Tasman District Council

Wastewater
Activity Management Plan

2009 - 2019

August 2009

Quality Assurance Statement		
Tasman District Council 189 Queen Street Private Bag 4 Richmond 7050 Telephone: (03) 543 8400 Fax: (03) 543 9524	**Version:**	5 (August 2009)
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For full Quality Assurance Statement, Refer Appendix Z.

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1. INTRODUCTION

1.1 The Wastewater Activity Management Plan: What is it and Why is it Produced?

The Wastewater Activity is one of the eight engineering activities addressed in the Tasman District Council Long Term Council Community Plan (LTCCP). This Wastewater Activity Management Plan (AMP) is, therefore, strongly linked to the overall strategic direction for the district. The LTCCP is the document and process that alerts the community to the key issues and strategies contained in this document.

The purpose of this plan is to outline and to summarise in one place, the Council's strategic and management long-term approach for the provision and maintenance of sewage transfer and treatment. Under Council's significance policy, wastewater is deemed to be a significant activity.

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 level of service required by the customers is provided at the lowest long term cost to the community and is delivered in a sustainable manner.

This AMP is based on existing levels of service, currently available information and the existing knowledge and judgement of Council staff.

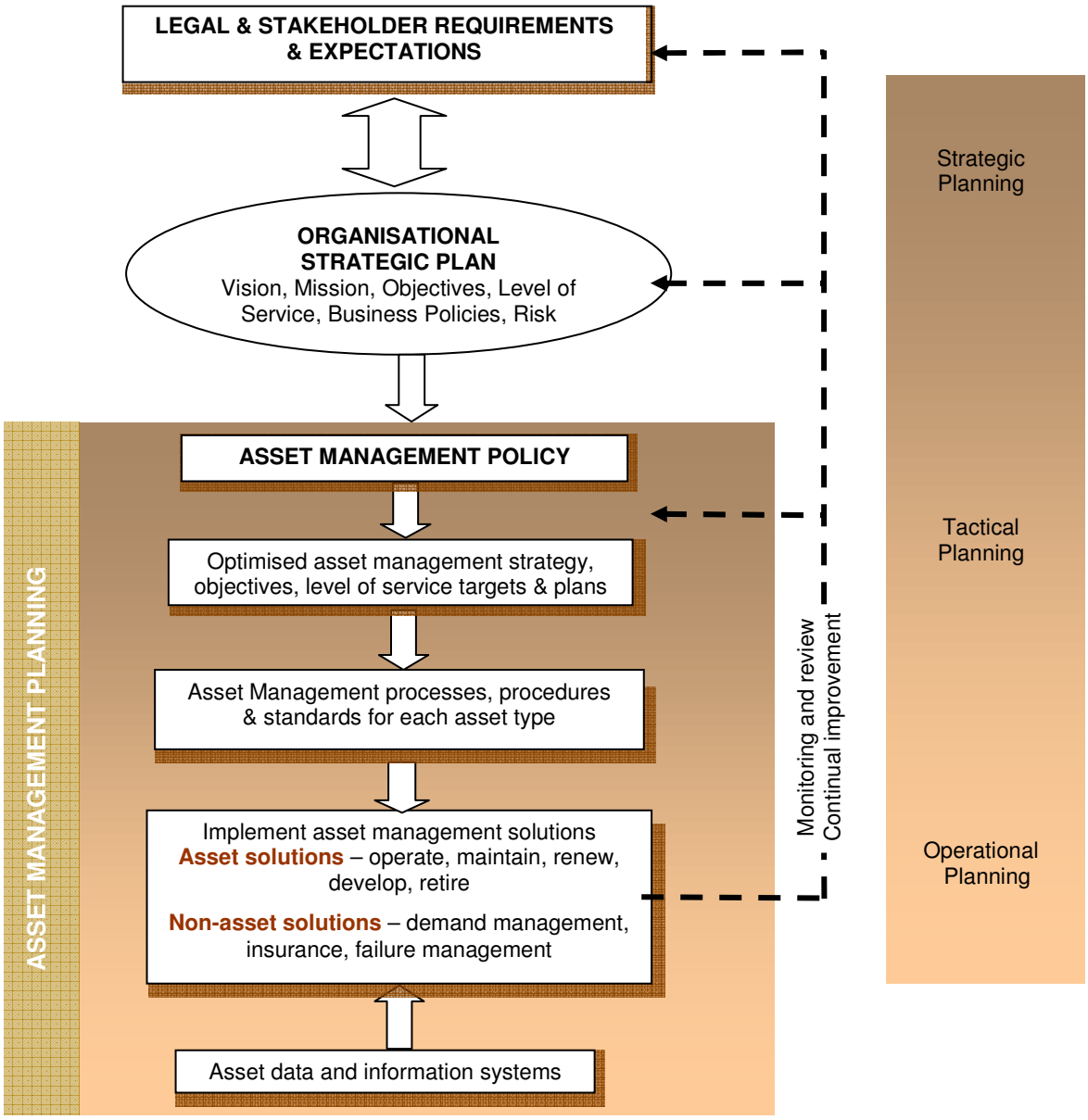
A programme of asset management improvement (see Appendix V) is planned to improve the quality of decision making (e.g. predictive modelling, risk management, optimised renewal decision making) and improve the knowledge of Council's assets and customer expectations. These future enhancements will enable Council to optimise life cycle AM activities and provide a greater degree of confidence in financial forecasts.

Figure 1-1 depicts the activity management planning process for infrastructure assets, with fundamental links to customer expectations, legislative requirements and corporate visions and strategies.

This plan has been prepared in line with the requirements of the Local Government Act 2002 and the International Infrastructure Management Manual (IIMM), Australia / New Zealand Edition, Version 3.0, 2006.

The key drivers, linkages with other plans and legislative requirements, that all feed into the development of the plan are discussed in Appendix A.

Figure 1-1: Activity Management Process for Infrastructure (Source IIMM)



1.2 Rationale for Council's Involvement in the Wastewater Activity

The provision of wastewater management services is considered to be a core public health function of local government and is something that the Council has always provided. The service provides many public benefits and it is considered necessary and beneficial to the community that 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 public 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 provided by others.

1.3 Justification of Asset Ownership

This AMP assumes continued Council ownership of the wastewater schemes. Arguments to justify public ownership of wastewater assets include:

(1) Core Business - the provision of wastewater services is considered to be a core function of local government.

(2) Public Benefit - the service is assessed as providing mainly public benefits

(3) Funding - local government has access to more favourable financing options

(4) Exclusivity - although it is practical to exclude customers from utilising the service by disconnection, in practice this is difficult for health and safety reasons

(5) Monopoly Supply - the service is a monopoly because of limited customer options

(6) Community Opinion - the public generally do not favour private ownership of key infrastructure assets

The Local Government Act 2002 contains severe restrictions on Council's ownership opportunities including:

- Wastewater assets cannot be used as security.
- Ownership cannot be divested (except to another local government organisation).
- Only wastewater services servicing less than 200 people may be closed down or transferred to an entity representative of the community, and then only by way of a very prescriptive process.

The legal authority for Council to be involved in the management and ownership of assets is embodied in the Local Government Act 2002 and empowers Council:

- to undertake the planning, implementation and maintenance of any work that, in the opinion of the territorial authority, is necessary or beneficial to the district, whether within or outside the district.
- to purchase, take in the manner provided for in the Public Works Act 1981, or otherwise acquire and hold, any land or interest in land which may be necessary or convenient for the purposes of or in connection with any public work that the local authority is empowered to undertake, construct or provide.

1.4 Overview of the Wastewater Activity

This activity encompasses the provision of wastewater treatment facilities and sewerage collection systems to the residents of 14 Urban Drainage Areas (UDA's) within the Tasman District. The assets used to provide this service include approximately 323 km of pipelines, 2,250 manholes, 75 sewage pump stations, 7 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 8 wastewater treatment and disposal plants (WWTPs). This Plan covers the wastewater assets owned, operated and maintained by Council within the following communities:

Table 1-1: Urban Drainage Areas and Treatment and Disposal Plants

Wastewater System	Urban Drainage Area (UDA)	Treatment & Disposal Plants
Collingwood	Collingwood	Collingwood WWTP
Kaiteriteri / Riwaka	Kaiteriteri	Motueka WWTP
	Riwaka	
Motueka	Motueka	
Murchison	Murchison	Murchison WWTP
St Arnaud	St Arnaud	St Arnaud

Wastewater System	Urban Drainage Area (UDA)	Treatment & Disposal Plants
Upper Takaka	Upper Takaka	Upper Takaka WWTP
Takaka	Takaka	Takaka WWTP
Pohara	Pohara	
Tapawera	Tapawera	Tapawera WWTP
Mapua / Ruby Bay	Mapua / Ruby Bay	NRSBU Bell Island WWTP (50% ownership)
Richmond / Hope	Richmond	
	Hope	
Wakefield Brightwater	Wakefield	
	Brightwater	

Tasman District Council and Nelson City Council are equal joint owners of the Nelson Regional Sewerage Business Unit (NRSBU). The treatment plant is located at Bell Island in Waimea Inlet. Wakefield, Brightwater, Hope, Richmond and Mapua/Ruby Bay communities dispose their wastewater to this plant which also treats a significant part of Nelson City's wastewater. Council has representatives on the NRSBU Board, but is not involved in the management and operation of the treatment plant.

Council operates, maintains and improves the infrastructure assets relating to wastewater on behalf of the ratepayers and strives to meet the level of service they require to enhance community development and improve the environmental and recreational assets relating to Tasman District.

Day to day operational, inspection and maintenance of the wastewater systems is carried out by Downer EDi Works Ltd. This maintenance contract is administered by MWH New Zealand Ltd, Council's Professional Services Consultant.

As part of the annual budgeting exercise the Asset Managers combine their knowledge with that provided by MWH and Downer to identify assets that require renewal or significant upgrades.

Renewal decisions are based on issues such as high operating costs or failure rates. While there is no formal project ranking system, the Council decision to proceed with significant renewal projects typically follows a formal investigation process.

Extensions to the existing network of assets occurs through the vesting of assets associated with a new development or through direct creation to meet demand.

1.5 Key Issues and Strategic Approach

The key issues for Council have been:

- the performance of its wastewater treatment plants,
- the condition of some of its critical pressure mains which were causing a number of pipe breaks,
- the high wet weather flows experienced in the reticulation networks,
- capacity issues in some of the core infrastructure which when combined with high wet weather flows has led to system overflows.

To deal with these problems Council's initial focus has been to:

- reduce sewage overflows from pump stations, pipe breaks and trunk mains. This has seen a focus on upgrading or replacing pump stations, rising mains and trunk mains, including for example - Takaka working back towards Pohara, and replacement of the Richmond trunk main. Most sections of the rising main between Kaiteriteri and Motueka SH Bridge have also been replaced;
- upgrade wastewater treatment plants, continuing the work on preventing overflows and pipe breaks, reducing inflow and infiltration, and gaining a better understanding of the condition and capacity of wastewater assets.

The current highest priority wastewater projects for Council are the completion of the upgrading of wastewater treatment plants to provide additional capacity for future growth and to improve environmental outcomes. Council has completed a major upgrade of Murchison and Tapawera WWTPs and minor upgrades of Upper Takaka and Collingwood. The next planned upgrades are for Takaka, and Motueka. These treatment plants are currently under capacity and treatment performance is compromised.

Council has been focussing on preventing sewer overflows from pump stations and pipe breaks as there is certainty in achieving a result in the short term. However this has not addressed the core problem of high wet weather flows. Having the issues of overflows and treatment plants in hand, Council can move on to address these core problems. Council is now planning projects to reduce major sources of inflow and infiltration. The benefit from this may not been seen in the short term but in the long term will lead to reduced operation and maintenance costs, and delay the need for upgrading some assets.

Modelling of existing wastewater networks is being undertaken to provide a better understanding of existing system capacity, identify areas of high inflow and infiltration, highlight system deficiencies, and allow robust planning around new subdivision developments and future upgrading needs.

The Water and Sanitary Services Assessment (WSSA) identified several communities which would benefit from a public wastewater system. These included Tasman and Marahau. The provision of a wastewater service for both these communities is programmed outside the first ten years of the financial forecast and will require community consultation before they proceed.

2. LEVELS OF SERVICE, PERFORMANCE MEASURES, AND RELATIONSHIP TO COMMUNITY OUTCOMES

2.1 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 this 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
- The Council's understanding of what the community is able to fund

2.2 How do Our Wastewater Activities Contribute to the Community Outcomes?

A full summary of the Council's Community Outcomes is included in Appendix R. Table 2-1 lists the Community Outcomes to which the wastewater activity contributes, and describes how it contributes.

Table 2-1: How Wastewater Activities Contribute to Community Outcomes

Community Outcomes	How Our Wastewater Activities Contribute to the Community Outcomes
Our unique and special natural environment is bountiful, healthy, clean 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 affect the health and cleanliness of the receiving environment.
Our built urban and rural environments are functional, pleasant, safe 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 transport and essential services are sufficient, efficient and sustainably managed.	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.

2.3 What Level of Service Do We Seek To Achieve?

Table 2-2 sets out the levels of service the Council has adopted. It also shows:

- the Community Outcome from which each level of service has been developed
- how we will know if we are successful in delivering the level of service.

Table 2-2: Levels Of Service - Wastewater

Community Outcomes	Levels of Service (what Council will provide)	We will know we are achieving this when …….
Our unique and special natural environment is bountiful, healthy, clean and protected.	1. Our Wastewater systems do not adversely pollute or degrade the receiving environment.	All wastewater treatment plants hold all necessary resource consents.
		All wastewater treatment plants meet the minimum compliance levels in the resource consents.
		We can limit the number of overflows that cause beach closures or shellfish gathering bans to less than 5 per year.
Our built urban and rural environments are functional, pleasant, safe and sustainable managed.	2. Our wastewater systems reliably take our wastewater with a minimum of odours, overflows or disturbance to the public.	We can limit the number of overflows on private property due to Council system fault to less than 5 per year.
		We can limit the number of overflows from the sewer in a year to less than one per kilometre of sewer.
		We can limit the number of overflows from pump stations per year to less than 10.
		We receive less than 30 complaints per year relating to odour or noise from our wastewater systems.
Our transport and essential services are sufficient, efficient and sustainable managed.	3. Our wastewater systems serve those who should be serviced.	95% of properties within the Urban Drainage Areas are able to be connected to the Council's reticulation system at their boundary if they so choose.
		Our Water and Sanitary Services Assessment (WSSA) identifies communities that we don't serve but that may benefit from having a Council owned community scheme, and plans are in place in the AMP to consult with these communities.
	4. Our wastewater activities are managed at a level that satisfies the community.	Our surveys show that 80% of customers are satisfied with the wastewater service they receive.
	5. Our systems are built so that failures can be prevented. If they do occur, they can be responded to quickly.	We are able to respond to and fix faults within the timeframes we have specified with our operations and maintenance contracts.
		We have a facility for receiving and handling emergency calls after office hours.
		We have operative risk management processes in place and planned mitigation measures completed.
		All pump stations have standby pumps in case of mechanical failure.
		Our pump stations have storage or standby electrical generation in case of power failure.
		Our pump stations have telemetry to allow automatic communication of failures.

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 AMP, however after taking into account feedback from various parties including Audit New Zealand, the Council has decided to reduce the number of Levels Of Service so there is more focus and clarity, and to make sure that the link between the Levels Of Service adopted and the Community Outcomes is clear.

2.4 What Performance Are We Achieving and What Do We Plan to Achieve?

Details of the Levels Of Service that Council is currently achieving are shown in Table R1 in Appendix R. This table includes intended future performance for each level of service within the next 3 years, and by the end of the next 10 year period.

2.5 What Plans Have Council Made to Meet The Levels Of Service?

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

- Council is making a capital works investment of $78.6 million over the next 20 year period to upgrade existing wastewater assets and improve levels of service in the wastewater systems. This includes:
  - installing new digital telemetry at 14 pump stations or other wastewater facilities;
  - adding storage at 19 existing pump stations to meet current Engineering Standards and prevent overflows;
  - purchasing three new mobile generators, to service Mapua/Ruby Bay, Motueka, and Golden Bay;
  - installing new biofilters or other odour controls at 5 existing pump stations;
  - increasing capacity of existing reticulation networks to meet current Engineering Standard requirements.
- Of the above sum, the Council plans to invest $47.1 million over the next 20 years to renew wastewater assets including:
  - a major gravity pipeline renewals programme for Motueka to reduce infiltration, reduce overflows and improve treatment plant performance;
  - upgrading analogue telemetry with digital telemetry at 27 pump stations or other facilities as they become due for renewal or are upgraded;
  - upgrading of 2 WWTPs to improve environmental and health outcomes.
- The Council have allocated an annual budget of $4.3 million increasing to $6.7 million over 20 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;
  - NSRBU charges;
  - professional services for investigative and modelling work/studies.
- Council has a budget provision on average of $175,000 per year over the next 20 year period to investigate and reduce infiltration within its wastewater networks.

3. THE EXISTING SITUATION DESCRIBED

3.1 Public Wastewater Systems

The public wastewater systems and treatment facilities that are presently owned and managed by the Tasman District Council are shown in Table 3-1 and Table 3-2 below. A comprehensive description of each scheme is provided in Appendix B.

The data displayed in the Table below has been sourced from the Council's Asset Register.

Table 3-1: Summary of Wastewater Assets Managed by TDC

Wastewater Systems	Pipelines (km)	Manholes	Pump Stations	Treatment
Collingwood	7.5	40	3	Collingwood WWTP
Kaiteriteri / Riwaka	37.8	71	11	Motueka WWTP
Motueka	46.0	128	18	Motueka WWTP
Mapua / Ruby Bay	26.4	84	12	NRSBU scheme
Wakefield / Brightwater	36.7	188	4	NRSBU scheme
Richmond / Hope	93.1	1390	2	NRSBU scheme
Murchison	6.6	22	2	Murchison WWTP
St Arnaud	11.9	76	2	St Arnaud WWTP
Takaka / Pohara	53.8	189	20	Takaka WWTP
Tapawera	2.7	55	0	Tapawera WWTP
Upper Takaka	1.0	7	1	Upper Takaka WWTP
Total	**323.5**	**2250**	**75**	

Table 3-2: Summary of Treatment Plant Assets

Location	Treatment Plant
Collingwood	Oxidation pond to wetland with UV disinfection to Burton Ale Creek
Motueka	Aeration pond to oxidation pond to soakage beds to ground soakage
Murchison	Aeration pond to oxidation pond to gravel filter to ground soakage
St Arnaud	Oxidation ponds to wetlands to ground soakage
Takaka	Oxidation ponds to wetlands to ground soakage
Tapawera	Oxidation pond to ground soakage
Upper Takaka	Oxidation pond to wetland to ground soakage

Bell Island treatment plant is operated by the Nelson Regional Sewerage Business Unit (NRSBU), which is jointly owned by Nelson City Council and Tasman District Council. This WWTP comprises:

- Inlet works,
- grit removal,
- activated sludge system,
- secondary clarifier,
- DAF plant,
- bio solids treatment,

- facultative ponds,
- maturation ponds,
- discharge of treated effluent to the sea.

An upgrade of this WWTP commenced in 2008/09 and will include constructing a new inlet works, a primary clarifier and primary sludge thickening.

The Treatment Plant is owned by Nelson Regional Sewerage Business Unit (NRSBU) which comprises both Nelson City and Tasman District Councils.

3.2 Private Wastewater Systems

There are no private systems included in this AMP. Private system assessments were carried out in 2004/2005. The Water and Sanitary Services Assessment (WSSA) documents, Volumes 1 and 2 underwent the public submission process and were approved by Council in June 2005. Refer to Appendix C of this AMP.

3.3 Asset Condition

The Asset Register was reviewed in July 2007 with all wastewater supply assets formally valued as at 30 June 2007. Generally accepted theoretical design life (base life) of the asset components were assessed in relation to a point when asset performance or condition becomes unsustainable. The base lives used in the AMP are also consistent with the lives adopted in the Asset Register. Further information on the asset records and systems utilised can be found in Appendix S.

These theoretical base lives have been reviewed on a location by location basis, by staff and consultants who have specific knowledge in these areas. Where required, adjustments were made to the remaining life of the assets to better reflect their actual condition and performance and to tie into any planned renewal works.

The condition and performance of assets is routinely monitored through the maintenance Contract in the form of pump station records and wastewater treatment plant performance testing. In addition treatment plant and pump station inspections are carried out in accordance with maintenance contract requirements.

3.4 Asset Management Practices

Council has access to staff and consultants who have had a long association with the assets being managed. The history of most assets is generally known. However, as a source of information such knowledge and experience has its limitations. A number of information systems have been implemented to monitor performance and assist in the asset management process.

As part of the annual budgeting exercise the Asset Managers combine their knowledge with that provided by MWH and Downer EDi Works to identify assets that require renewal or significant upgrades.

Renewal decisions are based on issues such as high operating costs, system inadequacies or failure rates. While there is no formal project ranking system, the Council decision to proceed with significant renewal projects typically follows a formal investigation process. A risk management system is to be developed as part of the asset management system to aid this decision making process.

Extension of the existing network of assets occurs through the vesting of assets associated with a new development or through direct creation to meet demand.

Southbank Systems Ltd, Confirm Enterprise Software is used Councils corporate Asset Management System. The implementation and expansion of this system is ongoing.

4. OPERATIONS AND MAINTENANCE

4.1 Council 'Ownership' of Operations and Maintenance

The operation and maintenance of the wastewater systems has been incorporated into a single contract along with the operation and maintenance of the water supply and stormwater systems in the District. Whilst Council has recruited assistance through delegation, it is ultimately the Council's responsibility to ensure that the wastewater assets are adequately operated and maintained.

The Council has implemented a performance based contract from 1 July 2007. This contract states what the contractor must achieve within a strict set of guidelines and standards. It is then up to the contractor to determine what must be done to achieve these outcomes. This empowers the contractor to be innovative in scheduling the maintenance works, as better efficiency and effectiveness will lead to commercial gain. The theory is that the savings achieved by the contractor in the long term will lead to reduced maintenance costs to Council and an ability to divert expenditure from maintenance to improvement.

4.2 Control and Management of Operations and Maintenance

A full explanation of how the Council manages the whole wastewater activity (its organisation arrangements, information systems, various processes and implementation tactics) is in Appendix E.

Day to day operational, inspection and maintenance of the wastewater systems is carried out by Downer Edi Works Ltd. TDC Contract 688, which outlines work to be performed, commenced on 1 July 2007 for a period of up to 10 years. This maintenance contract is administered by MWH.

Contract 688 the current Utilities Maintenance Contract includes provision for both proactive and reactive wastewater activities. The proactive element covers the bulk of maintenance works carried out with the reactive element covering one off repairs and improvements. There is additional facility for the Council to instruct and remunerate the contractor to carry for completing additional works if necessary. These are usually approved and instructed by the Engineer.

4.3 Maintenance Standards

Details of maintenance standards and costs are included in Appendix E.

4.4 Maintenance and Operating Issues

Generally, the wastewater systems and treatment facilities are well maintained and operate smoothly. However, there are maintenance and operating issues that Council recognises and will continue to work on to resolve. These issues are summarised in Table 4-1 below:

Table 4-1: Summary of Operations and Maintenance Issues and Actions

Issue	Action Council is Taking
Access to accurate plans of assets can be difficult, particularly remotely, e.g. contractors out in the field.	Continuing development of the Confirm Enterprise database and GIS system, formalisation of as-built drawing processes and ensuring as-built data collected under the O&M contract is inputted and accessible.
O&M manuals for existing assets are basic and in some areas do not exist. Also System Operating Plans do not in general incorporate comprehensive detail and explain/clarify the relationship between assets, e.g. pump stations and reticulation.	New assets are in general well documented, over time O&M manuals on existing/older assets need to be produced and updated. System Operating Plans need to be developed further to incorporate additional operational data.
Telemetry: A single supplier provides virtually all telemetry equipment in the district, including software, tying Council to that supplier. Hence potentially exposing it to business risks.	Council is currently undergoing an update which incorporates industry standard equipment and communication protocols that enables more generic equipment to be utilised. This also incorporates a move to a digital based radio network which provides more efficient data transfer and aligns the system with the capabilities of the Council's existing internet facilities.
Radio licensing: The current radio licensing system has some cost inefficiencies.	Council is currently migrating the radio network to a less complex system of licensing repeaters to cover areas rather than licensing individual sites. In time this will greatly reduce license fees and provide much more flexibility when adding or amending sites.
Expansion of monitoring programmes relating to wastewater treatment plant discharges.	Although most WWTPs have discharge permits with terms greater than 10 years, there may be pressure to expand monitoring programmes to include additional parameters or more additional monitoring sites as a result of research or changes to standards. Council has allowed for some increase to monitoring costs over the term of this AMP.
Systems are under pressure at times of heavy rainfall or flood through inflow and/or infiltration. Most systems still function well, but some require a high level of attention, particularly Pohara, Collingwood, Motueka and Mapua.	Increasing storage and continuing with inflow/infiltration investigations identifying major problems areas and replacing those sections of pipe. Modelling schemes to gain a better understanding of inflow/infiltration influences and system capacity. Upgrading facilities to improve fault diagnosis (flow measurement, pump current, telemetered alarms etc.).

4.5 Business Continuity / Emergency Management

The Council has developed various plans that outline the procedures that are to be followed to enable the wastewater network to continue to function to the fullest possible extent, even though this may be at a reduced level during a major breakdown and after a civil emergency.

These plans include:

- Nelson Tasman Engineering Lifelines Report 2008
- Nelson Tasman Emergency Management Plan
- TDC Emergency Procedures Manual – June 2005
- MWH/TDC Emergency Procedures Manual – June 2005
- Y2K report.

5. FUTURE DEMAND

5.1 Factors Affecting Demand

Council recognises that future demand for infrastructure services will be influenced by:

- Population growth and demographics
- Changes in community expectations
- Industrial demand
- Technological change
- Changes in legislation and environmental standards.

5.2 Population Growth

5.2.1. District Wide Projections

The scale of population growth anticipated in the District will have a significant impact on the wastewater assets. More people generally equate to higher wastewater flows and higher organic loadings.

The Tasman district has undergone a period of rapid growth as shown by census population shown in Table 5-1 below.

Table 5-1: Summary of Population Growth

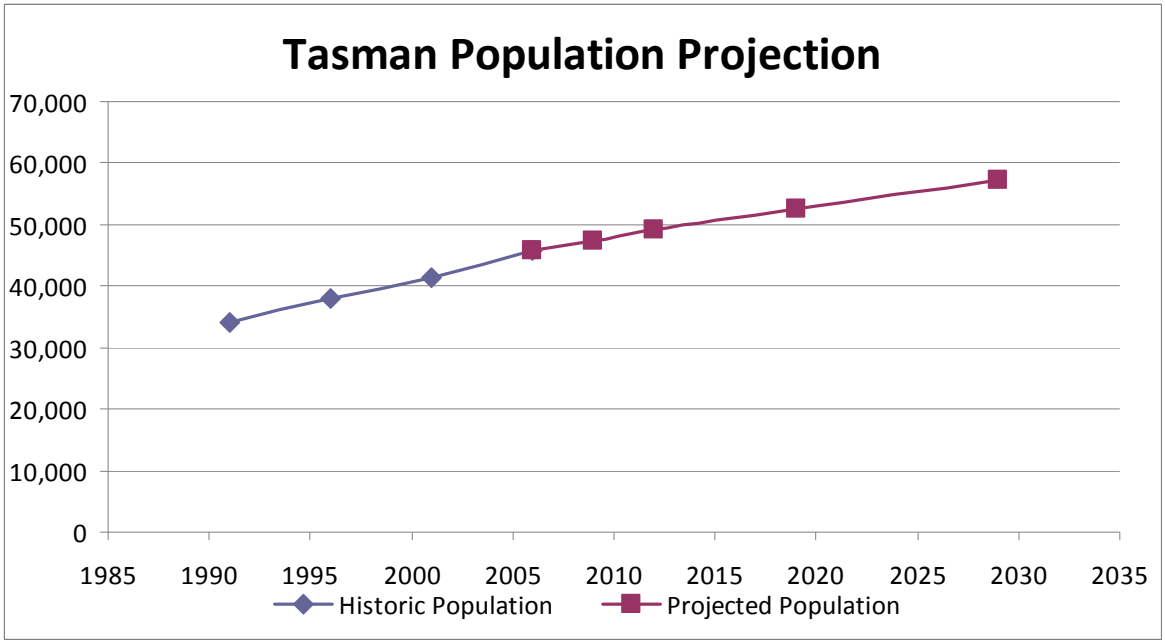
Year	Census Population For Tasman District	% Increase since last census	Average Compound Growth Rate per Annum	New Zealand Average Growth Rate per Annum
1991	34,026			
1996	37,971	11.6%	2.22%	1.41%
2001	41,352	8.9%	1.72%	0.65%
2006	45,800	10.8%	2.06%	1.51%

This shows that Tasman District has been growing at a faster rate that the national average.

For the purpose of projecting population growth and related property / dwelling growth in the district for the next 20 years and beyond, a comprehensive growth modelling analysis has been undertaken. This is summarised in Appendix F, and reported in more detail in a separate document (Refer to Appendix F for details). The resulting population projection that Council has adopted for the purposes of its infrastructure planning and financial planning is shown in Figure 5-1.

Council have adopted population projections that are consistent with Statistics New Zealand growth projections. Council has assumed medium growth for all areas except Motueka and Richmond where a high growth rate has been adopted.

Figure 5-1: Council's Desired Population Growth



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 wastewater infrastructure and, in turn, have determined the planned asset capacity requirements. The projected growth of wastewater pans due to the projected population growth are shown in Appendix F.

5.2.2. 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: Many 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 on-going problems in terms of consistently meeting performance levels, particularly during high inflow events and to a lesser extent during the peak summer period. Adding higher loads to the treatment plants adversely affects performance.

In terms of specific components of the sewerage systems, the required responses are as follows:

- The trunk mains between Brightwater and Richmond will be upgraded;
- Pump stations and rising mains will be upgraded in Ruby Bay and Mapua;
- The capacity of the rising main from Mapua to Bell Island will be increased;
- Upgrades at the Motueka and Takaka WWTP will be undertaken within the next 5 years;
- The pumping system through Pohara, Ligar Bay and Tata Beach will be upsized and modified;
- Increased capacity is needed in various gravity mains throughout Richmond;

5.2.3. 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 Council services.

Anticipated new developments and asset creation include the following significant schemes:

Richmond West — The development of Richmond West will be staged with the first new sewer pump station (Headingly Lane) being constructed once land designation and acquisition is complete. The second (Lower Queen Street) is planned to be constructed in Year 10 but will be timed to fit with subdivision developments.

Seaton Valley — Although this is a relatively recent subdivision for rural residential development many private septic systems are failing due to the characteristics of the Moutere clay soil. There is currently no council-owned wastewater service for this area, although it is anticipated that there may be pressure to provide a system that connects into the Mapua/Ruby Bay reticulation network, connecting to Bell Island. Provision for this is not currently in the plan. Future upgrading of the Mapua reticulation will include additional capacity in the design to cater for Seaton Valley.

5.3 Trends in Community Expectations

Community expectations vary geographically and over time. Key trends in community expectations that the Council recognises include those listed in Table 5-2.

Table 5-2: Trends in Community Expectations

Trends in Community Expectations	Implications for Wastewater Systems	How Council plans to Address the Issues
Environmental awareness is leading to a demand for higher treatment standards.	Resulting in higher number of complaints. Need to improve treatment. Council will need to be seen as a leader in sustainable practices and wastewater 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 consent.
Increased demand for public wastewater services.	On-site treatment and disposal may not meet future quality standard. Public systems may be demanded as an alternative.	Explore subsidies to provide wastewater services to such communities when they are available.
Customers are becoming more aware of the need for better water conservation.	Better water conservation by the public will in turn lead to a reduction in wastewater flows per connection.	Council should promote water conservation.
Customers and communities are becoming less tolerant of sewage overflows, odours or mechanical noise at pump stations and treatment plants.	Upgrades needed to defer/reduce overflows and odours. Also need to take steps to improve assets in order to minimise the number of shutdowns, service faults.	Increase storage capacities, increase system inter-connectedness and flexibility to convey wastewater and increase the robustness of the system in general.
Residents have expressed interest in alternative systems such as composting toilets.	Reduce flows in existing systems. Reduce need for rural extensions and offer an alternative to conventional on-site systems.	Council to develop policy on the use of composting toilets.

5.4 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

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 for them in this AMP.

5.5 Legislative Change

Legislative change can significantly affect the Councils ability to meet minimum levels of service, and can require improvements to infrastructure assets. Recent and possible future legislative changes that will impact on Council's ability to meet required standards, and may require improvements to infrastructure assets are outlined below. Recent trends suggest that there will more pressure on the Council to improve its management of waste. Current initiatives that are being advanced in the central government/industry include:

- The Local Government Act 2002 which required Council to carry out a Water and Sanitary Services Assessment by June 2005 followed by regular updates. The Water and Sanitary Services Assessment is planned to be updated every three years from 2009/10.
- New Zealand Waste Strategy: has a target of December 2007 for more than 95% of sewage sludge currently disposed of at landfill to be composted, beneficially reused or appropriately treated to minimise production of methane and leachate. Another target is that by December 2020 all substandard wastewater treatment facilities will be upgraded, closed or replaced with systems that comply with all relevant regional and coastal plans, standards and guidelines.
- Local Government Act 2002: also introduced a new philosophical approach that encompasses government's approach to sustainable development, i.e. the concept of sustainable communities and the requirement to consider social, cultural, environmental and economic thinking in the Council's decision making, financial management and reporting. This Act encourages, from Council, a higher level of environmental management responsibility and accountability.
- Ageing Pipes and Murky Waters (PCE June 2000): Report by Parliamentary Commissioner for the Environment to identify the key sustainability issues and significant risks affecting the sustainable management of urban wastewater systems. A major conclusion in this report is that New Zealand needs to manage its urban water systems (water supply, wastewater and stormwater) in an integrated and sustainable manner.

The implications of these initiatives include the need for Council to:

- Increase the quality of treated effluent,
- change their bio solid treatment and disposal methods in line with the NZ Waste Strategy,
- Increase their level of community consultation,
- Increase the integration of planning for wastewater systems (between water supply, wastewater and stormwater).

A financial allowance has been made to address some of these eventualities in this AMP. However the Council will be taking an active monitoring role to follow progress on these issues.

5.6 Industrial Demand

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

All industries are affected by the new Trade Waste Bylaw which came into effect in on 1 July 2006. There is not expected to be any significant change in industrial demand on the wastewater system.

6. NEW CAPITAL EXPENDITURE

6.1 Future Capital Works Programme

New works are those works that create a new asset that did not previously exist, or works that upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may be created at no direct cost to the Council (i.e. subdivisional developments for local authorities).

The creation of new assets is approached differently depending on whether it is an urban or industrial development within or adjacent to an existing wastewater system, or whether it is the introduction of a new system into a previously unreticulated area.

Development within, or adjacent to existing wastewater systems is typically driven by a developer subdividing land. These developments are guided and controlled by zoning and building consent processes, administered by the Council's Environment and Planning Section. As part of the building consent process the design of all assets, which will be vested to the Council, are checked against TDC Engineering Standards and Policies. If additional capacity must be added to the existing system to cater for the proposed development, the Asset Manager will negotiate an appropriate cost sharing agreement with the developer.

The creation of entirely new systems and the significant expansion of existing systems are driven by the Asset Manager, based on public demand, political drivers or technical requirements.

Council have developed 20 year capital works programmes. Only the first 10 years of the capital works programme are reported in Council's LTCCP, however Council have decided that there is benefit in planning over a 20 year horizon to ensure the level of expenditure over the long term is financially sustainable, and that a long term view is taken on the infrastructure planning.

The Council's 20 year capital programme is included in Appendix F.

6.1.1. Development Standards

All new wastewater assets constructed by the Council or acquired from subdivision developments will be constructed in accordance with the latest edition of the Council Engineering Standards and Policies.

The standards are updated regularly to incorporate relevant experiences and changes in best practice.

The standardisation in designs and specifications will be considered in the interests of facilitating replacement and operational simplicity.

6.2 Deferred Capital Projects

In developing their financial forecasts, Council has prepared a full schedule of capital projects and has programmed them in order to meet the levels of service, or the meet the needs of population growth. Initially Council adopted an optimistic growth forecast which drove significant capital expenditure. When new information became available from Statistics New Zealand on the 2006 census and their population projections, Council reviewed their growth forecast and adopted a more moderate growth in alignment with Statistics New Zealand projections. This has meant that some growth driven projects have been moved back, however these have moved because Council considers the need for them will arise later, rather than because of affordability issues. Thus it is expected that with these movements in the programme, the levels of service can still be met.

The Council has considered the financial affordability of the wastewater systems capital forecasts together with forecasts from all other Council activities, and has concluded that the wastewater capital forecast as provided is affordable, and has thus approved the capital programme with the following amendment.

Table 6-1: Projects Deferred Beyond the 20 year Forecast

Activity	Affected Communities	Total Estimate	Project Driver*
Tasman Village Reticulation	Tasman	$3,826,050	BL
Total Value of Projects Removed from the 20-year Forecast		**$3,826,050**	

*Project Drivers; G = Growth, B = Backlog, L = Increase in Level of Service, R = Renewal
N.B. does not include inflation

The implications of these deferrals have been incorporated into the Levels of Service and the text of the remainder of the AMP, however, specific implications are highlighted below:

- *If the National Environmental Standard for on-site wastewater is approved and widespread problems with septic system failures continue pressure to reticulate may mean Council will need to revise this decision.*

6.3 Funding of Future Capital Works

6.3.1. Overview

Future capital works are typically grouped into three categories namely:

- New schemes.
- Significant extensions to existing schemes.
- Works to address additional requirements to an existing scheme.

6.3.2. Funding New Schemes

New schemes are funded by:

- Financial Contribution via a Development Contribution (DC) which is a mechanism for developers to contribute towards designing for future growth capacity.
- The balance is grouped one-third Group Wastewater Account and two-thirds User contribution.

In addition to these means of funding new capital works, there is another potential source, the Central Government Health Subsidy.

6.3.3. Funding Significant Extensions to Schemes

This will occur when a current scheme is extended to service an area outside of the UDA (often adjacent to the current UDA). It is funded by:

- Extending the UDA to include this area into the Group Wastewater Account.
- Existing properties pay a joining (or connection) charge.
- New properties, created through subdivision, will pay a development contribution.

6.3.4. Funding New Requirements for an Existing Scheme

Capital works are funded by:

- Development Contribution (DC) – for any growth related proportion of the work payable by new allotments created by subdivision.
- Group Wastewater Account

6.4 Other Capital Works Issues and Policies

Apart from community consultation and affordability of new schemes, there are other issues that must be addressed for many capital projects. These include:

- Obtaining land to build on, either by purchase or lease.
- Obtaining resource consents, and this often includes consultation with affected parties (including iwi, landowners and neighbours) and other interested parties.

Other key financial policies relating to wastewater capital programming and expenditure are:

a) The repayment period for all new loans may be 20-30 years, or the estimated life of the asset which the loan is being raised to fund (whichever is the lesser). The Council also intends to review its current loan portfolio to determine whether or not the present loan repayment periods are appropriate.

b) The new capital expenditure forecasts for the next three years and for the next ten years are indicative only at this stage. The plan will be updated at intervals of not less than every three years, and the capital forecasts that are presently in it cannot be interpreted to mean that the work listed will be undertaken in the priority order shown, or necessarily, at all. In some cases, further studies are required to confirm that the work really is required and that the option that has been costed will be the best option for satisfying the identified need.

7. RENEWALS CAPITAL EXPENDITURE AND DEPRECIATION

7.1 Future Renewals Needs

Details outlining Council's renewal policy are listed in Appendix I.

Confirm, Council's asset management system software, is being implemented to assist in the process of identifying under-performing assets and determining the cost of maintaining those assets. It will also support decisions of whether or not renewing the asset is the most cost effective solution. The aim is to achieve a solution with the lowest long-term cost and with an affordable cash flow programme.

The projected expenditure on renewals for the next 10 years is in Appendix I.

7.2 Funding of Renewal Work

Renewal work is funded by pan charges. Council will decide on an ongoing basis whether or not any part of the works should be loan funded depending on the state of the account balance.

7.3 Deferred Renewals

Renewal works identified may be deferred if the cost is beyond the community's ability to fund it. This can occur when higher priority works are required on other infrastructure assets, or there are short term peaks in expenditure or if an inadequate rating base exists.

When renewal work is deferred the impact of the deferral on economic inefficiencies and the system's ability to achieve the required service standards will be assessed. Although the deferral of some renewal works may not impact significantly on the operation of assets, repeated deferral will create a liability in the longer term.

There are no renewal projects that have been deferred in the 20 year period of this plan.

7.4 Depreciation and Decline of Service Potential

As assets age they deteriorate and the efficiency and effectiveness of the service they provide can erode. This "decline of service potential" can be very minor and take a long time, or it can be quick depending on the type of asset. Depreciation is the mechanism by which this is accounted for, and renewals are the means by assets are restored to providing an acceptable level of service. Key assumptions on the Depreciation and Decline in Service Potential are included in Appendix J. The actual value of depreciation accounted for is included in the future overall financial requirements in Appendix L.

7.5 Asset Disposals

When an asset reaches the end of its useful life and renewal or replacement is decided against, Council may elect to decommission and dispose of an asset. The Council does not have a formal strategy relating to asset disposals. Council's approach to asset disposals is summarised in Appendix W.

There are no plans to decommission and dispose of any assets in the Wastewater activity in the period of this AM Plan.

8. SUMMARY OF THE OVERALL FINANCIAL POSITION, INCLUDING EXPENDITURE, INCOME, AND EXISTING ASSET VALUE

8.1 Overview

Council has a policy of user-pays for wastewater. All of the wastewater schemes servicing the various townships in the district belong to a district Group Wastewater Account. This is operated as a 'closed account' and, therefore, has a credit or debit balance reported annually.

8.2 A Statement of Financial Performance for the Next Ten Years

The statement of financial performance for the wastewater supply for the next 10 years is included in Appendix L. Only the first 10 years of the financial performance are reported in Council's LTCCP, however Council have decided that there is benefit in planning over a 20 year horizon to ensure the level of expenditure over the long term is financially sustainable, and that a long term view is taken on the infrastructure planning.

It should be noted that the financial projections in AMP, Appendix L, do not include inflation and are assessed in current value terms. The financial information presented in the LTCCP does include for inflation.

8.3 An Explanation Of The Council's Funding Policy For The Activity

Wastewater expenditure is funded in the main from a targeted rate called a "pan charge". The wastewater services are therefore operated on a user pays basis and are not funded by any general rate appropriation.

- Pan charges
- Non-lump sum rates
- Connection charges
- Loans
- Development contributions (DC's)
- Trade Waste charges

More detail on these rates and charges is included in Appendix M.

Council operates a group account for all Council owned wastewater schemes with a uniform pan charge across the district. In 1998 Council adopted a policy of multi pan discounts (i.e. 1st pan full charge, 2nd to 10th pan 75% charge, over 10 pans 50% charge).

8.4 Trade Waste

The Trade Waste Bylaw 2005 regulates the discharge of trade waste to Council's wastewater system and replaces the previous TDC Interim Trade Waste Bylaw.

It details the charges to be set to cover the cost of administration, monitoring, conveying, treating and disposing of trade waste.

The bylaw was adopted by TDC in January 2006 and came into effect on 1 July 2006. Currently only the major trade waste producers (up to ten) have permits and are monitored on a regular basis. It is Council's intention to extend the permit process to the medium sized trade water producers in the short term.

Reviews of the Bylaw have been included in the financial forecast on a ten year cycle.

8.5 Schedule of Fees and Charges

A schedule of Fees and Charges is included in Appendix M.

9. RESOURCE CONSENTS AND PROPERTY DESIGNATIONS

9.1 An Explanation of Resource Consent Issues Relating to this Activity

A very important aspect of the wastewater activity is to ensure that any discharge to the district's land, air and natural water resources are managed responsibly.

Council managed wastewater reticulation and wastewater treatment plants (WWTPs) have an essential role in ensuring that wastewater produced in urban areas is properly collected and disposed of in ways that meet community expectations and avoid causing significant adverse effects in the environment.

Under the Resource Management Act 1991 (RMA) and the Tasman Resource Management Plan (TRMP), resource consents in the form of discharge permits are required for all discharges of treated effluent and odour. Other resource consents may also be required for construction and/or operation of wastewater infrastructure (e.g., pipelines in coastal areas). Council has designated WWTP sites which is an alternative form of authorisation provided in the RMA for public works.

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.

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

9.2 A Schedule Of All Resource Consents

A register has been developed to record the details of all active resource consents associated with the wastewater activity that are currently held by the Council. This register is used to identify when future consent renewals are required. Details are provided in Appendix H.

Identifying the full suite of ongoing resource consent requirements for wastewater infrastructure will be influenced by the provisions of the pending Part IV of the Tasman Resource Management Plan (TRMP): Rivers and Lakes, which will determine what consents are required for structures in river and stream beds.

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 on-going programme of "consent renewals" for those components of Council's wastewater systems. Council will ensure that the processes / programme for lodging applications for new consents will be achieved in plenty of time before the existing consents expire.

9.3 Resource Consent Reporting

Each discharge consent associated with the discharge of treated effluent requires an annual monitoring report to be submitted to Environment and Planning. The reports summarise monitoring during the previous year, identify trends, discussed performance, non-compliances, and recommends any changes to the monitoring programme.

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

9.4 Property Designations

Council has various designations for wastewater sites, all designated for “sewerage disposal purposes” in the TRMP, Appendix 1. A summary of all the designations can be found in Appendix H of this AMP.

In summary, Council has two existing designations for sewer pump stations, six for wastewater treatment plants (St Arnaud is not designated), and one for a future treatment site at Patons Rock. The designations all have a duration of 5 years from the date the Tasman Resource Management Plan becomes operative, parts of which became operative on 1 November 2008.

Council also has proposed designations over two pump station sites and two sewer main routes to serve the Richmond West Development Area.

10. DEMAND MANAGEMENT

10.1 An Explanation of the Council's Demand Management Policies for the Activity

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.

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.

Council is continuing to investigate and identify major defects in reticulation systems where inflow and infiltration is a significant issue.

Historically, the Council has not aggressively targeted cost recovery from industrial trade waste. The new Trade Waste Bylaw, which came into effect on 1st July 2006, has helped align the Tasman District with Nelson City trade waste regulations. The aim of the Bylaw is to ensure full cost recovery from trade waste producers for collecting and treating their waste. Full 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 Council will now look at targeting medium trade waste producers.

10.2 Water and Sanitary Services Assessments

The Local Government Act 2002 required all local authorities to carry out, by way of a special consultative procedure, a comprehensive assessment of all wastewater services within their districts (whether or not such services are owned and managed by the Council).This was completed in June 2005.

Assessments were not required on wastewater systems for individual properties but schools, camping grounds and marae were included because the emphasis is on the protection of public health.

More details of the sanitary services assessments are provided in Appendix C. This WSSA will be updated in 2009/2010.

11. SIGNIFICANT NEGATIVE EFFECTS

The significant negative effects on a community associated with providing and operating a wastewater system described in Appendix P.

12. SIGNIFICANT FORECASTING ASSUMPTIONS, UNCERTAINTIES, AND RISK MANAGEMENT

12.1 Assumptions and Uncertainties

The most significant assumptions and uncertainties that underlie the financial forecasting approach are described in Appendix Q and summarised as follows;

(a) ***Asset data knowledge:*** Assumptions have been made on the locations, condition and performance of the assets because the asset data register is not complete.

(b) ***Growth Forecasts:*** Assumptions have been made on future population growth. These assumptions greatly influence the financial forecasts.

(c) ***Network Capacity:*** Assumptions are made to estimate the hydraulic capacity of pipe systems, but a greater level of understanding is being achieved from hydraulic modelling. Hydraulic modelling has recently been completed for the Richmond and Mapua wastewater systems.

(d) ***Timing of Capital Projects:*** Many factors influence when projects can be implemented, some of these are beyond the Council's control. This will impact on the year to year budgets but in the long term will not have significant effect.

(e) ***Funding of Capital Projects***: Funding is critical to new wastewater projects and assumptions have been made about how this will be achieved, especially in terms of subsidies, major user's contributions, development contributions, Council subsidy and community contributions. These have significant implications for the financial forecasts.

(f) ***Accuracy of Capital Project Cost Estimates***: All projects in the capital forecasts have been estimated. A 15% 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. The amount added depends on the amount of work already done on the project. It is not feasible to have all projects in the next 20 years advanced to a high level of accuracy. However, it is preferable to have projects in the next 3 years advanced to a level that provides reasonable confidence about the accuracy of the estimate.

12.2 Risk Management

Council is adopting an Integrated Risk Management (IRM) framework and processes to manage risk within the organisation. Appendix Q contains a brief description of the IRM framework. The IRM process and framework is intended to:

- Demonstrate responsible stewardship by TDC on behalf of its customers and stakeholders.
- Act as a vehicle for communication with all parties with an interest in TDC's organisational and asset management practices.
- Provide a focus within TDC for ongoing development of good management practices.
- Demonstrate good governance.
- Meet public expectations and compliance obligations.
- Manage risk from an organisational perspective.
- Facilitate the effective and transparent allocation of resources to where they will have most effect on the success of the organisation in delivering its services.

The risk assessment is considered at 3 levels:

Level 1 – Organisational Risk

Level 2 – Asset Group Risk

Level 3 – Critical Asset Risk

At this point, Council has undertaken the Risk Assessments for Level 1 and 2, but have yet to complete the determining the appropriate risk treatment strategies for either. This has been included in the Improvement Plan. The level 3 assessment has not been started but has been planned for in the Improvement Plan.

13. BYLAWS

The Council has reviewed and updated its bylaws relating to wastewater over the last 3 years. Appendix T lists the current bylaws.

14. PLAN REVIEW AND PUBLIC CONSULTATION

14.1 Review Process For This Activity Management Plan

This section details the programme of on-going monitoring of AMP's effectiveness and review. The AMP is a living document that is relevant and integral to daily activity management. To ensure that the plan remains useful and relevant, the following on-going process of AMP monitoring and review will be undertaken:

- A comprehensive review at intervals of not less than three years via the Special Consultative Procedure. Each review will be completed to coincide with the next review of the LTCCP.
- Between three yearly reviews, various asset management improvement initiatives will be undertaken as listed in the Improvement Plan (Appendix V). The AMP will be amended to incorporate the outcomes of these at each review.
- Quality assurance audits of Activity Management information to ensure the integrity and cost effectiveness of data collected (Appendix Z).

14.2 Public Consultation

The Council consults the public through various mediums as outlined in more detail in Appendix U. Through this consultation, Council concludes that:

- Where a Council Wastewater Supply is provided, people are generally satisfied with the service received (over 94% satisfied from Communitrak™ survey 2008) and are comfortable with the cost relative to the level of service provided. Only 3% want to spend less, while 68% want to spend about the same. 14% want more spent on wastewater services knowing that this will increase rates and charges.
- A large percent (28%) were unable to comment on their satisfaction with the Council's wastewater system and that is probably due to 36% of residents saying they are not provided with a wastewater system. Greater than 40% in the more rural wards, Lakes-Murchison, Golden Bay, Moutere-Waimea, were unable to comment.
- In Golden Bay there is an unusually high level of dis-satisfaction (23%) with the wastewater service provided. The data is not sufficient to make any clear conclusion from this but it may indicate unmet demand for a Council service. This should be considered when Council reviews its Water and Sanitary Services Assessment (refer Improvement Plan, Appendix V).

14.3 Intentions for Future Consultation

The Draft Long Term Council Community Plan outlines the Council's intent for public consultation around the LTCCP and this AMP.

Council plans to review the Community Outcomes in the latter half of 2010 (refer LTCCP) followed by a review of the Levels of Service for all Council activities in 2011 (refer Improvement Plan and LTCCP). The outcome of these reviews will feed into the next revision of the AMP and LTCCP.

15. SUSTAINABLE DEVELOPMENT

Council's Vision, Mission and Objectives (refer Appendix A) demonstrate the Council's commitment to sustainable development. This is in line with the community wishes and the legislative requirements of the Local Government Act 2002 to promote the social, economic, environmental and cultural well being of communities in the present and for the future.

At an organisational level, Council has:

- incorporated the 4 well beings into the community outcomes, which flow into the levels of service and performance measures
- incorporated the 4 well beings in the integrated risk management approach
- incorporated environmental, social and cultural considerations in the growth planning and modelling

In the Wastewater activity specifically, a sustainable development approach is demonstrated in the following aspects:

- The discharge of treated effluent into receiving waters has environmental impacts and cultural impacts – especially to Maori. Council has taken a pro-active approach to managing cultural impacts by consulting openly and co-operatively with iwi groups over treatment plant upgrades, promoting and entering into agreements with iwi for monitoring activities and performance of wastewater treatment plants (for example, the Golden Bay Sewerage Liaison Group – an agreement with Manawhenua ki Mahua).
- Council has invested significantly in its wastewater Infrastructure over the past 5 years to address, in priority order, issues which have the most significant effect on environmental and cultural well being on a benefit/cost basis (i.e. where most benefit in terms of reducing environmental and cultural impacts can be made for the cost invested). This has seen the Council pursue the following general strategies in priority order:
    - Upgrade the wastewater treatment plants to achieve higher effluent discharge standards
    - Identify and repair parts of the networks which cause the most sewage overflows – this has resulted in significant investment in replacing rising mains and sewage pump stations
    - Investing in asset surveys and network modelling to improve knowledge of asset condition and performance in advance of pursuing initiatives to reduce wet weather flows

When considering new upgrade solutions, Council considers lifecycle cost issues. Council does not have a formal process for this, but where lifecycle cost is considered to have an impact on decision making, it used as an evaluation criteria.

16. IMPROVEMENT PLAN

The development of this plan is based on existing levels of service, the best available current information and the knowledge and judgement of Council staff. The AMP will be the subject of on-going monitoring, review and updating to improve the quality of AM planning and accuracy of the financial projections. This process will use improved knowledge of customer expectations and enhanced AM systems and data to optimise decision-making, review outputs, develop strategies, and extend the planning horizon.

The AM improvement process involves:

- The cycle of AM plan monitoring, review, revision and audit to improve the effectiveness of AMP outputs and compliance with audit criteria, legal requirements and good practice.
- The definition of service standards reflecting community desires through public consultation (service level review). The AMP is used to identify service standard options and costs, and the delivery of the service standards adopted is a key objective of Asset Management planning.
- The corporate Asset Management co-ordination role by the Asset Management team, which guides and audits the development of the AMP within the framework of Council's strategic direction.

Details of the specific planned improvements to Wastewater Asset are detailed in Appendix V.

17. SCHEDULE OF KEY PROPOSED NEW CAPITAL AND RENEWAL WORK

17.1 Schedule for Next 10 Years

The significant work programmed for the next 10 years is listed below in Table 17-1. A full list of all capital projects over the 20 year period is included in Appendix F.

Table 17-1: Schedule of Work for the Next 10 Years

Activity/project	Total Estimate Years 1 to 3	Total Estimate Years 4 to 10	Project Driver
Treatment Plant Upgrades: Motueka Takaka	 $1,100,340 $3,111,250	$5,403,040	 GBLR GBLR
Continue to progress pipeline replacements across all schemes where pipes are failing.	$3,150,000	$7,069,400	R
Replace Tapu Bay Pipeline with terrestrial route		$3,285,550	GR
Upgrade the pumping main from Motueka River Bridge to Motueka Ponds		$594,400	BR
Improve capacity issues within Mapua/Ruby Bay. This includes upgrading or replacing 5 pump stations and associated rising mains.	$1,575,500	$549,400	GL
Replacement of significant Motueka mains: Courtney Street – Hau Road High Street	 $360,200 $428,200		 R GR
Upgrade of Oaks Village Pump Station		$633,600	GBLR
Upgrade Trunk Main from Rabbit Island to Bell Island	$2,055,800		G
The Pohara /Tata Beach reticulation pump station upgrade and associated pipelines are to be undertaken in stages over the next 12 year period.	$401,100	$6,969,500	GBLR
Brightwater to Burke's Bank trunk main upgrade.		$2,121,900	GBL
Upgrade of Richmond reticulation: Headingly Lane PS Churchill Ave pipeline upgrade Wensley Rd pipeline upgrade	$700,000	 $352,800 $351,500	 G GBL GBL

N.B. amounts do not include inflation

Key to Project Drivers: G = Growth, B = Backlog, R = Renewal L = Increased Level of Service,

In addition to the major schemes, general improvements will be made throughout the district, e.g.:

- Continue to rehabilitate schemes suffering from high wet weather flows (ongoing every year).
- Continue to replace and improve ageing pumps and electrical systems (ongoing every year).

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

A.1 Introduction

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

- National Drivers – for example 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 TRMP.
- 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.1 Key Legislation and Industry Standards, and Statutory Planning Documents

- The 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')
- The Local Government Act 1974 (Part XXXI)
- The Climate Change Response Act
- The New Zealand Coastal Policy Statement 1994
- The Civil Defence Emergency Management Act 2002 (Lifelines)
- The Health Act 1956
- The Government's Sustainable Development Action Plan
- The Resource Management Act 1991
- The Local Government (Rating) Act 2002
- The Health and Safety in Employment Act 1999
- The Building Act
- The (proposed) National Environmental Standard relating to On-site wastewater systems
- The Sustainable Wastewater Management document published by the Ministry for the Environment
- 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.
- Regional Growth Strategy and any Regional Coastal Policies
- New Zealand Standard SNZHB 4360:2000 'Risk Management for Local Government'

Relevant Council and regional policy documents include:

- LTCCP 2006
- TDC Engineering Design Standards 2008
- Wastewater Activity Management Plan 2006
- TDC Trade Waste Bylaw 2005
- TDC Waste Management Plan
- Tasman Resource Management Plan (TRMP)
- Tasman Regional Policy Statement - Operative 2001
- Ministry of Health Sanitary Works Subsidy Scheme Guidelines

A.2 Key Stakeholders

Stakeholders are those individuals and organisations that have an interest in the management and/or operation of the assets. Stakeholders include but are not limited to:

National Organisations:

- The Ministry of Health (Subsidies).
- The Local Medical Officer of Health (Part 7, Local Government Act).
- INGENIUM.
- The Water and Waste Association.
- The Ministry for the Environment.
- The Department of Conservation.
- Local Government New Zealand.

Local Stakeholders

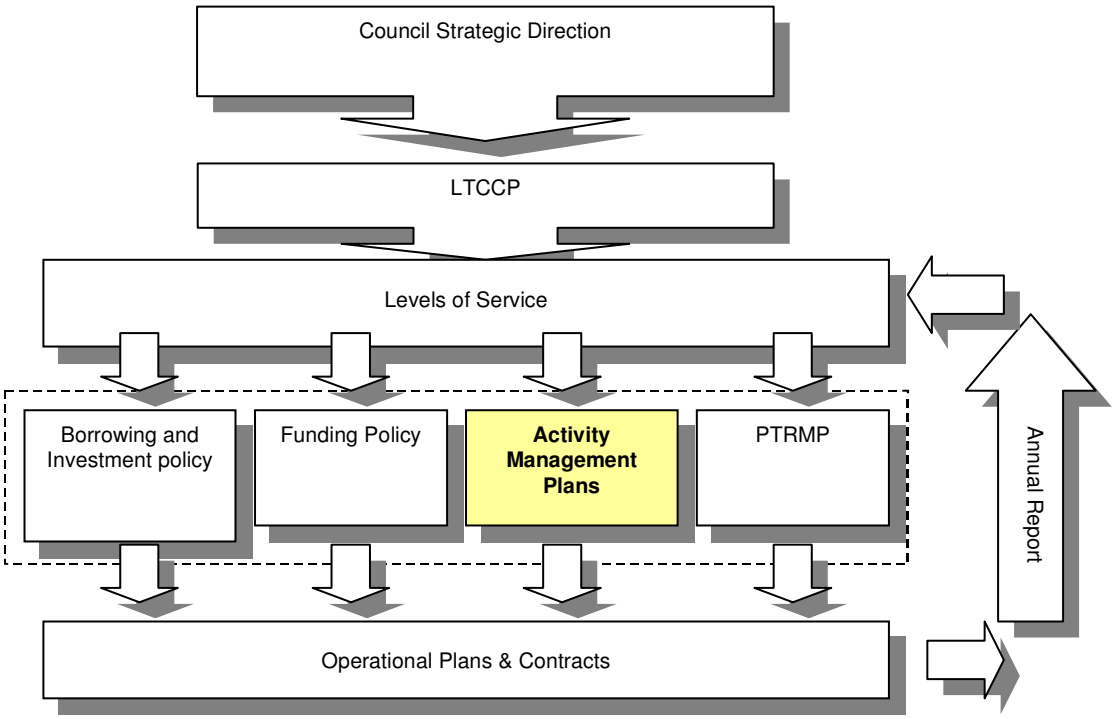
- Nelson/Marlborough District Health Board.
- The elected representatives (Councilors and Community Boards).
- The TDC Community of owners, residents and ratepayers.
- Tangata Whenua.
- Regulatory and monitoring bodies.
- Environmental and Recreational Interest Groups including Fish and Game New Zealand, Royal Forest and Bird Protection Society and Tasman Environmental Society.
- Tasman District Council employees.
- Consultants and contractors.

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 Council Community Plan (LTCCP). It also provides a guide for the preparation of each Annual Plan and other forward work programmes.

Figure A-1 depicts the links between Council's activity management plans and other corporate plans.

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



Council Strategic Direction is outlined in the Vision, Mission and Objectives of the Council:

Vision: An interactive community living safely in the garden that is Tasman District.

Mission: To enhance community wellbeing and quality of life.

Objectives:

Objective 1:
To implement policies and financial management strategies that advance the Tasman District.

Objective 2:
To ensure sustainable management of natural and physical resources, and security of environmental standards.

Objective 3:
To sustainably manage infrastructural assets relating to Tasman District.

Objective 4:
To enhance community development and the social, natural, cultural and recreational assets relating to Tasman District.

Objective 5:
To promote sustainable economic development in the Tasman District.

Table A-1: Strategic Documents Utilised During the Planning Process

LTCCP	The Long-term Council Community Plan. The primary instrument for the Council to report on its intentions on delivering its services to the community. The LTCCP supersedes the Long Term Financial Strategy (LTFS) and traditional Annual Plan.
Strategic Plan	This is the broad strategic direction of Council set in the context of current and future customer requirements. The AMP is the tactical plan with a view to achieving the strategic targets.
Annual Plan	The service level options and associated costs developed in the AMP will be fed into the Annual Plan consultation process. The content of the Annual Plan will feed directly from the short term forecasts in the LTCCP.
Financial and Business Plans	The financial and business plans requirement by the Local Government Amendment Act (3). The expenditure projections will be taken directly from the financial forecasts in the AMP.
Contracts	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.
Operational Plans	Operating and maintenance guidelines to ensure that the schemes operate reliably and equipment and plant is maintained in a condition that will maximise their useful service life.
Corporate Information	Quality AM is dependent on suitable information and data and the availability of sophisticated AM systems which are fully integrated with the wider corporate information systems (e.g. financial, property, GIS, customer service, etc.). Council's goal is to work towards such a fully integrated system.

A.4 Key Activity Drivers

The key legislative and organisational drivers for the wastewater activity include:

- Proposed National Environmental Standard (NES) for on-site wastewater systems. While the Standard is currently only a discussion document, the NES may drive extension of existing reticulation to include small settlements where private septic systems have failed, such as Seaton Valley, Tasman, Eighty-eight Valley.
- Resource consent renewals for wastewater treatment plant discharges. Many long term discharge permits are requiring renewal and new consents will require improved environmental standards to be met. This combined with insufficient treatment capacity due to population growth means upgrades are needed at Takaka and Motueka within the next 5 years.

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

B.1 Introduction

The Urban Drainage Areas (UDA) in the Tasman District are detailed in the following Appendices;

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 Council intend to meet can be found in Section 2 with a measurement of performance detailed 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 projecting 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 20 years, the asset designer has to consider at least the next 20 years and be aware of what may happen up to 50 years on. This is because most wastewater asset components have a life-cycle of somewhere between 20 and 70 years.

B.1.4. Operations and Maintenance

Day to day operation, inspection and maintenance of the wastewater system is carried out by Downer EDi Works Ltd. This maintenance contract is administered by MWH.

Both the Downer EDi Works and MWH Contracts were competitively tendered on the open market in 2006. The MWH Contract (461) has been extended until October 2011 and the Downer EDi Works Contract (688) potentially runs until 2017, dependent on successful re-negotiations. Both contracts are 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 they are not specifically set up as one, the contracts are in many respects similar to a partnering

agreement with all parties working closely together with the same goal in mind, i.e. delivering a high level of service and providing value for money for the TDC ratepayers

Operational budget forecasts appearing in this AMP are based on the current requirements specified by Downer EDi Works and MWH, balanced against historical expenditure figures. As the parties associated improve their operational experience, local knowledge and understanding of the TDC network, further sustainable operational requirements will emerge, be developed and implemented. Optimising these requirements will be an ongoing process over the duration of the contracts and will be carried out in conjunction with projections from the TDC Asset Management Systems.

Operating and maintenance costs are included in the common Wastewater Group account.

B.1.5. Relationship with Iwi

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 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.

Council are working with Tiakina te Taiao to develop a similar Agreement for wastewater systems within the rest of Tasman District.

B.1.6. Disposal Programme

In general, no assets are expected to be disposed of except where old assets are renewed. Depending on the nature of the assets, they are either:

- Made safe and left in place
- Removed and disposed of to landfill
- Removed and sold.

Further reference to the disposal of assets can be found in Appendix W.

B.1.7. Asset Valuation

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

A detailed list of the assets in each UDA can be found in Table B-1 at the end of this Appendix.

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

B.2.1. System Overview

These four UDAs are grouped together because they all discharge to the Bell Island WWTP managed by the Nelson Regional Sewerage Business Unit (NRSBU).

B.2.2. Wakefield and Brightwater

The Waimea Basin wastewater scheme services the Wakefield and Brightwater Urban Drainage Areas.

All Wakefield reticulation is gravity, which gravitates to the Brightwater Main Pump Station via a 200mm-dia trunk main laid in the old railway reserve.

The Brightwater reticulation consists of gravity reticulation and 3 pump stations that pump into the gravity system discharging into the Brightwater Main Pump Station.

All Brightwater and Wakefield wastewater arrives at the main pump station adjacent to Brightwater Engineers 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 is cut or the high well alarm is activated.

This pump station has three pumps - duty, standby and the third is connected to the generator circuit and is monitored by telemetry.

The operation of pumps in all pump stations is controlled by float switches.

B.2.3. Richmond/Hope

Hope discharges to 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 sewage.

The Richmond wastewater scheme is a gravity reticulation system originally installed in the 1950's. There are two small pump stations on Hill St that pump into the gravity system which discharges to the Beach Road pump station at the northern edge of the town. From the pumping station the scheme is under the control of the NRSBU.

B.2.4. Mapua/Ruby Bay

Wastewater reticulation was constructed in Mapua and Ruby Bay circa 1988. The reticulation drains generally south and east via gravity and pumped to a pump station at the Mapua Wharf. A rising main crosses the Mapua Channel to Rabbit Island and then to Bell Island WWTP. Council's responsibility for the rising main ends at the junction with the NRSBU trunk main on Bell Island.

The pumps in all 12 pump stations are controlled by float switches to start and stop pumps at predetermined effluent levels. All pump stations have a duty and standby pump with corresponding controls.

The main Mapua Wharf pump station and others are telemetry linked with the TDC Datran system which can be viewed and interrogated by TDC staff, MWH Richmond and Council's Maintenance Contractor who is responsible for monitoring alarms and state of operation.

The trunk main under the Mapua Channel is a 250mm dia H.D.P.E pipeline. Another 200mm dia PVC sewer pipeline exists under the channel however it was abandoned some years ago due to its poor condition. The balance of the trunk main to Bell Island WWTP is 200mm dia PVC.

B.2.5. Asset Information

Wakefield / Brightwater:

The combined schemes consist of:

- A reticulation system consisting of approximately 36,750m of pipe
- 188 manholes
- 3 rodding eyes
- 1,381 residential pans
- 4 pump stations (2 with telemetry)
- 1 generator

No formal assessment of the reticulation condition has been undertaken. However, there are no known specific concerns regarding the condition of these assets. This scheme was designed in the late 1980s and, to date, there have been no significant issues identified with the capacity of the reticulation. Inspections by Council staff, maintenance contractors and consultants have not identified any specific defects however there are a few operational improvements needed.

The existing trunk mains' capacity was found to be inadequate when tested against the projected growth in these two townships.

Richmond / Hope:

The Scheme consists of:

- A reticulation system consisting of approximately 93,100m of pipe
- 1,390 manholes
- 13 rodding eyes
- 4,482 residential pans
- 2 pump stations

Modelling of the Richmond/Hope reticulation network has confirmed the theoretical capacity of the pipes and has identified where significant capacity issues exist. Much of the reticulation is less than 15 years old due to the significant development of Richmond during the late 1980's and 1990's, however, the original reticulation installed during the 1950's is in a 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. Extra development above the older part of the town has resulted in some of the older reticulation being undersized

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

Mapua / Ruby Bay:

The Scheme consists of:

- A reticulation system consisting of approximately 13,915m of gravity pipe and 12,530m of rising main.
- 84 manholes
- 634 connections
- 12 pump stations (9 have telemetry)
- 1 generator

Current capacity is inadequate to meet the long-term growth projections and upgrades are required. Development in the Mapua area is currently been prevented by the lack of capacity in the wastewater system. All the main pump stations and rising mains in Mapua require significant upgrade. A strategy study has been completed which identifies the extent of the upgrades required. It is envisaged that 2 new pumping stations will be built, 5 existing pumping stations will need a significant upgrade, and that the rising mains will also need to be upgraded.

B.2.6. Resource Consents

All sewage from Urban Drainage Areas of Wakefield, Brightwater, Richmond/Hope and Mapua/Ruby Bay is transported to Bell Island, which is administered by the NRSBU.

The NRSBU holds resource consents granted in 2003 for the 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.2.7. Operations and Maintenance

The Wakefield and Brightwater gravity systems run relatively trouble free.

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.

The Brightwater Main pump station is equipped with a standby diesel generator that automatically starts if the power supply is cut or the high well alarm is activated. The generator only operates a single emergency pump and not the entire pump station. The emergency pump is now under-capacity and struggles to cope with storm flows.

Telemetry is needed at Malthouse Cres and Waimea West pump stations so they can be monitored remotely.

The Sunview Heights pump station was constructed with galvanised pipework which has corroded and therefore the pumps cannot be removed for servicing. Also the valve chamber is constructed from timber and needs replacing. There is no telemetry at this pump station or 423 Hill St pump station so they cannot be monitored remotely.

Overloading of the reticulation due to stormwater and/or groundwater infiltration has been a regular occurrence during wet weather. The stormwater enters the system through eroded rubber ring joints in some of the older reticulation. Recent upgrading works have included new mains to relieve some of the bottlenecks and has reduced the occurrence of overflows. Modelling of the reticulation network has identified several areas that need upgrading to meet the demands of stormflows 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.

Much of the reticulation is on private property and manholes can become buried under gardens, making emergency access difficult.

The Mapua system suffers from high wet weather flows due to infiltration problems. The pumps stations are a very basic design with no storage provided and the non return valves in many of the pump station restrict flow and cause blockages.

The Mapua / Ruby Bay 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 growth so a progressive upgrade of the network is planned.

The 200mm dia main along Rabbit Island, from the Mapua Channel to the Bell Island WWTP, has ongoing problems with pipe fractures and needs to be replaced.

A second pipeline is needed across the Mapua channel to provide additional capacity. There are two options to achieve this, the existing abandoned pipeline may be able to be cleaned and then split with a larger diameter pipe fed through. Alternatively if the existing pipe cannot be cleared then a new pipe will need to be drilled across the channel. Resource consents will be required for the new pipeline.

The position of the main pump station at the Mapua wharf will be reviewed. This area has become a tourist/dining attraction and the pump station is only metres away from diners, and causes odour complaints.

B.2.8. Strategic Management Approach

The issues facing these schemes include:

- The rising costs of treatment through the NRSBU (the costs are expected to increase by 93% from 2009/10 to the end of the plan 2018/19).
- The high wet weather flows in Richmond especially, which are causing sewage overflows during very intense rainfall.
- The high growth in all schemes which is taking the sewage flows beyond the system's trunk main capacities (notably Richmond South and West, Mapua/Ruby Bay).
- Failure of on-site wastewater systems in rural residential areas adjacent to existing reticulation networks.

The strategic approach to these schemes is to:

- Continue to construct and upgrade the trunk main systems to alleviate overflows in affected areas and 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.

A future issue is the cost for Council to continue to discharge its sewage to the Bell Island treatment plant. The costs are projected to increase due to a new user's contribution formula, plus the requirement for the NRSBU to carry out some significant capital upgrades. An ongoing issue is the need to limit the loading impacts of infiltration of storm and ground water.

B.3 Motueka, Riwaka, and Kaiteriteri

B.3.1. System Overview

These three schemes are all linked to the Wastewater Treatment Plant (WWTP) located in Motueka. Over the last three years there has been minimal increase in winter loadings on the treatment plant, however there has been a 25% increase in loading over the peak summer period.

There is a significant issue with groundwater and stormwater infiltration which causes operational and maintenance difficulties at pump stations and the WWTP. During the 2008 winter a significant amount of rain raised groundwater levels for months and caused flows to the treatment plant to remain at least triple the average dry weather flow, peaking at five times normal flow. This led to numerous blockages of the mechanical inlet screen, overloading of the aeration basin, extremely high water levels in the oxidation pond – near to overflowing on two occasions, blockage of the oxidation pond outlet, and overflows from the wetland to the Motueka River and estuary for several months.

The Motueka Wastewater Scheme services the Motueka Urban Drainage Area that comprises the town area of Motueka.

The sewerage system was installed in the 1940's and retains the original treatment plant, which is located just south of the Motueka River mouth. The treatment plant comprises a mechanical inlet screen, an aeration lagoon (constructed in the early 1990's), followed by an oxidation pond from where effluent discharges to soakage beds and a wetland and then into groundwater adjacent to the Motueka River mouth and coast.

The area serviced by this scheme is flat and low lying, hence the need for many pump stations. Gravity reticulation feeds into the pump stations. The present system involves some pump stations injecting into the rising main to the treatment plant while other pump stations pass the effluent 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 Kaiteriteri/Riwaka wastewater scheme consists of reticulation and pumping stations only. Wastewater is conveyed to the Motueka Treatment Plant for treatment. The reticulation was designed in 1987 to cope with a fully developed UDA as per the current zoning so has no capacity issues.

The Kaiteriteri scheme is made up of a number of sub-catchments and these relate to the various bays plus the large motorcamp. Due to the high tourist population the peak summer flows far exceed the average flows.

The reticulation in Kaiteriteri gravitates to the main pumping station at Martins 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 Bay and then gravitates across Tapu Bay to Riwaka via a 215mm dia PE pipe. The existing 100mm dia main was abandoned but could also be used in an emergency. Valves on the pipelines from Tapu Bay are automatically opened/closed when the level in the vessel above Stephens Bay rises/falls to set points such that the wastewater gravitates to the Riwaka reticulation in a series of "pulses".

There are three other small boosted areas that pump into the trunk main from Stephens Bay, Tapu Bay and Little Kaiteriteri. From Riwaka the sewage is pumped to the sewage ponds at Motueka.

The pump stations and the Tapu Bay vessel are monitored via telemetry.

The system does not receive trade wastes.

B.3.2. Asset Information

Motueka:

The reticulation network consists of:

- a reticulation system consisting of approximately 46,000m of pipe,
- 128 manholes,
- 2,604 residential pans,
- 18 pump stations,
- 2 air valves,
- 1 generator.

The treatment plant consists of:

- A 3mm mechanical inlet step screen,
- 6,000m^3 aeration pond with four 7.5kW aerators and a dissolved oxygen (DO) probe,
- penstock and motorised valve for automatic bypass of the aeration lagoon to oxidation pond if flow is greater than 2,000m^3/day
- 5 hectare oxidation pond,
- Datran telemetry system monitoring the screen, aerators, aeration lagoon bypass, and DO,
- Land soakage beds,
- Overflow wetland/soakage area.

The effluent flow from Motueka township is measured by a magflow meter as it enters the treatment plant.

The system does not receive significant trade wastes.

Kaiteriteri and Riwaka:

The scheme consists of:

- a reticulation system consisting of approximately 37,800m of pipe,
- 71 manholes,
- 552 residential pans,
- 1 control vessel,
- 6 air valves,
- 11 pump stations.

B.3.3. Resource Consents

The Motueka WWTP currently has a treated effluent discharge consent, which expires on 20 March 2009. A renewal application is expected to be lodged in November 2008 to allow the WWTP to continue to operate while the upgrade of the WWTP is finalised. New consents will then be sought for completing the upgrade and for the discharges from the upgraded WWTP.

The current discharge consent permits the maximum daily discharge of 10,000 cubic metres.

Consent conditions require:

- Preparation of a management plan for the land disposal system and any extension,
- Preparation of a contingency plan detailing alarms and emergency procedures,
- Monitoring of groundwater upstream and downstream of the disposal beds to determine the impact of the

effluent discharge.

The consent sets out several limits for compliance but does not specifically require monitoring of the effluent or state a monitoring frequency. The following limits apply to effluent sampled at the oxidation pond discharge:

- <80 g/m³ BOD_5
- <150 g/m³ total suspended solids
- <500,000 cfu/100ml

A System Operating Plan has been developed for this site that describes all the environmental and plant performance monitoring, checks and inspections, and fulfils the role of the management and contingency plans required by the consent.

The oxidation pond effluent is usually well below consent limits, however during the 07/08 summer the suspended solid and BOD concentrations exceeded consent limits. The high suspended solids are likely to be the result of high algae concentrations due to the warm, fine summer weather. Algal growth is necessary part of the treatment process.

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 Council entered a Memorandum of Understanding between Council and local iwi. This formed the basis for the Motueka Wastewater Task Group responsible for making recommendations to Council concerning the future of wastewater services between Motueka and Marahau. One of the recommendation of the task Group was the replacement of the Tapu Bay pipeline with a land based system prior to the current consents' expiry. Council has included for this in its 10 year financial plan.

B.3.4. Operations and Maintenance

A formal assessment of the reticulation condition has not been undertaken however much of the reticulation is very old (40 years +) and is in need of renewal or rehabilitation. 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 than the pipe material itself.

Over-loading 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 concrete rising main along Thorp St is in poor condition and is prone to failure. Some of the gravity mains are laid on very flat grades and are prone to blockages.

There are various issues with pump stations, from undersized wet well pipework, corrosion, delamination of wet well concrete, lack of telemetry, and pump stations located on private property.

There is insufficient capacity within the wastewater treatment plant disposal system to dispose of the treated effluent without overflows, particularly after rain events when the water table is high. The sand soakage beds have progressively clogged over the last 10 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 3 years.

During the peak summer period, significant portions of this wetland area dry out. However there is permanent water at the Motueka River end. During high rainfall events that combine with high effluent flows, there can be minor overflows from the wetland area to the Motueka River and the southern estuary. As a result environmental monitoring of the river, estuary, and coastline is carried out on a monthly basis. To date this monitoring has not shown any measurable impact from the treatment plant discharge.

The trunk mains from Riwaka to the Motueka WWTP are susceptible to breakage. The 200mm-dia section from Tapu Bay to Riwaka pump station through to the Motueka River has been replaced. However a section of pipe to, and upstream of, the Riwaka pump station has not been replaced and is susceptible to breaks.

Although the system capacity is sufficient to prevent overflows, the pumping hours are considered high for the population served. This indicates that infiltration is occurring. No formal assessment of the reticulation condition has been undertaken. However, there are no known specific concerns regarding the condition of these assets. 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.

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. Therefore constant monitoring and maintenance is required. The Kaiteriteri vessel operation has become problematic with the deterioration in telemetry communication reliability. The downstream valve doesn't get signalled to open early enough and the vessel overflows. Until the telemetry system is upgraded the high level float has been lowered (reducing the storage volume in the vessel) to allow for the delay in the valve opening.

Due to low off-peak flow into the Honeymoon Bay and Breaker Bay pump stations regular flushing with clean water is required to prevent stagnation. 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 these systems cause nuisance odour, venting from the reticulation at the top of the Breaker Bay hill.

B.3.5. Strategic Management Approach

The Motueka WWTP will need to be upgraded to:

- Accommodate growth
- Comply with existing and future resource consent requirements (discharge to land and air).

The issues facing these schemes are as follows:

- The Motueka reticulation system is old and is known to have high wet weather flows.
- The Motueka treatment plant, which also serves Kaiteriteri and Riwaka needs to be upgraded. It is recognised that the Motueka iwi have an interest in how this treatment plant operates and a task Group including iwi and Council was set up in 2005 to investigate options for the upgrade and make recommendation to Council. The main consideration is determining a sustainable disposal solution which will then drive the type of treatment plant upgrade needed.
- The final stage of replacing the defective pressure main from Kaiteriteri to the Motueka treatment plant is planned.
- The Tapu Bay pipeline resource consent expires in 2018 and the pipeline will need to be replaced with a land based system.

The strategic approach to these schemes is to:

- Continue field investigations and modelling of the reticulation to identify and repair system defects.
- Complete rapid infiltration basin trials to determine if this is a sustainable treated effluent disposal method.
- Upgrade the treatment plant to improve the treatment capacity and the disposal system.
- Continue to involve iwi and other stakeholders by providing input to the treatment plant upgrade decision-making process.

The renewal of the consents to treat and discharge the effluent is key to the continued operation of these three schemes. Consultation with key stakeholders (including iwi) is ongoing.

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

B.4.1. System Overview

The original Takaka township sewerage scheme was constructed in the mid 1980's. 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 northern end of the CBD. Wastewater is pumped from Waitapu Road along SH 60 and Haldane Road to the Takaka WWTP from the north. Wastewater is pumped from Hiawatha Lane via Roses Rd to the WWTP from the south.

A large part of the Takaka township lies within the flood plain of the Takaka River and is located close to Tasman Bay. The rest of the service area is a prominent and high profile tourist region, comprising a number of coastal settlements to the north forming the gateway of Abel Tasman National Park.

During 1994 and 1995 Pohara Valley Rd, Pohara campground and Richmond Rd 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 the 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 4 new pump stations.

Flows from the settlement of Rototai to the northeast of Takaka are intercepted and pumped into the Waitapu PS in Takaka. The coastal community is served by nine major pumping stations, which transfer wastewater along a distance of approx. 11km from Tata Beach to a manhole in Meihana Street.

Pumps stations are fitted with duty and standby pumps operated by their respective float switches. Ten pump stations are now connected to Council's telemetry system.

The original treatment plant had one oxidation pond which discharged initially via sand filter infiltration basins into gravels in the Takaka River flood plain. A second oxidation pond and eight artificial wetlands were constructed in 1995 to service the extended system. The bases of the wetlands were not sealed and were designed to allow infiltration into the underlying gravels. Any excess effluent was designed to discharge from the wetlands into infiltrations pipes in the northern bunds of the wetlands. These bunds were constructed from highly permeable gravels and during high flows had insufficient capacity and effluent leaked out the side. Infiltration ditches were constructed adjacent to the bunds to collect the excess effluent and allow it to filter into the ground or overflow into a nearby drainage ditch.

Electricity was supplied to the site to provide for further increases in treatment capacity via aeration. The inlet to the ponds is screened with a manual bar screen and there is a flow meter, which measures the total in flow. There is no telemetry at the treatment plant.

B.4.2. Asset Information

The Scheme consists of:

- A reticulation system consisting of approximately 20,700m of rising main and 35,800m of gravity pipe,
- 189 manholes,
- 836 residential pans,
- 20 pump stations,
- 0.93 hectare oxidation pond (Pond No 1),
- 0.82 hectare oxidation pond (Pond No 2),
- Two sets of four wetland cells,
- 2 soakage trenches,
- 5 biofilters,
- 7 air valves.

B.4.3. Resource Consents

The operational discharge permit for the treatment plant expired on 31 August 2008, however a new consent application was lodged in February 2008 therefore allowing the WWTP to continue operating under the original permit until the new consents are granted.

The discharge permit allows the maximum daily discharge of 1,680 cubic metres and consent conditions require:

- Recording of daily influent volume, biennial flowmeter calibration, and weekly rainfall
- Twice weekly inspections
- Environmental and performance monitoring (limits apply)
- Maintaining an incident register

The consent monitoring conditions and limits are extensive and complex. Limits apply to marsh cell discharge, groundwater and surface water.

Analysis of the monitoring results indicates that the treatment plant regularly fails to comply with consent limits for groundwater and the marsh cells. An upgrade to the treatment plant is planned for 2010/2011 to address treatment and disposal deficiencies. This upgrade has been anticipated in the application lodged for the new discharge permits. The upgrade is also expected to require changes to the site designation.

B.4.4. Operations and Maintenance

The system has inherent operational difficulties given the large distances to transfer wastewater flows 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.

The capacity of the existing systems is known. Due to recent significant population growth in the coastal settlements, the rising mains and pump stations in these areas are generally under capacity. Council has been progressively upgrading pump stations and rising mains from Takaka towards Tata Beach.

The Pohara pump stations have a history of unreliability with frequent call outs to pump overloads. Improvements to deal with heat and moisture have not completely cured the problems. Telemetry has been installed at many of the Pohara/Tata Beach pump stations as the visual flashing light alarms were vulnerable to vandalism. The Pohara Holiday Camp creates problems at peak season with high volumes of fat and sand reaching the pump station 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.

Stormwater infiltration in the older Takaka township section is a problem that has resulted in numerous overflows in the past. Pump station and rising main upgrades over the last 3 years has resulted in a significant reduction in overflows. However this has led to increased flows at the treatment plant which has lead to an increased occurrence of overflows from the infiltration trenches and contributed to reduced performance of the wetlands. There is no telemetry at the treatment plant so regular measurement of peak flows is difficult.

There are continued problems with the quality of the effluent meeting resource consent requirements at the treatment ponds which will not be resolved until the upgrade is completed and new consents are in place.

B.4.5. Strategic Management Approach

There are a number of issues facing the Takaka and Pohara sewerage scheme. The Takaka gravity reticulation is in a poor condition which is giving rise to high flows during wet weather.

The Pohara scheme pumps over a large distance. Therefore the sewage is “old” by the time it gets to Takaka giving rise to odour problems. The high growth along the Pohara/Tata Beach coast is threatening to overload

the system and the pumping mains were constructed using pipe that has been found to be unsuitable for the application.

Significant growth throughout the Pohara area is expected in the next 20 years. In order to meet these demands in capacity along with the existing operational problems, major upgrades are planned for the whole system.

Recent work has included the construction of new pumping stations to provide additional capacity at Sunbelt PS, Motupipi PS, Hiawatha PS, Waitapu, Dodsons Rd, and Delaneys. Further upgrade and capacity improvement work will be undertaken in the next 10 years to increase the capacity of the integrated pumped reticulation system from Four Winds PS up to Tata Beach PS.

The Takaka WWTP is performing reasonably well, however the wetlands disposal system is problematic causing difficulties in meeting resource consent conditions. It is noted that the plant is in a vulnerable location in a river channel and could be damaged during a significant flood event.

An upgrade of the WWTP is planned for 2010/2011 to address quality and capacity issues. Generally the upgrade will include the construction of a new aeration basin with inlet screening, artificially lined wetlands and rapid infiltration basins for disposing of treated effluent. It is likely that additional land will be required for the upgrade.

B.5 Collingwood

B.5.1. System Overview

This scheme was constructed in 1989 and services the Collingwood Urban Drainage Area.

Wastewater from the lower end of Beach Road drains into the Beach Front 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, which pumps on to the Wally's Rest pump station. The hospital and adjoining subdivision drains into the Wally's Rest pump station.

Each pump station includes one duty and one standby pump with float actuated controls. Wally's Rest and the Motels pump stations both have telemetry but only Wally's Rest has a flow meter.

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 oxidation pond followed by constructed wetlands with UV disinfection and telemetry, and final discharge to the Burton Ale Creek.

This system does not receive trade waste.

B.5.2. Asset Information

The Scheme consists of:

- a reticulation system consisting of approximately 7,500m of pipe
- 40 manholes
- 110 residential pans
- 3 pump stations
- 0.32 hectare oxidation pond
- 5 artificial wetlands
- a UV disinfection system with recirculation pump and flowmeter
- discharge pipe and diffuser in Burton Ale Creek

No recent formal assessment of the reticulation condition has been undertaken. However, due to population growth, deficiencies in wastewater storage at pump stations has been identified as an issue, as well as the capacity of the rising main from Wally's Rest to the Treatment plant.

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

B.5.3. Resource Consents

The current discharge consent for the treatment plant came into effect on 26 January 2004 and expires on 26 January 2009. Consent renewal applications for the treated effluent discharge and the diffuser pipe in Burton Ale Creek were lodged in July 2008 to ensure the continued operation of the WWTP while the consent applications are processed.

The current discharge consent permits the maximum daily discharge of 1,070m^3 to Burton Ale Creek.

Consent conditions require:

- Recording of daily influent volume
- Weekly inspections
- Environmental and performance monitoring (limits apply)
- Maintaining a complaints register

- Submission of an annual monitoring report
- Development of upgrade trigger conditions
- Review and updating of Collingwood Wastewater System Operating Plan.

The following limits apply to the wetland discharge:

- Faecal coliforms shall not exceed 1000 cfu/100mls
- Total suspended solids shall not exceed 50 g/m^3
- BOD_5 shall not exceed 50 g/m^3

The limits that apply to impact on Burton Ale Creek are for:

- Dissolved oxygen
- Faecal coliforms
- Ammonia nitrogen
- Periphyton Cover
- Macroinvertebrates

Analysis of the monitoring results indicates that the treatment plant consistently meets consent requirements. Assessment by Cawthron of Burton Ale Creek as part of the consent requirements has found that the treated effluent discharge has little or no impact on the creek.

B.5.4. Operations and Maintenance

Collingwood is very close to an estuary and the sea, and the risk of a sewage overflow or malfunction of the treatment ponds has potentially significant effects that must be mitigated against and managed.

This scheme appears to operate reasonably well although there are issues with periodic high storm flows that cause overflows from pump stations and flood wetlands at the treatment plant. There has been a significant reduction in infiltration since the stormwater system was upgraded, but it still remains an issue.

The capacity of the rising main between Wally's Rest pump station and the WWTP is insufficient to meet future population demands.

Pumps require constant checking and cleaning, especially during the summer holiday period and the area has frequent power outages and alarm lights are prone to suffer vandalism.

B.5.5. Strategic Management Approach

The main issues facing Collingwood sewerage system are:

- The treatment plant and particularly the oxidation pond is approaching its design life.
- The pipework connecting the wetlands does not have sufficient capacity for high wet weather flows
- The system suffers from high wet weather flows and can overflow in intense rainfall.
- An overflow can get into the coastal marine environment and the shellfish industries, and the high social, environmental and cultural value of this environment makes it very sensitive to overflows.
- It is remote and the response to any failure of the system can take some time.

The strategic approach for this system is to:

- Increase treatment capacity
- Improve hydraulic capacity of wetland pipework
- Upgrade system capacity to handle wet weather flows
- Investigate the network to identify then repair sources of inflow/infiltration.

The flows and loading to the treatment plant are approaching its design capacity. The desludging of the oxidation pond in May 2008 and the installation of a mechanical inlet screen and 2 x 4kW aerators will extend the treatment plant's design life in the short term, however a more significant capacity upgrade will be required within the medium term.

B.6 Upper Takaka

B.6.1. System Overview

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 1950's 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 where it was originally treated in an Imhoff tank. In 1991 Electricorp replaced the Imhoff tank with a pump station which now 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. The wetland is being replanted in 2008/09 and the soakage slope 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 replacing the audio visual fault alarm that relied on public notification of an alarm.

The pump station, and treatment plant are on Council 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.

There is no trade waste generated by this village.

B.6.2. Asset Information

The Scheme consists of:

- A reticulation system consisting of approximately 1,000m of pipe
- 7 manholes
- 13 pans
- 1 pump stations
- 0.04 hectare oxidation pond
- 290m² wetland
- 225m² land soakage area with containment bund

B.6.3. Resource Consents

The discharge consents (treated effluent to land and odour to air) for this treatment plant became effective on 30 August 2007.

NN010258 permits the maximum discharge of 35m³/day of treated wastewater to land with the 30 day average dry weather flow of not more than 12m³/day.

The consent sets out several limits for compliance including:

- The dissolved oxygen level in the oxidation pond shall exceed 1 g/m³ on 9 out of 10 sampling occasions
- Effluent sampled at the wetland discharge shall not exceed the following:
  - 5000 cfu/100ml
  - 50 g/m³ BOD_5
  - 50 g/m³ total suspended solids.

B.6.4. Operations and Maintenance

The sewerage scheme is around 40 years old, and Council has replaced most of 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. Council completed further infiltration investigations in 2008 and is currently working to eliminate the major sources of the infiltration.

There is sufficient capacity within the existing reticulation network for the current and future population.

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 will be removed in late 2008 and the embankment replanted with evergreen 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 are removed a cut-off drain will be constructed across the embankment to prevent groundwater ponding on the soakage slope.

B.6.5. Strategic Management Approach

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 recently been investigated and the majority of defects will be repaired in 2008/09.

The theoretical capacity of the pipes is unknown however, there are currently no known issues with the capacity of the reticulation or the pump station.

B.7 Tapawera

B.7.1. System Overview

The Tapawera Wastewater scheme was originally installed by the N.Z. Forestry 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 Tapawera sewerage scheme comprises a gravity reticulation system which discharges to the treatment plant to the west of the town. The treatment plant is currently undergoing an upgrade with the final treatment process consisting of a mechanical inlet screen, an HDPE lined oxidation pond with 2 baffles followed by a pumped discharge to rapid infiltration basins. Telemetry will be installed as part of the upgrade along with flow meters on each of the discharge pipes.

The Tapawera treatment plant does not receive trade wastes.

B.7.2. Asset Information

The upgraded Scheme will consist of:

- A reticulation system consisting of approximately 2,700m of pipe,
- 55 manholes,
- 127 residential pans,
- 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.

The reticulation network is nearly all 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 or capacity of these assets.

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

B.7.3. Resource Consents

There are several current discharge consents for the Tapawera WWTP;

- for the interim wastewater discharge while the upgrade is being constructed,
- for the final upgraded treatment plant wastewater discharge,
- for the discharge of odour from desludging during upgrade,
- for the discharge of odour from the final upgrade treatment plant,
- and for the discharge of water to land from dewatering during construction.

The treated wastewater discharge permit for the upgraded treatment plant RM050391 permits the following maximum discharges from the treatment plant:

- 500 m^3/day (wet weather flow excluding rain falling on the pond)

- the groundwater quality measured in the compliance bore MW6 shall meet drinking water standards for 9 out of 10 sampling rounds.

The odour discharge permit for the upgraded treatment plant RM070634 has the following restrictions:

- there shall be no offensive or objectionable odour discharged beyond the WWTP property boundary.
- during temporary desludging operations the discharge may be offensive or objectionable out to a distance of 150m beyond the WWTP property boundary.
- the dissolved oxygen concentration in the oxidation pond shall not fall below 1g/m^3 at a depth of 50mm below the water surface.

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 variable performance but this is expected to improve once the upgrade is completed.

B.7.4. Operations and Maintenance

The Tapawera treatment plant is located on the upper terraces of the Motueka River, and any failure of the system may have a negative effect on the surrounding groundwater. The plant must, therefore, be managed to mitigate this risk.

Another potential risk is that the vehicle access way to the WWTP is not owned by Council, however Council has an Easement and Right-of-Way across the land.

Due to flat grades the gravity main, especially along Main Road Tapawera to the ponds, 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 3 times the average daily flow. This impact on the treatment performance and Council is currently working with the school to manage the discharge in the future.

B.7.5. Strategic Management 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 theoretical capacity of the pipes has not been established. However, there are no known issues with the capacity of the reticulation.

B.8 St Arnaud

B.8.1. System Overview

The St Arnaud wastewater scheme was built in 1999 and services the St Arnaud Township. The scheme covers the township and the campground at Kerr Bay. Reticulation drains by gravity to two pump stations. The Kerr Bay pump station (No.1) pumps up the hill to Rotoiti St where it discharges into the gravity network draining to the Alpine Lodge pump station (No.2). From there the entire catchment is pumped to the treatment plant at Teetotal Flats.

Both pump stations have duty and standby pumps controlled by probes and are linked via telemetry to the Councils Datran system. Each pump station has 6 hours storage at peak occupancy of 1000 people with emergency overflows discharging to Black Valley stream in extreme events.

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 treatment plant and Pump station No .1 communicate with Pump station No. 2 which communicates with the Datran base station through the Mt Murchison repeater.

The treatment plant consists of an oxidation pond and two marsh cells. Effluent is treated in an aerated oxidation pond followed by surface flow wetlands with ground disposal via a subsurface pressure system into gravels. 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 one soakage trench only. The oxidation pond aerator is controlled by a dissolved oxygen probe.

B.8.2. Asset Information

The Scheme consists of:

- a reticulation system consisting of approximately 11,860m of pipe,
- 76 manholes,
- 69 rodding eyes,
- 212 residential pans,
- 2 pump stations,
- 0.85 hectare oxidation pond with 4kW aspirator aerator,
- 2 surface flow wetlands,
- 1 disposal pump station,
- 1 sequencing valve set and one emergency gravity bypass,
- 4 x 50m long subsurface disposal trenches,
- 4 groundwater monitoring bores,
- 3 air valves,
- Weather station – including rain gauge and anemometer.

The wastewater system was design for the maximum population of the UDA in 1999. However the wastewater loading from the settlement has never exceeded 65% of the design, likely due to the low permanent population in St Arnaud.

Accuracy of asset information is very good because the scheme is only 9 years old.

B.8.3. Resource Consents

St Arnaud WWTP has two discharge permits, one for the discharge of treated sewage to ground (NN980167) and the other for a discharge to air (NN980118). These permits expire in August 2013. There is a third permit (Land use) legalising the use of land within the Conservation Zone for the wastewater treatment plant and pipe stream crossings.

NN980167 permits the following maximum discharges from the treatment plant:

- Maximum discharge rate of 5.2l/s
- Maximum hourly discharge of 18.72. cubic metres

Consent conditions require:

- Recording of daily influent and discharge volume, weekly rainfall, aerator use, and biennial flow meter calibration checks
- Environmental and performance monitoring (limits apply)
- Maintaining an incident and complaints register
- Submission of an annual monitoring report
- Biennial review and updating of Operation and Maintenance and Contingency Plans.

Limits for total suspended solids, biological oxygen demand, and bacteria apply to the wetland discharge, while limits for similar parameters, including nutrients, apply to groundwater.

Analysis of the monitoring results indicates that the treatment plant usually meets consent conditions although duck weed growing in the wetlands has caused non-compliance with suspended solid limits during summer months. Also in 2006 unusually high bacterial loadings were recorded in the summer of 2005/06 which lead to numerous ongoing non-compliance. The low water table (greater than 14m below ground) has not allowed regular sampling of groundwater.

B.8.4. Operations and Maintenance

A gravel trap exists prior to each pump station. This requires regular checking and cleaning out. “Pigging” of rising mains is also required regularly.

There are frequent telemetry communications failures at St Arnaud due to increased telemetry traffic from expansion of the system to include new and existing wastewater assets. The telemetry from the wastewater treatment plant and Kerr Bay pump station are routed through the Alpine Lodge pump station, if there is a communication failure with the Alpine Lodge pump station all communication with St Arnaud facilities is lost.

The gravel filters at the wetland outlets do not filter out floating duck weed effectively which requires additional effort each summer to manage. The manual inlet screen at the oxidation pond can become blocked over peak summer and requires additional attention.

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 and has an overflow storage tank next to the pump station, with a mobile generator available locally in the event of power failure.

B.8.5. Strategic Management Approach

The St Arnaud scheme is a relatively new scheme and was only designed to cater for the population as at 1999. Generally the treatment system performs well, however in 2005/06 performance was variable due to extremely high bacterial loadings entering the plant. The strategic approach for this scheme is to assess future development and upgrade the treatment plant as necessary providing a system that is more robust with highly variable bacterial loadings.

This scheme does not suffer from infiltration, due to the age of the scheme, however with recent development the need for increased pumping and pipe capacity needs to be assessed.

One of the drivers for development at St Arnaud is the Rainbow Ski field which was closed in 2002 but is now operating again as a semi-commercial club field (which is currently expanding).

The capital works planned include extension of the overflow from the gravity system to the PS and minor upgrades at the treatment plant. Application for resource consent renewal will also be required by February 2013.

B.9 Murchison

B.9.1. System Overview

The Murchison Wastewater Scheme was built around 1989 and services the Murchison Urban Drainage Area. The reticulation consists of two pump stations and a wastewater treatment plant on the western side of the Matakitaki River.

The wastewater pump station in Hotham Street collects flows from the lower levels in 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. The Waller Street pump station is monitored by Datran Telemetry via the Mt Murchison repeater.

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. The original gravel filter was upgraded and a second filter added with a pump station alternately dosing the gravel filters. The disposal mechanism remains the same with treated effluent from the gravel filters discharged to ground via subsoil soakage trenches.

There has been a 33% increase in flow to the treatment plant over the last three years, however a minimal increase in organic loading over the winter. The organic loading has increased more significantly over the summer peak period at 82%, well in excess of the increase in flow. This is due to the large holiday and tourist population over the summer months.

B.9.2. Asset Information

The Scheme consists of:

- a reticulation system consisting of approximately 6,600m of pipe
- 22 manholes
- 213 residential pans
- 2 pump stations
- Mechanical step screen
- aeration basin with 4 x 4kW aspirator aerators
- a 0.5 hectare oxidation pond with 2 baffles
- 1 disposal pump station
- 2 gravel filters
- 2 subsoil soakage trenches.
- 14 groundwater monitoring bores
- 1 water supply bore and water pump

The capacity of the reticulation network is unknown, however few overflows occur.

Accuracy of the information is relatively good.

B.9.3. Resource Consents

The Murchison WWTP has two discharge permits, one for the discharge of treated effluent to land (RM050617) and the other for the discharge of odour to air (RM050618). These consents expire in June 2041.

Permit RM050617 allows a maximum discharge of 500m³/day (excluding rainfall) measured at Waller St Pump Station flowmeter. Other limits outlined in the consent relate to a compliance groundwater bore where the water quality must meet the NZ Drinking Water Standards.

Other consent conditions require:

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

Monitoring over the past year has shown consistent compliance with resource consent limits.

B.9.4. Operations and Maintenance

There have been a few operation and maintenance problems at the treatment plant immediately after the upgrade. There was an initial issue with downstream groundwater not meeting consent limits however investigations determined the non-compliance was not the result of the treatment plant. The source of the contamination was likely to have been upstream of the WWTP. The reason for the consent breaches was never confirmed but compliance has been achieved since July 2007. The exact location and condition of the disposal trenches is also uncertain so will be surveyed using CCTV in late 2008.

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 and is subject to frequent breaks. The rising main crosses the Matakitaki River on the State Highway bridge and when breaks occur, untreated effluent is discharged directly into the river.

During the construction of a new valve chamber at the Waller Street PS is was discovered that the pump station was on private property. All work on the upgrade was halted and land negotiations have been ongoing. Council is urgently progressing the negotiations as the electrical system at the pump station is a health and safety concern.

The Hotham St pump station is located in a hollow on private property and is difficult to gain vehicle access to.

The reticulation network was constructed with cleaning eyes on bends in pipework rather than manholes. This causes maintenance difficulties trying to investigation and clear blockages.

B.9.5. Strategic Management Approach

No formal assessment of the reticulation condition has been undertaken, but there are no known specific concerns regarding the condition of these assets, with the exception of the rising main between Waller St PS and the treatment plant. Most of the infrastructure is of an age (approximately 18 years old) where condition problems are not expected. However, higher wet weather flows indicate infiltration problems, although these are only about 50% greater than dry weather flows.

Due to the isolated nature of Murchison, a mobile generator will be purchased to allow the operation of both water and wastewater assets in the case of a significant power failure.

Council intends to continue operating the asset to minimise its impact on the community and the environment. The upgrade of the section of rising main over the Matakitaki River has been prioritised. Council has also budgeted for replacing cleaning eyes with manholes, modelling the reticulation system and undertaking CCTV investigations to determine the condition of the network.

Table B 1: Register of Assets for Urban Wastewater Schemes (as at July 2007)

Scheme	Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets	
Wakefield, Brightwater	Brightwater Main Bryants Road Waimea West Road Malthouse Crescent	2 x Pumpex K89 2 x Pumpex K80 F-VA197-2 2 x Flygt 3085 MT461 2 x Sarlin	12.5kW 2.7kW 1.3kw	Bells Island WWTP (NRSBU)	**Wakefield:** Trunk Mains: 200mm dia 250mm dia Reticulation: 100mm dia 150mm dia 200mm dia Manholes: **Brightwater:** Trunk Mains: 225mm dia 250mm dia 300mm dia Rising Mains 80mm dia Gravity 100mm dia 150mm dia 250mm dia 300mm dia Manholes:	 4,320m 916m 3,267m 9,226m 1,205 88 2,032m 2,360m 1,456m 50m 4,526m 6,689m 600m 100m 100	Residential Pans	1381
Richmond / Hope	423 Hill Street Sunview Heights	2 x Jung UAK 08/2MS 2 x Jung UAK 35/2M	1.08kW 3.5kW	Bells Island WWTP (NRSBU)	**Richmond:** Reticulation: 100mm dia 150mm dia 200mm dia 225mm dia 250mm dia 300mm dia 375mm dia 400mm dia 450mm dia 475mm dia 525mm dia	 6,435m 58,917m 3,419m 6,527m 358m 4,902m 1,093m 932m 100m 240m 1,210m	Residential pans	4482

Scheme	Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets	
					600mm dia	271m		
					675mm dia	1,023m		
					750mm dia	1,117m		
					Manholes:	1,376		
					Hope:			
					Reticulation:			
					100mm dia	2,910m		
					150mm dia	3,624m		
					Manholes:	14		
Mapua / Ruby Bay	Mapua Wharf	2 x Pumpex K89 VE2215	21kW	Bell Island WWTP (NRSBU)	Rising Mains:		Residential pans	634
	Aranui-Higgs Road	1 x Sarlin SV024 B	2.15kW		80mm dia	830m		
		1 x Pumpex K80	2.7kW		100mm dia	278m		
	Leisure Park	1 x Pumpex K89	12.5kW		150mm dia	949m		
		1 x Jung UAK 25/251	2.6kW					
	Toru Street	2 x Sarlin SV014 BL	1.65kW		Reticulation:			
	Higgs Road No 1	2 x Jung VAK 35/251	3.7kW		100mm dia	6,229m		
	Higgs Road No 2	2 x Jung VAK 25/251	2.6kW		150mm dia	7,685		
	Higgs Road No 3	2 x Jung VAK 25/251	2.6kW					
	Aranui Road 109	1 x Sarlin SV014 BL	1.65kW		Trunk Main:			
		1 x Pumpex K80	2.7kW		200mm dia	10,476m		
	Stafford Drive (Tait)	1 x Flygt M18-10-2AL	4.4kW					
		1 x Jung 35/251	3.7kW		Manholes:	84		
	Ruby Bay Shop	2 x Jung 25/251	2.6kW					
	Warren Place	2 x Jung 25/251	2.2kW					
	Lionel Place	unknown						
Motueka	Goodman	2 x Flygt NP3201	30kW	Motueka WWTP	Rising Mains:		Residential pans	2604
	Woodlands	2 x Flygt CP3102	4.4kW		80mm dia	60m	Air Valves	2
	Courtney Street	2 x Flygt NP3153	9kW		100mm dia	250m		
	Tarrant Place	2 x Flygt EMU FA 05-128	2.6kW		150mm dia	2,206m		
	Pethybridge Street	2 x Flygt CP 3126 H1	7.4kW		225mm dia	2,320m		
	Teece (81 Thorp St)	2 x Flygt C3102	3.1kW		375mm dia	2,868m		
	169 Motueka Quay	2 x Jung UAK 25/2M	2.2kW					
	Totara Park	2 x Jung UAK 35	3.7kW		Reticulation:			
	Thorp St (Bensemann)	2 x Jung UAK 25/2M	2.6kW		100mm dia	4,894m		
	240 Thorp Street	2 x Jung UAK 25/2M	2.6kW		150mm dia	32,358m		
	13 Trewavas St	2 x Pumpex K83	3.8kW		375mm dia	10m		
	45 Trewavas St	2 x Lowara DLV120	1.85kW					

Scheme	Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets	
	86 Trewavas St	2 x Lowara DLV140			Manholes:	128		
	Beach Front	2 x Lowara DLV120	1.85kW					
	Everett St	2 x Jung UAK 35/251	3.7kW					
	Oaks Village	Type and size unknown						
	Atkins St	Type and size unknown						
	Sanderlane	2 x Flygt 3102.180	3.1kW					
Riwaka, Kaiteriteri	Honeymoon Bay	2 x Flygt MP3102-170	4.4kW	Motueka WWTP	Rising Mains:		Residential pans	552
	Breaker Bay	2 x Jung UAK 35/251	3.7kW		80mm dia	118m	Air valves	6
	Martin Farm Road	2 x Flygt CP3201SH263	30kW		100mm dia	7,675m	Control Vessel	1
	Little Kaiteriteri	2 x Pumpex K85	11kW		150mm dia	607m	Motorised Valves	1
	Stephens Bay	2 x Homa V2346-P122	25.2kW		200mm dia	9,256m		
	Tapu Bay	2 x Homa A70-160E 11/2a	11kW					
	Riwaka Main	2 x Homa A70–160E 11/2a	11kW		Reticulation:			
	Jenkins SH60	2 x Sarlin SV014BL	1.65kW		100mm dia	6,366m		
	School Road	1 x Sarlin SV014BL	1.65kW		150mm dia	13,791m		
		1 Pumpex K80	2.7kW					
	Green Tree Lane	2 x Sarlin SV014B	1.65kW		Manholes:	71		
	Lodder Lane	1 x Sarlin SV014B and	1.65kW					
		1 x Pumpex K80 Vortex	2.7kW					
Takaka	Waitapu Rd (School Shop)	1 x Pumpex K80 W1312/4		Takaka WWTP	Rising Mains:		Residential pans	390
		1 x Pumpex K89-188			50mm dia	196m	Biofilters	2
	Hiawatha Lane	2 x Grundfos SV152H1	15kW		80mm dia	534m	Air Valves	8
		1 x Grundfos SQE 5-50 (Bore pump)	1.06kW		100mm dia	2,192m	Cleaning eyes	108
	Motupipi Street	2 x Grundfos S1504H1	50kW		125mm dia	2,286m		
		1 x Grundfos SQE 5-50 (Bore pump)	1.06kW		150mm dia	1,134m		
	Primary School	2 x Lowara GLV56	2.0kW		225mm dia	3,146m		
	Rototai Road	2 x Pumpex KL81/2130	3.0kW		Reticulation:			
	Park Ave	2 x Pumpex K87	6.3kW		100mm dia	1,585m		
	Dodson Rd	2 x Pumpex K87	2.2kW		150mm dia	14,592m		
	Sunbelt Cres	2 x Grundfos S1504H1	50kW		225mm dia	723m		
		1 x Grundfos SQE 5-50 (Bore pump)	1.06kW		Manholes:	131		
Pohara	Transfer Station	1 x Lowara GRPBGLV-56	1.3kW	Takaka WWTP	Rising Mains:		Residential pans	268
		1 x Jung UAK 08/2	1.2kW		50mm dia	144m	Biofilters	2
	Three Oaks	2 x Pumpex KL83	3.8kW		80mm dia	1,544m	Cleaning eyes	78
	Cassidys Corner	2 x Pumpex KL85 FF80	7.0kW		100mm dia	7,104m		
	Delaneys	1 x Pumpex PX-80-2P	8.0kW					
		1 x Pumpex KL85 FF80	7.0kW		Reticulation:			
	Boyle Street	2 x Jung UAK 08M	1.2kW		100mm dia	4,289m		

Scheme	Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets	
	Golf Club	2 x Pumpex KL81-2130	3.0kW		150mm dia	9,972m		
	Four Winds Corner	2 x Pumpex KL85 FF80	7.0kW					
	Pohara Camp	2 x Pumpex KL 81 KLF	3.0kW		Manholes:	140		
	Pohara Valley	2 x Pumpex KL 81 KLF	3.0kW					
	Tarakohe	2 x Pumpex KL 81-2150	3.0kW					
Ligar Bay / Tata Beach	Ligar Bay	2 x Pumpex KL 85-2185	7.0kW	Takaka WWTP	Rising Mains:		Residential pans	178
	Tata Beach	2 x Pumpex KL 81-2150	3.0kW		80mm dia	1,371m	Biofilters	1
					100mm dia	1,039m	Cleaning eyes	35
					Reticulation:			
					100mm dia	996m		
					150mm dia	3,625m		
					Manholes:	71		
Collingwood	Beach Front	2 x Sarlin SV072 BH	1.65kW	Collingwood WWTP	Rising Mains:		Residential pans	110
	Motels	2 Jung UAK 35/2 M/4	3.7kW		80mm dia	306m		
	Wally's Rest	1 x Pumpex K87	6.3kW		Reticulation:			
					100mm dia	1,995m		
					150mm dia	3,357m		
					Trunk Main:			
					100mm dia	1,874m		
					Manholes:	40		
Upper Takaka	Upper Takaka	2 x Jung UAK 25/2m	1.3kW	Upper Takaka WWTP	Rising Mains:		Residential pans	13
					50mm dia	550m		
					Reticulation:			
					100mm dia	373m		
					150mm dia	43m		
					Trunk Mains:			
					50mm dia	51m		
					Manholes:	7		
Tapawera	No pump stations on this scheme			Tapawera WWTP	Reticulation:		Residential pans	127
					100mm dia	142m		
					150mm dia	2275m		
					200mm dia	258m		
					Manholes:	55		
St Arnaud	Station No.1 (Lake)	1 x Jung UAK 75/2M	6.8kW	St Arnaud WWTP	Rising Mains:		Air Valves	3
		1 x Flygt MP3127 LT210	7.4kW		63mm dia	335m	Rodding eyes	69
	Station No. 2 (Alpine Lodge)	2 x Flygt CP3127 HT250	7.4kW		Reticulation:		Residential pans	212
					100mm dia	5,197m		

Scheme	Pump Stations			Treatment Plants	Reticulation		Miscellaneous Assets	
					150mm dia Trunk Main: 150mm dia Manholes:	3,358m 2,968m 76		
Murchison	Waller Street Hotham Street	2 x Pumpex K87 2 x Jung UAK 25/251	6.2kW 2.6kW	Murchison WWTP	Rising Mains: 80mm dia 100mm dia Reticulation: 100mm dia 150mm Manholes:	 150m 660m 2,788m 2,987m 22	Residential pans	213

APPENDIX C: ASSESSMENT OF ALL WASTEWATER SYSTEMS IN THE DISTRICT

Tasman District Council performed the Water and Sanitary Services Assessments (WSSA) and evaluated Council owned, community owned and some private wastewater services. The WSSA documents consist of two volumes:

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.

Council approved the WSSA documents in June 2005 and therefore met the requirements of the Local Government Act 2002 that the first assessment be adopted before 30 June 2005. The next update of the WSSA will be in 2009/10.

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 Equivalent to International Accounting Standard 16; Property, Plant and Equipment (NZ IAS 16) and IAS 36 (Impairment of Assets is the one of the current requirements of meeting GAAP.

The purpose of the valuations is for reporting asset values in the financial statements of TDC.

TDC requires its infrastructure asset register and valuation to be updated in accordance with Financial Reporting Standards and the AMP improvement plan (i.e. three yearly updates)

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 ended June 2007.

- NAMS Group Infrastructure Asset Valuation Guidelines – Edition 2.0
- New Zealand Equivalent to International Accounting Standard 16; Property, Plant and Equipment (NZ IAS 16) and IAS 36 (Impairment of Assets

D.1.1. Depreciation

Depreciation of assets must be charged over their useful life.

- Depreciated Replacement Cost is the current replacement cost less 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. The basis of the data inputs used is described in detail in the attached report.

(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 Overview of Asset Valuations

Assets are valued every three years, and historic asset valuations reports are held with Council.

The wastewater assets were last re-valued in June 2007 and the data are reported under separate cover[1]. The total replacement value of the wastewater assets as of 30 June 2007 is given in the Table D-1: Wastewater Asset Valuation Summary 30 June 2007.

Key assumptions in assessing the asset valuations are described in detail in the valuation report.

D.3 2007 Valuation- Wastewater

The optimised replacement value, annual depreciation and optimised depreciated replacement value of the wastewater assets are summarised in Table D-1.

Table D-1: Wastewater Asset Valuation Summary 30 June 2007

Scheme	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation To Date ($)	Annual Depreciation ($/yr)
Wastewater Pipes	66,686,899	48,330,821	18,356,078	866,974
Wastewater Pump Stations	8,071,005	5,036,088	3,034,917	294,645
Wastewater Treatment	5,089,231	4,736,858	352,373	75,623
Total	**79,847,135**	**58,103,766**	**21,743,368**	**1,237,241**

N.B. does not include inflation

[1] Infrastructural Asset Revaluation, June 2007 – MWH report for Tasman District Council

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 EDi Works Ltd. The initial contract duration is 6 years provided the contractor meets the performance requirements of the contract. 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 proactive maintenance work is managed in the following way:

1. The Contractor prepares an Annual Maintenance Programme that consists of monthly programmes of all proactive maintenance and reporting deadlines.

2. The Engineer to the Contract (Council's consultant) 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 monthly 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 related to 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 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.

E.2 Maintenance Standards

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
- TDC Engineering Standards and Policies 2008.

E.3 Engineering Studies

A number of studies 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 of Study
Water and Sanitary Services Assessment	Completed every 3 years to assess unreticulated communities.
Sludge Management	Options for district wide sludge management
Modelling of reticulation networks	Assessing capacity and deficiencies of reticulation networks, including Hope, Brightwater, Wakefield, Motueka and Murchison
Infiltration and Inflow Investigations	Assessing major areas of reticulation networks that should be replaced, including Collingwood, Little Kaiteriteri, Murchison, Pohara Valley, Richmond, Motueka and Takaka
Trade Waste	Survey and data capture
Risk Assessment	Expand existing risk assessments to individual asset level

E.4 Projected Operations and Maintenance Costs

Twenty-year forecasts for operations and maintenance costs are shown in Table E-2 below.

Table E-2: Engineering Strategic Studies

Item	Study Name	Description	TOTAL	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
1	Water & Sanitary Services Assessments	3 yrly reviews	300,000	40,000			40,000			40,000			40,000			40,000			40,000			40,000	
2	AMP Review and Update	3 yrly reviews (20yr forecast)	420,000		20,000	50,000		20,000	50,000		20000	50,000		20000	50,000		20000	50,000		20000	50,000		
3	AMP Improvement Plan Activities	Annual allowance	1,100,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
4	O&M Contract Tender	Retender allowance	345,000			100,000						100,000						100,000					
5	Valuations	3 yrly reviews	120,000		15,000			15,000			15000			15000			15000			15000			15000
6	Brightwater Reticulation	Root Cutting & Cleaning Pipelines	400,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
7	Hope/Brightwater/Wakefield CCTV/Modelling	CCTV and modelling of reticulation networks	684,200	106,051	147,103	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947	23,947
8	WWTP Signage	Upgrade signage at all WWTP's (excluding Motueka)	36,000	12,000							12,000							12,000					
9	Collingwood I/I Reduction	I/I reduction investigation and repairs	60,000	20,000			20,000			20,000													
10	Little Kaiteriteri I/I Reduction	I/I reduction investigation and repairs	100,000			50,000		50,000															
11	Murchison CCTV	CCTV Reticulation	88,400	17,680			17,680			17,680			17,680			17,680							
12	Murchison Modelling	Model Network	53,000	31,800	21,200																		
13	Pohara Valley I/I	I/I reduction investigation and repairs	55,900	55,900																			
14	Richmond Flow Testing	I/I reduction investigation	1,200,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
15	Richmond CCTV	CCTV 4km of reticulation	1,001,100	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055	50,055
16	Golden Bay Annual WWTP Report	Report to MkM each Oct/Nov	90,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
17	Trade Waste Implementation	Survey and data capture	300,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
18	Trade Waste Bylaw Review	Review of Bylaw	40,000							20,000										20,000			
19	Memorandum of Agreement	MoA with Tasman Bay Iwi	10,000		10,000																		
20	Annual Tasman Bay WW Report	Report to Tasman Bay Iwi	110,000	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
21	Risk Assessment	Identify key assets and prepare risk mitigation plan	20,000		20,000																		
22	Sludge Management	Look at options for sludge management district wide	60,000			30,000										30,000							
23	Professional Services Retender	Council retendering process	40,000				20,000										20000						
24	Motueka CCTV	CCTV Reticulation	400,000	100,000	100,000	50,000	50,000	25,000	25,000	25,000	25,000												
25	Kaiteriteri Reticulation	Little Kaiteriteri Reduce I/I	100,000					50,000	50,000														
26	Motueka WWTP	Stakeholder Working Party	40,000	10,000	10,000	10,000	10,000																
27	NRSBU Charges	Annual WW charges	71,224,893	1,989,000	2,148,460	2,591,400	3,206,700	3,188,850	3,137,050	3,084,900	3,628,450	3,766,350	3,845,800	3,884,258	3,923,101	3,962,332	4,001,955	4,041,974	4,082,394	4,123,218	4,164,450	4,206,095	4,248,156
28	Takaka Reticulation	Takaka I/I investigation and repair	96,600							26,000	70600												
38	Richmond Model Maintenance		150,000	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
39	System Operating Plan Updates	Updating of all 7 System Operating Plans	140,000	20,000			20,000			20,000			20,000			20,000			20,000			20,000	
Total				2,614,986	2,704,318	3,117,902	3,620,882	3,585,352	3,498,552	3,490,082	4,007,552	4,152,852	4,159,982	4,155,760	4,209,603	4,306,514	4,293,457	4,440,476	4,378,896	4,414,720	4,450,952	4,502,597	4,499,658

Table E-3: Projected Wastewater Operations and Maintenance Costs

General Ledger Code	WASTEWATER GENERAL OPERATING & MAINTENANCE	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15 Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10	2019/20 Year 11	2020/21 Year 12	2021/22 Year 13	2022/23 Year 14	2023/24 Year 15	2024/25 Year 16	2025/26 Year 17	2026/27 Year 18	2027/28 Year 19	2028/29 Year 20
Wastewater																					
Combined Account																					
0901 2401	SEW RICHMOND MAINTENANCE	80,000	81,200	86,072	86,933	87,802	89,119	90,010	90,910	91,819	92,738	94,129	95,070	96,021	96,981	97,951	99,420	100,414	101,418	102,433	103,457
0901 2401 02	SEW MOTUEKA MAINTENANCE	105,000	106,575	112,970	122,099	123,320	125,170	126,422	127,686	128,963	130,252	132,206	133,528	134,864	136,212	137,574	139,638	141,034	142,445	143,869	145,308
0901 2401 03	SEW TAKAKA MAINTENANCE	45,000	50,675	48,416	48,900	49,389	50,129	50,631	51,137	51,648	52,165	52,947	53,477	54,012	54,552	55,097	55,924	56,483	57,048	57,618	58,194
0901 2401 04	SEW WAIMEA BASIN MAINTENANCE	52,000	52,780	55,947	56,506	57,071	57,927	58,507	59,092	59,683	60,279	61,184	61,796	62,413	63,038	63,668	64,623	65,269	65,922	66,581	67,247
0901 2401 05	SEW MAPUA/RUBY BAY MAINTENANCE	55,000	55,825	59,175	59,766	60,364	66,269	66,932	67,601	68,277	68,960	69,995	70,695	71,401	72,115	72,837	73,929	74,668	79,781	80,579	81,385
0901 2401 06	SEW KAITERITERI/RIWAKA MAINTEN	32,000	32,480	34,429	34,773	35,121	35,648	36,004	36,364	36,728	45,095	45,771	46,229	46,692	47,158	47,630	48,344	48,828	49,316	49,809	50,307
0901 2401 07	SEW MURCHISON MAINTENANCE	45,000	45,675	53,416	48,900	49,389	50,129	50,631	51,137	51,648	52,165	52,947	53,477	54,012	54,552	55,097	55,924	56,483	57,048	57,618	58,194
0901 2401 08	SEW COLLINGWOOD MAINTENANCE	47,000	42,630	45,188	45,640	46,096	46,788	47,255	47,728	48,205	48,687	49,418	49,912	50,411	50,915	51,424	52,196	52,717	53,245	53,777	54,315
0901 2401 09	SEW TAPAWERA MAINTENANCE	25,000	25,375	26,898	32,166	27,438	27,850	28,128	28,409	28,694	28,981	29,415	29,709	30,006	30,307	30,610	31,069	31,379	31,693	32,010	32,330
0901 2401 10	SEW UPPER TAKAKA MAINTENANCE	14,000	14,210	15,063	15,213	15,365	15,596	15,752	15,909	16,068	16,229	16,473	16,637	16,804	16,972	17,141	17,399	17,572	17,748	17,926	18,105
0901 2401 11	SEW POHARA MAINTENANCE	75,000	76,125	80,693	81,499	82,314	83,549	84,385	85,228	86,081	86,942	88,246	89,128	90,019	90,920	91,829	93,206	94,138	95,080	96,030	96,991
0901 2401 12	SEW GENERAL MAINTENANCE	340,000	345,100	365,806	369,464	373,159	378,756	382,544	386,369	390,233	394,135	400,047	404,048	408,088	412,169	416,291	422,535	426,760	431,028	435,338	439,692
0901 2401 13	SEW ST ARNAUD MAINTENANCE	25,000	25,375	26,898	27,166	32,438	27,850	28,128	28,409	28,694	28,981	29,415	29,709	30,006	30,307	30,610	31,069	31,379	31,693	32,010	32,330
0901 2401 16	SEW MARAHAU																				35,000
0901 2401 14	SEW DATRAN MAINTENANCE	55,000	55,825	59,175	59,766	60,364	61,269	61,882	62,501	63,126	63,757	64,714	65,361	66,014	66,674	67,341	68,351	69,035	69,725	70,422	71,127
0901 2401 17	I/I INVESTIGATIONS AND REPAIR	155,900	80,000	130,000	100,000	130,000	80,000	126,000	150,600	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
0901 2401 15	SEW CCTV INSPECTIONS	167,735	150,055	100,055	117,735	125,055	125,055	92,735	75,055	50,055	67,735	50,055	50,055	67,735	50,055	50,055	50,055	50,055	50,055	50,055	50,055
		1,318,635	1,239,905	1,300,196	1,306,527	1,354,685	1,321,105	1,345,945	1,364,137	1,279,922	1,317,101	1,316,961	1,328,830	1,358,498	1,352,926	1,365,155	1,383,681	1,396,217	1,413,245	1,426,077	1,474,037
ELECTRICITY																					
09012505	WASTEWATER ELECTRICITY	146,951	155,768	157,325	159,899	162,297	163,920	165,559	167,215	168,887	173,420	175,155	176,906	178,675	180,462	183,169	185,001	186,851	189,719	191,616	194,490
PROFESSIONAL SERVICES																					
09012203	SEW GEN P/S CONSULTANTS	341,419	361,904	365,523	369,178	374,716	378,463	382,247	386,070	389,931	395,780	399,737	403,735	407,772	411,850	418,028	422,208	426,430	430,694	435,001	441,526
09012608	SEW NRSS TREATMENT COSTS	1,989,000	2,148,460	2,591,400	3,206,700	3,188,850	3,137,050	3,084,900	3,628,450	3,766,350	3,845,800	3,884,258	3,923,101	3,962,332	4,001,955	4,041,974	4,082,394	4,123,218	4,164,450	4,206,095	4,248,156
0901220301	SEW RESOURCE CONSENTS P/S	170,656	180,895	182,704	184,531	187,299	189,172	191,064	192,975	194,904	197,828	199,806	201,804	203,822	205,861	208,949	211,038	213,148	215,280	217,433	220,694
0901220310	AMP/LTCCP (3 YEARLY REVIEW/UPDATE)	0	20,000	50,000	0	20,000	50,000	0	20,000	50,000	0	20,000	50,000	0	20,000	50,000	0	20,000	50,000	0	0
0901252601	SEWERAGE MODELLING	145,351	175,803	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447	31,447
0901252602	AMP LTCCP STRAT PLAN																				
0901252603	ASSET REVALUATIONS	0	15,000	0	0	15,000	0	0	15,000	0	0	15,000	0	0	15,000	0	0	15,000	0	0	15,000
0901252604	TRADE WASTE BYLAW	15,000	15,000	15,000	15,000	15,000	15,000	35,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	35,000	15,000	15,000	15,000
0901252605	O&M CONTRACT RETENDER	0	0	100,000	0	0	0	0	0	100,000	0	0	0	0	0	100,000	0	0	0	0	0
0901252606	SANITARY SERVICES ASSESSMENTS	40,000	0	0	40,000	0	0	40,000	0	0	40,000	0	0	40,000	0	0	40,000	0	0	40,000	0
0901250609	WWTP Signage	12,000	0	0	0	0	0	0	12,000	0	0	0	0	0	0	12,000	0	0	0	0	0
0901252610	I/I REDUCTION																				
0901252611	CCTV INVESTIGATION																				
0901252608	AMP IMPROVEMENT PLAN ACTIVITIES	70,000	70,000	50,000	70,000	50,000	50,000	70,000	50,000	50,000	70,000	50,000	50,000	70,000	50,000	50,000	70,000	50,000	50,000	70,000	50,000
0901252612	PROFESSIONAL SERVICES RETENDERING PROC	0	0	0	20,000	0	0	0	0	0	0	0	0	0	20,000	0	0	0	0	0	0
0901252607	WW REPORTING REQUIREMENTS	20,000	30,000	50,000	20,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	40,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
		2,803,426	3,017,062	3,436,074	3,956,856	3,892,312	3,861,132	3,844,658	4,360,942	4,607,632	4,605,855	4,625,249	4,685,087	4,770,373	4,781,112	4,937,398	4,882,087	4,924,243	4,966,871	5,024,976	5,031,823
	Total	4,269,011	4,412,735	4,893,595	5,423,282	5,409,294	5,346,157	5,356,163	5,892,294	6,056,441	6,096,376	6,117,365	6,190,823	6,307,546	6,314,500	6,485,721	6,450,769	6,507,311	6,569,836	6,642,669	6,700,351

N.B. does not include inflation

APPENDIX F: DEMAND AND FUTURE NEW CAPITAL REQUIREMENTS

F.1 Growth Supply – Demand Model

A comprehensive population growth supply/demand model has been developed in 2008. This replaces the previous "AMPlan/LTCCP Growth Maps – November 2005". There are now two volumes namely:

Volume 1 TDC Growth Supply - Demand Model 2009/10 to 2018/19 to 2029.
Volume 2 Infrastructure Activity Outputs

The model projects development within the time periods:

- Year 1 to 3 - term until the next LTCCP review
- Year 4 to 10 - 10 year timeframe of LTCCP
- Year 11 to 20 - for future infrastructure planning
- Year 20 plus - for future infrastructure planning.

The status of the assessments of the many Development Areas for the model process remains subservient to the TRMP.

The model projects are described in detail in both volumes and are summarised as follows:

F.1.1. Volume 1

F.1.1.1 Supply

- Settlement Areas – 17 GIS Maps represent the 'urban' areas in the district which are further divided into some 258 Development Areas aligned to existing and potential new zonings. All known existing Residential dwellings and existing Business buildings are shown. The current supply of lots, dwellings and buildings are established.
- An assessment of every Development Area is then completed considering:
    - Land Use Effects – settlement form, productive land value, and hazard risk exposure, environmental/social impacts.
    - Network Services Effects – stormwater, water supply, wastewater, transportation, green space. Each Development Area has a net positive or negative development score assigned to it identifying where growth should be promoted or halted.
    - Using the data from the Settlement/Development Area maps and Assessments plus the Council staff knowledge the model generates the theoretical total future supply of lots.

F.1.1.2 Demand

- Residential: A district population growth projection percentage has been established for the five wards and the Settlement Areas within each ward. The population growth is based on Statistics New Zealand demographic population projections assuming medium growth for all areas except Richmond and Motueka where a high growth projection has been adopted. Initially Council adopted a higher growth projection across the district, however in the light of new information that was released by Statistics New Zealand on the 2006 census, and when the full impact of the higher growth projection was understood, Council reviewed this decision and adopted a projection in line with Statistics New Zealand projections. The population growth is converted into required dwellings assuming 2.4 persons per average household.
- Business: Council Land Management Consultants have produced a 'business land required' sub model. Three types of business are considered namely Industrial, Commercial and Retail, however the model simplifies the demand to future building sites required over three time periods.

- Supply and Demand: The model requires experienced Council staff to then decide on how the demand for future Residential and Business quantities will be satisfied. The demand is met by using either:
    - Existing available unbuilt on lots.
    - New lots created through subdivision.

  The results of this whole process are shown in the first worksheet table in Volume 1 called 'Summary of Volume 1 Outputs'.

F.1.2. Volume 2

The Volume 1 summary outputs table is reproduced in Volume 2.

Volume 2 creates worksheets for the entire Engineering infrastructure activities which require a rate to be struck over the 10 year period of the LTCCP.

Volume 2 does not contain any financial figures but rather provides the numerical units required to be determined.

The starting, base data for Volume 2 is derived from Council's rating database.

F.1.2.1 Projections Beyond 20 Years

This model satisfies the requirement to project growth over a 3, 10 and 20 year time period for the LTCCP financial model.

Asset Managers however are also tasked to consider design requirements for assets with life cycles exceeding 20 years.

There is sufficient data available in both volumes to extrapolate figures to a future time requirement acknowledging the limitations of the models accuracy.

F.2 Projection of Wastewater Demands

Table F-1 summarises the total number of pans by UDA for the next 10 years. Each residential property is counted as a single pan even if a household has multiple pans as residential properties are only rated for their first pan. All multiple pans are businesses, schools, or hospitals, etc.

Table F-1: Projected Urban Pan Growth in the Tasman District

WASTEWATER				Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7			Year 8			Year 9			Year 10			Year 11-20*	
	2008/09			2009/10			2010/11			2011/12			2012/13			2013/14			2014/15			2015/16			2016/17			2017/18			2018/19			2019-2039	
PANS	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**1**	**2-10**	**11+**	**Residential**	**Business**
Brightwater	621	106	46	632	111	48	645	116	50	659	121	52	664	121	52	675	121	52	688	130	57	701	139	62	712	139	62	724	139	62	736	139	62	83	3
Collingwood	110	70	17	110	70	17	113	75	19	113	75	19	113	75	19	113	75	19	115	80	21	116	80	21	117	80	21	117	80	21	117	80	21	1	0
Kaiteriteri	442	102	97	442	102	97	443	102	97	444	102	97	444	102	97	445	107	99	447	107	99	449	107	99	450	107	99	450	107	99	450	107	99	0	0
Ligar Bay/Tata Beach	178	42	15	178	42	15	179	42	15	179	42	15	180	42	15	180	42	15	181	42	15	182	42	15	183	42	15	184	42	15	185	42	15	0	0
Mapua/Ruby Bay	634	79	37	642	79	37	655	88	42	669	102	49	676	102	49	688	111	54	699	116	56	711	125	61	722	130	63	734	139	68	745	144	70	36	2
Marahau	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Motueka	2604	744	300	2636	758	307	2671	781	319	2706	804	331	2730	813	336	2757	827	343	2784	841	350	3812	859	360	2840	877	370	2868	895	380	2896	913	390	155	17
Murchison	213	139	81	214	144	83	216	149	85	219	158	90	219	158	90	221	163	92	223	168	94	226	173	96	229	178	98	231	181	98	231	181	98	4	0
Pohara	268	62	22	271	71	27	277	85	34	283	99	41	283	99	41	288	108	46	293	113	48	297	122	53	301	131	58	305	140	63	307	149	68	13	9
Richmond	4482	685	553	4598	781	603	4718	882	655	4838	983	707	4934	1029	731	5037	1079	757	5139	1125	781	5241	1171	805	5343	1217	829	5445	1263	853	5542	1286	865	773	52
Riwaka	110	25	24	112	25	24	114	25	24	116	25	24	117	25	24	118	25	24	122	30	26	124	30	26	125	30	26	126	30	26	127	30	26	0	0
St Arnaud	212	71	58	214	71	58	215	76	60	217	81	62	217	81	62	219	81	62	222	86	64	225	91	66	226	91	66	227	91	66	227	91	66	8	1
Takaka	390	194	74	391	194	74	393	199	76	396	208	81	399	208	81	403	213	83	408	218	85	413	223	87	417	223	87	419	223	87	420	223	87	28	2
Tapawera	127	44	23	127	44	23	130	44	23	132	44	23	132	44	23	133	44	23	135	44	23	137	44	23	139	44	23	141	44	23	142	44	23	10	0
Tasman	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Upper Takaka	13	4	0	13	4	0	13	4	0	13	4	0	14	5	1	14	5	1	14	5	1	14	5	1	15	6	2	15	6	2	15	6	2	0	0
Wakefield	760	130	57	769	135	59	786	158	71	803	181	83	809	181	83	821	190	88	832	195	90	844	204	95	854	209	97	865	218	102	877	232	109	81	2
	11860	**2516**	**1307**	**12045**	**2649**	**1376**	**12264**	**2842**	**1476**	**12483**	**3044**	**1581**	**12627**	**3101**	**1610**	**12808**	**3207**	**1665**	**12998**	**3313**	**1720**	**13188**	**3428**	**1780**	**13369**	**3517**	**1826**	**13546**	**3609**	**1874**	**13712**	**3678**	**1910**	**1195**	**90**
TOTAL PANS			**15683**			**16070**			**16582**			**17108**			**17338**			**17680**			**18031**			**18396**			**18712**			19029			**19300**		**20585**

* number of new lots only (no projections for pan numbers beyond Year 10).

F.3 Future New Capital Requirements

New capital works are those works that create a new asset that did not previously exist, or works that upgrade or improve an existing asset beyond its existing capacity. The need for the new capital work could be from one of the following drivers:

- Growth – to provide infrastructure to accommodate the demand
- Increased Level of Service – to improve assets to provide a better level of service
- Backlog – to upgrade or improve an asset that should have been upgraded previously but for some reason has been deferred or not identified.

This is necessary for two reasons as follows:

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

The projected new capital requirements for the next 20 years (including renewals) is summarised as follows:

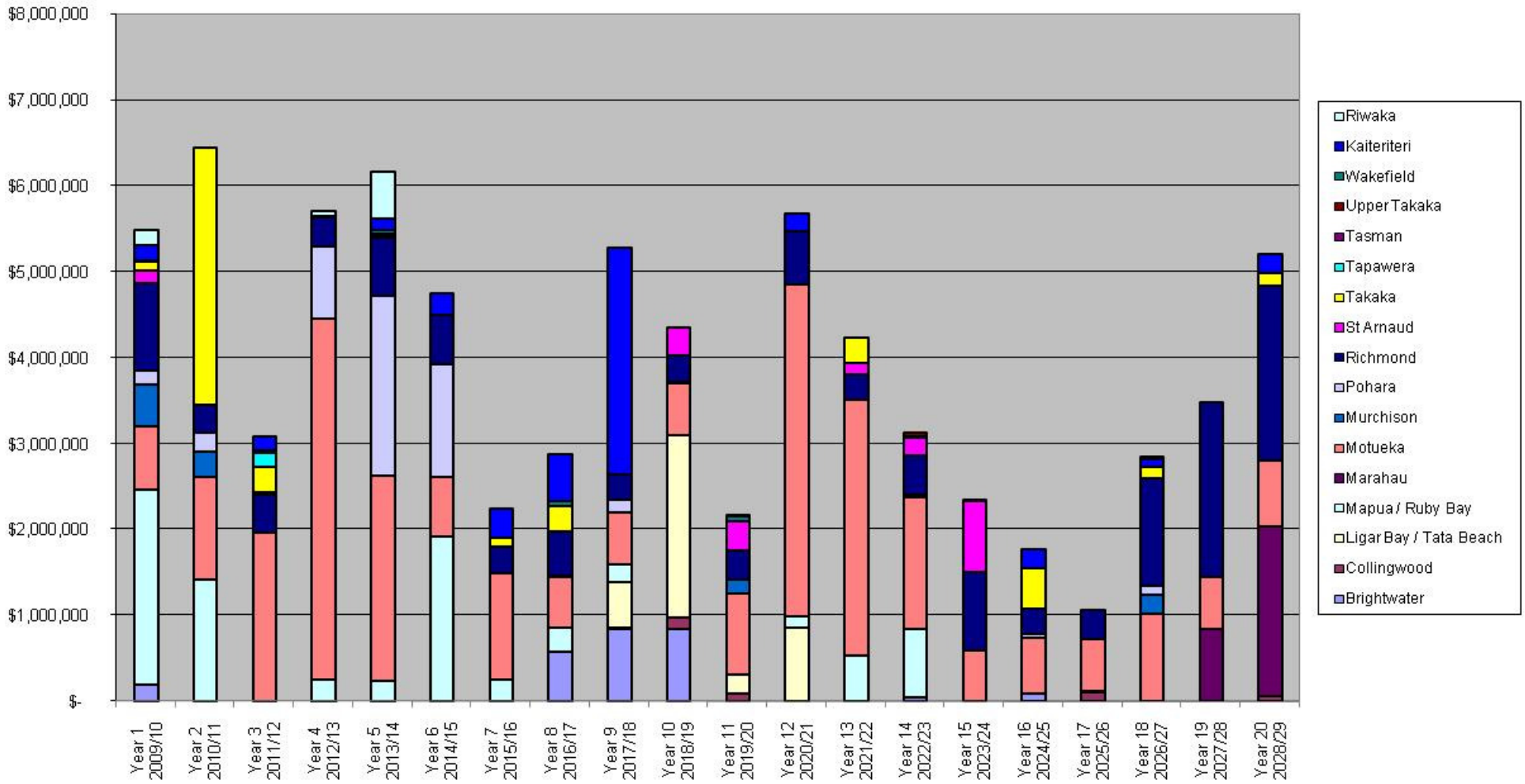


Figure F-1: Wastewater Supply Capital Forecast – By Urban Drainage Area

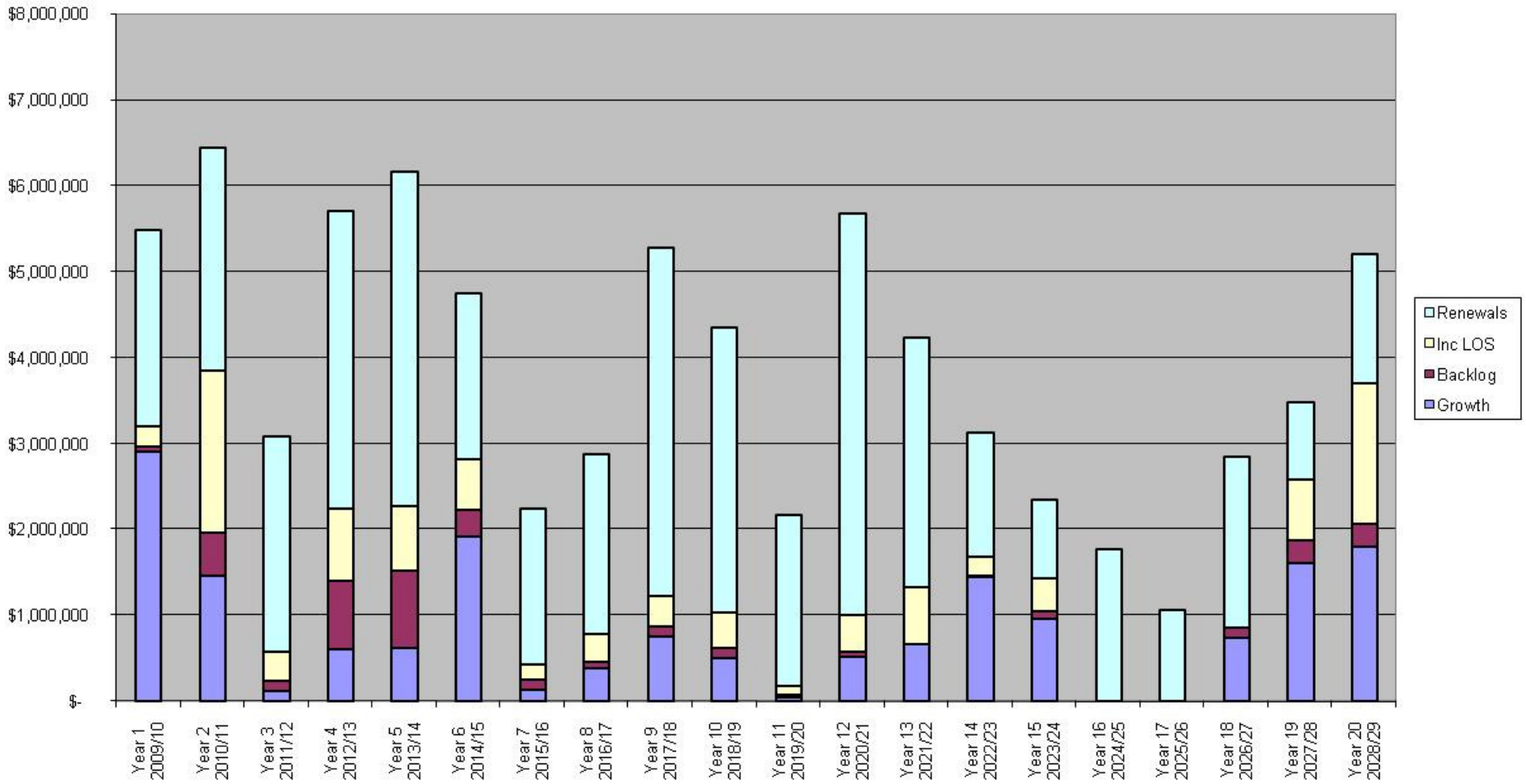


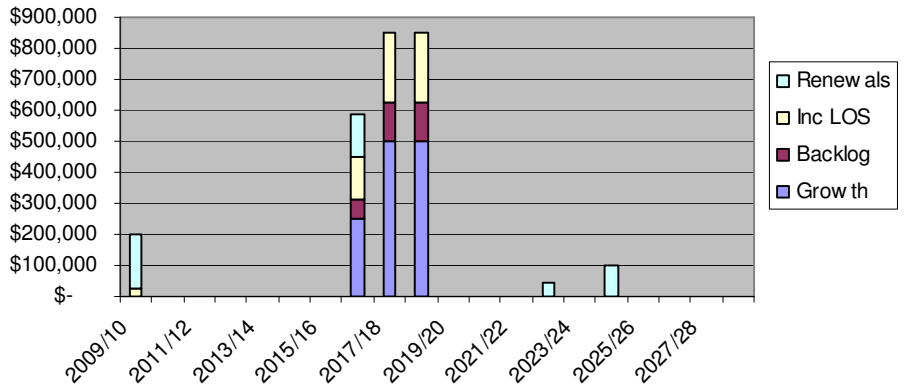
Figure F-2: Wastewater Supply Capital Forecast – by Project Driver

These charts have been developed from a database of projects that provide a full list of the individual projects along with project cost estimate, allocations against project drivers, project programming and other project specific information. This project database is included at the end of this Appendix.

F.4 Future New Capital Requirements by Scheme

Figure F-3 shows future new Capital Expenditure by Scheme along with a bullet point list of the main expenditure items contributing to the New Capital Requirements.

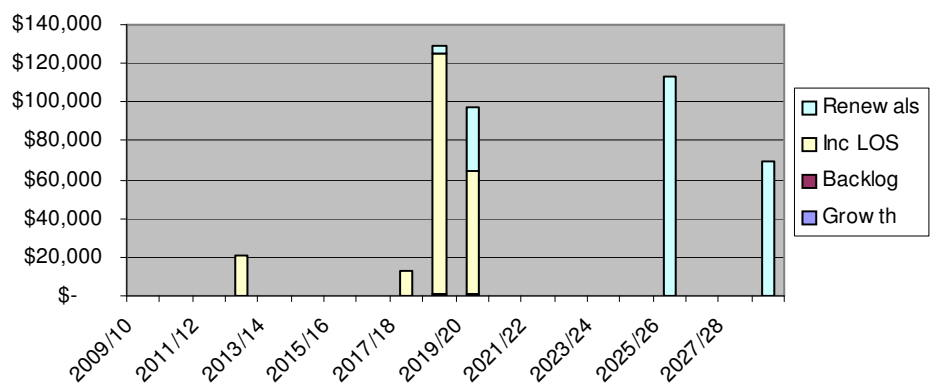
Capex Brightwater



Major Capital Works

- Upgrade Main PS and Rising Main to Burkes Bank 2016-19 ($2,122k)

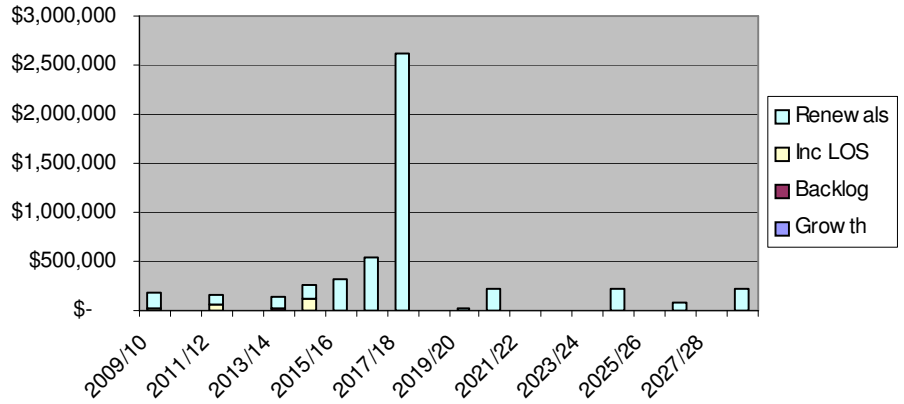
Capex Collingwood



Major Capital Works

- Motels PS storage and biofilter 18/19 ($131k)
- Beach Rd PS storage, pump, electrical upgrade 19/20 ($108k)
- Collingw ood WWTP UV and telemetry renew al 25/26 ($113k)

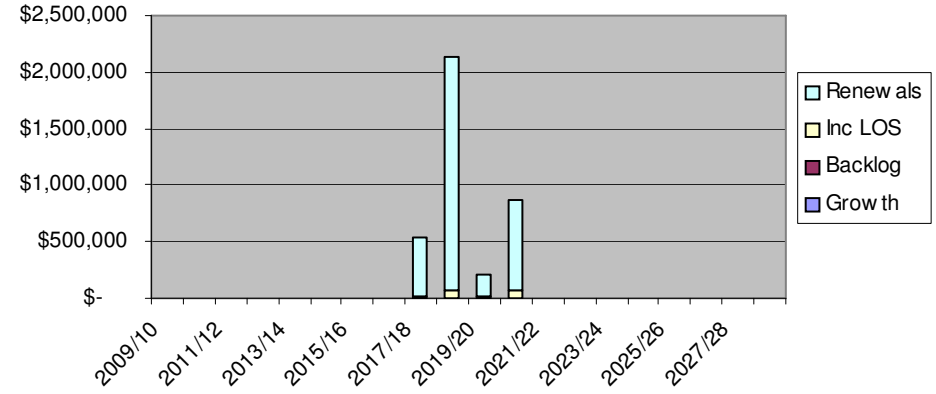
Capex Kaiteriteri



Major Capital Works

- Martin Farm Rd PS Upgrade 14/15 ($253k)
- Tapu Bay rising main replacement 2016-18 ($3,286k)
- Pipeline Renew als 16/17, 20/21, 24/25, 28/29 ($853k)

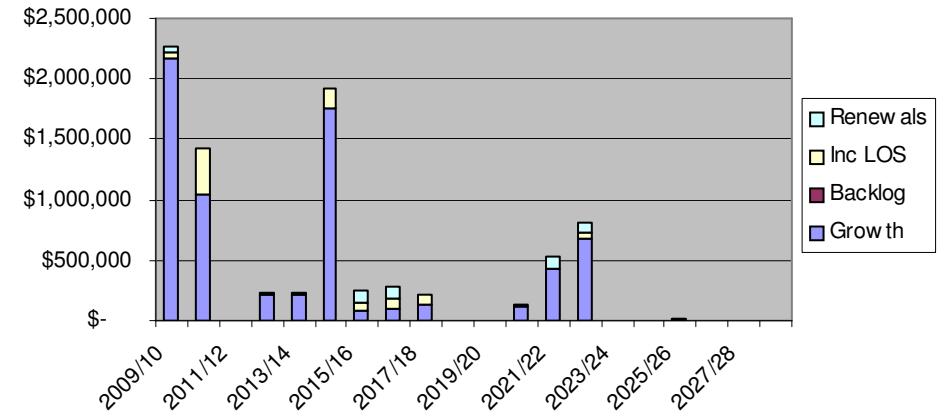
Capex Ligar Bay / Tata Beach



Major Capital Works

- Tarakohe & Ligar Bay PS and rising main upgrade 2017-19 ($2,663k)
- Tata Beach PS & rising main upgrade 2019-21 ($1,080k)

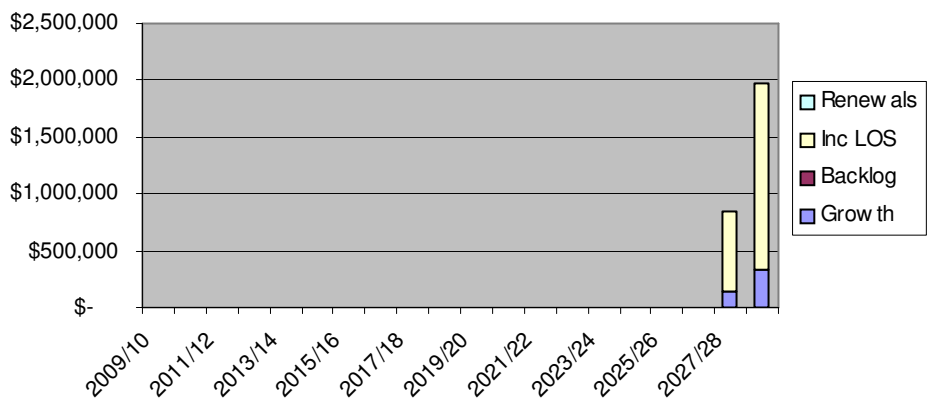
Capex Mapua / Ruby Bay



Major Capital Works

- Aranui Combined PS upgrade 2020-23 ($1,047k)
- Trunk main to Bell Island upgrade 9/10 ($2,056k)
- Mapua Wharf PS upgrade & generator 2009-11 ($1,576k)
- Stafford Dr PS & rising main upgrades 2012-15 ($2,379k)

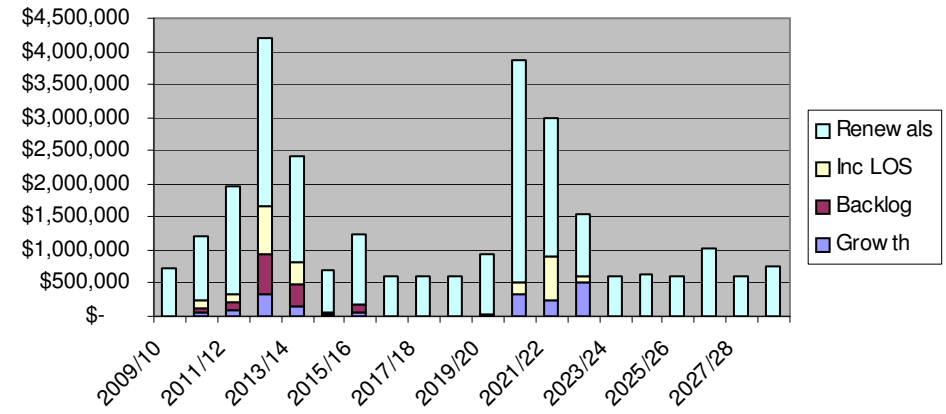
Capex Marahau



Major Capital Works

- New reticulation and treatment plant 2027-29 ($2,819k)

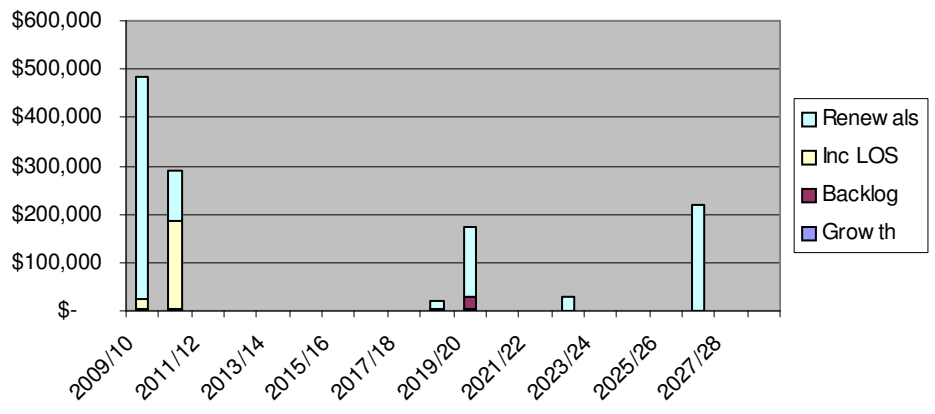
Capex Motueka



Major Capital Works

- WWTP Upgrade 2011-14 ($6,003k)
- Thorp St rising main to WWTP upgrade 2019-21 ($3,214k)
- Thorp St trunk main upgrade 2020-22 ($1,840k)

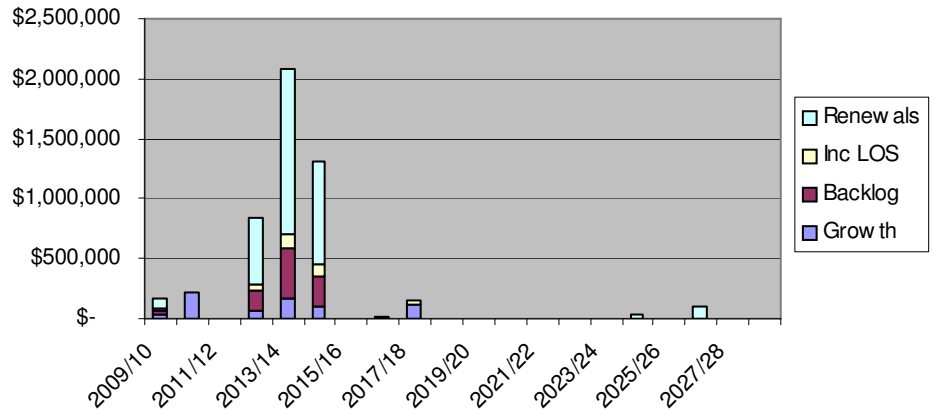
Capex Murchison



Major Capital Works

- SH bridge risingman replacement 09/10 ($274k)
- Murchison WWTP Renew als 26/27 ($218k)
- Hotham St PS Upgrade 2009-11 ($199k)

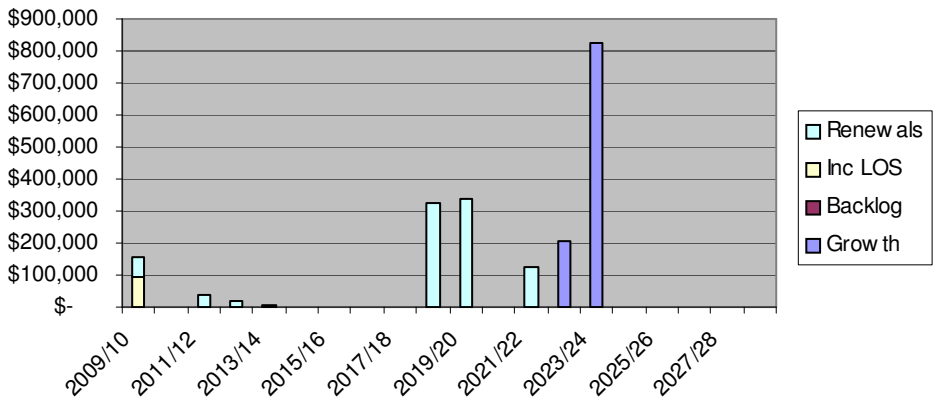
Capex Pohara



Major Capital Works

- Four Winds, Pohara Camp & Valley PS and rising main upgrades 2012-15 ($4,172k)

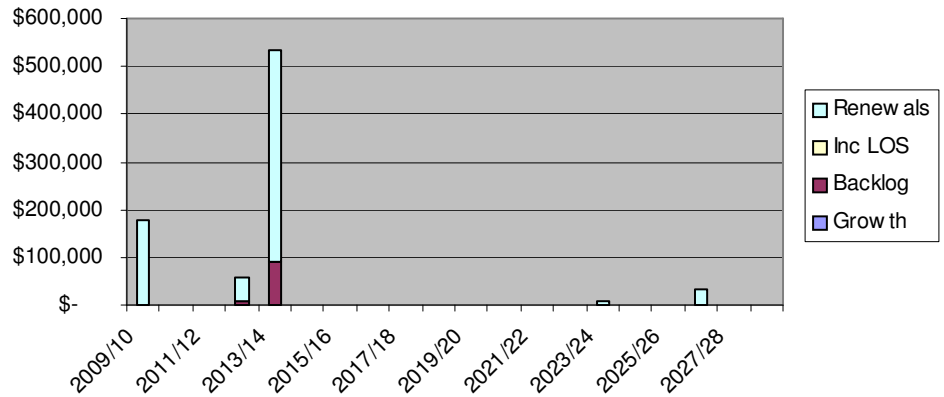
Capex St. Arnaud



Major Capital Works

- Rising main to WWTP upgrade 2022-24 ($1,033k)

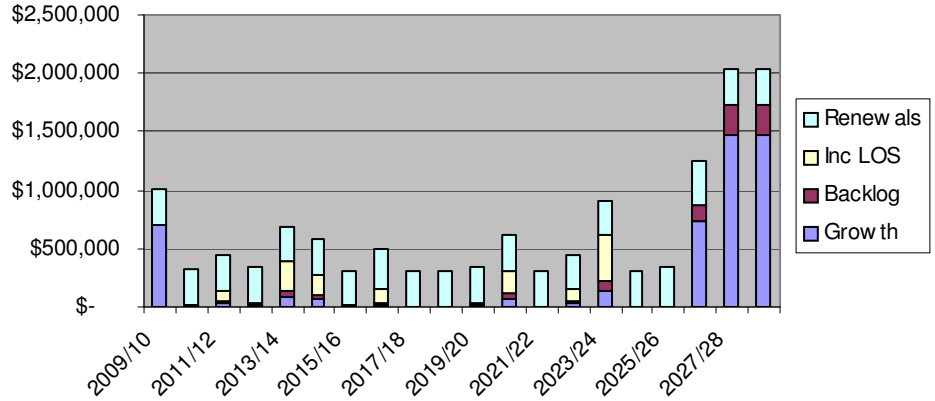
Capex Riwaka



Major Capital Works

- Motueka Bridge to WWTP rising main upgrade 2012-14 ($594k)

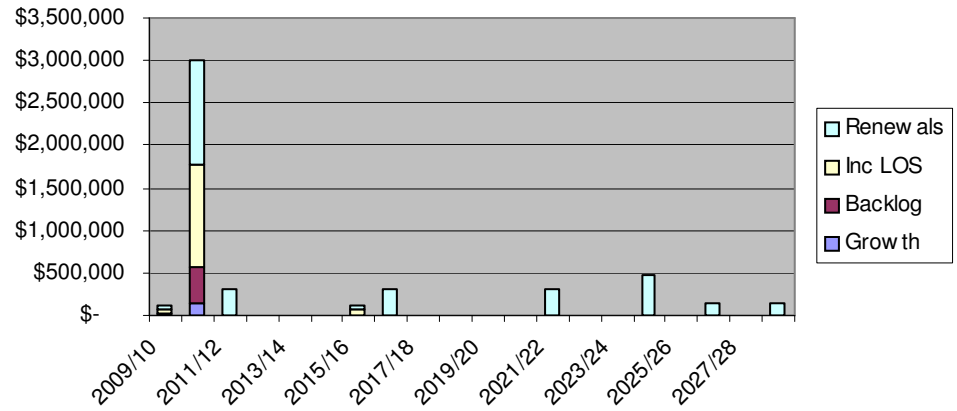
Capex Richmond



Major Capital Works

- 3 Brothers Cnr - Burkes Bank trunk main 2026-29 ($4,338k)
- New Headingly Lane PS 09/10 ($700k)
- Oxford St pipeline upgrade 2022-24 ($766k)

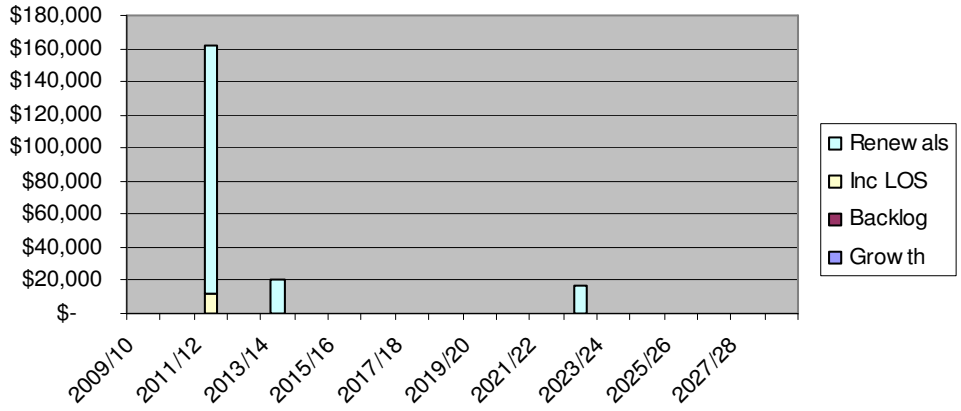
Capex Takaka



Major Capital Works

- WWTP Upgrade 10/11 ($1,112k)

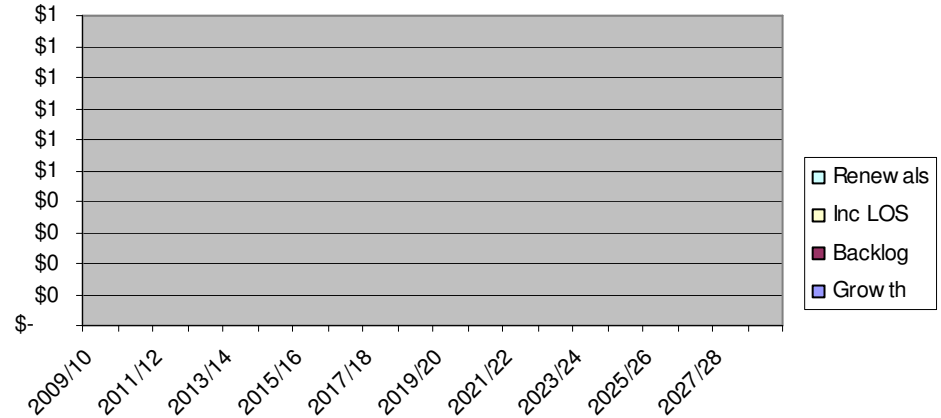
Capex Tapawera



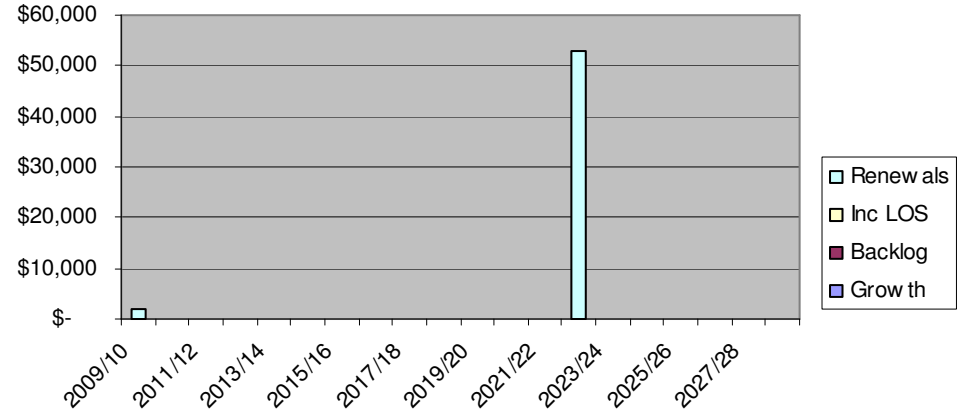
Major Capital Works

- Pipeline renew als 11/12 ($150k)

Capex Tasman



Capex Upper Takaka



Major Capital Works

- Harw ood Pl PS upgrade 22/23 ($53k)

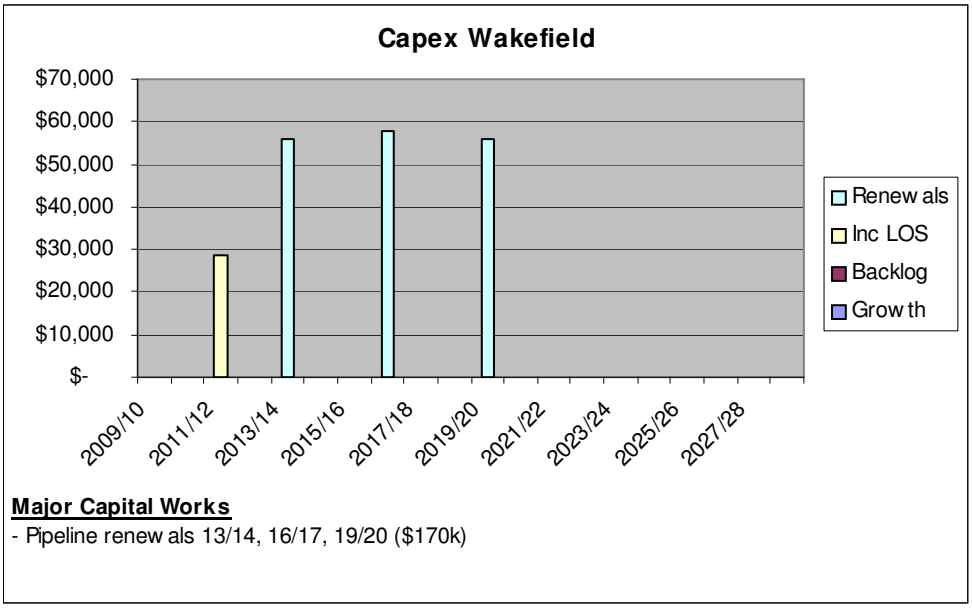


Figure F-3: Capex Requirements by Scheme

F.5 Development of New Capital Requirement Forecasts

During April to September 2008, a number of workshops with the project team (See Appendix Z for details) 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 developed to ensure consistent estimating practices and rates 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 filed in an Estimates file to be held by Council.

The information from the estimates has then been entered into the Capital Forecast spreadsheet/database that enables listing a summing 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 council's financial system for financial modelling.

The full spreadsheet of projects, Total Capital Forecast, is included on the following page:

Total Capital Forecast

Item	Scheme	Project Name	Project Estimate	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15 Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10	2019/20 Year 11	2020/21 Year 12	2021/22 Year 13	2022/23 Year 14	2023/24 Year 15	2024/25 Year 16	2025/26 Year 17	2026/27 Year 18	2027/28 Year 19	2028/29 Year 20	Beyond Year 20
1	Brightwater	Brightwater - Burkes Bank	$ 2,121,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 424,380	$ 848,760	$ 848,760	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	Brightwater	Brightwater Main PS Renewals	$ 104,576	$ 104,576	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Brightwater	Bryant Rd PS Upgrade	$ 45,185	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,185	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Brightwater	Malthouse Cres PS Upgrade	$ 60,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,709	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Brightwater	Pipeline Renewals	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -
6	Brightwater	Waimea West PS (Malthouse Cres Intersection) Upgrade	$ 58,674	$ 58,674	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Brightwater	Brightwater Isolation Valves	$ 36,000	$ 36,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Collingwood	Beach Rd PS Telemetry	$ 20,400	$ -	$ -	$ -	$ 20,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Collingwood	Beach Road PS Upgrade	$ 107,804	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,780	$ 97,024	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Collingwood	Collingwood WWTP Renewals	$ 113,408	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113,408	$ -	$ -	$ -	$ -
11	Collingwood	Collingwood WWTP Upgrade	$ 838,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 838,400
12	Collingwood	Motels PS Upgrade	$ 130,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,090	$ 117,810	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Collingwood	Wallys Rest PS Upgrade	$ 69,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 69,600	$ -
14	Kaiteriteri	Breaker Bay PS Pumps	$ 14,728	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,728	$ -
15	Kaiteriteri	Breaker Bay PS Upgrade	$ 73,091	$ -	$ -	$ 73,091	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Kaiteriteri	Honeymoon Bay PS Electrics	$ 88,090	$ -	$ -	$ 88,090	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Kaiteriteri	Kaiteriteri Vessel Telemetry	$ 24,800	$ 24,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Kaiteriteri	Little Kaiteriteri PS Pumps	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	Kaiteriteri	Little Kaiteriteri PS Upgrade	$ 72,366	$ 72,366	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Kaiteriteri	Martin Farm Rd PS Pumps	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Kaiteriteri	Martin Farm Road PS Electrics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Kaiteriteri	Martin Farm Road PS Upgrade	$ 252,531	$ -	$ -	$ -	$ -	$ -	$ 252,531	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Kaiteriteri	Martin Farm Road PS Telemetry	$ 11,296	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,296	$ -	$ -	$ -
24	Kaiteriteri	Pipeline Renewals	$ 853,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -
25	Kaiteriteri	Rising main through Girvins	$ 130,400	$ -	$ -	$ -	$ -	$ 130,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
26	Kaiteriteri	Stephens Bay PS Ugrade	$ 616,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 616,600
27	Kaiteriteri	Stephens Bay PS Upgrade	$ 73,643	$ 73,643	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	Kaiteriteri	Tapu Bay Pipeline	$ 3,285,550	$ -	$ -	$ -	$ -	$ -	$ -	$ 328,555	$ 328,555	$ 2,628,440	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
29	Kaiteriteri	Tapu Bay PS Pumps	$ 13,879	$ 13,879	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30	Kaiteriteri	Tapu Bay PS Upgrade	$ 70,308	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,308	$ -	$ -	$ -
31	Ligar Bay / Tata Beach	Tarakohe/Ligar Bay Upgrades	$ 2,662,695	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 532,539	$ 2,130,156	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
32	Ligar Bay / Tata Beach	Tata Beach Upgrade	$ 1,080,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 216,090	$ 864,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	Mapua / Ruby Bay	Aranui Combined PS Upgrade	$ 1,046,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 104,650	$ 209,300	$ 732,550	$ -	$ -	$ -	$ -	$ -	$ -	$ -
34	Mapua / Ruby Bay	Aranui-Higgs Rd PS Upgrade & Storage	$ 97,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,720	$ 87,480	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
35	Mapua / Ruby Bay	Higgs Rd PS 1 Upgrade & Storage	$ 152,000	$ -	$ -	$ -	$ -	$ -	$ 15,200	$ 136,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
36	Mapua / Ruby Bay	Higgs Rd PS 2 Upgrade	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	Mapua / Ruby Bay	Higgs Rd PS 3 Upgrade	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
38	Mapua / Ruby Bay	Leisure Park PS Pump 2	$ 13,555	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,555	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	Mapua / Ruby Bay	Leisure Park PS Upgrade	$ 71,048	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71,048	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40	Mapua / Ruby Bay	Mapua Wharf PS Upgrade & Generator	$ 1,575,500	$ 157,550	$ 1,417,950	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	Mapua / Ruby Bay	Mapua/Ruby Bay Pipeline Renewals	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
42	Mapua / Ruby Bay	Ruby Bay PS Upgrade & Storage	$ 149,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 29,920	$ 119,680	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
43	Mapua / Ruby Bay	Seaton Valley Pump Station	$ 1,124,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,124,160
44	Mapua / Ruby Bay	Stafford Dr PS & RM Upgrade	$ 2,378,800	$ -	$ -	$ -	$ 237,880	$ 237,880	$ 1,903,040	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
45	Mapua / Ruby Bay	Toru St PS Upgrade & Storage	$ 150,600	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,060	$ 135,540	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
46	Mapua / Ruby Bay	Upgrade Trunk Main to Bell Island	$ 2,055,800	$ 2,055,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	Mapua / Ruby Bay	Upgrade Trunk Main to Rabbit Island	$ 253,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 25,370	$ 228,330	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
48	Mapua / Ruby Bay	Warren Pl (School) PS Telemetry	$ 10,475	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,475	$ -	$ -	$ -	$ -
49	Mapua / Ruby Bay	Warren Pl (School) PS Upgrade	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
50	Mapua / Ruby Bay	Mapua Rising Main NRVs	$ 14,000	$ 14,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
51	Marahau	Marahau Reticulation and WWTP	$ 2,819,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 845,790	$ 1,973,510	$ -
52	Motueka	13 Trewavas St PS (Price) Electrics	$ 32,727	$ 32,727	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
53	Motueka	13 Trewavas St PS (Price) Upgrade	$ 813,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 162,740	$ 650,960	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
54	Motueka	169 Motueka Quay PS Upgrade	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	Motueka	45 Trewavas St PS Electrics	$ 24,830	$ 24,830	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
56	Motueka	45 Trewavas St PS Pumps	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
57	Motueka	45 Trewavas St PS Telemetry	$ 28,461	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28,461	$ -	$ -	$ -
58	Motueka	81 Thorp St PS (Teece) Covers	$ 4,500	$ -	$ -	$ -	$ -	$ -	$ 4,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
59	Motueka	81 Thorp St PS (Teece) Upgrade	$ 47,973	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47,973	$ -	$ -	$ -	$ -	$ -
60	Motueka	86 Trewavas St PS Upgrade	$ 54,186	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,186	$ -	$ -	$ -
61	Motueka	Atkins Street PS Upgrade	$ 30,537	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
62	Motueka	Beach Front PS Electrics	$ 29,529	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 29,529	$ -	$ -	$ -
63	Motueka	Beach Front PS Pumps	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	Motueka	Courtney St PS Upgrade	$ 84,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 84,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -
65	Motueka	Courtney Street - Hau Road	$ 360,200	$ -	$ 36,020	$ 324,180	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
66	Motueka	Courtney Street PS Upgrade	$ 657,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,700	$ 591,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -
67	Motueka	Everett Street PS (Beach Camp) Electrics	$ 31,674	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31,674	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
68	Motueka	Everett Street PS (Beach Camp) Pump 1	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,127	$ -
69	Motueka	Everett Street PS (Beach Camp) Pump 2	$ 10,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
70	Motueka	Goodman Dr PS Upgrade	$ 134,647	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 134,647	$ -	$ -	$ -	$ -	$ -	$ -	$ -
71	Motueka	High St Gravity Main	$ 428,200	$ -	$ 42,820	$ 385,380	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
72	Motueka	King Edward new development area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
73	Motueka	Motueka Quay PS Upgrade	$ 37,282	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,282	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
74	Motueka	Motueka WWTP Land Negotiation	$ 500,000	$ -	$ 500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
75	Motueka	Motueka WWTP Renewals	$ 290,804	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 290,804	$ -	$ -	$ -
76	Motueka	Motueka WWTP Resource Consents	$ 80,000	$ -	$ 24,000	$ 56,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
77	Motueka	Motueka WWTP Upgrade	$ 6,003,384	$ -	$ -	$ 600,338	$ 3,602,030	$ 1,801,015	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
78	Motueka	Oaks Village PS (Naumai Street) Upgrade	$ 633,600	$ -	$ -	$ -	$ -	$ -	$ 63,360	$ 570,240	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
79	Motueka	Pipeline Renewals	$ 12,000,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ -
80	Motueka	Sanderlane Dr PS Upgrade	$ 45,263	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,263	$ -	$ -	$ -	$ -	$ -	$ -	$ -
81	Motueka	Tarrant Place PS (Fry Subdivision) Upgrade	$ 52,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,433	$ -
82	Motueka	Thorp St PS (South End) Upgrade	$ 41,348	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41,348	$ -
83	Motueka	Thorp Street Pipe Replacement	$ 3,214,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 321,425	$ 2,892,825	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
84	Motueka	Thorp Street Pipe Replacement	$ 1,840,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 184,030	$ 1,656,270	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
85	Motueka	Thorp Street PS (Benseman) Telemetry	$ 24,800	$ -	$ -	$ -	$ -	$ -	$ 24,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
86	Motueka	Thorp Street PS (Benseman) Upgrade	$ 61,521	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 61,521	$ -
87	Motueka	Totara Park Avenue PS Electrics	$ 27,805	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,805	$ -	$ -	$ -
88	Motueka	Totara Park Avenue PS Pump 1	$ 7,127	$ -	$ -	$ -	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
89	Motueka	Totara Park Avenue PS Pump 2	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
90	Motueka	Whakerewa st development area	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
91	Motueka	Woodlands Ave PS Upgrade	$ 75,901	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,901	$ -	$ -	$ -	$ -	$ -	$ -	$ -
92	Motueka	Motueka WWTP Telemetry	$ 11,032	$ 11,032	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
93	Motueka	Motueka Isolation Valve	$ 26,300	$ 26,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
94	Murchison	Hotham St PS Upgrade	$ 199,200	$ 19,920	$ 179,280	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
95	Murchison	Murchison WWTP Disposal Upgrade	$ 191,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,160	$ 172,440	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
96	Murchison	Murchison WWTP Renewals	$ 218,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218,000	$ -	$ -	$ -
97	Murchison	Murchison WWTP Septage Facility	$ 123,800	$ 12,380	$ 111,420	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
98	Murchison	Risingmain Renewal across SH Bridge	$ 273,600	$ 273,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
99	Murchison	Waller St PS Electrics	$ 79,000	$ 79,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
100	Murchison	Waller St PS Land Purchase	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
101	Murchison	Waller St PS Pumps	$ 30,515	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,515	$ -	$ -	$ -	$ -	$ -	$ -	$ -
102	Murchison	Murchison Cleaning Eye Replacement	$ 37,174	$ -	$ -	$ -	$ -	$ 37,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
103	Pohara	Boyle PS Electrics	$ 30,417	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,417	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
104	Pohara	Boyle PS Pump 1	$ 3,958	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,958	$ -	$ -	$ -	$ -
105	Pohara	Burnside Rd PS Upgrade	$ 93,982	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 93,982	$ -
106	Pohara	Golf Course PS Upgrade	$ 71,838	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71,838	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
107	Pohara	Labyrinth Ln PS Upgrade	$ 63,370	$ -	$ -	$ -	$ -	$ -	$ 63,370	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
108	Pohara	Pohara Gravity Main Upgrade	$ 251,100	$ 25,110	$ 225,990	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
109	Pohara	Pohara Valley Reticulation Upgrade	$ 135,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,530	$ 121,770	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
110	Pohara	Pohara/Tata Beach Upgrade	$ 4,171,500	$ -	$ -	$ -	$ 834,300	$ 2,085,750	$ 1,251,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
111	Pohara	PS Upgrade Land Acquisition	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
112	Pohara	Sunbelt Cres PS Upgrade	$ 98,810	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,810	$ -	$ -	$ -
113	Pohara	Three Oaks PS Upgrade	$ 38,489	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,489	$ -	$ -	$ -	$ -	$ -
114	Richmond	423 Hill St PS (Firth) Upgrade	$ 40,218	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,218	$ -	$ -	$ -	$ -

Total Capital Forecast

Item	Scheme	Project Name	Project Estimate	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15 Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10	2019/20 Year 11	2020/21 Year 12	2021/22 Year 13	2022/23 Year 14	2023/24 Year 15	2024/25 Year 16	2025/26 Year 17	2026/27 Year 18	2027/28 Year 19	2028/29 Year 20	Beyond Year 20
115	Richmond	Burkes Bank - Hope	$ 4,338,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 867,680	$ 1,735,360	$ 1,735,360	$ -
116	Richmond	Churchill Ave Pipeline Upgrade	$ 352,800	$ -	$ -	$ -	$ 35,280	$ 317,520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
117	Richmond	Gladstone Rd Pipeline Upgrade	$ 343,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,310	$ 308,790	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
118	Richmond	Lower Queen St PS	$ 1,349,295	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,349,295
119	Richmond	Headingly Lane PS	$ 700,000	$ 700,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
120	Richmond	McShane Rd PS	$ 1,585,275	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,585,275
121	Richmond	Oxford St Pipeline Upgrade	$ 765,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 153,100	$ 612,400	$ -	$ -	$ -	$ -	$ -	$ -
122	Richmond	Queen St Pipeline Upgrade	$ 114,600	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,460	$ 103,140	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
123	Richmond	Richmond Pipeline Renewals	$ 6,000,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ -
124	Richmond	Richmond Trunkmain Renewals	$ 82,741	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,741	$ -	$ -	$ -
125	Richmond	Sunview Hgts & 423 Hill St PS Telemetry	$ 49,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 49,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
126	Richmond	Sunview Hgts PS Upgrade	$ 51,439	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,439	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
127	Richmond	Wensley Rd Pipeline Upgrade	$ 351,500	$ -	$ -	$ -	$ -	$ 70,300	$ 281,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
128	Richmond	William St Pipeline Upgrade	$ 150,400	$ -	$ 15,040	$ 135,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
129	Richmond	Native Plants	$ 25,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
130	Riwaka	Green Tree Road PS Upgrade	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
131	Riwaka	Jenkins PS Upgrade	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
132	Riwaka	Lodders Land PS Pump 2	$ 6,771	$ 6,771	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
133	Riwaka	Lodders Land PS Upgrade	$ 34,958	$ 34,958	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
134	Riwaka	Motueka Bridge - Motueka Ponds	$ 594,400	$ -	$ -	$ -	$ 59,440	$ 534,960	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
135	Riwaka	Riwaka Main PS Pumps	$ 23,494	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
136	Riwaka	Riwaka Main PS Upgrade	$ 35,092	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,092	$ -	$ -	$ -
137	Riwaka	School Road PS Pump 2	$ 7,584	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,584	$ -	$ -	$ -	$ -	$ -	$ -
138	Riwaka	School Road PS Upgrade	$ 34,962	$ 34,962	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
139	St Arnaud	Kerr Bay PS 1 Upgrade	$ 127,025	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127,025	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
140	St Arnaud	Mobile Generator Replacement	$ 36,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
141	St Arnaud	Rlsingmain Upgrade to WWTP	$ 1,032,815	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 206,563	$ 826,252	$ -	$ -	$ -	$ -	$ -	$ -
142	St Arnaud	SH 63 PS 2 Upgrade	$ 135,911	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 135,911	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
143	St Arnaud	St Arnaud WWTP Flow Meters	$ 6,447	$ -	$ -	$ -	$ -	$ 6,447	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
144	St Arnaud	St Arnaud WWTP Minor Upgrade	$ 189,923	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 189,923	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
145	St Arnaud	St Arnaud WWTP Screen & Jetty	$ 95,000	$ 95,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
146	St Arnaud	St Arnaud Telemetry	$ 47,950	$ 47,950	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
147	St Arnaud	St Arnaud WWTP Desludge	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
148	St Arnaud	St Arnaud WWTP Resource Consents	$ 50,000	$ -	$ -	$ 30,000	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
149	St Arnaud	St Arnaud WWTP Wetland Filters	$ 11,000	$ 11,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
150	St Arnaud	St Arnuad PS Emergency Overflow Removal	$ 5,000	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
151	Takaka	Dodson Rd PS Electrics	$ 43,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,400	$ -	$ -	$ -	$ -	$ -
152	Takaka	Dodson Rd PS Telemetry	$ 21,100	$ -	$ -	$ -	$ -	$ -	$ 21,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
153	Takaka	Hiawatha Ln PS Upgrade	$ 75,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,912	$ -	$ -	$ -
154	Takaka	Motupip St PS Upgrade	$ 65,666	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,666	$ -	$ -	$ -
155	Takaka	Park Ave PS Telemetry	$ 21,100	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
156	Takaka	Park Ave PS Upgrade	$ 56,964	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 56,964	$ -	$ -	$ -	$ -	$ -
157	Takaka	Takaka Pipeline Renewals	$ 900,000	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ 306,000	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
158	Takaka	Primary School PS Upgrade	$ 52,224	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,224	$ -
159	Takaka	Rototai Rd PS Upgrade	$ 71,838	$ -	$ -	$ -	$ -	$ -	$ -	$ 71,838	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
160	Takaka	Takaka WWTP Desludge	$ 370,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 370,000	$ -	$ -	$ -	$ -	$ -
161	Takaka	Takaka WWTP Upgrade	$ 3,111,246	$ 111,246	$ 3,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
162	Takaka	Waitapu Rd PS Upgrade	$ 97,137	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 97,137	$ -
163	Tapawera	Pipeline Renewals	$ 150,000	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
164	Tapawera	Tapawera WWTP Aerator Replacement	$ 20,000	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
165	Tapawera	Tapawera WWTP Flowmeter	$ 17,513	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,513	$ -	$ -	$ -	$ -	$ -	$ -	$ -
166	Tapawera	Tapawera WWTP Landscaping/Revegetation	$ 12,000	$ -	$ -	$ 12,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
167	Tasman	Tasman Village Wastewater Reticulation	$ 3,826,050	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,826,050
168	Upper Takaka	Harwood Pl PS Upgrade	$ 52,891	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,891	$ -	$ -	$ -	$ -	$ -	$ -	$ -
169	Upper Takaka	Upper Takaka PS Emergency Overflow	$ 2,000	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
170	Wakefield	88 Valley Extension	$ 3,859,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,859,200
171	Wakefield	Wakefield Pipeline Renewals	$ 170,000	$ -	$ -	$ -	$ -	$ 56,100	$ -	$ -	$ -	$ 57,800	$ -	$ -	$ 56,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
172	Wakefield	Wakefield Flow Meter	$ 28,600	$ -	$ -	$ 28,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
173	Wakefield	Wakefield to Brightwater Trunk Main	$ 4,816,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,816,200

APPENDIX G: DEVELOPMENT CONTRIBUTIONS / FINANCIAL CONTRIBUTIONS

Information on Development Contributions and Financial Contributions can be found in the Council's Long Term Council Community Plan (LTCCP) document.

There is one Wastewater Development Contribution in place and the policy on where and how it is applied is detailed in the LTCCP.

The following Table summarises the current Development Contributions:

Activity	Development Contribution per HUD $ (incl GST)*
Water	6,922
Wastewater	5,518
Roading	5,034
Stormwater	2,919
Total	**20,393**

* The value of the Development Contribution shall be adjusted on 1 July each calendar year.

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 deals with;

- the control of the use of land'
- structures and works in river beds and in the coastal marine area'
- the control of the taking, use, damming and diversion of water, and the control of the quantify, level and flow of water in any water body, including:
  - the setting of any maximum or minimum levels or flows of water; and
  - the control of the range, or rate of change, of levels or flows of water; and
- the control of discharges or contaminants into water and discharges of water into water.

The RMA is administered locally by Tasman District Council, a Unitary Authority, through the Tasman Resource Management Plan (TRMP) which sets out Policies, Objectives and Rules controlling activities to ensure they meet the Purpose and Principles of the RMA.

A very important aspect of the wastewater activity is to ensure that any discharge of contaminants to the district's land, air and natural water resources is managed responsibly.

Council's sewerage reticulation and wastewater treatment plants have an essential role in ensuring that wastewater produced in urban areas is properly collected and disposed of in ways that meet community expectations and avoid causing significant adverse effects in the environment.

Under the RMA and TRMP, resource consents in the form of discharge permits are required for all discharges of treated effluent and odours associated with wastewater activities. Other resource consents may also be required for installation and operation of wastewater infrastructure (e.g., pipelines across rivers and streams, and in coastal areas).

Council has designated most of the WWTP sites, which is an alternative way provided for in the RMA of authorising the land use aspects of public works. Outline Plans are usually required to be prepared prior to the installation of wastewater facilities on designated sites.

Generally 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.

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

Short-term consents are required from time to time for construction activities including the installation of bores for monitoring wells or water sources at pump stations.

H.2 Schedule of Resource Consents

A register of all active resource consents for Council's wastewater systems is being developed. The number and type of resource consents relating to wastewater assets has increased significantly over the past 5 years and as a result, use of spreadsheets for managing the consents has become inefficient. MWH will develop a database (NM2) of all Engineering resource consents (water, wastewater, refuse, stormwater) in 2008/09. NM2 will allow the accurate programming of all actions required by the consents including renewal prior to consent expiry. NM2 will also drive the overall wastewater annual monitoring programme.

Identifying the full suite of on-going resource consent requirements for wastewater infrastructure will be influenced by provisions of the pending Part IV of the Tasman Resource Management Plan (TRMP): Rivers and Lakes, which will determine what consents are required for structures in river and stream beds.

A summary of the active resource consents held for the seven WWTPs operated by Council is provided in Table H-1. As the TRMP is a living document and subject to change, the list is only accurate at the time of compilation (October 2008).

Table H-1: Wastewater Register of Resource Consents for WWTPs.

Scheme	Consent Number	Consent Type	Effective From	Expiry Date
Upper Takaka	RM010258	Discharge onto land	01-Aug-07	11-Jul-42
	RM070404	Discharge to air (odour)	01-Aug-07	11-Jul-42
Tapawera	RM080167	Discharge to land (temporary)	29-Apr-08	23-Dec-08*
	RM050391	Discharge to land (soakage)	12-Feb-08	31-Jul-42
	RM070634	Discharge to air (odour)	12-Feb-08	31-Jul-42
	RM070667	Water take (dewatering)		01-Apr-10*
	RM070668	Discharge to air (odour)		01-Apr-10*
	RM070669	Discharge to land (dewatering)		01-Apr-10*
Takaka	NN960204	Discharge into land (soakage)	12-May-99	31-Aug-08[1]
	RM071078	Discharge to air (desludging)	14-Jan-08	06-Dec-43
St Arnaud	NN980167	Discharge into land		24-Aug-13
	NN980144	Land use (WWTP site and reticulation stream crossings)		24-Aug-13
	NN980118D	Discharge to air (odour)		24-Aug-13
Murchison	RM050617	Discharge into land		02-Jun-41
	RM050618	Discharge to air (odour)		02-Jun-41
	RM050811	Land use (earthworks)		02-Jun-41
	RM050843	Discharge to air (desludging)	06-Mar-06	09-Feb-41
Motueka	880460	Discharge into land (soakage)	20-Mar-89	20-Mar-09[2]
	RM041050	Land disturbance (earthworks)	17-Jan-05	20-Mar-09
	NN010307C	Coastal Permit (Tapu Bay pipe)		01-Oct-18
	NN010406L	Land use (Riwaka River bed)		01-Oct-18
	NN010407L	Land use (Tapu Bay pipe)		01-Oct-18
Collingwood	RM030414	Discharge to water	26-Jan-04	26-Jan-09[3]
	RM040142	Land use (creek bed)	24-Jun-04	31-May-09
	RM070652	Discharge to air (odour)	14-Jan-08	06-Dec-19

Note to Table H-1:

* These are short-term consents for the upgrade of the Tapawera WWTP

1 An application for new discharge permits for the Takaka WWTP was lodged in February 2008

2 An application for new discharge permits for the Motueka WWTP was lodged in December 2008

3 An application for new discharge permits for the Collingwood WWTP was lodged in July 2008.

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 on-going 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.

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.

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

All monitoring data associated with wastewater treatment plants is stored on Council's Samplyzer database. Samplyzer is also used to produce Chain of Custody forms for all wastewater monitoring so Council, the operation and maintenance contractor, Council's Consultants, and Cawthron Institute all use the same sample identifiers. Samplyzer also allows the automated input of monitoring data direct from Cawthron's electronic laboratory reports. Monitoring data stored in Samplyzer can be viewed by Council staff using the Hilltop computer programme. Council's consultants will soon have access to this programme.

H.3 Designations

Council has designations for all WWTP sites, except for the one at St Arnaud. The other six WWTPs and two sewer pump stations at Richmond and Brightwater are all designated for "sewerage disposal purposes" in the Tasman Resource Management Plan (TRMP), Appendix 1. The explanation for designating the sites is that they form essential elements for the sewage 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 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 Patons Rock for a future WWTP for that locality. In April 2008 Council issued proposed designations for two pump stations and sewer mains required to serve the Richmond West Development Area.

All of 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	Area	Effective From	Expiry Date
D176	121 Beach Rd, Richmond	Beach Rd Pump Station & Tanks	0.240 ha		
D177	Tapawera-Glenhope Rd	Tapawera Sewage Treatment Pond	2.2027 ha	1 Nov 08	1 Nov 2013
		RM070699 Outline Plan			Unlimited
D178	SH 6, Murchison	Murchison Sewage Treatment Pond	4.70 ha	1 Nov 08	1 Nov 2013
D179	Thorp St, Motueka	Motueka Sewage Treatment Pond	60.7028 ha	1 Nov 08	1 Nov 2013
D180*	Haldane Rd, Takaka	Takaka Sewage Treatment Pond	7.9677 ha	1 Nov 08	1 Nov 2013
D181	Collingwood/Bainham Rd	Collingwood Sewage Treatment Pond	1.70 ha	1 Nov 08	1 Nov 2013
D182	Patons Rock	Future Sewage Treatment Pond	0.490ha	1 Nov 08	1 Nov 2013

ID	Location of Site	Site Name	Area	Effective From	Expiry Date
D203	3 Spencer Pl, Brightwater	Brightwater Main Sewer Pump Station	0.0450 ha	1 Nov 08	1 Nov 2013
D204	SH 60, Upper Takaka	Upper Takaka Sewage Treatment Pond	0.2788 ha	1 Nov 08	1 Nov 2013

* An Outline Plan and alteration to D180 are pending for the proposed upgrade of the Takaka WWTP

It will not be 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 designation boundaries may be required, and Outline Plans prepared for proposed new works on the designated sites. Also, designations do not negate the on-going need for regional resource consents (e.g. discharge permits) for existing facilities or future upgrades, as outlined in Section H.2 above.

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.

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 database, 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, optimised replacement, timing across assets – especially between pipe upgrades and roading works, and smoothing of expenditure.

The renewal programme is reviewed in detail at each AMP (i.e. 3 yearly), and every year the annual renewal programme is reviewed and planned with the input of the maintenance contractor.

I.2 Forecast of Renewals Expenditure for next 20 years

Figure I-1 shows a summary of the expenditure forecast for renewals over the next 20 years. The expenditure is detailed scheme by scheme. The spreadsheets at the end of this appendix provides a total breakdown of the Expenditure Forecast for Renewals over the next 20 years.

I.3 Renewal Standards

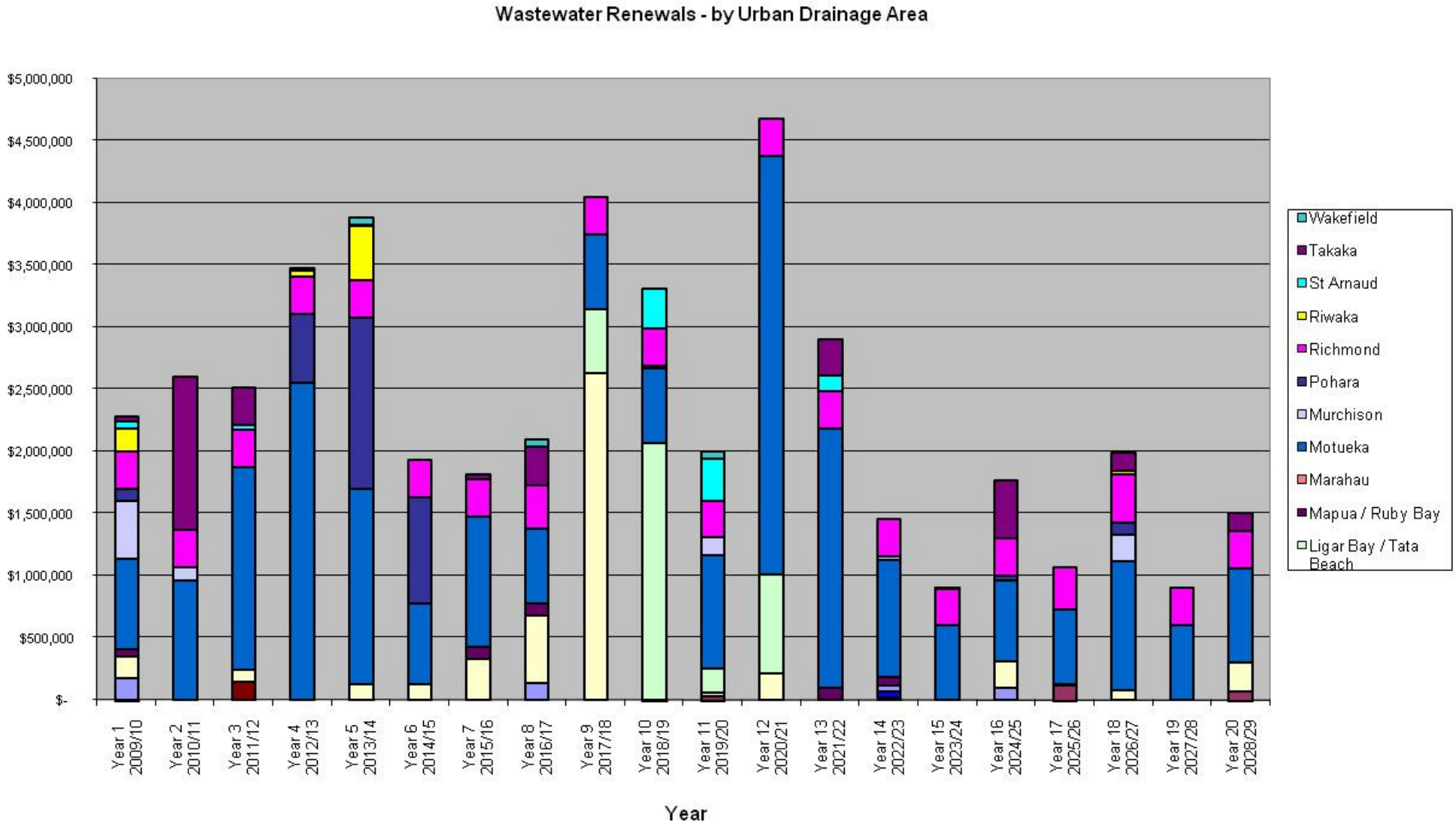
The work to be performed and materials to be used shall comply with the current TDC Engineering Standards and Policies.

I.4 Deferred Renewals

Renewal works identified may be deferred if the cost is beyond the community's ability to fund it. This can occur when higher priority works are required on other infrastructure assets, or there are short term peaks in expenditure or if an inadequate rating base exists.

When renewal works is deferred the impact of the deferral on economic inefficiencies and the system's ability to achieve the required service standards will be assessed. Although the deferral of some renewal works may not impact significantly on the operation of assets, repeated deferral will create a liability in the longer term.

Figure I-1 Summary of Wastewater Renewals by Urban Drainage Area



Total Wastewater Renewals Forecast

Item	Scheme	Project Name	Total Project Cost	Total Renewals	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15 Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10	2019/20 Year 11	2020/21 Year 12	2021/22 Year 13	2022/23 Year 14	2023/24 Year 15	2024/25 Year 16	2025/26 Year 17	2026/27 Year 18	2027/28 Year 19	2028/29 Year 20	Beyond Year 20
2	Brightwater	Brightwater Main PS Renewals	$ 104,576	$ 104,576	$ 104,576	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Brightwater	Bryant Rd PS Upgrade	$ 45,185	$ 45,185	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,185	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Brightwater	Malthouse Cres PS Upgrade	$ 60,709	$ 36,426	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,426	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Brightwater	Pipeline Renewals	$ 200,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -
6	Brightwater	Waimea West PS (Malthouse Cres Intersect	$ 58,674	$ 35,204	$ 35,204	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Brightwater	Brightwater Isolation Valves	$ 36,000	$ 36,000	$ 36,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Collingwood	Beach Road PS Upgrade	$ 107,804	$ 35,575	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,558	$ 32,018	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Collingwood	Collingwood WWTP Renewals	$ 113,408	$ 113,408	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113,408	$ -	$ -	$ -
13	Collingwood	Wallys Rest PS Upgrade	$ 69,600	$ 69,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 69,600	$ -
14	Kaiteriteri	Breaker Bay PS Pumps	$ 14,728	$ 14,728	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 14,728	$ -
15	Kaiteriteri	Breaker Bay PS Upgrade	$ 73,091	$ 40,200	$ -	$ -	$ 40,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Kaiteriteri	Honeymoon Bay PS Electrics	$ 88,090	$ 52,854	$ -	$ -	$ 52,854	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Kaiteriteri	Kaiteriteri Vessel Telemetry	$ 24,800	$ 19,840	$ 19,840	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Kaiteriteri	Little Kaiteriteri PS Pumps	$ 23,494	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	Kaiteriteri	Little Kaiteriteri PS Upgrade	$ 72,366	$ 64,406	$ 64,406	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22	Kaiteriteri	Martin Farm Road PS Upgrade	$ 252,531	$ 126,266	$ -	$ -	$ -	$ -	$ -	$ 126,266	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Kaiteriteri	Martin Farm Road PS Telemetry	$ 11,296	$ 11,296	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,296	$ -	$ -	$ -
24	Kaiteriteri	Pipeline Renewals	$ 853,200	$ 853,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -	$ -	$ -	$ 213,300	$ -
25	Kaiteriteri	Rising main through Girvins	$ 130,400	$ 104,320	$ -	$ -	$ -	$ -	$ 104,320	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
27	Kaiteriteri	Stephens Bay PS Upgrade	$ 73,643	$ 73,643	$ 73,643	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	Kaiteriteri	Tapu Bay Pipeline	$ 3,285,550	$ 3,285,550	$ -	$ -	$ -	$ -	$ -	$ -	$ 328,555	$ 328,555	$ 2,628,440	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
29	Kaiteriteri	Tapu Bay PS Pumps	$ 13,879	$ 13,879	$ 13,879	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30	Kaiteriteri	Tapu Bay PS Upgrade	$ 70,308	$ 70,308	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,308	$ -	$ -	$ -
31	Ligar Bay / Tata Beach	Tarakohe/Ligar Bay Upgrades	$ 2,662,695	$ 2,582,814	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 516,563	$ 2,066,251	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
32	Ligar Bay / Tata Beach	Tata Beach Upgrade	$ 1,080,450	$ 994,014	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 198,803	$ 795,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
36	Mapua / Ruby Bay	Higgs Rd PS 2 Upgrade	$ 43,638	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	Mapua / Ruby Bay	Higgs Rd PS 3 Upgrade	$ 43,638	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,638	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
38	Mapua / Ruby Bay	Leisure Park PS Pump 2	$ 13,555	$ 13,555	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,555	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	Mapua / Ruby Bay	Leisure Park PS Upgrade	$ 71,048	$ 71,048	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 71,048	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	Mapua / Ruby Bay	Mapua/Ruby Bay Pipeline Renewals	$ 200,000	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
48	Mapua / Ruby Bay	Warren Pl (School) PS Telemetry	$ 10,475	$ 10,475	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,475	$ -	$ -	$ -	$ -
49	Mapua / Ruby Bay	Warren Pl (School) PS Upgrade	$ 39,821	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
50	Mapua / Ruby Bay	Mapua Rising Main NRVs	$ 14,000	$ 14,000	$ 14,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
52	Motueka	13 Trewavas St PS (Price) Electrics	$ 32,727	$ 32,727	$ 32,727	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
54	Motueka	169 Motueka Quay PS Upgrade	$ 30,537	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	Motueka	45 Trewavas St PS Electrics	$ 24,830	$ 24,830	$ 24,830	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
56	Motueka	45 Trewavas St PS Pumps	$ 11,174	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
57	Motueka	45 Trewavas St PS Telemetry	$ 28,461	$ 28,461	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28,461	$ -	$ -	$ -
58	Motueka	81 Thorp St PS (Teece) Covers	$ 4,500	$ 4,500	$ -	$ -	$ -	$ -	$ -	$ 4,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
59	Motueka	81 Thorp St PS (Teece) Upgrade	$ 47,973	$ 47,973	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47,973	$ -	$ -	$ -	$ -	$ -
60	Motueka	86 Trewavas St PS Upgrade	$ 54,186	$ 54,186	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 54,186	$ -	$ -	$ -
61	Motueka	Atkins Street PS Upgrade	$ 30,537	$ 30,537	$ 30,537	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
62	Motueka	Beach Front PS Electrics	$ 29,529	$ 29,529	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 29,529	$ -	$ -	$ -
63	Motueka	Beach Front PS Pumps	$ 11,174	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,174	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	Motueka	Courtney St PS Upgrade	$ 84,184	$ 84,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 84,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -
65	Motueka	Courtney Street - Hau Road	$ 360,200	$ 360,200	$ -	$ 36,020	$ 324,180	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
67	Motueka	Everett Street PS (Beach Camp) Electrics	$ 31,674	$ 31,674	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31,674	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
68	Motueka	Everett Street PS (Beach Camp) Pump 1	$ 7,127	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,127	$ -
69	Motueka	Everett Street PS (Beach Camp) Pump 2	$ 10,000	$ 10,000	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
70	Motueka	Goodman Dr PS Upgrade	$ 134,647	$ 134,647	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 134,647	$ -	$ -	$ -	$ -	$ -	$ -	$ -
71	Motueka	High St Gravity Main	$ 428,200	$ 381,098	$ -	$ 38,110	$ 342,988	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
73	Motueka	Motueka Quay PS Upgrade	$ 37,282	$ 37,282	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,282	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
74	Motueka	Motueka WWTP Land Negotiation	$ 500,000	$ 270,000	$ -	$ 270,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
75	Motueka	Motueka WWTP Renewals	$ 290,804	$ 290,804	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 290,804	$ -	$ -	$ -
76	Motueka	Motueka WWTP Resource Consents	$ 80,000	$ 56,000	$ -	$ 16,800	$ 39,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
77	Motueka	Motueka WWTP Upgrade	$ 6,003,384	$ 3,241,827	$ -	$ -	$ 324,183	$ 1,945,096	$ 972,548	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
78	Motueka	Oaks Village PS (Naumai Street) Upgrade	$ 633,600	$ 418,176	$ -	$ -	$ -	$ -	$ -	$ -	$ 41,818	$ 376,358	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
79	Motueka	Pipeline Renewals	$ 12,000,000	$ 12,000,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ 600,000	$ -
80	Motueka	Sanderlane Dr PS Upgrade	$ 45,263	$ 45,263	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,263	$ -	$ -	$ -	$ -	$ -	$ -	$ -
81	Motueka	Tarrant Place PS (Fry Subdivision) Upgrade	$ 52,433	$ 52,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,433	$ -
82	Motueka	Thorp St PS (South End) Upgrade	$ 41,348	$ 41,348	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 41,348	$ -
83	Motueka	Thorp Street Pipe Replacement	$ 3,214,250	$ 2,860,683	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 286,068	$ 2,574,614	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
84	Motueka	Thorp Street Pipe Replacement	$ 1,840,300	$ 1,637,867	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 163,787	$ 1,474,080	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
86	Motueka	Thorp Street PS (Benseman) Upgrade	$ 61,521	$ 61,521	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 61,521	$ -
87	Motueka	Totara Park Avenue PS Electrics	$ 27,805	$ 27,805	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 27,805	$ -	$ -	$ -
88	Motueka	Totara Park Avenue PS Pump 1	$ 7,127	$ 7,127	$ -	$ -	$ -	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
89	Motueka	Totara Park Avenue PS Pump 2	$ 7,127	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,127	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
91	Motueka	Woodlands Ave PS Upgrade	$ 75,901	$ 75,901	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,901	$ -	$ -	$ -	$ -	$ -	$ -	$ -
92	Motueka	Motueka WWTP Telemetry	$ 11,032	$ 11,032	$ 11,032	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
93	Motueka	Motueka Isolation Valve	$ 26,300	$ 26,300	$ 26,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
94	Murchison	Hotham St PS Upgrade	$ 199,200	$ 115,536	$ 11,554	$ 103,982	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
95	Murchison	Murchison WWTP Disposal Upgrade	$ 191,600	$ 159,028	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,903	$ 143,125	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
96	Murchison	Murchison WWTP Renewals	$ 218,000	$ 218,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 218,000	$ -
98	Murchison	Risingmain Renewal across SH Bridge	$ 273,600	$ 268,128	$ 268,128	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
99	Murchison	Waller St PS Electrics	$ 79,000	$ 79,000	$ 79,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
100	Murchison	Waller St PS Land Purchase	$ 100,000	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
101	Murchison	Waller St PS Pumps	$ 30,515	$ 30,515	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,515	$ -	$ -	$ -	$ -	$ -	$ -	$ -
107	Pohara	Labyrinth Ln PS Upgrade	$ 63,370	$ 34,854	$ -	$ -	$ -	$ -	$ -	$ 34,854	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
110	Pohara	Pohara/Tata Beach Upgrade	$ 4,171,500	$ 2,753,190	$ -	$ -	$ -	$ 550,638	$ 1,376,595	$ 825,957	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
111	Pohara	PS Upgrade Land Acquisition	$ 150,000	$ 99,000	$ 99,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
112	Pohara	Sunbelt Cres PS Upgrade	$ 98,810	$ 98,810	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,810	$ -	$ -	$ -
113	Pohara	Three Oaks PS Upgrade	$ 38,489	$ 38,489	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,489	$ -	$ -	$ -	$ -	$ -
114	Richmond	423 Hill St PS (Firth) Upgrade	$ 40,218	$ 40,218	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,218	$ -	$ -	$ -	$ -
123	Richmond	Richmond Pipeline Renewals	$ 6,000,000	$ 6,000,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ -
124	Richmond	Richmond Trunkmain Renewals	$ 82,741	$ 82,741	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,741	$ -	$ -	$ -
126	Richmond	Sunview Hgts PS Upgrade	$ 51,439	$ 51,439	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,439	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
129	Richmond	Native Plants	$ 25,000	$ 25,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
130	Riwaka	Green Tree Road PS Upgrade	$ 39,821	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
131	Riwaka	Jenkins PS Upgrade	$ 39,821	$ 39,821	$ 39,821	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
132	Riwaka	Lodders Land PS Pump 2	$ 6,771	$ 6,771	$ 6,771	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
133	Riwaka	Lodders Land PS Upgrade	$ 34,958	$ 34,958	$ 34,958	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
134	Riwaka	Motueka Bridge - Motueka Ponds	$ 594,400	$ 493,352	$ -	$ -	$ -	$ 49,335	$ 444,017	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
135	Riwaka	Riwaka Main PS Pumps	$ 23,494	$ 23,494	$ 23,494	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
136	Riwaka	Riwaka Main PS Upgrade	$ 35,092	$ 35,092	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 35,092	$ -	$ -	$ -
137	Riwaka	School Road PS Pump 2	$ 7,584	$ 7,584	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,584	$ -	$ -	$ -	$ -	$ -	$ -
138	Riwaka	School Road PS Upgrade	$ 34,962	$ 34,962	$ 34,962	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
139	St Arnaud	Kerr Bay PS 1 Upgrade	$ 127,025	$ 127,025	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 127,025	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
140	St Arnaud	Mobile Generator Replacement	$ 36,800	$ 36,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
142	St Arnaud	SH 63 PS 2 Upgrade	$ 135,911	$ 135,911	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 135,911	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
143	St Arnaud	St Arnaud WWTP Flow Meters	$ 6,447	$ 6,447	$ -	$ -	$ -	$ -	$ 6,447	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
144	St Arnaud	St Arnaud WWTP Minor Upgrade	$ 189,923	$ 189,923	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 189,923	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
146	St Arnaud	St Arnaud Telemetry	$ 47,950	$ 47,950	$ 47,950	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
147	St Arnaud	St Arnaud WWTP Desludge	$ 300,000	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
148	St Arnaud	St Arnaud WWTP Resource Consents	$ 50,000	$ 50,000	$ -	$ -	$ 30,000	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Total Wastewater Renewals Forecast

Item	Scheme	Project Name	Total Project Cost	Total Renewals	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15 Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10	2019/20 Year 11	2020/21 Year 12	2021/22 Year 13	2022/23 Year 14	2023/24 Year 15	2024/25 Year 16	2025/26 Year 17	2026/27 Year 18	2027/28 Year 19	2028/29 Year 20	Beyond Year 20
149	St Arnaud	St Arnaud WWTP Wetland Filters	$ 11,000	$ 11,000	$ 11,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
150	St Arnaud	St Arnaud PS Emergency Overflow Remova	$ 5,000	$ 5,000	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
151	Takaka	Dodson Rd PS Electrics	$ 43,400	$ 43,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,400	$ -	$ -	$ -	$ -	$ -
153	Takaka	Hiawatha Ln PS Upgrade	$ 75,912	$ 75,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,912	$ -	$ -	$ -
154	Takaka	Motupip St PS Upgrade	$ 65,666	$ 65,666	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 65,666	$ -	$ -	$ -
156	Takaka	Park Ave PS Upgrade	$ 56,964	$ 56,964	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 56,964	$ -	$ -	$ -	$ -	$ -
157	Takaka	Takaka Pipeline Renewals	$ 900,000	$ 900,000	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ 306,000	$ -	$ -	$ -	$ -	$ 297,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
158	Takaka	Primary School PS Upgrade	$ 52,224	$ 52,224	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,224	$ -
159	Takaka	Rototai Rd PS Upgrade	$ 71,838	$ 43,103	$ -	$ -	$ -	$ -	$ -	$ -	$ 43,103	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
160	Takaka	Takaka WWTP Desludge	$ 370,000	$ 370,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 370,000	$ -	$ -	$ -	$ -	$ -
161	Takaka	Takaka WWTP Upgrade	$ 3,111,246	$ 1,275,611	$ 45,611	$ 1,230,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
162	Takaka	Waitapu Rd PS Upgrade	$ 97,137	$ 97,137	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 97,137	$ -
163	Tapawera	Pipeline Renewals	$ 150,000	$ 150,000	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
164	Tapawera	Tapawera WWTP Aerator Replacement	$ 20,000	$ 20,000	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
165	Tapawera	Tapawera WWTP Flowmeter	$ 17,513	$ 17,513	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,513	$ -	$ -	$ -	$ -	$ -	$ -	$ -
168	Upper Takaka	Harwood Pl PS Upgrade	$ 52,891	$ 52,891	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,891	$ -	$ -	$ -	$ -	$ -	$ -	$ -
169	Upper Takaka	Upper Takaka PS Emergency Overflow	$ 2,000	$ 2,000	$ 2,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
171	Wakefield	Wakefield Pipeline Renewals	$ 170,000	$ 170,000	$ -	$ -	$ -	$ -	$ 56,100	$ -	$ -	$ 57,800	$ -	$ -	$ 56,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

APPENDIX J: DEPRECIATION AND DECLINE IN SERVICE POTENTIAL

The source of this information is mostly from the Long Term Council Community Plan.

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 as follows:

Wastewater	
Treatment	10 – 80 years
Pipes	60 – 80 years
Pump Stations	20 – 50 years
Electrical	20 years

Pumps for example typically have an estimated life of 20 years.

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 Council policy to operate the wastewater activity to meet a desired level of service. 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.

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 LTCCP. 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 (refer Section 3.2) 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 detailed Borrowing Policy is found in Section 3 of Council's Treasury Management Policy that was last reviewed by Council in April 2004.

K.2 Loans

Loans to fund capital projects over the next ten years add up to the following:

Wastewater	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15/ Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10
Loans Raised (x 1,000)	4,851	5,853	3,009	5,267	5,618	4,204	2,198	2,550	4,795	3,897
Opening Loan Balance	27,854	30,861	34,721	35,109	38,096	41,168	42,635	41,514	40,943	42,644

Note: Figures do not include for inflation and are in thousands of dollars (i.e. 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 in the following table.

The projected annual loan repayment costs over the next 10 years are:

Wastewater	2009/10 Year 1	2010/11 Year 2	2011/12 Year 3	2012/13 Year 4	2013/14 Year 5	2014/15/ Year 6	2015/16 Year 7	2016/17 Year 8	2017/18 Year 9	2018/19 Year 10
Loan Interest (x 1,000)	1,984	2,231	2,384	2,506	2,724	2,887	2,900	2,839	2,880	2,960
Loan Principal	1,844	1,992	2,620	2,280	2,546	2,737	3,299	3,121	3,094	3,365

Note: Figures do not include for inflation and are in thousands of dollars (i.e. x1000)

APPENDIX L: SUMMARY OF FUTURE OVERALL FINANCIAL REQUIREMENTS

Table L-1 presents a summary of the overall future financial requirements for the wastewater activity in the Tasman District.

Table L-1: Summary of Projected Costs and Income for Next 10 years

Wastewater	2008/2009 Budget $	2009/2010 Budget $	2010/2011 Budget $	2011/2012 Budget $	2012/2013 Budget $	2013/2014 Budget $	2014/2015 Budget $	2015/2016 Budget $	20016/2017 Budget $	2017/2018 Budget $	2018/2019 Budget $
INCOME											
Targeted Rate	6,735,928	7,829,298	8,303,923	9,326,482	9,967,256	10,437,894	10,745,050	11,211,920	11,427,610	11,728,868	12,013,360
Development Contributions	949,635	574,595	649,734	645,314	499,455	592,275	605,535	601,115	587,855	579,015	565,755
Fees & Recoveries	450,000	503,043	544,643	550,421	505,354	573,532	579,310	587,399	585,088	590,866	590,866
Sundry Income	348,728	336,387	392,823	401,461	403,046	403,937	404,237	404,276	404,035	403,790	403,565
TOTAL INCOME	8,484,291	9,243,323	9,891,123	10,923,678	11,375,111	12,007,638	12,334,132	12,804,710	13,004,588	13,302,539	13,573,546
OPERATING COSTS											
Maintenance	5,386,890	5,081,869	5,294,660	5,815,655	6,315,164	6,319,385	6,281,916	6,273,199	6,817,987	6,999,250	7,022,787
Loan Interest	1,712,071	1,984,156	2,231,365	2,384,319	2,505,839	2,723,957	2,887,354	2,899,813	2,838,910	2,879,571	2,959,954
Depreciation	1,174,488	1,813,107	1,994,372	2,061,573	2,257,651	2,352,382	2,610,942	2,664,397	2,866,363	2,916,498	3,167,829
TOTAL OPERATING COST	8,273,449	8,879,132	9,520,397	10,261,547	11,078,654	11,395,724	11,780,212	11,837,409	12,523,260	12,795,319	13,150,570
NET COST OF SERVICE (SURPLUS)	(210,842)	(364,191)	(370,726)	(662,131)	(296,457)	(611,914)	(553,920)	(967,301)	(481,328)	(507,220)	(422,976)
TOTAL FUNDS REQUIRED											
NET COST OF SERVICE (SURPLUS)	(210,842)	(364,191)	(370,726)	(662,131)	(296,457)	(611,914)	(553,920)	(967,301)	(481,328)	(507,220)	(422,976)
Capital	10,423,062	5,548,568	6,507,521	3,140,040	5,771,457	6,252,546	4,809,454	2,325,219	2,933,634	5,373,597	4,402,501
Transfer to Reserves	-	-	-	-	6,918	-	-	339,768	4,125	2,214	3,566
Loan Principal	1,318,323	1,844,363	1,992,365	2,620,498	2,279,932	2,546,278	2,736,956	3,298,780	3,121,051	3,093,853	3,365,136
	11,530,543	7,028,740	8,129,160	5,098,407	7,761,850	8,186,910	6,992,490	4,996,466	5,577,482	7,962,444	7,348,227
SOURCE OF FUNDS											
Restricted Reserves Applied	353,546	364,683	282,001	27,995	237,197	216,431	177,629	154,101	161,215	251,364	283,208
Loans Raised	10,002,509	4,850,950	5,852,787	3,008,839	5,267,002	5,618,097	4,203,919	2,177,968	2,549,904	4,794,582	3,897,190
	10,356,055	5,215,633	6,134,788	3,036,834	5,504,199	5,834,528	4,381,548	2,332,069	2,711,119	5,045,946	4,180,398
NON FUNDED DEPRECIATION											
Depreciation to be funded at income statement level	1,174,488	1,813,107	1,994,372	2,061,573	2,257,651	2,352,382	2,610,942	2,664,397	2,866,363	2,916,498	3,167,829
	1,174,488	1,813,107	1,994,372	2,061,573	2,257,651	2,352,382	2,610,942	2,664,397	2,866,363	2,916,498	3,167,829
	11,530,543	7,028,740	8,129,160	5,098,407	7,761,850	8,186,910	6,992,490	4,996,466	5,577,482	7,962,444	7,348,227

N.B. Figures do not include inflation

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

M.1 Schedule of Fees and Charges

Council sets a targeted rate for the purpose of meeting the operating costs of the general wastewater account. This 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) for 2009/2010 are:

Table M-1: Proposed Annual 'Pan' Charge per Property (incl. GST)

Category	2008/2009 $	2009/2010 $
First water closet or urinal	519.00	606.38
Second to tenth water closet or urinal	389.20	454.64
Eleventh and subsequent water closet or urinal	259.50	303.09

M.1.1. Capital Charges

Council sets a targeted rate for the purpose of meeting loan repayments for the capital costs of the wastewater schemes listed below. This rate will be based on where the land is situated and set differentially based on each rating unit in each 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) for 2009/2010 are:

Table M-2: Proposed UDA Capital Charges (incl. GST)

Category	2008/2009 $	2009/2010 $
Mapua/Ruby Bay Urban Drainage Area	88.00	-
Murchison Urban Drainage Area	85.00	85.00
Port Motueka Urban Drainage Area	77.00	77.00
Collingwood Wastewater Scheme Area	187.00	-
St Arnaud Wastewater	401.00	395.00

Council sets a targeted rate for the purpose of meeting loan repayments for the capital costs of the Pohara and Pohara Stage Three Wastewater Schemes. This rate will be based on where the land is situated and set differentially based on each rating unit in each 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) for 2009/2010 are:

Category	2008/2009 $	2009/2010 $
Connected Rating Units		
Pohara Wastewater	222.00	111.00
Pohara Stage 3 Wastewater	250.00	250.00
Serviceable Rating Units		
Pohara Wastewater	111.00	111.00
Pohara Stage 3 Wastewater	125.00	125.00

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) for 2009/10 are:

Category	2008/2009 $	2009/2010 $
Non-residential Connected Rating Units (for second and subsequent W/Cs or urinals)		
Pohara Wastewater	74.00	74.00
Pohara Stage 3 Wastewater	83.35	83.35
Residential Connected Rating Units (for second and subsequent W/Cs or urinals)		
Pohara Wastewater	74.00	74.00
Pohara Stage 3 Wastewater	83.35	83.35

M.1.2. New Connection Charges

Wastewater Connection Fees

District-wide connection fees for new connections outside existing Wastewater UDA's	$2,700 incl GST at building consent plus outwork + admin + GST.

Wastewater Connection Fees for New Connections within UDAs

Richmond Waimea Basin Mapua, Ruby Bay Kaiteriteri, Riwaka Murchison Motueka Takaka Collingwood Tapawera	$1,340 incl GST at building consent plus outwork + Admin + GST.
Pohara/St Arnaud	Rated for Capital Costs plus outwork + Admin + GST.

Wastewater Trade Waste Charges

Conveying based on rate of discharge	$7.50 per annum per litre per second (including GST)
Treatment based on BOD_5	$852 per annum per kilogram BOD per day (including GST)
Wastewater pan charge	Equates to wastewater – operation and maintenance charge as set out in the Annual Plan.
Method B – Definition 'C'. Cost to convey and treatment of sewage.	Equates to water supply – metered connections as set out in the Annual Plan.

Administration Charge Items and Terms

Trade waste discharges	Rate	Terms
Temporary discharge charge	$330.00	A charge payable prior to receipt of temporary discharge
Trade waste application charge	$330.00	A charge payable on an application for a trade waste discharge
Annual trade waste consent charge	$330.00	Annual management charge for holders of trade waste consents to cover Council's costs associated with: a) Administration b) Compliance monitoring c) Inspection of consents.

APPENDIX N: DEMAND MANAGEMENT

Not used - refer to Section 10 in this AMP.

APPENDIX O: NOT RELEVANT TO WASTEWATER/SEWERAGE MANAGEMENT ACTIVITY

APPENDIX P: SIGNIFICANT NEGATIVE EFFECTS

The significant negative effects on a community associated with providing and operating a wastewater system are as follows:

- Disruption to the community during the construction of new schemes.
- An increase in rates is likely to be required to assist in funding future schemes.
- At times, the wastewater systems can create a nuisance for the community. Extreme wet weather can result in sewage overflows and hot dry weather during peak holiday times can cause odours in the reticulation – especially on the long distance pumped schemes.
- Dumping of contaminants into the wastewater system can impact on treatment plant performance and lead to treatment failure. This can cause odours that can affect the surrounding area and may take days or weeks to resolve.
- There is a risk that the standard of effluent being discharged into the receiving environment does not comply with health standards / consent conditions. This may result in the degrading of water quality, preventing the use of groundwater, nearby rivers and beaches for 'all year around bathing', preventing the collection of shellfish, and detrimentally affecting marine farms.
- If there is a malfunction of a pump station or a treatment plant there can be sewage overflows and/or offensive odour problems.
- There could be disruption to the community if the service is not available for a prolonged period.

APPENDIX Q: SIGNIFICANT ASSUMPTIONS, UNCERTAINTIES, AND RISK MANAGEMENT

This appendix is in two parts:

- Assumptions and Uncertainties
- 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 Council consider could have a significant affect on the financial forecasts, and discusses the potential risks that this creates.

Q.1.1. Asset Data Knowledge

While the Council has asset registers and many digital systems, processes and records, 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.

Notwithstanding this, 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 is well known from experience
- There are plans to upgrade significant extents of poorly performing assets

The assumptions that have been made that are considered significant include:

The majority of wastewater reticulation is in satisfactory condition. The known exceptions to this are inflow and infiltration (I/I) which is an issue throughout most of the district, and the disposal capacity of the Motueka WWTP. Council have allocated expenditure to investigate the extent and significance of the I/I problem, including CCTV surveys and modelling projects. Council has also made provision for some pipe rehabilitation works. Council has allocated expenditure for a major upgrade of the Motueka WWTP.

As more knowledge is gained, a better forecast of capital expenditure will be incorporated into future forecasts.

Q.1.2. 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
- Council income forecasts including rates and development contributions
- funding strategies

Thus the financial forecasts are sensitive to the assumptions made in the growth forecasts.

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.1.3. Capacity of the Schemes

The Council has a growing knowledge and understanding of network capacity, however, the knowledge is not complete. 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. The models will provide new information that may create a need for new projects and/or re-prioritisation of existing projects.

Q.1.4. Timing Of Capital Projects

The timing of many capital projects can be well defined and accurately forecast because there are few limitations on the implementation other than the community approval through the LTCCP/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 the community consent
- obtaining subsidy from central government
- securing land to construct new assets on

Where these issues may become a factor, allowances have been made to complete in a reasonable timeframe, however these plans are not always achieved. The effect of this will be to defer expenditure. The impact of this on the financials is not considered significant.

Q.1.5. Funding Of Capital Projects

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

Funding assumptions are made about:

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

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

Some decisions have been made to remove some projects from the 10 year forecast. These decisions will mean that some problems may continue to exist. No remedial works or other financial provisions have been made to address these consequences.

Q.1.6. Accuracy Of Capital Project Cost Estimates

The financial forecasts contain many projects, each of which has 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 20 years advanced to a high level of accuracy. However, it is preferable to have

projects in the next 3 years advanced to a level that provides reasonable confidence about the accuracy of the estimate.

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

- 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, land acquisition costs.
- Specific provisions have been included to deal with estimate accuracy. These are described as follows.

A 15% 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 – i.e. is the solution adopted 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 below, and from this an estimate 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.

Stage in Project Lifecycle	Estimate Accuracy
Concept / Feasibility	± 30% (±25% for projects >$1m)
Preliminary Design / Investigation	± 20% (±15% for projects >$1m)
Detailed Design	± 10%
Construction	± 5%
Commissioning	± 0%

Significant projects assigned to the first three years of this AMP are listed in Table Q-1 and have the following accuracy levels:

Table Q-1: Major Schemes Assigned to the First Three Years of this AMP

Project	Project Stage & Estimate Accuracy	Project Value in 1st 3 years	Factors that Could affect Estimate Accuracy
Mapua Wharf PS Upgrade	Preliminary Design	$1,575,500	This pump station needs to be relocated away from the Smokehouse restaurant and the cost of land acquisition is unknown.
Trunk main from Rabbit Island to Bell Island	Preliminary Design	$2,055,800	Resource consent will be needed for pipeline across estuary.
Motueka WWTP Upgrade	Concept/Feasibility	$1,180,300	Costs include resource consent, land costs and preliminary design only. Further costs for the upgrade are planned for year 4 and 5.
Headingly Lane PS	Preliminary Design	$700,000	No allowance for land purchase or easement due to Designation.
Takaka WWTP	Preliminary Design	$3,111,200	Additional land is needed to complete upgrade. Land acquisition costs are unknown.

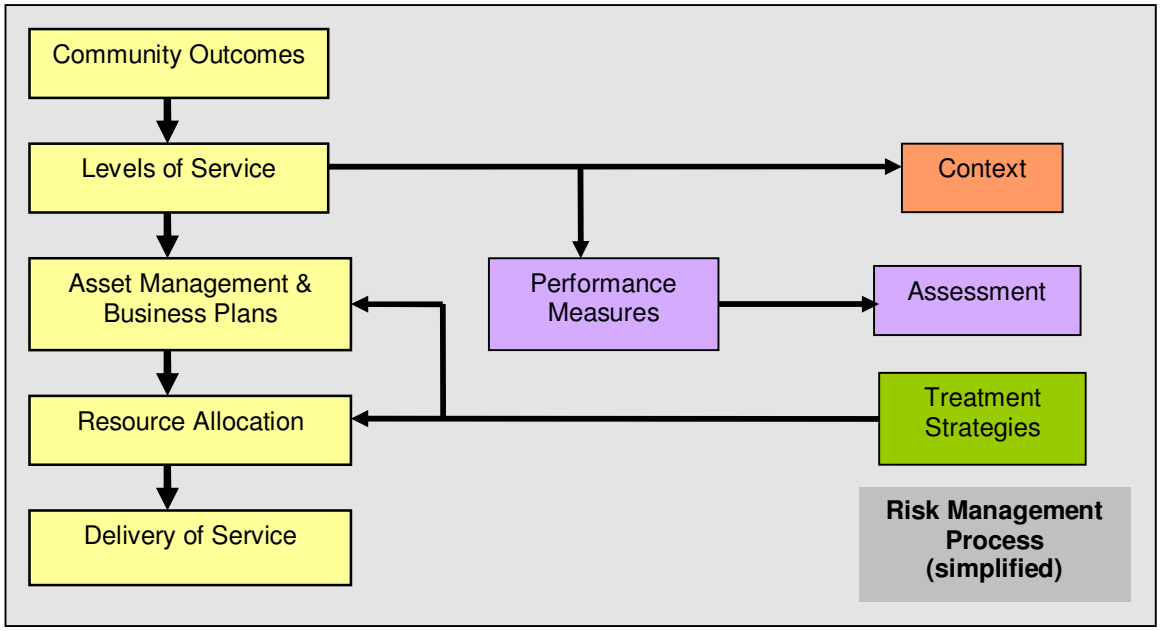
Q.2 Risk Management

Council is adopting an Integrated Risk Management (IRM) framework and process as the means for managing risk within the organisation. The process integrates with the Long Term Council Community Plan (LTCCP) process as illustrated in Figure Q-1

The strategic goal of integrated risk management is:

"*To integrate risk management into Council's organisational decision making so that it can achieve its strategic goals cost effectively while optimising opportunities and reducing threats.*"

Figure Q-1: Integration of Risk Management Process into LTCCP Process

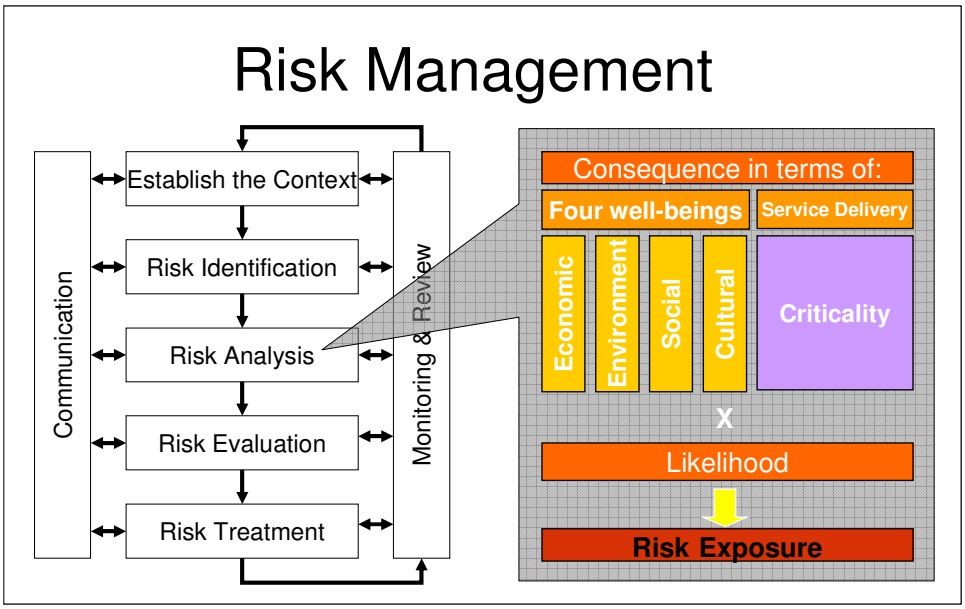


The IRM process and framework is intended to:

- To demonstrate responsible stewardship by TDC on behalf of its customers and stakeholders.
- To act as a vehicle for communication with all parties with an interest in TDC's organisational and asset management practices.
- Provide a focus within TDC for ongoing development of good management practices.
- Demonstrate good governance.
- Meet public expectations and compliance obligations.
- Manage risk from an organisational perspective.
- Facilitate the effective and transparent allocation of resources to where they will have most effect on the success of the organisation in delivering its services.

The risk management framework adopted by TDC is consistent with AS/NZS 4360:2004 Risk Management and assesses risk exposure by considering the consequence and likelihood of each risk which is identified as having an impact on the achievement of organisational objectives (Figure Q-2).

Figure Q-2: Integrated Risk Management Process



Consequence categories have been developed to reflect the impact of risk events on the four well-beings and each consequence category is scored as either "extreme", "major", "medium", "minor", or "negligible". These categories address common consequences across any asset or project, however, they do not specifically account for the differences in assets. Therefore an additional category "Service Delivery" is used to reflect the essential reason for the ownership or management of any asset within the local authority – the delivery of a service. This means that the consequence of failure to deliver the service in question (the criticality of the service) can be used to weight the consequences to reflect the relative importance of the asset to the community and in turn to Council.

Table Q-2: Consequence Categories

Category		Description
Service Delivery		Assessment based on the asset's compliance with Performance Measures and value in relation to outcomes and resource usage
Social/ Cultural	Health & Safety	Assessment of impact as it relates to death, injury, illness, life expectancy and health
	Community Safety & Security	Assessment of impact based on perceptions of safety and reported levels of crime
	Community / Social / Cultural	Assessment of impact based on damage and disruption to community services and structures, and effect on social quality of life and cultural relationships
	Compliance / Governance	Assessment of effect on governance and statutory compliance of Council
	Reputation / Perceptions of Council	Assessment of public perception of Council and media coverage in relation to Council
Environment	Natural Environment	Effect on the physical and ecological environment, open space and productive land
	Built Environment	Effect on the amenity, character, heritage and cultural, and economic aspects of the built environment and level of satisfaction with the amenity of the built environment
Economic	Direct Cost / Benefit	Direct cost (or benefit) to Council
	Indirect Cost / Benefit	Direct cost (or benefit) to wider community

Similarly, the likelihood of the risk occurring is scored on a scale from “almost certain” to “unlikely” with associated probabilities and frequencies provided for guidance.

The risk exposure is then determined for each identified risk by multiplying the consequence and likelihood, and is presented using semantic descriptions ranging from “extreme” to “negligible”
Treatment strategies, or strategic plans, that mitigate each risk can then be identified, and prioritised based on the risk exposure.

The consequence, likelihood scoring and risk matrix tables are all located in a separate report, TDC Integrated Risk Management - Engineering Activities. This document also contains the outputs from the Level 1 and Level 2 Risk Assessments.

There are essentially three levels of risk assessment that should be considered for each activity within Council;

Level 1 - Organisational Risk Assessment

Level 2 - Asset Group Risk Assessment

Level 3 - Critical Asset Risk Assessment

Q.2.1. Level 1 - Organisational Risk Assessment

The Organisational Risk Assessment focuses on identification and management of significant operational risks that will have an impact beyond the activity itself and will affect the organisation as a whole. This approach allows the Integrated Risk Management framework to address risks at the organisational level, as well as at both the management and operational levels within the particular Council activities.

During the process of developing the integrated risk management process, Council identified a number of risk events and issues at an organisational level. These are relatively generic across all activities, but have been reviewed against each particular activity to ensure relevance and adjusted to suit. The decision to implement the treatment measures identified will be at an organisational level, not activity level.

Q.2.2. Level 2 - Asset Group Risk Assessment

The same principals and consequence tables have been applied at an activity level. Major asset groups within the activity have been identified, for wastewater these were;

- gravity reticulation
- rising / trunk mains
- pump stations
- wastewater treatment plants

An analysis of risk events was then undertaken to determine the issues arising that may prevent the assets delivering the required service. At this level of risk assessment, the risk events considered are physical events only as management and organisational risk events formed part of the earlier organisational risk assessment. Treatment strategies that mitigate each risk for asset groups have been identified.

The outcome from this process is summarised in Table Q-3, a checklist of mitigation measures that should be considered for each type of asset group.

Table Q-3: Mitigation Measures Check List

Mitigation Measures to be considered	Asset Group			
	Rising/Trunk Mains	Treatment Plant	Gravity Mains	Pump Stations
System Operating Plans	✓	✓	✓	✓
Geotechnical Assessments	✓	✓	✓	✓
Health & Safety Assessments		✓		✓
24hr Customer Response	✓	✓	✓	✓
Regulatory Consents		✓		
Asset Management System/Confirm	✓	✓	✓	✓
Telemetry System		✓		✓
Maintenance & Professional Service Contracts	✓	✓	✓	✓
Environmental/Performance Monitoring		✓		
Design Standards	✓	✓	✓	✓
Generators		✓		✓
Bylaws	✓	✓	✓	✓
Storage/Containment	✓	✓	✓	✓
CD Emergency Management		✓		✓
Signage/Access Control		✓		✓

Q.2.3. Level 3 - Critical Assets Risk Assessment

The next step in the Integrated Risk Management approach is to consider each of the individual critical assets within the asset groups of an activity. Each asset will be reviewed in terms of the consequences initially identified and mitigation measures required. The output from the process will be a recommendation of projects or operational strategies to address shortfalls.

At this time, this level of risk management has not been implemented but has been included for completion in the Improvement Plan.

Q.2.4. Projects to Address Risk Shortfalls

Despite the incomplete nature of the Integrated Risk Management process, specific risk mitigation measures that have been planned within the 20 year wastewater programme include:

- Updating Engineering Standards every 3 years,
- Updating System Operating Plans,
- A programme of telemetry installation and upgrade,
- Continuing to develop Council's Asset Management System / Confirm,
- Ensuring all necessary regulatory consents are obtained and that existing consents are renewed as required,
- New signage for WWTPs,
- The pump station upgrade programme includes new storage,
- Purchase of generators to allow operation of key wastewater assets during power outages,
- Retendering of maintenance/professional service contracts.

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

R.1 Community Outcomes to Which this Activity Contributes

Through consultation, the Council identified eight Community Outcomes. These community outcomes are linked to the four well beings and Council's objectives as shown in Table R-1.

R.2 Performance Measurement

Table R-2 contains an assessment of current performance against the levels of service, and a forecast of the performance planned for within the next 3 years, and within the next 10 years.

Table R-1: The Four Wellbeings, Interim Community Outcomes, Council Objectives, Group and Activities

Community Wellbeing	Community Outcomes	Council Objectives	Council Groups and Activities	Council Activities
Environmental wellbeing	1. Our unique and special natural environment is bountiful, healthy, clean and protected. 2. Our built urban and rural environments are functional, pleasant, safe and sustainably managed. 3. Our transport and essential services are sufficient, efficient and sustainably managed.	To ensure sustainable management of natural and physical resources and security of environmental standards. To sustainably manage infrastructural assets relating to Tasman District.	Environment and Planning Transportation Sanitation, drainage and water supply	Resource Policy Resource Information Resource Consents and Compliance Environmental Education, Advocacy and Operations Regulatory services Mapua Rehabilitation Regional Cycling and Walking Strategy. Land Transportation Coastal Structures, Aerodromes Refuse Wastewater Stormwater management Rivers Water Supply
Social and Cultural Wellbeing	4. Our vibrant community is safe, well, enjoys an excellent quality of life and supports those with special needs. 5. Our community understands regional history, heritage and culture. 6. Our diverse community enjoys access to a range of spiritual, cultural, social, educational and recreational services. 7. Our participatory community contributes to district-decision making and development.	To enhance community development and the social, natural, cultural and recreational assets relating to Tasman District.	Cultural services and grants Recreation and leisure Community support services.	Libraries Cultural services and community grants Community recreation Camping grounds Parks and Reserves Development impact levies Community facilities Emergency management Community housing Governance
Economic Wellbeing	8. Our growing and sustainable economy provides opportunities for us all.	To implement policies and financial management strategies that advance. To promote sustainable development in the Tasman District.	Council Enterprises	Forestry Property Council controlled organisations.

Table R-2: Assessment of Current Performance Against Levels of Service and Intended Future Performance.

Levels Of Service (what Council will provide)	We will know we are achieving this when	Current Performance	Future Performance (by Year 3)	Future Performance (by Year 10)
1. Our Wastewater systems do not adversely pollute or degrade the receiving environment	All wastewater treatment plants hold all necessary resource consents.	All WWTP's hold all necessary consents. Consent renewal applications have been lodged for Takaka and Collingwood.	100%	100%
	All wastewater treatment plants meet the minimum compliance levels in the resource consents	June 07 to July 08 overall – 71%. Collingwood = 80% Motueka = 69% Murchison = 80% St Arnaud = 60% Takaka = 33% Tapawera = 100% Upper Takaka = 87% Tapawera compliance has been assessed against the expired consent which does not have any limits. The new discharge consent does not become active until the upgraded WWTP is commissioned. Takaka WWTP compliance levels are expected to increase significantly once the upgrade is complete.	Year 1 = 75% Year 2 = 80% Year 3 = 90%	90%
	We can limit the number of overflows that cause beach closures or shellfish gathering bans to less than 5 per year	There were no overflows leading to beach closures or shellfish gathering bans in 2007/08.	<5	<5
2. Our wastewater systems reliably take our wastewater with a minimum of odours, overflows or disturbance to the public	We can limit the number of overflows on private property due to Council system fault to less than 5 per year	There have been 10 overflows on private properties over the last 2 years	<5	<5
	We can limit the number of overflows from sewer in a year to less than one per kilometre of sewer	Over the last 6 years we have been averaging <0.4 overflows	<1	<1
	We can limit the number of overflows from pump stations per year to less than 10.	Over the last 2 years we have had <6 overflows	<10	<10

Levels Of Service (what Council will provide)	We will know we are achieving this when	Current Performance	Future Performance (by Year 3)	Future Performance (by Year 10)
	We receive less than 30 complaints per year relating to odour or noise from our wastewater systems.	We received 35 complaints in 2007/08 and 25 in 2006/07	<30	<30
3. Our wastewater systems serve those that should be serviced	95% of properties within the Urban Drainage Areas are able to connected to the Council's reticulation system at their boundary if they so choose.	This cannot currently be reported on due to recent changes in Council's Asset Management System. Changing Council's recording systems to allow measurement of this in future has been included in the Improvement Plan.	100%	100%
	Our Water And Sanitary Services Assessment (WSSA) identifies communities that we don't serve but that may benefit from having a Council owned community scheme, and plans are in place in the AMP to consult these communities.	Both Marahau and Tasman were identified in the WSSA as potentially benefiting from a Council sewerage scheme. However neither were included in the previous AMP.	100%	100%
4. Our wastewater activities are managed at a level that satisfies the community	Our surveys show that 80% of customers are satisfied with the wastewater service they receive.	94% of those residents provided with a sewerage system are satisfied with the service. Data from the 2008 TDC/Communitrak™ survey.	≥80%	≥80%
5. Our systems are built so that failures can be prevented. If they do occur they can be responded to quickly.	We are able to respond to and fix faults within the timeframes we have specified in our operations and maintenance contracts	The operations and maintenance contractor is required to meet a target of 90% of faults to be fixed within the specified timeframes. During the first 12 months of Contract 688 >90% was achieved.	90%	90%
	We have a facility for receiving and handling emergency calls after office hours.	Council has an after hours call centre that receives calls 24/7 and contractors and system managers have duty staff who are contactable to respond to emergencies	continue to do the same	continue to do the same
	We have operative risk management processes in place and planned mitigation measures completed.	Council does not have a risk management plan	In place and operating	In place and operating
	All pump stations have standby pumps in case of mechanical failure.	All but one pump station (Boyle St) have standby pumps.	100%	100%

Levels Of Service (what Council will provide)	We will know we are achieving this when	Current Performance	Future Performance (by Year 3)	Future Performance (by Year 10)
	Our pump stations have storage or standby electrical generation in case of power failure.	Achieved 21%. 10 pump stations have 6hrs storage. Two pump stations have standby generators and there are two mobile generators, (St Arnaud and Richmond) which serve multiple pump stations.	Year 1 = 25% Year 2 = 25% Year 3 = 30%	50%
	Our pump stations have telemetry to allow automatic communication of failures.	51% - 40 of 78 pump stations have telemetry	55%	75%

APPENDIX S: ASSET MANAGEMENT INFORMATION SYSTEMS AND DATA MANAGEMENT, AND ENABLING PROCESSES FOR ASSET MANAGEMENT

This appendix gives an overview of:

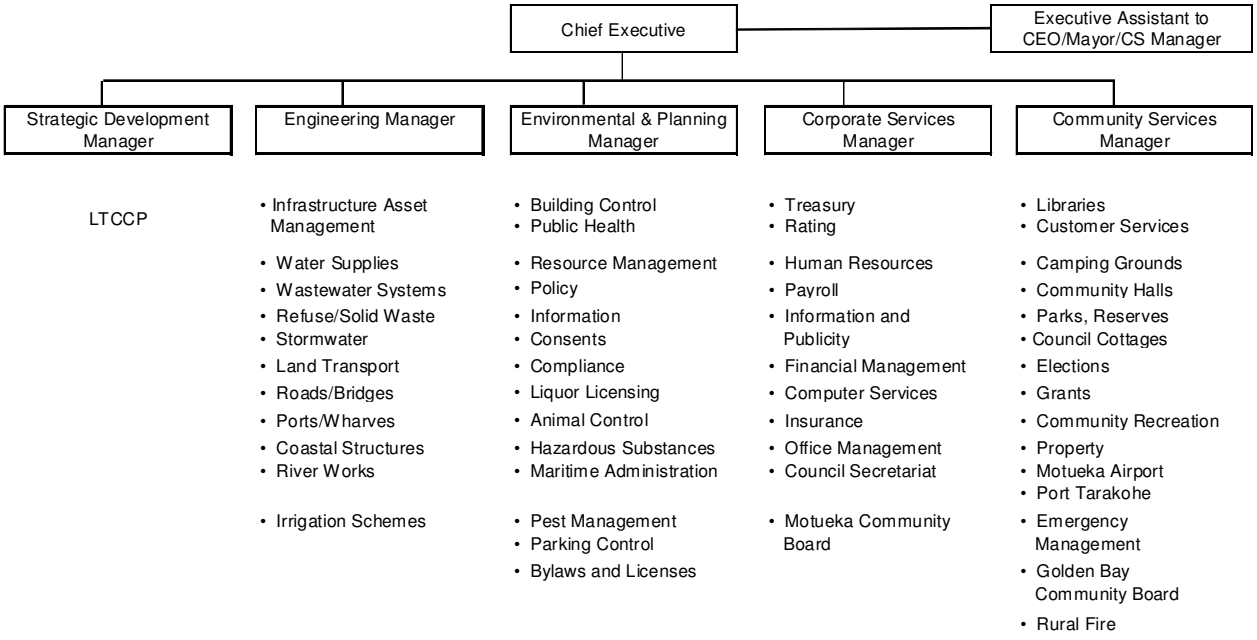
- Council's organisational structure
- How asset data is managed
- What asset management systems and processes are used
- How decisions are made.

S.1 Organisational Structure

The Engineering Manager is principal advisor to the Engineering Services Committee that has delegated powers from the Council. The Engineering Services Committee has responsibility for roads and bridges, footpaths, carparks, water supplies, refuse collection and disposal, wastewater treatment and disposal, stormwater, river works, ports and wharves, and aerodromes.

The Tasman District Council organisational structure is shown in Figure S-1 As the chart shows, the asset management function for the wastewater asset management plan falls under the Engineering Manager.

Figure S-1: Tasman District Council Organisation Structure



S.2 Asset Data

The Council's corporate Asset Management System (AMS) is Confirm Enterprise. The Engineering Department uses it to record and track customer enquiries, maintain its asset register, and for tracking non-routine maintenance of assets. Valuations of all assets other than Roading will be done from Confirm.

The Asset Information team, Asset Managers, TDC's consultants and contractors all have access to the system with levels of access appropriate to their needs. Asset information is delivered to the Council via Explore Tasman, TDC's web-based GIS browser application. Performance and operational reports are delivered via a web-based reporting system.

Confirm has links to other core Council applications:

- NCS (Napier Computer System) for property data and water meter details
- SilentOne document management system for construction and As-built plans.

A more detailed breakdown of Roading Assets is held in RAMM (Road Asset and Maintenance Management) which is maintained by MWH on behalf of TDC.

Table S-3 summarises the various data sources and how they are managed. It also provides a grading on the data accuracy and completeness where this is appropriate. The accuracy grade is based on the IIMM grading as shown in Table S-1: the completeness grade is based on the grading as shown in Table S-2:

Table S-1: Asset Data Accuracy Grade

Grade	Description	Accuracy
1	Accurate	100%
2	Minor inaccuracies	± 5%
3	50% estimated	± 20%
4	Significant Data estimated	± 30%
5	All data estimated	± 40%

Table S-2: Asset Data Completeness Grade

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

Table S-3: Council Asset Data Types and Confidence

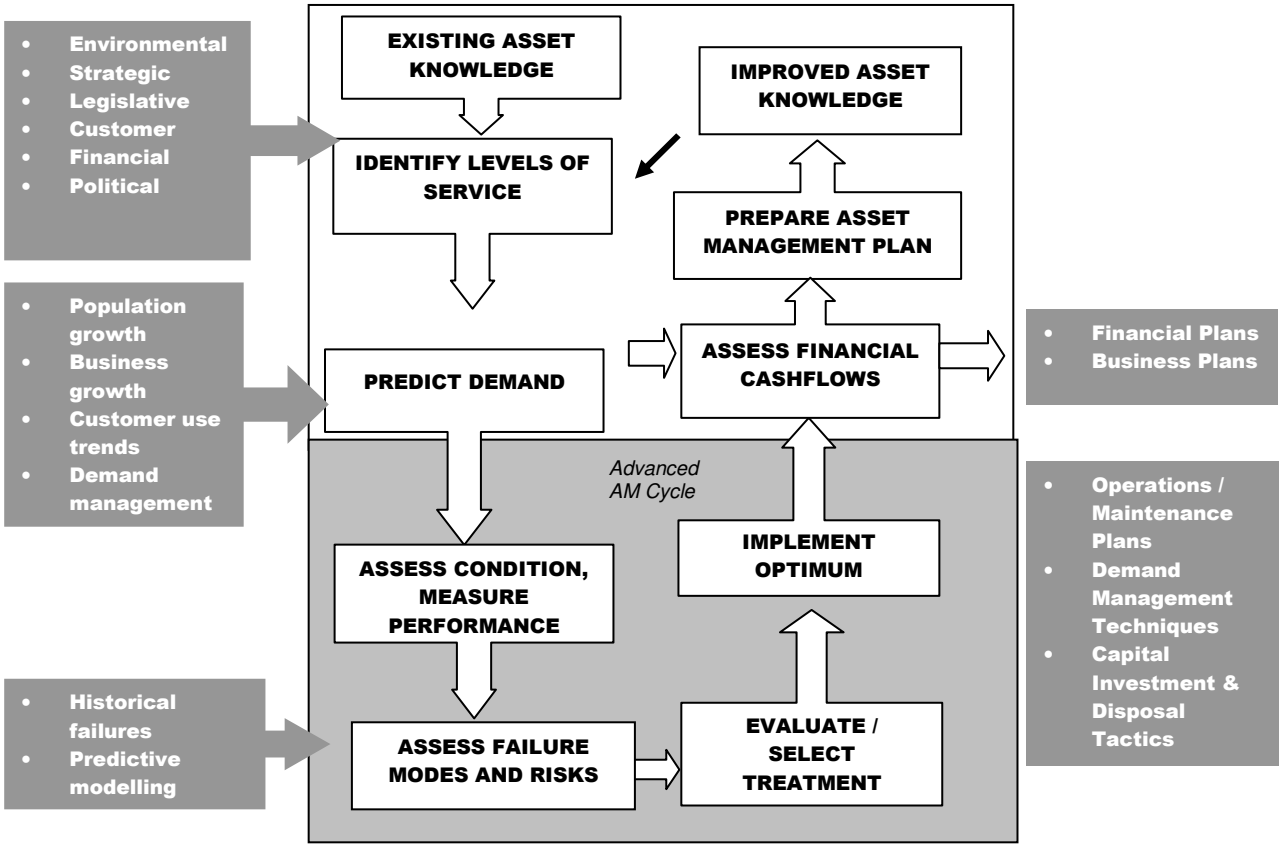
Data Type	Data Storage	Management Strategy	Data Confidence	
			Accuracy	Completeness
Asset location	GIS (line data)	GIS is being compiled from As-built data and is the first port of call for asset location, but not the last word – refer As-builts below.	2	2
	Confirm (point data)	Point data is provided in Confirm	2	2
	As-built Plans	As-builts are the primary source of asset location data. As-built plans of all new assets are scanned and incorporated into SILENTONE. This allows digital retrieval of as-builts from GIS system. Early as-builts are to a lesser quality, however in recent years as-builts quality has been significantly improved and are now prepared to specific standards and reviewed/audited on receipt.	2	2
Asset description (size, age, material)	Confirm	Confirm is the primary source for asset data. The intention is to over time migrate all data into Confirm.	2	3
	Asset Register	The asset register prepared for valuation purposes contains information on asset extent, age, remaining life, condition etc. It has been spreadsheet based but it is being transferred into Confirm in a controlled manner so that future valuations can be done from Confirm.	2	3
	CMS Database	A database containing data information about pump types and operational performance (totalized flow etc) is maintained. It is intended that this also will be transferred eventually into Confirm.	2	2
Maintenance History	Confirm			
	CMS			
Financial Information	NCS	Council Accounting and Financial systems are based on Napier Computer Systems (NCS) software and GAAP Guidelines. Long term financial decisions are based on the development of 10-year financial plans.	n/a	n/a
Resource Consents	Resource Consent Database	A database containing details and copies of all resource consents associated with the water, wastewater and solid waste assets was developed in 2008. This will be expanded to include the stormwater, roading, and river assets in the near future. The database is administered by the Council's professional services provider. Management processes have been developed to ensure all consent conditions are complied and any new or changed consents is updated in the database.	1	1
System Operation	Telemetry / SCADA	The Council's telemetry / SCADA system is in a continual state of development.	n/a	n/a

Data Type	Data Storage	Management Strategy	Data Confidence	
			Accuracy	Completeness
	Water Quality & Environmental Monitoring	Records of the water quality testing, treatment plant and pump station inspections are carried out in accordance with maintenance contract requirements. Historically Council's consultants, MWH, have held these records but in 2008 Council inputted all wastewater related monitoring data into the Hilltop database.	2	1
	Pump Operation	Pump station records include pump hours, flow meter and Amp readings for most pump stations since 1996. Council do not routinely undertake pipe pressure testing.		
Reports		A variety of investigative and design reports have been prepared and are held by various asset managers as appropriate.		
System Records		Council paper records are kept in files in the Records Room. These are classified by utility type and area. Files are kept for Roads, Bridges, Utilities and Resource Consents.		

S.3 Asset Management Processes and Systems

The way the Council develops its Asset Management Strategies is in general alignment with the IIMM manual as diagrammatically shown in below Figure S-2.

Figure S-2: Asset Management Process and Developing Asset Management Strategies (Source IIMM)



The specific processes and systems used are summarised as follows:

Process Step	Processes and Systems
Identify Levels Of Service	• Levels of Service identified taking account of Community Outcomes, Legislative Requirements, Financial constraints (affordability) and knowledge of asset performance. • Reviewed and confirmed on a 3 year basis – when AMP and LTCCP updated
Predict Demand	• Population Forecasting undertaken as described in Section 5 and Appendix F • Demand Forecasting undertaken as described in Section 5 and Appendix F • Demand Management undertaken as described in Section 11 and Appendix N
Assess Condition, Measure Performance	• Council undertook a comprehensive condition assessment of its wastewater assets in a valuation exercise in 1998. Subsequent valuations have used the pre-existing condition assessment, but reviewing and amending with the asset management knowledge and experience gained through operation of the assets. This draws from knowledge based on: o Pipe break reports where pipe condition and nature of break is recorded by service in the field and logged into digital loggers that

Process Step	Processes and Systems
	record the information against the asset and the customer service request. Ultimately this will be held in Confirm for analysis of condition. ○ Pipe break history where all pipe breaks are located by GPS to allow mapping on an annual basis to establish trends • Going forward an above ground asset condition assessment will be performed by the maintenance contractor on a 3 yearly basis • Performance against levels of service measured through a combination of operational activities, specific technical investigations and customer surveys • NRB Communitrak customer survey run every 3 years
Renewals Management	• Renewals first identified from valuation data base – when remaining life expires • Forecast renewals then field justified by reviewing with operations staff and asset management staff to confirm renewal requirements from valuation information and add to where there is specific knowledge of additional renewal requirements • Optimising review undertaken to identify opportunities for: ○ "bundling" with other projects – across assets and services – e.g. roading, water, power, telecom ○ Optimized replacement – i.e. whether the replacement asset should be the same size, capacity or manufacture, or are there justifications to replace with something different ○ Smoothing of expenditure • On an annual basis renewal work is programmed for implementation and managed as a programme – either through the Operations and Maintenance contract, or through specific tendered construction projects • To improve pipe renewal forecasts, Council are developing a risk based approach using dTIMS. All pipes in a network are considered on a basis criticality (how critical are the pipes to the operation of the network, what would be the consequences if they failed) and likelihood of failure (how often have they failed in the past, is there a history of failure with that type of pipe) to determine a risk ranking. This would then be used to develop a programme of replacements. This is being developed for Richmond but is yet to be completed.
Asset Creation Management	• Asset creation forecasts are developed every 3 years when updating this AMP. • The 10 year forecast from the last update of the AMP is taken as a starting point, and then the outcomes of growth and demand forecasts, level of service and performance review, the risk management and a workshop with asset managers are used to identify upgrade projects needed. • All capital projects identified are listed and a cost estimate developed. For consistency, a cost estimating spreadsheet has been developed and a series of base rates developed after consultation with suppliers and recent contract prices for the more common work elements. The cost estimating spreadsheets require: ○ Assessment of construction and non-construction costs (i.e. Engineering, consenting costs, land costs) ○ An assessment of contingency needed – on a consistent basis between estimates ○ An evaluation of the project drivers – increased level of service, backlog, growth or renewal. ○ An evaluation of a programme of implementation – spanning years to ensure appropriate time allowed for developing the project ○ A statement of the scope of the upgrade and a statement of risks and assumptions made in preparing the estimate • Once estimated the forecasts are combined in a capital expenditure forecast

Process Step	Processes and Systems
	database that records the outcomes of the estimate in a manner that allows summation of the work value against various criteria – scheme, project driver (growth, backlog, increased LOS or renewal), year or project. It is also used as an input into Council's financial system. • The funding of the capital forecast is modelled in Council's financial system NCS, and the implications for the forecast review at Council officer level and Councillor level. Any changes made to the projection in terms of deferring, adding or deleting projects is recorded and the implications on risk, growth or level of service stated. • The records of the individual project estimate sheets and the overall capital forecast spreadsheet are filed and retained.
Risk Assessment and Management	• Council have developed an Integrated Risk Management framework to manage risks – refer to Section 12 and Appendix Q for description.
Optimised Decision Making	• Hydraulic models of Richmond and Mapua wastewater networks have been developed and calibrated using the Infoworks WS modelling software. These models provide knowledge of the network performance of the system and are being used to identify network shortfalls, assess system development options to cater for growth and generally provide improved system knowledge.

APPENDIX T: BYLAWS

The only Council Bylaw relating to wastewater is the Trade Waste Bylaw that came into force on 1 July 2006.

APPENDIX U: STAKEHOLDERS AND CONSULTATION

U.1 Consultation

U.1.1. Purpose of Consultation and Types of Consultation

Council consults with the public to gain an understanding of customer expectations and preferences. This enables 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 and
- consultation via the Annual Plan and LTCCP process.

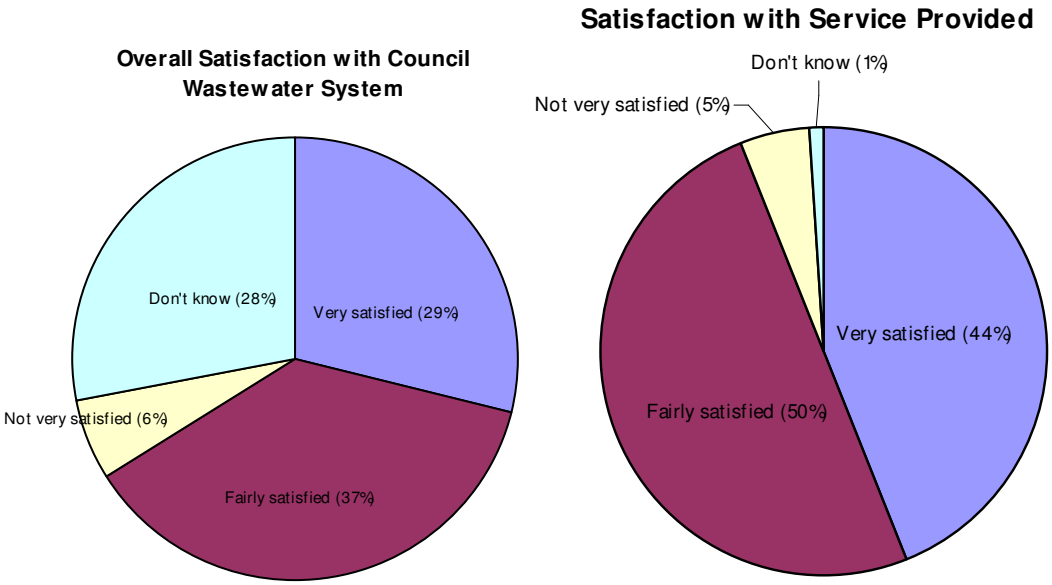
Council commissions customer surveys on a regular basis, usually every 3 years, from the National Research Bureau Ltd[2]. These Communitrak™ surveys assess the levels of satisfaction with key services, including wastewater services, and the willingness across the community to pay to improve services.

Council at times will undertake focussed surveys to get information on specific subjects or projects.

U.1.2. Consultation Outcomes

The most recent NRB Communitrak™ survey was undertaken in June/July 2008. This asked whether residents were satisfied with the wastewater system and included residents that had a Council service and some that were not on a Council service. The results from this survey are summarised in Figure U-1.

Figure U-1: Public Opinion of Wastewater Systems Communitrak ™ Survey 2008



[2] Communitrak™: Public Perceptions and Interpretations of Council Services / Facilities and Representation, NRB Ltd June/July 2008.

A large percent (28%) were unable to comment on their satisfaction with the Councils Wastewater System and that is probably due to 36% of residents saying they are not provided with a wastewater system. Of the residents who are provided with a wastewater system, 94% are satisfied with it.

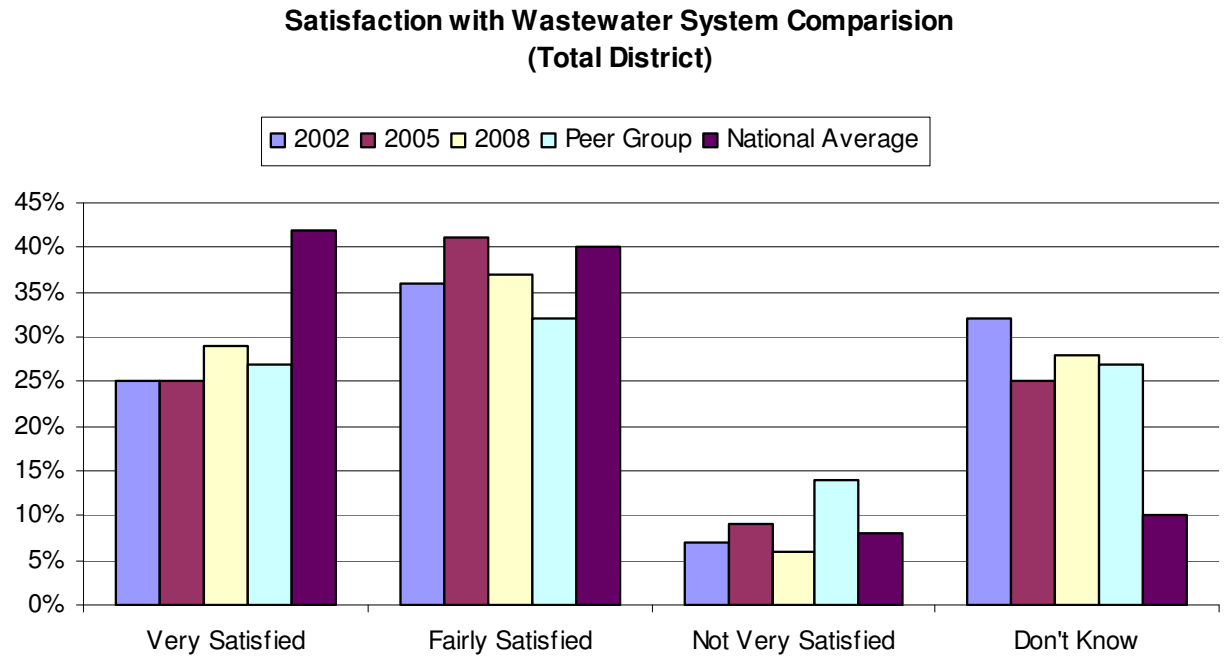


Figure U-2: Comparison with Peer Group and National Average

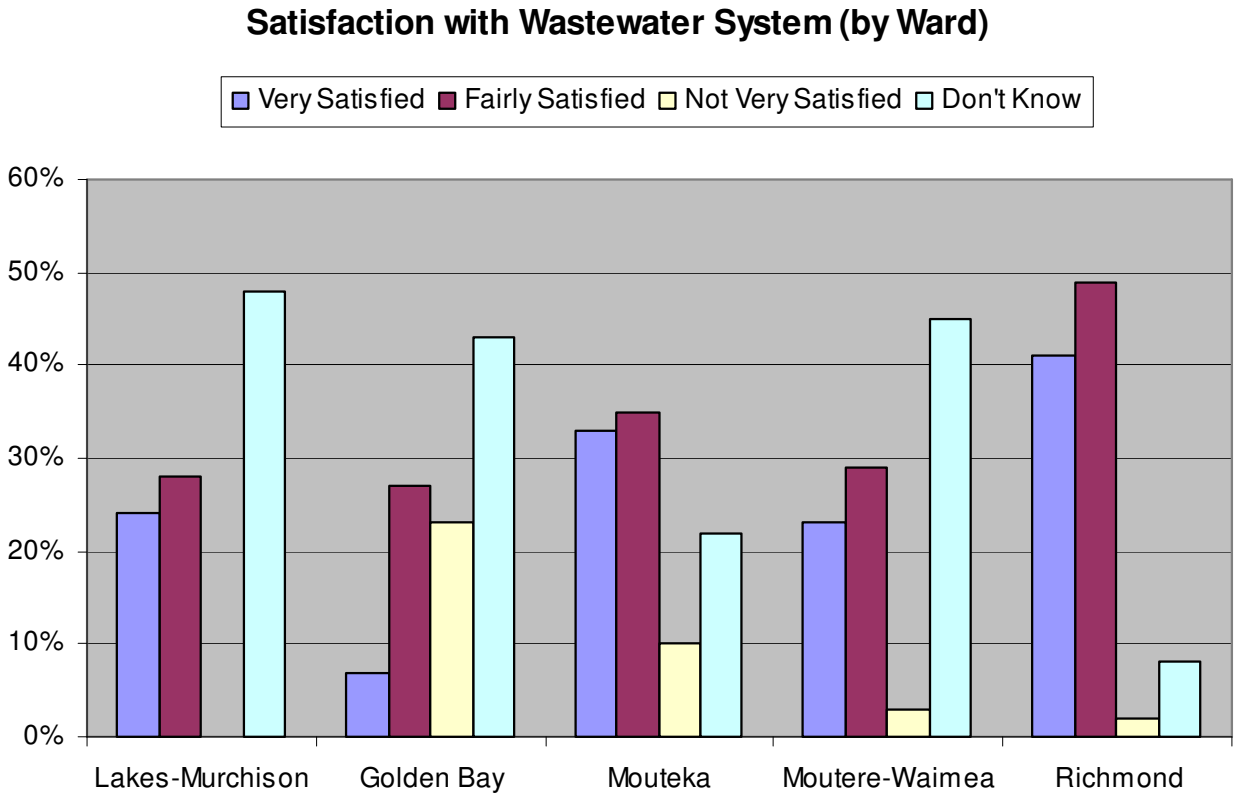


Figure U-3: Satisfaction with Wastewater Service by Ward

Residents were also asked if they would like to spend more, about the same, or less on wastewater given that Council cannot spend more without increasing rates or user charges. The outcome is shown in Figure U-4, with Figure U-5 showing a decreasing trend in residents who want more spent on wastewater.

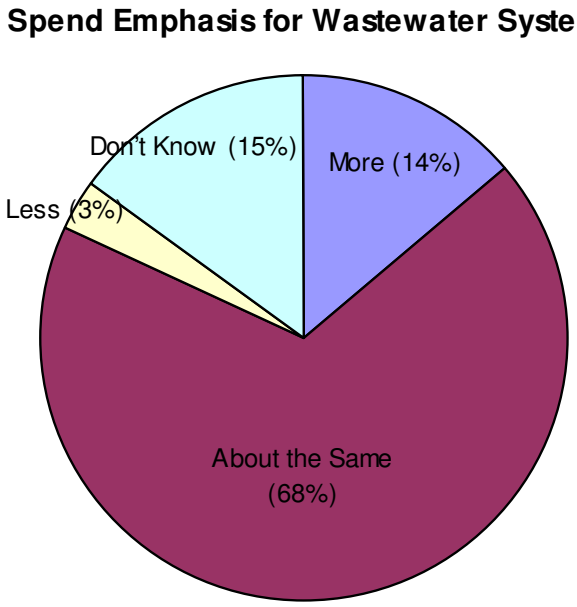


Figure U-4: Spend Emphasis on Wastewater

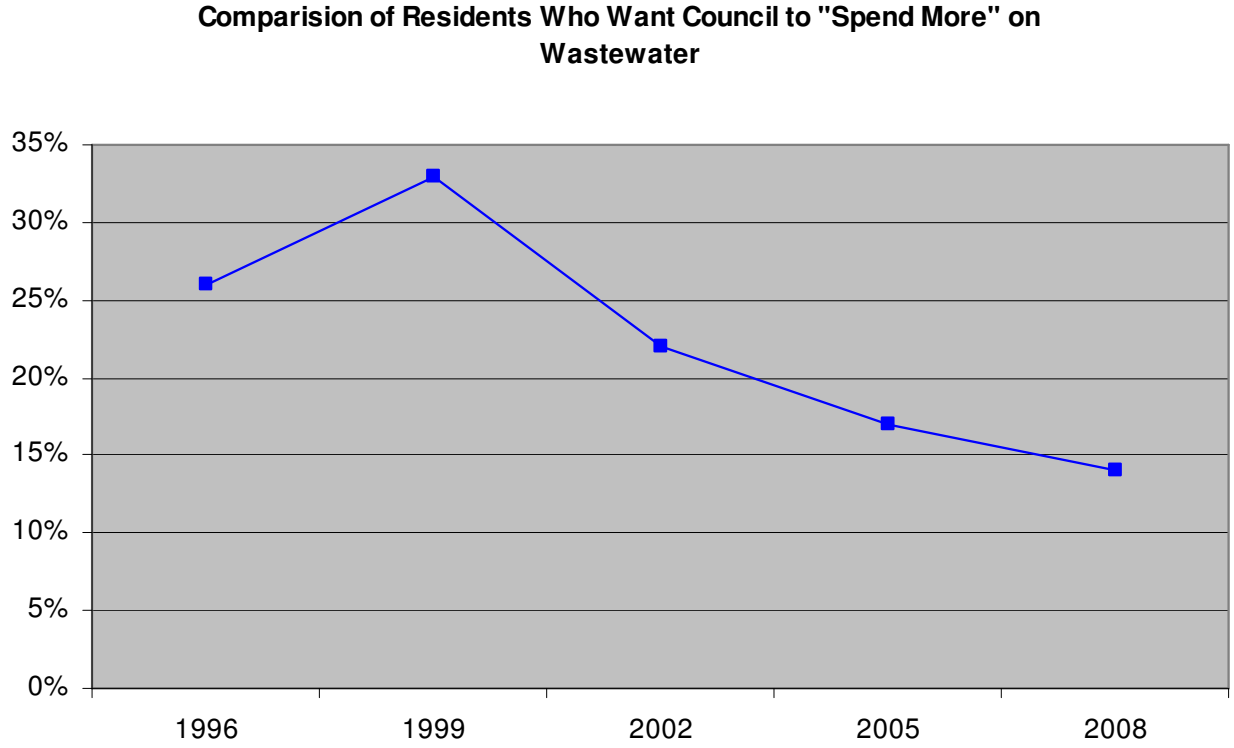


Figure U-5: Trend in Percentage of Resident Who Want More Spent on Wastewater

U.2 Stakeholders

A list of stakeholders is included in Appendix A, Section A.2.

APPENDIX V: IMPLEMENTATION AND IMPROVEMENT PROGRAMME

Activity management improvements are necessary to achieve the appropriate (and desired) level of activity management planning sophistication. Since the last AMP review, improvements to service delivery have been made in a number of areas.

Table V-1 details improvements that have been achieved from the last AMP Improvement Plan. Other improvements that have been achieved are:

- Review of Levels of Service,
- Review of Engineering Standards and Policies,
- Developed the wastewater resource consent registers into a database - NM2,
- Migrated all historical monitoring data associated with the wastewater asset onto Hilltop,
- Began using Samplyzer for managing sample collection.

Table V-1: Improvements to Activity Management Systems Since the 2005 AMP

Improvement	Achievement
Implement the Information Management Strategy and improve implementation of computerised AMS.	Council has developed its Asset Management System (Confirm) and use it to track and record customer enquiries, maintain its asset register, and track non-routine maintenance of assets. Confirm has been integrated with other asset management tools such as Silent One and Council's GIS (Explore Tasman).
Determine appropriate Risk Management Approach	Council has adopted a risk management approach, refer to Appendix Q.
Continue with hydraulic flow assessments	Council has developed hydraulic models for Richmond and Mapua.
Develop Asset Condition Evaluation and replacement profile	Filed condition evaluations using CCTV have be undertaken in Upper Takaka, Richmond, Mapua, and parts of Motueka.
Asset Revaluation	Review and update of the asset register and valuation was completed in June 2007.
UDA Reviews	New UDAs have been created for Upper Takaka, Pohara and Ligar Bay/Tata Beach.
Bylaw Reviews	Review of Trade Waste Bylaw was completed.
Review routine reporting practice	The development of a new approach to Levels of Service means that some reporting practices have to be changed so that performance can be measured.
Review affordability of projects	Projects that were deferred in the 2005 AMP due to affordability have been reviewed. Some have been reinstated in the current 20 year financial forecast, however Tasman Village Reticulation has not.

Table V-2 details the proposed short to medium term improvements, discusses why these improvements are needed, and when they are planned to be achieved. For each improvement:

- Options have been considered and the listed improvement has been concluded as the best practicable option.
- Costs to implement each improvement have been estimated and included in the 20 year financial forecast.
- An indication on the level of priority to complete each initiative/ improvement has been made.

Table V-2: Planned Activity Management Improvement Programme

Item	Improvement	Benefits	Estimated Cost in 10 Year Financial Forecast ($)	Priority
AMP Update	Review and update AMP on a 3 year cycle. Next due in 2011.	Needed to comply with L.G. Act 2002 requirements.	$70,000 every 3 years.	High
Asset Valuations	Review and update wastewater Asset Valuation on a 3 yearly cycle. Next due in 2010.	Needed to comply with L.G. Act 2002 requirements.	$15,000 every 3 years	High
Risk Management	The Council intends to apply a consistent approach to risk management across all asset groups and will complete a risk assessment at three levels, Organisational, Asset Group and Critical Assets.	Identifies actions/ improvements required to be made to the organisation or operation or provision of Councils assets in order that: • Council's ability to maintain levels of service as a result of organisational change and external physical events is maximised. • Council's operational systems are robust.	$20,000 - 2010/2011	High
Asset Management System Development	Continue to develop Council's Asset Management System and integration with its related asset information systems, GIS, Silent One, etc....	Confirm enables a 'one stop shop' for Asset Management. It increases the knowledge and understanding of the Council's asset, asset performance and assists with efficient operation and maintenance of the assets.	Ongoing, no separate budget provided. Included within other projects such as modelling and CCTV investigations or general Improvement Plan Activities budget.	High
Asset Condition Assessment	Completion of CCTV surveys to inspect the condition of wastewater pipes.	Council's intention is to incorporate the results of these inspections into the Confirm system and use these to plan for asset replacement and complete the asset valuation	Varies for year to year	High
Hydraulic Models	Develop hydraulic models for main catchments. A staged approach will be taken over the period of this plan.	Provides necessary information about existing system capacity and aids robust decision making for future developments, upgrading requirements and future renewals.	Varies from year to year.	High
Water and Sanitary Services	Identify areas where communities want a higher level of service through completing a	Feed into reviewing current levels of service and identifying capital upgrade / renewal projects	$40,000 every 3 years	Medium

Item	Improvement	Benefits	Estimated Cost in 10 Year Financial Forecast ($)	Priority
Assessments	Water & Sanitary Services Assessment every 3 years. Next due 2009/10			
System Operating Plans	Further develop and update System Operating Plans for all UDAs.	A single document for each wastewater UDA that; • includes all the roles and responsibilities of Council and its contractors • details operational procedures, checks and inspections particular to each system • includes as-built plans • details resource consents and environmental monitoring requirements	General allowance of $50,000 p.a. for Improvement Plan activities.	Medium
Review Routine Reporting Practice	Ensure that the number of wastewater connections (residential and non-residential) is collected, recorded and can be reported on for each UDA.	Currently Council has no accurate information of the number of properties connected to its sewerage systems. The pan numbers used in this AMP have been based on 2006 census data and Lot numbers, not on actual property connection data. Collecting data on the number of connections will: • provide valuable information when assessing WWTP capacity and performance, • assist with assessing reticulation capacity, • assist with planning for future upgrading of wastewater assets, • mean that all the new Levels of Service will able to be measured and reported against.	General allowance of $50,000 p.a. for Improvement Plan activities.	High
Resource Consent Database	Expand database to include all resource consents related to the wastewater network	Not all Landuse Permits, legitimising pipeline crossings of waterways and estuary's, have been included in the database. These consents could expire without renewal applications being lodged.	General allowance of $50,000 p.a. for Improvement Plan activities.	Medium
Alternate Waste Treatment	Past public consultation shows there is a strong desire for Council to consider composting toilets instead of, or included in new reticulation systems especially in more rural areas.	Satisfies public desire for an alternative solution to connecting to the local wastewater system.	General allowance of $50,000 p.a. for Improvement Plan activities.	Low

Item	Improvement	Benefits	Estimated Cost in 10 Year Financial Forecast ($)	Priority
Brochure for Public Information	Prepare a brochure setting out the Council's and landowner's responsibility for wastewater management and maintenance. This will also be put on the Council website	Public gain a better understanding of the wastewater asset, where the Council's responsibility ends, knowledge on what products and chemicals affect the wastewater system.	General allowance of $50,000 p.a. for Improvement Plan activities.	2007/08

APPENDIX W: DISPOSALS

The Council does not have formal strategy documents relating to asset disposals. When any such assets reach a state where disposal needs to be considered, the Council will treat each case individually.

There are no current, or planned areas of operation that TDC wishes to divest itself of. Asset disposal therefore is a by-product of renewal or upgrade decisions that involve the replacement of assets.

Depending on the nature and value of the assets they are either:

- Made safe and left in place.
- Removed and disposed to landfill.
- Removed and sold.

The LGA 2002 has reinforced a number of disposal policies as follows. A local authority:

- May not divest ownership without going through the Special Consultative process.

- May **close** down assets only if:
  - Community is <200 people
  - Comparison is made with likely quality and adequacy of alternative services
  - Make available publicly a) Medical Officer of Health (MOH), and b) a comparison of options, costs, and environmental implementation
  - Achieve 75% support in a binding referendum.

- May **transfer** assets only if:
  - Community is <200 people
  - MoH consulted
  - Make available publicly a) draft management plans, and b) assessment of costs and ability of community entity to provide service.
  - Achieve 50% support in binding referendum.

APPENDIX X: GLOSSARY OF ASSET MANAGEMENT TERMS

Acronyms and Abbreviations

AMP	Activity Management Plan
LGA	Local Government Act
LTCCP	Long Term Council Community Plan
PS	Pump Station
TRMP	Tasman Regional Management Plan
TDC	Tasman District Council
UDA	Urban Drainage Area
DC	Development Contribution
AMS	Asset Management System

Activity	An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Activity Management Plan	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 LTCCP, 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).
AM Plan	See Activity Management Plan.
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.
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.
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 (e.g. 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 data-base.
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	The defined service quality for a particular activity (i.e. water) or service area (i.e. 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 i.e. from planning and design to decommissioning or disposal. The period of time between a selected date and the last year over which the criteria (e.g. 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 Council Community Plan	The Long Term Council Community Plan (LTCCP) 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 LTCCP is a key output required of Local Authorities under the Local Government Act 2002.

Long Term Financial Strategy	The Long Term Financial Strategy has been superseded by the Long Term Council Community Plan.
LTCCP	See Long Term Council Community Plan.
Maintenance Plan	Collated information, policies and procedures for the optimum maintenance of an asset, or group of assets.
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 3 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 (e.g. 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.
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 (replacement of light bulbs, cleaning of drains, repairing leaks, etc.) 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, i.e. replacement value for determining maintenance levels or market value for life cycle costing.

APPENDIX Y: MAPS OF UDA BOUNDARIES

The area boundaries are correct as at July 2008. The boundaries are revised periodically.

The current version is located in the LTCCP.

Legend

- Pump Station
- WW Surface Feature
- Gravity Main
- WW UDA
- Rising Main

N
W E
S

WWT-17626
Malthouse Crescent Sewer PS

WWT-17988
Waimea West Road Sewer PS

WWT-14563
Bryant Rd PS -
7 Somerville Lane (ex Bryant Road Lift Station)

WWT-15908
Brightwater Main Sewer PS -
6 Spencer Place

WAIMEA WEST ROAD
NEWMAN AVENUE
HOLLYBUSH DRIVE
BRYANT ROAD
LORD RUTHERFORD ROAD NORTH
HOLLIS PLACE
ELLIS STREET
BRIGHTWATER DEVIATION
LORD RUTHERFORD ROAD SOUTH

Brightwater Wastewater Pump Stations & Reticulation

0.15 0 0.15 0.3 0.45
Kilometers

Scale: 1:7,500

Legend

- Pump Station
- WW Surface Feature
- Gravity Main
- WW UDA
- Rising mains

N
W E
S

WWT-17790
Elizabeth Street
(O/S Collingwood Motels)

WWT-15268
Beach Road -
O/S #54

WWT-14120
Wally's Rest Sewer PS

WWT-14713
Collingwood WW Treatment plant

WWT-14124
Collingwood WW Treatment Plant

BEACH ROAD
BEACH ROAD
COLLINGWOOD QUAY
COLLINGWOOD
LEWIS STREET
WASHINGTON STREET
GIBBS ROAD
SWIFTSURE STREET
ORION STREET
TAKAKA-COLLINGWOOD HIGHWAY
COLLINGWOOD-PUPONGA MAIN ROAD
COLLINGWOOD-BAINHAM MAIN ROAD

0.15 0 0.15 0.3 0.45
Kilometers

Scale: 1:7,500

Collingwood Wastewater Pump Stations & Reticulation

Legend

- Pump Station
- WW Surface Feature
- Rising Main
- Gravity Main
- WW UDA

N
W E
S

RANZAU ROAD WEST
RANZAU ROAD EAST
MAIN ROAD HOPE
MAIN ROAD HOPE
WHITE ROAD
WHITE ROAD
PATON ROAD
BATEUP ROAD
HART ROAD
HART ROAD
HILL STREET
HILL STREET
SUNVIEW HEIGHTS

WWT-14516
Firth/Ashworth Sewer PS
(423 Hill St)

WWT-17348
Hill Street South - o/s # 515
(Sunview Heights)

0.2 0 0.2 0.4 0.6
Kilometers

Scale: 1:10,000

Hope Wastewater Pump Stations & Reticulation

Legend

- Pump Station
- WW Surface Features
- Rising Mains
- Gravity Mains
- WW UDA
- Abandoned Mains

N
W E
S

WWT-13723
Kaiteriteri-Sandy Bay Road
(Honeymoon Bay)

WWT-15283
Kaiteriteri-Sandy Bay Road
(Breaker Bay)

KAITERITERI-SANDY BAY ROAD

MARTIN FARM ROAD

WWT-14184
Martin Farm Road

ROWLING ROAD

WWT-14178
Rowling Road - Little Kaiteriteri Sewer PS

WWT-14127
Riwaka Kaiteriteri Road
Storage Vessel

STEPHENS BAY ROAD

WWT-14667
Stephens Bay Sewer PS

ANAREWA CRESCENT

WWT-15143
Tapu Bay

Kaiteriteri Wastewater Pump Stations & Reticulation

To Riwaka

See Detail

Detail

Legend

- Pump Stations
- WW Surface Features
- Rising Mains
- Gravity Mains
- WW UDA

N
W E
S

BRABANT DRIVE
COASTAL HIGHWAY
ADMIRALS WAY
VAN BEEK PLACE
PINE HILL ROAD
BRABANT DRIVE
BROADSEA AVENUE
STAFFORD DRIVE
SEATON VALLEY ROAD
THE COASTAL HIGHWAY
HIGGS ROAD
ARANUI ROAD
IWA STREET
TAHI STREET

WWT-15394
Stafford Drive opp
Ruby Bay store

WWT-15369
72 Stafford Drive
(Taits)

WWT-13583
Warren Place

WWT-18159
102 Aranui Rd Sewer PS

WWT-15336
144B Higgs Road # 3

WWT-15335
121 Higgs Road # 2

WWT-14008
115 Higgs Road # 1

WWT-15331
Lionel Place - opposite #6

WWT-15343
Aranui Road / Higgs Road

WWT-15349
Iwa Street -
opposite #48A

WWT-17187
Mapua Leisure Park

WWT-18099
Mapua Wharf

0.2 0 0.2 0.4 0.6
Kilometers

Scale: 1:10,000

Mapua Wastewater Pump Stations & Reticulation

WWT-14514
Motueka Oxidation Pond

N
W E
S

Legend
- Pump Stations
- WW Surface Feature
- Rising Main
- Gravity Main
- WW UDA
- Abandoned Mains

PARKER STREET
FEARON STREET
THORP STREET
INGLIS STREET
PAH STREET
GREENWOOD STREET
TUDOR STREET
HARBOUR ROAD
WHAKAREWA STREET
HIGH STREET
KING EDWARD STREET
OLD WHARF ROAD
MOTUEKA QUAY
TREWAVAS STREET
WHARF ROAD

WWT-16576
4 Atkins Street

WWT-14203
6 Tarrant Place

WWT-12305
Pethybridge Street
(Eginton)

WWT-18041
81 Thorp Street

WWT-15099
Goodman Park

WWT-12314
175 Motueka Quay

WWT-18042
26 Naumai Street (Oaks Village)

WWT-15094
25 Woodlands Avenue

WWT-15259
Totara Park Avenue

WWT-14439
Sanderlane Drive

WWT-14918
217 Thorp St
(Bensemann)

WWT-16142
240 Thorp Street
(South End PS)

WWT-15256
13 Trewavas Street

WWT-16071
45 Trewavas Street

WWT-14687
Courtney Street East

WWT-15260
86 Trewavas Street
(York Park)

WWT-15253
Beachfront Sewer PS
99 Trewavas Street - behind

WWT-15262
Everett Street

0.2 0 0.2 0.4 0.6
Kilometers

Scale: 1:10,000

Motueka Wastewater Pump Stations & Reticulation

See detail below

WWT-15155
Murchison WWTP -
Oxidation Pond

WWT-15432
Waller Street

WWT-17825
Matakitaki West Bank Road
Landfill Leachate PS

WWT-15439
Hotham Street

FAIRFAX STREET
GREY STREET
WALLER STREET
BRUNNER STREET
MILTON STREET
HAMPDEN STREET
HOTHAM STREET
CROMWELL STREET
ESSEX STREET
MATAKITAKI WEST B

Detail
Riverview Camp

Legend
- Pump Station
- WW Surface Feature
- Rising Main
- Gravity Main
- WW UDA

N
W E
S

0.1 0 0.1 0.2 0.3
Kilometers

Scale: 1:5,000

Murchison Wastewater Pump Stations & Reticulation

WWT-15032
Petersen Road -
Tata Beach Sewer PS

WWT-16733
Tarakohe Sewer PS -
Abel Tasman Drive

WWT-15209
Abel Tasman Drive,
Ligar Bay

ABEL TASMAN DRIVE

NYHANE DRIVE

WWT-14342
Pohara Valley Road

POHARA VALLEY ROAD

WWT-16725
Selwyn Street -
Golf Club

SELWYN STREET

WWT-16711
Abel Tasman Drive -
Four Winds

WWT-15202
Abel Tasman Drive -
Pohara Camp

BAY VISTA DRIVE

RICHMOND ROAD

ABEL TASMAN DRIVE

WWT-13392
Boyle Street

Legend

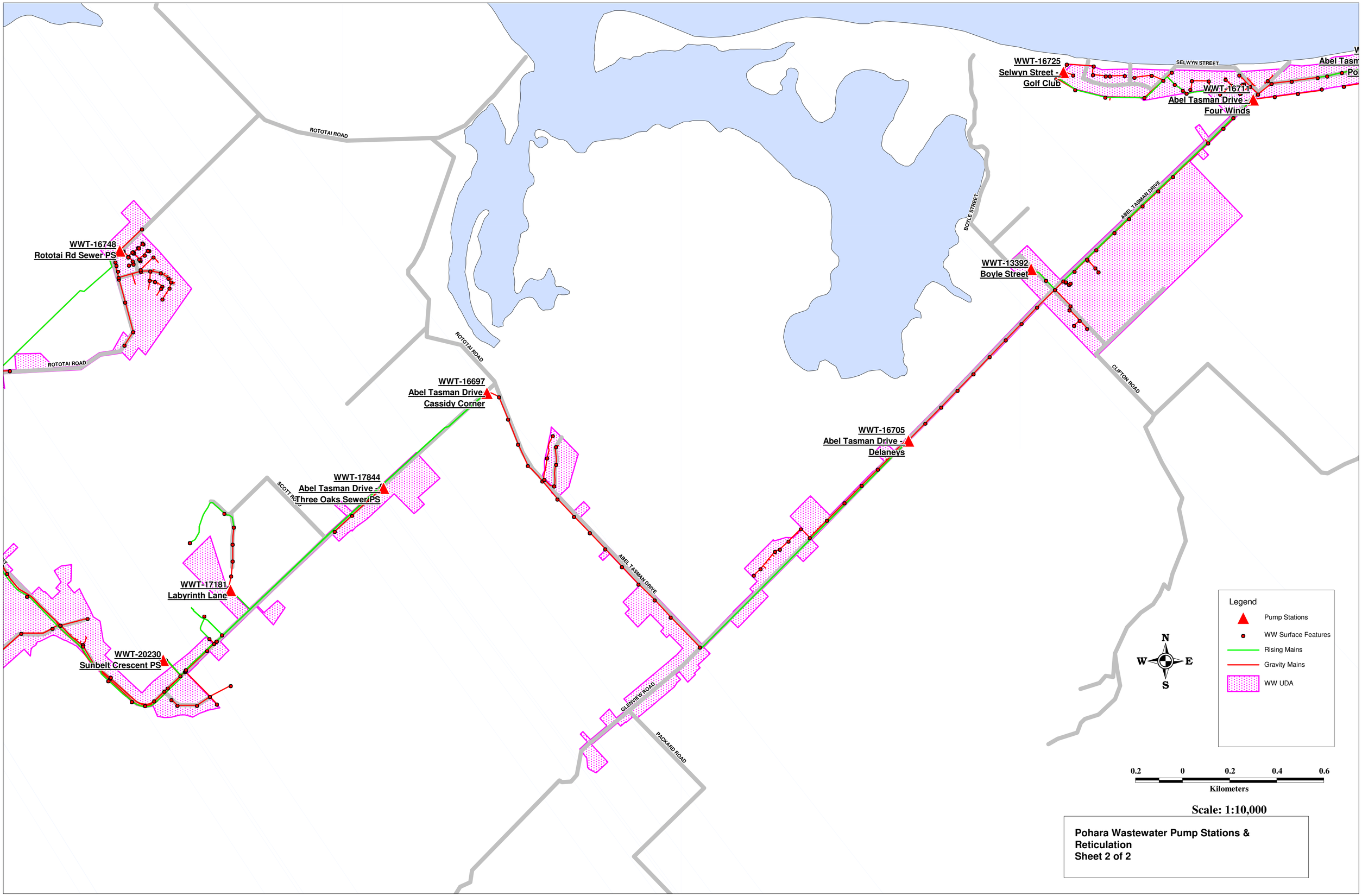
- Pump Stations
- WW Surface Features
- Rising Mains
- Gravity Mains
- WW UDA

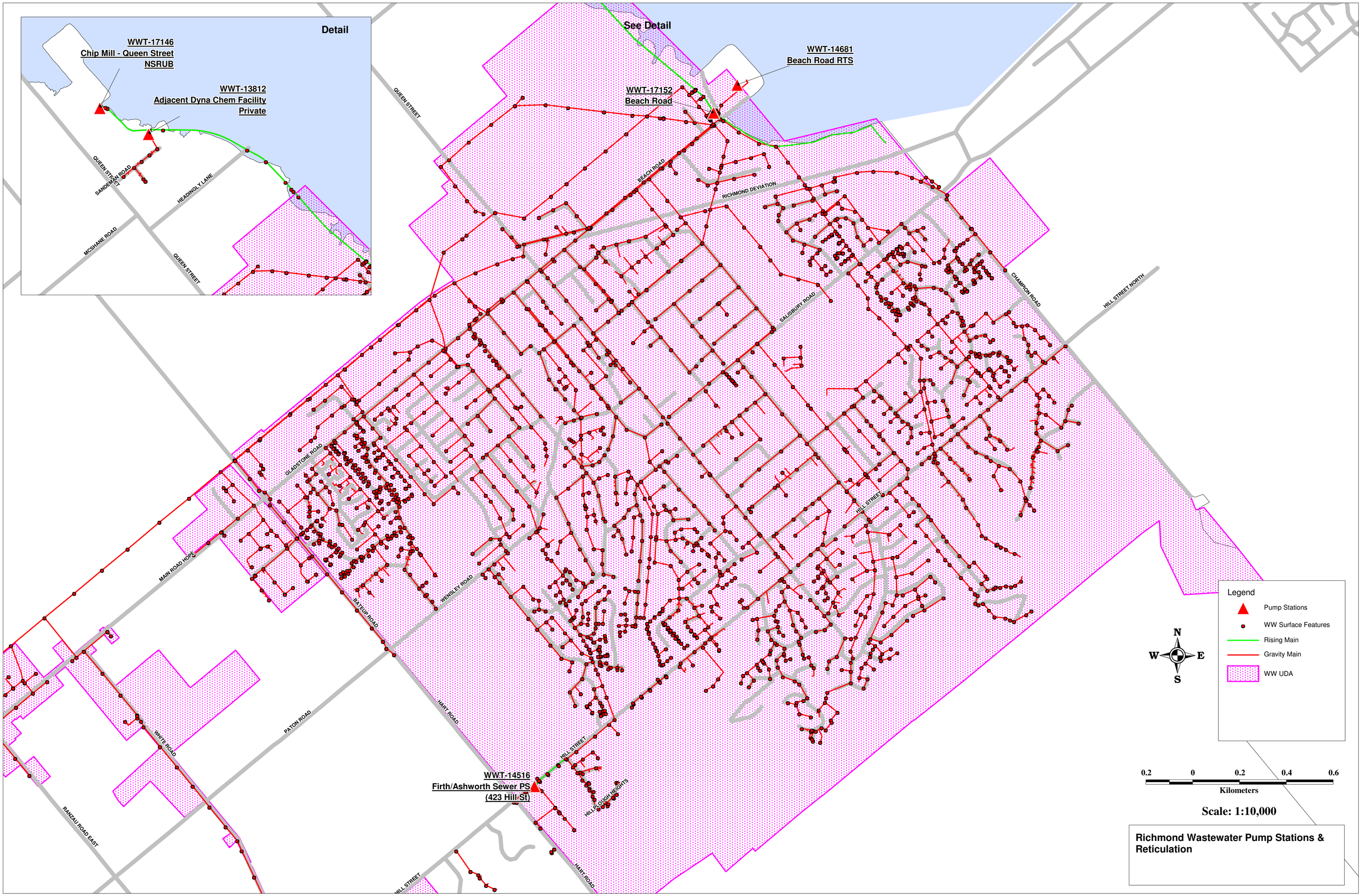
N
W E
S

0.2 0 0.2 0.4 0.6
Kilometers

Scale: 1:10,000

Pohara Wastewater Pump Stations & Reticulation
Sheet 1 of 2


WWT-16748
Rototai Rd Sewer PS
ROTOTAI ROAD
ROTOTAI ROAD
WWT-16697
Abel Tasman Drive -
Cassidy Corner
WWT-17844
Abel Tasman Drive -
Three Oaks Sewer PS
SCOTT RD
WWT-17181
Labyrinth Lane
WWT-20230
Sunbelt Crescent PS
WWT-16725
Selwyn Street -
Golf Club
SELWYN STREET
WWT-16711
Abel Tasman Drive -
Four Winds
BOYLE STREET
ABEL TASMAN DRIVE
WWT-13392
Boyle Street
CLIFTON ROAD
WWT-16705
Abel Tasman Drive -
Delaneys
ABEL TASMAN DRIVE
GLENVIEW ROAD
PACKARD ROAD
Legend
Pump Stations
WW Surface Features
Rising Mains
Gravity Mains
WW UDA
N
W
E
S
0.2 0 0.2 0.4 0.6
Kilometers
Scale: 1:10,000
Pohara Wastewater Pump Stations & Reticulation
Sheet 2 of 2


Detail
WWT-17146
Chip Mill - Queen Street
NSRUB
WWT-13812
Adjacent Dyna Chem Facility
Private
QUEEN STREET
SANDEMAN ST
HEADINGLY LANE
MCSHANE ROAD
QUEEN STREET
See Detail
WWT-14681
Beach Road RTS
WWT-17152
Beach Road
QUEEN STREET
BEACH ROAD
RICHMOND DEVIATION
SALISBURY ROAD
CHAMPION ROAD
HILL STREET NORTH
HILL STREET
GLADSTONE ROAD
MAIN ROAD HOPE
WAIMEA ROAD
WENSLEY ROAD
HART ROAD
PATON ROAD
WHITE ROAD
RANZAU ROAD EAST
WWT-14516
Firth/Ashworth Sewer PS
(423 Hill St)
HILLSBOROUGH HEIGHTS
HILL STREET
HART ROAD
Legend
Pump Stations
WW Surface Features
Rising Main
Gravity Main
WW UDA
N
W
E
S
0.2 0 0.2 0.4 0.6
Kilometers
Scale: 1:10,000
Richmond Wastewater Pump Stations & Reticulation

Legend

- Pump Stations
- WW Surface Features
- Rising Main
- Gravity Main
- WW UDA
- Abandoned Mains

N
W E
S

WWT-18109
Green Tree Road Sewer PS

WWT-15443
School Road - opp # 27

WWT-18266
Jenkins SH 60
457 Main Road Riwaka

WWT-14639
Riwaka Main Sewer PS

WWT-15484
73 Lodder Lane

WWT-14514
Motueka Oxidation Pond

MAIN ROAD RIWAKA

GREEN TREE ROAD

SCHOOL ROAD

WHARF ROAD

LODDER LANE

THORP STREET

0.2 0 0.2 0.4 0.6

Kilometers

Scale: 1:10,000

Riwaka Wastewater Pump Stations & Reticulation

Detail

WWT-17340
Teetotal Flats - St Arnaud Sewer Treatment

SH 63

See detail

SH 63

MAIN ROAD ST ARNAUD

WWT-17286
SH 63
(79 Main Road St Arnaud)

ROBERT STREET

KERR BAY ROAD

LAKE ROAD

VIEW ROAD

ATMORE STREET

WWT-17307
Kerr Bay Road

N
W E
S

Legend

- Pump Stations
- WW Surface Features
- Rising Mains
- Gravity Mains
- WW UDA

0.15 0 0.15 0.3 0.45
Kilometers

Scale: 1:7,500

St Arnaud Wastewater Pump Stations & Reticulation

WWT-17806
Tadmor Valley Road
Oxidation Pond

TADMOR VALLEY ROAD

MOTUEKA VALLEY HIGHWAY

TOTARA STREET

RATA AVENUE

KOWHAI STREET

MATAI CRESCENT

MAIN ROAD TAPAWERA

MATAI CRESCENT

N
W E
S

Legend

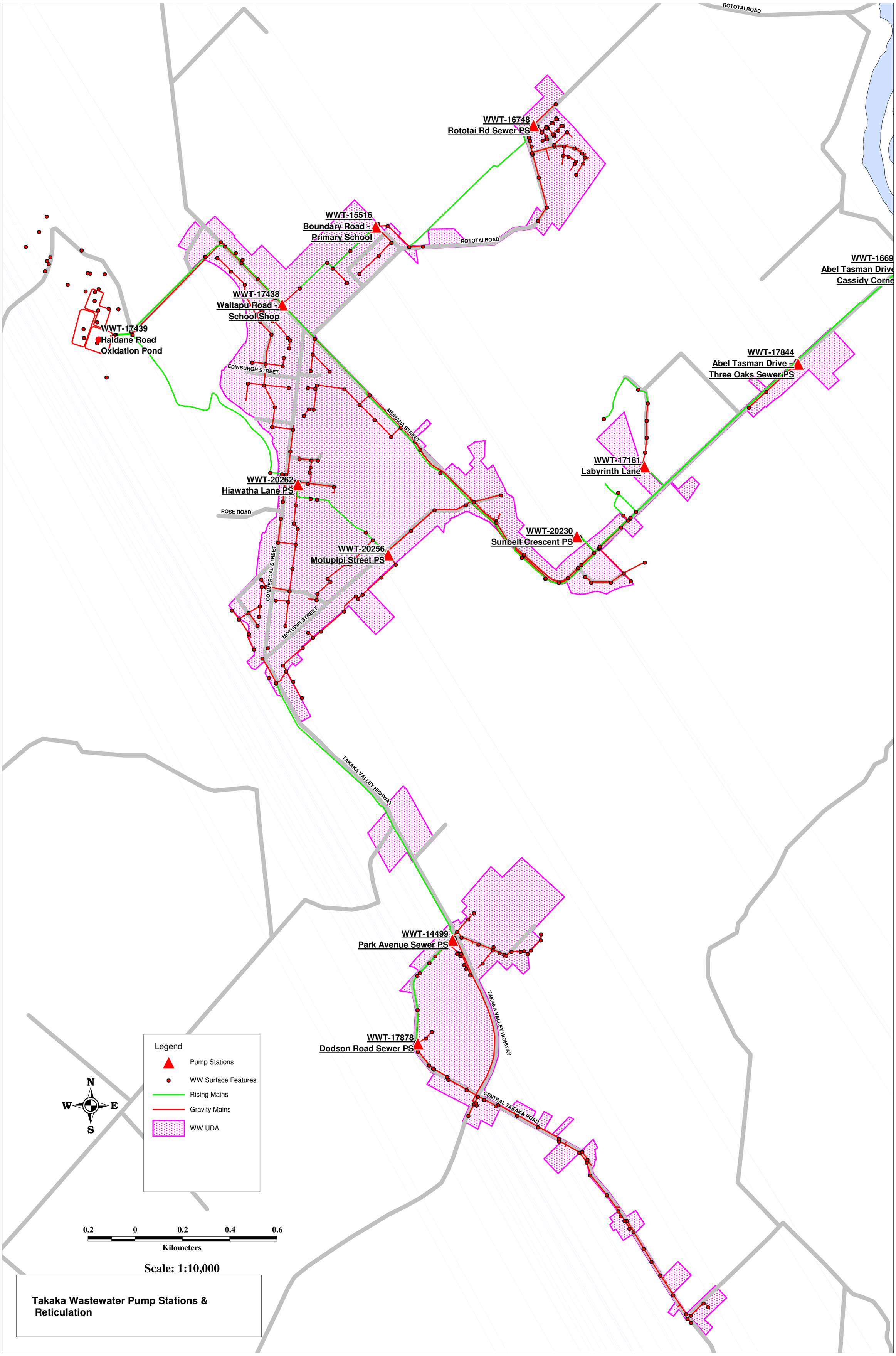
- WW Surface Features
- Gravity Mains
- WW UDA

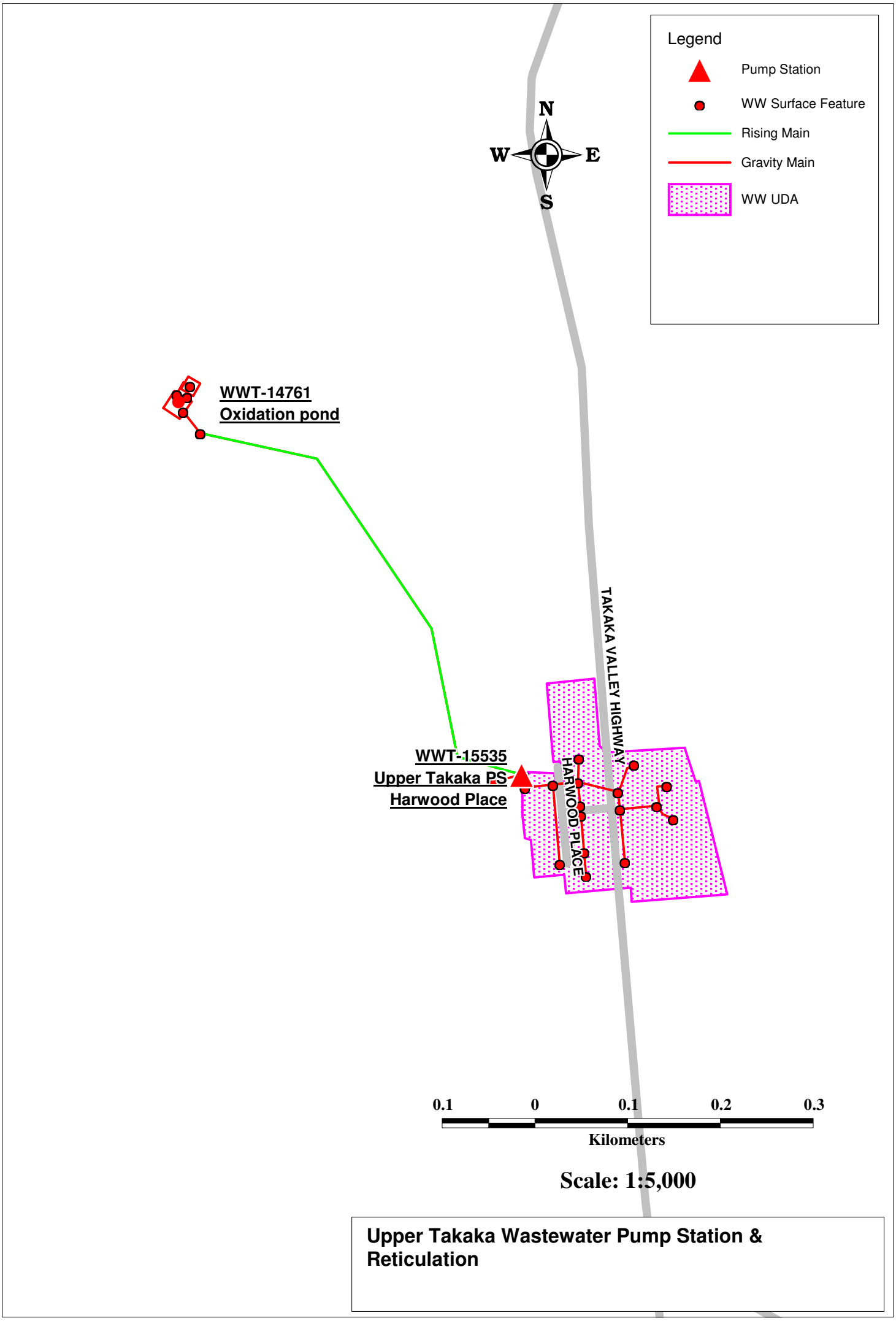
0.1 0 0.1 0.2 0.3

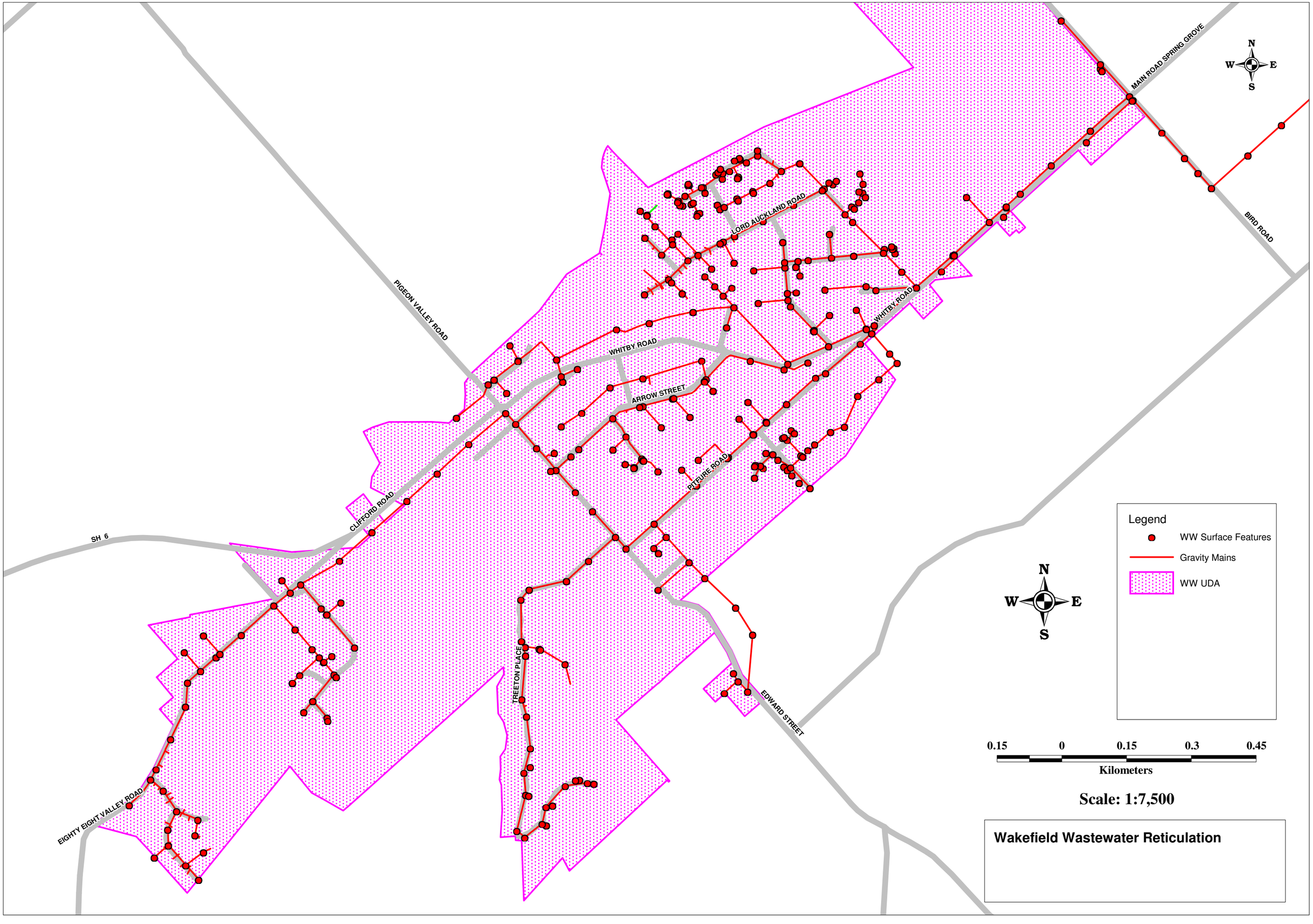
Kilometers

Scale: 1:5,000

Tapawera Wastewater Reticulation


ROTOTAI ROAD
WWT-16748
Rototai Rd Sewer PS
WWT-15516
Boundary Road -
Primary School
ROTOTAI ROAD
WWT-1669
Abel Tasman Drive
Cassidy Corne
WWT-17438
Waitapu Road -
School Shop
WWT-17439
Haldane Road
Oxidation Pond
EDINBURGH STREET
WWT-17844
Abel Tasman Drive -
Three Oaks Sewer PS
MEIHANA STREET
WWT-17181
Labyrinth Lane
WWT-20262
Hiawatha Lane PS
ROSE ROAD
WWT-20230
Sunbelt Crescent PS
WWT-20256
Motupipi Street PS
COMMERCIAL STREET
MOTUPIPI STREET
TAKAKA VALLEY HIGHWAY
WWT-14499
Park Avenue Sewer PS
TAKAKA VALLEY HIGHWAY
WWT-17878
Dodson Road Sewer PS
CENTRAL TAKAKA ROAD
Legend
Pump Stations
WW Surface Features
Rising Mains
Gravity Mains
WW UDA
N
W
E
S
0.2 0 0.2 0.4 0.6
Kilometers
Scale: 1:10,000
Takaka Wastewater Pump Stations & Reticulation


Legend
Pump Station
WW Surface Feature
Rising Main
Gravity Main
WW UDA
N
W
E
S
WWT-14761
Oxidation pond
WWT-15535
Upper Takaka PS
Harwood Place
TAKAKA VALLEY HIGHWAY
HARWOOD PLACE
0.1
0
0.1
0.2
0.3
Kilometers
Scale: 1:5,000
Upper Takaka Wastewater Pump Station & Reticulation


MAIN ROAD SPRING GROVE
BIRD ROAD
LORD AUCKLAND ROAD
WHITBY ROAD
PIGEON VALLEY ROAD
WHITBY ROAD
ARROW STREET
PITFURE ROAD
CLIFFORD ROAD
SH 6
TREETON PLACE
EDWARD STREET
EIGHTY EIGHT VALLEY ROAD
N
W
E
S
Legend
WW Surface Features
Gravity Mains
WW UDA
0.15
0
0.15
0.3
0.45
Kilometers
Scale: 1:7,500
Wakefield Wastewater Reticulation

Tasman District Council

APPENDIX Z: AMP STATUS AND DEVELOPMENT PROCESS - WASTEWATER

Z.1 AMP Status

Version	Status	Document Approval	Signature	Date
1	Working Draft			
2	Draft for Council Officer Review	Name: Richard Lester Authority: Project Manager		31/10/08
3	Draft for Council Review	Name: Jeff Cuthbertson Authority: Utilities Asset Manager		3/2/09
4	Draft for Public Consultation	Name: Peter Thomson Authority: Engineering Manager		3/2/09
5	Final Plan Adopted by Council Council Resolution	Name: Richard Kempthorne Authority: Mayor Reference: CN09/10/15		7/10/09

Z.2 AMP Development Process

Project Sponsor:	Peter Thomson (Engineering Manager)
Asset Manager:	Jeff Cuthbertson (Utilities)
Project Manager:	Richard Lester
AMP Author:	Juliet Westbury
Project Team:	Jeff Cuthbertson, Kim Arnold, Denis O'Brien, Sebastian Head, Avik Halder Paul Barratt, Gary Beaumont – Operations and Maintenance Joe Dean, Steve Webster – Operations and Maintenance

Z.3 Quality Plan

This quality plan comprises 3 parts:

1. Quality Requirements and Issues – identification of the quality standards required and the quality issues that might arise.
2. Quality Assurance – the planned approach to ensure quality requirements are pro-actively met – i.e. get it right first time
3. Quality Control – the monitoring of the project implementation to ensure quality outcomes are met.

Z.4 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	TDC 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 internet.
4	AMP Text Accuracy and Currentness	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.
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 financial model, the implications of the decisions must be reflected in the financial information and other relevant places in the AMP – e.g. Levels of service and performance measures, improvement plans etc.
11	Improvement Plan Adequate	Improvements identified, costed, planned and financially provided for in financial forecasts

Z.5 Quality Assurance

	Issues and Requirements	Quality Assurance Approach	Responsible Person
1	Fitness For Purpose	Conduct various reviews of critical elements up front and plan to up upgrade the plans to specific requirements: Scoping of AMP Upgrade Project Review Of Levels Of Service Review of Document Upgrade Needs	Richard Lester
		Conduct a Peer Review	Peter Thomson
2 3 4	AMP Document Consistency AMP Document Format AMP readability	Review documents in advance and prepare instructions to authors on how to upgrade	Becky Marsay
		Central Review Of AMP document deliverables	Becky Marsay
5	AMP Text Accuracy and Currentness	Authors to review each AMP in detail	AMP authors
6	Completeness of Required Upgrades/Expenditure elements	AMP Authors to workshop with relevant project team members to ensure all projects/cost elements covered	AMP authors
		Central list of issues (called a "Parking Lot") that need to be considered in each AMP	Becky Marsay
7	Accuracy of Cost Estimates	Independent Review of all cost estimates	AMP authors
8	Correctness Of Spreadsheet Templates	Independent Review of all templates	Richard Lester
9	Assumptions and Uncertainties and Risk Assessments	Independent Review of all cost estimates	AMP authors
10	Changes made after submission to Financial Model	Protocol prepared to ensure Quickplace is used and all parties follow instructions on how changes are made	Becky Marsay
		Ensure there is a place in the AMP documents to record any changes made and the implications of changes	Richard Lester
		AMP Authors to manage a change log for changes after submission	AMP Authors
11	Improvement Plan Adequate	Prepare template in advance to ensure consistent approach	Richard Lester
		Central Review Of Improvement Plans	Richard Lester

Z.6 Quality Control

Quality Control Checks and Reviews are scheduled on the attached Tables. These shall be progressively completed as the AMP is developed and incorporated in the final AMP Plan in Appendix Z.

Check or Review	Person Responsible	Authority	Signature	Date
Scope Of AMP Upgrade Project Complete	Peter Thomson	Engineering Manager		9/12/08
Levels Of Service prepared to Instructions	Richard Lester	Project Manager		31/10/08
Levels Of Service Asset Manager Acceptance	Jeff Cuthbertson	Asset Manager		9/12/08
AMP Document prepared to instructions	Becky Marsay	Assistant PM		9/12/08
AMP Text Accuracy and Currentness	Juliet Westbury	AMP Author		31.10.08
Capital Upgrade List Complete	Denis O'Brien	Programme Manager		31.10.08
Capital Upgrade List Complete - Asset Manager Acceptance	Jeff Cuthbertson	Asset Manager		9/12/08.
All Issues on "Parking Lot" addressed	Juliet Westbury	AMP Author		31.10.08
Capex Expenditure Spreadsheet Template Reviewed	Richard Lester	Project Manager		31/10/08
Project Estimate Spreadsheet Template Reviewed	Denis O'Brien	Programme Manager		31.10.08.
All Capex Estimates Reviewed and including assessment of Programme, Project Drivers, Levels of Accuracy and assumptions/uncertainty	Juliet Westbury	AMP Author		31.10.08
Opex Costs Spreadsheet Arithmetic Review	Juliet Westbury	AMP Author		31.10.08
Opex Cost forecast – fitness for purpose	Jeff Cuthbertson	Asset Manager		9/12/08
Improvement Plan Prepared to instructions	Richard Lester	Project Manager		09/12/08
Improvement Plan Asset Manager Acceptance	Jeff Cuthbertson	Asset Manager		9/12/08
Capital Forecast Accepted for Input to NCS	Jeff Cuthbertson	Asset Manager		9/12/08
Change log complete and changes appropriately dealt with – after Council review	Juliet Westbury	AMP Author		2/2/09
Change log complete and changes appropriately dealt with – after Public consultation	Jeff Cuthbertson	Asset Manager		7/10/09
Peer Review Completed	Peter Thomson	Engineering Manager		3/2/09