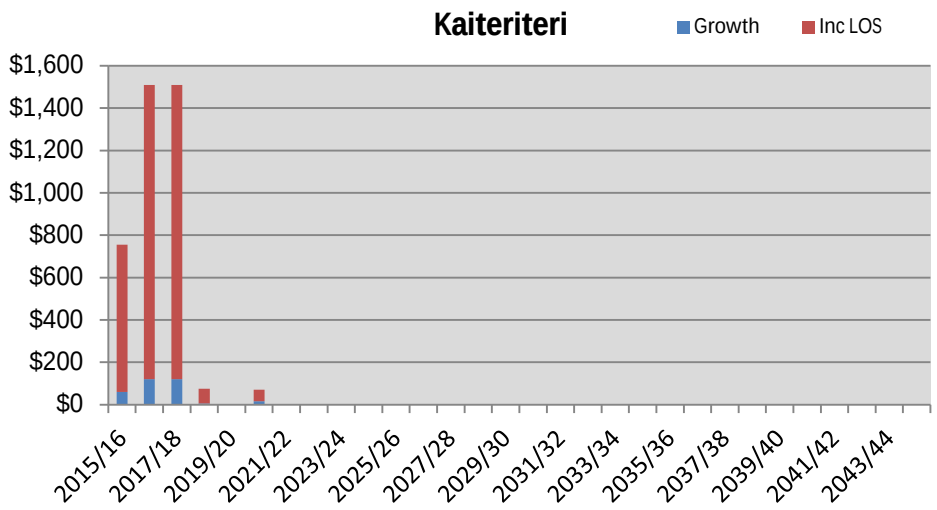
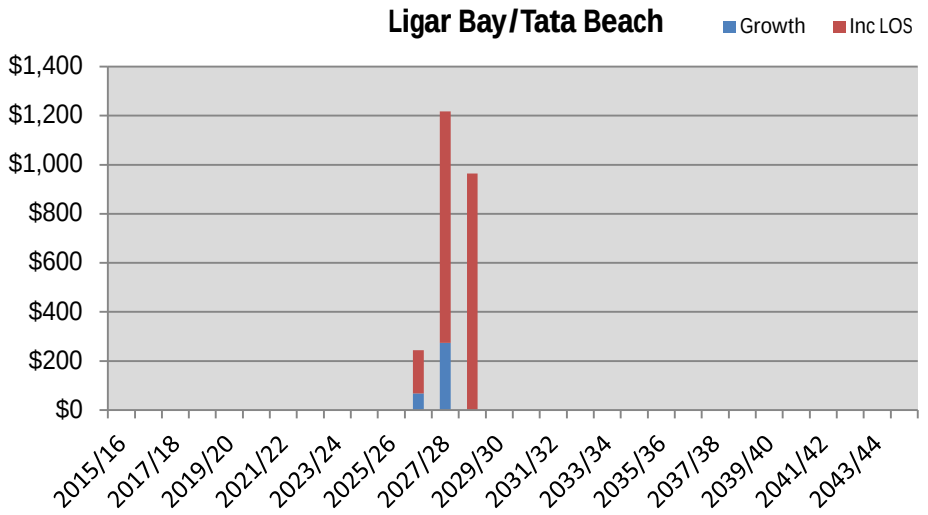


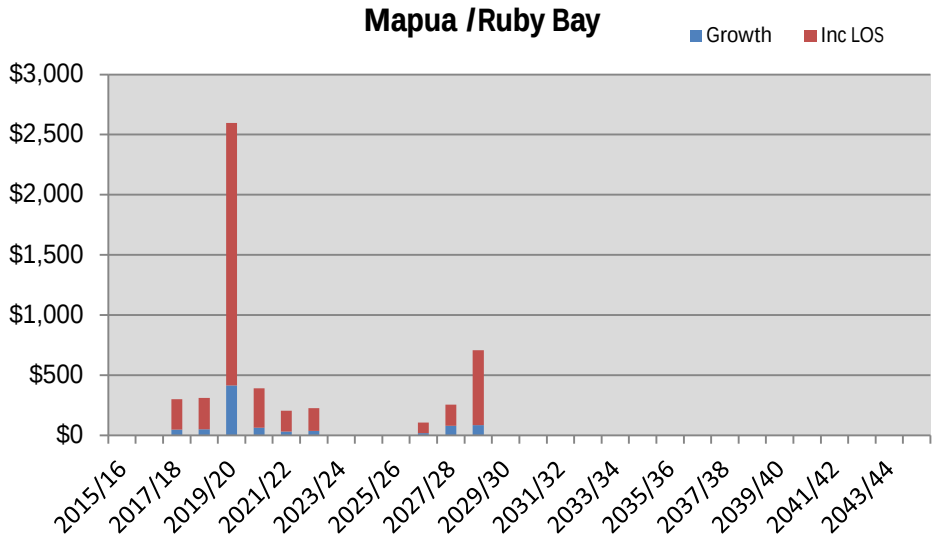
Figure F-3: 2015 – 2045 Wastewater New Capital Expenditure ($000)



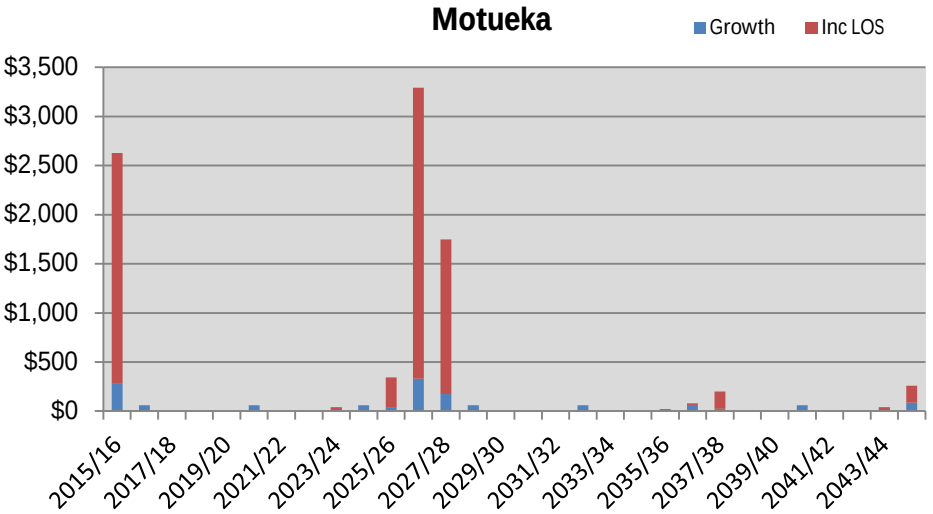
Major Capital Projects
Tapu Bay rising main replacement



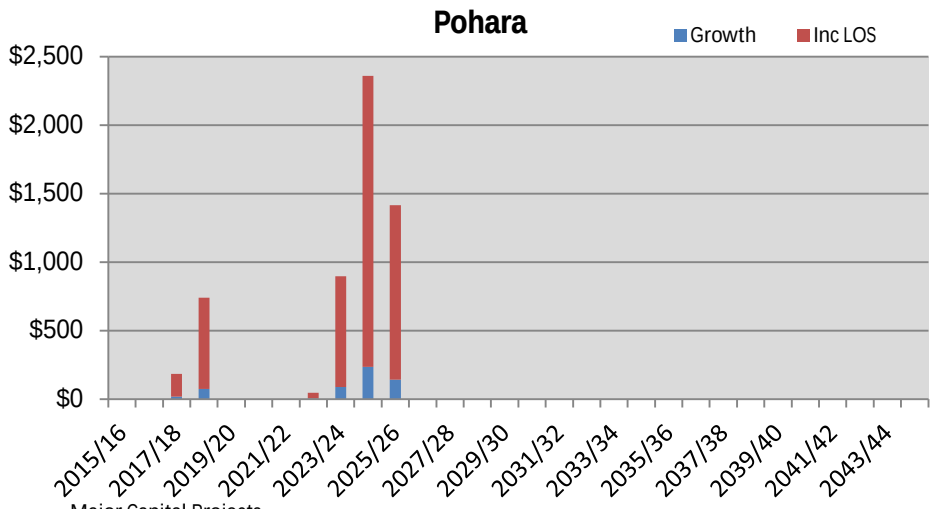
Major Capital Projects
Ligar Bay and Tata Beach pump station and rising main upgrades



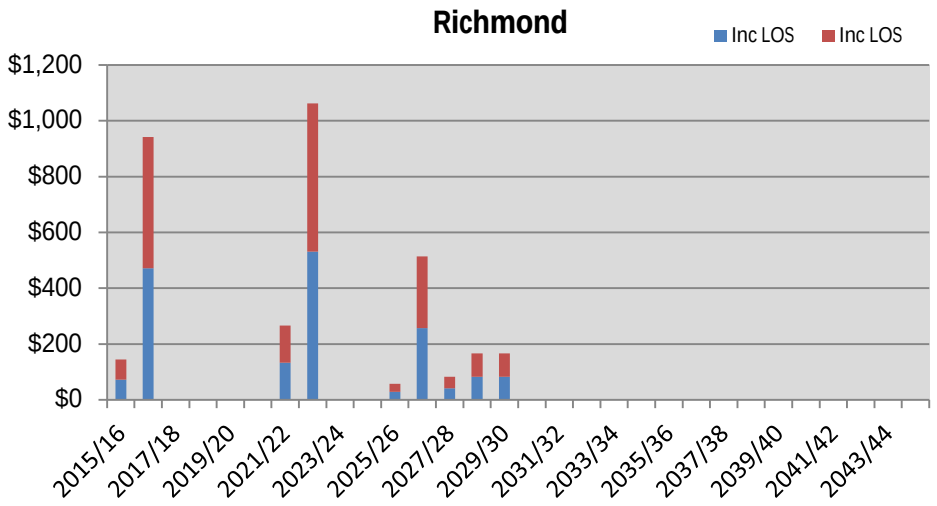
Major Capital Projects
New Stafford Drive pump station and rising main



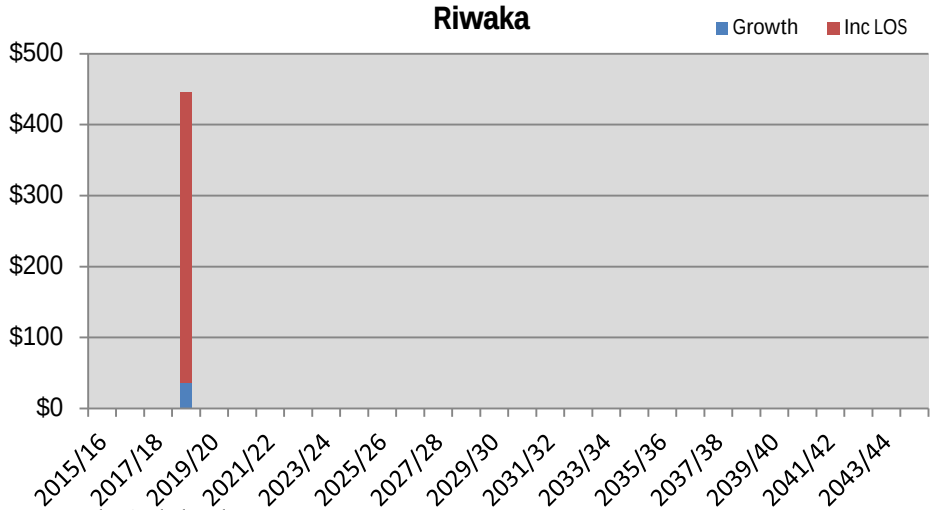
Major Capital Projects
Motueka WWTP Upgrade
Thorp Street rising main renewal



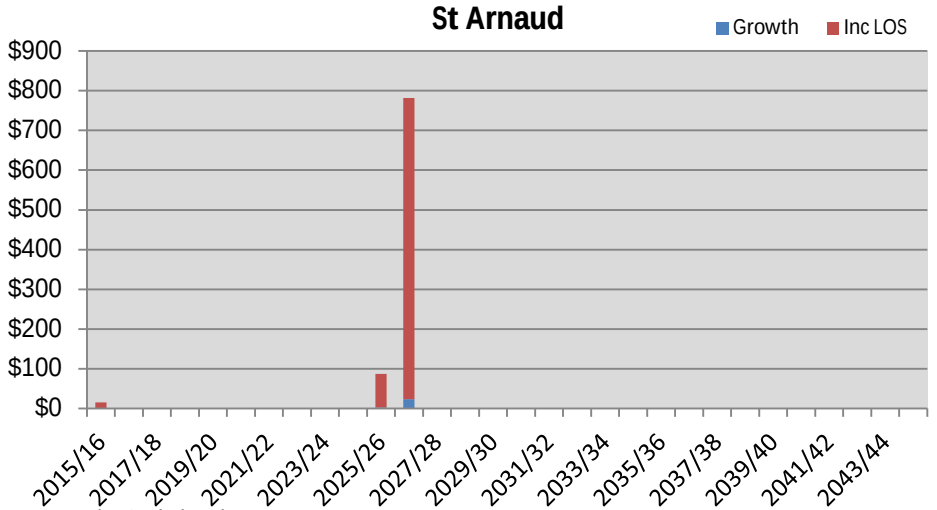
Major Capital Projects
Four Winds pump station and rising main upgrade
Pohara Camp, Pohara Valley and Tarakohe pump station and rising main



Major Capital Projects
Wensley Road pipeline upgrade
Oxford Street pipeline upgrade



Major Capital Projects
Motueka River bridge to WWTP rising main upgrade



Major Capital Projects
Rising main to WWTP replacement

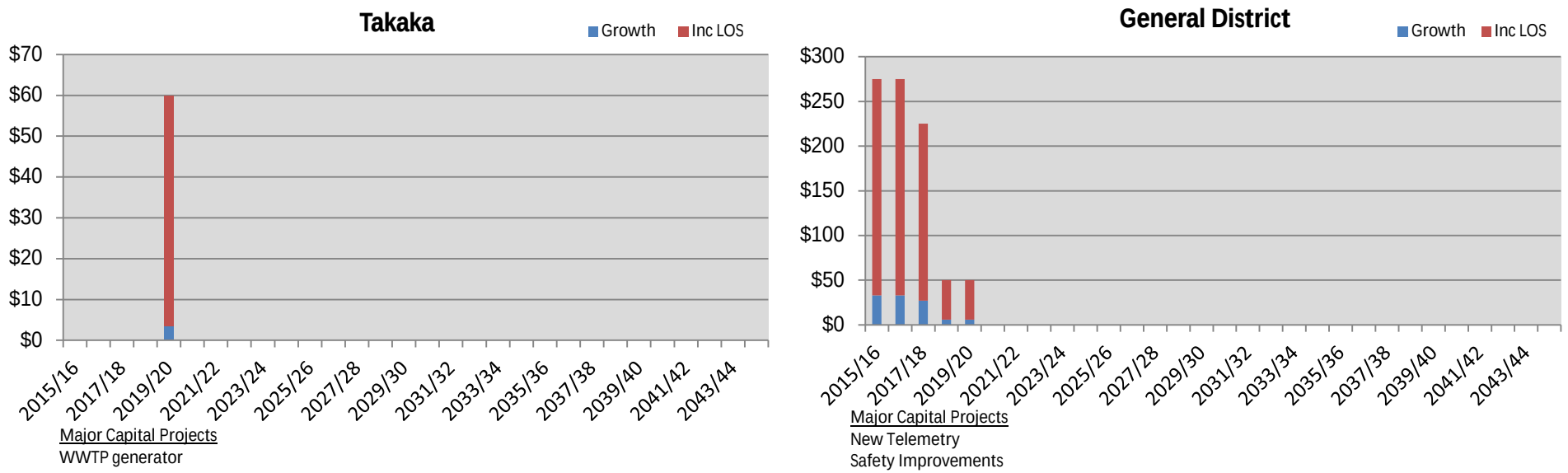


Figure F-4: 2015 – 2045 Wastewater New Capital Expenditure individual Schemes

Table F-8: 2015 – 2045 Wastewater New Capital Expenditure Forecast ($000)

ID	Project Name	Project Description	Category	GL Code	% Growth	% LOS	New Capital Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140005	Stephens Bay PS Upgrade	New storage	Kaiteriteri	09286200014	8%	92%	76	76	-	-	-	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140006	Rising Main through Girvins	Replace RM through Girvins	Kaiteriteri	09286200012	8%	26%	70	203	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140007	Tapu Bay Rising Main Replacement	Replace estuary RM with land based RM	Kaiteriteri	09286200015	8%	92%	3,775	3,775	755	1,510	1,510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140008	Ligar Bay PS and RM Upgrade	Upgrade PS and RM	Ligar Bay / Tata Beach	09626200001	24%	63%	1,220	1,397	-	-	-	-	-	-	-	-	-	-	-	244	976	-	-	-	-	-	-	-	-	-
140009	Tata Beach PS and RM Upgrade	Upgrade PS and RM	Ligar Bay / Tata Beach	09626200002	0%	86%	1,205	1,408	-	-	-	-	-	-	-	-	-	-	-	-	241	964	-	-	-	-	-	-	-	-
140011	New Stafford Dr PS and RM	New PS and 33m³ storage and RM upgrade	Mapua / Ruby Bay	09296200012	16%	84%	3,165	3,165	-	-	301	310	2,555	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140012	Higgs Rd PS1 Upgrade	Upgrade PS and new 14m² storage	Mapua / Ruby Bay	09296200003	16%	84%	415	415	-	-	-	-	41	373	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140013	Toru Street PS Upgrade and Storage	New pumps, storage and odour control	Mapua / Ruby Bay	09296200013	16%	84%	178	178	-	-	-	-	-	18	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140014	Aranui-Higgs Rd PS Upgrade and Storage	New pumps, storage and odour control	Mapua / Ruby Bay	09296221	16%	84%	86	86	-	-	-	-	-	-	9	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140015	Ruby Bay PS Upgrade and Storage	PS upgrade and 16m³ storage	Mapua / Ruby Bay	09296200010	16%	84%	185	185	-	-	-	-	-	-	37	148	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140016	Replacement Aranui Rd PS	New PS and storage	Mapua / Ruby Bay	09296200001	12%	88%	1,012	1,012	-	-	-	-	-	-	-	-	-	-	-	101	202	708	-	-	-	-	-	-	-	-
140017	New rising main across Mapua Channel	Pipeline upgrade	Mapua / Ruby Bay	09296200024	12%	0%	60	500	-	-	-	-	-	-	-	-	-	-	-	6	54	-	-	-	-	-	-	-	-	-
140019	Motueka WWTP Upgrade	Upgrade WWTP	Motueka	09206200026	10%	85%	2,556	2,700	2,556	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140022	45 Trewavas St Storage	New storage	Motueka	0920620047	10%	90%	74	74	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140023	Growth Allowance For Pipeline Upgrades	Growth allowance for pipeline upgrades	Motueka	09206200052	100%	0%	480	480	-	60	-	-	-	60	-	-	-	60	-	-	-	60	-	-	-	60	-	-	180	-
140024	Thorp Street RM Renewal	Renewal of RM from 13 Trewavas Street PS to WWSP5168	Motueka	09206200033	10%	90%	1,941	1,941	-	-	-	-	-	-	-	-	-	-	-	194	1,747	-	-	-	-	-	-	-	-	-
140025	Thorp Street RM Renewal	Renewal of RM from WWSP5168 to WWTP	Motueka	09206200032	10%	90%	3,441	3,441	-	-	-	-	-	-	-	-	-	-	344	3,097	-	-	-	-	-	-	-	-	-	-
140026	New Motueka WWTP	Identify and purchase land, specialist studies, consents and construction of new WWTP, decommissioning of existing WWTP	Motueka	09206200056	5%	35%	520	1,300	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	480	20,600
140029	Pohara/Tarakohe PS and RM Upgrades	Pohara Camp, Pohara Valley, Tarakohe PSs and RM upgrades	Pohara	09626200019	10%	90%	4,716	4,716	-	-	-	-	-	-	-	47	896	2,358	1,415	-	-	-	-	-	-	-	-	-	-	-
140030	Four Winds PS and RM Upgrade	New storage and RM, refurbish PS	Pohara	09626200022	7%	64%	925	1,305	-	-	185	740	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140031	Gladstone Road Pipeline Upgrade	Upgrade from WWSF2131 to WWSF2126	Richmond	09226200004	14%	86%	332	332	-	-	-	-	-	-	-	-	-	-	33	299	-	-	-	-	-	-	-	-	-	-

ID	Project Name	Project Description	Category	GL Code	% Growth	% LOS	New Capital Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140032	Growth Allowance For Pipeline Upgrades	Growth allowance for pipeline upgrades	Richmond	09226200018	100%	0%	600	600	-	-	100	-	-	-	-	100	-	-	-	-	100	-	-	-	-	100	-	-	200	-
140033	Wensley Road Pipeline Upgrade	Pipeline upgrade betweenWWSF1709 and WWSF1708	Richmond	09226200012	14%	86%	419	419	84	335	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140034	Oxford Street Pipeline Upgrade	Pipeline upgrade	Richmond	09226200007	14%	86%	773	773	-	-	-	-	-	-	155	618	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140035	Queen Street Pipeline Upgrade	202 Queen Street to Sundial Sq pipeline upgrade	Richmond	09226200008	14%	86%	212	212	-	212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140038	Trunkmain Easement Wakefield to Richmond	Gain Easement for trunkmain	Richmond	09376200005	17%	83%	250	250	-	-	-	-	-	-	-	-	-	-	-	-	50	100	100	-	-	-	-	-	-	-
140039	Wakefield to 3 Brothers Corner Pipeline Upgrade	Upgrade trunk main	Richmond	09226200002	100%	0%	12,184	12,184	-	-	-	-	-	-	-	452	904	904	-	-	-	-	1,616	1,616	1,665	1,005	2,011	2,011	-	-
140040	Motueka Bridge to Motueka WWTP RM Upgrade	Upgrade of RM	Riwaka	09286200022	8%	92%	446	446	-	-	-	446	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140041	New Flowmeter on RM at St Arnaud WWTP	Install new flowmeter on RM at WWTP	St Arnaud	09556200016	7%	93%	15	15	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140043	St Arnaud RM Replacement	Replacement of 140mm PN4 with 160mm PN12 RM between PS2 and WWTP	St Arnaud	09556200003	3%	97%	868	868	-	-	-	-	-	-	-	-	-	-	87	781	-	-	-	-	-	-	-	-	-	-
140047	Takaka WWTP Generator	Generator	Takaka	09246200011	6%	94%	60	60	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140053	New Telemetry	Installing telemetry existing sites	General District	09226200020	12%	88%	625	625	225	225	175	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140057	Safety Improvements	Implement safety improvements, fall protection, bollards, other modifications at pump stations	General District	09016200001	12%	88%	250	250	50	50	50	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTALS						43,134	239,187	3,758	2,393	2,321	1,621	2,706	521	360	1,443	1,840	3,322	1,879	4,723	3,371	1,832	1,716	1,616	1,665	1,165	2,011	2,011	860	31,238

APPENDIX G DEVELOPMENT CONTRIBUTIONS / FINANCIAL CONTRIBUTIONS

Tasman District Council's full Development Contribution Policy (The Policy) can be found on our website at http://www.tasman.govt.nz/policy/policies/development-contributions-policy.
The Policy was adopted in conjunction with the Council's Long Term Plan (LTP) and will come into effect on 1 July 2015.

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 Development Contribution 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 is one Wastewater Development Contribution in place (as shown in Table G-1 below).

Table G-1: Current Development Contributions

Activity	Growth costs to be recovered (in GST)	Recoverable growth	Development Contribution per HUD $ (incl GST)*
Water	$7,627,839	1,514	$5,039
Wastewater	$17,062,205	1,699	$10,041
Transportation	$2,025,024	2,412	$840
Stormwater	$15,766,878	1,702	$9,264
TOTAL	$42,481,945		$25,184

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.

A forecast of the income from Wastewater Development Contributions expected over the 10 year period of the Long Term Plan has been prepared by Council's Corporate Services staff based on the forecast residential and business growth projections of the Growth Demand and Supply Model (GDSM – refer Appendix F). The forecast income is included as a line item in the Cost of Service Statement included in Appendix L.

APPENDIX H RESOURCE CONSENTS AND PROPERTY DESIGNATIONS

H.1 Introduction

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, a unitary authority, through the Tasman Resource Management Plan (TRMP).

An important aspect of the wastewater activity is to ensure that any discharge to land, air or water is managed responsibly. The Council's wastewater reticulation and treatment plants have an essential role in ensuring that wastewater produced in urban areas is properly collected, treated and disposed of in ways that meet community and cultural expectations and avoid causing significant adverse effects on the environment.

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. Other resource consents may also be required for installation and operation of wastewater infrastructure (eg, pipelines across rivers and streams, and in coastal areas, monitoring or water supply bores for wastewater activities).

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.

Generally the Council holds resource consents or designations for its wastewater activities to the extent required by the RMA and current rules in the TRMP. For some wastewater infrastructure installed prior to the RMA being enacted in 1991, such as pipelines across rivers and streams and seabed, previous authorisations are relied on.

Limits and standards apply to most discharges and monitoring is required by the majority of the treatment plant discharge consents. This information is held by the Council in consent registers, System Operating Plans, and monitoring programmes which are updated as necessary.

H.2 Schedule of Resource Consents

The number and type of resource consents relating to wastewater assets has increased significantly over recent years.

A summary of the active resource consents held for the Council's wastewater networks is provided Table H-1. As the TRMP is a living document and subject to change, the list is only accurate at the time of compilation (November 2014). Short term consents are required from time to time for construction activities and are not included in Table H-1.

Table H-1: Wastewater Register of Resource Consents

Scheme	Asset	Consent Number	Consent Type	Granted	Expiry Date
Collingwood	WWTP	RM070652V1	Discharge to air (odour)	14 Jan 2008	06 Dec 2019
		RM080703	Discharge to water	27 July 2009	01 Jul 2034
		RM080704	Land use (creek bed)		
	Rising main	RM081017	Coastal Permit (occupation)	29 Jan 2009	29 Jan 2019
					29 Jan 2044
					29 Jan 2019
Mapua	Rising main	RM090328	Discharge Permit (dewatering)	27 Oct 2009	27 Oct 2029
		RM090455	Land use (archaeological area)	27 Oct 2009	27 Oct 2029
		RM090458	Land use (works exceeding 1000m²)	27 Oct 2009	27 Oct 2029
		RM090459	Coastal Permit (occupy)	27 Oct 2009	27 Oct 2029

Scheme	Asset	Consent Number	Consent Type	Granted	Expiry Date
		RM090460	Coastal Permit (disturb)	27 Oct 2009	27 Oct 2029
		RM090461	Land use (construct pipeline)	27 Oct 2009	unlimited
		RM090462	Land use (structure)	27 Oct 2009	unlimited
Motueka	WWTP	RM081130V1	Discharge to land	18 Dec 2012	02 Feb 2018
		RM120265	Discharge to air (odour)		
	Goodman Park PS	RM060443	Bore Permit (water supply)	14 Jun 2006	unlimited
	Tapu Bay Pipeline	NN010307C	Coastal Permit (construction)		01 Oct 2018
		NN010406L	Land use (Riwaka River bed)		
		NN010407L	Land use (Tapu Bay)		
Murchison		RM050617V3	Discharge to land	02 Mar 2011	02 Jun 2041
		RM050618	Discharge to air (odour)		02 Jun 2041
		RM050811	Land use (earthworks)		02 Jun 2041
		RM050843	Discharge to air (desludging)	06 Mar 2006	09 Feb 2041
St Arnaud	WWTP	RM130179	Discharge to land	16 Apr 2013	16 Apr 2038
		RM130180	Discharge to air (odour)		
		RM130181	Land use		unlimited
Takaka	Rising main	RM041177	Land use- structure in bed of a river (wastewater pipe)	28 Oct 2004	28 Oct 2038
	WWTP	RM080146	Discharge Permit	11 Jun 2013	04 Jul 2038
		RM080166	Discharge Permit		
		RM100333	Designation – alteration		unlimited
		RM071078V1	Discharge to air (desludging)	14 Jan 2008	06 Dec 2042
Tapawera	WWTP	RM050391V3	Discharge to land	12 Feb 2008	31 Jul 2042
		RM070634V2	Discharge to air (odour)		
		RM070699	Designation - Outline Plan	27 Aug 2007	unlimited
Upper Takaka	WWTP	RM010258V3	Discharge onto land	01 Aug 2007	11 Jul 2042
		RM070404	Discharge to air (odour)	01 Aug 2007	11 Jul 2042
Waimea	Headingly Lane PS	RM100205	Land Use	18 May 2010	18 May 2018
		RM100286	Water Permit		
		RM100287	Water Permit		
		RM100288	Discharge Permit		
	Rising main	RM080288	Designation – notice of requirement	28 Sep 2009	28 Sep 2029
	Richmond West PS	RM080289	Designation – notice of requirement		

Where permits for discharges, water or coastal activities, or consents for river beds are required, the RMA restricts those consents to a maximum term of 35 years only. Hence there needs to be an ongoing programme of “consent renewals” for those components of Council’s wastewater systems, as well as a monitoring programme for compliance with the conditions of permitted activities or resource consents.

The Council will ensure the use of processes/programming for lodging applications for new consents will be achieved in plenty of time before the existing consents expire; and for monitoring and reporting the Council’s actual performance against the relevant conditions of each consent. Many of the discharge permits have reporting requirements that will be adhered to.

The Council has developed a full and comprehensive reporting programme covering all consents.

H.3 Resource Consent Reporting and Monitoring

The Council aims to achieve minimum compliance with all consents and / or operating conditions. Use of the Council's Napier Computer System (NCS) monitoring database allows the accurate programming of all actions required by the consents including renewal prior to consent expiry.

H.3.1. Environmental 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 Council staff and their consultant 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*, 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.

Any non-compliance incidents are recorded, notified to the Council's compliance team, and mitigation measures put in place to minimise any potential impacts.

H.3.2. Auditing

Regular site audits are completed at WWTPs to ensure the Council's maintenance contractor is operating the sites in accordance with system operating plans, resource consents, and maintenance contract.

H.3.3. 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.

A summary of how the Council is performing against this level of service is also provided in Appendix R.

H.4 Property Designations

Except for St Arnaud, the Council has designations for the six other WWTP sites and two wastewater pump stations at Richmond and Brightwater.

The explanation for designating the sites is that they form essential elements for the wastewater disposal systems. The nature of the facilities, as described in the TRMP is.

- sewer pump station sites consist of an in-ground concrete well finishing flush with the ground surface with access hatches and above-ground vents and electrical control cabinets. The main Brightwater site also contains an equipment shed;
- sewage treatment pond sites contain oxidation ponds varying in size from 0.3 ha to 5.3 ha with some sites also containing aeration ponds and soakage beds or marsh cells for disposal of effluent.

A site has been designated at Paton Rock for a future WWTP for that locality.

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 (eg, 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 (eg, discharge permits) required for the designated site (refer to section H.2 above).

The Council's designations associated with the wastewater systems are summarised in Table H-2 below.

Table H-2: 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

APPENDIX I CAPITAL REQUIREMENTS FOR FUTURE RENEWALS

I.1 Introduction

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.

I.2 Renewal Strategy

Assets are considered for renewal as they near the end of their effective working life or where the cost of maintenance becomes uneconomical and when the risk of failure of critical assets is sufficiently high.

The renewal programme has been developed by:

- taking asset age and remaining life predictions from the valuation data in Confirm, 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 through the Customer Services System, the GPS locating of pipe breaks and overflows, and contract reporting structures;
- undertaking an optimising review to identify opportunities for bundling projects across assets, especially between pipe upgrades and roading works and smoothing of expenditure.

The renewal programme is reviewed in detail at each AMP (ie, three yearly) and every year the annual renewal programme is reviewed and planned with the input of the maintenance contractor.

In this AMP all pump and associated electrical and telemetry renewals have been bundled together. This allows flexibility in the annual renewal programme as some pumps have low usage and therefore can easily exceed their theoretical life while other high use pumps need earlier replacement.

Generally when pumps need to be replaced the electrical switchboards need to be upgraded to meet current electrical standards so in most cases pump, electrics and telemetry are all renewed at the same time.

Long life concrete assets like pump station wet wells and valve chambers have been excluded from the 30 year renewal forecast as condition assessments have found they are in good condition and their life can be extended. It is expected that these assets will be repaired rather than replaced when required.

Previously deferred renewals have been included in the 30 forecast, within the first five years. This has meant that some of the planned renewals have had to be delayed to smooth the expenditure profile. Generally planned renewals have only been deferred by one to three years.

I.3 Delivery of Renewals

A rolling programme of CCTV investigation is currently in place progressing through each catchment. The programme targets lengths 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.

I.4 Renewal Standards

The work to be performed and materials to be used shall comply with the current Council Engineering Standards and Policies.

I.5 Deferred Renewals

Deferred renewals 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 or because the asset is still in good condition);
- 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.

I.5.1. Assessment of Deferred Renewals

The extent of deferred renewals can be identified by comparing the accumulated investment in renewals with the accumulated annual depreciation as shown in Table I-1.

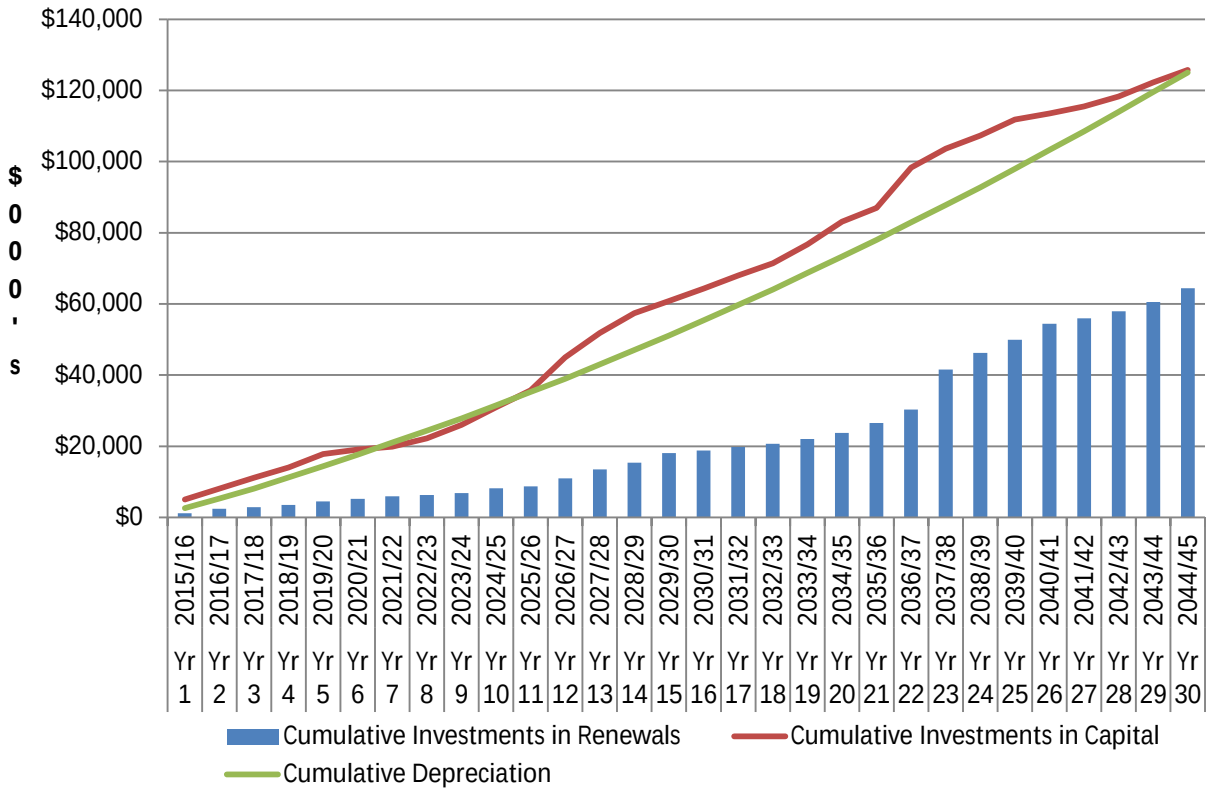


Figure I-1: Accumulated Renewal Expenditure and Depreciation for all Wastewater Assets

Table I-1 compares the total cumulative investment in renewals and the total cumulative depreciation for the wastewater activity for first 30 years. It shows that the Council is not investing in renewals at anywhere near the level of depreciation. This would indicate that the assets are being consumed.

However, many wastewater assets have a life expectancy of 80 years and much of the network is still young so there is not a great need to renew them. To be investing in renewals would be spending money on sound assets with limited real benefit. As the Council shifts to cash fund depreciation the difference between renewals expenditure and depreciation will reduce debt associated with the activity and enable the Council to fund renewals when needed later.

I.5.2. Management and Mitigation of Renewals

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

- updating their wastewater asset valuation, using the more up-to-date and complete database in confirm and more 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 identifying 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.

I.6 2015 – 2045 Wastewater Renewal Expenditure

Figure I-4 shows a summary of the expenditure forecast for renewals over the next 30 years. The expenditure is detailed scheme by scheme. The spreadsheet (Table I-1) at the end of this appendix provides a total breakdown of the expenditure forecast for renewals over the next 30 years.

The value of renewals based on asset life has been compared to planned renewals in Figure I-2 and Figure I-3. Approximately $15 million has been removed from both renewal budgets as:

- pump station wet wells generally have a life of greater than 80 years and they are normally repaired or renovated rather than being renewed. The renewal budget includes for the renovation of the Goodman Park pump station in Motueka due to deterioration of the epoxy liner and sulphuric acid attack of the concrete.
- solid waste assets, such as the Eves Valley leachate rising main and leachate pump stations were included in the wastewater valuation. These have been transferred to solid waste.
- some assets are obsolete, abandoned or no longer exist.

The annual renewal expenditure trends are similar, although planned expenditure is greater than renewals based on asset life indicates is necessary. The main reasons for the differences are:

- some assets require replacement ahead of the end of asset life, usually due to poor condition or because a need to increase capacity as a result of growth;
- estimated renewal cost is greater than the valuation replacement value;
- new assets constructed within the 30 year programme are excluded for the current valuation so have no replacement value and may have an asset life for less than 30 years;

- assets with a short asset life may need to be renewed two or three times within the 30 year programme but are only included once in the current valuation.

The significant variances are because of:

- 2025/26 – Motueka WWTP new membranes renewal (10yr life) $700,000;
- 2026-29 – Tata Beach and Ligar Bay pump station and rising main replacement needed due to growth, Mapua Channel rising main replacement needed due to growth $819,000;
- 2028/29 – Motueka pipeline renewals do not follow asset life, investigations over the first three years of the AMP will determine the future renewal programme;
- 2033-35 - Takaka WWTP Floating Wetland renewal (20yr life) $600,000;
- 2035/36 - Motueka WTP membrane and aerator renewals $1,200,000;
- 2037/38 - New Motueka WWTP investigations $300,000;
- 2044/45 - New Motueka WWTP investigations $300,000.

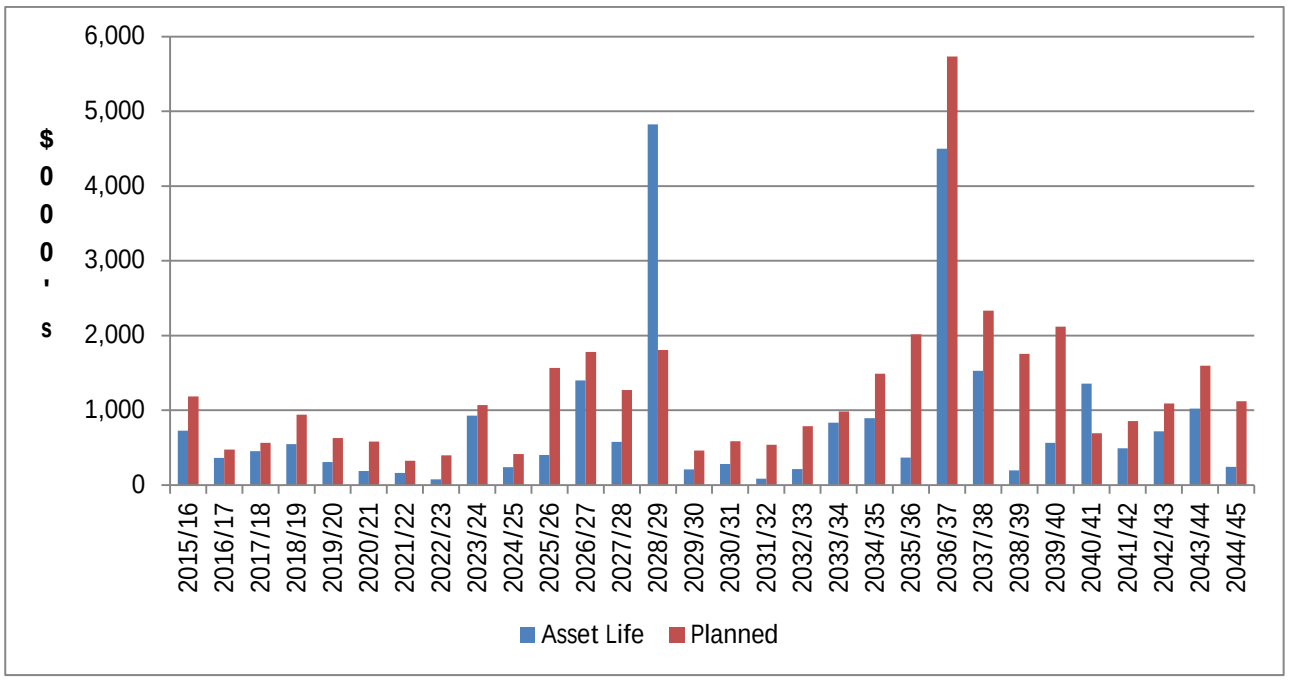


Figure I-2: 2015 – 2045 Comparison of Annual Renewals Based on Asset Life with Planned Renewals

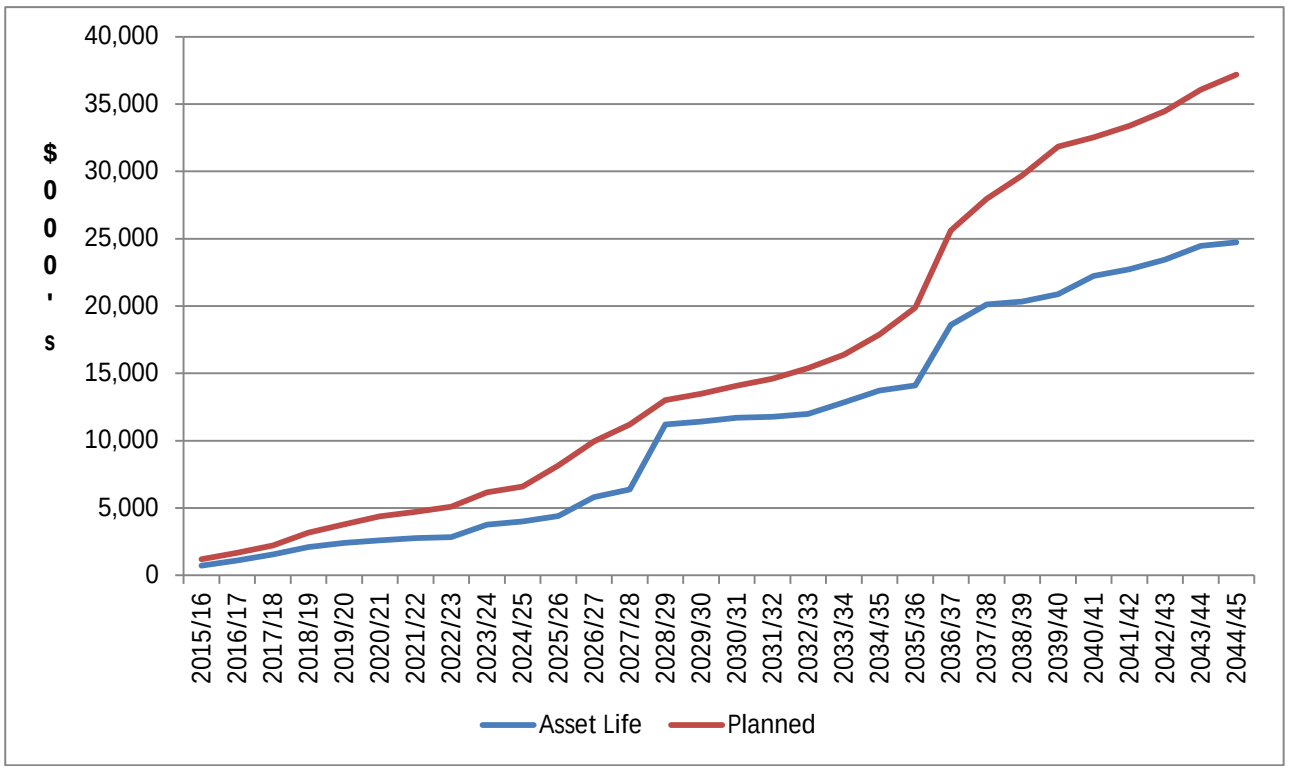


Figure I-3: 2015 - 2045 Comparison of Renewals Based on Asset Life with Planned Renewals

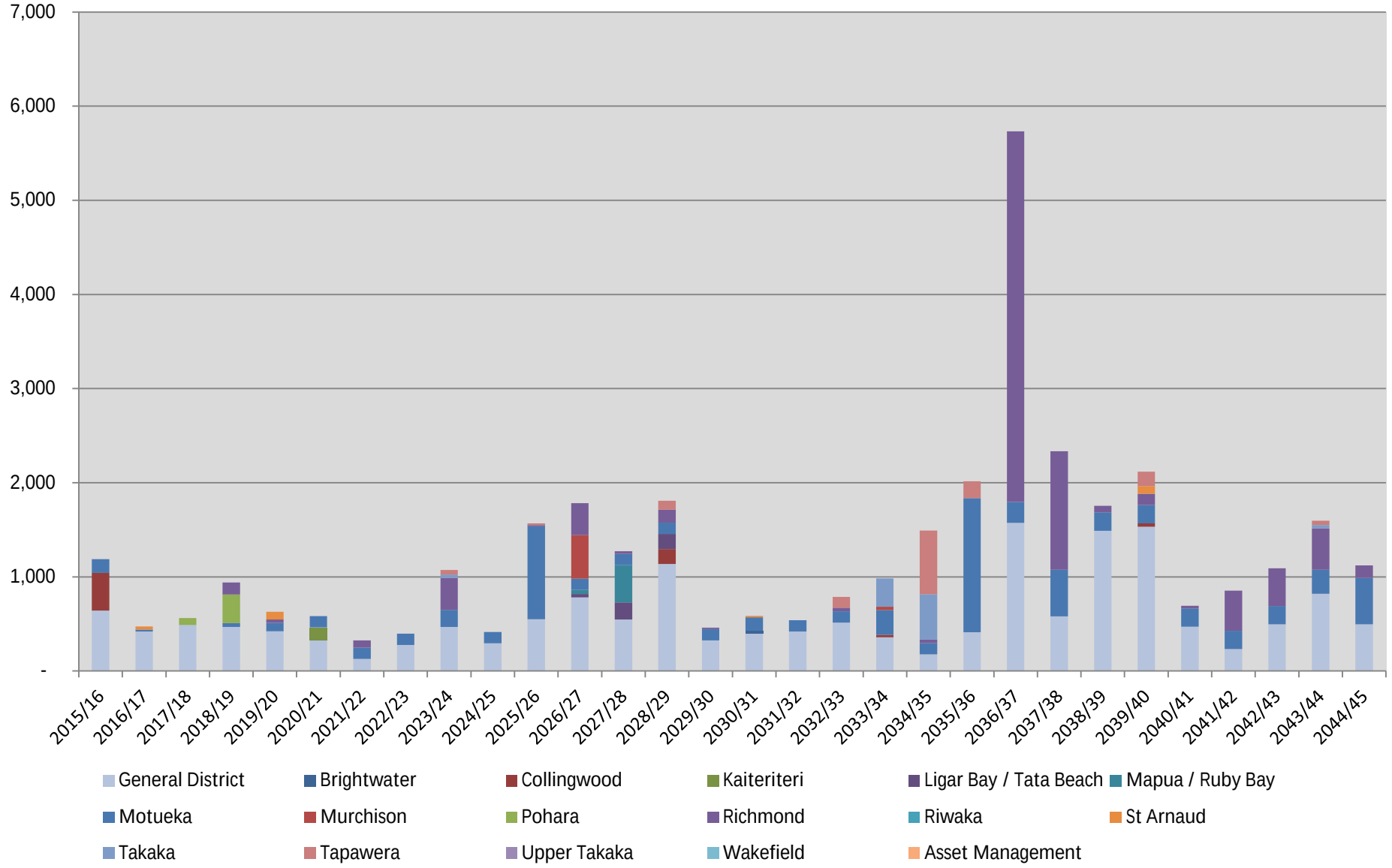


Figure I-4: 2015 – 2045 Wastewater Renewal Expenditure Forecast ($000)

Table I-1: 2015 – 2045 Wastewater Renewals Expenditure Forecast ($000)

ID	Project Name	Project Description	Category	GL Code	% Renewal	Renewal Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140001	Brightwater Generator Renewal	Replace mobile generator	Brightwater	09256200009	100%	29	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	-	-	-	-	-	-
140002	Brightwater Pipeline Renewals	Pipeline renewals	Brightwater	09256200005	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140003	Collingwood WWTP Renewals	Renewal of UV unit, flowmeter and recirc pump, aerator and controls, telemetry, valving and building	Collingwood	09266200003	100%	273	273	53	-	-	-	-	-	-	-	-	-	-	-	-	157	-	-	-	-	27	-	36	-
140004	Collingwood WWTP Wetland Renewal	Improve wetland hydraulics and embankment repairs	Collingwood	09266200004	100%	350	350	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140006	Rising Main through Girvins	Replace RM through Girvins	Kaiteriteri	09286200012	66%	133	203	-	-	-	-	-	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140008	Ligar Bay PS and RM Upgrade	Upgrade PS and RM	Ligar Bay / Tata Beach	09626200001	13%	177	1,397	-	-	-	-	-	-	-	-	-	-	-	35	141	-	-	-	-	-	-	-	-	-
140009	Tata Beach PS and RM Upgrade	Upgrade PS and RM	Ligar Bay / Tata Beach	09626200002	14%	203	1,408	-	-	-	-	-	-	-	-	-	-	-	-	41	162	-	-	-	-	-	-	-	-
140010	Mapua/Ruby Bay Pipeline Renewals	Pipeline renewals	Mapua / Ruby Bay	09296200009	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140017	New rising main across Mapua Channel	Pipeline upgrade	Mapua / Ruby Bay	09296200024	88%	440	500	-	-	-	-	-	-	-	-	-	-	-	44	396	-	-	-	-	-	-	-	-	-
140019	Motueka WWTP Upgrade	Upgrade WWTP	Motueka	09206200026	5%	144	2,700	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140020	Motueka WWTP Renewals	Renewal of aerators, flowmeters, electrical, telemetry, DO and H2S probes, odour scrubber, valving, membranes, screen	Motueka	09206200024	100%	2,247	2,247	-	-	-	-	11	-	-	-	-	-	867	-	-	-	-	24	-	-	141	-	1,204	-
140021	Motueka Pipeline Renewals	Pipeline renewals	Motueka	09206200028	100%	3,860	3,860	-	-	-	40	80	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	1,940	-
140026	New Motueka WWTP	Identify and purchase land, specialist studies, consents and construction of new WWTP, decommissioning of existing WWTP	Motueka	09206200056	60%	780	1,300	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	720	30,900
140027	Flushing Tanks Decommissioning	Decommissioning/disposal of flushing tanks	Motueka	09206200057	100%	21	21	-	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140028	Murchison WWTP Renewals	Renewal of aerators (4), gravel filters, electrical, telemetry and pumps	Murchison	09336200003	100%	500	500	-	-	-	-	-	-	-	-	-	-	-	462	-	-	-	-	-	-	38	-	-	-
140030	Four Winds PS and RM Upgrade	New storage and RM, refurbish PS	Pohara	09626200022	29%	380	1,305	-	-	76	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140036	Richmond Trunkmain Renewals	Renewal of flowmeter and telemetry	Richmond	09226200009	100%	27	27	-	-	-	-	-	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-	-
140037	Richmond Pipeline Renewals	Pipeline renewals	Richmond	09226200015	100%	7,977	7,977	-	-	-	127	36	-	77	-	341	-	14	339	-	138	16	-	-	40	-	35	6,814	-
140042	St Arnaud Generator Renewal	Renewal of mobile generator	St Arnaud	09556200014	100%	34	34	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140044	St Arnaud WWTP Renewals	Renewal of aerator, flow meter, electrics, telemetry, and pumps	St Arnaud	09556200017	100%	178	178	-	-	-	-	81	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	81	-

ID	Project Name	Project Description	Category	GL Code	% Renewal	Renewal Estimate	Total Project Estimate	Year 1 2015/16	Year 2 2016/17	Year 3 2017/18	Year 4 2018/19	Year 5 2019/20	Year 6 2020/21	Year 7 2021/22	Year 8 2022/23	Year 9 2023/24	Year 10 2024/25	Year 11 2025/26	Year 12 2026/27	Year 13 2027/28	Year 14 2028/29	Year 15 2029/30	Year 16 2030/31	Year 17 2031/32	Year 18 2032/33	Year 19 2033/34	Year 20 2034/35	Year 21 to Year 30	Beyond Year 30
140045	Takaka Pipeline Renewals	Pipeline renewals	Takaka	09246200007	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140046	Takaka WWTP Renewals	Renewal of aerators, flowmeter, telemetry	Takaka	09246200010	100%	854	854	-	-	-	-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	300	485	35	-
140048	Tapawera Flushing Tank Renewal	Renewal of flushing tanks	Tapawera	09346200005	100%	17	17	-	-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-
140049	Tapawera Pipeline Renewals	Renewal of AC pipelines	Tapawera	09346200001	100%	1,120	1,120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	114	-	675	332	-
140050	Tapawera WWTP Renewals	Renewal of flowmeter, telemetry and electrics	Tapawera	09346200002	100%	188	188	-	-	-	-	-	-	-	-	47	-	-	-	-	94	-	-	-	-	-	-	47	-
140052	Pump Station Renewals	Renewal of pumps, electrics, telemetry and ancillaries	General District	09016216	100%	9,301	9,301	341	320	388	359	322	229	29	177	369	146	450	683	399	610	225	298	320	175	166	76	3,218	-
140054	Rehabilitation of Wetwells	Rehabilitate wetwells	General District	09226200021	100%	2,238	2,238	200	-	-	-	-	-	-	-	-	48	-	-	48	-	-	-	-	194	-	-	1,747	-
140055	Rehabilitation of Manholes	Rehabilitation of Manholes	General District	09016217	100%	1,405	1,405	-	-	-	-	-	-	-	-	-	-	-	-	-	417	-	-	-	-	93	-	895	-
140056	WWTP and RM Resource Consent Renewals	Consent Renewals	General District	09016218	100%	1,310	1,310	-	-	-	10	-	-	-	-	-	-	-	-	-	10	-	-	-	45	-	-	1,245	-
140104	Renewals Contingency	Renewals Contingency	General District	0901621601	100%	3,000	3,000	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1,000	-
	TOTALS					37,184	240,090	1,188	474	564	941	629	582	326	397	1,072	414	1,568	1,783	1,272	1,809	461	587	540	787	984	1,491	19,313	30,900

APPENDIX J DEPRECIATION AND DECLINE IN SERVICE POTENTIAL

J.1 Depreciation of Infrastructural Assets

Depreciation is provided on a straight line basis on all infrastructural assets at rates which will write off the cost (or valuation) of the assets to their estimated residual values, over their useful lives.

The remaining useful lives and associated rates for the wastewater infrastructure have been estimated and are detailed in Appendix D – Asset Valuations.

The following wastewater asset components have not been depreciated:

- oxidation pond earthworks;
- detention dams earthworks.

J.2 Decline in Service Potential

The decline in service potential is a decline in the future economic benefits (service potential) embodied in an asset.

It is the Council's policy to operate the wastewater activity to meet a desired level of service. The Council will monitor and assess the state of the wastewater infrastructure and upgrade or replace components over time to counter the decline in service potential at the optimum times.

J.3 Council's Borrowing Policy

The Council's borrowing policy was that it only funds capital and renewal expenditure through borrowing, normally for 20 years, but shorter terms are used for some assets depending on how long they are expected to last before they need to be replaced.

The Council has now made a decision to start phasing in the funding of depreciation; effectively this will create a reserve to fund the replacement of assets. This method means that debt will not be raised to fund asset replacement. This is being phased in over ten years and is more fully explained in the Financial Strategy which is part of supporting information associated with the 2015 LTP.

APPENDIX K PUBLIC DEBT AND ANNUAL LOAN SERVICING COSTS

K.1 General Policy

The Council borrows as it considers prudent and appropriate and exercises its flexible and diversified funding powers pursuant to the Local Government Act 2002. The Council approves, by resolution, the borrowing requirement for each financial year during the annual planning process. The arrangement of precise terms and conditions of borrowing is delegated to the Corporate Services Manager.

The Council has significant infrastructural assets with long economic lives yielding long term benefits. The Council also has a significant strategic investment holding. The use of debt is seen as an appropriate and efficient mechanism for promoting intergenerational equity between current and future ratepayers in relation to the Council's assets and investments. Debt in the context of this policy refers to the Council's net external public debt, which is derived from the Council's gross external public debt adjusted for reserves as recorded in the Council's general ledger.

Generally, the Council's capital expenditure projects, with their long term benefits, are debt funded. The Council's other district responsibilities have policy and social objectives and are generally revenue funded.

The Council raises debt for the following primary purposes:

- capital to fund development of infrastructural assets;
- short term debt to manage timing differences between cash inflows and outflows and to maintain the Council's liquidity;
- debt associated with specific projects as approved in the Annual Plan or LTP. The specific debt can also result from finance which has been packaged into a particular project.

In approving new debt, the Council considers the impact on its borrowing limits as well as the size and the economic life of the asset that is being funded and its consistency with Council's long term financial strategy.

The Borrowing Policy is found in Volume 2 of Council's Long Term Plan.

K.2 Loans

Loans to fund capital works over the next 10 years add up to the following costs detailed in Table K-1.

Table K-1: Projected Capital Works Funded by Loan for the Next 10 Years

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Wastewater	$	$	$	$	$	$	$	$	$	$
Loans Raised	3,848	1,702	1,789	1,408	2,326	-444	-1,215	316	1,755	2,663
Opening Loan Balance	39,257	39,166	36,963	34,758	32,240	30,703	26,397	21,466	18,037	16,031

Note: Figures include for inflation and are in thousands of dollars (ie. x1000)

K.3 Cost of Loans

Council funds the principal and interest costs of past loans and these are added to the projected loan costs for the next 10 years as shown in Table K-2.

Table K-2: Projected Annual Loan Repayment Costs for Next 10 Years

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Wastewater	$	$	$	$	$	$	$	$	$	$
Loan Interest	2,461	2,425	2,300	2,054	2,028	1,860	1,596	1,416	1,254	1,158
Principal Repaid	3,647	3,940	3,905	3,994	3,927	3,862	3,716	3,745	3,761	3,867

Note: Figures include for inflation and are in thousands of dollars (ie. x1000)

Figure K-1 and Figure K-2 show the 10 and 30 year debt and interest forecast costs respectively. Debt and interest costs associated with the wastewater activity decline from $40m to $16m over 10 years. The longer term forecast is based on a continuation of the ten year debt level for the foreseeable future.

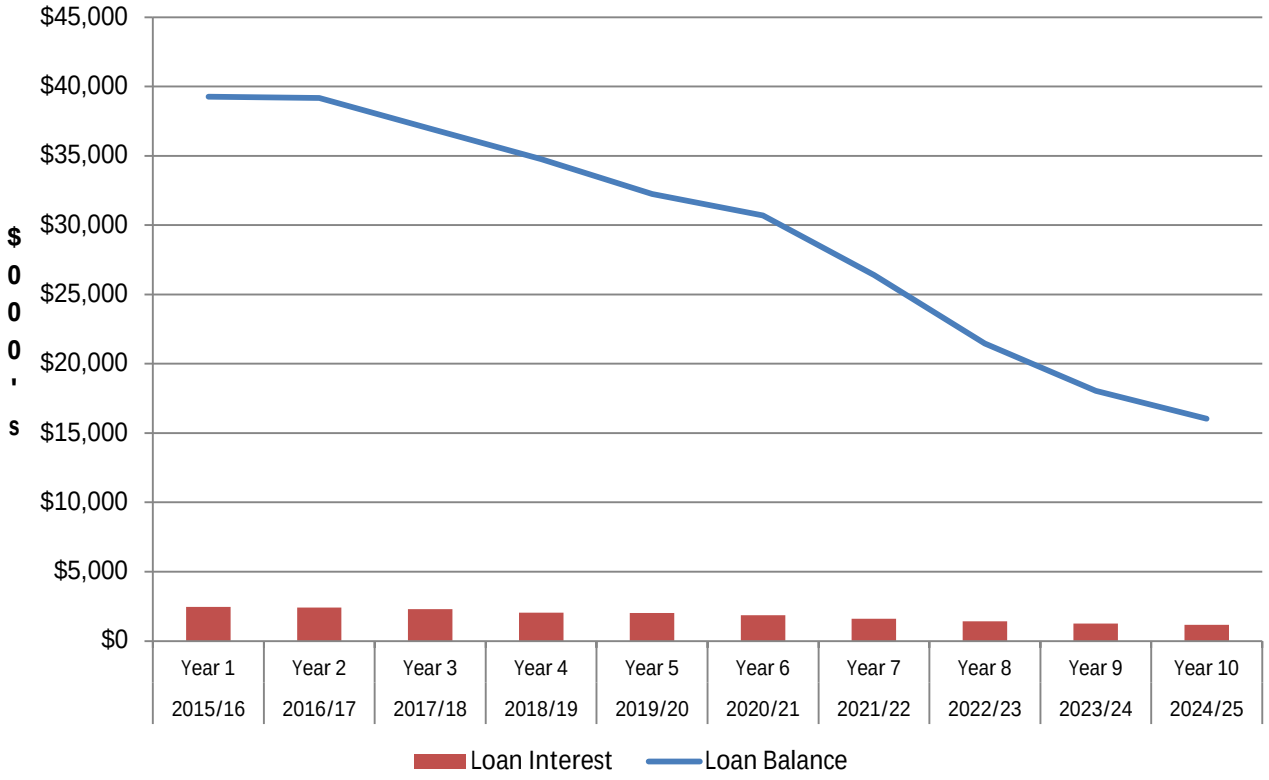


Figure K-1: Ten Year Annual Debt and Interest Cost Forecast

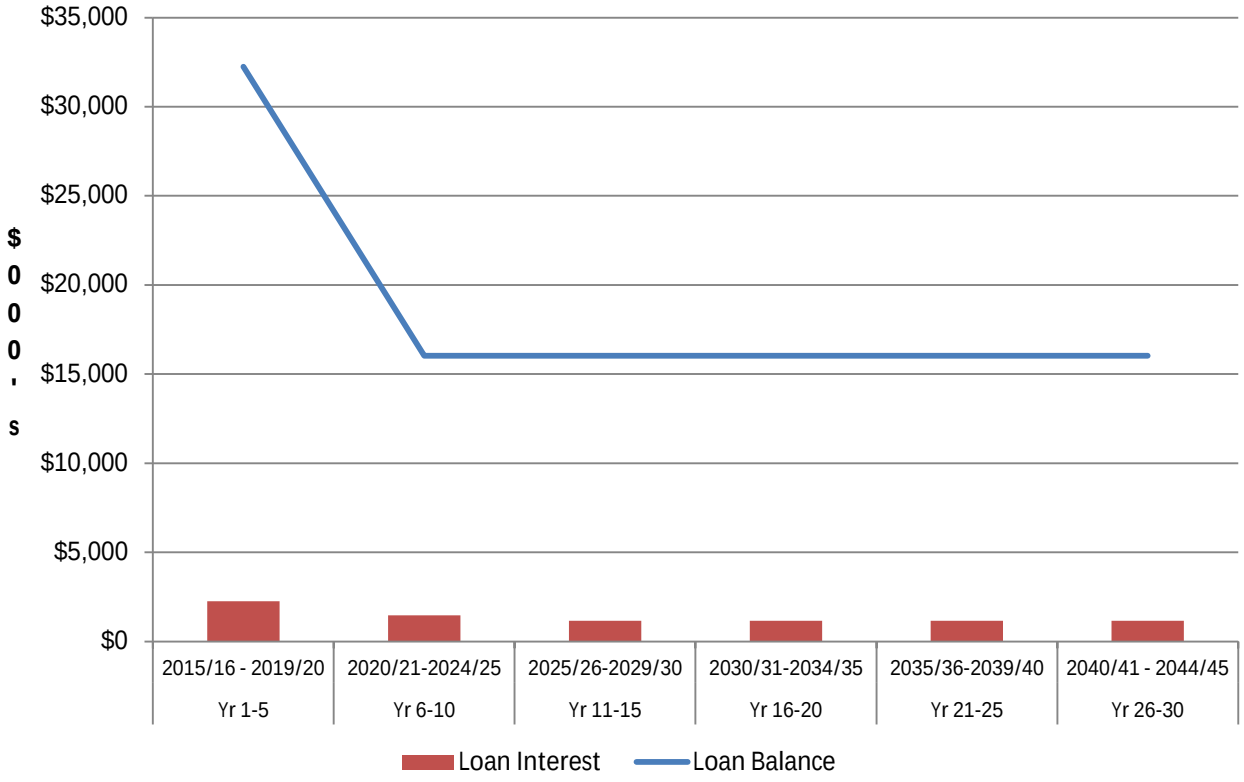


Figure K-2: 30 Year Five Yearly Average Debt and Interest Cost Forecast

APPENDIX L SUMMARY OF FUTURE OVERALL FINANCIAL REQUIREMENTS

L.1 Overall Financial Summary

All tables and figures in this appendix include inflation. Table L-1 presents a summary of the overall future financial requirements for the Wastewater activity in the Tasman District.

Table L-1: Funding Income Statement for the Next 10 years

	2014/15 Budget $000	2015/16 Budget $000	2016/17 Budget $000	2017/18 Budget $000	2018/19 Budget $000	2019/20 Budget $000	2020/21 Budget $000	2021/22 Budget $000	2022/23 Budget $000	2023/24 Budget $000	2024/25 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 (other than a targeted rate for water supply)	9,850	10,311	10,879	11,453	11,347	11,146	11,355	11,595	11,555	11,780	12,098
Subsidies and grants for operating purposes	0	0	0	0	0	0	0	0	0	0	0
Fees, charges and targeted rates for water supply	0	0	0	0	0	0	0	0	0	0	0
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	589	4,690	4,813	4,551	5,140	5,265	5,421	5,401	5,430	5,386	5,396
TOTAL OPERATING FUNDING	**10,438**	**15,001**	**15,692**	**16,004**	**16,487**	**16,411**	**16,776**	**16,996**	**16,985**	**17,166**	**17,495**
APPLICATIONS OF OPERATING FUNDING											
Payments to staff and suppliers	5,410	8,491	8,959	9,281	9,826	9,642	10,020	10,216	10,443	10,702	10,799
Finance costs	1,983	2,461	2,425	2,300	2,054	2,028	1,860	1,596	1,416	1,254	1,158
Internal charges and overheads applied	1,194	604	663	709	720	739	783	816	856	899	936
Other operating funding applications	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF OPERATING FUNDING	**8,587**	**11,557**	**12,048**	**12,290**	**12,600**	**12,409**	**12,663**	**12,628**	**12,715**	**12,855**	**12,893**
SURPLUS (DEFICIT) OF OPERATING FUNDING	**1,852**	**3,444**	**3,644**	**3,713**	**3,887**	**4,002**	**4,113**	**4,368**	**4,270**	**4,311**	**4,602**

	2014/15 Budget $000	2015/16 Budget $000	2016/17 Budget $000	2017/18 Budget $000	2018/19 Budget $000	2019/20 Budget $000	2020/21 Budget $000	2021/22 Budget $000	2022/23 Budget $000	2023/24 Budget $000	2024/25 Budget $000
SOURCES OF CAPITAL FUNDING											
Subsidies and grants for capital expenditure	0	0	0	0	0	0	0	0	0	0	0
Development and financial contributions	628	1,415	1,603	1,509	1,532	1,391	1,485	1,391	1,454	1,454	1,603
Increase (decrease) in debt	2,189	201	(2,238)	(2,116)	(2,585)	(1,601)	(4,306)	(4,931)	(3,429)	(2,006)	(1,204)
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
TOTAL SOURCES OF CAPITAL FUNDING	**2,817**	**1,616**	**(635)**	**(607)**	**(1,053)**	**(211)**	**(2,821)**	**(3,540)**	**(1,975)**	**(552)**	**399**
APPLICATIONS OF CAPITAL FUNDING											
Capital expenditure											
- to meet additional demand	468	0	63	108	0	0	70	0	688	1,166	1,290
- to improve the level of service	2,787	3,992	2,449	2,473	2,130	3,077	458	435	1,111	1,157	3,156
- to replace existing assets	1,233	1,068	498	525	704	715	763	393	496	1,436	555
Increase (decrease) in reserves	181	0	0	0	0	0	0	0	0	0	0
Increase (decrease) in investments	0	0	0	0	0	0	0	0	0	0	0
TOTAL APPLICATIONS OF CAPITAL FUNDING	**4,669**	**5,060**	**3,009**	**3,107**	**2,834**	**3,791**	**1,292**	**828**	**2,295**	**3,759**	**5,001**
SURPLUS (DEFICIT) OF CAPITAL FUNDING	**(1,852)**	**(3,444)**	**(3,644)**	**(3,713)**	**(3,887)**	**(4,002)**	**(4,113)**	**(4,368)**	**(4,270)**	**(4,311)**	**(4,602)**
FUNDING BALANCE	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

L.2 Total Expenditure

Figure L-1 and Figure L-2 show the total expenditure for the wastewater activity for the first 10 and 30 years respectively. Capital expenditure fluctuates over the 10 year period. The notable peaks in years 2015/16, 2019/20 and 2024/25 are due to the Motueka WWTP upgrade, the new Stafford Drive pump station and rising main and the replacement of the Pohara to Tarakohe pump stations and rising mains.

Operating expenditure increases from $14.6 to $17.1 million over the 10 year period. This is due to inflation, increasing loan servicing costs and network growth.

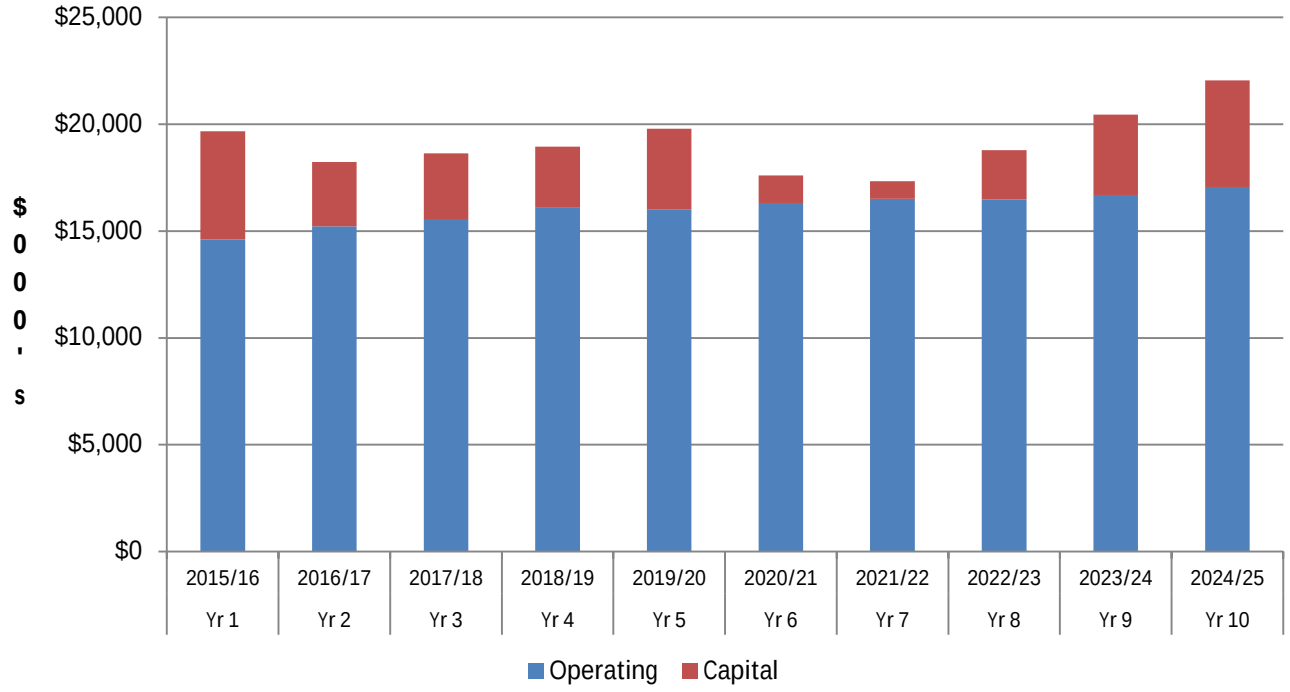


Figure L-1: Total Annual Expenditure Years 1-10

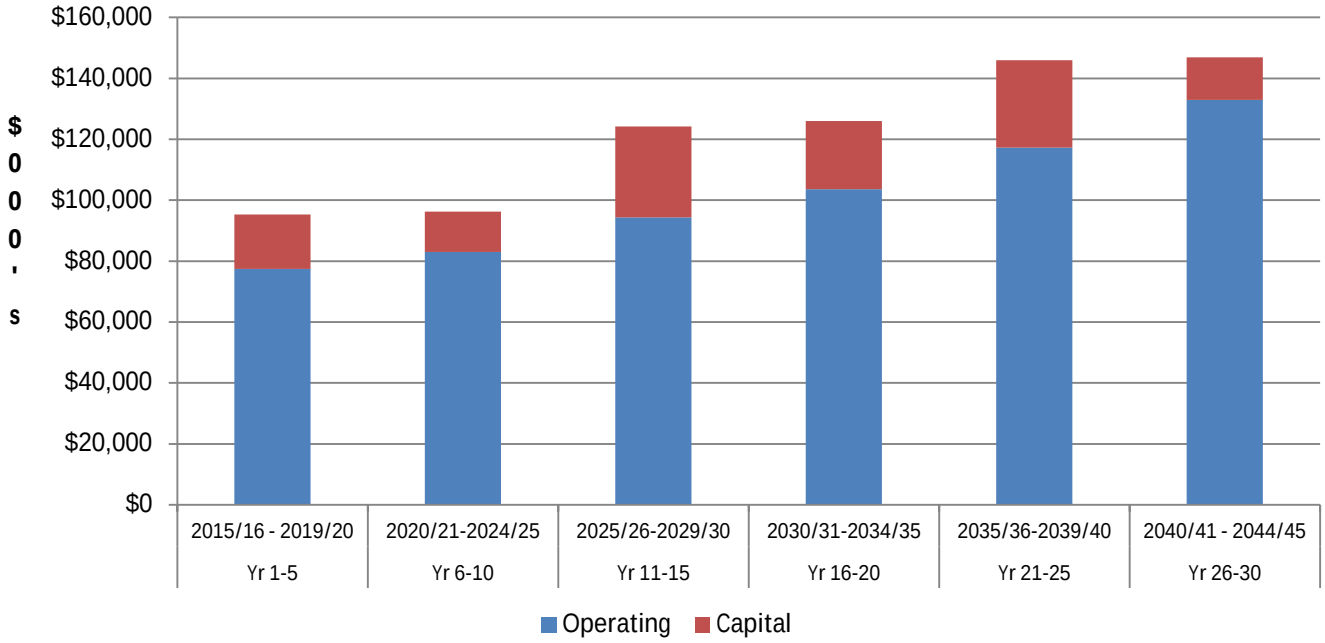


Figure L-2: Five Yearly Total Expenditure Years 1 to 30

L.3 Total Income

Figure L-3 and Figure L-4 show the total income for the wastewater activity fr the first 10 and 30 years respectively. Rates account for the majority of income, increasing over the first three years before levelling out for the following seven years. Development contributions are consistent over ten years while other income increases in year four due to expected income from trade waste charges.

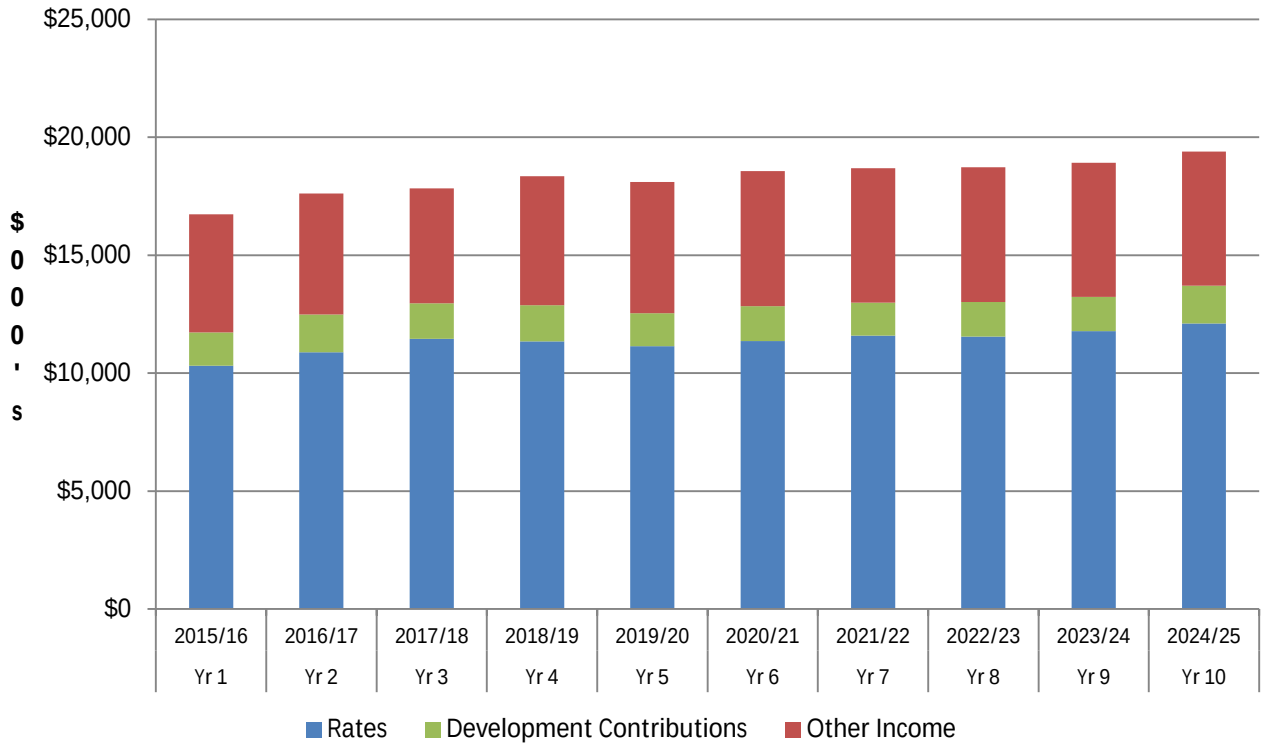


Figure L-3: Total Annual Income Years 1 to 10

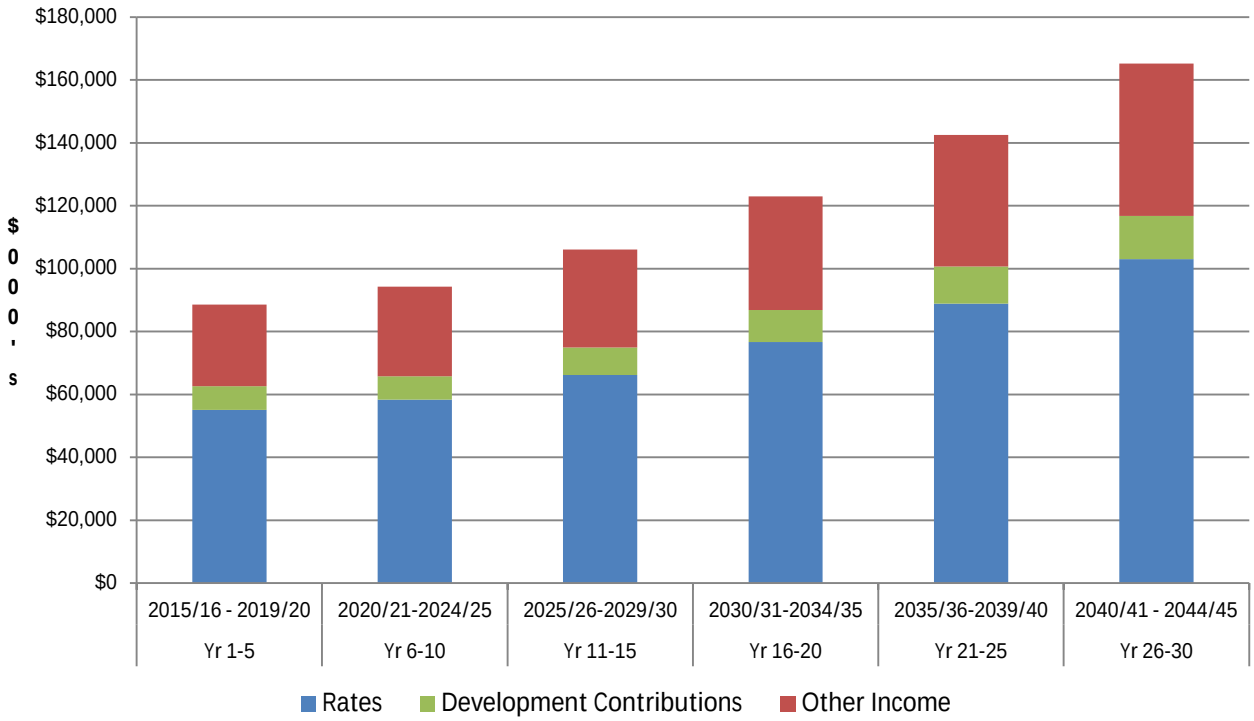


Figure L-4: Five Yearly Total Income Years 1 to 30

L.4 Operational Expenditure

Figure L-5 and Figure L-6 show the total operating expenditure for the wastewater activity for the first 10 and 30 years respectively. Operating expenditure is forecast to rise modestly, from $14.6 to $17 million over ten years. This represents an increase of less than 2% per annum. Cost increases in the longer term are higher at around 2.46% per annum. These increases are less than the cost of inflation, meaning the "real" costs of operating the wastewater network is forecast to fall over time.

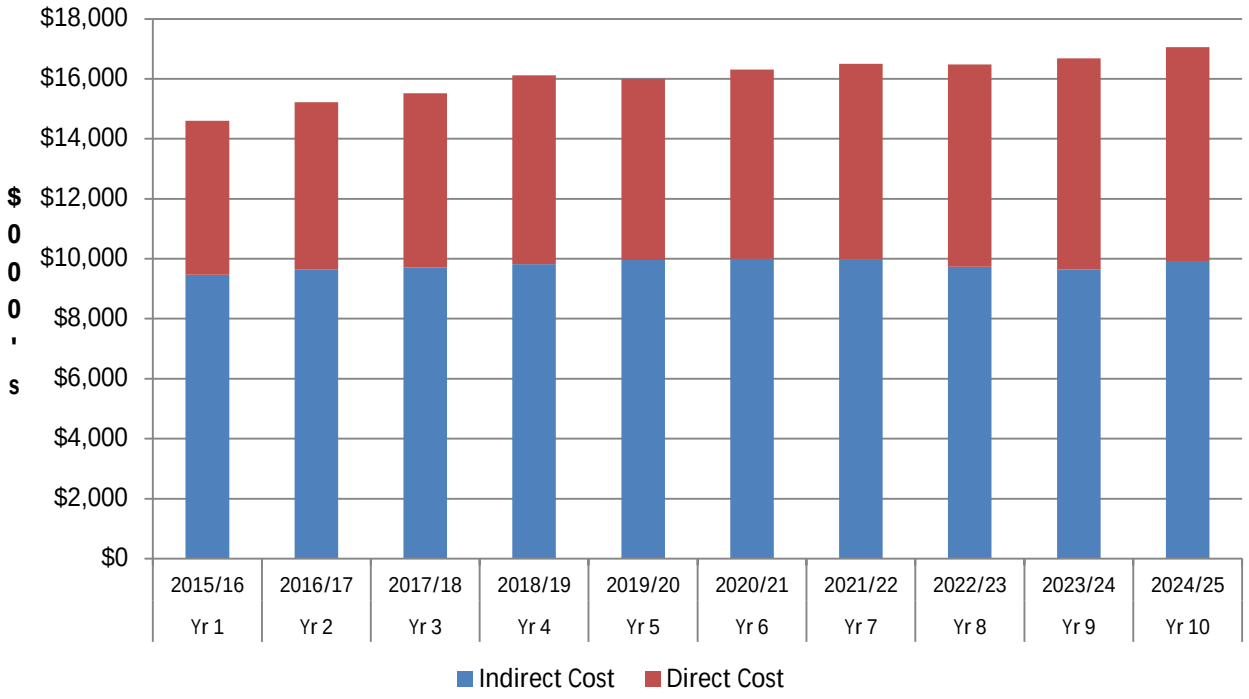


Figure L-5: Annual Operating Expenditure Years 1 to 10

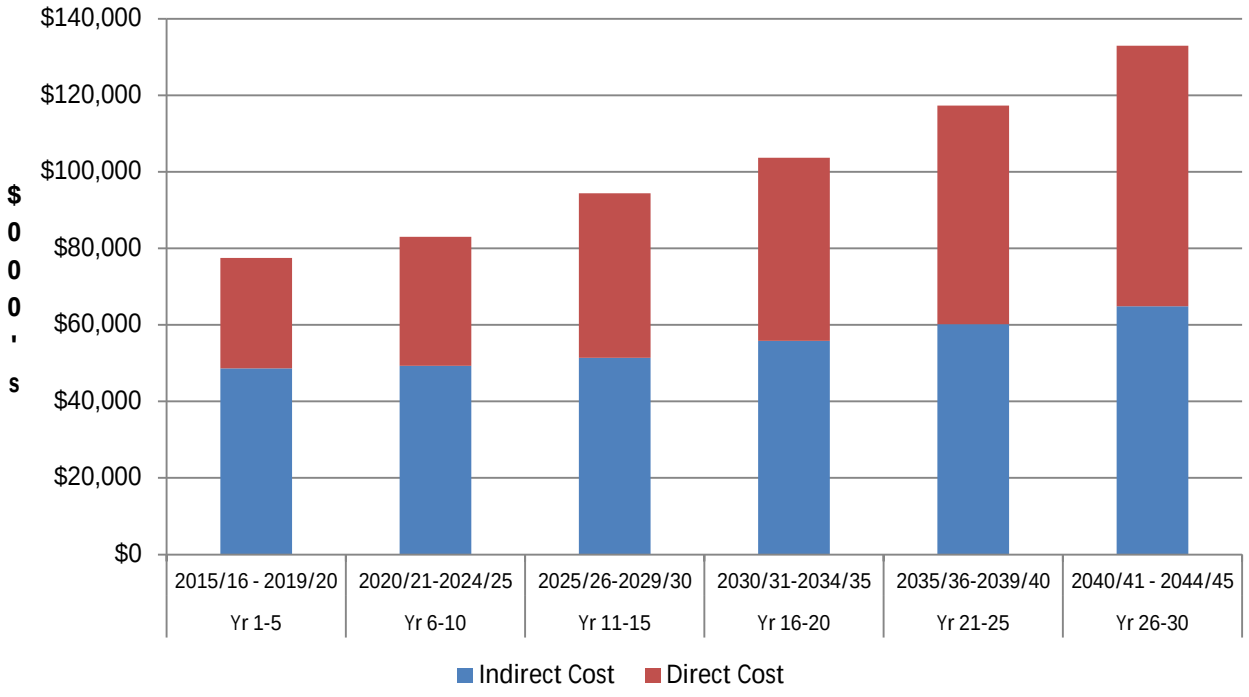


Figure L-6: Five Yearly Operating Expenditure Years 1 to 30

L.5 Capital Expenditure

Figure L-7 and Figure L-8 show the total capital expenditure for the wastewater activity for the first 10 and 30 years respectively. Capital expenditure is highly variable over the 10 year period totalling around $31m. Most expenditure is for level of service improvements associated with resource consents requirements or reducing the risk of overflows. In the longer term the focus of the programme changes to undertaking renewals as many of the district's wastewater pipes and manholes become due for replacement.

Key capital projects in the first ten years include:

- Motueka WWTP Upgrade, year 2015/16 - $2,700,000;
- Tapu Bay Pipeline (Kaiteriteri) replacement, years 2015 – 2018 - $3,775,200;
- new Stafford Drive (Ruby Bay) pump station and rising main to Mapua Wharf, years 2016 – 2020 - $3,165,491;
- Four Winds (Pohara) pump station and rising main upgrade, year 2018/19 - $1,304,270;
- Brightwater to Burkes Bank trunk main upgrade, years 2023 to 2025 - $2,259,100;
- Pohara/Tarakohe pump station and rising main upgrades, years 2023 – 2026 - $4,715,800.

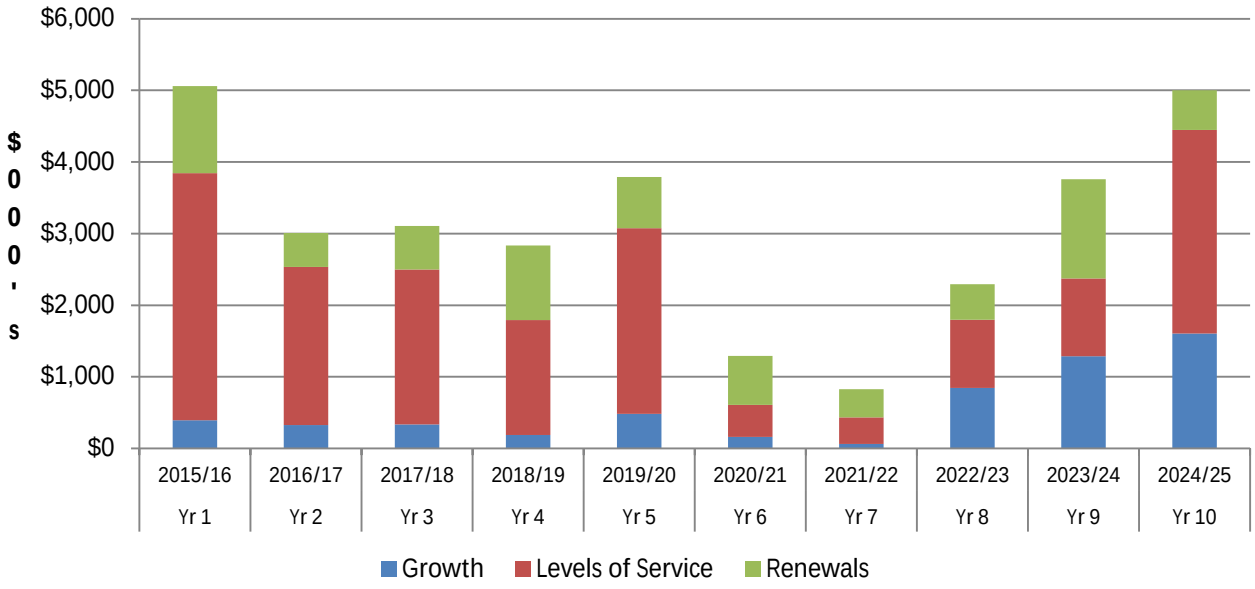


Figure L-7: Annual Capital Expenditure Years 1 to 10

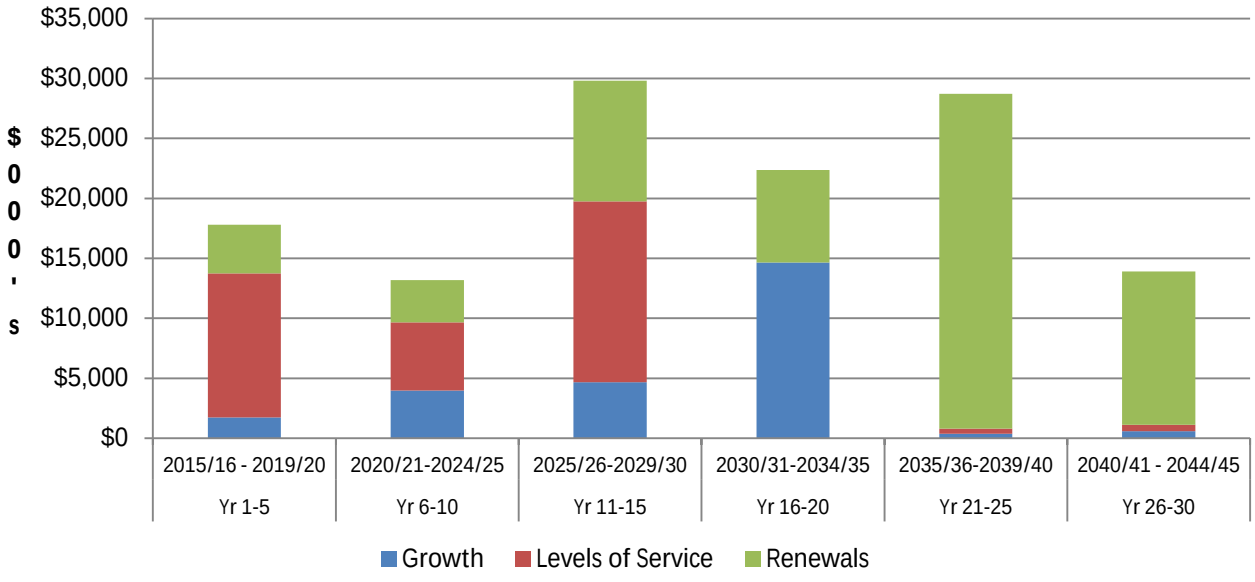


Figure L-8: Five Yearly Capital Expenditure Years 1 to 30

APPENDIX M FUNDING POLICY, FEES AND CHARGES (INCLUDING TRADE WASTE FEES)

M.1 Schedule of Fees and Charges

The Council sets a targeted rate for the purpose of meeting the operating costs of the general wastewater account. This charge (Pan Charge) is based on the number of water closets or urinals connected either directly or through a private drain, to a public wastewater drain. In respect of rating units used primarily as a residence for one household, no more than one water closet will be liable for this charge. The rates (in dollars per water closet or urinal) are detailed in the Long Term Plan and are reassessed every year and included in the Annual Plan.

M.1.1. Capital Charges

The Council sets a targeted rate for the purpose of meeting loan repayments for the capital costs of the Pohara Stage 3 Wastewater Schemes. This rate is based on the provision or availability of service and where the land is situated. The proposed rate will be set in relation to each rating unit in the Pohara Urban Drainage Area which has not elected to make a lump sum contribution to the capital cost of the scheme. The rates (in dollars per rating unit) are detailed in the Long Term Plan.

Where the rating unit is non-residential and connected, a charge is made for the second and subsequent water closets or urinals. Residential rating units with more than one separately used or inhabited part are charged for the second and subsequent water closets or urinals but not for more than one water closet per part. The rates (in dollars per water closet or urinal) are detailed in the Long Term Plan.

M.1.2. New Connection Charges

Connection fees are to be paid at the time the lateral connection is installed or, for existing connections where a connection fee has not been paid, at the time of building consent. Charges are separated into a charge for joining the wastewater scheme (equity) and a charge for making the physical connection. Outside the UDA the physical connection charge is the actual cost to make the connection while inside the UDA the charge is a flat fee, based on the historical average cost of making a connection.

M.1.3. Trade Waste Charges

Trade waste charges are additional to the pan charge as trade waste has characteristics that make it more difficult to treat and/or convey than domestic wastewater.

The Wastewater Bylaw sets out three types of trade waste; 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.

There is an annual charge only for permitted trade waste while 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.

APPENDIX N DEMAND MANAGEMENT

N.1 Introduction to 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 and performance of existing assets;
- reduce or defer the need for new assets;
- meet the organisation's strategic objectives (including social, environmental and political);
- deliver a more sustainable service;
- respond to customer needs.

N.2 Councils Approach for Demand Management

There are currently no initiatives aimed at reducing domestic demand for wastewater services. However, public education on water conservation will have an indirect effect on the volume of wastewater produced. Public education has been included within the water supply demand management plan.

The Council is continuing to investigate and identify major defects in reticulation systems where inflow and infiltration (I&I) is a significant issue. I&I results in high volumes of water entering the wastewater network, reducing the capacity within the infrastructure therefore increasing the risk for an overflow within the network and at the wastewater treatment plant (WWTP). Furthermore, a greater amount of wastewater needs to be treated at the WWTP. Reduction in I&I would result in optimising the performance of the network and WWTP, extend the life of mechanical assets, reduce the likelihood of an overflow and reduce the cost to operate and maintain the network and treat the wastewater effluent.

Historically, the Council has not aggressively targeted cost recovery from industrial trade waste. The Wastewater Bylaw comes into effect on 1 July 2015. The aim of the bylaw is to ensure cost recovery from trade waste producers for collecting and treating their waste. Cost recovery encourages trade waste producers to reduce their impact on the wastewater network. The largest trade waste producers now have permits in place and the Council will look at targeting medium trade waste producers throughout the district.

N.3 Climate Change

The RMA 1991 states, in Section 7, that a local authority shall take account of the effects of climate change when developing and managing its resources. The Local Government Act 2002 also contains requirements to "to meet the current and future needs of communities for good quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses". "Good quality" means infrastructure, services, and performance that are efficient and effective and appropriate to present and anticipated future circumstances.

This appendix summarises climate change information available to Council for asset and activity planning. Key information sources include:

- Climate Change Effects and Impacts Assessment: A Guidance Manual for Local Government in NZ, MfE (2008);
- Climate Change and Variability in the Tasman District, NIWA (2008);
- Mean High Water Springs report, NIWA (2013);
- Fifth Assessment Report, IPCC (2013);
- Extreme sea-level elevations from storm-tides and waves: Tasman and Golden Bay coastlines, NIWA (2014).

N.3.1 Changing Climatic Patterns

To assist local authorities, the Ministry for the Environment (MfE) prepared a report[1] to support councils' assessing expected effects of climate change, and to help them prepare appropriate responses when necessary.

In 2008, Tasman District Council commissioned NIWA to provide local interpretation[2]. The report examined the impacts of expected climate changes for the Tasman-Nelson region.

Subsequently, the Intergovernmental Panel on Climate Change (IPCC) has produced its fifth assessment report AR5 (2013). The AR5 is a result of substantial collective international science over the past five years, and has synthesised the current physical science basis for climate change understanding. The report covers the scope and significance of expected impacts, vulnerabilities and adaptation challenges arising at an international level, and national level.

AR5 does not fundamentally change our understanding of how global climate impacts will manifest themselves locally in Tasman, however Council will undertake a similar exercise to that of 2008 to commission NIWA to produce a Climate Change and Variability report specific to the Tasman District.

N.3.2 Temperature Change

Table N-1 shows that the mean annual temperatures in Tasman-Nelson are expected to increase in the future.

Table N-1: Projected Mean Temperature Change (Upper and Lower Limits) in Tasman-Nelson (in ^{o}C)

	Summer	Autumn	Winter	Spring	Annual
Projected changes 1990-2040	0.2 – 2.2	0.2 – 2.3	0.2 – 2.0	0.1 – 1.8	0.2 – 2.0
Projected changes 1990-2090	0.9 – 5.6	0.6 – 5.1	0.5 – 4.9	0.3 – 4.6	0.6 – 5.0

Source: Climate Change and Variability – Tasman District (NIWA, June 2008)

It is the opinion of NIWA[3] scientists that the actual temperature increase this century is very likely to be more than the 'low' scenario given here. Under the mid-range scenario for 2090, an increase in mean temperature of 2.0^{o}C would represent annual average temperature in coastal Tasman in 2090.

N.3.3 Rainfall Patterns

Table N-2 shows an expected increase in mean annual precipitation in Tasman-Nelson from 1990 to 2090.

Table N-2: Projected Mean Precipitation Change (Upper and Lower Limits) in Tasman-Nelson (in %)

	Summer	Autumn	Winter	Spring	Annual
Projected changes 1990-2040	-14, 27	-2, 19	-4, 9	-8,9	-3,9
Projected changes 1990-2090	-13, 30	-4, 18	-2, 19	-20, 19	-3, 14

Source: Climate Change and Variability – Tasman District (NIWA, June 2008)

N.3.4 Heavy Rainfall

A warmer atmosphere can hold more moisture (about 8% more for every 1^{o}C increase in temperature), so there is an obvious potential for heavier extreme rainfall under climate change.

More recent climate model simulations confirm the likelihood that heavy rainfall events will become more frequent.

[1] Climate Change Effects and Impacts Assessment A Guidance Manual for Local Government in NZ (MfE, May 2008)
[2] Climate Change and Variability – Tasman District (NIWA, June 2008)
[3] Climate Change and Variability – Tasman District (NIWA, June 2008)

N.3.5 Evaporation, Soil Moisture and Drought

From their report, NIWA conclude that there is a risk the frequency of drought (in terms of low soil moisture conditions) could increase as the century progresses, for the main agriculturally productive parts of Tasman District.

N.3.6 Climate Change and Sea Level

The MfE Report provides guidance for local government on coastal hazards and climate change. The report recommends:

For planning and decision timeframes out to the 2090s (2090–2099):

- a base value sea-level rise of 0.5 m relative to the 1980–1999 average should be used, along with;
- an assessment of the potential consequences from a range of possible higher sea-level rises (particularly where impacts are likely to have high consequence or where additional future adaptation options are limited). At the very least, all assessments should consider the consequences of a mean sea-level rise of at least 0.8 m relative to the 1980–1999 average. Guidance on potential sea-level rise uncertainties and values at the time (2008) is provided within the Guidance Manual to aid this assessment.

For planning and decision timeframes beyond the 2090s where, as a result of the particular decision, future adaptation options will be limited, an allowance for sea-level rise of 10 mm per year beyond 2100 is recommended.

Since the MfE guidance was published in 2008, the NZ Coastal Policy Statement has been updated, requiring identification of areas in the coastal environment that are potentially affected by coastal hazards over at least 100 years, taking into account the effects of climate change (Policy 24).

The two values of sea-level rise to be considered as a minimum number of rises for assessing risk of 0.5 m and 0.8 m by the 2090s in the 2008 MfE guidance are equivalent to rises of 0.7 m and 1.0 m extended out to 2115, which is “at least 100 years” from the present. These projections are for mean sea levels.

In 2013 the Council commissioned NIWA to prepare a report on mean high water springs (MHWS) for Tasman District, and includes a range of sea level rise scenarios[4]. Ongoing sea-level rise will require updates of the MHWS levels and for projecting MHWS levels into the future, whereby the appropriate sea-level rise is simply added to the ‘present day’ MHWS levels. The report includes worked examples for sea-level rise magnitudes of 0.7 m and 1.0 m, which extend the equivalent tie-point values for the 2090s (0.5 m and 0.8 m) in the Ministry for the Environment (2008) guidance out to 2115 to cover at least a 100-year period.

Subsequently, Tasman District Council was granted an Envirolink medium advice grant (1413-TSDC99)[5] for NIWA to develop defensible coastal inundation elevations and likelihoods as a result of combinations of elevated storm-tide, wave setup and wave run-up, along the “open coast” of the Tasman Bay and Golden Bay coastlines. The study excludes inlets and the west coast of Tasman District. The report includes an interactive ‘calculator’ which allows council to accommodate various predicted sea level rise scenarios and different beach profiles.

The extent of coastal inundation in Motueka is being modelled at the time of writing this AMP. The model is an extension of the work undertaken on the movement of the Motueka sand spit and impacts on Jacket Island. The Motueka modelling is expected to show the depth and extent of land affected by sea water inundation.

Mapua and Ruby Bay have also been subject to inundation modelling as a result of TRMP Plan Change 22. Future urban locations for inundation modelling have yet to be determined.

A wider coastal hazard assessment project for Tasman District commenced in 2014. The project will consider options for risk mitigation and adaptation. The results will be integrated into land use and infrastructure planning.

[4] NIWA Report: Mean High Water Spring (MHWS) levels including sea-level rise scenarios: Envirolink Small Advice Grant (1289-TSDC95), 4 September 2013 (revised 30 April 2014)
[5] NIWA Report: Extreme sea-level elevations from storm-tides and waves: Tasman and Golden Bay coastlines, March 2014.

N.3.7 Potential Impacts on Council's Infrastructure and Services

Table N-3 lists the potential impacts of climate change on Council's infrastructure and services.

Table N-3: Local Government Functions and Possible Negative Climate Change Outcomes

Function	Affected Assets of Activities	Key Climate Influences	Possible Effects
Water supply and irrigation	Infrastructure	Reduced rainfall, extreme rainfall events and increased temperature. Sea level rise.	Reduced security of supply (depending on water source). Contamination of water supply. Saltwater intrusion into coastal wells.
Wastewater	Infrastructure	Increased rainfall. Sea level rise.	More intense rainfall (extreme events) will cause more inflow and infiltration into the wastewater network. Wet weather overflow events will increase in frequency and volume. Longer dry spells will increase the likelihood of blockages and related dry weather overflows. Disruption of WWTPs due to coastal inundation or erosion impacts.
Stormwater	Reticulation Stopbanks	Increased rainfall. Sea-level rise.	Increased frequency and/or volume of system flooding. Increased peak flows in streams and related erosion. Groundwater level changes. Saltwater intrusion in coastal zones. Changing flood plains and greater likelihood of damage to properties and infrastructure.
Transportation	Road network and associated infrastructure (power, telecommunications, drainage).	Extreme rainfall events, extreme winds, high temperatures. Sea-level rise.	Disruption due to flooding, landslides, falling trees and lines. Direct effects of wind exposure on heavy vehicles. Melting of tar. Increased coastal erosion or storm induced damage.
Planning/policy development	Management of development in the private sector. Expansion of urban areas. Infrastructure and communications planning.	All.	Inappropriate location of urban expansion areas. Inadequate or inappropriate infrastructure, costly retro-fitting of systems.
Land management	Rural land management	Changes in rainfall, wind and temperature.	Enhanced erosion, Changes in type/distribution of pest species. Increased fire risk. Reduction in water availability for irrigation.

Function	Affected Assets of Activities	Key Climate Influences	Possible Effects
			Changes in appropriate land use. Changes in evapotranspiration..
Water management	Management of watercourses/lakes/ Wetlands.	Changes in rainfall and temperature.	More variation in water volumes possible. Reduced water quality. Sedimentation and weed growth. Changes in type/distribution of pest species.
Coastal management	Infrastructure. Management of coastal development.	Temperature changes leading to sea-level changes. Extreme storm events.	Coastal erosion and flooding. Disruption in roading, communications. Loss of private property and community assets. Effects on water quality.
Civil defence and emergency management	Emergency planning and response, and recovery operations.	Extreme events.	Greater risks to public safety, and resources needed to manage flood, rural fire, landslip and storm events.
Biosecurity	Pest management.	Temperature and rainfall changes.	Changes in the range and density of pest species
Open space and community facilities management	Planning and management of parks, playing fields and urban open spaces.	Temperature and rainfall changes. Extreme wind and rainfall events.	Changes/reduction in water availability. Changes in biodiversity. Changes in type/distribution of pest species. Groundwater changes. Saltwater intrusion in coastal zones. Need for more shelter in urban spaces.
Public Transport	Management of public transport. Provision of footpaths, cycleways etc.	Changes in temperatures, wind and rainfall.	Changed maintenance needs for public transport infrastructure. Disruption due to extreme events.
Waste management	Transfer stations and landfills.	Changes in rainfall and temperature.	Increased surface flooding risk. Biosecurity changes. Changes in ground water level and leaching.
Water supply and irrigation	Infrastructure.	Reduced rainfall, extreme rainfall events and increased temperature.	Reduced security of supply (depending on water source). Contamination of water supply.

Source: Climate Change Effects and Impacts Assessment (MfE, May 2008)

The Council has incorporated the potential impacts of climate change in the Engineering Standards and Policies.

APPENDIX O NOT RELEVANT TO THIS ACTIVITY

APPENDIX P POTENTIAL SIGNIFICANT EFFECTS

P.1 Significant Negative Effects

Potential significant negative effects and the proposed mitigation measures for the wastewater activity are listed below in Table P-1.

Table P-1: Potential Significant Negative Effects

Effect	Description	Council's 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.	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** 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.	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 Council's mobile generators. Several key pump stations have on-site generators.

Effect	Description	Council's Mitigation Measures
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.
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. 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.

P.2 Significant Positive Effects

Potential significant positive effects are listed below in Table P-2.

Table P-2: Potential Significant 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.

APPENDIX Q SIGNIFICANT ASSUMPTIONS, UNCERTAINTIES AND RISK MANAGEMENT

Q.1 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.

Q.1.1. Financial Assumptions

The following assumptions have been made:

- all expenditure is stated in dollar values as at 1 July 2014, with no allowance made for inflation;
- all costs and financial projections are GST exclusive.

Q.1.2. Asset Data Knowledge

While the Council has asset registers and many digital systems, processes and records, the Council does not have complete knowledge of the assets it owns. To varying degrees the Council has incomplete knowledge of asset location, asset condition, remaining useful life and asset capacities. This requires assumptions to be made on the total value of the assets owned, the time at which assets will need to be replaced and when new assets will need to be constructed to provide better service.

The Council considers these assumptions and uncertainties constitute only a small risk to the financial forecasts because:

- significant amounts of asset data is known;
- asset performance for significant structures is well known from experience;
- there are plans to upgrade significant extents of poorly performing assets.

An assumption that is considered significant is the majority of wastewater reticulation is in satisfactory condition. The known exceptions to this are inflow and infiltration which is an issue in Motueka, Takaka and Richmond, and the disposal capacity of the Motueka WWTP.

The Council has deferred most of its pipe rehabilitation works in the first three years of this AMP while it investigates the extent, significance, and prioritises and re-budgets a more targeted advance pipe renewal programme. The Council has allocated expenditure to complete this investigation. The Council has allocated expenditure for a major upgrade of the Motueka WWTP.

Q.1.3. Growth Forecasts

Growth forecasts are inherently uncertain and involve many assumptions. The growth forecasts also have a very strong influence on the financial forecasts, especially in Tasman District where population growth is higher than the national average. The growth forecasts underpin and drive:

- the asset creation programme;
- the Council's income forecasts including rates and development contributions;
- funding strategies.

Thus the financial forecasts are sensitive to the assumptions made in the growth forecasts. If the growth is significantly different it will have a significant impact. If higher, the Council may need to advance capital projects. If it is lower, the Council may have to defer planned works.

The significant assumptions in the growth forecasts are covered in the explanation on method and assumptions in Appendix F: Demand and Future New Capital Requirements.

Q.1.4. Timing of Projects

The timing of many projects can be well defined and accurately forecast because there are few limitations on the implementation other than the community approval through the LTP/Annual Plan processes. However, the timing of some projects is highly dependent on some factors which are beyond the Council's ability to fully control. These include factors like:

- obtaining resource consent, especially where community input is necessary;
- obtaining community support;
- obtaining a subsidy from central government;
- securing land purchase and / or land entry agreements;
- the timing of large private developments;
- the rate of population growth.

In particular, projects that are only required to facilitate new subdivisions will be delivered just in time to support this growth. Where these issues may be a factor, allowances have been made to complete the projects in a reasonable timeframe. However, these plans may not always be achieved and projects may be deferred as a consequence.

Q.1.5. Funding of Projects

When forecasting projects that will not occur for a number of years, a number of assumptions have to be made about how the project will be funded.

Funding assumptions are made about:

- whether projects will qualify for subsidies;
- whether major beneficiaries of the work (for example a 'wet' factory that gets a connection) will contribute to the project, and if so, how much will they pay;
- whether the network has compulsory connections or voluntary connections;
- whether and how much should be funded from development contributions, and if so how much is appropriate;
- whether the Council will subsidise the development of the project.

The correctness of these assumptions has major consequences on the affordability especially of new projects. The Council has considered each new project and concluded for each a funding strategy. The funding strategy will form one part of the consultation process as these projects are advanced toward construction.

Q.1.6. Accuracy of Project Cost Estimates

The financial forecasts have been estimated from the best available knowledge. The level of uncertainty inherent in each project is different depending on how much work has been done in defining the problem and determining a solution. In many cases, only a rough order cost estimate is possible because little or no preliminary investigation has been carried out. It is not feasible to have all projects in the next 30 years advanced to a high level of accuracy. It is general practice for all projects in the first three years and projects over $500,000 in the first 10 years to be advanced to a level that provides reasonable confidence with the estimate.

To get consistency and formality in cost estimating, the following practices have been followed:

- applying financial assumptions listed in Q.1.1;
- a project estimating template has been developed that provides a consistent means of preparing estimates;
- where practical, a common set of rates has been determined;

- specific provisions have been included to deal with non-construction costs like contract preliminary and general costs, engineering costs, Council staff costs, resource consenting costs and land acquisition costs;
- specific provisions have been included to deal with construction contingency, project complexity and estimate accuracy as described below.

A 10% construction contingency provision has been included to get a "Base Project Estimate" to reflect the uncertainties in the unit rates used. A further provision has been added to reflect the uncertainties in the scope of the project – ie, is the adopted solution the right solution? Often detailed investigation will reveal the need for additional works over and above that initially expected. The amount added depends on the amount of work already done on the project. Each project has been assessed as being at the project lifecycle stage as detailed in Table Q-1 below, and from this an estimated accuracy assessed. The estimate accuracy is added to the Base Project Estimate to get the Total Project Estimate – the figure that is carried forward into the financial forecasts. Project complexity ratings of "simple", "normal" or "complex" lead to different cost estimate multipliers of 0.8, 1.0 and 1.3 respectively.

Table Q-2 below shows the complexity ratings assigned for large projects. In the 2015-2045 AMP preparation cycle, contingencies were reduced to allow for the reduced risk of full cost overruns on a programme-wide basis. Individual projects are now more likely to go over budget and Council has specifically accepted this risk.

Table Q-1: Life Cycle Estimate Accuracies

Stage in Project Lifecycle	Estimate Accuracy
Concept / Feasibility	± 20%
Preliminary Design / Investigation	± 10%
Detailed Design	± 5%

Table Q-2 details estimate accuracies and significant uncertainties for major projects in the next three years of this AMP.

Table Q-2: Major Schemes (>500k) Assigned to the First Three Years of this AMP

Project	Project Stage and Estimate Accuracy	Complexity	Project Value in First 3 years	Factors that Could affect Estimate Accuracy
Tapu Bay Rising Main Replacement	Concept	Complex	$3,775,200	Ground conditions, construction method, archaeological sites, pipe route, number of pump stations needed
Motueka WWTP Upgrade	Concept	Complex	$2,700,000	Treatment and disposal concept, resource consent process and conditions, ground conditions.
New Telemetry	Preliminary Design	Simple	$625,000	Coverage, condition of existing control panels.

Q.1.7. Land Purchase and Access

The Council has made the assumption that it will be able to purchase land, and/or secure access to land to complete projects. The risk of delays to project timing is high due to possible delays in obtaining the land. The Council works to mitigate this issue by undertaking consultation with landowners sufficiently in advance of the construction phase of a project. The consequence of not securing land and/or land access for projects may require redesign which can have a moderate cost implication. If delays do occur, it may influence the level of service the Council can provide.

Q.1.8. Future Changes in Legislation and Policy

The legal and planning framework under which local government operates frequently changes. This can significantly affect the feasibility of projects, how they are designed, constructed and funded. The Council has assumed that there will be no major changes in legislation or policy. The risk of significant changes remains high owing to the nature of government policy formulation. If major changes occur it will impact on required expenditure and the Council has not provided mitigation for this effect.

Q.1.9. Resource Consents

The need to secure and comply with resource consents can materially affect asset activities and the delivery of projects.

Complying with resource consent conditions can affect the cost and time required to perform an activity, and in some instances determine whether or not the activity can continue. The Council has assumed that there will be no material change in operations due to consenting requirements over the period of the AMP.

There may be some risk of change in the following areas of the activity:

- operation and maintenance costs when consents are renewed or new consents granted;
- operation of an asset where compliance with existing consents is difficult.

Securing resource consent is often a significant task in the successful delivery of a project or in the management of a particular activity. Consent applications may consume considerable time and resources, particularly in the instance of a publicly notified application, or where a decision is subject to appeal.

The Council has assumed that there will be no material change in the need to secure consents for activities and that consent costs for future projects will be broadly in line with the cost of consents in the past.

Q.1.10. Disaster Fund Reserves

That the level of funding held in the Council's disaster fund reserves and available from insurance cover will be adequate to cover reinstatement following emergency events. The risk of inadequate reserves and recovery from insurance claims would mean deferral of future projects to provide any financial shortfall required to cover reinstatement costs.

Q.1.11. System Capacity

The Council has a growing knowledge and understanding of network capacity, however, the knowledge is not complete. The Council is collecting wastewater asset data and modelling the networks to enhance the understanding of system capacity.

System capacity upgrades have been planned where shortfalls are known or where growth is expected, however the models will provide new information that may create a need for new projects and/or re-prioritisation of existing projects. If the network capacity is lower than assumed, the Council may be required to advance capital works projects to address this issue. The risk of this occurring is low; however the impact on expenditure could be large. If the network capacity is greater than assumed, the Council may be able to defer works. The risk of this occurring is low and is likely to have little impact.

Q.1.12. Pipeline Renewals

This AMP assumes that pipeline renewals expenditure is sufficient to address an aging network. Pipeline renewals programmes are generally based on asset age rather than condition. The Council has had a programme of advanced pipeline renewals to reduce the significant groundwater infiltration problems in Motueka. The programme has now been deferred for three years so a more structured assessment can be completed to determine a robust renewals expenditure programme.

Q.1.13. Inflow and Infiltration

Identifying and resolving all inflow and infiltration issues is not economically sustainable as the operational costs of transporting and treating the additional flows is often less than the cost to repair the network. However, high inflow/infiltration flows can lead to capacity issues requiring early upgrades and may limit upgrade options. Therefore the Council has planned a three year window where no advance renewals will be

completed. Instead a robust renewal programme will be developed to identify where repairs can effectively reduce I&I with a long term cost benefit.

Q.2 Risk Management

Q.2.1. Why We Do Risk Management

Risk management is the systematic process of identifying, analysing, evaluating, treating and monitoring risk events so that they are mitigated as far as possible, refer to Figure Q-1.

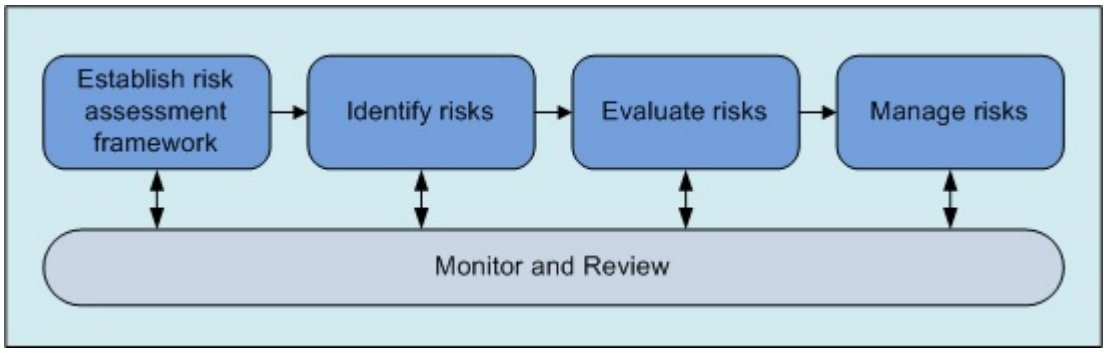


Figure Q-1: Risk Management Process

Risk management involves assessing each risk event and identifying an appropriate treatment. Treatments are identified to try and manage or reduce the risk. There are some risk events for which it is near impossible or not feasible to reduce the likelihood of the event occurring, or to mitigate the effects of the risk event if it occurs eg, extreme natural hazards. In this situation the most appropriate response may be to accept the risk as is, or prepare response plans and consider system resilience.

Well managed risks can help reduce:

- disruption to infrastructure assets and services;
- financial loss;
- damage to the environment;
- injury and harm;
- legal obligation failures.

Q.2.2. Our Approach to Risk Management

Q.2.2.1 Risk Assessment Framework

The Council's risk assessment framework was developed in 2011 to be consistent with *AS/NZS IS 4360:2004 Risk Management.* It assesses risk exposure by considering the consequence and likelihood of each risk event. Risk exposure is managed at three levels within the Council organisation, refer to Figure Q-2:

- Level 1 – Corporate Risks;
- Level 2 – Activity Risks;
- Level 3 – Operational Risks.

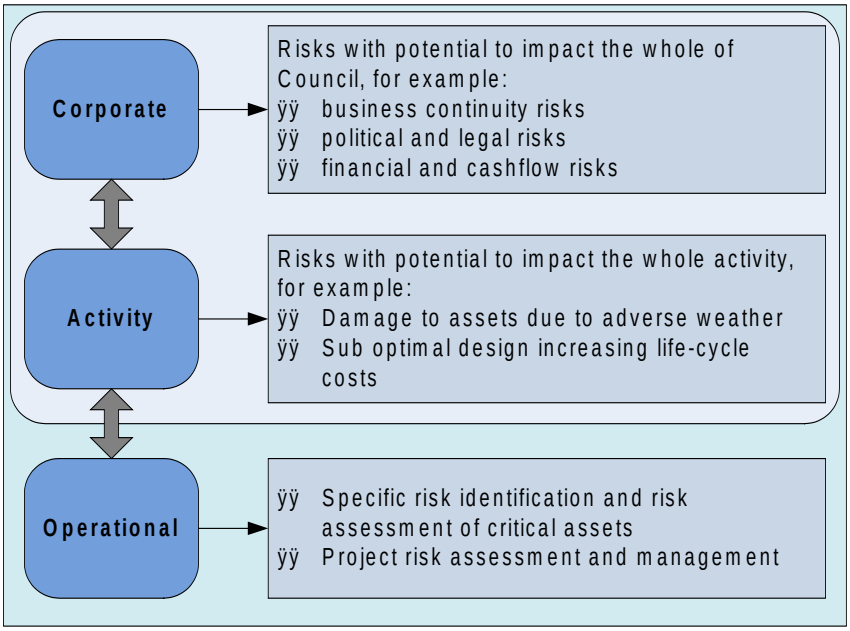


Figure Q-2: Levels of Risk Assessment

The risk assessment framework discussed in Section Q.2.2.1 and Q.2.2.2 is applied to Corporate and Activity specific risks. There are some risk events which could be interpreted as either Corporate or Activity level risks. For example, a risk event may have the potential to impact the Council organisation as a whole or many parts of the organisation if it was to occur. In the first instance this type of risk would be classified as a Corporate risk. There is however a secondary consideration that needs to be given, that is, "is the risk best managed in different ways within the separate activities?" For example, a large seismic event will likely impact the Council organisation as a whole, however each activity will prepare for and manage these risks differently; eg, water reservoirs may be strengthened to minimise the risk of collapse, or corporate services may prepare a business continuity plan.

The Council is yet to implement consistent risk management processes at the operational risk level. Development of the critical asset framework is discussed in Section Q.2.5. The Council plans to develop a framework for assessing maintenance and project risks in 2015.

Q.2.2.2 Risk Identification and Evaluation

The risk management framework requires the activity management team to identify activity risks and to then assess the risk, likelihood and consequence for each individual event. The definitions of risk, likelihood and consequence are defined in Table Q-3.

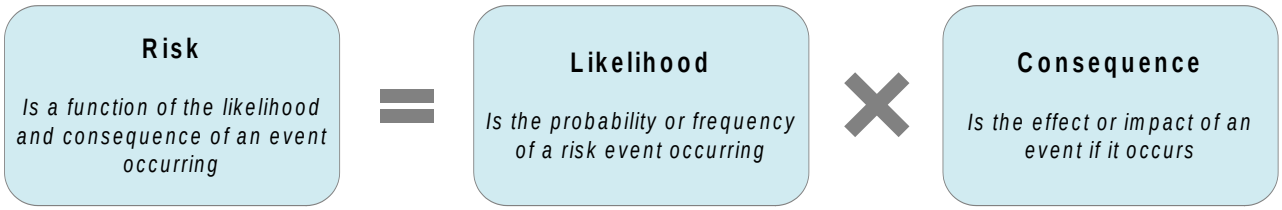


Figure Q-3: Risk Assessment Definitions

The Council has developed objective based scales to assist asset managers when determining the likelihood and consequence scores for all risk events. The consequence of each risk event is assessed on a scale of one-to-100 for all of the consequence categories listed in Table Q-3 and the respective consequence rating score (Table Q-4) is selected. The detailed objective scale used to assess the consequence rating of the risk event against the risk is attached to this appendix.

Table Q-3: Risk Consequence Categories

Category		Sub Category	Description
Consequence Categories	Service Delivery	N/A	Asset's compliance with performance measures and value in relation to outcomes and resource usage.
	Social / Cultural	Health and Safety	Impact as it relates to death, injury, illness, life expectancy and health.
		Community Safety and Security	Impact on perceived safety and reported levels of crime.
		Community / Social / Cultural	Damage and disruption to community services and structures, and effect on social quality of life and cultural relationships.
		Compliance / Governance	Effect on the Council's governance and statutory compliance.
		Reputation / Perception of Council	Public perception of the Council and media coverage in relation to the Council.
	Environment	Natural Environment	Effect on the physical and ecological environment, open space and productive land.
		Built Environment	Effect on amenity, character, heritage, cultural, and economic aspects of the built environment.
	Economic	Direct Cost	Cost to the Council.
		Indirect Cost	Cost to the wider community.

Table Q-4: Consequence Ratings

Consequence Rating					
Description	Extreme	Major	Medium	Minor	Negligible
Rating	100	70	40	10	1

Table Q-5 provides a summary of the likelihood assessment criteria.

Table Q-5: Likelihood Ratings

Likelihood Rating			
Description	**Frequency**	**Criteria**	**Rating**
Almost certain	Greater than every 2 years	The threat can be expected to occur **or** A very poor state of knowledge has been established on the threat	5
Likely	Once per 2-5 years	The threat will quite commonly occur **or** A poor state of knowledge has been established on the threat	4
Possible	Once per 5-10 years	The threat may occur occasionally **or** A moderate state of knowledge has been established on the threat	3
Unlikely	Once per 10-50 years	The threat could infrequently occur **or** A good state of knowledge has been established on the threat	2
Very Unlikely	Less than once per 50 years	The threat may occur in exceptional circumstances **or** A very good state of knowledge has been established on the threat	1

Using the existing risk management framework summarised in Table Q-6, the risk score is calculated by multiplying the likelihood of the risk event with the highest rated individual consequence category for that risk event to generate a risk score, as shown in Figure Q-4.

Table Q-6: Risk Scores

Risk Scoring Matrix		**Consequence**				
		Negligible	Minor	Medium	Major	Extreme
Likelihood	Almost Certain	5	50	200	350	500
	Likely	4	40	160	280	400
	Possible	3	30	120	210	300
	Unlikely	2	20	80	140	200
	Very Unlikely	1	10	40	70	100

Risk Score
Extreme
Very High
High
Moderate
Low
Negligible

An example of how the risk score is calculated is below.

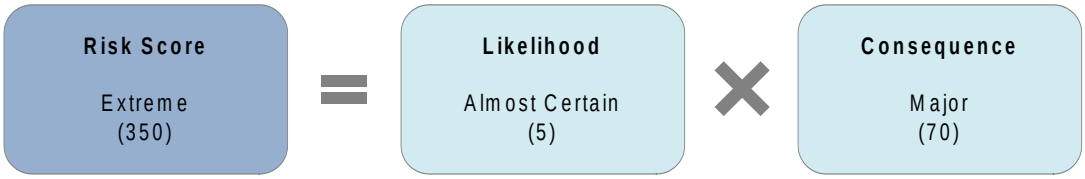


Figure Q-4: Risk Score Calculation

Risk scores are generated for inherent risk, current risk and target risk.

inherent risk is the raw risk score without taking into consideration any current or future controls. Current risk the level of risk to the Council after considering the effect of existing risk management controls. Target risk is the level of risk the Council expects and wants to achieve after applying the proposed risk management controls.

In some cases it is not feasible to reduce the inherent risk and in this case the Council would accept the inherent risk level as the current and target risk levels.

Q.2.2.3 Limitations

The processes outlined above forms a conservative approach to evaluating risk and could been seen as representing the worst case scenario. It also provides limited ability to differentiate the priority of risks due to the potential to score highly in at least one of the consequence categories; this tends to create a smaller range of results. For example two events with a likelihood of "Almost Certain (5)" have been compared below:

- **Event A** – scores "Major (70)" for one consequence category and "Negligible (1)" in all the remaining consequence categories, this will generate an inherent risk score of "Extreme (350)".
- **Event B** – scores "Medium (40)" in all 10 consequence categories, this will generate an inherent risk score of "Very High (200)".
- **Event C** – scores "Major (70)" in all 10 consequence categories, this will generate an inherent risk score of "Extreme (350)".

These examples show that there are limitations for the Council when prioritising risk events, especially those that may have a wider impact on the activity eg, Event B or C. Consequently, the Council acknowledges that there are some downfalls in its existing framework and it has proposed to undertake a full review of its risk management framework during 2015.

Q.2.3. Corporate Risk Mitigation Measures

Q.2.3.1 Asset Insurance

Tasman District Council has various mechanisms to insure assets against damage. These include:

- Tasman District Council insures its above ground assets, like buildings, through private insurance which is arranged as a shared service with Nelson City and Marlborough District Councils.
- Tasman District Council is a member of the Local Authority Protection Programme (LAPP) which is a mutual pool created by local authorities to cater for the replacement of some types of infrastructure assets following catastrophic damage by natural disasters like earthquake, storms, floods, cyclones, tornados, volcanic eruption and tsunami. These infrastructure assets are largely stopbanks along rivers and underground assets like water and wastewater pipes and stormwater drainage.
- Taman District Council has a Classified Rivers Protection Fund, which is a form of self-insurance. The fund is used to pay the excess on the LAPP insurance, when an event occurs that affects rivers and stopbank assets.
- Tasman District Council has a General Disaster Fund, which is also a form of self-insurance. Some assets, like roads and bridges, are very difficult to obtain insurance for or it is prohibitively expensive if it can be obtained. For these reasons Council has a fund that it can tap into when events occur which damage Council assets that are not covered by other forms of insurance. Some of the cost of damage to these assets is covered by central government, for example the New Zealand Transport Agency covers around half the cost of damage to local roads and bridges (as set out in the co-investment rate/financial assistance rate).

Refer to the Council's Financial Strategy for insurance disclosures as required under Section 31 of the Local Government Act.

Q.2.3.2 Civil Defence Emergency Management

The Civil Defence Emergency Management Act 2002 was developed to ensure that the community is in the best possible position to prepare for, deal with, and recover from local, regional and national emergencies.

The Act requires that a risk management approach be taken when dealing with hazards including natural hazards. In identifying and analyzing these risks the Act dictates that consideration is given to both the likelihood of the event occurring and its consequences. The Act sets out the responsibilities for Local Authorities. These are:

- ensure you are able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency;
- plan and provide for civil defence emergency management within your own district.

Tasman District Council and Nelson City Council jointly deliver civil defence as the Nelson Tasman Civil Defence Emergency Management (CDEM) Group. The vision of the CDEM Group is to build "A resilient Nelson Tasman community".

Civil Defence services are provided by the Nelson Tasman Emergency Management Office. Other council staff are also heavily involved in preparing for and responding to civil defence events. For example, Council monitors river flows and rainfall, and has a major role in alleviating the effects of flooding.

The Nelson Tasman Civil Defence Emergency Management Group developed a Regional Plan in 2012. The Plan sets out how Civil Defence is organised in the region and describes how the region prepares for, responds to and recovers from emergency events. A review is scheduled for 2016/2017.

Q.2.3.3 Engineering Lifelines

The Nelson Tasman Engineering Lifelines (NTEL) project commenced in 2002. The NTEL Group formed in 2003. Its report *Limiting the Impact* was reviewed in 2009. The purpose of the report was:

- to help the Nelson Tasman region reduce its infrastructure vulnerability and improve resilience through working collaboratively;
- to assist Lifeline Utilities with their risk reduction programmes and in their preparedness for response and recovery;
- to provide a mechanism for information flow during and after an emergency event.

The NTEL Group is in the process of applying for funding to hold a further review to begin in 2015.

The project was supported and funded by the two controlling authorities, Nelson City Council and Tasman District Council. Following the initial start-up forum in 2002, a Project Steering Group was formed and initial project work was completed. The initial work to investigate risks and assess vulnerabilities from natural hazard disaster events was divided amongst five task groups:

- Hazards Task Group;
- Civil Task Group;
- Communications Task Group;
- Energy Task Group;
- Transportation Task Group.

These groups were then tasked with assessing the risk and vulnerability of segments of their own networks against the impacts of major natural hazard disaster events. These natural hazards included:

- earthquake;
- landslide;
- coastal / flooding.

The Nelson Tasman region is geotechnically complex with high probabilities of earthquake, river flooding and landslides. By identifying impacts that these hazards may have on the local communities, the NTEL Group aims to have processes in place to allow the community to return to normal functionality as quickly as possible after a major natural disaster event.

To date the project has identified the impacts of natural hazards and the critical lifelines of the regions service networks including communication, transportation, power and fuel supply, water, sewerage, and stormwater networks. The initial NTEL assessment work is the first stage of an on-going process to gain a more comprehensive understanding of the impacts of natural hazards in the Nelson Tasman region.

Q.2.4. Recovery Plans

These plans are designed to come into effect in the aftermath of an event causing widespread damage and guide the restoration of full service.

The Recovery Plan for the Nelson Tasman Civil Defence and Emergency Management Group (June 2008) identifies recovery principles and key tasks, defines recovery organisation, specifies the role of the Recovery Manager, and outlines specific resources and how funds are to be managed. A review of the Recovery Plan is required and a budget has been applied for.

Information about welfare provision in the Nelson-Tasman region is contained in a Welfare Plan (December 2005), which gives an overview of how welfare will be delivered during the response and recovery phases of an emergency.

The plan is a coordinated approach to welfare services for both people and animals in the Nelson Tasman region following an emergency event.

Q.2.5. Business Continuance

The Council has a number of processes and procedures in place to ensure minimum impact to wastewater services in the event of a major emergency or natural hazard event. They include:

- the Council has limited business continuity plans that were developed around the influenza pandemic planning in 2014;
- the Council's contractors have up to date Health and Safety Plans in place;
- the System Operating Plans include Contingency Plans.

Q.2.6. Wastewater Risks

In order to identify the key activity risks the asset management team has applied a secondary filter to the outcomes of the risk management framework. This is necessary to overcome the limitations of the framework. To apply this secondary filter the asset management team have used their network knowledge and engineering judgement to identify the key activity risks. The key risks relevant to the wastewater activity are summarised in Table Q-7.

Table Q-7: Key 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
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

An asset management improvement item included in Appendix V is to review all inherent, current and target risk scores following the adoption of the amended framework.

Q.2.6.1 Other Risks Mitigation Measures

General risk mitigation is fostered by continual staff and system development to progressively improve the "what" and "how" we are undertaking the activity.

Q.2.7. Critical Assets

A revised critical asset framework was developed in 2014. The framework has largely been applied to the Confirm dataset so all wastewater assets have an initial rating. It is planned to review and refine the ratings in 2015. Figure Q-5 represents the process used by the activity planning team to assess assets for criticality.

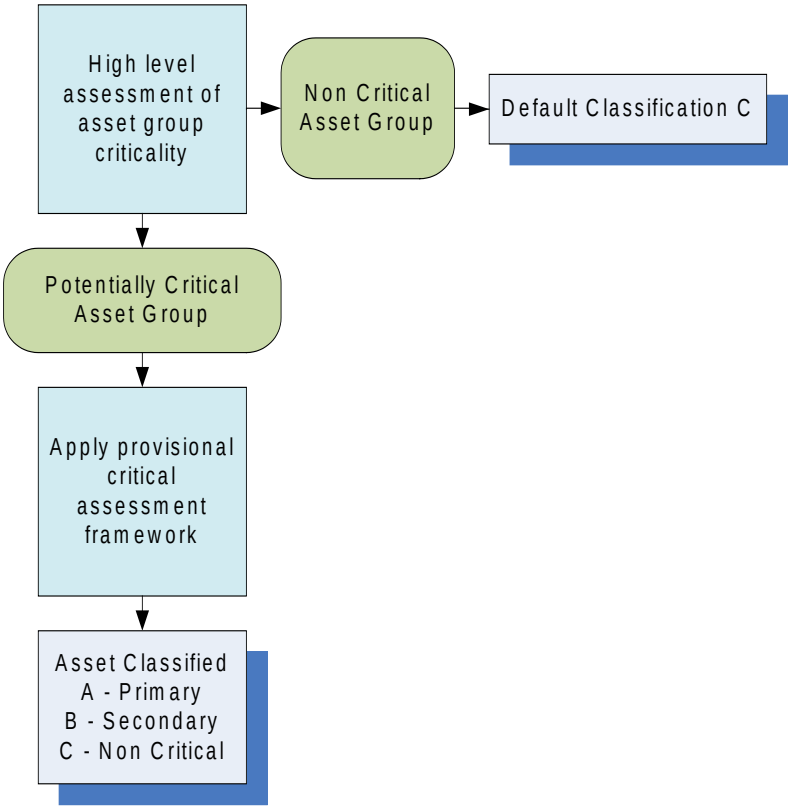


Figure Q-5: Critical Asset Assessment Process

A high level assessment was first undertaken to determine if some asset groups as a whole could be considered either critical or non-critical. This initial assessment determined that wastewater treatment plants, pump stations, rising mains, gravity trunk mains and telemetry were critical.

The following asset groups were considered non-critical:

- cleaning eyes at property boundaries;
- reticulation that serves less than 100 residential properties.

The key inputs into the framework and critical asset decision making process are:

- Nelson Tasman Engineering Lifelines report;
- water and wastewater critical assets;
- network and asset engineer's knowledge and experience.

Q.2.7.1 Critical Asset Assessment

Criticality assessments will be completed using the framework set out in Table Q-8 below.

To assess for criticality individual assets will be evaluated against all seven of the criteria categories listed below and a sub score will be selected based on the impact potential if the asset was to catastrophically fail. The sub score is then multiplied by the weighting to produce a weighted score. The final score is the total sum of the weighted scores for all seven categories.

Table Q-8: Critical Asset Framework

Criteria Category	Severity	Level	Score	Weighting	Weighted Score
Quality (includes Health)	Safe (meets standards)	1	0	5	0
	Safe but marginal aesthetic	2	2	5	10
	Safe but low aesthetic	3	3	5	15
	Safe based on track record	4	5	5	25
	Unsafe	5	10	5	50
Disruption to level of service	Nil	1	0	4	0
	Minor	2	2	4	8
	Moderate	3	6	4	24
	Extreme	4	10	4	40
Number of properties affected	Nil	1	0	5	0
	Individual	2	2	5	10
	Individual Street (2-100)	3	4	5	20
	Community 101-500 s	4	6	5	30
	Widespread (>500 or >1 community)	5	10	5	50
Time to repair	<1/2 day	1	1	3	3
	<1 day	2	2	3	6
	1-3 days	3	5	3	15
	>3 days	4	10	3	30
Environmental impacts	Nil	1	0	2	0
	Minor	2	2	2	4
	Moderate	3	4	2	8
	Extreme	4	10	2	20
Cultural impacts	Nil	1	0	2	0
	Minor	2	2	2	4
	Moderate	3	4	2	8
	Extreme	4	10	2	20
Cost of repair	<$1000	1	1	4	4
	$1K - $10K	2	3	4	12
	$10K - $50K	3	5	4	20
	<$50K<250K	4	10	4	40
	$250K+	5	15	4	60
Affect on other assets	Nil	1	0	3	0
	Minor	2	5	3	15
	Several non-critical assets	3	10	3	30
	1 critical asset or many assets	4	15	3	45
	>1 critical asset	5	20	3	60

Once the final score has been calculated the critical asset hierarchy can be determined as shown in Table Q-9. The critical asset hierarchy will be a key input that informs asset life-cycle decisions, especially when considering how much the Council should prolong the life of an asset.

Table Q-9: Critical Asset Hierarchy

Category	Description	Final Score
A	Primary	>150
B	Secondary	75-149
C	Non Critical	<75

Q.2.8. Projects to Address Risk Shortfalls

The Council plans to reduce its risk profile by undertaking specific projects and asset management activities. The mitigation measures included within the 30 year wastewater programme include:

Asset Management Activity

- asset revaluations;
- developing, improving and update System Operating Plans.

Operational Project

- desludging of oxidation ponds;
- health and safety assessment and minor retrofitting of pumping stations;
- regular odour management strategy reviews;
- inflow and infiltration repairs;
- implement the Trade Waste Bylaw and review regularly.

Capital Project

- upgrade critical rising mains and pump stations in Pohara and Mapua to match population growth;
- upgrade Motueka WWTP;
- continue with digitising telemetry installations and installing telemetry are all pumping station;
- upgrade pipelines with existing capacity issues;
- upgrade trunk main between Wakefield and Hope to match population growth;
- prioritise and undertake renewals based on condition and risk.

Strategic Study

- develop a new inflow and infiltration programme for the Motueka network;
- wastewater network modelling;
- identify critical assets.

Q.2.9. Critical and Significant Assets

Table Q-10 shows critical assets and associated projects.

Table Q-10: Critical and Significant Assets

Asset Key	Identified as Critical Main in 688

Key	Measure to be considered
	Measure in place
	No measure in place - not necessary
	No measure in place - Project needed

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
District			140099	Trade Waste Bylaw Implementation																			
Wakefield / Brightwater	General Area			System Operating Plan development																			
	Rising/Trunk Mains	**Brightwater Main PS - Hope**	140038 140039	Pipeline easement Trunk main replacement																			
		Malthouse Cr PS - Waimea West PS																					
		Waimea West Road PS - Bryant Road PS																					
		Bryant Road PS - Brightwater Main PS																					
		Wakefield - Brightwater Main PS	140039	Trunk main replacement																			
		Arrow Street																					
		Pitfure Road																					
		Whitby Road - Brightwater																					
	Pump Stations	Brightwater Main PS	140068	Safety assessment																			
		Sommerville PS	140068	Safety assessment																			
		Waimea West Road PS	140068	Safety assessment																			
		Malthouse Cr PS	140053 140068	Telemetry Safety assessment																			
	Treatment Plant	NRSBU																					
Richmond / Hope	General Area			System Operating Plan development																			
	Rising/Trunk Mains	Brightwater to Three Brothers Corner	140039	Trunk main replacement																			
		RM from Sunview Heights PS																					
		RM from Hill St PS - Gladstone Rd																					

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
		Bateup Rd																					
		Gladstone Rd	140031	Gladstone Rd pipeline upgrade																			
		Oxford Street	140034	Oxford Street pipeline upgrade																			
		Queen Street	140035	Queen Street pipeline upgrade																			
		Wensley Road	140033	Wensley Road pipeline upgrade																			
		Hill St - Beach Road																					
		Headingly Lane PS - Beach Road PS																					
	Pump Stations	423 Hill Street PS	140068	Safety assessment																			
	Pump Stations	Sunview Heights PS	140068	Safety assessment																			
	Pump Stations	Headingly Lane PS	140068	Safety assessment																			
	Treatment Plant	NRSBU																					
Mapua / Ruby Bay	General Area			System Operating Plan updates																			
	Rising/Trunk Mains	to Ruby Bay Shop PS																					
	Rising/Trunk Mains	Ruby Bay Shop PS - Taits PS																					
	Rising/Trunk Mains	Taits PS - Warren Place PS	140011	PS & RM upgrade																			
	Rising/Trunk Mains	Warren Place PS - 102 Aranui Rd PS																					
	Rising/Trunk Mains	102 Aranui Rd PS - Aranui/Higgs PS																					
	Rising/Trunk Mains	Aranui /Higgs PS - Mapua Wharf PS																					
	Rising/Trunk Mains	**Mapua Wharf PS - Rabbit Island**	140017	Channel rising main replacement																			
	Rising/Trunk Mains	Mapua Leisure Park PS - Toru Street PS																					
	Rising/Trunk Mains	Toru Street PS - Mapua Wharf PS																					
	Rising/Trunk Mains	Higgs Rd 3 PS - Higgs Rd 2 PS																					
	Rising/Trunk Mains	Higgs Rd 2 PS – Higgs Rd 1 PS																					
	Rising/Trunk Mains	Higgs Rd 1 PS - Aranui Road/Higgs PS																					
	Pump Stations	Mapua Wharf PS	140068																				
	Pump Stations	Aranui/Higgs Road PS	140014 140068	PS upgrade and storage Safety assessment																			
	Pump Stations	Leisure Park PS	140068	Safety assessment																			
	Pump Stations	Toru Street PS	140013 140068	PS upgrade and storage Safety assessment																			
	Pump Stations	Higgs Road 1 PS	140012 140053 140068	PS upgrade and storage Telemetry Safety assessment																			
	Pump Stations	Higgs Road 2 PS	140053	Telemetry																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
			140068	Safety assessment																			
		Higgs Road 3 PS	140053 140068	Telemetry Safety assessment																			
		Aranui Road PS	140016 140068	Aranui combined PS upgrade Safety assessment																			
		Tait PS	140044 140068	New PS & RM upgrade Safety assessment																			
		Ruby Bay Shop PS	140015 140068	PS upgrade and storage Safety assessment																			
		Warren Place PS	140068	Safety assessment																			
	Treatment Plant	NRSBU																					
Motueka	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Riwaka - Motueka WWTP	140040	Motueka Bridge - Motueka WWTP																			
		Everett Street PS - Trewavas Street PSs																					
		Trewavas Streets PS - Thorp Street PS	140024	Thorp Street pipe replacement																			
		Thorp Street PS - Motueka WWTP	140025	Thorp Street pipe replacement																			
		Motueka Quay PS - Thorp Street PS																					
		Courtney Street PS - Thorp Street PS																					
		High Street																					
		Tudor Street																					
	Pump Stations	Goodman PS	140068	Safety assessment																			
		Woodlands PS	140068	Safety assessment																			
		Courtney Street PS	140068	Safety assessment																			
		Tarrant Place PS	140068	Safety assessment																			
		Teece PS	140068	Safety assessment																			
		Motueka Quay PS	140068	Safety assessment																			
		Totara Park PS	140068	Safety assessment																			
		Thorp Street (Benseman) PS	140068	Safety assessment																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
		13 Trewavas Street PS	140068	Safety assessment																			
		45 Trewavas Street PS	140022 140068	Storage Safety assessment																			
		86 Trewavas Street PS	140068	Safety assessment																			
		Fearons Garden	140068	Safety assessment																			
		Pethybridge PS	140053 140068	Telemetry Safety assessment																			
		Beach Front PS	140068	Safety assessment																			
		Everett Street PS	140068	Safety assessment																			
		Oaks Village PS	140053 140068	Telemetry Safety assessment																			
		Atkins PS	140053 140068	Telemetry Safety assessment																			
		Puketutu	140068	Safety assessment																			
		Sanderlane PS	140053 140068	Telemetry Safety assessment																			
	Treatment Plant	Motueka WWTP	140019	WWTP upgrade																			
Riwaka / Kaiteriteri	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Honeymoon Bay PS - Breaker Bay PS																					
		Breaker Bay PS - Martin Farm PS																					
		Little Kaiteriteri PS - Martin Farm Road PS																					
		Martin Farm Rd PS - Kaiteriteri Vessel																					
		Martin Farm Rd - Martin Farm Rd PS																					
		Kaiteriteri Vessel - Stephens Bay PS																					
		Stephens Bay PS - Tapu Bay PS																					
		Tapu Bay - Riwaka	140007	Tapu Bay pipeline replacement																			
		Green Tree PS - Riwaka Main PS																					
		Jenkins SH60 PS - School Rd PS																					
		School Rd PS - Riwaka Main PS																					
		Lodder Lane PS - Riwaka Main PS																					
		Riwaka Main PS - Motueka WWTP	140006	Replace rising main through Girvins																			
	Pump Stations	Honeymoon Bay PS	140053	Telemetry Safety																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
			140068	assessment																			
		Breaker Bay PS	140053 140068	Telemetry Safety assessment																			
		Martin Farm Road PS	140068	Safety assessment																			
		Little Kaiteriteri PS	140068	Safety assessment																			
		Stephens Bay PS	140005	Additional storage																			
		Tapu Bay PS	140068	Safety assessment																			
		Riwaka Main PS	140068	Safety assessment																			
		Jenkins SH60 PS	140053 140068	Telemetry Safety assessment																			
		School Road PS	140053 140068	Telemetry Safety assessment																			
		Green Tree Lane PS	140053 140068	Telemetry Safety assessment																			
		Lodder Lane PS	140053 140068	Telemetry Safety assessment																			
		Kaiteriteri Vessel																					
	Treatment Plant	Motueka WWTP																					
Takaka	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Three Oaks PS - Sunbelt Crescent PS																					
		Sunbelt Crescent PS - WWTP																					
		Waitapu Rd PS - WWTP																					
		Rototai Rd PS - Primary School PS																					
		Primary School PS - Waitapu Rd PS																					
		Dodson Rd PS - Park Avenue PS																					
		Park Avenue PS - Motupipi St PS																					
		Motupipi St PS - WWTP																					
		Hiawatha Lane PS - WWTP																					
	Pump Stations	Waitapu Rd PS	140068	Safety assessment																			
		Hiawatha Lane PS	140068	Safety assessment																			
		Motupipi Street PS	140068	Safety assessment																			
		Primary School PS	140068	Safety assessment																			
		Rototai Road PS	140053 140068	Telemetry Safety assessment																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
		Park Ave PS	140053 140068	Telemetry Safety assessment																			
		Dodson Road PS	140053 140068	Telemetry Safety assessment																			
		Sunbelt Crescent PS	140068	Safety assessment																			
	Treatment Plant	Takaka WWTP	140047	Generator																			
Pohara	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Tarakohe PS - Pohara Valley Rd PS	140029	PS & RM upgrade																			
		Pohara Valley Rd PS - Pohara Camp PS	140029	PS & RM upgrade																			
		Pohara Camp PS - Four Winds PS	140029	PS & RM upgrade																			
		Golf Club PS - Four Winds PS																					
		Four Winds PS - Boyle Street PS	140030	PS & RM upgrade																			
		Boyle St PS - Delaneys PS																					
		Delaneys PS - Burnside PS																					
		Burnside PS - Three Oaks PS																					
	Pump Stations	Three Oaks PS	140053 140068	Telemetry Safety assessment																			
		Burnside PS	140068	Safety assessment																			
		Delaneys PS	140068	Safety assessment																			
		Boyle Street PS	140053 140068	Telemetry Safety assessment																			
		Golf Club PS	140053 140068	Telemetry Safety assessment																			
		Four Winds PS	140030 140068	PS & RM upgrade Safety assessment																			
		Pohara Camp PS	140029 140068	PS & RM upgrade Safety assessment																			
		Pohara Valley PS	140029 140068	PS & RM upgrade Safety assessment																			
		Tarakohe PS	140029 140053 140068	PS & RM upgrade Telemetry Safety assessment																			
	Treatment Plant	Takaka WWTP	140047	Generator																			
Ligar Bay / Tata	General Area		SS 39	System Operating																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
Beach				Plan Update																			
	Rising/Trunk Mains	Tata Beach PS - Ligar Bay PS	140008	PS & RM upgrade																			
		Ligar Bay PS - Tarakohe PS	140009	PS & RM upgrade																			
	Pump Stations	Ligar Bay PS	140008 140068	PS & RM upgrade Safety assessment																			
		Tata Beach PS	140009 140053 140068	PS & RM upgrade Telemetry Safety assessment																			
	Treatment Plant	Takaka WWTP	140047	Generator																			
Collingwood	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Beach Road PS - Elizabeth Street PS																					
		Elizabeth Street PS - Wallys Rest PS																					
		Wallys Rest PS - WWTP																					
	Pump Stations	Beach Road PS	140068	Safety assessment																			
		Motels PS	140068	Safety assessment																			
		Wallys Rest PS	140068	Safety assessment																			
	Treatment Plant	Collingwood WWTP	140004	Improve wetland hydraulics																			
Upper Takaka	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Upper Takaka PS - WWTP																					
	Pump Stations	Upper Takaka PS	140068	Safety assessment																			
	Treatment Plant	Upper Takaka WWTP																					
Tapawera	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	**Motueka Valley Highway - WWTP**																					
	Treatment Plant	Tapawera WWTP																					
St Arnaud	General Area			System Operating Plan Updates																			
	Rising/Trunk Mains	Kerr Bay Rd PS - WWTP	140043	Rising main upgrade																			
		Beech Nest PS - WWTP																					
	Pump Stations	PS 1 (Lake)	140068	Safety assessment																			
		PS 2 (Alpine Lodge)	140068	Safety assessment																			
		Beech Nest PS	140068	Safety																			

Wastewater Scheme	Asset Group	Critical & Significant Asset	Project ID	Project Name	Telemetry System	Generators	Storage/Containment	Duty/Standby pumps	Signage/Access Control	Odour Management	Improve Connectivity / Hydraulics	Duplicate Main	Relocate Main	Regulatory Consents	Environmental/Performance Monitoring	System Operating Plans	Health & Safety Assessments	24hr Customer Response	Asset Management System/Confirm	Maintenance & Professional Service Contracts	Design Standards	Bylaws	CD Emergency Management
				assessment																			
	Treatment Plant	St Arnaud WWTP	140041	New inflow meter																			
Murchison	General Area			System Operating Plan Update																			
	Rising/Trunk Mains	Hotham Street PS - Waller Street PS																					
		Waller Street PS - WWTP																					
	Pump Stations	Waller Street PS	140068	Safety assessment																			
		Hotham Street PS	140068	Safety assessment																			
	Treatment Plant	Murchison WWTP																					

APPENDIX R LEVELS OF SERVICE, PERFORMANCE MEASURES AND RELATIONSHIP TO COMMUNITY OUTCOMES

R.1 Introduction

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

The levels of service for wastewater have been developed to contribute to the achievement of the stated Community Outcomes that were developed in consultation with the community, but taking into account:

- the Council's statutory and legal obligations;
- the Council's policies and objectives;
- Local Government Act's mandatory performance measures;
- the Council's understanding of what the community is able to fund.

R.2 How do our Wastewater Activities Contribute to the Community Outcomes?

Through consultation, the Council identified eight Community Outcomes. These Community Outcomes are linked to the four well beings and Council Objectives as shown in Table A-1 in Appendix A.

R.3 Level of Service

Levels of service are attributes that Tasman District Council expects of its assets to deliver the required services to stakeholders.

A key objective of this plan is to clarify and define the levels of service for the wastewater assets, and then identify and cost future operations, maintenance, renewal and development works required of these assets to deliver that service level. This requires converting user's needs, expectations and preferences into measurable levels of service.

Levels of service can be strategic, tactical, operational or implementation and 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 Council bylaws that impact on the way assets are managed (eg. 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.

R.3.1. Industry Standards and Best Practice

The AMP acknowledges the Council's responsibility to act in accordance with the legislative requirements that impact on the Council's wastewater activity. A variety of legislation affects the operation of these assets, as detailed in Appendix A.

R.3.2. Prioritisation Related to Available Resources

Sometimes customers may expect levels of service that are beyond what the Council can afford as determined by the limits set in the Council's fiscal envelope. Consequently tradeoffs need to be made and the priority is given to the 'need to have' as opposed to the 'nice to have'. For example, expenditure that is

considered necessary to enable an asset to continue to perform in a cost-effective manner will be prioritised above an amenity improvement.

R.3.3. What Level of Service Do We Seek to Achieve?

Level of services need to be reviewed and upgraded on a continuous basis in line with legislative and regulatory changes, and feedback from customers, consultation, internal assessments, audits and strategic objectives, and funding availability.

The levels of service that the Council has adopted for this AMP have been developed from the levels of service prepared in the July 2006 and July 2009 AMPs. They take into account feedback from various parties including Audit New Zealand, mandatory performance measures, industry best practice and ease of measuring and reporting of performance measures.

The Council has decided to reduce the number of levels of service reported in the LTP, showing only those that are considered to be customer-focused. The AMP extends the levels of service and performance measures to include the more technical measures associated with the management of the activity.

Table R-3 details the levels of service and associated performance measures for the wastewater activity. Those shaded are the customer-focused measures which are included in the LTP. The table sets out the Councils current performance and the targets for the next three years and by the end of the next 10 year period.

The levels of service and performance measures are consulted on and adopted as part of the LTP consultation process.

R.3.4. Levels of Service Linked to Legislation

In 2010, the Local Government Act 2002 was amended to require the Secretary for Local Government to make rules specifying non financial performance measures for local authorities to use when reporting to their communities. In November 2013 the Non-Financial Performance Measures Rules 2013 was signed and came into force on 30 July 2014. The mandatory performance measures relating to the wastewater activity have been included in Table R-1.

R.3.5. Plans The Council Has Made to Meet the Levels of Service

In preparing the future financial forecasts, the Council has included specific initiatives to meet the current or intended future levels of service. A summary of these is included below.

- The Council is making a capital works investment to upgrade existing wastewater assets and improve levels of service in the wastewater systems. This includes:
  - replacing and upgrading the Tapu Bay rising main;
  - new Stafford Drive and Aranui pump stations to accommodate growth;
  - upgrading pump stations and rising mains in Ruby Bay and Mapua to accommodate growth;
  - upgrading pump stations and rising mains between Four Winds and Tata Beach to accommodate growth;
  - upgrading the trunk main between Wakefield and Three Brothers Corner to accommodate growth.
- the Council also plans to invest in renewing wastewater assets including:
  - Thorp Street rising main replacements;
  - Motueka gravity pipeline renewals to reduce infiltration, provide for growth and improve treatment plant performance;
  - Richmond gravity pipeline renewals to reduce inflow and infiltration, overflows and loading on the Beach Road pump station;
  - renewing pumps, upgrading electrical systems and replacing analogue telemetry with digital telemetry at numerous pump stations or other facilities as they become due for renewal;
  - pipeline renewals throughout the district as they reach the end of their useful life;

- resource consent renewals for the wastewater systems.

· The Council has allocated an annual budget of $5.1 million increasing to $6.0 million over 30 years for the Operation and Maintenance (O&M) of its wastewater assets. O&M costs include:

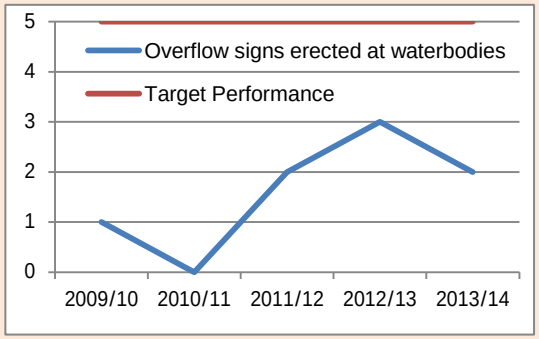
- day to day operation and maintenance of all wastewater assets;
- electricity supply;
- NRSBU charges;
- desludging of oxidation ponds;
- CCTV of reticulation throughout the district;
- professional services for investigative work/studies.

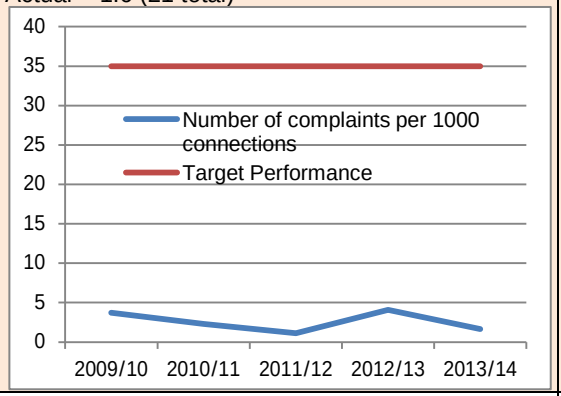
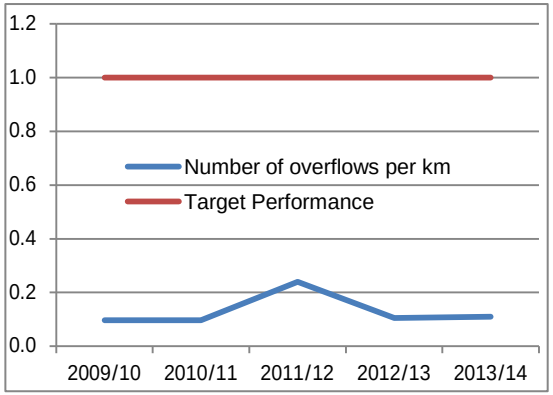
The Council has a budget provision over the first three years of $495,000 to investigate priorities, options for and the need for future pipeline renewals to reduce inflow and infiltration into the Motueka and Richmond wastewater networks.

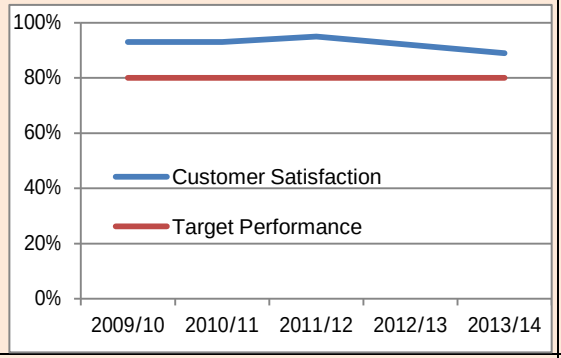
The WWTP at Bell Island is managed by a joint venture with Nelson City Council which is called the Nelson Regional Sewerage Business Unit (NRSBU). This is not a Council-owned asset and therefore its performance is not measured or reported within Councils level of service.

Table R-1 summarises the levels of service and performance measures for the wastewater activity. Shaded rows are the levels of service and performance measures to be included in the Long Term Plan. The current performance is based on the 2013/14 financial year.

Table R-1: Assessment of Current Performance against Levels of Service and Intended Future Performance

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2024/25
				Year 1	Year 2	Year 3	
				2015/16	2016/17	2017/18	
Community Outcome: Our unique natural environment is healthy and protected.							
1	Our wastewater systems do not adversely affect the receiving environment.	All necessary consents are held. Measured by resource consents held in Council's NCS database.	Actual = 100%	*100%*	*100%*	*100%*	*100%*
2		The number of times temporary wastewater overflow signs are erected at waterways is minimised. Measured by the number of contractor job requests.	Actual = 2 	*<5*	*<5*	*<5*	*<5*
3		Compliance with resource consents for discharges from wastewater systems is achieved, as measured by the number of; · abatement notices, · infringement notices, · enforcement orders, or · convictions	Actual = 0 Actual = 0 Actual = 0 Actual = 0	≤1 0 0 0	≤1 0 0 0	≤1 0 0 0	≤1 0 0 0

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2024/25
				Year 1	Year 2	Year 3	
				2012/13	2013/14	2014/15	
Community Outcome: Our urban and rural environments are pleasant, safe and sustainably managed.							
4	Our wastewater systems reliably take our wastewater with a minimum of odours, overflows or disturbance to the public.	The total number of complaints received about: odour, system faults, blockages, and Council's response to issues for each 1000 properties connected to the wastewater system is less than the target.	Actual = 1.6 (21 total) 	*≤35*	*≤35*	*≤35*	*≤35*
5		Number of overflows resulting from faults in Council's wastewater systems. Measured by the number in Confirm.	Actual = 0.11 (42 overflows with a total of 380 km) 	*<1 per km*	*<1 per km*	*<1 per km*	*<1 per km*
6		The number of dry weather wastewater overflows from all wastewater systems, expressed per 1000 wastewater connections in Tasman District. Dry weather is defined as a continuous 96 hours with less than 1mm of rain within each	This cannot currently be measured.	≤5	≤5	≤5	≤5

		24 hour period.					
ID	**Levels of Service (we provide)**	**Performance Measure** (We will know we are meeting the level of service if…)	**Current Performance**	**Future Performance**			**Future Performance (targets) in Year 10 2024/25**
				Year 1	**Year 2**	**Year 3**	
				2015/16	**2016/17**	**2017/18**	
7		Number of overflows from pump stations with operational telemetry shall be less than the target. As recorded in Confirm.	This cannot currently be measured.	<2	<2	<2	<2
Community Outcome: Our infrastructure is safe, efficient and sustainably managed.							
8	Our wastewater activities are managed at a level that satisfies the community.	Percentage of customers satisfied with the wastewater service meets out targets. As measured through the annual residents' survey.	Actual = 89% 	*80%*	*80%*	*80%*	*80%*
9	Our systems are built, operated and maintained so that failures can be managed and responded to quickly.	Overflows resulting from blockages or other faults in the wastewater system are responded to within the target timeframes. As recorded in Confirm. **Attendance time** - from the time Council received notification of the fault to the time that service personnel reach the site, and **Resolution time** - from the time notification is received to the time that the service personnel confirm resolution of the blockage or other fault.	This cannot currently be measured	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs	*Median* ≤60 mins *Median* ≤9 hrs
10		All pump stations have standby pumps in case of mechanical failures. As detailed in the asset register.	Actual = 100% The spare Boyle St pump is stored at the Takaka WWTP.	100%	100%	100%	100%

ID	Levels of Service (we provide)	Performance Measure (We will know we are meeting the level of service if…)	Current Performance	Future Performance			Future Performance (targets) in Year 10 2024/25
				Year 1	Year 2	Year 3	
				2015/16	2016/17	2017/18	
11		Our pump stations have storage or standby electrical generation in case of power failure. As detailed in the Asset Register.	Actual = 23% of pump stations have emergency storage. Three pump stations also have on-site standby electrical generation. However, there are two portable generators available which are able to serve up to 53% of pump stations.	50%	50%	50%	70%
12		Our pump stations have telemetry to allow automatic communication of failures. As detailed in the Asset Register.	Actual = 68% 53 of the 78 pump stations have telemetry.	70%	70%	70%	100%
13		Critical assets are identified and included in the Activity Risk Register.	Actual = Critical assets are identified and assessed for Risk. Where mitigations measures are required, they have been included for action in the AMP.	In place	In place	In place	In place

APPENDIX S COUNCIL'S DATA MANAGEMENT, ASSET MANAGEMENT PROCESSES AND SYSTEMS

S.1 Introduction

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 standards. The IIMM describes the Asset Management (AM) process as a step by step process applied to an activity or network level, to manage assets from planning to disposal or renewal. This process is shown in Figure S-1.

Each of these processes is summarised in this Appendix.

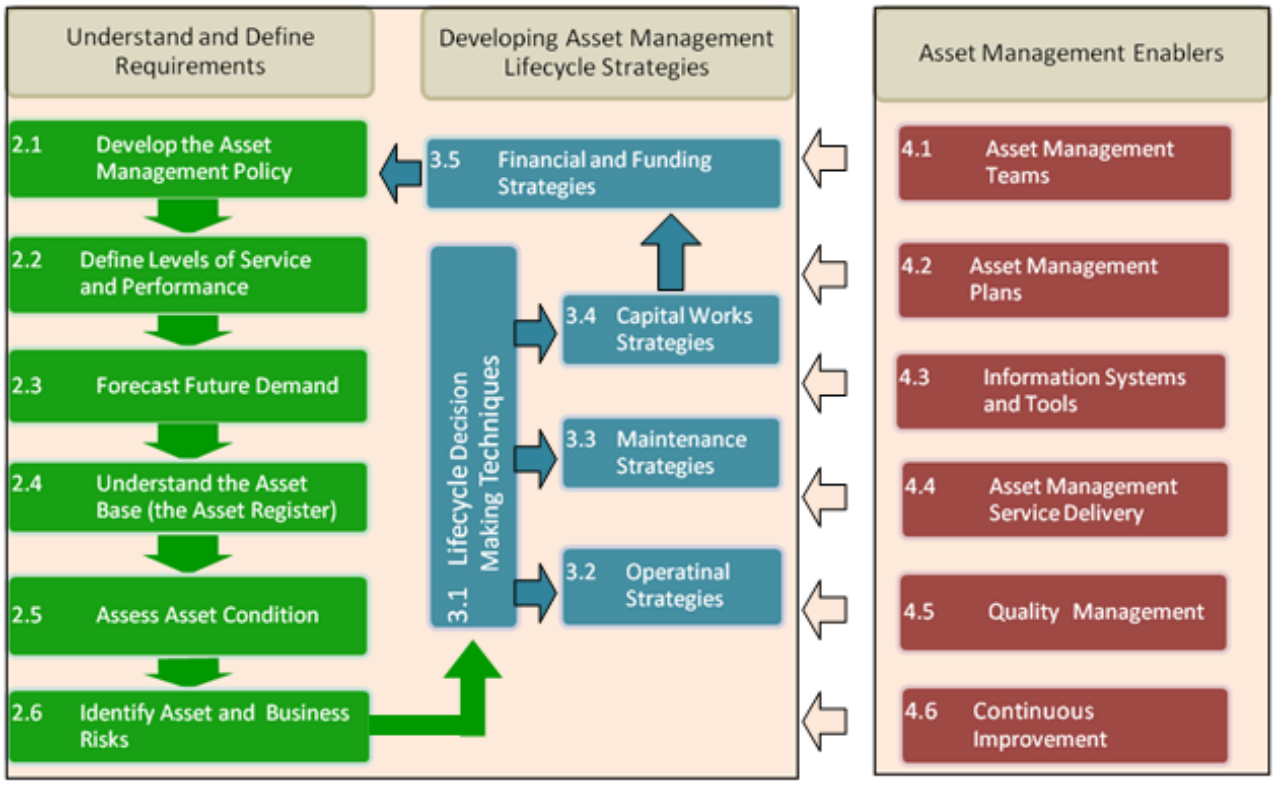


Figure S-1: The Asset Management Process (taken from IIMM 2011)

S.2 Understand and Define Requirements

This phase determines what service levels are required and how future demand might change over time, as well as the current assets' capability to deliver on those requirements.

S.2.1. Develop the Asset Management Policy

The Asset Management policy framework guides the organisation in terms of priorities and strategies, and sets out specific responsibilities, objectives, targets and plans. The Council has approached this by determining the desired and actual levels of asset management practice, and identifying the gaps between them for future improvement.

S.2.1.1 Determine the Appropriate (Desired) Level of Asset Management Practice

The level of Asset Management expected can differ between activities. The IIMM defines the standards of the Activity Management Plans (AMPs) on a scale as follows:

- Minimum — Starting point
- Core — Basic

· Intermediate (core plus)	Transition between Core and Advanced
· Advanced	Most thorough

In 2010, Waugh Infrastructure Management Ltd undertook a review of these levels and advised on target levels. A range of parameters (including populations, issues affecting the district, costs and benefits to the community, legislative requirements, size, condition and complexity of assets, risk associated with failure, skills and resources available, and customer expectation) was assessed to determine the most suitable level of asset management.

The results showed that Tasman District Council should be managing its assets at the following levels:

· Transportation	Intermediate with demand management and resource availability drivers
· Stormwater, Water, Wastewater	Intermediate with demand and risk management drivers
· Solid Waste	Core with risk management drivers
· Rivers	Core
· Coastal Structures	Core (future reassessment may be required)

S.2.1.2 Determine the Actual Level of Asset Management Practice and Identify Gaps

The Council underwent a process at the end of the 2009 AMP to undertake a high level review of the AMPs and associated activity management processes against good practice asset management as described in the IIMM and in accordance with the Office of Auditor-General. During this process, the AMP and associated practices were scored to give a snapshot of the current status and then set targets as to where the Council wished to head. The 2009 AMP Improvement Plan was assessed in its effectiveness to close the gap between actual and target compliance levels and new items added to the Improvement Plan where gaps were identified.

The results of the review are detailed in a separate report (Performance Review of Wastewater Activity Management Processes, MWH February 2010).

The two reviews described above were carried out independently of each other however the outputs from both were compared to ensure consistency of recommendations. Whilst both reviews focused on slightly different aspects of asset management practices, there was no conflict between the recommendations made.

This work is now somewhat dated as the AMPs have changed substantially since 2009. This area will be renewed following development of the LTP.

Table S-1 below shows analysis undertaken to link the two reviews to identify the compliance gaps and actions that should be undertaken to address them.

Table S-1: Analysis of Asset Management Reviews

	Intermediate	Compliance Status	Compliance Gaps to Address to Meet Intermediate
Description of Assets	Advanced	Substantially Compliant	**Action:** improve level of performance data in Confirm.
Levels of Service	Core	Higher level of compliance than suggested	There is substantial communication of LoS with the public.
Managing Growth	Advanced	Substantially Compliant	**Action:** Improve level of demand strategies for Wastewater and Stormwater.
Risk Management	Advanced	Substantially Compliant	**Action:** Improve integration with maintenance and replacement strategies.
Lifecycle Decision Making	Advanced (with the exception of predictive modelling)	Partially Compliant	**Action:** Improve evaluation tools.
Financial Forecasts	Advanced (with the exception of sensitivity testing of forecasts)	Compliant	No plans to undertake sensitivity testing of forecasts.
Planning Assumptions and Confidence Levels	Advanced	Substantially Compliant	**Action:** Improve confidence and accuracy of asset data and performance.
Outline Improvement Programmes	Advanced	Substantially Compliant	**Action:** Identify timeframes, priorities and resources for Improvement Plan actions.
Planning by Qualified Persons	Core	Compliant	Intending to achieve Advanced by undertaking Peer Review.
Commitment	Advanced	Substantially Compliant	**Action:** More emphasis and commitment needed to Improvement Plan.

S.2.2. Define Levels of Service and Performance

The Level of Service and Performance Management frameworks will ensure that agreed stakeholder requirements are met. Levels of Service, Performance measures, and Relationship to Community Outcomes are detailed in Appendix R.

S.2.3. Forecast Future Demand

Understanding how future demand for service will change enables the Council to plan ahead to meet that demand. Demand and future new capital requirements are dealt with in Appendix F.

S.2.4. Understand the Asset Base (the Asset Register)

A robust asset register is a core requirement for asset management.

Data on the Council assets is collected via as-built plans (supplied through capital works and subdivision), maintenance contract work and field studies. Two enterprise asset systems are used to record core data:

· RAMM – Transportation excluding streetlights;

· Confirm – Stormwater, Water, Wastewater, Solid Waste, Rivers, Coastal Structures, Streetlights.

Most data sets are viewable on the corporate GIS browser, Explore Tasman. Reporting systems summarise data for management and performance reporting, and for providing links between AM systems and GIS / financial systems. Several other standalone applications exist for specific purposes.

The Asset Register and other Information Systems are described more comprehensively in section S4.3 Information Systems and Tools.

S.3 Assess Asset Condition

The Council needs to understand the current condition of its assets. Monitoring programmes should be tailored to consider how critical the asset is, how quickly it is likely to deteriorate, and the cost of data collection.

Condition assessment is not performed on individual reticulation assets; reticulation systems as a whole and electrical / control mechanisms are audited. The audits look at the conditions of the sites and items that need replacement or repair are identified. Pumps are scheduled to be replaced at the end of their standard life assessment. Our network is comparatively young so condition is not yet a big issue. 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 has been done via CCTV surveys - this is planned for incorporation 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 1-5 scale is used, as per the NZQQA Infrastructure Asset Grading Guidelines, as shown in Table S-2.

Table S-2: Asset Condition Rating Table

Condition Grade and Meaning	General Meaning	
1 **Very Good**	Life: Physical: Access: Security: Exposure:	10+ years. Fit for purpose. Robust and modern design. Easy; easy lift manhole lids, clear access roads. Sound structure with modern locks. Fully protected from elements or providing full protection.
2 **Good**	Life: Physical: Access: Security: Exposure:	Review in 5 – 10 years. Fit for purpose. Early signs of corrosion/wear. Robust, but not latest design. Awkward; heavy/corroded lids, overgrown with vegetation. Sound structure with locks. Adequate protection from elements or providing adequate protection.
3 **Moderate**	Life: Physical: Access: Secure: Exposure:	Review in 5 years. Potentially impaired by corrosion/wear, old design or poor implementation. Difficult: requires special tools or more than one person. Locked but structure not secure, or secure structure with no locks. Showing signs of wear that could lead to exposure.
4 **Poor**	Life: Physical:	Almost at failure, needs immediate expert review. Heavy corrosion impairing use. Obvious signs of potential failure.

Condition Grade and Meaning	General Meaning	
	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.

S.3.1. Identify Asset and Business Risks

A key process is assessing critical assets and risks. This feeds into all lifecycle decision making processes.

S.3.2. Asset Risks - Critical Assets

All assets except transportation are now being graded for criticality as shown in Table S-3. This process is expected to be complete in 2015.

Table S-3: Asset Criticality Rating Table

Condition Grade	Meaning	Significance for Future Maintenance
A	Critical	Advanced condition assessment and preventative maintenance
B	Normal	Standard condition assessment and maintenance
C	Non-critical	Reduced maintenance acceptable

Assets are created in Confirm with a default value of C. Asset Type and Site is then used as a first assessment of criticality. Further assessments are now being made using the criteria of position in the network and number of customers served, to get a final grading.

S.3.3. Business Risks

The Council has adopted an Integrated Risk Management framework to manage risks, both at corporate and activity level. This is detailed in Appendix Q.

S.4 Developing Asset Management Lifecycle Strategies

S.4.1. Lifecycle Decision-Making Techniques

The lifecycle decision phase looks at how best to deliver on the requirements by applying various decision-making techniques, strategies and plans. These are discussed in separate appendices as listed below.

S.4.2. Operational Strategies and Plans

Demand management strategies (reducing overall demand and / or reducing peak demands) are covered in Appendix N.

Emergency management processes are covered in Appendix Q.

S.4.3. Maintenance Strategies and Plans

Optimised maintenance programmes are dealt with in Appendix E.

S.4.4. Capital Works Strategies

Forecast growth and demand and new asset investment programming are detailed in Appendix F. Optimised renewal programmes and Asset investment programmes are covered in Appendix I.

S.4.5. Financial and Funding Strategies

A robust, long-term financial forecast is developed as the culmination of this phase, which identifies strategies to fund these programmes. This section covers how the resource demand of AM can be identified, disclosed and funded.

The following appendices hold this information:

- Appendix D – Asset Valuations;
- Appendix G – Development Contributions / Financial Contributions;
- Appendix K – Public Debt and Annual Loan Servicing Costs;
- Appendix L – Summary of Future Overall Financial Requirements;
- Appendix M – Funding Policy, Fees and Charges.

S.5 Asset Management Enablers

Underpinning Asset Management decision-making at each stage are the following:

S.5.1. Asset Management Teams

The Council has an organisational structure and capability that supports the AM planning process. Responsibility for asset planning across the lifecycle is delivered by teams within the Council as shown by Figure S-2below.

Corporate and Strategic Planning is performed by the Strategic Policy team in the Community Development Department.

The Asset Management function is managed by Engineering's Activity Planning team. Operations are the responsibility of the Utilities and Transportation teams, while Projects and Contracts are managed by the Programme Delivery team.

Operations and maintenance and Contracts are externally tendered. Professional services are supplied by consultants.

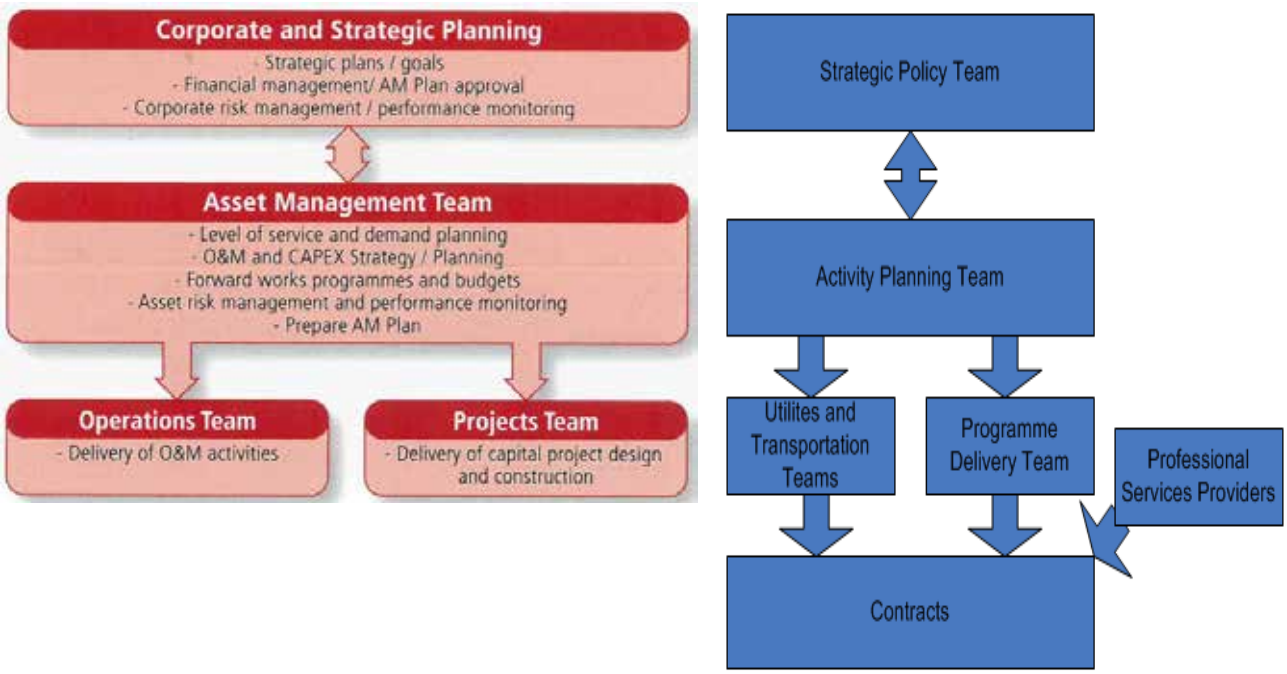


Figure S-2: Asset Management Team Roles (taken from IIMM 2011) and Asset Management Teams at Tasman District Council

S.5.2. Asset Management Plans

Asset Management plans need to be robust and set out clear future strategies and programmes. This document is a key part of the Asset Management process and will be updated on a regular basis in between AMP planning cycles.

S.5.3. 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 optimal asset programmes. These are detailed in below. There is a continual push to incorporate all asset data into the core AM systems where possible; where not possible, attempts are made to integrate or link systems so that they can be easily accessed.

Figure S-3 shows how the various systems used in the Council inter-relate.

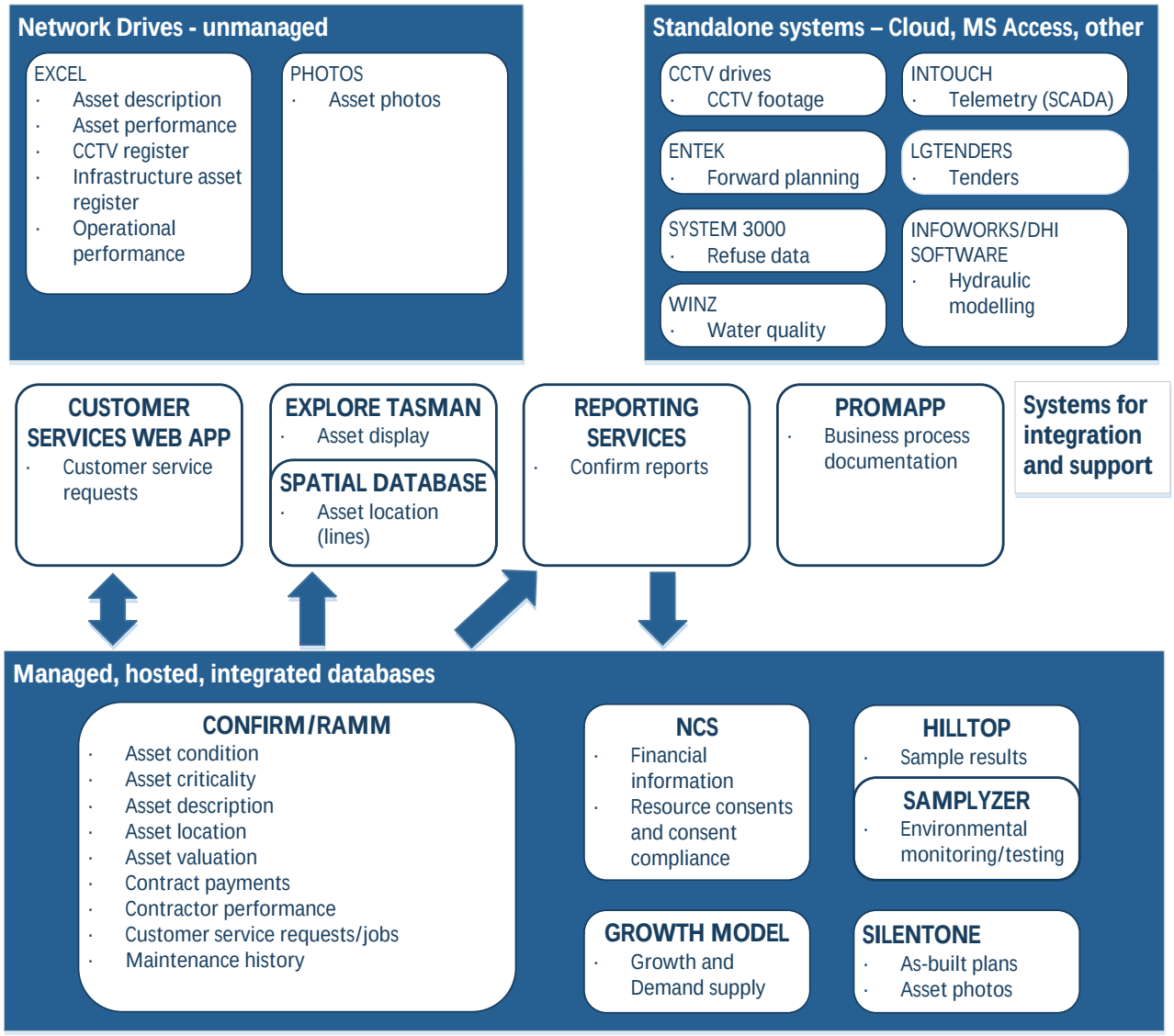


Figure S-3: Systems used for Asset Management at Tasman District Council

Table S-4 lists the various data types and systems they are held in, with a summary of how they are managed.

Table S-4: Data Types and Information Systems Used

Data Type	Information System	Management Strategy	Data Accuracy	Data Completeness
As-built plans	SilentOne	As-built plans are uploaded to SilentOne, allowing digital retrieval. Each plan is audited on receipt to ensure a consistent standard and quality.	2	2
Asset condition	Confirm	See discussion in section S2.5	N/A	N/A
Asset criticality	Confirm	See section S2.6.1 Asset Risks - Critical assets	4	3
Asset description	Confirm / spreadsheets	All assets are captured in Confirm's Site and Asset modules, from as-built plans and maintenance notes. Hierarchy is	2	2

Data Type	Information System	Management Strategy	Data Accuracy	Data Completeness
		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.		
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
CCTV data	Hard drives / CCTV register / Confirm	CCTV footage on DVD is transferred to external hard drives and catalogued in a CCTV register spreadsheet and cross-referenced on Resource Consent in NCS if applicable. Data on condition and defects will be imported to Confirm and held against individual assets.	2	3
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
Contractor performance	Confirm	Time to complete jobs is measured against contract KPIs through Confirm's 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

Data Type	Information System	Management Strategy	Data Accuracy	Data Completeness
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.	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	Entek TPM (Time and space Project Management)	Forward programmes for the Council activities, and reseal / footpath renewal programmes, are uploaded to TPM in order to identify clashes and opportunities. The strength of this module relied on buy in from Utilities Companies and Local Contractors (neither of which occurred).	N/A	N/A
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 Confirm's Maintenance Management module. History of maintenance is stored against individual assets. Prior to 2007 it was logged at a scheme level.	2	2
Operational performance	Spreadsheet / Intouch	Flow meter (determines performance of network as a whole) and pump performance is recorded in a spreadsheet and Intouch, which is shared with the Contractor. Annual compliance report for Resource Consents sent to various parties is also an indication of performance. Standard Operating Procedures are updated as changes are made.	2	2
Photos	Network drives / SilentOne	Electronic photos of assets are mainly stored on the Council's network drives. Coastal Structures and Streetlight photos have been uploaded to SilentOne and linked to the assets displayed via Explore Tasman.	N/A	N/A

Data Type	Information System	Management Strategy	Data Accuracy	Data Completeness
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 SilentOne and NCS)	N/A	N/A
Telemetry (SCADA)	Intouch	Used to monitor remotely the performance of key assets at major installations. Contractors can remotely control systems and assets.	2	2
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

Table S-5 defines the Accuracy and Completeness grades applied to asset data in Table S-2.

Table S-5: Asset Data Accuracy and Completeness Grades

Grade	Description	% Accuracy
1	Accurate	100
2	Minor inaccuracies	± 5
3	50% estimated	± 20
4	Significant data estimated	± 30
5	All data estimated	± 40

Grade	Description	% Completeness
1	Complete	100
2	Minor gaps	90 – 99
3	Major gaps	60 – 90
4	Significant gaps	20 – 60
5	Limited data available	0 – 20

S.5.4. Asset Management Service Delivery

The Council has opted to tender Capital Works and Operations and Maintenance externally to obtain more cost-effective service delivery.

The Council has adopted effective procurement strategies, such that AM activities are being delivered in the most cost-effective way (value for money rather than lowest cost).

S.5.5. Procurement Strategy

Tasman District Council has a formal Procurement Strategy for its Engineering Services. This Strategy has been prepared to meet New Zealand Transport Agency's (NZTA) requirements for expenditure from the National Land Transport Fund, and it describes the procurement environment that exists within the Tasman District. It has been developed following a three-year review of the Strategy and approved in November

2013. It principally focuses on Engineering Services activities but is framed in the NZTA procurement plan format, which is consistent with whole of government procurement initiatives.

The Council's objectives are to:

- implement policies and financial management strategies that advance the Tasman District;
- ensure sustainable management of natural and physical resources, and security of environmental standards;
- sustainably manage infrastructure assets relating to Tasman District;
- enhance community development and the social, natural, cultural and recreational assets relating to Tasman district;
- promote sustainable economic development in the Tasman District.

The Council has recently implemented a procurement and tender award governance gateway process. This is shown in Figure S-4 below.

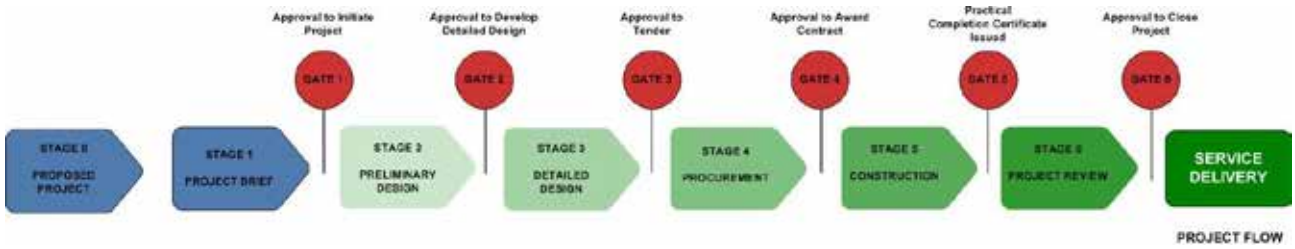


Figure S-4: Gateway Process Used by Programme Delivery Team

At the Approval to Tender gate (Gate 3), the Tender Evaluation Team:

1 Carefully reviews the specifications, drawings, detailed design.

2 Reviews estimate against allocated budget and checks availability of funds.

3 Assesses/ reviews project-specific risks and critical success factors.

4 Selects the evaluation method (supplier panel or direct to market; Price/Quality, Lowest Price Conforming, Weighted Attributes, Target Price, Brooks Law, etc) – check best suited to project's scope and risk levels.

5 Checks peer review of design.

6 Checks status of required consents and land issues.

7 Reviews Price/ Non-Price weightings, risk review and quality premium they are prepared to pay.

8 Reviews attributes (including pass/ fail and/ or weightings) and targeted questions in RFT to check for relevance to project-specific success factors and differentiators.

9 Reviews the response period (relative to RFT requirements) to ensure there is sufficient time for quality responses.

At the Approval to Award gate (Gate 4), the Programme Delivery Manager:

10 Reviews the tender process to check relevance/ effectiveness.

11 Reviews the recommendation.

12 Checks if Tender Panel approval is required.

13 Awards the contract.

S.5.6. Professional Services Contract

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 significant transport, utilities, coastal management, flood protection and solid waste capital works programme. 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 following a six month tender selection process and commenced on 1 July 2014 with an initial three year term and two three-year extensions to be awarded at the Council's sole discretion.

S.5.7. Quality Management

Table S-6 outlines quality management approaches that support the Council's asset management processes and systems.

Table S-6: Quality Management Approach

Approach	Description
Process documentation	This is being phased in across the Council with the implementation of Promapp. Over time business units are capturing organisational knowledge in an area accessible to all staff, 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.
Quality Management systems	Tasman District Council does not have a formal Quality Management system across the Council; quality is ensured by audits and checks that are managed in individual teams. Quality checks are done at many stages throughout the Asset Management process.
Planning	The planning process is formalised across the Council, with internal reviews and the Council approval stages. Following completion of the AMPs, a peer review is done. From that a comprehensive Improvement Plan is drawn up. Actions are discussed at regular meetings and progress noted. These will be incorporated into the following round of AMPs.
Programme Delivery	This strictly follows a gateway system with inbuilt checks and balances at every stage. Projects can't proceed until all criteria of a certain stage have been completely met and formally signed off.
Subdivision works	Subdivision sites are audited for accuracy of data against the plans submitted. CCTV is performed on all subdivision stormwater and wastewater assets at completion of works and again before the assets are vested in the Council, so that defects can be repaired.
Asset creation	As-built plans are reviewed on receipt for completeness and adherence to the Engineering Standards and Policies. 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.
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.
Asset performance	Audits of reticulation flows are done regularly to ensure that system performance is optimal.
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 linked to financial penalties for the contractor.
Levels of Service	Key Performance Indicators are reported regularly in Engineering Services council meetings and then again annually and audited by the OAG.
Customer Service Requests (CSRs)	Asset based CSRs (in Confirm and RAMM) are checked monthly for outstanding items via a customised report that is e-mailed to action officers. Non-asset based CSRs (in NCS) are checked for compliance weekly at Senior Management Teams, via a dashboard reporting system.

Approach	Description
Reports to Council	All reports that are presented to the Council are reviewed and edited by the Executive Assistant prior to approval by the Engineering Manager and the Senior Management Team.

S.5.8. Continuous Improvement

Processes are in place to monitor the adequacy, suitability and effectiveness of all asset management planning activities to drive a continuous cycle of review, corrective action and improvement. These are covered by Appendix V.

APPENDIX T BYLAWS

The following bylaws have been adopted by Council:

- Consolidated Bylaws 2013 - Introduction
- Control of Liquor in Public Places 2012
- Dog Control Bylaw 2014
- Freedom Camping Bylaw 2011
- Freedom Camping (Motueka Beach Reserve) Bylaw 2013
- Navigation Safety Bylaw 2014
- Speed Limits Bylaw 2013
- Stock Control and Droving Bylaw 2005
- **Wastewater Bylaw 2015***
- Trading in Public Places Bylaw 2010
- Traffic Control Bylaw 2013
- Water Supply Bylaw 2009

In accordance with the Local Government Act 2002, these bylaws will be reviewed no later than 10 years after they were last reviewed.

*The Wastewater Bylaw is the only bylaw with relevance to this activity.

APPENDIX U STAKEHOLDERS AND CONSULTATION

U.1 Stakeholders

There are many individuals and organisations that have an interest in the management and/or operation of the Council's assets. The Council has a Significance and Engagement Policy which is designed to guide the expectations with 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;
- 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;
- 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 (Councillors and Community Board members);
- Iwi/Maori (including Tiakina te Taiao and Manawhenua ki Mohua, iwi monitors);
- Regulatory (Consent compliance, Public Health);
- Fisheries organizations;
- Public Health Service (NMDHB);
- 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);
- neighbours.

U.2 Consultation

U.2.1. 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 surveys;
- 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 (LTP) process.

The Council commission's resident surveys on a regular basis, every year since 2008, from the National Research Bureau Ltd[1]. These Communitrak™ surveys assess the levels of satisfaction with key services, including wastewater services, and the willingness across the community to pay to improve services.

From time to time the Council undertakes focused surveys to get information on specific subjects or projects.

U.2.2. Communitrak™ Outcomes

The most recent NRB Communitrak™ survey was undertaken in May 2014. This asked whether residents were satisfied with the wastewater system and included residents that were connected to the Council service and some that were not. The results from this survey are summarised in Figure U-1 to Figure U-4.

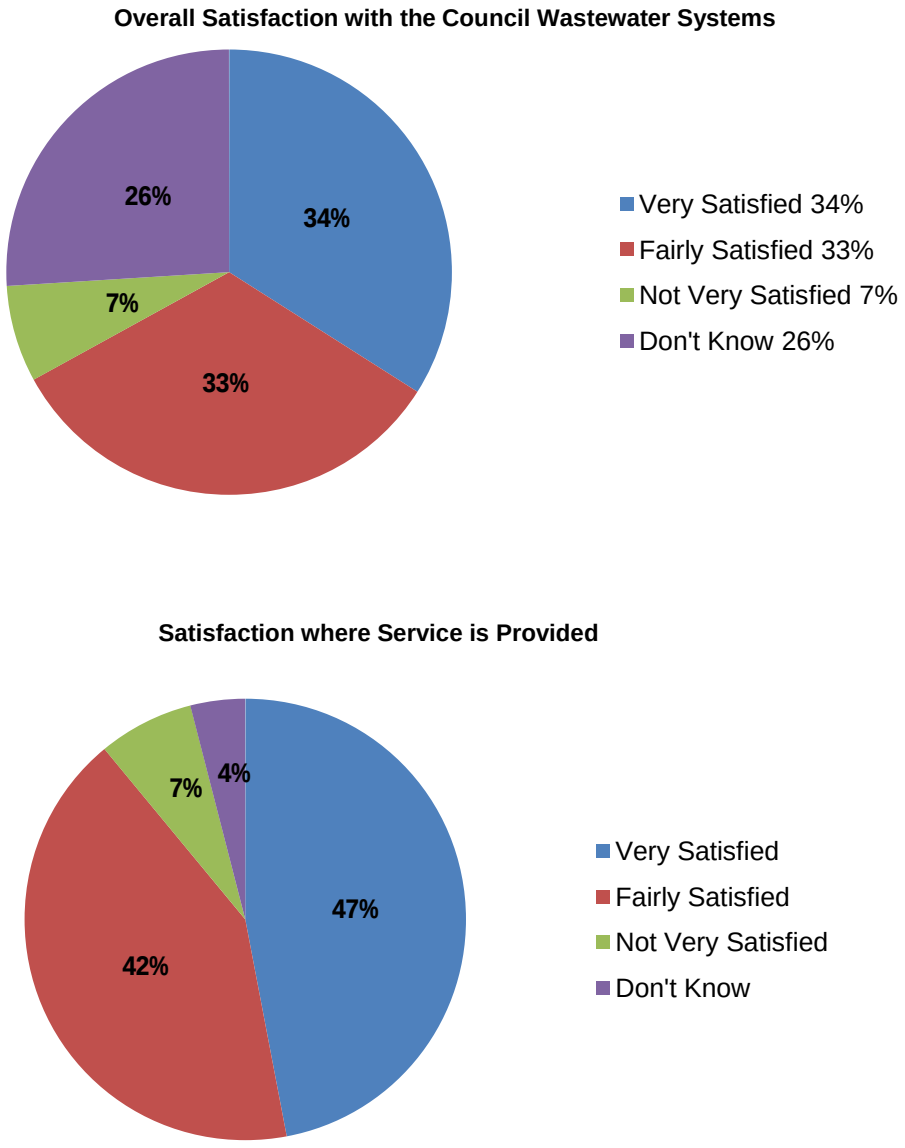


Figure U-1: Public Opinion of Wastewater Systems Communitrak™ Survey 2014

[1] Communitrak™: Public Perceptions and Interpretations of Council Services / Facilities and Representation, NRB Ltd May 2014.

The level of satisfaction is on a par with the Peer Group but is slightly lower than the national average.

A large percent (26%) were unable to comment on their satisfaction with the Council's wastewater system and that is probably due to 34% of residents saying they are not connected to the Council's wastewater system. Of the residents who are provided with a wastewater system, 89% are satisfied with it. This is lower than for previous surveys, see Figure U-2.

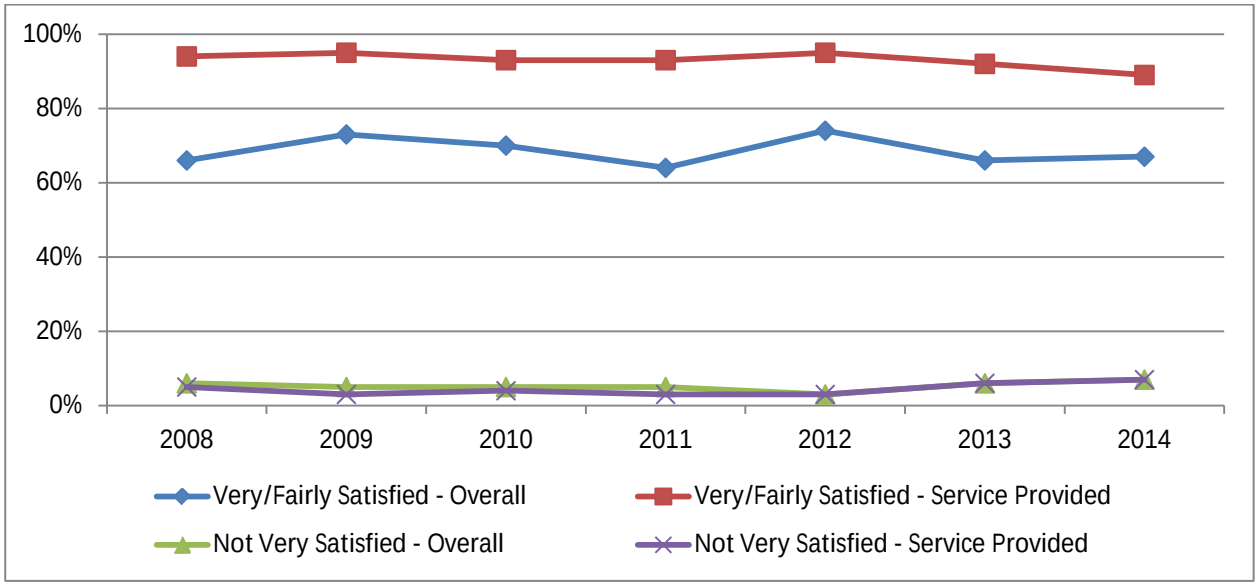


Figure U-2: Trend in Customer Satisfaction

Figure U-3 shows the overall satisfaction with the Council's wastewater systems by ward. The number of Golden Bay residents that were not satisfied with the Council's wastewater systems was high at 21%. The reason for this is unknown.

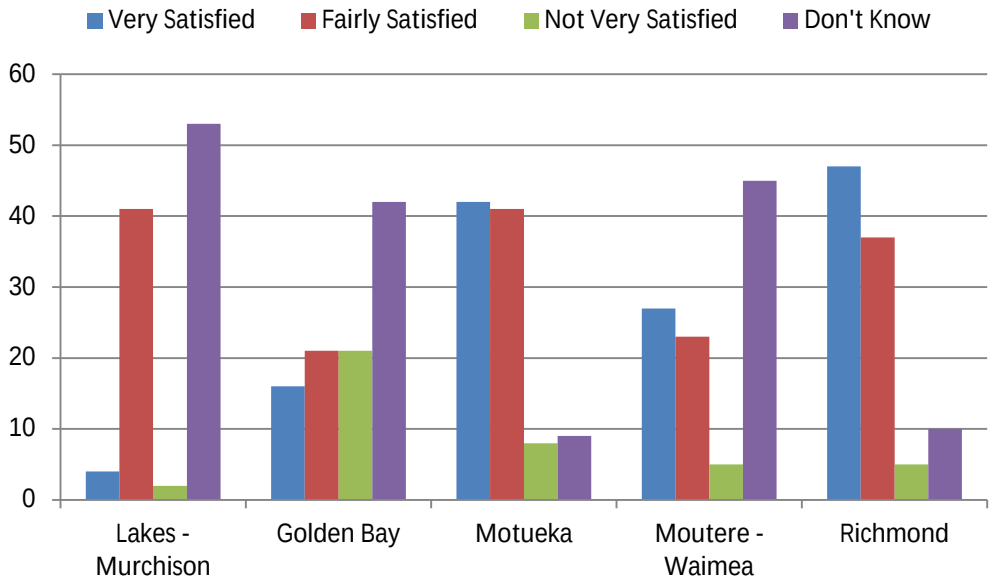


Figure U-3: Satisfaction with Wastewater Service by Ward

Residents were also asked if they would like to spend more (10%) about the same (73%), or less (2%) on wastewater given that the Council cannot spend more without increasing rates or user charges. The outcome is shown in Figure U-4.

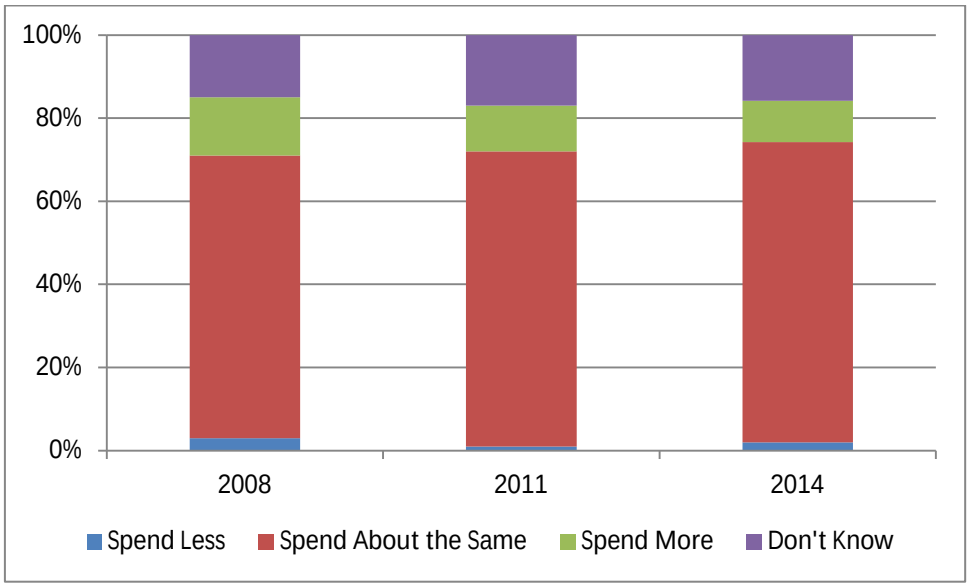


Figure U-4: Spend Emphasis on Wastewater

APPENDIX V IMPROVEMENT PLAN

To be provided in final document.

APPENDIX W ASSET DISPOSALS

W.1 Asset Disposal Strategy

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.

APPENDIX X GLOSSARY OF ASSET MANAGEMENT TERMS

Acronyms and Abbreviations

AMP	Activity Management Plan
LGA	Local Government Act
LTP	Long Term Plan
TRMP	Tasman Regional Management Plan

Term	Description
Activity	An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Activity Management Plan (AMP)	Activity Management Plans are key strategic documents that describe all aspects of the management of assets and services for an activity. The documents feed information directly in the Council's LTP, and place an emphasis on long term financial planning, community consultation, and a clear definition of service levels and performance standards.
Advanced Asset Management	Asset management that employs predictive modelling, risk management and optimised renewal decision-making techniques to establish asset lifecycle treatment options and related long term cash flow predictions. (See Basic Asset Management).
Annual Plan	The Annual Plan provides a statement of the direction of Council and ensures consistency and co-ordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Asset	A physical component of a facility that has value enables services to be provided and has an economic life of greater than 12 months.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner.
Asset Management System (AMS)	A system (usually computerised) for collecting analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Management Plan	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. A significant component of the plan is a long-term cash flow projection for the activities.
Asset Management Strategy	A strategy for asset management covering, the development and implementation of plans and programmes for asset creation, operation, maintenance, renewal, disposal and performance monitoring to ensure that the desired levels of service and other operational objectives are achieved at optimum cost.

Term	Description
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Basic Asset Management	Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, inventory control, condition assessment and defined levels of service, in order to establish alternative treatment options and long term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).
Benefit Cost Ratio (B/C)	The sum of the present values of all benefits (including residual value, if any) over a specified period, or the life cycle of the asset or facility, divided by the sum of the present value of all costs.
Business Plan	A plan produced by an organisation (or business units within it) which translate the objectives contained in an Annual Plan into detailed work plans for a particular, or range of, business activities. Activities may include marketing, development, operations, management, personnel, technology and financial planning.
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Disposal	Activities necessary to dispose of decommissioned assets.

Term	Description
Economic Life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
Facility	A complex comprising many assets (eg. swimming pool complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components. The network may include normally recognised 'ordinary' assets as components.
I.M.S.	Infrastructure Management System - computer database
Level of Service (LoS)	The defined service quality for a particular activity (ie. water) or service area (ie. Water quality) against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life Cycle	Life cycle has two meanings. · The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset ie. from planning and design to decommissioning or disposal. · The period of time between a selected date and the last year over which the criteria (eg. costs) relating to a decision or alternative under study will be assessed.
Life Cycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Long Term Plan (LTP)	The Long Term Plan is the primary strategic document through which Council communicates its intentions over the next 10 years for meeting community service expectations and how it intends to fund this work. The LTP is a key output required of Local Authorities under the Local Government Act 2002. The LTP replaces the Long Term Council Community Plan (LTCCP).
Maintenance Plan	Collated information, policies and procedures for the optimum maintenance of an asset, or group of assets.

Term	Description
Objective	An objective is a general statement of intention relating to a specific output or activity. They are generally longer-term aims and are not necessarily outcomes that managers can control.
Operation	The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. Operation costs are part of the life cycle costs of an asset.
Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.
Performance Indicator (PI)	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
Planned Maintenance	Planned maintenance activities fall into three categories. · Periodic – necessary to ensure the reliability or sustain the design life of an asset. · Predictive – condition monitoring activities used to predict failure. · Preventive – maintenance that can be initiated without routine or continuous checking (eg. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition-based.
Recreation	Means voluntary non-work activities for the attainment of personal and social benefits, including restoration (recreation) and social cohesion.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally involves repairing the asset using available techniques and standards to deliver its original level of service without resorting to significant upgrading or replacement.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing facilities with facilities of equivalent capacity or performance capability.
Renewal Accounting	A method of infrastructure asset accounting which recognises that infrastructure assets are maintained at an agreed service level through regular planned maintenance, rehabilitation and renewal programmes contained in an asset management plan. The system as a whole is maintained in perpetuity and therefore does not need to be depreciated. The relevant rehabilitation and renewal costs are treated as operational rather than capital expenditure and any loss in service potential is recognised as deferred maintenance.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative, level of service.

Term	Description
Remaining Economic Life	The time remaining until an asset ceases to provide service level or economic usefulness.
Risk Cost	The assessed annual cost or benefit relating to the consequence of an event. Risk cost equals the costs relating to the event multiplied by the probability of the event occurring.
Risk Management	The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
Routine Maintenance	Day to day operational activities to keep the asset operating (eg. replacement of light bulbs, cleaning of drains, repairing leaks) and which form part of the annual operating budget, including preventative maintenance.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
Strategic Plan	Strategic planning involves making decisions about the long term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long term survival, value and growth of the organisation.
Unplanned Maintenance	Corrective work required in the short term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
Upgrading	The replacement of an asset or addition/ replacement of an asset component which materially improves the original service potential of the asset.
Valuation	Estimated asset value that may depend on the purpose for which the valuation is required, ie. replacement value for determining maintenance levels or market value for life cycle costing.

Wastewater Drainage Area | Brightwater

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.05 0.1 0.15 0.2 0.25

Kilometers

1:7,080

tasman district council

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Wastewater Drainage Area | Collingwood

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.03 0.06 0.09 0.12 0.15

Kilometers

1:4,380

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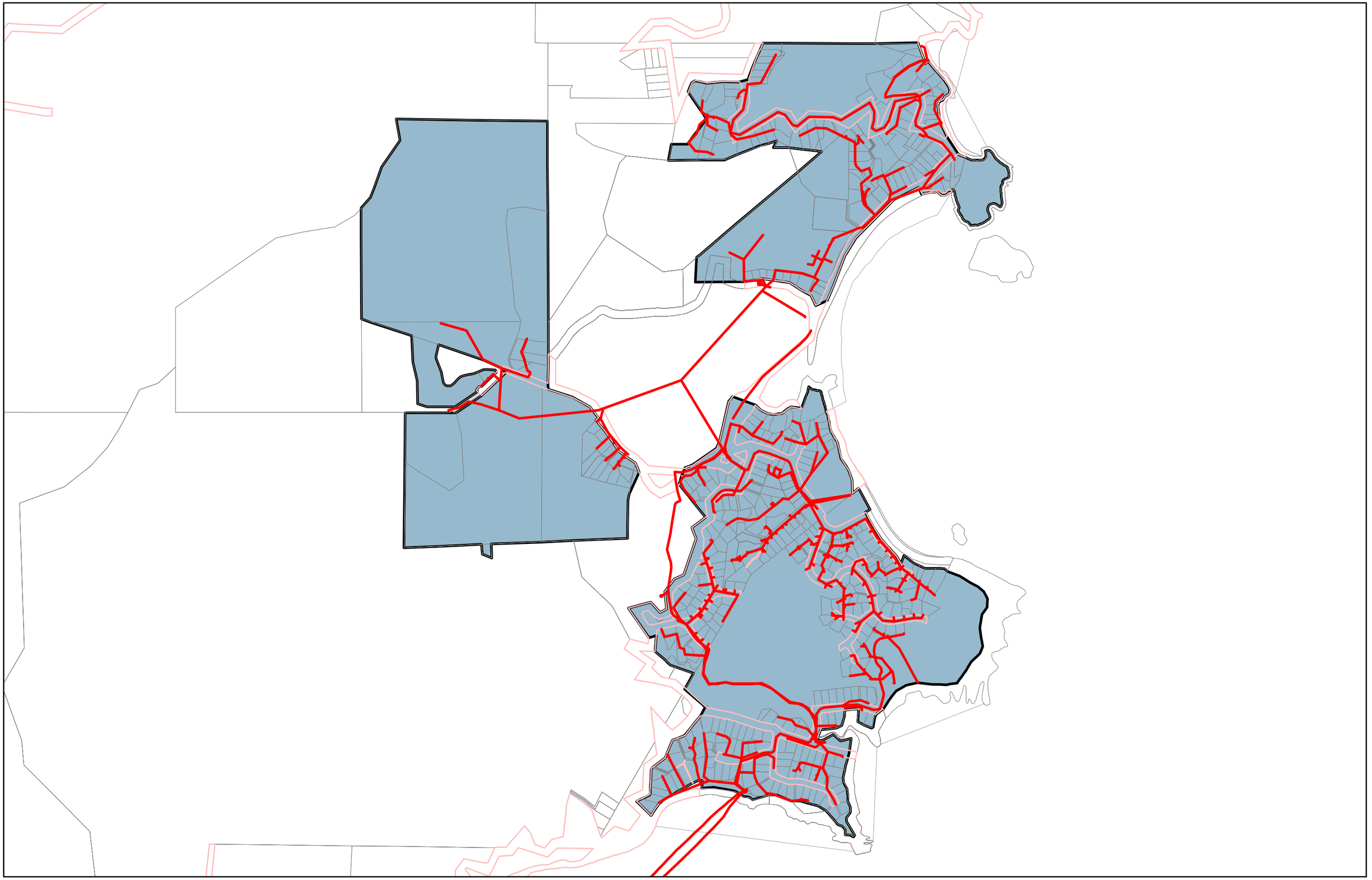

Wastewater Drainage Area | Kaiteriteri

N

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

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Kilometers

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N

Wastewater Drainage Area | Ligar Bay/Tata Beach

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.065 0.13 0.195 0.26 0.325

Kilometers

1:8,730

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N

Wastewater Drainage Area | Mapua

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

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Kilometers

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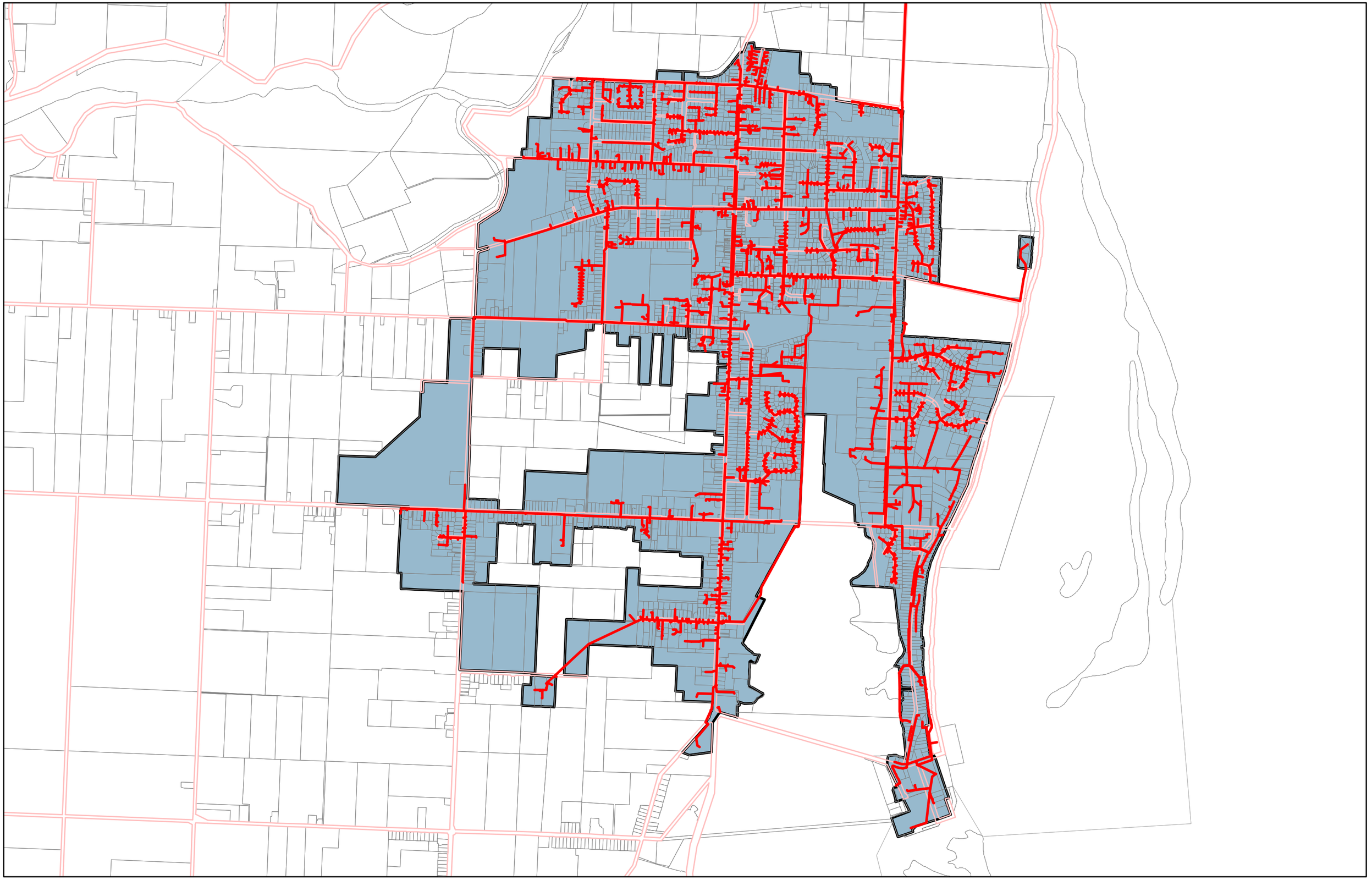

N

Wastewater Drainage Area | Motueka

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

0 0.1 0.2 0.3 0.4 0.5
Kilometers

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Wastewater Drainage Area | Murchison

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.05 0.1 0.15 0.2 0.25

Kilometers

1:7,380

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Wastewater Drainage Area | Pohara

N

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

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Kilometers

1:14,370

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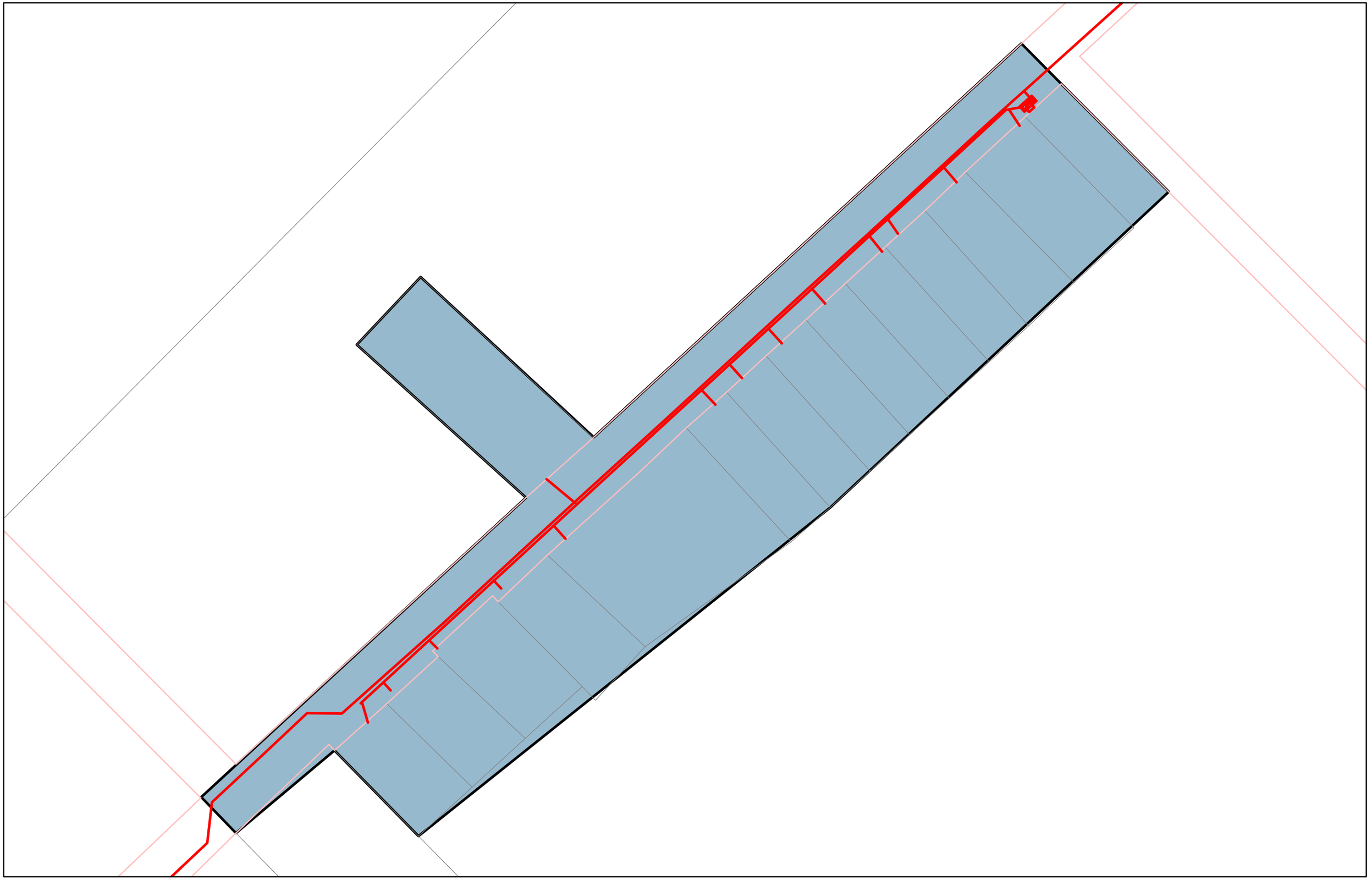

Wastewater Drainage Area | Pohara Stage 3

N

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

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Kilometers

1:1,050

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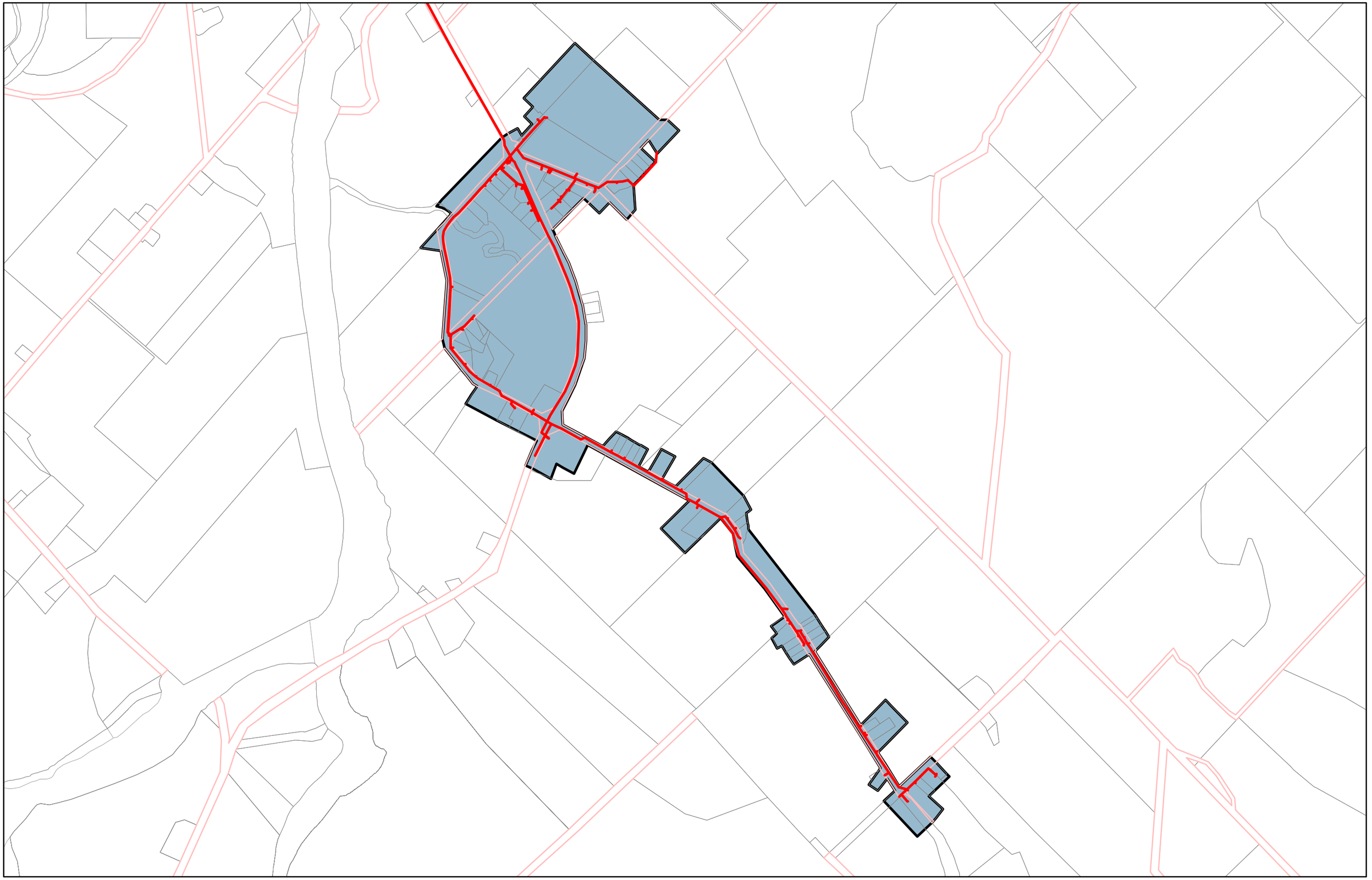

Wastewater Drainage Area | Proposed Pohara

N

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

0 0.06 0.12 0.18 0.24 0.3
Kilometers

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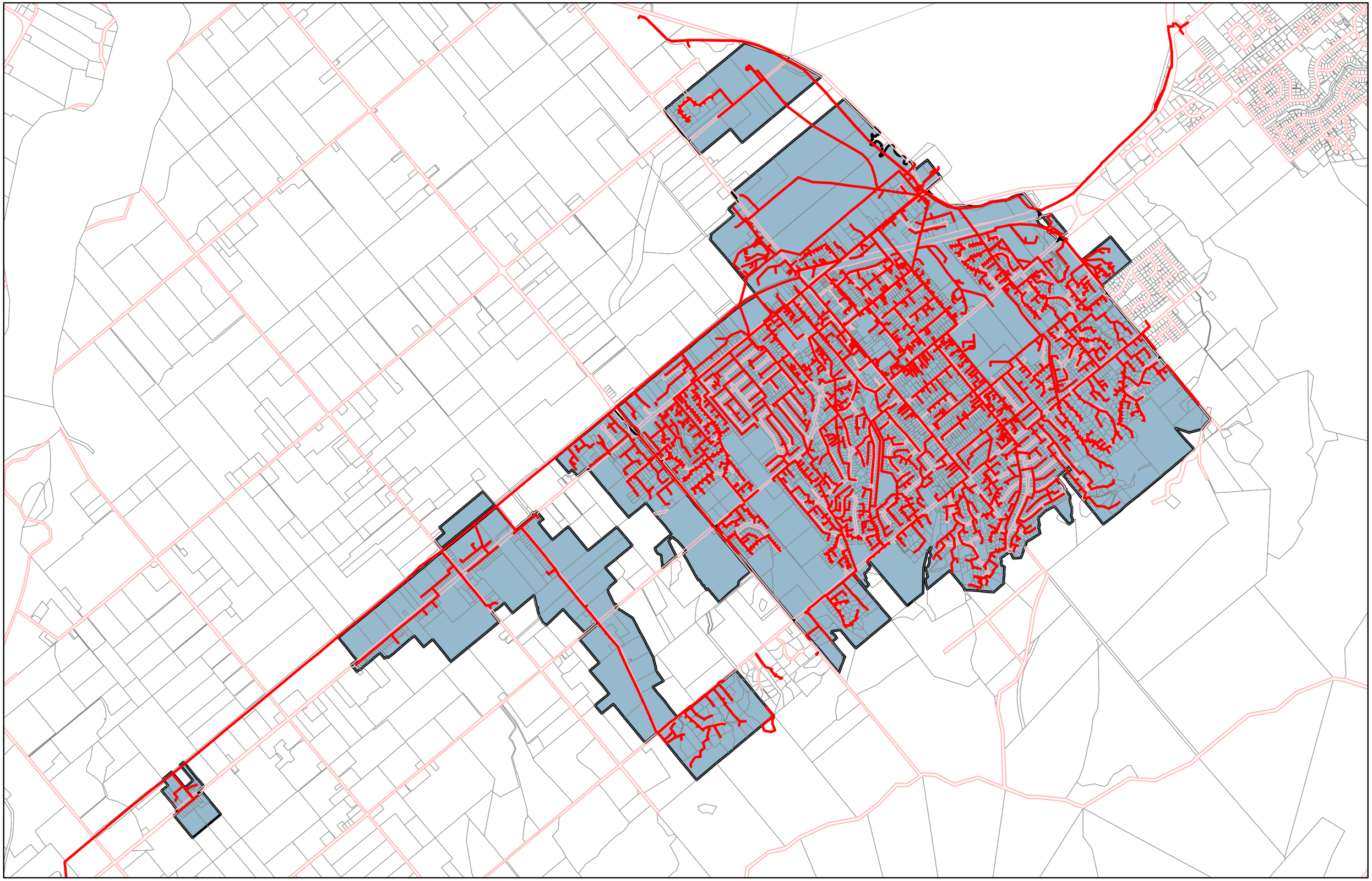

N

Wastewater Drainage Area | Richmond

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

0 0.15 0.3 0.45 0.6 0.75
Kilometers

1:22,830

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Wastewater Drainage Area | Riwaka

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.07 0.14 0.21 0.28 0.35

Kilometers

1:9,910

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Wastewater Drainage Area | St Arnaud

N

Selected Wastewater Drainage Areas
Other Wastewater Drainage Areas
WastewaterPipes
RoadBoundaries

0 0.04 0.08 0.12 0.16 0.2
Kilometers

1:5,320

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Wastewater Drainage Area | Takaka

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

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Kilometers

1:11,490

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Wastewater Drainage Area | Tapawera

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

0 0.03 0.06 0.09 0.12 0.15

Kilometers

1:4,190

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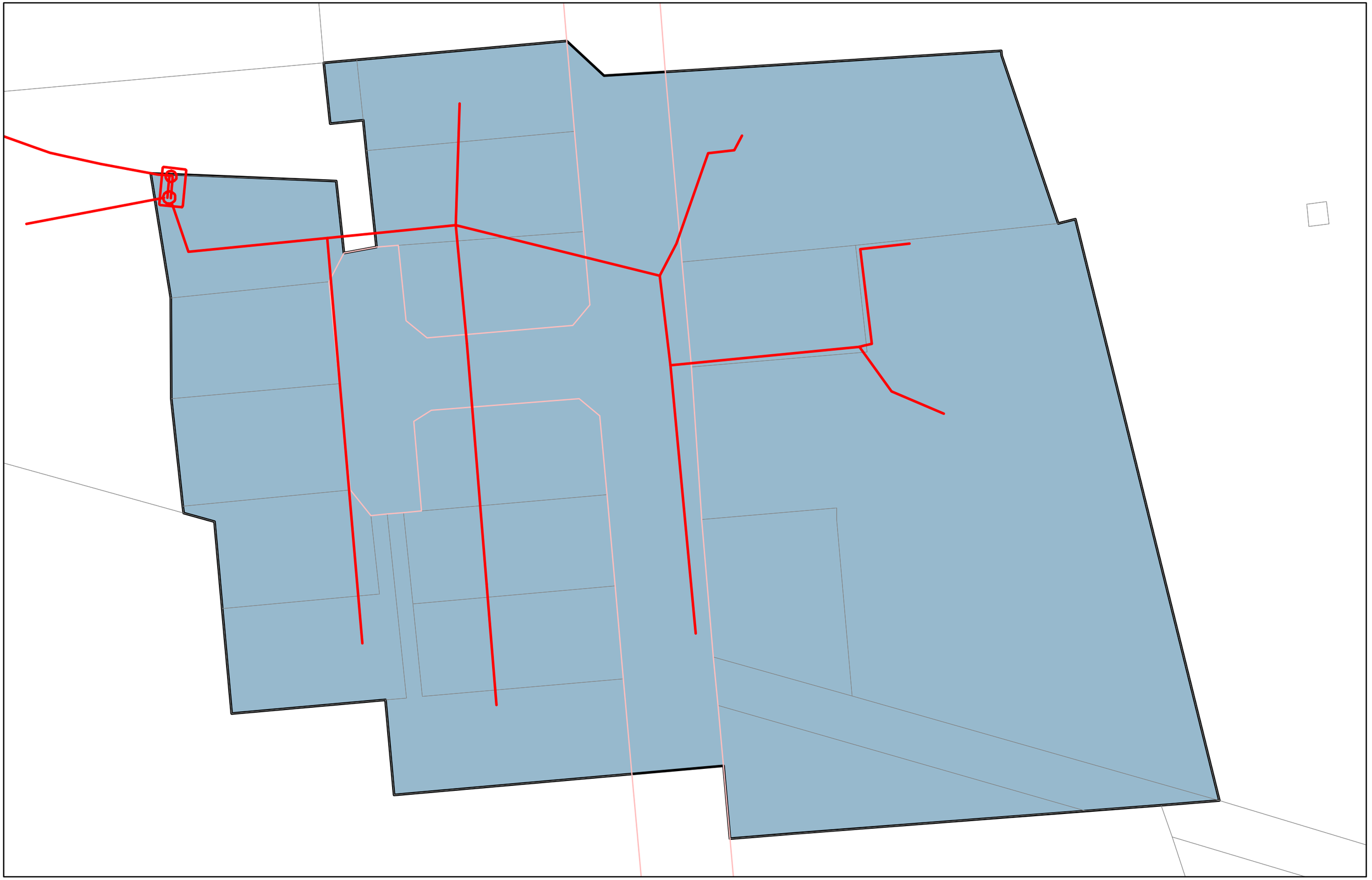

Wastewater Drainage Area | Upper Takaka

N

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

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Kilometers

1:710

tasman district council

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Wastewater Drainage Area | Wakefield

Selected Wastewater Drainage Areas

Other Wastewater Drainage Areas

WastewaterPipes

RoadBoundaries

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Kilometers

1:10,130

tasman district council

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APPENDIX Y MAPS OF UDA BOUNDARIES

The area boundaries are correct as at February 2015. The boundaries include areas currently serviced by for wastewater.

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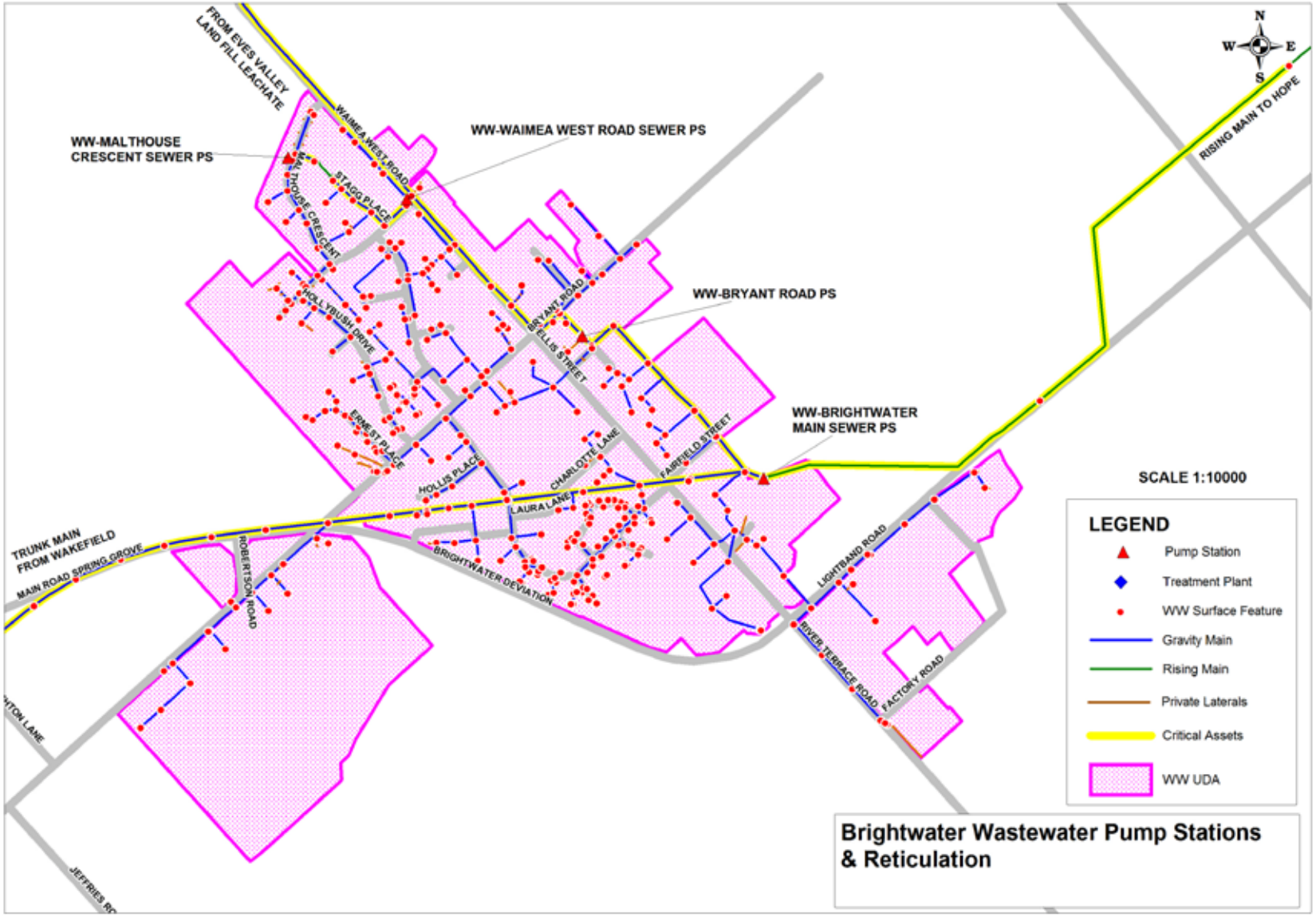
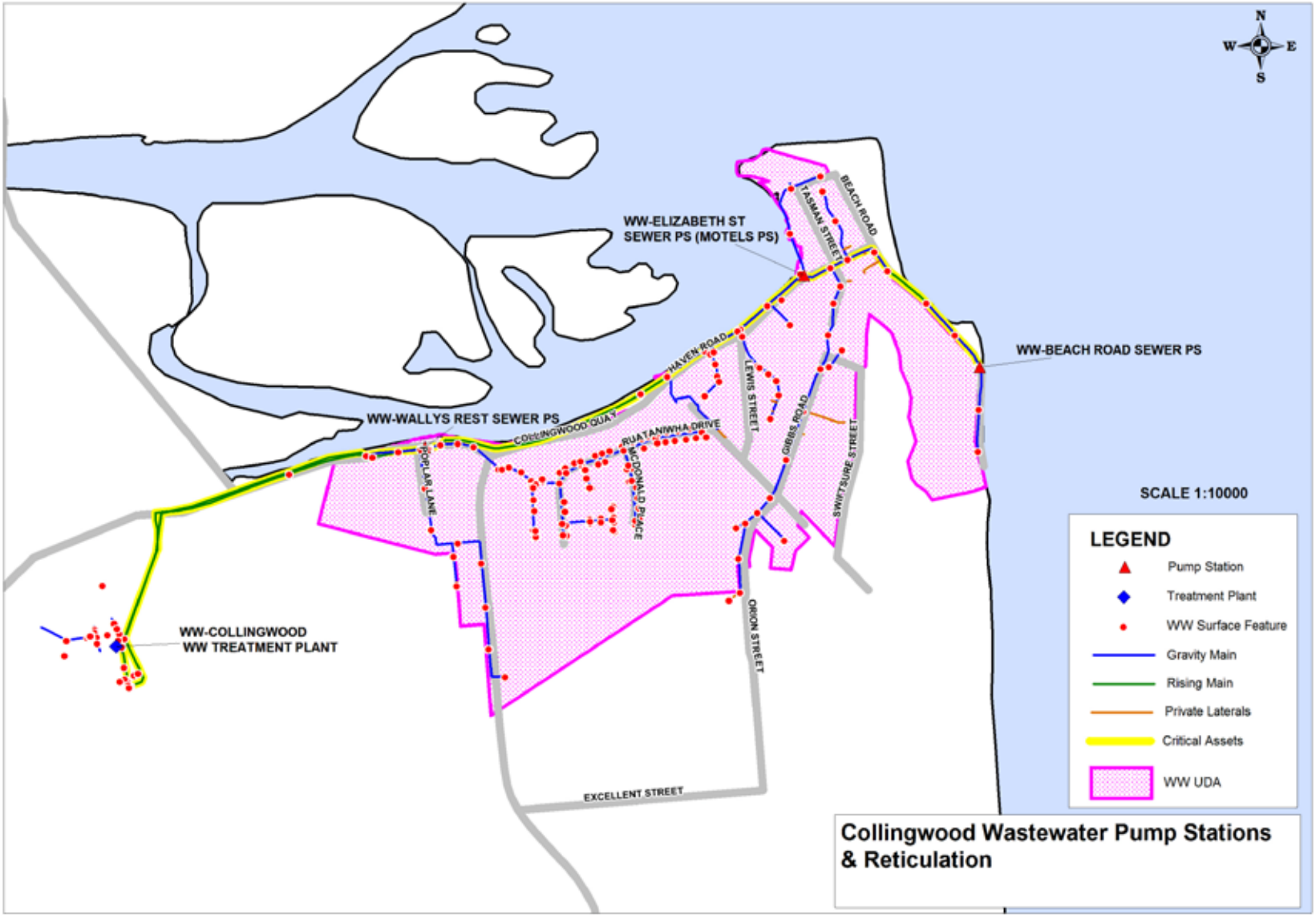
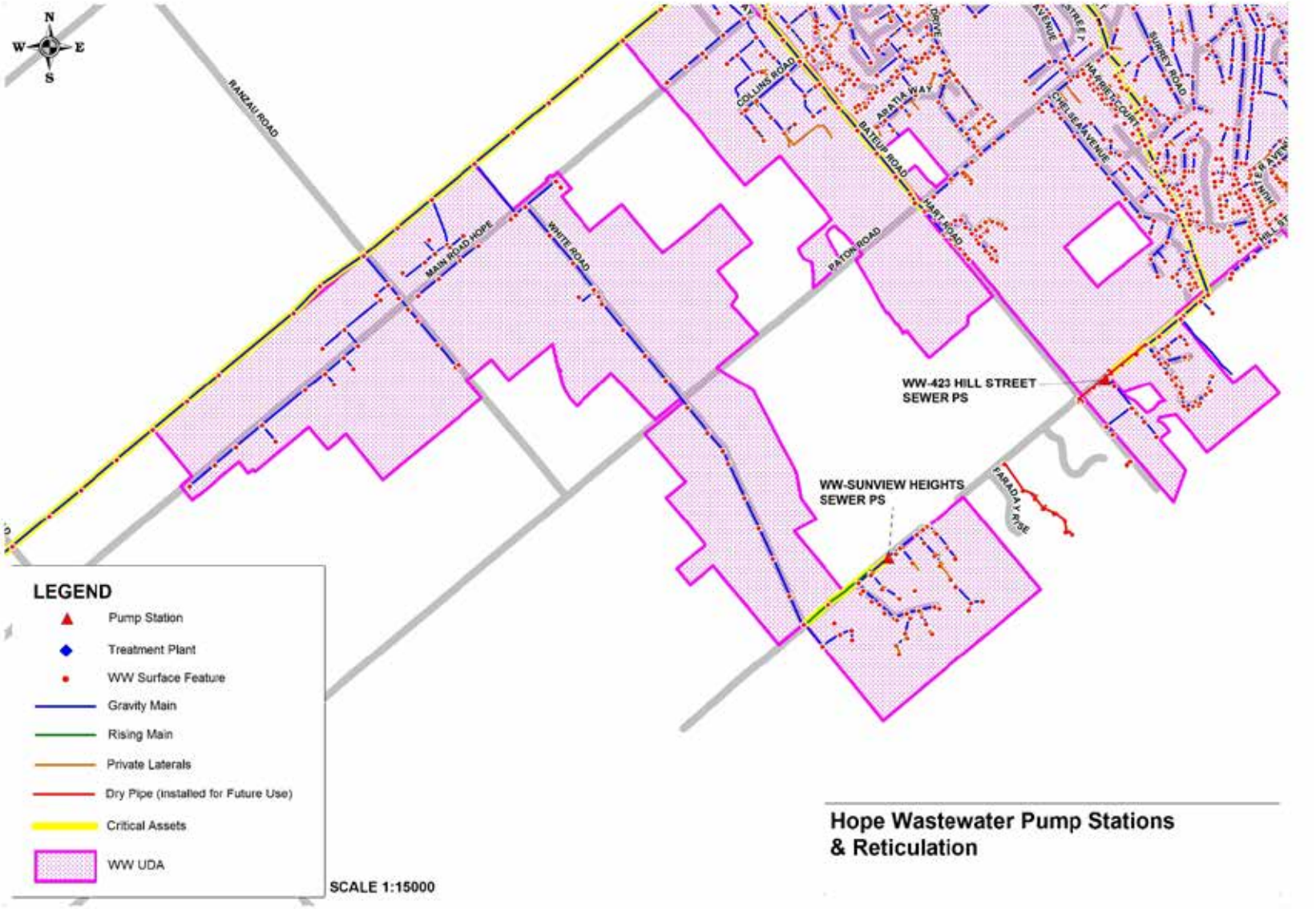
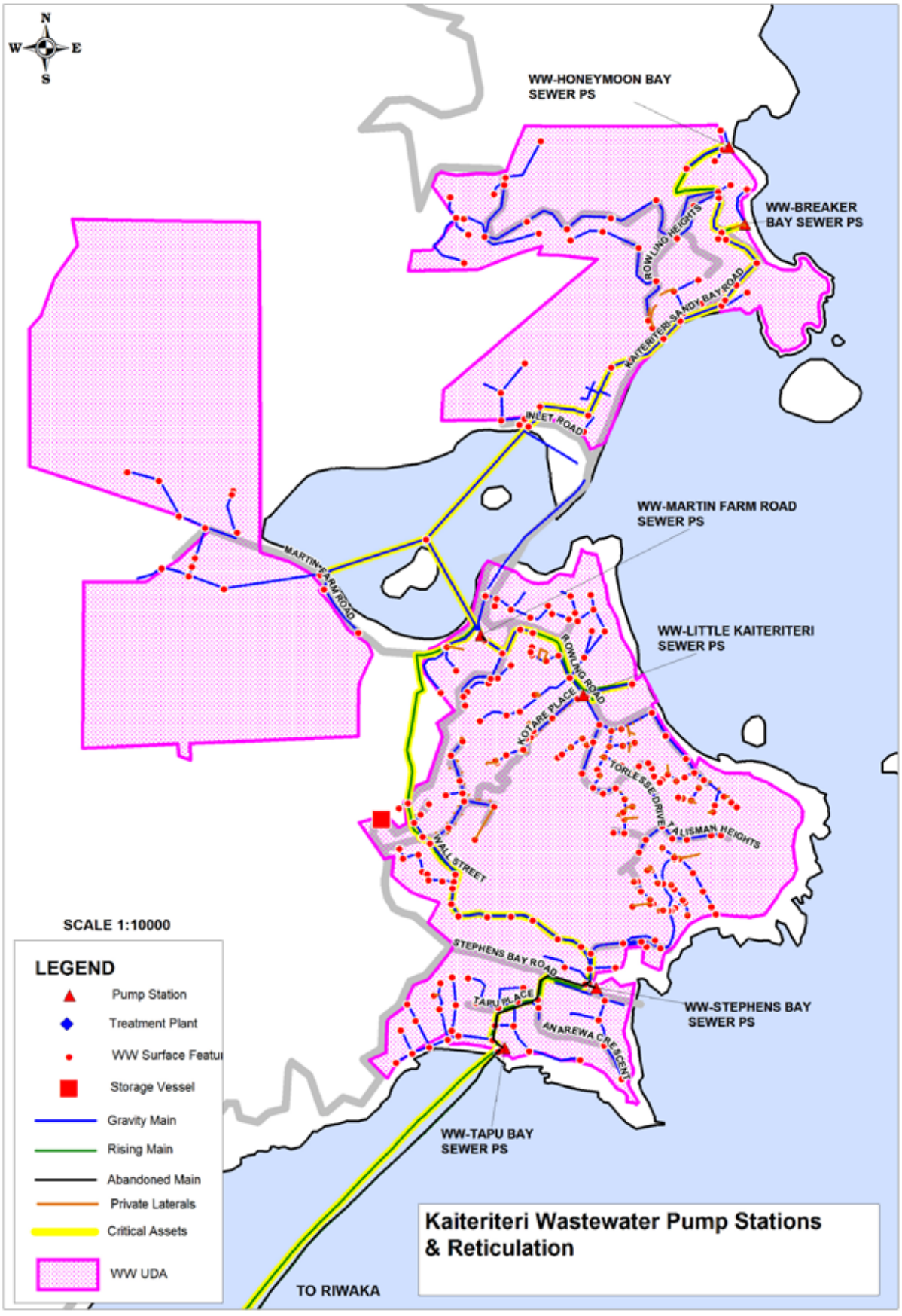

FROM EVES VALLEY LAND FILL LEACHATE
WW-MALTHOUSE CRESCENT SEWER PS
WW-WAIMEA WEST ROAD SEWER PS
WW-BRYANT ROAD PS
WW-BRIGHTWATER MAIN SEWER PS
RISING MAIN TO HOPE
TRUNK MAIN FROM WAKEFIELD
WAIMEA WEST ROAD
MALTHOUSE CRESCENT
STAGG PLACE
HOLLYBUSH DRIVE
BRYANT ROAD
ELLIS STREET
ERNEST PLACE
HOLLIS PLACE
CHARLOTTE LANE
FAIRFIELD STREET
LAURA LANE
MAIN ROAD SPRING GROVE
ROBERTSON ROAD
BRIGHTWATER DEVIATION
LIGHTBAND ROAD
RIVER TERRACE ROAD
FACTORY ROAD
JEFFRIES RD
N
W
E
S
SCALE 1:10000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Private Laterals
Critical Assets
WW UDA
Brightwater Wastewater Pump Stations & Reticulation


N
W
E
S
WW-ELIZABETH ST
SEWER PS (MOTELS PS)
WW-BEACH ROAD SEWER PS
WW-WALLYS REST SEWER PS
WW-COLLINGWOOD
WW TREATMENT PLANT
BEACH ROAD
TASMAN STREET
HAVEN ROAD
COLLINGWOOD QUAY
RUATANIWHA DRIVE
LEWIS STREET
GIBBS ROAD
SWIFTSURE STREET
POPLAR LANE
MCDONALD PLACE
ORION STREET
EXCELLENT STREET
SCALE 1:10000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Private Laterals
Critical Assets
WW UDA
Collingwood Wastewater Pump Stations
& Reticulation


N
W
E
S
RANZAU ROAD
MAIN ROAD HOPE
WHITE ROAD
COLLINS ROAD
ARATIA WAY
BATEUP ROAD
HART ROAD
PATON ROAD
SURREY ROAD
CHELSEA AVENUE
HARPER COURT
FARADAY RISE
WW-423 HILL STREET
SEWER PS
WW-SUNVIEW HEIGHTS
SEWER PS
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Private Laterals
Dry Pipe (installed for Future Use)
Critical Assets
WW UDA
SCALE 1:15000
Hope Wastewater Pump Stations
& Reticulation


N
W
E
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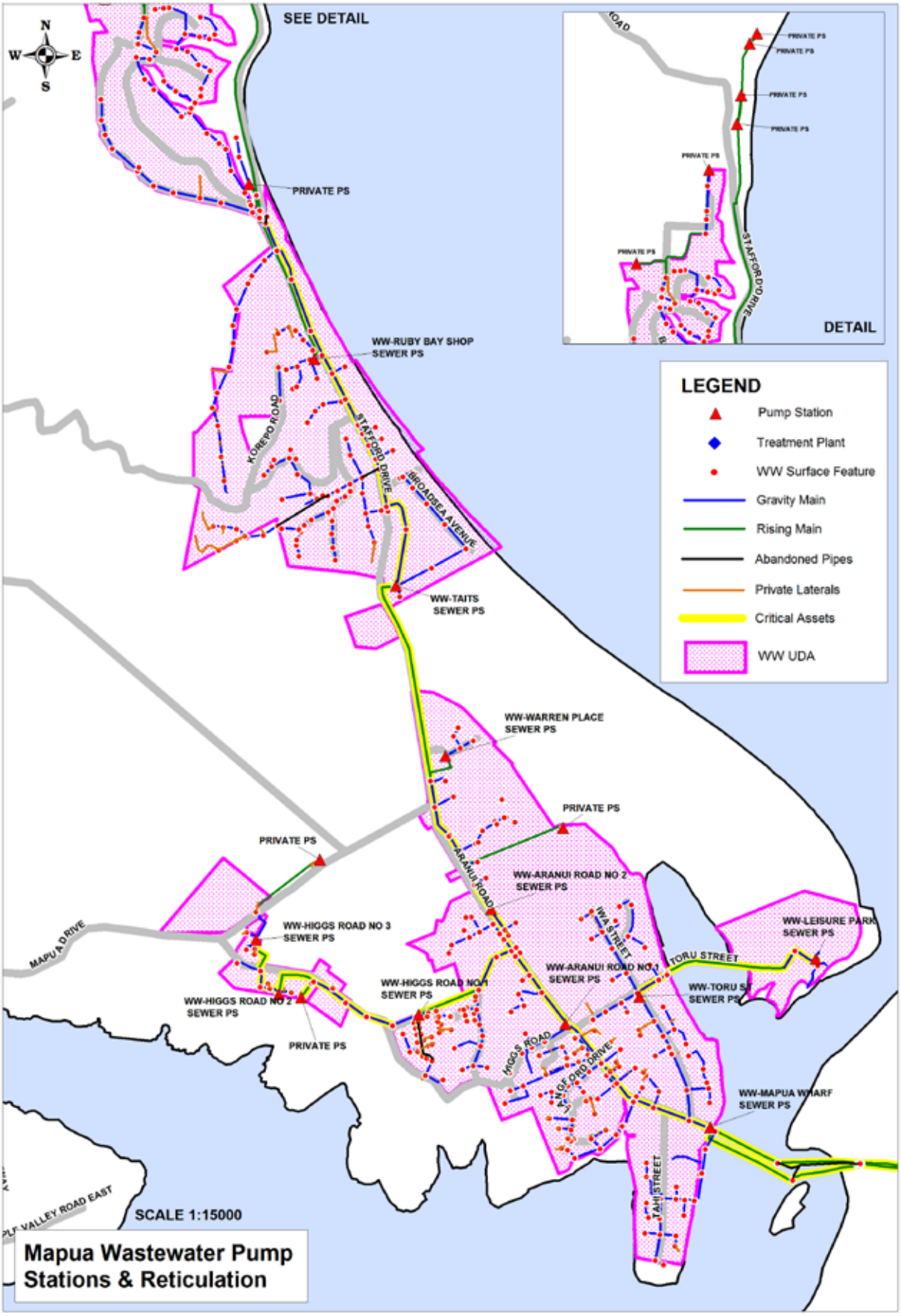
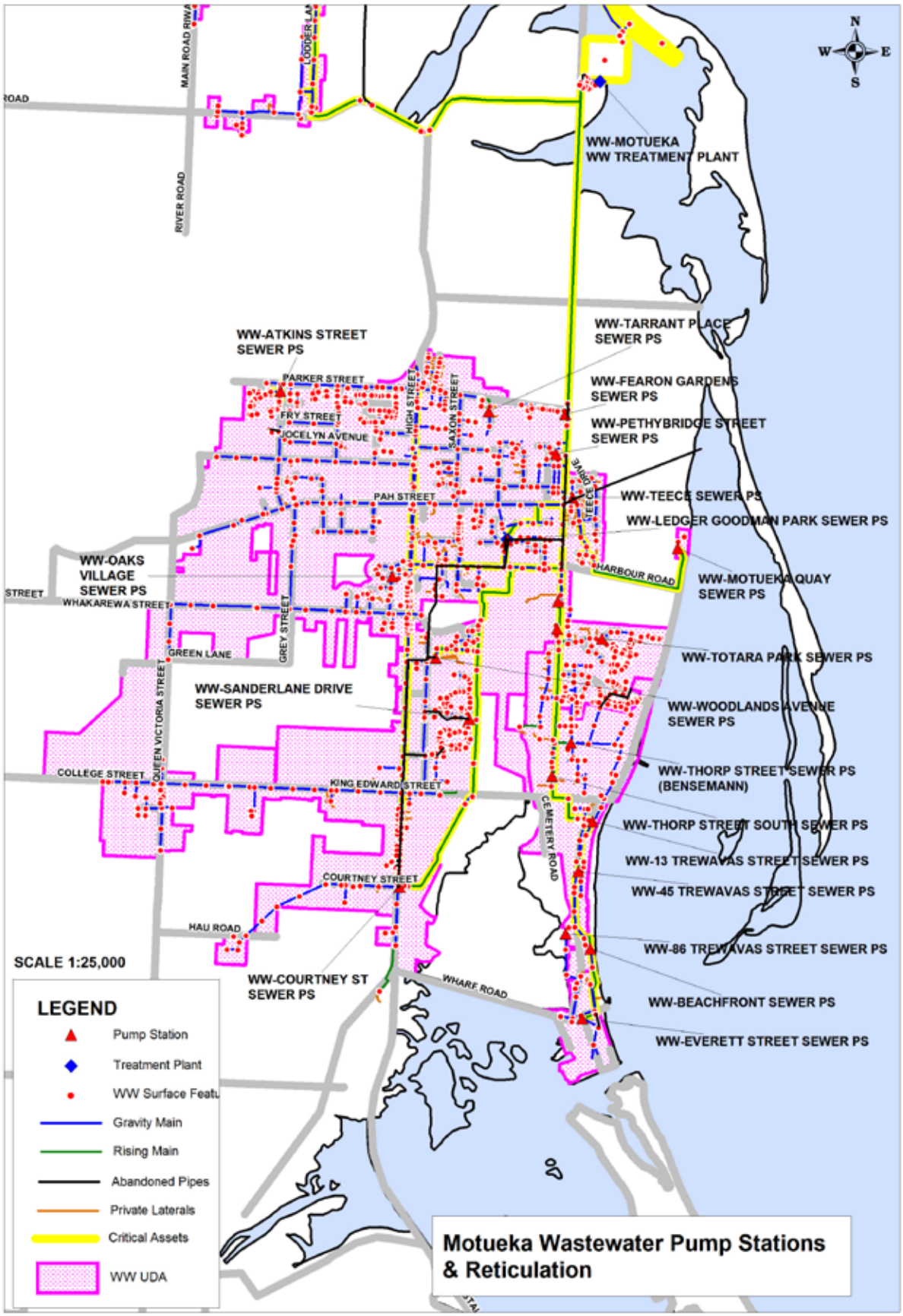
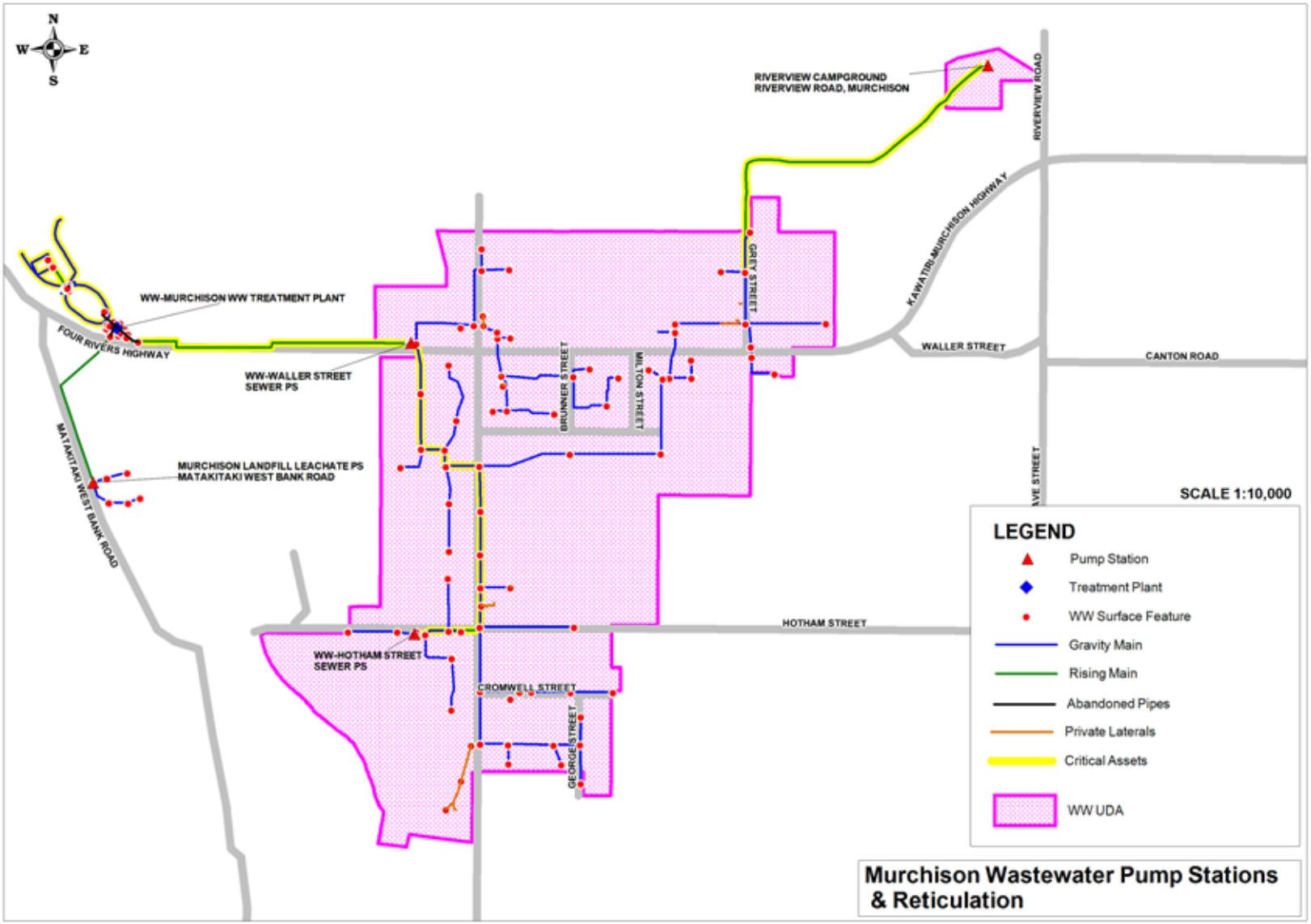
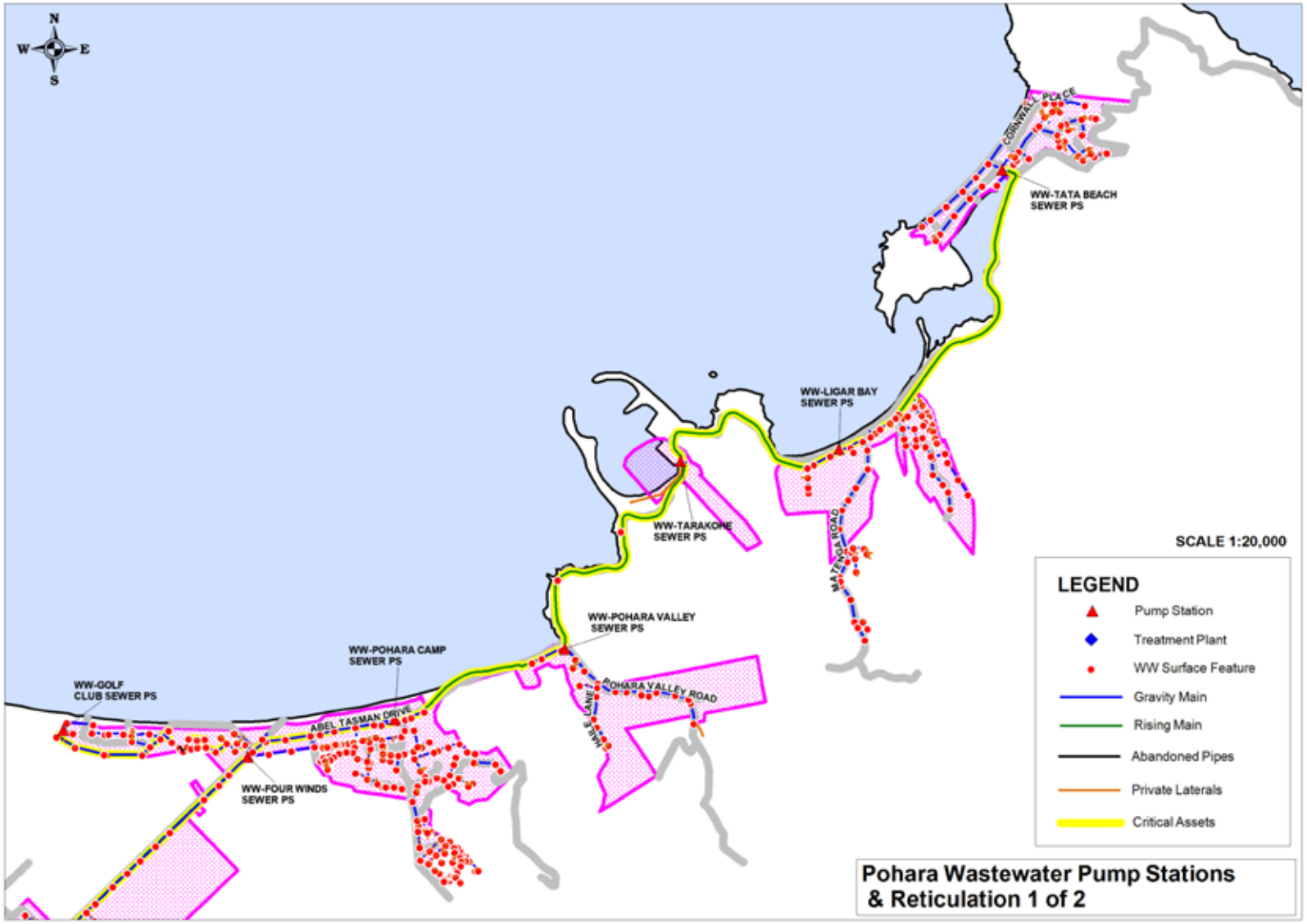
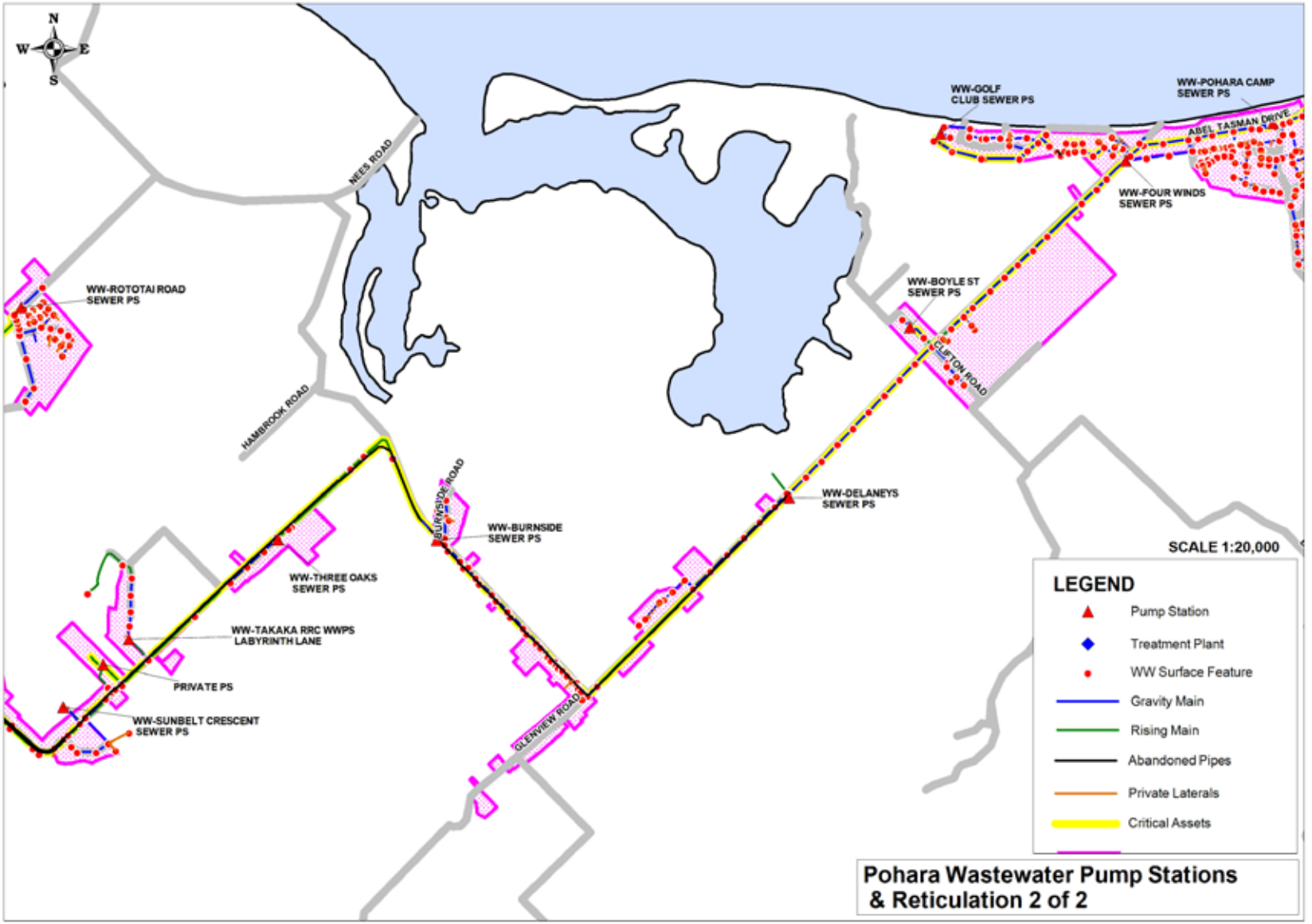
WW-HONEYMOON BAY SEWER PS
WW-BREAKER BAY SEWER PS
ROWLING HEIGHTS
KAITERITERI-SANDY BAY ROAD
INLET ROAD
WW-MARTIN FARM ROAD SEWER PS
MARTIN FARM ROAD
WW-LITTLE KAITERITERI SEWER PS
ROWLING ROAD
KOTARE PLACE
TORLESSE DRIVE
TALISMAN HEIGHTS
WALL STREET
STEPHENS BAY ROAD
TARU PLACE
ANAREWA CRESCENT
WW-STEPHENS BAY SEWER PS
WW-TAPU BAY SEWER PS
SCALE 1:10000
LEGEND
Pump Station
Treatment Plant
WW Surface Featur
Storage Vessel
Gravity Main
Rising Main
Abandoned Main
Private Laterals
Critical Assets
WW UDA
TO RIWAKA
Kaiteriteri Wastewater Pump Stations & Reticulation


SEE DETAIL
N
W
E
S
PRIVATE PS
WW-RUBY BAY SHOP SEWER PS
KOREPO ROAD
STAFFORD DRIVE
BROADSEA AVENUE
WW-TAITS SEWER PS
WW-WARREN PLACE SEWER PS
PRIVATE PS
PRIVATE PS
ARANUI ROAD
WW-ARANUI ROAD NO 2 SEWER PS
WW-HIGGS ROAD NO 3 SEWER PS
MAPUA DRIVE
IWA STREET
TORU STREET
WW-LEISURE PARK SEWER PS
WW-ARANUI ROAD NO 1 SEWER PS
WW-TORU ST SEWER PS
WW-HIGGS ROAD NO 1 SEWER PS
WW-HIGGS ROAD NO 2 SEWER PS
PRIVATE PS
HIGGS ROAD
LANGFORD DRIVE
WW-MAPUA WHARF SEWER PS
TAHI STREET
SCALE 1:15000
Mapua Wastewater Pump Stations & Reticulation
DETAIL
PRIVATE PS
PRIVATE PS
PRIVATE PS
PRIVATE PS
PRIVATE PS
PRIVATE PS
STAFFORD DRIVE
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA


N
W
E
S
WW-MOTUEKA
WW TREATMENT PLANT
WW-ATKINS STREET
SEWER PS
WW-TARRANT PLACE
SEWER PS
WW-FEARON GARDENS
SEWER PS
WW-PETHYBRIDGE STREET
SEWER PS
WW-TEECE SEWER PS
WW-LEDGER GOODMAN PARK SEWER PS
WW-MOTUEKA QUAY
SEWER PS
WW-OAKS
VILLAGE
SEWER PS
WW-TOTARA PARK SEWER PS
WW-SANDERLANE DRIVE
SEWER PS
WW-WOODLANDS AVENUE
SEWER PS
WW-THORP STREET SEWER PS
(BENSEMANN)
WW-THORP STREET SOUTH SEWER PS
WW-13 TREWAVAS STREET SEWER PS
WW-45 TREWAVAS STREET SEWER PS
WW-86 TREWAVAS STREET SEWER PS
WW-COURTNEY ST
SEWER PS
WW-BEACHFRONT SEWER PS
WW-EVERETT STREET SEWER PS
PARKER STREET
FRY STREET
JOCELYN AVENUE
PAH STREET
WHAKAREWA STREET
GREEN LANE
GREY STREET
QUEEN VICTORIA STREET
COLLEGE STREET
KING EDWARD STREET
COURTNEY STREET
HAU ROAD
HARBOUR ROAD
WHARF ROAD
CEMETERY ROAD
RIVER ROAD
MAIN ROAD
SCALE 1:25,000
LEGEND
Pump Station
Treatment Plant
WW Surface Featu
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Motueka Wastewater Pump Stations
& Reticulation


N
W
E
S
RIVERVIEW CAMPGROUND
RIVERVIEW ROAD, MURCHISON
RIVERVIEW ROAD
KAWATIRI-MURCHISON HIGHWAY
GREY STREET
WW-MURCHISON WW TREATMENT PLANT
FOUR RIVERS HIGHWAY
WW-WALLER STREET
SEWER PS
WALLER STREET
CANTON ROAD
BRUNNER STREET
MILTON STREET
MATAKITAKI WEST BANK ROAD
MURCHISON LANDFILL LEACHATE PS
MATAKITAKI WEST BANK ROAD
SCALE 1:10,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
HOTHAM STREET
WW-HOTHAM STREET
SEWER PS
CROMWELL STREET
GEORGE STREET
Murchison Wastewater Pump Stations
& Reticulation


N
W
E
S
WW-TATA BEACH SEWER PS
CORNWALL PLACE
WW-LIGAR BAY SEWER PS
WW-TARAKOHE SEWER PS
WW-POHARA VALLEY SEWER PS
WW-POHARA CAMP SEWER PS
WW-GOLF CLUB SEWER PS
WW-FOUR WINDS SEWER PS
ABEL TASMAN DRIVE
POHARA VALLEY ROAD
MATENGA ROAD
SCALE 1:20,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
Pohara Wastewater Pump Stations & Reticulation 1 of 2


N
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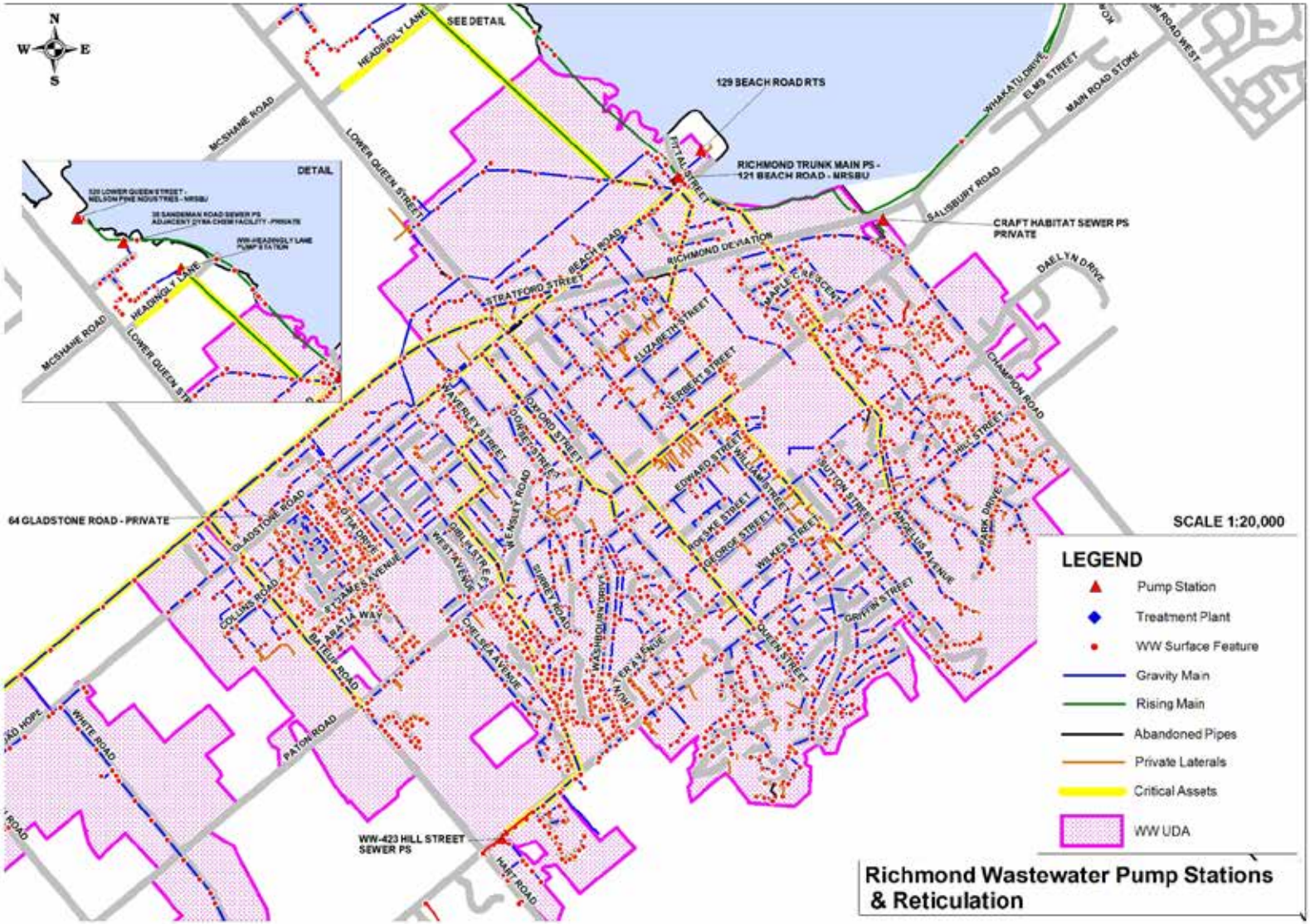
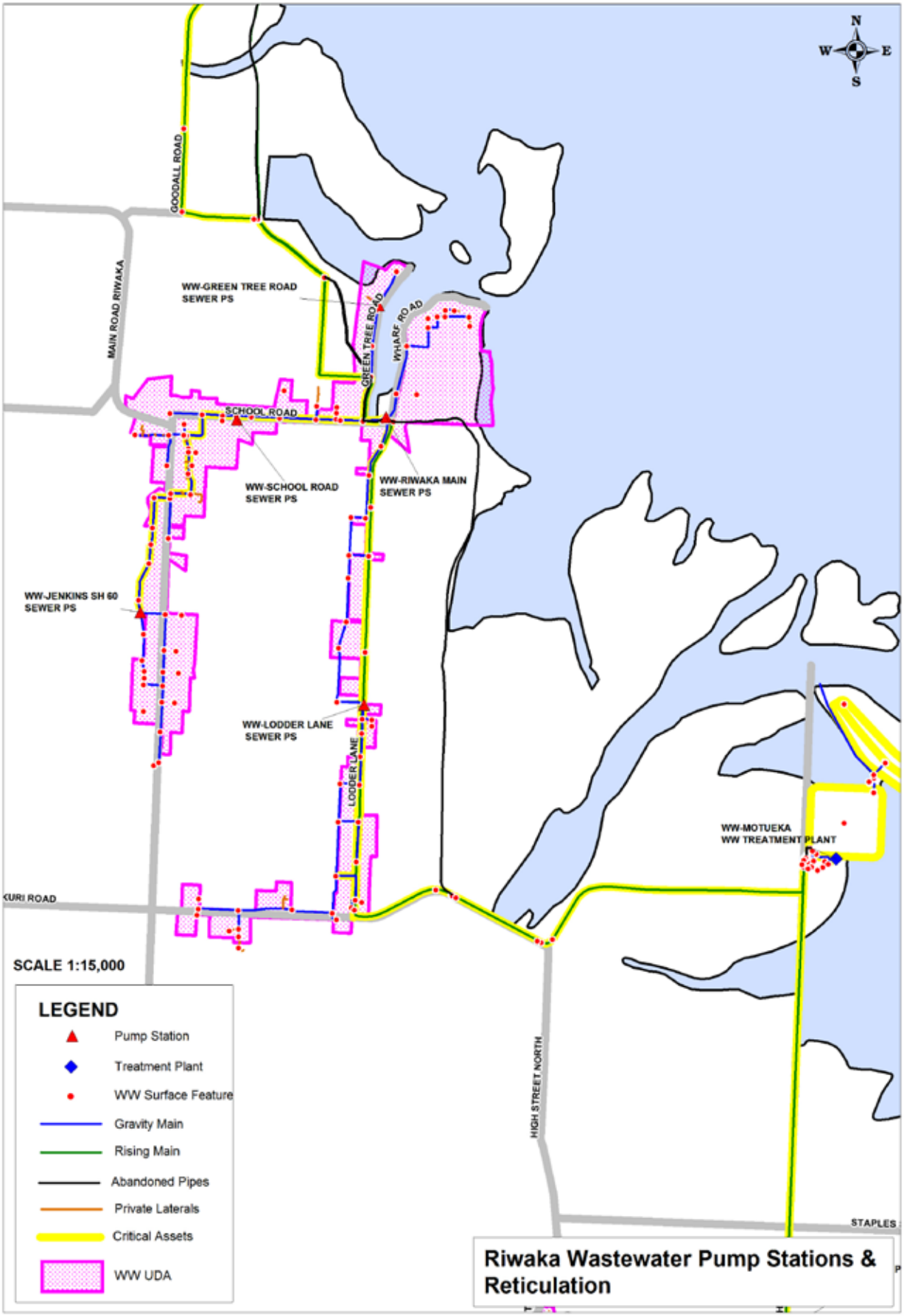
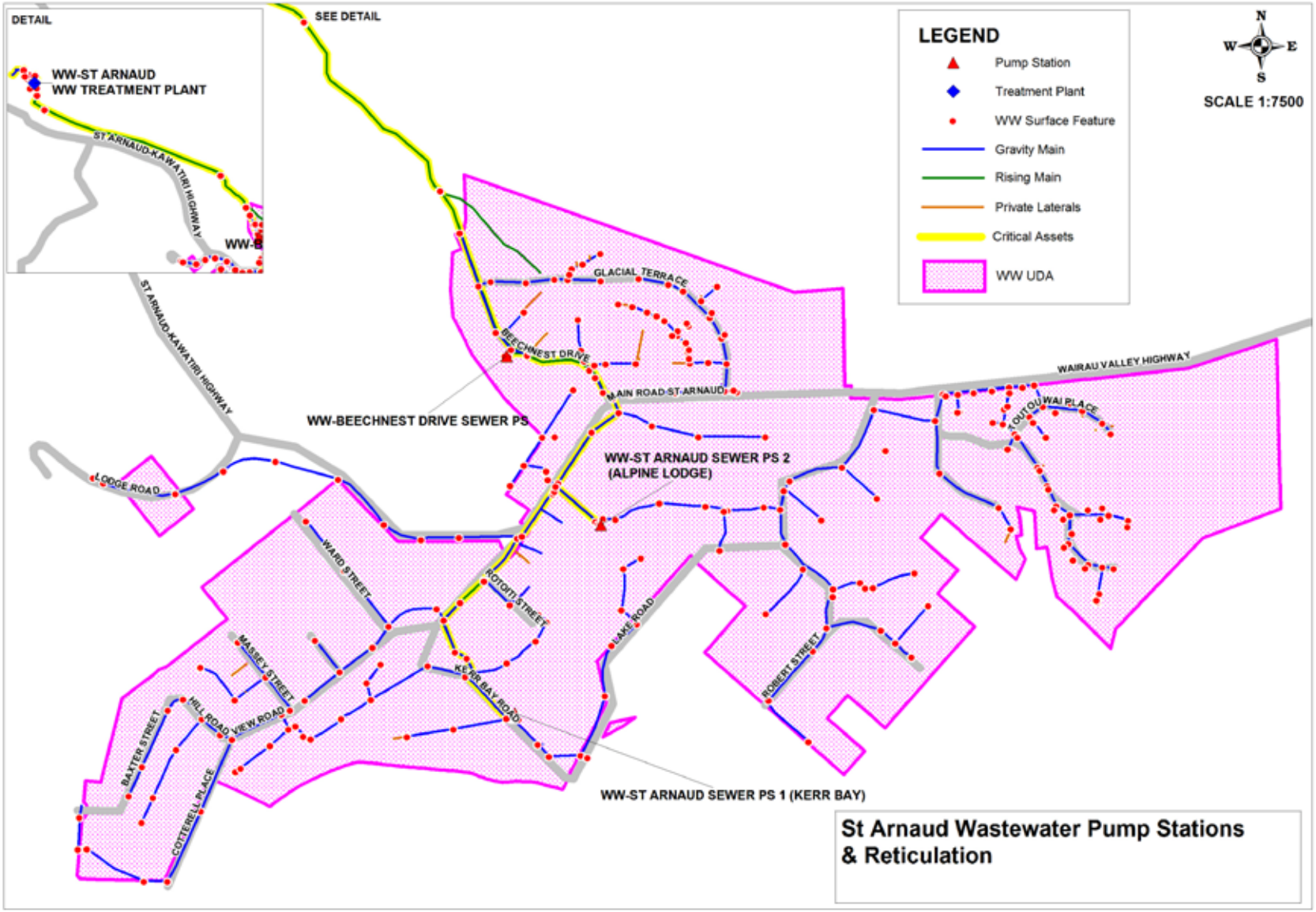
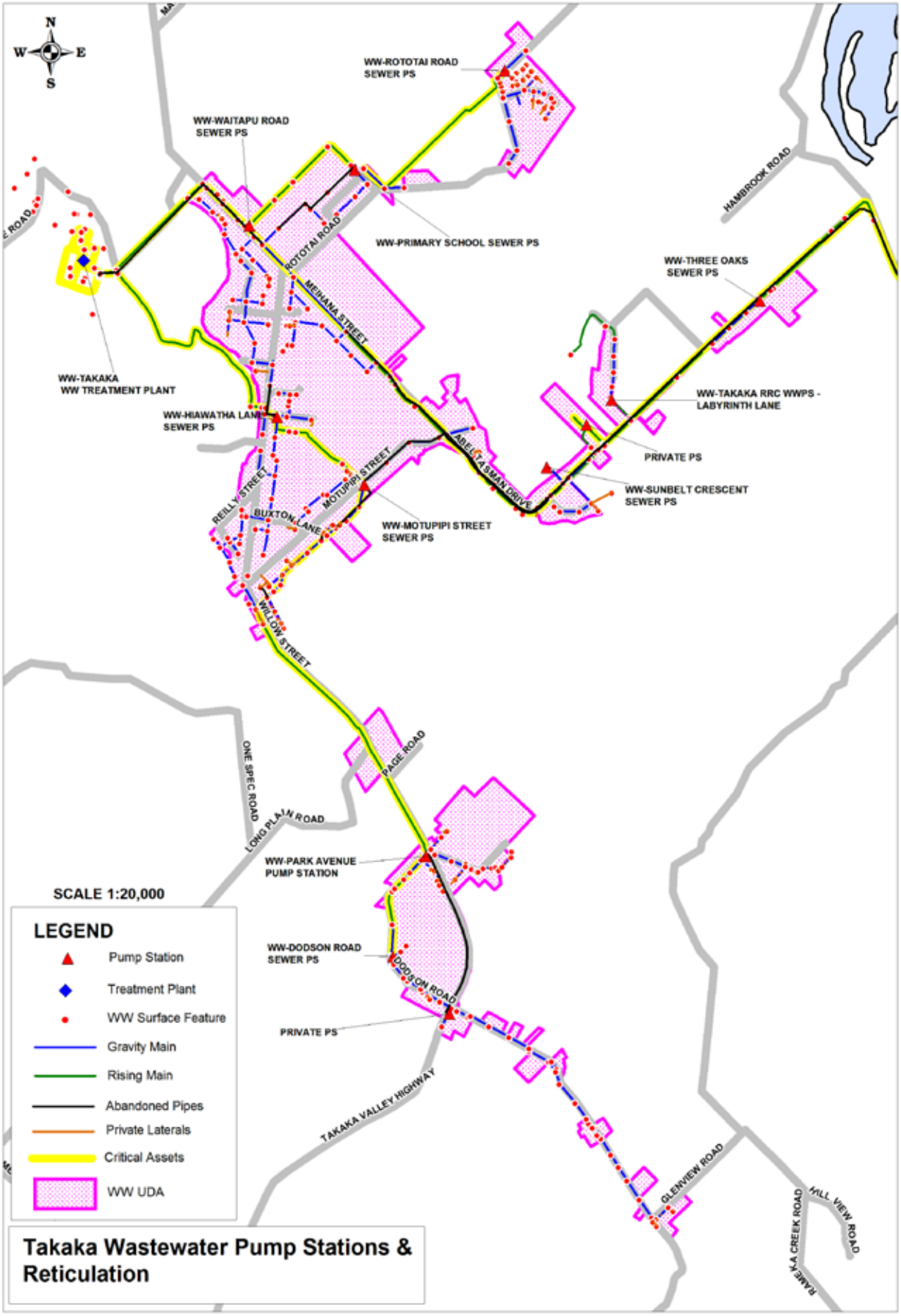
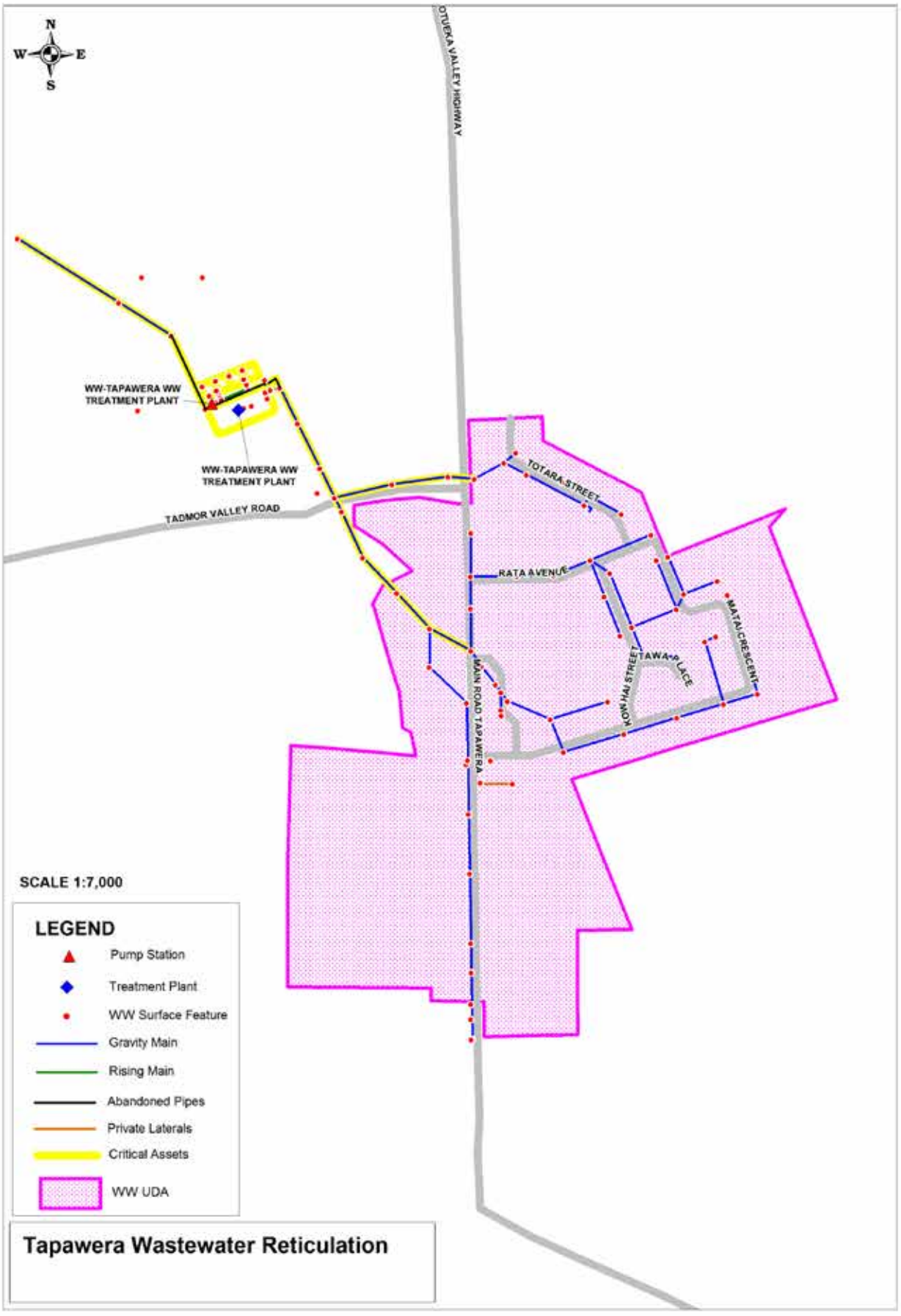
WW-GOLF CLUB SEWER PS
WW-POHARA CAMP SEWER PS
ABEL TASMAN DRIVE
WW-FOUR WINDS SEWER PS
NEES ROAD
WW-ROTOTAI ROAD SEWER PS
WW-BOYLE ST SEWER PS
CLIFTON ROAD
HAMBROOK ROAD
BURNSIDE ROAD
WW-BURNSIDE SEWER PS
WW-DELANEYS SEWER PS
WW-THREE OAKS SEWER PS
WW-TAKAKA RRC WWPS LABYRINTH LANE
PRIVATE PS
WW-SUNBELT CRESCENT SEWER PS
GLENVIEW ROAD
SCALE 1:20,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
Pohara Wastewater Pump Stations & Reticulation 2 of 2

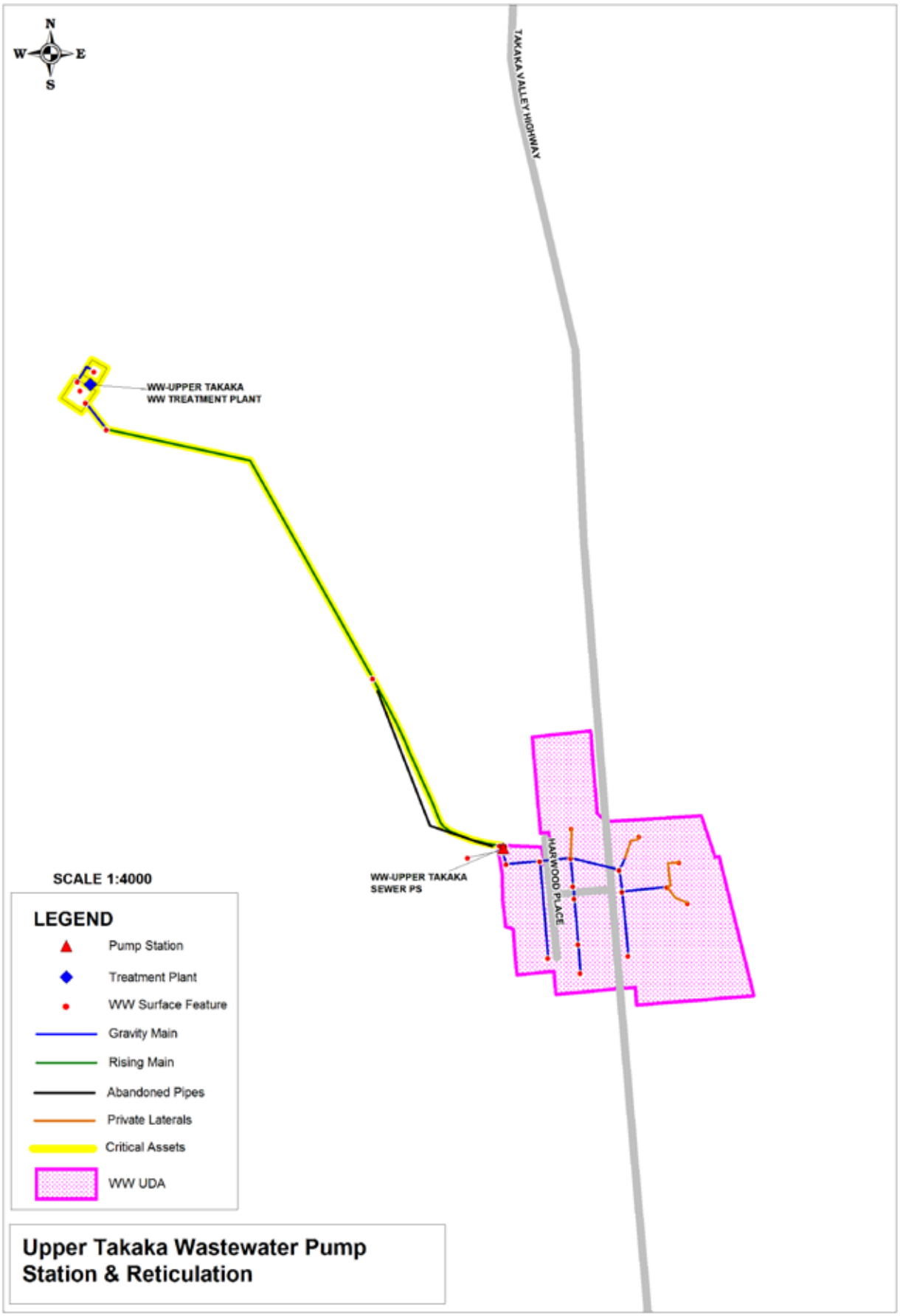

N
W
E
S
SEE DETAIL
129 BEACH ROAD RTS
RICHMOND TRUNK MAIN PS -
121 BEACH ROAD - NRSBU
CRAFT HABITAT SEWER PS
PRIVATE
64 GLADSTONE ROAD - PRIVATE
WW-423 HILL STREET
SEWER PS
DETAIL
SCALE 1:20,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Richmond Wastewater Pump Stations
& Reticulation

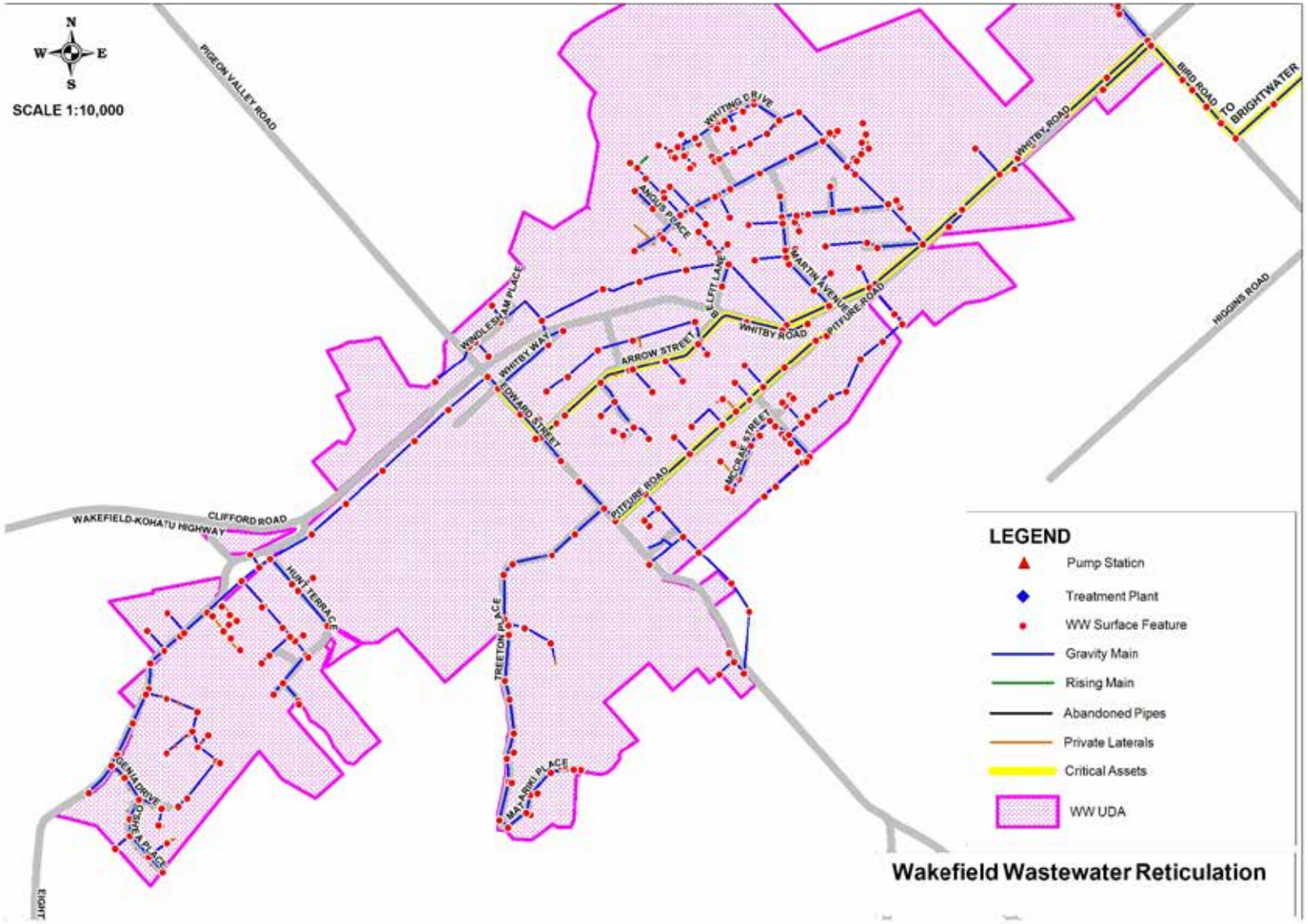

N
W
E
S
GOODALL ROAD
MAIN ROAD RIWAKA
WW-GREEN TREE ROAD SEWER PS
GREEN TREE ROAD
WHARF ROAD
SCHOOL ROAD
WW-SCHOOL ROAD SEWER PS
WW-RIWAKA MAIN SEWER PS
WW-JENKINS SH 60 SEWER PS
WW-LODDER LANE SEWER PS
LODDER LANE
WW-MOTUEKA WW TREATMENT PLANT
KURI ROAD
HIGH STREET NORTH
STAPLES
SCALE 1:15,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Riwaka Wastewater Pump Stations & Reticulation


DETAIL
WW-ST ARNAUD
WW TREATMENT PLANT
ST ARNAUD-KAWATIRI HIGHWAY
SEE DETAIL
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Private Laterals
Critical Assets
WW UDA
N
W
E
S
SCALE 1:7500
GLACIAL TERRACE
BEECHNEST DRIVE
MAIN ROAD ST ARNAUD
WAIRAU VALLEY HIGHWAY
TOUTOU WAI PLACE
WW-BEECHNEST DRIVE SEWER PS
WW-ST ARNAUD SEWER PS 2
(ALPINE LODGE)
LODGE ROAD
WARD STREET
ROTOITI STREET
LAKE ROAD
ROBERT STREET
MASSEY STREET
KERR BAY ROAD
HILL ROAD
VIEW ROAD
BAXTER STREET
COTTERELL PLACE
WW-ST ARNAUD SEWER PS 1 (KERR BAY)
St Arnaud Wastewater Pump Stations
& Reticulation


N
W
E
S
WW-ROTOTAI ROAD SEWER PS
WW-WAITAPU ROAD SEWER PS
WW-PRIMARY SCHOOL SEWER PS
ROTOTAI ROAD
MEHANA STREET
HAMBROOK ROAD
WW-THREE OAKS SEWER PS
WW-TAKAKA WW TREATMENT PLANT
WW-HIAWATHA LANE SEWER PS
ABEL TASMAN DRIVE
WW-TAKAKA RRC WWPS - LABYRINTH LANE
PRIVATE PS
WW-SUNBELT CRESCENT SEWER PS
REILLY STREET
MOTUPIPI STREET
BUXTON LANE
WW-MOTUPIPI STREET SEWER PS
WILLOW STREET
PAGE ROAD
ONE SPEC ROAD
LONG PLAIN ROAD
WW-PARK AVENUE PUMP STATION
SCALE 1:20,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
WW-DODSON ROAD SEWER PS
DODSON ROAD
PRIVATE PS
TAKAKA VALLEY HIGHWAY
GLENVIEW ROAD
HILL VIEW ROAD
RAKE-X-A CREEK ROAD
Takaka Wastewater Pump Stations & Reticulation


N
W
E
S
OTUEKA VALLEY HIGHWAY
WW-TAPAWERA WW TREATMENT PLANT
WW-TAPAWERA WW TREATMENT PLANT
TADMOR VALLEY ROAD
TOTARA STREET
RATA AVENUE
MATAI CRESCENT
KOWHAI STREET
TAWA PLACE
MAIN ROAD TAPAWERA
SCALE 1:7,000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Tapawera Wastewater Reticulation


N
W
E
S
TAKAKA VALLEY HIGHWAY
WW-UPPER TAKAKA
WW TREATMENT PLANT
WW-UPPER TAKAKA
SEWER PS
HARWOOD PLACE
SCALE 1:4000
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Upper Takaka Wastewater Pump Station & Reticulation


N
W
E
S
SCALE 1:10,000
PIGEON VALLEY ROAD
WHITING DRIVE
ANGUS PLACE
WINDLESHAM PLACE
WHITBY WAY
ARROW STREET
EDWARD STREET
WHITBY ROAD
MARTIN AVENUE
PITFURE ROAD
HIGGINS ROAD
BIRD ROAD TO BRIGHTWATER
WAKEFIELD-KOHATU HIGHWAY
CLIFFORD ROAD
HUNT TERRACE
TREETON PLACE
MAYFAIR PLACE
LORENA DRIVE
DOVE PLACE
LEGEND
Pump Station
Treatment Plant
WW Surface Feature
Gravity Main
Rising Main
Abandoned Pipes
Private Laterals
Critical Assets
WW UDA
Wakefield Wastewater Reticulation

APPENDIX Z AMP STATUS AND DEVELOPMENT PROCESS – WASTEWATER

Z.1 Quality Assurance

Quality Assurance Statement		
Tasman District Council 189 Queen Street Private Bag 4 Richmond 7050 Telephone: (03) 543 8400 Fax: (03) 543 9524	**Version:**	Draft – January 2015
	Status:	Draft
	Project Manager:	Dwayne Fletcher
	Prepared by: **AMP Author**	Juliet Westbury
	Approved for issue by: **Engineering Manager**	Peter Thomson

Z.2 Quality Requirements and Issues

	Issues and Requirements	Description
1	Fitness for Purpose	The AMP has to be "fit for purpose". It has to comply with Audit NZ expectations of what an AMP should be to provide them the confidence that the Council is adequately managing the Council activities.
2	AMP Document Consistency	Council want a high level of consistency between AMPs so that a reader can comfortably switch between plans.
3	AMP Document Format	The documents need to be prepared to a consistent and robust format so that the electronic documents are not corrupted (as happens to large documents that have been put together with a lot of cutting and pasting) and can be made available digitally over the internet.
4	AMP Text Accuracy and Currency	The AMPs are large and include a lot of detail. Errors or outdated statements reduce confidence in the document. The AMPs need to be updated to current information and statistics.
5	AMP Readability	The AMPs in their current form have duplication – where text is repeated in the "front" section and the Appendices. This needs to be rationalised so that the front section is slim and readable and the Appendix contains the detail without unnecessary duplication.
6	Completeness of Required Upgrades/Expenditure Elements	The capital expenditure forecasts and the operations and maintenance forecasts need to be complete. All projects and cost elements need to be included.
7	Accuracy of Cost Estimates	Cost estimates need to be as accurate as the data and present knowledge allows, consistently prepared and decisions made about timing of implementation, drivers for the project and level of accuracy the estimate is prepared to.

	Issues and Requirements	Description
8	Correctness of Spreadsheet Templates	The templates prepared for use need to be correct and fit for purpose.
9	Assumptions and Uncertainties	Assumptions and uncertainties need to be explicitly stated on the estimates.
10	Changes Made After Submission to Financial Model	If Council makes decisions on expenditure after they have been submitted into the financial model, the implications of the decisions must be reflected in the financial information and other relevant places in the AMP – eg. Levels of service and performance measures, improvement plans etc.
11	Improvement Plan Adequate	Improvements identified, costed, planned and financially provided for in financial forecasts.