Tasman District Council

Water Supply
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 Water Activity Management Plan: What is it and Why is it Produced?

The Water Supply Activity is one of the eight engineering activities addressed in the Tasman District Council Long Term Council Community Plan (LTCCP). This Water Supply 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 Water Supply systems.

Under Council's significance policy, water supply 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.

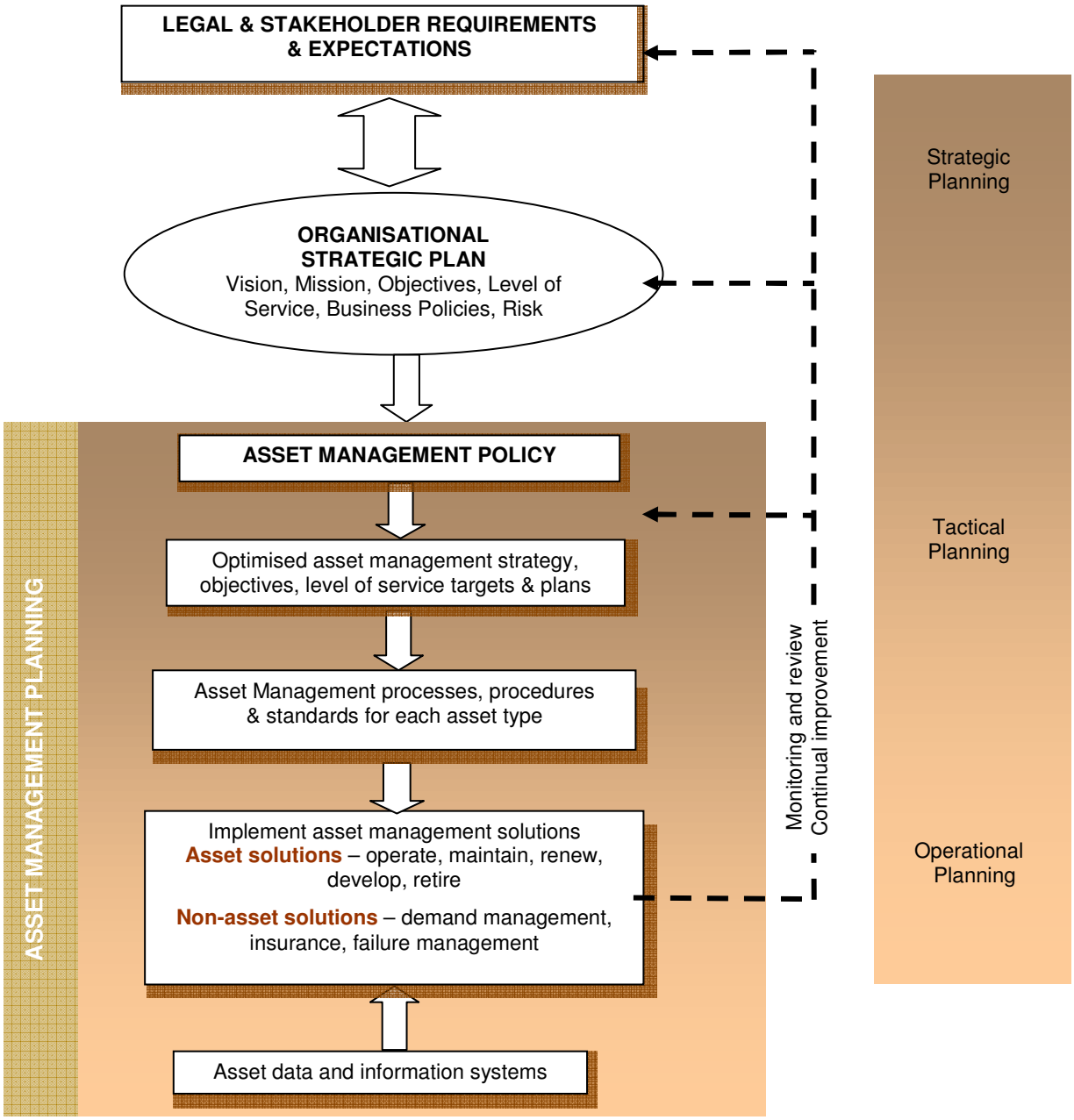
A programme of asset management improvement (see Appendix V) is planned to improve the quality of decision making (e.g. predictive modelling, risk management, optimised renewal decision making) and improve the knowledge of Council's assets and customer expectations. These future enhancements will enable Council to optimise life cycle asset management 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, Australia/New Zealand Edition, version 3.0, 2006.

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

Figure 1-1: The Total Asset Management Process (Source IIMM)



1.2 Rationale for Council's Involvement in the Water Supply Activity

The provision of water supply 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 water supply services in the District.

Territorial authorities have numerous responsibilities relating to the supply of water. One such responsibility is the duty under the Health Act 1956 to improve, promote, and protect public health within the districts. This implies that, in the case of the provision of potable water, councils have the obligation to identify where such a service is required, and to either provide it directly themselves, or to maintain an overview of the supply if it is provided by others.

This plan outlines and summarises the Council's strategic and management long-term approach for the provision and maintenance of potable water[1] supplies to properties throughout the district (excluding those that service single premises that have their own rainwater tanks or bores) - whether they be provided by public or private means.

1.3 Justification of Asset Ownership

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

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

(2) Public Benefit - the service is assessed as providing 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 public health 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 LGA 2002 contains severe restrictions on Council's ownership opportunities, including:

- Water supply assets cannot be used as security
- Ownership cannot be divested (except to another local government organisation)
- Only water supply services serving 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 LGA 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 Water Supply Activity

This activity comprises the provision of potable water to properties within 16 existing water supply areas in the Tasman District. The Council's network is extensive and growing rapidly. At present the network comprises approximately 659km of pipeline, 34 pumping stations, 11,387 domestic connections, and 43 reservoirs and break pressure tanks with a capacity of approximately 18,330 cubic metres of water.

Tasman District Council owns, operates and maintains 10 Urban Water Supply Schemes, 3 Rural Supply Schemes, and 3 Community[2] Schemes. This AMP covers the water supply assets owned, operated and maintained by Council within the following communities:

[1] 'Potable water' is water that is suitable for use by humans as drinking water.

[2] Community Schemes are schemes that are on-demand and metered, but which are voluntary to join and not included in the Urban Water Supply Areas. (Note Hamama scheme is not metered except for a bulk meter downstream from source.)

Table 1-1: Water Supply Schemes

Urban Schemes (Metered, unrestricted):	Richmond Waimea Industrial/NCC Mapua-Ruby Bay Wakefield Brightwater/Hope	Tapawera Murchison Upper Takaka Kaiteriteri / Riwaka Collingwood
Rural Schemes (Restricted):	88 Valley Dovedale	Redwood Valley
Community Schemes:	Pohara Valley Hamama Road (Non-Potable)	Motueka

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

1.5 Key Issues and Strategic Approach

The key issues for the water supply activity over the coming years are:

- All water supply schemes must achieve DWSNZ:2005 compliance within a specified timeframe. Public Health Risk Management Plans (PHRMPs) are being produced for each water supply to determine the upgrades required to achieve compliance. This will then lead to treatment upgrades at the majority of all water treatment plants and also work to improve the well head security.

- In times of severe drought, the water supplies serving Richmond are at risk from saline intrusion. In addition, the bores have limited capability to meet the long term growth needs. To ensure Richmond is able to meet the current and future water demands, a supplementary source needs to be identified. This and water storage (for example the construction of the Lee Valley Dam) will ensure the demands for water are met.

- Significant growth is predicted for Richmond, particularly in the South and East. In order to serve these developments, new infrastructure is required along with rezoning of the current system in order to maximise the use of the Waimea supply.

- Construction of the Coastal Pipeline and Coastal Tasman Area (CTA) extend beyond the current 20 year forecast. Both these major schemes are required to allow growth and development in the coastal Tasman Area and Mapua.

- The Water and Sanitary Services Assessment (WSSA) identified several communities which would benefit from the construction of a new town supply. These include Motueka, Takaka, Pohara and Marahau. Motueka new town supply is planned to coincide with the construction of the Coastal Pipeline which also includes a new source and treatment plant. It is crucial that the Motueka water supply receives a satisfactory Government subsidy, before Council proceeds with construction of the project. Takaka, Pohara and Marahau are programmed outside the first ten years of the financial forecast and will require community consultation before they proceed. Takaka however, may be receiving a reticulated fire fighting system in the Central Business District (CBD) in 2009/10 to replace the current failing fire well system.

- The Wakefield water supply is under severe strain in time of drought and supplementary measures are often required to meet demand. Long term growth projections predict a significant increase in demand. It is not feasible to meet this demand from the current source and locating a new bore field is key to allowing

future growth. Once a new source has been located, construction of a water treatment plant and additional reticulation will be required.

- Maintaining the operation of the current system to ensure efficient delivery of water to the communities is always going to be an issue due to ageing assets and infrastructure. Although there are no wide spread major problems with the networks, expenditure is planned to ensure assets are replaced as they come to the end of their life.

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 water supply activity with agreed expectations of customers and their willingness to pay for that level of service. The Levels of Service provide the basis for the life cycle management strategies and works programmes identified in the AMP.

The Levels of Service for Water Supply 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 Water Supply Activities Contribute to the Community Outcomes?

A full summary of the Community Outcomes is included in Appendix R. Table 2-1 describes how the water supply activities contribute to the Community Outcomes.

Table 2-1: How Water Supply Activities Contribute to Community Outcomes

Community Outcomes	How Our Water Supply Activity Contributes to the Community Outcome
Our unique and special natural environment is bountiful, healthy, clean and protected	All water in the Council owned schemes is taken from the environment. This activity can be managed so the impact of the water take does not prove detrimental to the surrounding environment.
Our built urban and rural environments are functional, pleasant, safe and sustainably managed.	The water supply activity is a service to the community providing water that is safe to drink and is efficiently delivered to meet customer needs. It also provides a means for fire fighting consistent with the national fire fighting standards.
Our transport and essential services are sufficient, efficient and sustainably managed.	The water supply activity is considered an essential service that should be provided to all properties within water supply network areas in sufficient capacity and pressure. 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 that 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 – Water Supply

Community Outcomes	Levels Of Service (We Provide)	We will know we are meeting the Level of Service if…..
Our unique and special natural environment is bountiful, healthy, clean and protected	1. Our water takes are sustainable	All water takes have Resource Consents with appropriate conditions which we consistently meet
Our built urban and rural environments are functional, pleasant, safe and sustainably managed.	2. Our water is safe and pleasant to drink	No advisory notices are issued to boil water.
		Our water supplies have a Public Health Risk Management Plan (PHRMP) in place.
		Grading of water supplies meets DWSNZ. For Richmond that means a grading of Bb, all other communities will aim for Cc.
		Testing of water supplies confirms that water meets DWSNZ.
	3. Our water is efficiently delivered to meet customer needs.	Water pressure to all urban and rural supply customers meets minimum pressure requirements as stipulated in the TDC Engineering Standards
		Acceptable water losses are identified for each water supply and a water loss reduction programme is in place to achieve those targets.
	4. Our water supply systems provide fire protection to a level that is consistent with the national standard.	Urban water supply systems are able to meet W3 standard Code of Practice for Fire Fighting Water Supplies
Our transport and essential services are sufficient, efficient and sustainably managed.	5. Our water supply systems serve those that should be serviced	Our urban water supply systems are able to service new water supply connections from properties inside Council Water Supply Areas.
		Council's Water and Sanitary Service Assessments (WSSA) identifies communities which could benefit from a new Council owned water supply scheme and makes a decision on whether to plan for a new scheme to be developed.
	6. Our water supply activities are managed at a level that the community is satisfied with	Our surveys show that 80% of customers are satisfied with the water supply service they receive.
	7. 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 specified in our operations and maintenance contracts.
		We have a facility for receiving and handling emergency calls after hours.
		We have an operative risk management framework in place and have planned mitigation measures.

Community Outcomes	Levels Of Service (We Provide)	We will know we are meeting the Level of Service if…..
		We have the following water storage in the water supply systems: Urban: - one day at average annual demand Rural: - six hours at average annual demand
		We have constructed and maintain hydraulic models of our water supply systems to ensure we have the best knowledge and understanding of each system.

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. 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?

The Levels of Service that Council is currently achieving is shown in Appendix R, Table R-2. This table also includes the Levels Of Service that Council plans to achieve 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 have included specific initiatives to meet the current or intended future Levels Of Service.

Council is making a capital works investment of $124.5 million over the next 20 year period to upgrade existing water supply assets and improve Levels Of Service. This includes the following specific schemes:

- Fire fighting capability in Takaka CBD
- New source and treatment for the Dovedale scheme to remove the permanent Boil Water Notice
- A programme of water treatment upgrades in line with the recommendations outlined in the PHRMPs to ensure compliance with DWSNZ:2005
- Increasing the capacity of the reticulation in the Richmond region to allow for the predicted future growth
- New town water supplies to be constructed at Motueka, Pohara, Takaka & Marahau, dependent on the outcome of community consultation

In addition to the capital works, Council has allocated a budget of $86 million over the 20 year period for the Operation and Maintenance of its current and future water supply assets. This allocation includes for professional services for investigative work and studies such as:

- Production of a PHRMP for each of the Council owned water supplies
- Implementation of a leak detection programme
- Hydraulic modelling of several urban water supply systems (construction of new models and maintenance of existing models).
- Implementation of an integrated risk management plan.

3 THE EXISTING SITUATION DESCRIBED

3.1 Public Water Supply Systems

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

The Council also owns or has some responsibility for:

- A series of fire wells in Takaka and Motueka that comprises groundwater wells with standpipes to enable fire trucks to pump from the ground water.

- A water supply system in Torrent Bay that was constructed and installed by the community and which the community operate and maintain. This system is not included in this Activity Management Plan.

3.2 Private Water Supply Systems

There are no private supplies included in this AMP. Private supply assessments were carried out in 2004/2005. The Water and Sanitary Services Assessment (WSSA) documents (refer Appendix C), Volumes 1 and 2 underwent the public submission process and were approved by Council in June 2005. The assessments will be updated in 2009/10.

3.3 Asset Condition

The Asset Register was reviewed in July 2007 with water 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 Contracts in the form of pump station records and water quality compliance testing. In addition, treatment plant and pump station inspections are carried out in accordance with maintenance contract requirements.

Table 3-1: Townships with Public Water Supply Systems

Scheme	Type	Source	Treatment	Pipe Length (km)	No. of Reservoirs	No. of Pump Stations	Connections Supplied	No. of fire hydrants
Richmond	Urban	5 bores	None	97.5	6	6	5086 metered 82 restrictor	517
Waimea	Urban	5 bores	Chlorination/lime dosing	15.6	2	2	156 metered 34 restrictor	34
Mapua/Ruby Bay	Urban	from Waimea	Supplied from Waimea	55.3	4	4	768 metered 226 restrictor	86
Wakefield	Urban	1 infiltration gallery, 1 bore	Aeration/chlorination	29.8	1	2	718 metered 51 restrictor	84
Brightwater	Urban	3 bores	Chlorination	41	2	2	971 metered 226 restrictor	116
Tapawera	Urban	2 bores	Chlorination/lime dosing	7.4	1	1	165 metered 1 restrictor	25
Murchison	Urban	1 well, 1 bore	Aeration/chlorination	13.9	1	1	300 metered 2 restrictor	40
Upper Takaka	Urban	Spring	UV disinfection+filtration	3.4	2	0	19 metered	4
Kaiteriteri	Urban	1 bore	None	14.7	2	2	572 metered	54
Collingwood	Urban	1 bore	Aeration/lime saturation/chlorination	10.4	1	1	214 metered 1 restrictor	23
88 Valley	Rural	Stream intake	Chlorination	59.7	1	0	180 restrictor	0
Dovedale	Rural	Stream intake	Chlorination	163.1	12 (Res & BP tanks)	6	293 restrictor	4
Redwoods Valley	Rural	3 wells	Aeration/chlorination	87.6	6 (Res & BP tank)	4	316 restrictor	0
Motueka	Community	2 bores	None	39.5	0	2	955 metered	116
Pohara Valley	Community	Stream intake	Sand filter/chlorination	16.3	1	1	51 metered	42
Hamama	Community	Stream intake	None	3.6	1	0	25 unmetered	1

Note: Figures taken from Asset Valuation as at June 2007 and Water Billing Report June 2008

3.4 Asset Management Practices

Council has access to staff and consultants who have had a long association with the assets being managed. The entire history of virtually all the assets is typically known. However, as a source of information such knowledge and experience has its limitations. A number of information systems are planned or being 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 Ltd 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 has been chosen for Council's corporate Asset Management System. The implementation of this system is ongoing.

4 OPERATIONS AND MAINTENANCE

4.1 Council 'Ownership' of Operations and Maintenance

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

The Council has implemented a performance based contract as at 1 July 2007. The 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 investment from maintenance into improvement.

4.2 Control and Management of Operations and Maintenance

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

Day to day operation, inspection and maintenance of the water supply systems is carried out by Downer EDI Works Ltd. TDC Contract 688 which outlines maintenance 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 includes provision for both proactive and reactive water supply activities. The proactive element covers the bulk of maintenance works carried out with the reactive element covering the one-off repairs and improvements. There is additional facility for Council to instruct and remunerate the Contractor 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 in Appendix E.

4.4 Maintenance and Operating Issues

Generally, the water supply systems are kept well maintained and operate smoothly. However, there are maintenance and operating issues that the Council recognise 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 for Water Supply in the Tasman District

Issue	Description	Envisaged Solution
Asset Location	Access to accurate plans of assets can be difficult to obtain.	Continuing development of 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	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 or clarify the relationship between assets.	New assets are in general well documented, over time O&M manuals on existing or older assets need to be produced and updated System Operating Plans need to be developed further to incorporate additional operational data.
Telemetry Equipment	A single supplier has provided virtually all telemetry equipment in the district, including the software, tying Council to that supplier. Hence potentially exposing it to business risks.	Council is currently undergoing an upgrade which incorporates industry standard equipment and communication protocols that enables more generic equipment to be utilised. This also incorporates a move to digital based radio network which provides more efficient data transfer and aligns the system with the capabilities of the Councils existing internet facilities.
Operation of Systems During Droughts	Systems are under most pressure at times of drought. Most systems still function well, but some require a high level of attention. This includes Redwoods, Dovedale, Mapua schemes and the Richmond Rural Extension.	Increase storage and capacity, model schemes to gain a better understanding of demand and system capacity, and increase facilities to improve fault diagnosis (flow measurement, telemetered alarms etc.)
Water Quality During “freshes”	The schemes with surface water intakes suffer from poor quality water during wet weather. This affects Pohara, Upper Takaka, Dovedale, 88 Valley and Hamama schemes.	Treatment upgrades are planned at the majority of treatment plants to bring them in line with DWSNZ 2005. Alternative sources are also a viable option in some cases..
Systems Without Backup	There are 8 pump stations with only one pump serving small areas.	Provide backup pump, modify pump station to accommodate 2nd pump or take pump station out of service.
Mapua Supply Security	Mapua water supply suffers annually from supply interruptions and/or restrictions due to trunk main failures, demand exceeding supply capacity, and lack of storage.	The Coastal pipeline will reduce the problems. However, until this is implemented, a solution would be to add storage and increase the main capacity.
Leak Locations in Rural Water Schemes	The rural water schemes cover large areas, and leaks are very difficult and expensive to locate.	Encourage and educate scheme users to be pro-active in finding and reporting leaks. Continue to model systems, install flow meters and undertake leak detection programmes.
Tampering with Restrictors	In rural water supply schemes restrictors are interfered with to improve supply rates into tanks. This causes shortages at scheme storage points.	Continue restrictor checks on biannual basis and impose fines for transgressors. Keep installing tamper warnings and educate the users of the issues and impacts of their behaviour.
Access to Water Mains	Many mains, especially in the rural schemes, are located in private property. Often access to locate and repair leaks is difficult to obtain, especially when farmers lock gates or deny access or sub-divide and fence off access tracks.	Consult and negotiate better access rights with landowners. Continue to educate landowners of the impact of restricting access to scheme reticulation.

4.5 Business Continuity / Emergency Management

The Council has developed various plans that outline the procedures that are to be followed to enable the water supply 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 demands for infrastructure services will be influenced by:

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

The impact of these influencing factors on water demand and the effect on the current asset infrastructure is discussed below.

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 water supply assets. More people generally equates to higher water demand.

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

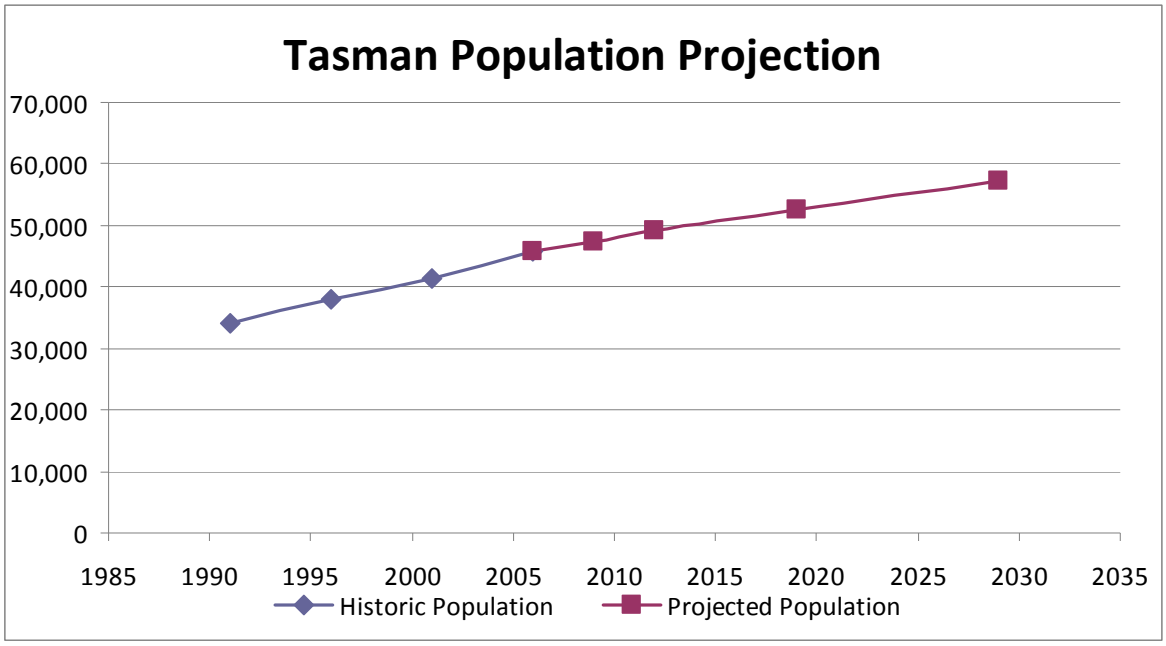
Year	Census Population For Tasman District	% Increase since last census	Average Compound Growth Rate per Annum	New Zealand Average Growth Rate per Annum
1991	34,026			
1996	37,971	11.6%	2.22%	1.41%
2001	41,352	8.9%	1.72%	0.65%
2006	45,800	10.8%	2.06%	1.51%

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

5.2.2 Effect of Population Growth on Water Supply

The population growth anticipated in the district will have a significant impact on the water supply assets.

- Water Source: Some systems are experiencing demand higher than the permitted water take, particularly during the summer months when water restrictions may be in place. The implications are that new connections are not being allowed to the system. New sources need to be located and developed and levels of water loss need to be reduced.
- Water Reticulation: Certain areas of reticulation are already at capacity meaning that unless these are upsized, no new growth can be serviced.

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

- New reticulation and storage is required to service expected growth to the south and to the east of Richmond. Rezoning of Richmond to maximise the use of the Waimea supply
- A supplementary Richmond source also needs to be developed to meet demand.
- New source to be located to serve Wakefield
- Reservoirs and mains rezoning for Wakefield and 88 Valley.
- Rural extension from Brightwater to serve Teapot Valley.
- Construction of the CTA reticulation and Coastal Pipeline to allow growth and development in the Coastal Tasman and Mapua regions.

5.2.3 New or Expanded Schemes

Projections for future growth in demand for water supply services must take into account not only new developments but also existing residents from unserviced areas connecting to Council services.

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

- Motueka – Whilst groundwater is readily available for private use in Motueka, the shallowness of the aquifers and the density of the population make the continuation of this practice a potential public health risk. Council is in the process of obtaining a resource consent to abstract water from a secure, deep aquifer. Sufficient water will be readily available to allow full reticulation of the town. Whether the proposal to provide Motueka with a fully reticulated supply proceeds will be dependent on receipt of a satisfactory Government subsidy to help pay some of the cost of the project.
- The Coastal Pipeline & CTA – The proposed coastal pipeline scheme represents a significant opportunity for development of the rural expansion zones between Motueka and Mapua. The increase in demand for public supplies from existing residents in unserviced areas, together with the demand for new rural 'lifestyle' properties raises the potential for expansion. Current private surface, rainwater or shallow well sources may not meet future quality standards and public expectations. The Coastal pipeline would provide part of the infrastructure to attract new investment and development to this area. Construction of these schemes will commence within the 10 year timeframe, but several stages of the work are scheduled beyond the 20 year horizon.
- Takaka - Like Motueka, Takaka residents predominantly get their water from shallow private bores. A system of fire wells provides fire fighting capabilities, however these are not up to standard. The WSSA identified Takaka as a Priority 2 community which would benefit from the construction of a new town drinking water supply. A fully reticulated town drinking water supply has been scheduled for construction in 2026. A scheme to address the poor fire fighting capability in the CBD will commence in 2009/10. However, there is an opportunity for the council to gain a Government subsidy, which would mean a fully reticulated water supply may be considered affordable by the Council and community. Therefore, Council will consult with the Golden Bay Ward on whether to provide a fully reticulated water supply in 2010/2011, or whether to proceed with the fire fighting water supply, as programmed.
- Pohara – There is a lot of unmet demand all along the Pohara to Tata Beach coast that cannot be supplied from the limited existing Pohara scheme. The nearest water source of acceptable quality and yield is the Takaka aquifers. The WSSA report identified Pohara as a Priority 2 community which would benefit from a new town drinking water supply. The new Pohara scheme would include supply to all coastal communities to Tata Beach and is currently scheduled to commence in 2026/27 following extensive community consultation.
- Marahau – This community has a limited supply of potable water. Rainwater tanks are currently the main water source. With the combined pressures of growth potential and tourism, Council considers that Marahau would benefit from a public water supply scheme. A scheme to provide a new town drinking water supply has been scheduled within the next 20 years but will require extensive community consultation.
- Wakefield – In order to meet growing demand in Wakefield, a new water source must be established and treated, to ensure sufficient water is available. The current source is not adequate to meet projected growth.

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 below.

Table 5-2: Trends in Community Expectations

Trends in community Expectations	Implications for Water Supplies	How Council Plans to Address the Issues
Rural water supply customers, particularly the farming community, are resistant to expenditure required to meet drinking water standards, especially where water is also for stock use.	Conflict with scheme users and management committees when rates rise to fund improvements.	Continue to inform management committees of current legislation and make clear that Council cannot decide not to meet their legal obligations.
'Lifestyle' property owners in rural water supply areas have high expectations of service level standards, and feel that rural supplies should deliver to the same standards as urban systems.	These expectations have resulted in a growing number of complaints, and an increase in costs associated with dealing with the complaints. Additionally, there are instances of unwise use and wastage of water in rural schemes because of misunderstandings of service level and capacity.	Council will issue a rural water supply policy statement to new customers, and continue to educate rural scheme users about wise water user practices and the limitations of the rural service.
Urban customers' expectations of achievable water quality standards are increasing.	Resulting in higher number of complaints. Need to improve treatment.	Treatment upgrades or new sources are planned for the majority of schemes to meet DWSNZ:2005
In general, the public and communities of Tasman district are becoming more environmentally aware.	Council will need to be seen as a leader in sustainable practices and water conservation.	Continue to identify water conservation opportunities and reduce water leakage across the supply network.
Customers and communities are becoming less tolerant of water restrictions, rationing, and interruptions in supply.	Upgrades needed to defer or reduce the need for restrictions and rationing. Also need to take steps to improve assets in order to minimise the number of shutdowns and interruptions to supply.	Increase storage capacities, increase systems inter-connectedness and flexibility to transfer water to where it is needed, and increase the robustness of the system in general.

5.4 Industrial Demand

There are very few significant industrial users within the Tasman District supplied from Council sources. The exceptions are Nelson Pine Industries Ltd, ENZA and the Alliance Group Ltd meat processing works within Stoke. All of these industrial users are supplied from the Waimea system.

Industry sources have indicated that water demand for the existing large industrial users will decrease with water saving initiatives. For the purposes of this 20 year plan it is assumed that the consumption will remain at approximately 1,200,000m^3/year. Council has contracts with the large industrial users in the region. These contracts are up for review within the next three years.

5.5 Supply Agreement Changes

Almost all water supply schemes in Tasman have their own water sources that are controlled by resource consents. The exception is a supply agreement between Tasman District Council and Nelson City Council. This agreement stems from the joint funding of the construction of the Roding Dam and guarantees Tasman District 909 m^3/day from the Nelson City Council system at a set cost.

This has been a valuable supply for Richmond. Generally only 10m^3/day is taken, however during summer 07/08 this source was almost fully utilised as a result of Stage 1 rationing being imposed in Richmond and the supply could not meet demand.

Maintaining use of the NCC supply serves two purposes:

- The original water right of 909m^3/ day is maintained.
- Flow of the water through the valved connection maintains good water quality within the pipeline by preventing stagnation.

5.6 Technological Change

Technological change has the ability to impact on the demand for a service. These changes can reduce or increase the demand for water supply infrastructure. Relevant examples are:

- Household water saving devices like dual flush toilets, low-flow shower heads and front-loading washing machines which reduce water demand.
- Rainwater and grey water re-use schemes.

Similarly, technological advances can have an effect on the cost of maintenance and operation of assets. Relevant examples are:

- Advances in treatment process could make quality improvements cost effective.
- Improvements in pump efficiency will decrease power consumption.
- Material improvements increase the base lives of assets.
- Advances in water leakage detection.

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

5.7 Legislative and Strategic Change

The Public Health (Drinking Water) Amendment Bill came into effect 1 July 2008.This means that compliance with DWSNZ:2005 is a legal requirement for Council. Significant treatment upgrades are therefore required for supplies that are not from secure groundwater sources. Similarly, a higher level of quality monitoring will be required.

The timeframes for completing the Public Health Risk Management Plans (PHRMPs) is shown in Table 5-3 below. The timescale for the implementation of the upgrades is 12 months from approval of the PHRMP. Provisions have been made in the financial forecasting to upgrade all treatment plants not currently complying with DWSNZ:2005. However, some of these upgrades may not meet the timeframes due to monitoring, investigations required or new sources to be identified and developed. In these cases Council may be able to negotiate timeframes with the Ministry of Health (MoH) by demonstrating they are taking “all practical steps” to comply.

Table 5-3: Timeframes for Compliance with DWSNZ:2005

Size of Supply	Population Served	PHRMP Date Due	Communities Affected
Large Supplies	> 10,000	1 July 2009	Richmond
Medium Supplies	5,001 – 10,000	1 July 2010	
Minor Supplies	501 – 5,000	1 July 2011	Brightwater/Hope, Wakefield, Motueka, Kaiteriteri/Riwaka, Mapua/Ruby Bay, Murchison, Redwoods, Dovedale
Small Supplies	101 – 500	1 July 2012	Collingwood, Tapawera, Pohara, 88 Valley
Neighbourhood Supplies	25 - 100	1 July 2013	Hamama, Upper Takaka

- **The Drinking Water Assistance Programme** – this is a $137 million pool of subsidy funding available for assistance to fund capital works to improve drinking water supplies. It is expected that Council will be able to make applications for subsidies to some of the schemes that supply less than 5000 people and meet specific criteria. It is anticipated that treatment upgrades to Pohara, Kaiteriteri, Collingwood, Motueka and Murchison WTPs would attract a subsidy. However, if the new town supplies for Motueka and Pohara proceed, the WTP upgrades would be ineligible for subsidy.

- **Water Gradings** – Water gradings are being revised to be brought in line with DWSNZ:2005 with all supplies to be re-graded. The new grading process incorporates higher and more rigorously applied standards. Some of Tasman District Council's water supplies have been through a regrading process and without exception the water gradings have been graded downwards. As yet, these gradings are yet to be confirmed. Capital works have been identified in the financial forecasts to address known deficiencies in well head security.

Similarly, in the future, it is expected that there will be greater demands on local government to manage their water assets in a more sustainable and integrated way. This is signalled in the following initiatives:

- Local Government Act: introduces 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 water 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.
- Beyond Ageing Pipes. Urban Water Systems for the 21st Century, (PCE, April 2001): Following on from the discussion paper Ageing pipes and Murky Waters (PCE June 2000), this report presents the findings of the Parliamentary Commissioner for the Environment's investigation into urban water systems. The report highlights issues such as the fragmented nature of water management, the importance of raising stakeholder awareness of the issues, pricing and charging for water services and placing urban water systems into an ecological context.

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 must result from growth, social or environmental needs. Assets may be created at no direct cost to the organisation (i.e. subdivision 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 water supply system, or whether it is the introduction of a new system into a previously unreticulated area.

Development within, or adjacent to existing water supply systems are typically driven by a developer subdividing land. These developments are guided and controlled by zoning and building consent processes, administered by Environment and Planning. 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. 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.

6.2 Development Standards

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

The standards will be 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.

6.3 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 water supply capital forecasts together with forecasts from all other Council activities, and has concluded that the water supply capital forecast as provided is affordable, and has thus approved the capital programme without amendment.

6.4 Funding of Future Capital Works

6.4.1 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.

6.4.2 Funding New Schemes

New urban schemes are funded by:

- Financial contributions 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 Water Account and two-thirds user contributions.

New Rural schemes are funded 100% by new rural scheme members.

The Motueka Water Supply, the Coastal Pipeline and the CTA Reticulation projects are new schemes for which Council have prepared a funding strategy. This is included in Appendix M 3.

6.4.3 Funding Significant Extensions to Schemes

This will occur when a current scheme is extended to service an area outside the water supply area.

Rural extension to urban schemes or extensions to a rural scheme are funded 100% by new scheme members.

Enlargements to include new areas within an urban water supply area are funded by:

- Enlarging the water supply area to include the area into the Urban Water Account
- Existing properties pay a joining (or connection) charge
- New properties created through subdivision will pay a development contribution at subdivision and a connection charge when they connect to the scheme.

6.5 Funding New Requirements for an Existing Scheme

This capital work in urban water supply areas is funded by:

- Development Contributions – for any growth related proportion of the work, payable by new allotments created by subdivision.
- Urban Water Account

In rural water supplies capital works are funded from the individual scheme accounts.

6.6 Other Capital Works Policies and Issues

Other key financial policies relating to water supply 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 the 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 costs and with an affordable cash flow programme.

The projected expenditure on renewals for the next 20 years is in Appendix I.

7.2 Funding of Renewal Work

Renewal work is funded from the water account in which the renewal is required. Council will decide on an ongoing basis whether or not any part of the works should be loan funded depending on the scale of work and 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 which 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 water 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 water. All of the urban water supply schemes servicing the various townships belong to a district Urban Water Account. This is operated as a closed account and therefore has a credit or debit balance reported annually. Rural water supply schemes also operate on individual closed account systems.

The Council's funding strategy is detailed in Appendix M.

8.2 A Statement of Financial Performance for the Next Ten Years

The statement of financial performance for the water 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 this AMP, Appendix L, do not include for 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 Water

Funding sources available for water supply schemes include:

- User charges via metering and flat rate charge (urban) and supply units (rural and rural extensions).
- User charge per supply units (rural and rural extensions)
- Development Contributions (DCs).
- Annual rates.
- Connection fees.
- Loans.
- Private (developer/community) funded works.

The water accounts also attract some sundry income (dividends, etc). There are also special rates levied against these water supply areas that have pre-amalgamation loans. These rates are specifically used for repayment and servicing of this loan.

8.4 A Schedule of Fees and Charges

A schedule of fees and charges is included in Appendix M.

9 RESOURCE CONSENTS AND PROPERTY DESIGNATIONS

9.1 Overview

An important aspect of the water supply activity is to ensure that all community water takes, whether they be from ground water or surface water, are managed responsibly.

Under the Resource Management Act 1991 (RMA) and the Tasman Resource Management Plan (TRMP), water permits are required for the volume of water abstractions required for community water supplies. Resource consents may also be required for dams, weirs and other structures in stream beds, and for reservoirs, treatment plants and other infrastructure associated with the water supply systems.

Generally resource consents are in place, or are in the process of being renewed for all the community water supplies that Council manages. Council has also made an application to increase the water take from the Central Plains aquifer in Motueka to secure future domestic supplies for Motueka township and the Coastal Tasman communities.

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 water supply activity that are currently held by Council. Details are provided in Appendix H.

Identifying the full suite of ongoing resource consent requirements for water 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 rivers and stream beds.

The RMA restricts water permits and consents for structures in stream beds to a maximum term of 35 years only. Hence there needs to be an ongoing programme of consent renewals. Council will ensure that the process for lodging applications for new consents will be achieved in plenty of time before existing consents expire.

9.3 Resource Consent Reporting

Generally there is no monitoring of compliance with resource consent conditions undertaken at present with the exception of meter reading. Council intend to initiate a programme of monitoring, including, but not limited to stream flow and scheme take. Provision for this has been made under the operations and maintenance budget.

9.4 Property Designations

Designations provided by the RMA are another way of identifying and protecting land for existing and public works. Council has designated 28 sites for various public water supply purposes in the TRMP, mainly existing water reservoirs and pump stations.

10 THE SUPPLY OF WATER FOR FIRE FIGHTING PURPOSES

In general, the urban water systems meet the required fire fighting standards with a few isolated areas or exception. No fire fighting capabilities are provided in the rural water supply systems. For information on supplying water for fire fighting purposes reference Appendix O.

11 DEMAND MANAGEMENT

11.1 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.

11.2 Methods of Demand Management for Water

The main aspects of Council's approach to demand management include:

- Water restrictions and rationing – to reduce use during drought times when sources are stressed and often demand through garden watering is high.
- Water conservation and public education – regulating dual flush toilets, and public education to raise awareness and change behaviour.
- Water metering and pricing strategy – following a user pays approach, metering of all urban connections and rating on use has been successful at reducing water usage and especially wastage.
- Water leakage control – following a combination of pro-active leakage identification, targeted leakage reduction and leakage control programme, Council is taking a proactive approach to leakage reduction.
- Network Modelling – Council is investing in developing water network models to provide the base tool for targeting leakage programmes and developing network management capabilities.
- Restricted supplies – to limit water use and keep capital and operational costs low.
- Pressure Control – to lower average pressure in the reticulation systems to reduce leakage and usage.

11.3 Water and Sanitary Services Assessments (WSSA)

The Local Government Act 2002 required all local authorities to carry out, by way of a special consultative procedure, a comprehensive assessment of all water supply systems within their districts. This was completed for Tasman District in June 2005 and includes all water supply systems regardless of whether or not they were owned and managed by Council.

Recommendations from the WSSA have been included in the 20 year financial forecasts and include new town water supplies for the communities of Motueka, Takaka, Pohara and Marahau. These will proceed only when successful community consultation has been undertaken.

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

12 SIGNIFICANT NEGATIVE EFFECTS

There are few significant negative effects from undertaking water supply system activities. These are detailed in Appendix P.

13 SIGNIFICANT ASSUMPTIONS, UNCERTAINTIES AND RISK MANAGEMENT

13.1 Assumptions and Uncertainties

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

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

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

- ***Network Capacity:*** Assumptions are made to estimate the hydraulic capacity of the networks, but a greater level of understanding is coming from hydraulic modelling which has recently been completed for the Richmond, Mapua, Wakefield and Brightwater systems.

- ***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 budget, but in the long term this will not have a significant effect.

- ***Funding of Capital Projects:*** Funding is critical to new water supply projects and assumptions have been made about how this will be achieved, especially in terms of subsidies, major users contributions, development contributions, Council subsidy and community contributions. These have significant contributions to the financial forecasts.

- ***Accuracy of Capital Project Cost Estimates:*** All projects in the capital forecasts have been estimated. A 15% contingency has been added to construction costs to reflect uncertainties in unit rates used. A further provision has been added to the project estimate to reflect uncertainty in project scope. 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 estimate 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.

13.2 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 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.

14 WATER SUPPLY BYLAWS

The Council intends to review the continuing appropriateness of its water supply bylaws within the next 3 years. Appendix T lists the current and known bylaws.

15 PLAN REVIEW AND PUBLIC CONSULTATION

15.1 Review Process for this Activity Management Plan

This section details the programme of ongoing monitoring of AMP effectiveness and review. The AMP is a living document that is relevant and integral to daily AM activity. To ensure the plan remains useful and relevant the following ongoing process of AMP monitoring and review activity 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 AM information to ensure the integrity and cost effectiveness of data collected (Appendix Z).

15.2 Public Consultation

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

- Where a Council Water Supply is provided, people are generally satisfied with the service received (over 80% 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 60% want to spend about the same. 23% want to spend more knowing that this will increase rates and charges.
- There is a lower level of satisfaction with the water supply service when residents not on a Council scheme are included in the survey. The data is not sufficient to make any major conclusion from this but it may indicate unmet demand for a Council service. This should be considered when Council review their Water and Sanitary Services Assessment.

15.3 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) and subsequently the Levels of Service for all Council activities in 2011 (refer Improvement Plan and LTCCP). The outcome of these will feed into the next revision of the AMPs and LTCCP.

16 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 into the integrated risk management approach
- incorporated environmental, social and cultural considerations in the growth planning and modelling

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

- The abstraction of water from groundwater or surface water sources has an environmental impact. Council operates within resource consents which limits the volume of water taken over specified periods of time.
- Water restrictions are imposed on water takes and use during times of drought. This protects the groundwater and surface water sources in order to minimise effect on the downstream environment
- Council has invested significantly in it's water 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:
    - Impose water restrictions during times of drought
    - Identify and repair parts of the networks which cause the most water leaks in order to minimise water wastage, hence reducing the water abstraction requirements
    - Investing in asset surveys and network modelling to improve knowledge of asset condition and performance. This helps identify significant water losses in the system, prevention of which will reduce the abstraction volumes required to serve the system.

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.

17 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 Water Supply activity are detailed in Appendix V.

18 SCHEDULE OF KEY PROPOSED NEW CAPITAL AND RENEWAL WORKS

18.1 Schedule of Work for Next 10 Years

Table 18-1 below details the significant capital and renewal work programmed for years 2009 to 2019. A full list of all capital projects over the 20 year period is included in Appendix F.

Table 18-1: Schedule of Work for Next 10 Years

Activity	2009/10 to 2011/12 Years 1 to 3	2012/13 to 2018/19 Years 4 to 10	Project Driver
Water Treatment Plant Upgrades to meet DWSNZ:2005 compliance:			
▪ 88 Valley		$657,800	I
▪ Brightwater		$348,800	G/I
▪ Collingwood		$524,300	G/I
▪ Kaiteriteri		$793,100	G/I
▪ Murchison	$48,580	$437,200	G/I
▪ Pohara		$439,100	I
▪ Redwoods Valley		$862,100	I
Main replacement along SH6 from 3 Brothers Corner to Ranzau Road		$696,500	R
Dovedale – new water supply from the Motueka River Valley. Includes Wells, treatment plant and delivery pipework		$1,654,200	I
Coastal Pipeline	$2,674,475	$12,224,125	G/I
CTA		$549,460	G/I
Moteuka – Construction of new town supply	$1,658,670	$9,399,130	G/I
Richmond Major Projects:			
▪ Reticulation renewals or upgrades	$346,500	$678,800	G/I
▪ Rezoning	$773,580	$906,020	G/I
▪ Richmond East	$2,597,300	$1,650,400	G/I
▪ Treatment Plant	$3,698,604	$2,172,196	G/I
▪ New Groundwater Source	$505,116	$631,395	G/I
▪ Lee Valley Dam Contribution	$750,000		G
Takaka Fire Fighting Improvements	$1,065,300		I
Wakefield - construction of new source and treatment plant		$3,123,500	G/I

N.B. Does not include inflation

Project Drivers: G = Growth, I = Increased Level of Service, R = Renewal

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

- Ongoing renewals of pipelines reaching the end of their life
- Ongoing replacement of ageing pumps and electrical systems.

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

A.1 Introduction

In preparing this AMP the project team has taken account of:

- National Drivers – for example the drivers for improving Asset Management through the Local Government Act 2002, and drivers for improved drinking water quality through Health (Drinking Water) Amendment Act 2007.
- Local Drivers – for example the Community Outcomes determined through consultation with the public, and increasing scarcity of water and demand for more.
- Linkages – the need to ensure this AMP is consistent with all other relevant plans and policies.
- Constraints – the legal constraints and obligations Council has to comply with in undertaking this activity.

The main Drivers, Linkages and Constraints are described in the following sections.

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

- The Health Act 1956.
- The Health (Drinking Water) Amendment Act 2007.
- The Local Government Act 2002.
  Especially
  - Part 7
  - Schedule 10
  - The requirement to consider all options and to assess the benefits and costs of each option
  - The consultation requirements (see Appendix 'U').
- The Climate Change Response Act.
- The Civil Defence Emergency Management Act 2002 (Lifelines).
- The Water Supplies Protection Regulations 1961
- The Government's Sustainable Development Action Plan
- The New Zealand Fire Service Fire Fighting Water Supplies Code of Practise: SNZ PAS 4509:2003
- The Resource Management Act 1991.
- The Local Government (Rating) Act 2002.
- The Health and Safety in Employment Act 1999.
- The Building Act.
- The Consumer Guarantees Act 1993
- The Sale of Goods Act 1908
- The Fair Trading Act 1986
- Tasman Resource Management Plan.
- Council's Engineering Design Standards – latest version.
- The National Environmental Standard sources of Human Drinking Water.
- Code of Practice for Urban Sub-division.

Council has several statutory planning documents implementing its responsibilities under the Resource Management Act 1991. Those which impact on the provision of Council water services are:

(1) *Tasman Regional Policy Statement* *Operative 2001*
An overview of significant resource management issues with general policies and methods to address these.

(2) *Tasman Resource Management Plan*
A combined regional and district plan with statements of issues, objectives, policies, methods and rules addressing the use of land, water, coastal marine area and discharges into the environment. This plan largely supersedes the Tasman District Transitional District Plan (comprising the Waimea, Golden Bay, Motueka and Richmond planning schemes).

(3) *Motueka-Riwaka-Plains Water Management Plan* *Operative 1995*

(4) *Moutere Water Management Plan* *Operative 2001*

(5) *Regional Plan (Land)* *Operative 1998*
The Regional Plan (Land) is superseded by Chapter 12 and Section 18.6 of the TRMP.

Water management plans 3) and (4) are superseded by Part V of the TRMP, notified with effect from November 2001. The Regional Plan (Land) is superseded by Chapter 12 and Section 18.6 of the TRMP.

These plans guide the processing of resource consent applications for water abstraction from water bodies, and for some land disturbance or waterway interferences that may be associated with water supply reticulation. The plans therefore may impact on the amount of water available for public supplies in various locations, the method of water abstraction and the location, design and construction of reticulation networks. The plans also specify requirements for onsite water supply.

In addition to legislative requirements, the following additional guidelines/standards also influence water supplies:

***Drinking-Water Standards for New Zealand (DWSNZ)* 2005** – In general these are more stringent than the 2000 DWSNZ. The new Public Health (Drinking Water) Amendment Act (2007) makes compliance with the DWSNZ mandatory.

***Public Health Grading of Drinking-Water Supplies* 2003 –** provides the framework for grading of water supplies against the *DWSNZ* by assessing the risk of contamination or other system failures.

New Zealand Code of Practice for Fire Fighting Water Supplies – defines flow and pressure standards for fire fighting.

NZS 4404 (Code of Practice for Urban Subdivision) – sets minimum water supply pressures and flows (for both service delivery and fire fighting).

Council Engineering Standards – set out standards for the design of Engineering works associated with the development of Urban supplies, eg: material types, capacity of pipes.

***Drinking-Water Standards for New Zealand (DWSNZ)* 2008** – came into effect on 31st December 2008. This may have an impact on the level of treatment required for water abstracted from bores less than 10m deep.

A.3 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 Industry Organisations:

- The National Office of the Ministry of Health (Subsidies).
- The local Medical Officer of Health (Part 7, Local Government Act).
- Nelson/Marlborough District Health Board.
- INGENIUM.
- The Water and Waste Association.
- The Ministry for the Environment.
- The Department of Conservation.
- The Fire Service.
- Local Government New Zealand

Local Stakeholders

- The elected representatives (Councillors 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.4 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 asset management plans to other corporate plans.

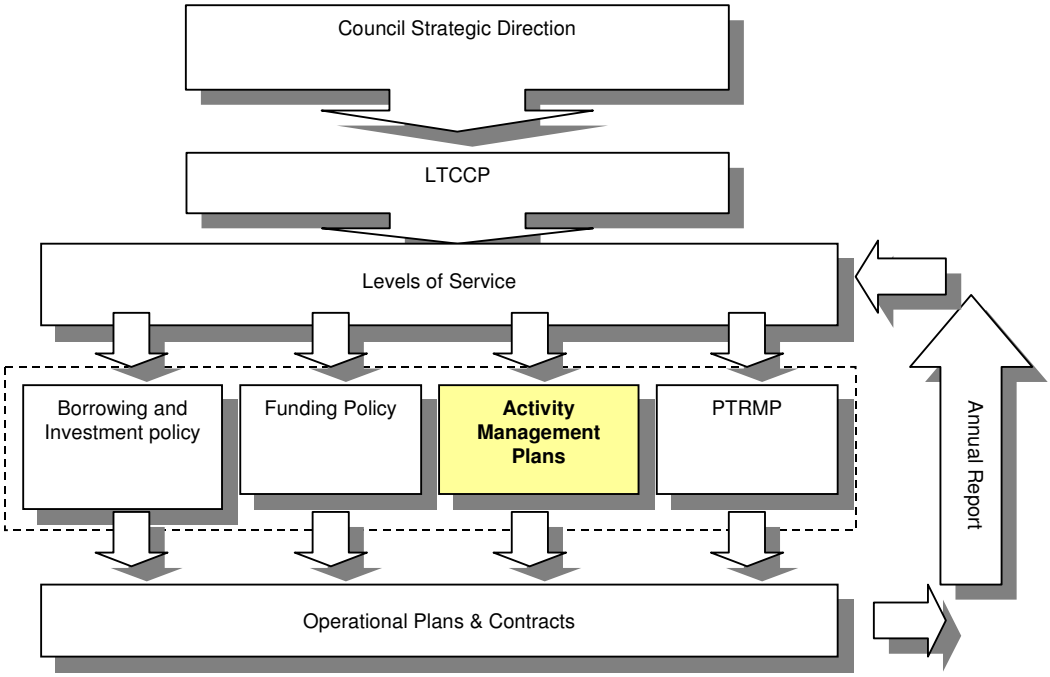


Figure A-1: Hierarchy of TDC Policy, Strategy and Planning

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 sustainability 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.5 Key Activity Drivers

Key drivers in the water supply activity include:

- Water Quality Improvements needed to comply with DWSNZ 2005, a standard that is now a legal requirement to be met.
- The LGA 2002 requires all authorities to carry out assessments of all water supply systems (WSSA). Presently there are several un-reticulated communities that were identified via WSSA that would benefit from the construction of a new town supply. These have been identified in the financial forecasts but will require significant community consultation.

APPENDIX B. AN OVERVIEW OF EVERY SEPARATE PUBLIC WATER SUPPLY IN THE DISTRICT

Appendix B1: Urban Water Supplies

B2 Richmond
B3 Waimea
B4 Mapua/ Ruby Bay
B5 Wakefield
B6 Brightwater
B7 Tapawera
B8 Murchison
B9 Upper Takaka
B10 Kaiteriteri
B11 Collingwood

Appendix B12: Rural Water Supplies

B13 88 Valley
B14 Dovedale
B15 Redwoods Valley

Appendix B16: Community Water Supplies

B17 Motueka
B18 Pohara Valley
B19 Hamama

B.1 Urban Water Supplies

B1.1 Introduction

The 10 urban water supplies in the Tasman District are:

i. Richmond
ii. Waimea
iii. Wakefield
iv. Brightwater/Hope
v. Mapua / Ruby Bay
vi. Kaiteriteri
vii. Tapawera
viii. Murchison
ix. Upper Takaka
x. Collingwood

Table B-1 contains an asset register, detailing the assets associated with each supply system.

B1.2 Plans of Water Supply Areas

See Appendix Y for plans of the Urban Water supply boundaries and maps showing the main components of each scheme's distribution system.

B1.3 Operations and Maintenance

Day to day operational, inspection and maintenance of the water supply systems 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. The Downer Edi Works Contract (688) potentially runs until 2014, 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 with operational matters improve their local knowledge, operational matters and understanding of the TDC networks 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.

B1.4 Future Issues for Urban Water Supplies

The District is predicted to continue growing at rapid rate, and continued investment and planning to meet future growth and changing customer expectations will be necessary.

The effect of technological change and industrial growth on existing assets will be minimal. Increased demand from new industries is expected to be offset by reductions in consumption from existing large industrial consumers. Legislative changes will have a significant effect over the period of this Plan and these are discussed below in reference to water quality.

B1.5 The Impact of the Health (Drinking Water) Amendment Act 2007

Recently, the Health (Drinking Water) Amendment Bill was passed in Parliament and came into affect on 1st July 2008. The effect will be progressive depending on the size of the population served by the water supply.

Size of Supply	Population Served	PHRMP Date Due	Communities Affected
Large Supplies	> 10,000	1st July 2009	Richmond
Medium Supplies	5,001 – 10,000	1st July 2010	
Minor Supplies	501 – 5,000	1st July 2011	Brightwater/Hope, Wakefield, Motueka, Kaiteriteri/Riwaka, Mapua/Ruby Bay, Murchison, Redwoods, Dovedale
Small Supplies	101 – 500	1st July 2012	Collingwood, Tapawera, Pohara, 88 Valley
Neighbourhood Supplies	25 - 100	1st July 2013	Hamama, Upper Takaka

The compliance tool used will be the Drinking Water Standards for New Zealand 2005 (DWSNZ:2005). The first stage requirement is to produce Public Health Risk Management Plans (PHRMPs) for each water supply. The purpose of the PHRMPs is to identify all potential risks of water supply contamination and continuation of supply for the water source, treatment and reticulation.

Mostly, the PHRMP will identify lack of treatment as a risk. The supply will then be required to upgrade treatment to comply with DWSNZ:2005. The timescale for the implementation of the upgrade is 12 months from approval of the PHRMP. Council may be able to negotiate on these timescales with the Ministry of Health (MoH) if it can prove that all practical steps to address the issues are in place.

All water supplies are currently being revised as a new re-grading process is underway to tie in with DWSNZ:2005. The new grading process incorporates higher and more rigorously applied standards with the six Council water supplies re-graded to date have all received lower gradings than previously. These gradings are yet to be confirmed.

Regular monitoring is undertaken to ensure compliance with the DWSNZ 2005. Council and utilities contractors use the Water Information for New Zealand (WINZ) database to schedule and record DWSNZ monitoring requirements. Transgressions will be responded to and recorded. Quarterly results are exported by the contractor to the local MoH Drinking Water Assessor Performance (DWA) who use it to audit annually.

B1.6 Disposal Programme

No assets are expected to be disposed of except where old assets are renewed. The old/obsolete assets would be either scrapped or if possible sold at best possible price.

B.2 Richmond

B2.1 System Overview

The water supply for Richmond comes from several sources;

Lower Queen Street bores
Appleby bore
Roding Dam (Nelson City Council)

The original water supply scheme in Richmond operated from the beginning of the century supplied by a small dam at the head of Reservoir Creek. In the early 1940's the Roding Dam water supply scheme was constructed to augment supplies in the growing District. The Reservoir Creek supply no longer operates, but the Roding Dam, now owned and operated by Nelson City Council, still supplies $10m^3$ per day to Richmond. The agreement provides for $909m^3$ per day, but due to the high cost of the water, TDC only take $10m^3$.

In the early 1970's a new scheme was constructed to further augment supplies which included four wells in Lower Queen Street, a supplementary well at Appleby and the main two reservoirs in upper Queen Street. The untreated well water is pumped into the "low pressure zone" (which includes the low lying areas of Richmond) with the upper Queen Street reservoir at the top end.

From the upper Queen Street reservoir, water is pumped up the hill to a second reservoir which supplies the "high pressure zone" (uphill of Wensley Rd and Hill St). Cropp Place and Valhalla Drive are both supplied by booster pumps with storage tanks at the top end of the zones. Rural connections in Hill St South and Haycock Rd are supplied from a booster pump and storage tank on the corner of Hill Street and Hart Rd.

The Appleby well pump and the Roding water supply operate continuously. To minimise the possibility of reservoir overflow (which can happen if the Appleby supply exceeds demand) the Queen St well pumps turn off when the reservoir is 1m below top water level.

In addition to the three water sources, the system comprises:

- 5 well pumps
- 3 booster pump stations (Cropp Place PS, Valhalla Drive Booster PS, Hill Street South PS)
- High Level Pressure Zone
- Low Level Pressure Zone
- High Level Reservoir
- Low Level Reservoir
- 3 x micro-zone reservoirs

B2.2 Strategic Management Approach

The key issues for Richmond are:

- Water treatment: to be upgraded to comply with DWSNZ:2005.
- Water availability: Overall the Council has sufficient water allocation for Richmond, however, with projected growth, the water rationing that occurs during droughts and the increasing competition for water in the district, it is becoming more difficult to source the water.
- Accommodating growth: Significant growth is predicted for Richmond, particularly in the south and the east, the available water will be insufficient.
- Coastal margin influences: sea level rises and saline intrusion pose a threat to the security and quality of the Lower Queen Street bores. Once these issues are detected, there could be a very tight time-frame to identify and secure other sources, leading to very limited water available for Richmond.

The strategic approaches to these issues are:

- Construct a new treatment plant to mix and treat water from both the Waimea source and Richmond source, (diluting the nitrates from one source and diluting the corrosiveness of the other).
- Construct a supplementary source capable of providing sufficient output should the bores on Lower Queen Street become redundant due to saline intrusion. This development is dependant on the construction of the Lee Valley Dam.
- Construct infrastructure to service the growth predicted for Richmond South
- Provide the infrastructure for growth in Richmond East
- Amend the reticulation boundaries within Richmond to maximise the use of the Waimea source capacity.

B2.3 Water Quality

Under the previous grading process, the Richmond source was originally graded as 'D' due to the nitrate levels exceeding the DWSNZ Maximum Allowable Value (MAV) as a result of the bore head not being secure and lack of raw water monitoring. The reticulation was 'c' due in part to the age of the pipes, extent of AC mains, and presence of dead end pipes (which allow water to stagnate). The water is untreated except for any water augmented from the Roding, NCC source which is filtered through a membrane plant and chlorinated.

An approved PHRMP is required by 1st July 2009.

B2.4 Asset Condition

The condition of most of the pipework in the system is good, however, there are areas of AC pipe which are causing problems and many of the copper rider mains are coming to the end of their life. The electrical cabinets at the well fields and Queen Street pump station require upgrading.

B2.5 Fire Fighting Capacity

Hydraulic modeling of the Richmond network has been undertaken. This highlights areas of the low level pressure zone including Gilbert Street, Warren Kelly, Sutton Street and Appaloosa Avenue as failing to provide firefighting standards. Also the high level zone boundary in the Queen to Wilkes Street area.

The areas of Cropp Place and Hart Road rural restricted were not designed to provide fire flow compliance.

B2.6 Future Development and Demand

Significant growth is anticipated in the areas of Richmond South and Richmond East with a potential 5060 new residential lots and a further 837 business lots created over the next 50 years.

In general, the current system has adequate capacity to meet current demand, with the exception of Queen Street reservoir which is undersized. In order to meet this increase in population, major new infrastructure, upgrades and rezoning are required. Projects to address the growth in Richmond East are detailed in the 20 year financial forecast and are summarized as part of Table 18-1, Section 18. Richmond South projects have been pushed out beyond the 20 year forecast.

B2.7 Daily Water Use / System Losses

Source	Water Permit (m^3/d)	Average Summer Demand (m^3/d)	Average Winter Demand (m^3/d)	Average Annual Demand (m^3/d)	Maximum Daily Demand (m^3/d)
Appleby Well	7273 Combined	914	959	935	978
Lower Queen Street Wells		3374	2768	3089	5653
Roding (NCC)	909	336	10	162	893

B.3 Waimea Supply

B3.1 System Overview

The Waimea water supply is obtained from a groundwater which supplies water to 3 Zones:

- Waimea Industrial (Queen St – Main Road Stoke, Saxton Road and Nayland Road)
- Best Island rural connections
- Mapua urban and rural

The water is sourced from 5 wells along the Waimea River side of the true right stop bank, extracting water from the Delta Zone (in total there are 9 bores, four of which have been abandoned due to saltwater intrusion). These wells would be considered unsecured supplies since the wells are shallow (less than 10m deep), stock graze over the supply area at the well heads and the Waimea River often floods over the area where water is abstracted.

The Waimea water supply was constructed in 1976 to supply the freezing works, NZ Apple and Pear Board cannery, and later the Nelson Pine Industries plant. The industries are supplied cheaper water than other users under an industrial agreement.

- 5 bores and pumps (normal operation)
- 2 emergency bores and pumps
- 4 High Lift Pumps
- Treatment Plant & PS
- Champion Rd Main Reservoir and PS
- Champion Road High level Reservoir and booster PS

B3.2 Strategic Management Approach

The key issues for Waimea are:

- Saltwater intrusion has already resulted in the abandonment of 4 bores. There is a risk of further intrusion affecting the remaining bores.
- The water source is unsecure and will be difficult to secure.

The strategic approaches to these issues are:

- Construct a new treatment plant to mix and treat water from both the Waimea source and Richmond source, (diluting the nitrates from one source and diluting the corrosiveness of the other).
- Amend the reticulation boundaries within Richmond to maximise the use of the Waimea source capacity.
- Construct a supplementary source capable of providing sufficient output should the bores on the Waimea supply become redundant due to saline intrusion. This development is dependant on the construction of the Lee Valley Dam which will also assist in preventing the salt water intrusion due to keep river levels at a sufficient level.

B3.3 Water Quality

Under the previous grading process, the Waimea source was originally graded as Aa. Under the proposed new grading system, this grade would drop to Ec due to the source being unsecured within an unprotected catchment and also the disinfection residual not meeting requirements.

An approved PHRMP is required by 1st July 2011.

Online turbidity monitoring has been installed on the raw water line and bacteriological samples are being taken to establish the treatment requirements. A new treatment plant will combine the water from the Waimea and Richmond sources. Combining the flows will dilute the high nitrates (Richmond source) and reduce the corrosiveness of the Waimea water.

B3.4 Asset Condition

The condition of most of the pipework in the system is good, but the lime dosing system in the treatment plant needs upgrading. To improve security of the supply, the well heads should be protected from stock access and the well head flanges should be raised above the 50-year flood plain level.

B3.5 Fire Fighting Capacity

The Waimea supply system has been hydraulically modelled. A small area of Hill Street North was found not to comply with fire flow standards.

B3.6 Future Development & Demand

Significant growth is anticipated in the areas of Richmond South and Richmond East with a potential 5060 new residential lots and a further 837 business lots created over the next 50 years.

In order to meet this increase in population, major new infrastructure, upgrades and rezoning are required to maximize the use of the Waimea supply. These are included within the 20 year financial forecast and are summarized as part of Table 18-1, Section 18.

B3.7 Daily Water Use / System Losses

Three industries consume between 65% - 95% of the demand from the Waimea source, around 1.2million cubic metres per annum.

Water Permit (m^3/d)	Average Summer Demand (m^3/d)	Average Winter Demand (m^3/d)	Average Annual Demand (m^3/d)	Maximum Daily Demand (m^3/d)
15400	3525	3091	3312	5411

Note: Includes flows taken to Mapua

B.4 Wakefield

B4.1 System Overview

The Wakefield water supply is obtained from a groundwater source that serves the Wakefield Urban area plus 3 rural extensions to Wakefield South, Spring Grove and Pigeon Valley. The water is sourced from an infiltration gallery that extracts water from the gravel of the Wai-iti River. This groundwater source is unsecure due to the shallow depth of the wells and because wells are located below the 50-year flood plain. Though this supply has a resource consent that permits a take of 1300m^3/day, the hydrogeology is such that only 1000m^3/day is obtainable. The well field is situated behind the Wakefield Fire Station.

All water connections are metered. All connections from rural extensions are of the rural low-flow type with the water flow regulated by a restrictor valve at the connection point that delivers a constant flow of water. The standard unit of supply is 2000 litres per day (a consent flow of 1.5 litres/minute). All properties connected are required to have an adequate size storage tank.

The Wakefield water supply scheme was constructed in 1973 with water sourced from a well adjacent to the Wai-iti River. Due to poor summer water yield, the well was upgraded with an infiltration gallery in 1986.

The scheme is linked to the Brightwater scheme via the old Railway Reserve and a booster pump at Bird Rd. This connection can be used for emergency supply to either township. The link pump from Brightwater to Wakefield is normally turned off. During periods of drought, it is activated manually and operates automatically. This is activated by a low level control on the Wakefield reservoir. If the Wakefield supply fails or water take is restricted, then water is pumped from Brightwater and if the Brightwater supply fails water gravitates from Wakefield.

The system comprises:

- well pumps
- Treatment Plant & PS
- Brightwater Link PS
- Treeton Place PS
- storage reservoir (450m^3)

The Edward St reservoir is located above the church in Edward St.

The system is influenced by water levels in the Wai-iti River and the source is augmented from the Brightwater, Richmond and the Waimea systems. There is not considered to be any additional capacity within the system to support increased demand. However, dry weather security was improved with the completion of the Wai-iti Valley Community Dam in 2006. By augmenting supply with the Wai-iti Dam, Council is able to obtain rights to 3,000m^3/d that can be drawn from the Waimea basin aquifer. To obtain more water for Wakefield, Council may exercise this right to develop a new source of supply in an area of higher yielding gravels.

The well pump was replaced in 1993, however the high lift pumps (which date from the original 1973 scheme) are in average condition. The majority of the reticulation is asbestos cement and polythene for the smaller rider mains with problems typical to those material pipes.

B4.2 Strategic Management Approach

The key issues for the Wakefield urban water supply are:

- Pressure/flow problems occur at the top end of the Pigeon Valley rural supply and Hunt Terrace due to lack of available head to these elevated areas.
- Lack of storage in the system
- Source does not supply adequate volume of water to serve existing and future demand.

The strategic approaches to these issues are:

- Identifying a location for a new bore field with suitable hydro geological parameter. This is key for providing sufficient water to meet current and future demands for Wakefield.
- Construction of a new bore once suitable location is identified, with treatment plant facilities to meet DWSNZ:2005
- Upgrades associated with the new Wakefield supply will upsize undersized pipelines, replace much of the existing AC trunk main and reticulation
- To construct facilities to improve the inter-connectivity of the schemes so that during drought times, water can be moved to where it is needed most.
- Rezoning of the Wakefield / 88 Valley boundary

B4.3 Water Quality

Under the previous grading system, Wakefield water supply obtained a grading of Da.

Changes in water quality have been observed to correlate to changes in river quality and therefore the source is not considered "secure". In addition, faecal coliforms have been recorded during raw water sampling. Whilst there is no risk if the water is chlorinated correctly, there is a potential for chlorination failure to go unnoticed (there is no continuous chlorine residual monitoring and no alarm for chlorinator failure). Hence receiving a grade D.

An approved PHRMP will be required by 1st July 2011. Inline monitoring for Turbidity and pH is being installed to assist DWSNZ:2005 compliance.

B4.4 Asset Condition

The majority of the reticulation is asbestos cement and polythene for the smaller rider mains with problems typical to those material pipes. High leakage and unaccounted for water rates have been reported in the area.

B4.5 Fire Fighting Capacity

The system has been hydraulically modelled. This highlighted that the areas of Clifford Road, Martin Avenue and Whitby Road did not have fire flow compliance. In additions, there are areas of low pressure in the western area of the network along 88 Valley Road.

B4.6 Future Development & Demand

A new 750m^3 reservoir is planned for construction in 2009 to improve the inadequate level of storage in the system. Growth projections identify 150 new lots to be created within 20 years. Wakefield struggles to meet summer demand with the existing population, but the construction of a new source will resolve this issue and will be sufficient to meet future demands.

B4.7 Daily Water Use / System Losses

High leakage has been an ongoing issue. Frequent repairing or replacing copper and PE rider mains prone to leakage and breaks has helped reduce the issue. This programme will continue as required.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
1300	891	577	737	1225

B.5 Brightwater / Hope

B5.1 System Overview

Brightwater's source of supply is groundwater. The source is not secure because the wells are shallow and the Wairoa River is subject to flooding over the well heads which are located below the 50-year flood plain.

The Brightwater supply serves the Brightwater urban area and Hope from Brightwater to Three Brothers Corner.

The following rural extensions are supplied from the Brightwater scheme:

- Mt Heslington Road to the lower end of the 88 Valley Rural scheme at River Terrace Road
- Teapot Valley
- Jeffries Road
- Hope (Paton's Rd and Pugh's Rd)

The water is sourced from three bores located in vineyard adjacent to the Wairoa River on the eastern side of the Brightwater Bridge, extracting water from the Reservoir Zone. The well site is located on the old Chisnall Farm on the north side of the Waimea River. This water is delivered to the main pump station, which is situated on the Western side of the Brightwater Bridge where it pumps into the reticulation.

A booster pump situated on the Teapot Valley scheme supplies water to higher level properties. A 150mm-dia-link main to Wakefield enables water to flow either way as required. There are connections to Wakefield and Richmond for emergency supply. This scheme is also linked into the Richmond reticulation enabling Richmond to supply into Hope.

The water supply network in Brightwater/Hope was constructed in 1976 and comprises:

- Well field at Lightband Road
- Treatment Plant
- Brightwater Main PS
- Reservoir - 680m^3
- New Brightwater Reservoir – 2500m^3, constructed in 2008
- Teapot Valley PS 7 Reservoir

B5.2 Strategic Management Approach

The key issues for the Brightwater urban water supply are:

- Source limitations
- Ageing reticulation

The strategic approaches to these issues are:

- Treatment upgrade to meet DWSNZ:2005
- A programme of meter and pipeline renewals

B5.3 Water Quality

The current grading for the Brightwater supply is Aa and the water source is considered unsecure.

An approved PHRMP will be required by 1st July 2011.

Continuous turbidity monitoring has been installed and pH is about to be installed. Bacteriological samples are being taken weekly on the raw water to establish protozoa treatment requirements.

B5.4 Asset Condition

The majority of the reticulation is asbestos cement and polythene for the smaller rider mains with problems typical to those material pipes.

The high lift pumps date back to the original 1976 scheme and pump test data indicates that the performance has deteriorated over the last few years. Two of the well pumps were replaced in 1990 and 1994 and are considered to be in good condition.

B5.5 Fire Fighting Capacity

The Brightwater supply system has been hydraulically modelled. The only area found not to provide fire compliance was Main Road Hope from Aniseed Valley to Bateup Road. In addition, a planned subdivision located on a ridge will require, as a minimum, a small pump station to boost the pressure to provide fire protection requirements.

B5.6 Future Development and Demand

Brightwater currently meets its water demand, but interconnectivity between schemes allows the transfer of water between Richmond and Brightwater if necessary. Current growth projections show there will be an increase of 178 new residential lots within the next 20 years.

B5.7 Daily Water Use / System Losses

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
2800	1807	1411	1613	2249

B.6 Mapua / Ruby Bay

B6.1 System Overview

The Mapua/Ruby Bay source is the Waimea wells. Water is delivered via the Mapua trunk main. See details about the Waimea source information under the description of the Waimea water supply. The water is sourced from the Waimea pump station contact tank and pumps by dedicated pump set to Mapua.

The Mapua supply services the golf course on Best Island, Bells Island, Rabbit Island, Mapua and Ruby Bay with a rural extension to areas of Old Coach Road, Marriages Road, Seaton Valley, Ruby Bay Bluff and Permins Road areas.

The system has three main supply zones, namely:

- The lower areas between the Pomona Road reservoir and the Waimea Pump station. This zone has a mixture of metered connections and rural restrictors.
- The high level serviced by the Pine Hill booster pumps.
- The high level and rural extensions supplied from the Pomona Road booster pump and the Old Coach Road reservoir.

In 1990 the Mapua/Ruby Bay water supply was added to the Waimea scheme via a connection off the Waimea supply main at the lower Queen St pump house. However, now the scheme is supplied via a dedicated pump installed at Waimea pumping station. In 2005 a new pump station was installed at Mapua Wharf to increase trunk main flow and enable the reservoirs at Pomona Road to fill more quickly.

The Mapua trunk main crosses Bells Island, Bests Island and Rabbit Island, the Mapua channel (to Mapua wharf) and then passes on to the Pomona Road reservoirs. The reservoirs service most of Mapua and Ruby Bay except the Pine Hill Heights subdivision and the Marriages Road rural extension (north towards Tasman).

Pine Hill Heights is supplied via a booster pump off the Mapua trunk main that pumps to a 90m^3 reservoir at the top of the subdivision. At the reservoir site a pair of booster pumps operate on a VSD to maintain supply pressure.

The Marriages Rd rural extension is supplied via a booster pump off the Pomona Road Reservoir that pumps to reservoir in Old Coach Rd.

This pump station will operate automatically to maintain reservoir storage. This provides 1 days average supply for present and future demand to the year 2025 and beyond when little growth is expected.

B6.2 Strategic Management Approach

The future development of Mapua / Ruby Bay is inherently tied to the “Coastal Pipeline” project and the development that proceeds due to the re-zoning of the Coastal Tasman Area.

Presently the Mapua/Ruby Bay scheme is supplied from Waimea. Transferring additional water to Mapua is not possible due to the present system being at full capacity. In light of this, no new connections to the water supply system are allowed.

The Coastal Pipeline project will allow the Mapua / Ruby Bay scheme to connect to a new supply near Motueka. This will free water from Waimea for use in the Waimea Basin schemes and also improve the supply capacity of the scheme.

The strategic approach for the Mapua / Ruby Bay scheme (in conjunction with Motueka and the Coastal Tasman area) is therefore to:

- Construct the coastal pipeline from Motueka to Mapua, including construction of the water source near Motueka
- Connect Mapua's existing adjacent water supplies into the Coastal Pipeline
- When financially affordable, extend the reticulation systems from the Coastal Pipeline to serve new areas along its length.

In the past the Mapua/Ruby Bay and Mapua Rural systems have experienced supply shortages in peak times due to capacity and storage shortfalls in the systems. Construction of the booster pump station and additional storage reservoir has reduced supply shortfalls. The Coastal Pipeline will further augment storage supply capacity and improve system reliability, however the Coastal Pipeline project will not be completed for some years.

B6.3 Water Quality

Mapua /Ruby Bay supply received a grading of Aa during the previous grading system. Under the proposed new grading system, this grade would drop to Ec due to the source being an unsecured within an unprotected catchment and also the disinfection residual not meeting requirements.

An approved PHRMP is required by 1st July 2011.

B6.4 Asset Condition

The reticulation in Mapua and Best Island was installed in 1989, and is predominantly uPVC, with polythene used for the smaller diameter rural pipes. A section of pipework under the Mapua Channel was replaced in the mid 1990s. The reticulation is in relatively good condition except for a section of trunk main from the treatment plant to the Pomona Road corner that has burst a number of times since its construction. Despite attempts to resolve the problems in the trunk main by installing dedicated pumps, frequent burst on the pipe remain problematic. The pipeline between Best Island and Rabbit Island was replaced in 2006.

Pine Hill Heights was improved by upgrading the top pump with a VSD, and transferring more of the higher house connections onto the high pressure rider main. A standby pump has also been installed.

Korepo Road pressure was increased by extending the high pressure 50mm rider main from the Old Coach Road Reservoir into Korepo Road, with the pressure adjusted by a PRV at the start of Korepo Rd.

The corrosive nature of the Waimea water has caused some historic problems, with new houses plumbed with copper. There do not appear to be any recent complaints of corrosion.

The reticulation is in relatively good condition except for a section of trunk main from the treatment plant to the Pomona Road corner that has burst a number of times since its construction. The first kilometre section of this main has been replaced recently.

B6.5 Fire Fighting Capacity

Mapua/Ruby Bay reservoir storage capacity is 1,700 m^3, more than 1 days storage for the current demand of around 1,200 m^3/d.

There are reported low pressures in Mapua around Pine Hill Heights and Korepo Rd which is due to the small elevation difference between the reservoir and the supplies (rather than inadequate pipe capacity). Most of Pine Hill Heights has already been transferred over to the top booster pump. There are also potential low pressures around Higgs Road although there are few complaints arising from this area. A supplementary trunk main was installed in 2007 from Aranui Road to Pomona Road Reservoir with a link to the top of Higgs Road. This will improve the fire flow in Higgs Road, but not the pressure.

Historically low pressures around Pine Hill Heights and Korepo Rd had been reported. This was caused by the small elevation difference between the reservoir and the supplies (rather than inadequate pipe capacity).

The system typically operates at an existing capacity of 80 m^3/hr but pumping capacity can be increased to 120 m^3/hr with the booster pump at Mapua Wharf. The existing reservoirs at Pomona Road now provide more than one day's storage.

B6.6 Future Development & Demand

There is currently an embargo on new connections to the Mapua system due to lack of capacity. Until the development of the CTA and Coastal Pipeline, Mapua and surrounding areas will be unable to expand.

B6.7 Daily Water Use / System Losses

Additional storage and pumping capacity improvements have helped to alleviate supply shortages over periods of drought and high water use, however, the current Waimea source and delivery pipework does not have the capacity to adequately meet peak demand in Mapua/Ruby Bay. Ultimately the completion of the Coastal Pipeline will rectify this.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
	1968	1317	1649	2632

B.7 Kaiteriteri

B7.1 System Overview

The Kaiteriteri water supply obtains water from a bore at River Road in Riwaka, which is sited in the road reserve approximately 200m from the State Highway. The Kaiteriteri source is hoped to be classed as secure groundwater but further review of monitoring compliance and hydrogeology is necessary to establish whether the source meets the standard for a secure supply.

The system has three supply zones, namely:

- From River Road to the No. 1 Booster prior to the Main Reservoir. This includes Riwaka and Riwaka-Kaiteriteri Road to the No. 1 Booster Pump.
- From No. 1 Booster Pump to the Main Reservoir. This includes Tapu Bay, Stephens Bay, lower Kaiteriteri, Breakers Bay and Honeymoon Bay.
- From No. 2 Booster to the High Level Reservoir. This includes all the High Level areas of Kaiteriteri above Honeymoon Bay.

The water is pumped by the River Rd well bore pumps via a pressure line and booster pump to a 700m³ reservoir above Tapu Bay. The water then gravitates from this tank into the system reticulation. An additional high level reservoir of 200m³ above Breaker Bay is supplied via a booster pump and services the Rowling Heights area. The scheme therefore comprises:

- Well Source and Pump
- Lower Booster PS
- Low level Reservoir (700m^3)
- Upper Booster PS
- High level reservoir (200m^3)

Kaiteriteri water supply was constructed in 1998. All properties at Tapu Bay, Stephens Bay, Little Kaiteriteri, Kaiteriteri Breakers Bay, and Honeymoon Bay are connected to the scheme, although not all of these properties use the water, as some prefer to use their original rainwater storage supply. The supply also serves two large camping grounds.

Some properties between the bore and Riwaka are connected to the scheme on a voluntary basis.

There are no difficulties with the performance of the system. Water quality is currently ungraded but the water quality is corrosive which if left unresolved may reduce the life expectance of some assets.

There is currently only one well but a spare pump is held in store at Brightwater.

B7.2 Strategic Management Approach

The key issues for Kaiteriteri are:

- The water supply does not meet DWSNZ:2005 compliance

The strategic approaches to these issues are:

- A treatment plant with pH correction will be required at the source.

B7.3 Water Quality

The Kaiteriteri supply is listed as “ungraded”. The security of this source is still to be determined.

An approved PHRMP will be required by 1st July 2012. Continuous monitoring of pH and turbidity will be installed on the raw water to establish treatment requirements.

B7.4 Asset Condition

The condition of most of the pipework in the system is good. There are no known specific condition concerns in the assets. Most of the infrastructure is of an age where condition problems are not expected and inspections by Council staff, maintenance contractors and consultants have not identified any specific problems except for upgrading required to the pumping station surrounds.

B7.5 Fire Fighting Capacity

The Kaiteriteri reservoir storage capacity is 900m^3. 1 day's storage is available. There are no known areas of low pressure.

B7.6 Future Development & Demand

Plans are to develop an additional bore in the vicinity of the existing supply on River Road in Riwaka as part of the treatment upgrade to improve security of supply. There are no issues with meeting future demand as only 2 new lots are predicted within the next 20 years. Significant growth is expected beyond the 20 year horizon however.

B7.7 Daily Water Use / System Losses

No known leakage problems exist.

Water Permit (m3/d)	Average Summer m3/d	Average Winter m3/d	Annual Average m3/d	Maximum m3/d
1840	452	173	315	963

B.8 Tapawera

B8.1 System Overview

Tapawera is supplied from two shallow bores between the Motueka River and the village on the Tadmor Valley Road. The groundwater supply is unsecure because the bores are less than 10m deep. Water is pumped into a 270m^3 concrete reservoir where it gravitates into the village.

The water supply network in Tapawera was installed by the NZ Forestry Service in 1973, extended by Council in 1976, and handed over to Council in 1979 and further upgraded. The system comprises:

- 2 well pumps
- Treatment plant
- high lift pumps
- reservoir (270m^3)

There are no rural extensions supplied from the Tapawera scheme.

B8.2 Strategic Management Approach

There are no significant issues which require resolving within the Tapawera system. Strategic approach to the system includes:

- Repair / renewal of pipes that have a history of failures
- Continuation of provision of effective and efficient operations and maintenance.

B8.3 Water Quality

The Tapawera supply is listed as “ungraded” and the source is unsecure.

Tapawera has a PHRMP which was approved in October 2007. Some funding was approved for upgrade works at the pump station to ensure DWSNZ:2005 compliance. At the time of writing this AMP the upgrade works were in progress.

B8.4 Asset Condition

The majority of the reticulation is asbestos cement and polythene for the smaller rider mains with problems typical to those material pipes and may be a source of the high water loss reported. PE rider mains and copper service connections cause an ongoing leakage problem. Renewals are undertaken as necessary.

B8.5 Fire Fighting Capacity

Current reservoir volume is 270 m^3, which provides for 1 days storage. There are no known areas of low pressure.

B8.6 Future Development & Demand

There are no significant demand issues within Tapawera. Current growth projections predict and increase of 17 new residential lots within the 20 year period.

B8.7 Daily Water Use / System Losses

In December 2007, a leak detection programme was undertaken. Thirteen significant leaks were found and repaired. As a result it is estimated to have reduced water usage by 30%.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
455	266	183	225	402

B.9 Murchison

B9.1 System Overview

A well field, consisting of a well and a bore situated in farmland between the main Pump Station and the Matakitaki River provide water for the Murchison water supply. The ground water supply is unsecure because the well and bore are less than 10m deep. Stock graze in the paddocks where the supplies are located but the bore is protected by a strong rail fence that keeps stock away from the well head. The well supply is unprotected. Both sources are used to provide water for Murchison.

The Murchison water supply services the Murchison urban area, with an extension out to Longford.

The water is delivered to the main pump station, which is situated in the old TDC depot in Fairfax Street.

The water supply scheme in Murchison was built in 1975, and comprises:

- 1 well and 1 bore pump
- Treatment Plant
- 2 high lift pumps
- reservoir (270m^3) + 4x30m^3 plastic tanks

There are no rural extensions off the Murchison scheme although there are some rural properties that are supplied on-demand, metered connections, especially around Longford.

B9.2 Strategic Management Approach

There are no significant issues facing the Murchison water supply scheme except the upgrades required to meet DWSNZ:2005.

There is also a history of failures and water loss which will be addressed through repair and renewal of poor quality sections of pipe.

B9.3 Water Quality

Under the previous grading process, the Murchison source was originally graded as Dc.

An approved PHRMP is required by 1st July 2011. MoH funding for a treatment upgrade could be available for this supply, it would be advantageous to provide the PHRMP sooner.

Continuous pH, turbidity and FAC monitoring is due to be installed to assist in confirming treatment requirements.

B9.4 Asset Condition

The majority of the reticulation is asbestos cement and polythene for the smaller rider mains with typical problems for those material types. The reservoir is in good structural condition. There has been an ongoing programme to renew PE rider mains which are coming to the end of their life. This programme will continue as necessary.

B9.5 Fire Fighting Capacity

The current storage capacity of 390m^3 satisfies the requirements for 1 day storage based on the average annual demand as shown in the table below.

B9.6 Future Development & Demand

Murchison's water source can meet future demand if the leakage problem is addressed as is currently the case. Monitoring of leakage should be continued. The water source has capacity to meet demand over the next ten years

B9.7 Daily Water Use / System Losses

An active leakage detection and repair programme needs to be continued to reduce the high levels of leakage suspected in the area. This has been included as part of the scheduled investigations and District wide pipe replacement costs.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
750	371	243	308	505

B.10 Upper Takaka

B10.1 System Overview

Upper Takaka supply is provided by water from Whiskey Creek. The supply is considered unsecure because of the influence of surface water.

The supply comprises:

- Surface intake
- Treatment Plant
- Break pressure tank
- Reservoir (2 x 48m^3)

There are no rural extensions off the Upper Takaka scheme.

The Upper Takaka water supply was originally built by the NZ Electricity Department in the 1950's and was taken over by the TDC in 1991. The system supplies stock water to the local farm that the pipeline is laid through, and to consumers of the Upper Takaka Township.

B10.2 Strategic Management Approach

There are no significant issues with the water supply system other than poor quality reticulation which will require a programme of renewal.

The water treatment system is being improved with MoH funding to meet DWSNZ:2005.

B10.3 Water Quality

The Upper Takaka supply is listed as "ungraded" and the source is insecure. The UV disinfection unit operates continuously. Current treatment is effective in terms of bacteriological compliance, but will require review in to meet DWSNZ 2005 in terms of Giardia and Crypto compliance.

Upper Takaka has a PHRMP which was approved in October 2007. Funding has been approved for a new treatment plant to be developed and upgrading of the existing UV plant.

B10.4 Asset Condition

Most of the reticulation system is galvanised iron pipe and is reported to be in very poor condition. Lack of monitoring of the reservoir levels means there is no indication when the reservoirs are approaching empty and the township has been known to run out of water. Levels of monitoring will be improved as part of the WTP upgrade this year with the installation of telemetry.

B10.5 Fire Fighting Capacity

There are no pressure or flow problems in the Upper Takaka scheme, however the scheme has limited fire fighting capability and does not meet the fire fighting code. There are no proper hydrants and the treatment plant was not designed to treat fire flows.

B10.6 Future Development & Demand

There are no plans to increase the water take volume to meet demand. Current growth projections predict a minimal increase over the next 20 years which should be satisfied by the current infrastructure.

B10.7 Daily Water Use / System Losses

There are no known leakage problems although 80% of the reticulation needs to be renewed. There is currently no formal model of the system and knowledge of the system demand is unkown due to unmetered connections off the supply line to local farmers.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
23	21	15	18	32

B.11 Collingwood

B11.1 System Overview

The Collingwood water supply was constructed in 2003 and opened in January 2004. A shallow bore situated beside the Aorere River supplies water for the Collingwood water supply. The bore is located about 3km south of Collingwood off the end of Swamp Road. The groundwater source is considered unsecure because the bore is less than 10m deep and the borehead is subject to flooding of the Aorere River. A stout rail fence keeps stock away from the bore head and the pump controls are elevated above the 50 year flood plain.

The bore pump transfers water to the treatment plant just south of the township. The system comprises:

- Bore
- Treatment Plant.
- Reservoir

From the treatment plant, the water is pumped up to the scheme reservoir through a rising main. The town reticulation feeds off the rising main.

There is a small rural extension at the end of Beach Road.

B11.2 Strategic Management Approach

The Collingwood water supply is a very recently commissioned scheme and as a result, the system is expected to perform to a high level with excellent reliability.

The water supply does not meet DWSNZ:2005 and requires a treatment upgrade.

B11.3 Water Quality

The Collingwood supply is listed as “ungraded” and the source is unsecure.

An approved PHRMP will be required by 1st July 2012. As MoH funding could be available for this supply, it would be advantageous to produce the PHRMP sooner.

B11.4 Asset Condition

Since the water supply for Collingwood has only recently been commissioned, the assets are in excellent condition. The water supply scheme was designed to meet the needs of the community including the demands of any future growth

B11.5 Fire Fighting Capacity

Requirement is for 1 days storage and the existing 285m^3 reservoir meets this requirement. There is an area of low pressure in the vicinity of the reservoir.

B11.6 Future Development

Very little growth is anticipated in Collingwood. The Collingwood supply is designed to meet present and future demands.

B11.7 Daily Water Use / System Losses

Collingwood water supply has no known leakage problem.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
400	70	53	62	138

Table B-1: Register of Asset for Urban Water Supply Schemes

Note: All Information provided taken from Asset Valuation June 2007. Connection Numbers take from Water Billing Report June 2008

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
URBAN									
Richmond	4 Bores - Lower Queen Street 1 Bore - Appleby (combined water permit = 7273m³/day) Roding Dam Water permit = 909m³/day	Headworks Appleby Well – Pleuger 20 hp PN63/16 Queen Street Well No 1– no pump, only flow meter Queen Street Well No 2 – Gould 8N-120-5 45 kW Queen Street Well No 3 – Gould 8N-120-5 45 kW Queen Street Well No 4 – EMU DCH 48-VII Queen Street Well No 5 – Pleuger PN83-4 30 kW Queen Street Main Reservoir Queen Street High Level No 1 – IEL VRD ¾ 55kW Queen Street High Level No 2 – Nimbus 125/100/250 45 kW Pump Stations Cropp Place PS: Pump 1 - Grundfos – CR4-80 1.5 kW, Pump 2 – details not shown in database Valhalla PS: Pump 1- Lowara SV3006F110 11kW, Pump 2 - Grundfos CR30-8/7 11 kW Hill Street South PS: 2x Lowara SV805 2.2 kW, 801 2.2 kW	No treatment is carried out.	Queen Street Main Reservoir 2250m³ Valhalla Lane Reservoir: Tank 1 : 450m³ Tank 2 : 700m³ Cropp Place Pump Station: 9m³ Valhalla Drive Storage Tanks: 90m³ Faraday Rise Reservoir: 23m³	Water Mains:	15mm 20mm 25mm 32mm 40mm 50mm 80mm 100mm 150mm 200mm 225mm 300mm 375mm **Total**	1,920 m 1,890m 7,825m 100m 7,395m 18,730m 1,820m 25,410m 28,650m 1,360m 20m 1,925m 890m **97,535m**	Fire Hydrants 517 Valves 938 Metered Connections 5086 Rural Connections 82
Waimea	5 Bores – Waimea River Delta Zone 2 Emergency Bores – Waimea River Delta Zone	Headworks Well No 9 - Goulds 9N/130 22kW Well No 8 - Goulds 9N/130 22kW Well No 7 - Goulds 9N/130 18.5kW Well No 6 - Goulds 8N/180 11kW Well No 5 - Goulds 8N/180 11kW Well No 10 - Goulds 10JNC-2	Lime dosing for pH correction Gas chlorination with Residual control	Champion Road High Level Reservoir 23m³ Champion Road Main Reservoir 5,700m³	Water Mains:	100mm 150mm 200mm 225mm 300mm 375mm 450mm	2,080m 195m 1,475m 525m 1,215m 5,300m 4,800m	Fire Hydrants 34 Water Meters 96 Restrictors 34 Valves 18	

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
	Water Permit = 15,400 m³/day (includes Mapua)	30kW Well No 11 - Goulds 10JNC-2 30kW Waimea Treatment Plant & PS High Lift Pumps 1, 2 & 3 - Ritz Norma 100 h.p High Lift Pump 4 - Thompson Kelly Lewis 132kW Champion Road Main Res & PS Pump 1 - Lowara SV809 4kW Pump 2 – *(details not shown in database)*	Turbidity Measurement Chlorine Measurement pH Measurement			**Total**	**15,585m**		
Mapua / Ruby Bay	See Waimea Source	Queen Street Pumps 2 x Southern Cross Starline 100 x 65-250 37kW Mapua Booster PS Southern Cross Starline 100 x 65-250 37kW Pinehill Reservoir & PS Grundfos CR 16/30 3kW with Hydrovar VS Lower PS - Grundfos CR 30/30 4kW Pomona Road Res & PS 2 x Lowara SV 30-07 15kW	See Waimea treatment plant information.	Pomona Road Main Reservoir 700m³ Temporary 1000m³ Pine Hill Heights 90m³ Old Coach Road 70m³	Water Mains:	15mm 20mm 25mm 40mm 50mm 80mm 100mm 150mm 200mm 225mm **Total**	755m 2,550m 6,635m 680m 17,625m 600m 7,055m 6,025m 13,230m 200m **55,355m**	Fire Hydrants 86 Valves 129 Metered Connections 768 Rural Connections 226	
Wakefield	Bore and Infiltration Gallery – Wai-iti River Water Permit = 1300m³/day	Wakefield Wells Well 1 – Grundfos SP125-1-A 7.5kW Well 2 –. Grundfos SP95-2 9.2 kW Well 3 – Ritz New Haden 5.5hp Wakefield Treatment Plant & PS 2x Ajax ZLC 20HP (60m3/hr) Brightwater Link PS Grundfos CR 60/60 (15kw) Treeton Place (Wai-iti Hills) Grundfos CR4 120	Aeration for pH adjustment Gas chlorination Chlorine Measurement	Wakefield Reservoir 450m³	Water Mains	15mm 20mm 25mm 32mm 40mm 50mm 100mm 150mm **Total**	695m 645m 5,900m 670m 3,450m 4,210m 3,640m 10,625m **29,835m**	Fire Hydrants 84 Valves 167 Water Meters 718 Rural Connections 51	

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
Brightwater/Hope	3 Bores – close to Waimea River Water Permit = 2800m³/day	Brightwater Well field Lightband Road Pump 1 & 3 Goulds 250 LZ07 5.8 KW Pump 2 - Aturia XB17B2 10hp Brightwater Main PS Pump 1 & 2 - Monoflow (20HP) Pump 3 – IEL VRC 2/3 CI Teapot Valley PS Lowara SV222 (3 kW)	Gas chlorination Turbidity Measurement	Brightwater Reservoir 680m³ Teapot Valley Reservoir 9m³ Newly constructed reservoir 2500m³	Water Mains	15mm 20mm 25mm 32mm 40mm 50mm 80mm 100mm 150mm 200mm **Total**	575m 1,940m 9,530m 790m 4,180m 8,470m 350m 4,520m 5,570m 5,165m **41090**	Fire Hydrants 116 Valves 194 Water Meter 971 Rural Connections 226	
Tapawera	2 Bores – between Motueka River and Tapawera, on Tadmor Valley Road. Water Permit = 455m³/day	107 Main Rd Source / Treatment Plant Pump 1 – Grundfos SP46-2 3kW Pump 2 – Grundfos SP35/2 Highlift Pumps 2 x Southern Cross RGA 1 ¼ Newman 11kW	Lime dosing for pH adjustment Gas chlorination Residual control Chlorine measurement Turbidity measurement pH measurement Pressure measurement	107 Main Road Source / Treatment Plant 270m3	Water Mains	20mm 25mm 40mm 50mm 100mm 150mm **Total**	145m 115m 565m 1,570m 3,720m 1,230m **7,360m**	Fire Hydrants 25 Valves 43 Water Metres 165 Rural Connections 1	
Murchison	1 Well 1 Bore Besides the Matakitaki River Water Permit = 750m³/day	92 Fairfax St Main PS Pump 1 – Ritz-New Haden 5.4hp1 Pump 2 – Lowara CN50-200 11 Kw Highlift pump 1 – Ajax 2L 20 HP Highlift pump2 - Lowara CN50-200 11 Kw	Aeration for pH adjustment Gas chlorination	Chalgrave Street Reservoir 250m³ 4 x 30m³	Water Mains	15mm 20mm 25mm 40mm 50mm 100mm 150mm **Total**	110m 160m 2,080m 3,965m 990m 1,530m 5,065m **13,900m**	Fire Hydrants 40 Valves 63 Water Meters 300 Rural Connections 2	
Upper Takaka	Whiskey Creek Water Permit = 23m³/day	No pump stations.	Sedimentation Tank (1x17m³ concrete) Break Pressure Tank (1x1m³ concrete) River Intake Spring Intake 80 micron manual clean filter at reservoir 20 micron cartridge filter	Upper Takaka Reservoir 2 x 48m³	Water Mains	25mm 50mm 100mm **Total**	135m 2,810m 430m **3,375m**	Fire Hydrants 4 Valves 10 Connections 19	

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
			UV disinfection						
Kaiteriteri	1 Bore – River Road Water Permit = 1840m³/day	River Road Well Goulds 8N 120-5 37 KW (installed) Kaiteriteri High Level Booster PS Lowara SV16-06 5.5kW Kaiteriteri Lower Booster PS 2 x Grundfos Premier 100x65x25 37 KW	No treatment is carried out.	Main Reservoir 700m³ High Level Reservoir 200m³	Water Mains	15mm 25mm 50mm 100mm 150mm 175mm 200mm **Total**	25m 100m 30m 2,680m 4,930m 5,650m 1,325m **14,740m**	Fire Hydrants Valves (approximately) Air Valves Water meters	54 41 10 572
Collingwood	1 Bore – besides the Aorere River Water Permit = 400m³/day	Collingwood Bore Grundfos SP46-3 5.5 kW Collingwood PS 2 Grundfos CR 32-5 11 kW	Aeration Lime Saturator for pH correction. Gas chlorination Turbidity measurement Chlorine measurement, pH measurement, Pressure measurement	Collingwood Reservoir 285m³	Water Mains	20mm 40mm 50mm 100mm 150mm **Total**	560m 530m 2,835m 885m 5,570m **10,830m**	Fire Hydrants Meter Valves Air valves Rural Connections	23 214 11 5 1

B.12 Rural Water Supplies

B12.1 Introduction

B.12.1.1 Overview of the Rural Water Supplies

The rural water supplies include:

88 Valley
Dovedale
Redwood Valley

Rural water supplies are low flow schemes serving rural areas. Each property on the scheme draws water through a restrictor into their privately owned tank. The restrictor limits the flow to a trickle feed equal to their allocation over 24 hours. The tank provides a balancing volume for the properties domestic and, at times, stock demands.

Because the scheme is restricted, the flows are low. Therefore, the systems have typically small diameter pipelines that travel long distances and often cross-country. They do not provide fire fighting capability.

There is currently an embargo on any new connections to the rural water supply schemes and a waiting list is in place for future connections.

B.13 88 Valley

B13.1 System Overview

88 Valley's source of supply is a stream intake in Parkes Stream in 88 Valley at a level of 230m above sea level. Because this source is a stream intake it is considered unsecure. Water flows from this source to a reservoir (4 x 30,000 litre plastic tanks). This reservoir above Wakefield at a level of 178m also acts as a break pressure tank.

The 88 Valley Rural Water Supply serves the rural area from Parkes property in 88 Valley, down 88 Valley, behind Wakefield and Spring Grove as far as Mt Heslington behind Brightwater.

This scheme is a total gravity system with no pumps. Most of the reticulation is on private property.

The Waimea County Council constructed the 88 Valley rural scheme in 1981 with assistance from farmers. The scheme comprises:

- Stream intake
- Chlorination
- Break pressure reservoir

The chlorination dosing system was upgraded in 2003 to a flow proportional system.

There is a Management Committee made up of elected local representatives which assists Council with scheme administration and reports to the Engineering Services Committee.

B13.2 Strategic Management Approach

The issues facing 88 Valley are:

- No new connections are allowed
- Water quality does not comply with DWSNZ:2005.

The strategic approaches to these issues for 88 Valley are to:

- Upgrade the water treatment to meet DWSNZ:2005

B13.3 Water Quality

The 88 Valley water supply is currently "ungraded" and the source is unsecure. There are some turbidity problems, particularly after rainfall. Careful water quality management with significant treatment upgrades will be required. Recent problems have been reported with high FAC levels at supplies local to the source.

An approved PHRMP is required by 1st July 2012.

B13.4 Asset Condition

The intake and pipe has been subjected to storm damage on several occasions and are repaired as necessary. Generally, the other assets for this supply are in satisfactory condition.

B13.5 Fire Fighting Capacity

Individual properties on this scheme can provide some fire fighting capacity by construction of storage and internal reticulation.

B13.6 Future Development & Demand

The scheme is fully allocated in terms of connections available and there is a waiting list of properties wishing to connect. There will be no future demand on the system as the water permit cannot in increased beyond 450m^3/d.

B13.7 Daily Water Use / System / Losses

No known leakage problems are associated with the 88 Valley scheme, although during drought conditions, the scheme runs at full capacity with occasional localised supply difficulties.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
450	301	254	278	379

B.14 Dovedale

B14.1 System Overview

The Dovedale rural water supply is obtained from a surface stream intake in the headwaters of Humphries Creek. The source is from a stream intake therefore the water source is considered unsecure.

The Dovedale rural water supply covers an area of approx. 12,000 hectares, supplying properties in the Dovedale, Rosedale and Upper Moutere areas. The physical relief of the area is made up of deep valley systems flanked by high steep ridges and spurs. By necessity many of the supply points to farm tanks are along the ridges and spurs while many of the domestic connections to houses are on the valley floors.

From the stream intake, water is chlorinated and partially settled before it enters the reticulation. The scheme is typified by a series of small pumps which boost water up valleys to storage tanks via a rising/falling main which supplies consumers en route. The smaller pumps are operated on timers and there are ball valves at the inlet to each storage tank which close when the reservoir is full causing the pumps to switch off on pressure.

There are 2 main reservoirs – Thorns (240 m^3) and Silcocks (68 m^3), 4 booster pump tanks – Wins (27 m^3), Knotts (14 m^3), Lower Tehepe (36 m^3), Upper Tehepe (14 m^3) in the Dovedale supply with a total of 400m^3 storage. There are also 2 settlement tanks and 6 break pressure tanks. This is equivalent to a total of 10 hours storage.

The supply was constructed during the 1970's by the Waimea County Council. The scheme comprises:

- Stream intake at Humphries Creek
- Chlorination
- Contact tank
- Gravity to Thorn's Reservoir
- Other pumping stations in Dovedale Basin
- Pump to Silcock's Res.
- Supply through Break Pressure tank to Upper Moutere.

There is a Management Committee made up of elected local representatives which assists Council with scheme administration and reports to the Engineering Services Committee.

B14.2 Strategic Management Approach

The Dovedale scheme faces two main issues:

- Some of the rural water supply pipes are having high failure rates. Over such a large area, such failures and leaks can be very difficult to detect and it is expensive to do so.
- There has been a permanent 'boil water notice' in place since 1989

The strategic approaches to these issues are to:

- Construct a new source in Motueka Valley river
- Install new treatment facilities to meet DWSNZ requirements.
- Continue to identify pipelines that require replacement and replace them as funds allow.

B14.3 Water Quality

The Dovedale water supply is currently “ungraded” and the source is unsecure.

Water quality in the scheme is generally poor. There is a high level of sediment in the water which decays where it settles (usually in reservoirs or consumer’s supply tanks). There has been a permanent ‘boil water notice’ in place since 1989. The most viable option to remove this notice is to locate and develop a new source.

An approved PHRMP is required by 1st July 2012

B14.4 Asset Condition

There have been continual problems with PVC pipe joints and splitting of polythene pipes ever since the scheme was constructed. The main reason for polythene failure is degradation of the material, which becomes brittle with time. Some of the larger diameter pipes were constructed in AC and there have also been problems with these pipes.

There are no other reported problems with the condition of the remaining assets.

B14.5 Future Development & Demand

Water quantity is not sufficient in summer as flow diminishes at the high level intake. The system needs to be supplemented from the low level intake by booster pump.

The scheme is fully allocated in terms of connections available and there is a waiting list of properties wishing to connect. There will be no future demand on the system as the water permit cannot in increased beyond 1080m^3/d.

B14.6 Daily Water Use / System / Losses

Pipeline breaks occur fairly regularly, but there is no specific leakage problem.

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
1080	1010	878	973	1091

B.15 Redwood Valley

B15.1 System Overview

The Redwood Valley Rural Water Supply services approximately 215 properties throughout the coastal hill country between the Waimea Plain and Bronte Road.

The scheme is actually two separate systems with some interlinkage. Redwood 1 services the inland Redwood Valley area between Eves Valley and Moutere Highway. Redwood 2 services the coastal area between Moutere Highway and the coast. Most of the reticulation is on private property.

The Redwood Valley water supply scheme originated when Waimea County Council took over and extended the TNL farm scheme in two stages between 1973 and 1976 - now called Redwood 1 & 2. Redwood 1 supplied from a well at Golden Hills Rd. Redwood 2 (the coastal area) is supplied from wells at O'Connor Creek on the Coastal Highway. A supplementary well was installed at River Road in 1997. This well is supplying water to both Golden Hills Rd and O'Connor Creek.

The wells are considered unsecure because they are less than 10m deep. The O'Connor Creek wells are regularly subjected to flooding.

Both Redwood Valley 1 and 2 systems comprise:

- Well pumps
- Supplementary Well
- Aeration tower
- Chlorination
- Contact tank
- High lift pumps
- Redwood 1 has two reservoirs
- Redwood 2 has one reservoir (6 x 25m^3)

Redwood 1 has two pressure zones, a high level zone with a reservoir at a level of 239 m (Top Reservoir) and a low level zone with a reservoir at a level of 163 m (Langs Reservoir). Redwood 2 has a small high level pressure zone supplied by Maiseys Road booster pump station to a small reservoir on the Moutere Highway.

The main pumps are controlled by reservoir level signals through the DATRAN control at the base station at Richmond. The smaller booster pumps are on timers and pressure switches.

There is a Management Committee made up of elected local representatives which assists Council with scheme administration and reports to the Engineering Services Committee.

B15.2 Strategic Management Approach

Redwood Valley rural water supply scheme faces a number of issues:

- The Redwood Valley rural scheme extends over large areas in mostly small diameter pipes. Growth and connections to the scheme could never be forecast with certainty and while caution and control has been exercised, the development of the scheme has reached a point where there are supply problems especially in high demand times.
- Some of the rural water supply pipes are having high failure rates. Over such a large area, such failures and leaks can be very difficult to detect and it is expensive to do so.
- Lack of capacity, no new connections allowed to scheme.

The strategic approaches to these issues are to:

- Upgrade treatment at O'Connors Creek and Golden Hills to meet DWSNZ:2005
- Deepen the bore at O'Connors Creek to secure a greater volume of water

B15.3 Water Quality

The water supply for Redwood Valley 1 and 2 is currently "ungraded" and the sources are unsecure.

Redwood Valley rural scheme's water quality is generally good. Corrosiveness and hardness of the groundwater has been the main problem in the Redwood Valley rural supply. The existing treatment has only been partially effective with typical pH values of 6.7-6.8 leaving the treatment plants.

An approved PHRMP is required by 1st July 2011.

B15.4 Asset Condition

Lang's reservoir is in poor condition and is leaking. This needs to be rebuilt and may be relocated due to access issues. The associated booster pump station should also be relocated due to access difficulties. Most of the infrastructure is of an age where condition problems are occasionally expected and inspections by Council staff, maintenance contractors and consultants have not identified any specific problems. As breaks occur pipelines are repaired and sections replaced. Some of the pipes in the poorest condition have been renewed or upgraded. This programme is ongoing as long as necessary.

B15.5 Future Development & Demand

The scheme is fully allocated in terms of connections available and there is a waiting list of properties wishing to connect. There will be no future demand on the system as the water permit cannot increase beyond the current permit.

B15.6 Daily Water Use / System / Losses

Source	Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
O'Connor's Creek	350	197	141	171	364
Golden Hills	200	86	50	69	232
River Road	600	433	399	416	539

Table B-2: Register of Asset for Rural Water Supply Schemes

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
RURAL									
88 Valley	Parkes Stream Water Permit = 450m^3/day	No pumps	Gas chlorination Chlorine Measurement Coarse Strainer	88 Valley Reservoir 4 x 30,000litre plastic tanks	Water Mains	15mm 20mm 25mm 32mm 40mm 50mm 80mm 100mm 125mm **Total**	90m 19065m 17575m 580m 6430m 2705m 6190m 4925m 2145m **59,705m**	Valves 44 Restrictors 80	
Dovedale	Humphries Creek Water Permit = 1080m^3/day	Humphries Creek PS Grundfos CR16-40 15kW Knots PS 2 x Lowara SV2-24 3kW Lower Tehepe PS 2 x Lowara SV4-24 4kW Upper Tehepe PS Pump 1 – Grundfos CP3-160 4hp Pump 2 – Lowara SV4-18 3kW Wins PS Pump 1 – Grundfos CP8-180 7.5kW Pump 2 – Lowara SV8-16 7.5kW Thorns PS 2 x Grundfos CP3-160 30kW	Gas chlorination with Residual control Chlorine Measurement	Reservoirs Knots Reservoir 14m^3 Lower Tehepe Reservoir 36m^3 Silcocks Reservoir 68m^3 Thorns Reservoir 8 x 30m^3 Upper Tehepe Reservoir 4m^3 Wins Reservoir 27m^3 Break Pressure Tanks Bensemanns BP Tank 18.9m^3 Beuke BP Tank 18.9m^3 Moores BP Tank 18.9m^3 Neudorf Hill BP Tank 18.9m^3 Rosedale Saddle BP Tank 1-18.9m^3 Rosedale Saddle BP Tank 2- 670m^3 Pump Stations Humpries Creek PS 5000 Gallons Knots PS 5000 Gallons Lower Tehepe PS 5000 Gallons Upper Tehepe PS 5000 Gallons Thorns PS 5000 Gallons Winns PS 5000 Gallons	Water Mains	15mm 20mm 25mm 32mm 40mm 50mm 65mm 80mm 100mm 125mm 150mm **Total**	1,290m 48,995m 35,980m 15,125m 12,150m 18,770m 11,730m 5,105m 2,375m 3,180m 8,370m **163,070m**	Fire Hydrants 4 Valves 78 Air valves 1 Restrictors 293	

Redwoods Valley	Golden Hills Well Water Permit = 200m³/day O'Connor Creek Wells Water Permit = 350m³/day River Road Well Water Permit = 600m³/day	River Road Well Lowara Z630/6 7.5kW O'Connors Creek Well Well 1 – Grundfos SP25-2 1.5kW Well 2 – Grundfos SP25-2 1.5kW O'Connors Creek PS 2 x Lowara SV30-09 15kW Golden Hills PS Pump 1 – Lowara DE4 (cora7-24/5) 7.5kW Pump 2 – Grundfos SP14A-5/4 1.5kW Highlift Pump 1 –Lowara SV1615F150 15kW Highlift Pump 2 – Grundfos CR16-140 15kW Redwood Booster PS 1 2 x Lowara SV4-20 F40T 4kW Redwood Booster PS 2 – Maiseys Road 2 x Lowara SV212 1.5kW	Aeration for pH adjustment Gas Chlorination	Maisey High Level Reservoir Maisey Road Reservoir 1 90m³ Maisey Road Reservoir 2 46m³ Redwood High Level Reservoir 23m³ Redwood, Malling Road BP Tank 37	Water Mains	15mm 20mm 25mm 32mm 40mm 50mm 65mm 80mm **Total**	10m 33,730m 16,660m 6,415m 6,290m 10,240m 1,160m 13,110m **87,615m**	Valves 58 Restrictors 316

Note: All Information provided taken from Asset Valuation June 2007. Connection Numbers take from Water Billing Report June 2008

B.16 Community Water Supplies

B16.1 Overview of the Community Water Supplies

The community schemes are on-demand schemes (i.e. not restricted) that receive a very similar level of service to the urban water supplies (refer to Appendix B1). The main difference between the urban and the community schemes is that connection is voluntary in the community schemes. In the urban schemes, all properties within the water supply area have to pay water rates irrespective of whether water is being used.

The community schemes include:

Pohara Valley

Motueka

Hamama

B.17 Motueka

B17.1 System Overview

Motueka does not have a full urban water supply. Only parts of the urban area are reticulated and connection to this by consumers is voluntary. Where there is no reticulated water supply. Groundwater wells and pipes provide water for fire fighting. None of the water supplies are treated and there are no rural extensions off the scheme.

The water is sourced from:

- A bore at the Fearon's Bush Motor Camp
- A bore at the Recreation Centre in Old Wharf Road

These bores are considered unsecure because they are less than 10m deep and subject to surface water influence.

- Motueka and Riwaka have approximately 50 fire wells and 70 fire pipes that have to be maintained for fire fighting purposes in areas where there is no reticulation.
- A connection exists between the TDC main in Everett Street and Talley's supply from their well in High Street South. The link is installed with two shut valves and a meter. This connection enables flows to be supplied either way for emergencies only.

The original water supply scheme, which supplied the port area, was built by the Motueka Harbour Board. The Waimea County Council took over the scheme in the 1960's and later extended it into the Motueka Borough via a bulk meter on Trewavas Street (at the Borough/County boundary).

The well pump and high lift pumps at Fearon's Bush Camp pumps into a contact tank from where water is pumped directly into supply was upgraded in 2001.

The Fearon's Bush well operates during periods of normal demand, however when pressure drops below a set point the Recreation Centre well (which has a much larger capacity) switches on. This latter pump is variable speed and adjusts flow to suit demand. A standby generator is installed at both Fearon's Bush and Recreation Centre.

B17.2 Strategic Management Approach

The key issue facing Motueka are:

- The town has a partial reticulation system which serves only 25% of the town.
- Motueka is the largest town in New Zealand without a fully reticulated system
- There is no storage capacity in the current system
- The partial reticulation and fire wells provide limited fire fighting capability.
- The current supply does not comply with DWSNZ:2005

The strategic approach to address these issues are:

- A new source will be constructed in Motueka which will serve the town and also supply the Coastal Tasman Areas via the construction of the Coastal Pipeline.
- Construction of a treatment plant at source to meet DWSNZ:2005 compliance.
- Construction of a new town supply providing full reticulation to the currently unserviced areas of Motueka.

B17.3 Water Quality

The groundwater around Motueka is plentiful and of high quality. The shallow aquifers would not be defined as "secure" sources and, therefore, require treatment to meet drinking water standards.

Under the previous grading process, the Motueka supply was originally graded as 'Bd'. Under the proposed new grading system, this is anticipated to become a grade of Eb due to unsecure water sources.

A PHRMP is currently being written for both the reticulated supply and the self-supply for Motueka.

B17.4 Asset Condition

Some of the reticulation is Class B uPVC and is approximately twenty years old. There have been several problems relating to pipe breakages which are believed to be caused by low grade (Class B) pipe and the high surge pressures which can arise when water is pumped into a closed system with no break pressure such as a reservoir.

The Class B pipe is a limiting factor within the system. Areas suffering regular problems include High Street South, Fearon Street, Old Wharf Road, Thorpe Street and Central High Street.

B17.5 Fire Fighting Capacity

The Council has approximately 52 fire hydrants on the reticulation system. Beyond the reticulation system, the Council has 'fire wells and bores' for the fire trucks to draw direct from groundwater. These are tested annually by flow tests. Results are variable as could be expected from a non-reticulated source. The fire wells are generally in poor condition.

B17.6 Future Development & Demand

The current Motueka water supply has limited ability to provide for growth of the scheme. It does not have the capacity to serve the entire Motueka town.

The proposed new Motueka scheme will build from the existing scheme but will have a new reservoir and a new source and treatment system. The existing reticulation pipes will be largely retained, however pressure control systems will be installed to protect them from higher pressures achieve in the new system.

The new town supply scheme will ensure adequate capacity for future growth.

B17.7 Daily Water Use / System / Losses

Source	Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
Rec centre	3500	282	59	169	669
Fearons	1000	537	474	507	677

B.18 Pohara Valley

B18.1 System Overview

The Pohara Valley water supply is sourced from a surface intake at Winter Creek. Because this source is a stream intake it is unsecure. This supplies water to residents in the Pohara Valley and feeds both ways along the coast to the Wharf to the East and the Pohara Camp to the West.

The Pohara Valley water supply was originally constructed by the Golden Bay Cement Company and taken over by TDC when the Golden Bay Cement Company ceased operations.

The scheme comprises:

- Stream Intake
- Treatment Pond
- High Lift Pump
- Reservoirs (69m^3)

Most of the Pohara Valley reticulation is 100mm pvc mains with some hydrants. An 80mm galvanised pipe supplies water from the intake to the treatment plant with an 80mm motorised valve installed on the inlet, controlled by the level of the contact tank.

The high lift pump draws its water from the contact tank and supplies into the reticulation and on to the reservoirs. The high lift pump is controlled by the reservoir level via a control cable from the reservoir to the treatment plant.

The treatment plant originally had full treatment. (e.g. chlorination, flocculation, sedimentation, and filtration). The flocculation and sedimentation tanks are no longer used.

All water connections are metered.

A 100 diameter PVC main exists from Pohara Camp to Tata Beach as provision for future expansion of the scheme (it is presently unused).

B18.2 Strategic Management Approach

The key issues facing the Pohara scheme are:

- The scheme has a surface water source of poor quality and the limited treatment it receives does not meet NZ Drinking water standards
- There is a large unmet water demand along the whole coast from Pohara Valley to Tata Beach. The existing source cannot meet this demand.
- Takaka has no public water supply but plentiful quality groundwater that could sustain a water scheme that services Takaka and the Pohara to Tata Beach demand.

The strategic approach to these issues are:

- Upgrade the treatment plant to meetDWSNZ:2005
- Construct a new town supply from a groundwater source at Takaka. The new supply would feed Pohara and all coastal communities from Pohara Valley to Tata Beach.
- The new town supply goes ahead, that existing WTP will become redundant. The timing of the new town supply dictates the necessity of upgrading the existing WTP.

B18.3 Water Quality

Water quality in the scheme is generally poor. It can become discoloured with high turbidity and an occasional elevated aluminum concentration. It often experiences fluctuations in water quality, particularly during high flows.

The water supply in Pohara Valley is currently “ungraded”.

An approved PHRMP is required by 1st July 2012

As Pohara has a surface intake high in organics and the addition of chlorine, there is a serious potential risk of the formation of Trihalomethane (THMs). Either a new source or filtration is urgently required.

A project to upgrade the existing water treatment plant may be entitled to MoH funding. However, a new supply serving all areas along the coast would not attract funding.

B18.4 Asset Condition

The existing assets are in poor condition, particularly at the intake and treatment plant. The reticulation includes some low quality pipe material.

B18.5 Fire Fighting Capacity

There is no fire-fighting capability. The current Pohara Valley water supply is pressurised though there is low pressure in the vicinity of the reservoir.

B18.6 Future Development & Demand

Until a new town supply is constructed either at Pohara or extended from Takaka, no new connections will be permitted onto the existing Pohara water supply system.

B18.7 Daily Water Use / System / Losses

Water Permit (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
	154	102	129	263

B.19 Hamama

B19.1 System Overview

The Hamama system was installed, paid for and administered by a group of local farmers through Golden Bay County Council during the late 1950s. It is a non-potable supply intended mainly for stock use. The scheme comprises:

- Stream intake
- Storage tank
- Reticulation
- No treatment

It is an 80 hectare area of land in the stream catchment owned by Council and designated as a water supply reserve area.

The system is an unmetered 'on demand' system with no restrictors. The mains at the top of Hamama Rd are 100mm diameter concrete pipe reducing to 25mm diameter galvanised iron at the SH junction.

A user committee under a Golden Bay County Council by-law operates the supply. Council rate the supply area on land value to provide maintenance and operations funding for the management committee but have no direct involvement in maintaining the scheme.

The scheme was originally designed for ten farms but demand has grown considerably with rural subdivision and now it is reported that the system operates at its maximum capacity in the dry periods during the milking season. The user committee is considering options such as restrictors on supply lines and that committee will initiate any system upgrades.

B19.2 Strategic Management Approach

The key issues in Hamama are:

- It has a very limited funding base and, therefore, it is difficult to fund improvements or upgrades.
- Even though the water is used largely for stock water, there is domestic use as well and the supply requires water treatment to meet DWSNZ.

The strategic approach for Hamama is to involve the scheme members as much as possible in the operation, maintenance, and management. Providing conventional water treatment would not be a cost effective solution for Hamama. One solution is to provide individual household treatment units. These are relatively low capital cost but operational and maintenance costs are reasonably high. Other options will be considered following approval of the PHRMP.

B19.3 Water Quality

Water quality in the scheme is generally poor and can become discoloured. The water supply in Hamama is currently "ungraded" and because the source is a stream intake, is considered unsecure.

An approved PHRMP is required by 1st July 2013.

B19.4 Asset Condition

Approximately 3km of the old water main in Hamama Road (from Waingaro Road intersection west to the last house on Hamama Road) were recently replaced. The existing reservoir is on average/poor condition.

B19.5 Fire Fighting Capacity

There is no fire fighting capability.

B19.6 Future Development & Demand

No future growth is expected.

B19.7 Daily Water Use / System / Losses

Leakage problems occur on a relatively frequent basis in the pipeline. Since the new waterline was installed, pipeline breaks will most likely occur in the old portion of the pipeline that runs through a forest to the supply at Waingaro River. The rest of the pipeline is in very poor condition and often main breaks occur.

Water Availability (m^3/d)	Average Summer m^3/d	Average Winter m^3/d	Annual Average m^3/d	Maximum m^3/d
500	?	?	?	?

Table B-3: Register of Asset for Community Water Supply Schemes

SCHEME	SOURCE	PUMPS & PUMP STATIONS	WATER TREATMENT	STORAGE	RETICULATIO N			OTHER ASSETS	
COMMUNITY									
Motueka	Bore – Fearons Bush Motor Camp Water Permit = 1000m^3/day Bore – Rec. Centre, Old Wharf Road Water Permit = 3500m^3/day	Fearons Bush PS HLPump 1 Grundfos CR 16-50 5.5kw with Hydrovar VSD HL Pump 2 Lowara FHE40 15kw with Hydrovar VSD HL Pump 3 Lowara FHE40 15kw with Hydrovar VSD Fearons Bush Well Well Pump Goulds 7 TNHC 7.5 kw. Rec Centre Well (Old Wharf Road) Well Pump - Goulds 8N/120-4 40hp	No Treatment		Water Mains	15mm 20mm 25mm 40mm 50mm 65mm 80mm 100mm 150mm 200mm **Total**	800m 245m 6,395m 8,080m 8,195m 360m 360m 2,265m 6,825m 5,940m **39,465m**	Fire Hydrants Meter Valves	116 955 206
Pohara	Stream Intake	Pohara Valley PS Pump 1 – Lowara FHE 32 200/40 4kW	Pressure sand filter Gas chlorination	Pohara Reservoir 3 x 23m^3	Water Mains	15mm 20mm 25mm 40mm 50mm 100mm 150mm **Total**	45m 45m 3,710m 4,500m 910m 1,990m 4,205m **15,405m**	Fire Hydrants Meter Valves	42 51 72
Hamama	Stream Intake	No Pump Stations	No Treatment		Water Mains		3,600m	Fire Hydrants Connections	1 25

Note: All Information provided taken from Asset Valuation June 2007. Connection Numbers take from Water Billing Report June 2008

APPENDIX C. ASSESSMENT OF WATER SUPPLIES IN THE DISTRICT

Tasman District Council performed the Water and Sanitary Services Assessments (WSSA) in 2005 and evaluated Council owned, community and some private water supplies. The WSSA documents consist of two volumes:

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

Volume 2: Contained 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 WSSA will be updated 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 ending 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

D1.1 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.

D1.2 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 Water Supply assets were last re-valued in June 2007 and the data are reported under separate cover[1]. The total replacement value of the water assets as of 30 June 2007 is given in the Table below.

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

D.3 2007 Valuation-Water

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

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

	Optimised Replacement Value ($)	Optimised Depreciated Replacement Value ($)	Total Depreciation to Date ($)	Annual Depreciation ($/yr)
Water Urban	78,127,297	44,206,027	33,921,270	1,347,623
Water Rural	14,782,969	9,291,049	5,491,920	201,141
Water Non-Reticulation	16,982,213	12,558,111	4,424,103	339,229
Total	**109,892,479**	**66,055,187**	**43,837,293**	**1,887,993**

[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 water supply systems has been incorporated into a single performance based contract, C688. The initial contract duration is six 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 water supply reticulation repairs including source, treatment plants, pipes and pump stations

The maintenance contract also covers works related to new facilities. 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 with the detailed list shown in Table E-2.

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

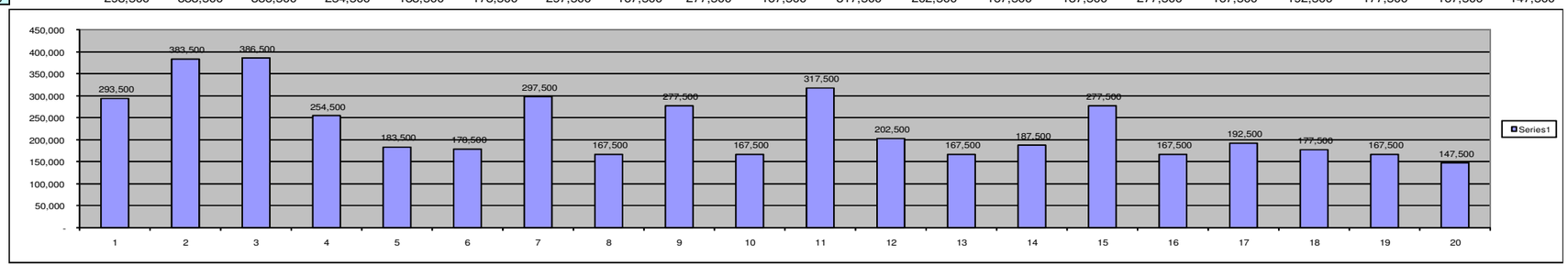
Study Name	Brief Description of Study
Water and Sanitary Services Assessment	Completed every 3 years to assess unreticulated communities.
Modelling of reticulation networks	Assessing capacity and deficiencies of reticulation networks, including Murchison, Collingwood, Motueka, Kaiteriteri with recalibration of Richmond/Waimea, Mapua, Brightwater & Wakefield.
PHRMP	Production of Public Health Risk Management Schemes for all water supply systems.
Water Loss Assessments	Assessing the levels of water loss in supply systems, identifying leaks
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-3.

Table E-2: Engineering Strategic Studies

Item	Study Name	Description	TOTAL	2008/9	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
				Current	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 Services Assessments	3 yrly reviews	280,000		40,000			40,000			40,000			40,000			40,000			40,000			40,000	
2	AMP Upgrades	3 yrly reviews	420,000			20,000	50,000		20,000	50,000		20000	50,000		20000	50,000		20000	50,000		20000	50,000		
3	P/S Contract Tender							20,000										20,000						
4	AMP Improvement Plan Activities	Annual allowance	1,000,000		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
5	O&M Contract Tender		300,000				100,000						100,000						100,000					
6	Valuations	3 yrly reviews	140,000			20,000			20,000			20,000			20,000			20,000			20,000			20,000
7	Water Modelling - Murchison		15,000						15,000															
8	Water Modelling - Collingwood		15,000								15,000													
9	Water Modelling - Motueka		50,000			50,000																		
10	Water Modelling - Riwaka-Kaiteri		40,000								40,000													
11	Water Modelling - Richmond/Waimea Recalibration		45,000		45,000																			
12	Water Modelling - Mapua Recalibration		25,000			25,000																		
13	Water Modelling - Wakefield Recalibration		25,000								25,000													
14	Water Modelling - Brightwater Recalibration		25,000								25,000													
15	Model management Guidelines Development		10,000		10,000																			
16	Model maintenance/updating		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
17	Developer Enquiry/system improvement assessments		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	Future Demand analysis		100,000			25,000					25,000					25,000					25,000			
19	Night flow monitoring	5 largest urban schemes	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
20	Assess Level of water loss for all schemes		18,000					18,000																
21	Cost benefit analysis		18,000				18,000																	
22	Develop water demand management plan		18,000					18,000																
23	Develop meter replacement program		15,000			15,000																		
24	Pressure management	Richmond/ Waimea	30,000					30,000																
25	Tapawera Asset data compilation		20,000				20,000																	
26	PHRMP	Brightwater	20,000			20,000																		
27	PHRMP	Wakefield	20,000			20,000																		
28	PHRMP	Murchison	20,000			20,000																		
29	PHRMP	Pohara Valley	10,000				10,000																	
30	PHRMP	88 Valley	10,000				10,000																	
31	PHRMP	Dovedale	10,000				10,000																	
32	PHRMP	Hamama	10,000				10,000																	
33	PHRMP	Collingwood	10,000				10,000																	
34	PHRMP	Redwoods	10,000				10,000																	
35	PHRMP	Waimea	20,000			20,000																		
36	PHRMP	Kaiteriteri	10,000				10,000																	
37	PHRMP	Mapua	20,000			20,000																		
38	PHRMP	PHRMP Reviews													150,000									
39	Risk Assessments	Identify key assets and prepare risk mitigation plan	20,000		20,000																			
40	Rural Schemes Markation		6,000		1,000	1,000	1,000	1,000	1,000	1,000														
41	Modelling Software Purchase				50,000																			
41	Resource Consent Monitoring		700,000		35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
Total			4,595,000	-	293,500	383,500	386,500	254,500	183,500	178,500	297,500	167,500	277,500	167,500	317,500	202,500	167,500	187,500	277,500	167,500	192,500	177,500	167,500	147,500



Does Not Include Inflation

Table E-3 – Operation & Maintenance Forecast

General Ledger Code	WATER 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
Water Supply																					
Urban Water Supply																					
0801 2401	WAT RICHMOND MAINTENANCE	120,000	132,000	138,600	145,530	152,807	170,379	189,121	191,012	192,922	194,852	197,774	199,752	201,750	203,767	205,805	208,892	210,981	213,091	215,221	217,374
0801 2401 01	WAT KAITERI MAINTENANCE	32,000	35,200	36,960	38,808	40,748	45,434	50,432	50,937	51,446	51,960	52,740	53,267	53,800	54,338	54,881	55,704	56,262	56,824	57,392	57,966
0801 2401 02	WAT BGW/HOPE MAINTENANCE	65,000	71,500	75,075	78,829	82,770	92,289	102,441	103,465	104,500	105,545	107,128	108,199	109,281	110,374	111,478	113,150	114,281	115,424	116,578	117,744
0801 2401 03	WAT WAKEFIELD MAINTENANCE	32,000	35,200	36,960	38,808	40,748	45,434	50,432	50,937	51,446	51,960	52,740	53,267	53,800	54,338	54,881	55,704	56,262	56,824	57,392	57,966
0801 2401 05	WAT TAPAWERA MAINTENANCE	30,000	33,000	34,650	36,383	38,202	42,595	47,280	47,753	48,231	48,713	49,444	49,938	50,437	50,942	51,451	52,223	52,745	53,273	53,805	54,343
0801 2401 06	WAT MURCHSION MAINTENANCE	45,000	49,500	51,975	54,574	57,302	63,892	70,920	71,630	72,346	73,069	74,165	74,907	75,656	76,413	77,177	78,334	79,118	79,909	80,708	81,515
0801 2401 07	WAT UPPER TAKAKA MAINTENANCE	15,000	16,500	17,325	18,191	19,101	21,297	23,640	23,877	24,115	24,356	24,722	24,969	25,219	25,471	25,726	26,111	26,373	26,636	26,903	27,172
0801 2401 08	WAT WAIMEA MAINTENANCE	90,000	99,000	103,950	109,148	114,605	127,784	141,841	143,259	144,692	146,139	148,331	149,814	151,312	152,825	154,354	156,669	158,236	159,818	161,416	163,030
0801 2401 09	WAT MAPUA MAINTENANCE	115,000	126,500	132,825	139,466	146,440	163,280	181,241	183,053	184,884	186,733	189,534	191,429	193,343	195,277	197,230	200,188	202,190	204,212	206,254	208,316
0801 2401 10	WAT URBAN GENERAL MAINTENANCE	700,000	770,000	808,500	848,925	891,371	993,879	1,103,206	1,114,238	1,125,380	1,136,634	1,153,683	1,165,220	1,176,872	1,188,641	1,200,528	1,218,535	1,230,721	1,243,028	1,255,458	1,268,013
0801 2401 11	WAT DATRAN MAINTENANCE	55,000	60,500	63,525	66,701	70,036	78,090	86,680	87,547	88,423	89,307	90,647	91,553	92,469	93,393	94,327	95,742	96,699	97,666	98,643	99,630
0810 2401 14	WAT COLLINGWOOD MAINTENANCE	25,000	27,500	28,875	30,319	31,835	35,496	39,400	39,794	40,192	40,594	41,203	41,615	42,031	42,451	42,876	43,519	43,954	44,394	44,838	45,286
0801 2401 12	WAT MOTUEKA MAINTENANCE							100,000	101,000	102,010	103,030	104,576	105,621	106,678	107,744	108,822	110,454	111,559	112,674	113,801	114,939
0801 2401 13	WAT POHARA MAINTENANCE																				55,000
0825 2401	WAT COASTAL PIPELINE MAINTENANCE						100,000	111,500	123,765	125,003	126,253	127,515	129,428	130,722	132,029	133,350	134,683	136,703	138,071	139,451	140,846
0825 2401 01	WAT COASTAL TASMAN AREA MAINTENANCE																				100,000
0813 2401	WAT MARAHAU MAINTENANCE																				30,000
0801 2401 17	WAT TAKAKA MAINTENANCE	10,000	11,000	11,550	12,128	12,734	14,198	15,760	15,918	16,077	16,238	16,481	16,646	16,812	16,981	60,000	60,900	61,509	62,124	62,745	63,373
0802 2401	WAT MOTUEKA RETICULATION MTCE	75,000	82,500	86,625	90,956	95,504	106,487														
0802 2401 01	WAT MOTUEKA FIRE WELLS MTCE	15,000	16,500	17,325	18,191	19,101	21,297														
0804 2401	WAT 88 VALLEY GENERAL MAINTENANCE	40,000	44,000	46,200	48,510	50,936	56,793	63,040	63,671	64,307	64,951	65,925	66,584	67,250	67,922	68,602	69,631	70,327	71,030	71,740	72,458
0805 2401	WAT DOVEDALE GENERAL MAINTENANCE	90,000	99,000	103,950	109,148	114,605	127,784	141,841	143,259	144,692	146,139	148,331	149,814	151,312	152,825	154,354	156,669	158,236	159,818	161,416	163,030
0806 2401	WAT REDWOOD GENERAL MAINTENANCE	65,000	71,500	75,075	78,829	82,770	92,289	102,441	103,465	104,500	105,545	107,128	108,199	109,281	110,374	111,478	113,150	114,281	115,424	116,578	117,744
08072401	WAT HAMAMA GENERAL MAINTENANCE	6,000	6,600	6,930	7,277	7,640	18,519	20,556	20,762	20,969	21,179	21,497	21,712	21,929	22,148	22,369	22,705	22,932	23,161	23,393	23,627
0808 2401	WAT POHARA GENERAL MAINTENANCE	20,000	22,000	23,100	24,255	25,468	28,397	31,520	31,835	32,154	32,475	32,962	33,292	33,625	33,961	34,301	34,815	35,163	35,515	35,870	36,229
0809 2401 01	WAT WAI ITI DAM MAINTENANCE	20,000	22,000	23,100	24,255	25,468	28,397	31,520	31,835	32,154	32,475	32,962	33,292	33,625	33,961	34,301	34,815	35,163	35,515	35,870	36,229
0826 2401	WAT TAKAKA FIREWELLS G MAINTEN	9,000	9,900																		
		1,674,000	1,841,400	1,923,075	2,019,229	2,120,190	2,474,012	2,704,813	2,743,011	2,770,441	2,798,145	2,839,486	2,868,519	2,897,204	2,926,176	2,998,287	3,042,595	3,073,694	3,104,431	3,135,475	3,351,830
ELECTRICITY																					
08012505	URBAN ELECTRICITY	387,098	425,808	448,098	470,503	494,028	553,842	614,764	620,912	627,121	633,392	642,893	649,322	655,815	662,373	670,497	680,555	687,360	694,234	701,176	708,188
08022505	MOTUEKA ELECTRICITY	29,326	32,259	33,872	35,565	37,344	41,638	51,218	51,731	52,248	52,770	53,562	54,097	54,638	55,185	55,737	56,573	57,138	57,710	58,287	58,870
08042505	88 VLY ELECTRICITY	1,173	1,291	1,355	1,423	1,494	1,666	1,849	1,868	1,886	1,905	1,934	1,953	1,973	1,992	2,012	2,042	2,063	2,083	2,104	2,125
08052505	DOVEDALE ELECTRICITY	24,868	27,355	28,723	30,159	31,667	35,309	39,193	39,585	39,981	40,380	40,986	41,396	41,810	42,228	42,650	43,290	43,723	44,160	44,602	45,048
08062505	REDWOODS ELECTRICITY	30,498	33,548	35,226	36,987	38,836	43,302	48,066	48,546	49,032	49,522	50,265	50,768	51,275	51,788	52,306	53,090	53,621	54,158	54,699	55,246
08082505	POHARA ELECTRICITY	5,442	5,987	6,286	6,600	6,930	7,727	8,577	8,663	8,750	8,837	8,970	9,059	9,150	9,241	9,334	9,474	9,569	9,664	9,761	10,858
		478,407	526,247	553,560	581,238	610,300	683,484	763,667	771,304	779,017	786,807	798,609	806,595	814,661	822,808	832,536	845,024	853,474	862,009	870,629	880,335
PROFFESSIONAL SERVICES																					
08012203	WAT GEN P/S CONSULTANTS	379,732	417,705	438,591	460,520	483,546	539,154	598,461	604,445	610,490	616,595	625,844	632,102	638,423	644,807	651,256	661,024	667,635	674,311	681,054	687,865
08012404	WATER METER READING	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583	27,583
08012607	WAT PURCHASE N C C	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
08022203	WAT MOTUEKA P/S CONSULTANTS	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965	17,965
08042203	WAT 88 VALLEY P/S CONSULTANTS	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967	4,967
08052203	WAT DOVEDALE P/S CONSULTANTS	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300	9,300
08062203	WAT REDWOOD P/S CONSULTANTS	9,267	10,194	10,704	11,239	11,801	13,158	14,605	14,752	14,899	15,048	15,274	15,427	15,581	15,737	15,894	16,132	16,294	16,457	16,621	16,787
08082203	WAT POHARA P/S CONSULTANTS	1,454	1,600	1,679	1,763	1,852	2,065	2,292	2,315	2,338	2,361	2,397	2,420	2,445	2,469	2,494	2,531	2,557	2,582	2,608	2,634
08092203	WAT WAI-ITI DAM PROF SERVICES	1,000	1,110	1,221	1,282	1,346	1,413	1,576	1,749	1,767	1,785	1,802	1,829	1,848	1,866	1,885	1,904	1,932	1,952	1,971	1,991
08262203	WAT TAKAKA FIRE P/S CONSULTANT	1,459	1,600																		
0801220301	WAT RESOURCE CONSENT P/S	5,550	6,105	6,410	6,731	7,067	7,880	8,747	8,834	8,923	9,012	9,147	9,239	9,331	9,424	9,518	9,661	9,758	9,855	9,954	10,054
0801260501	WAT RESOURCE CONSENT MONITORING	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000
0801220304	WAT - A M PLAN P/S	50,000	70,000	100,000	50,000	70,000	100,000	50,000	70,000	100,000	50,000	70,000	100,000	50,000	70,000	100,000	50,000	70,000	100,000	50,000	50,000
0801220306	WAT WATER 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
0801220307	WAT PUBLIC HEALTH PLANS (PHRMP)	100,000	100,000	70,000	0	0	0	0	0	0	0	150,000	0	0	0	0	0	0	0	0	0
0801252601	WAT URBAN MODELLING	112,500	82,500	7,500	7,500	22,500	7,500	112,500	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
0801220310	WAT O&M CONTRACT TENDER	0	0	100,000	0	0	0	0	0	100,000	0	0	0	0	0	100,000	0	0	0	0	0
0801220315	WAT P/S CONTRACT TENDER	0	0	0	20,000	0	0	0	0	0	0	0	0	0	20,000	0	0	0	0	0	0
08012205	WAT VALUATIONS	0	20,000	0	0	20,000	0	0	20,000	0	0	20,000	0	0	20,000	0	0	20,000	0	0	20,000
0252603	Enquiry/Sys Improvement Assess	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
0801252604	Sys Analysis&Program Replacemt	0	40,000	38,000	66,000	0	0	25,000	0	0	0	0	25,000	0	0	0	0	25,000	0	0	0
08012605	WAT NIGHT FLOW MONITORING	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
0801220316	RURAL SCHEME MARKATION	1,000	1,000	1,000	1,000	1,000	1,000	0	0	0	0	0									
0801220311	WAT RISK ASSESSMENTS	20,000																			
		867,777	897,629	920,920	811,850	764,927	817,985	998,996	875,410	991,731	888,115	1,047,778	939,332	910,942	937,619	1,034,362	934,568	966,490	958,472	955,523	942,645
	Total	3,020,184	3,265,276	3,397,555	3,412,317	3,495,417	3,975,481	4,467,476	4,389,725	4,541,189	4,473,068	4,685,874	4,614,446	4,622,807	4,686,602	4,865,185	4,822,187	4,893,658	4,924,912	4,961,628	5,174,811

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 projections are described in detail in both volumes and are summarised as follows:

F1.1 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, hazard risk exposure and 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'.

F1.2 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 Water Demands

Table F-1 summarises the total number of connections to water supplies for the next 20 years.

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Table F-1: Projected Number of Connections in the Tasman District

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2020/29
		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Yrs 11-20
Water Supply Area												
Urban												
Richmond (incl. Hope)	5218	5302	5387	5472	5551	5633	5714	5795	5876	5957	6038	6811
Brightwater	975	985	996	1008	1012	1022	1033	1044	1054	1064	1074	1157
Wakefield	734	740	750	760	764	772	779	787	794	802	810	891
Murchison	301	301	301	301	301	301	301	302	303	304	304	308
Tapawera	166	166	167	167	167	168	169	170	171	172	173	183
Motueka	967	980	994	1008	1018	1029	1062	1095	1128	1161	1194	1349
Mapua/ Ruby Bay	804	808	815	822	824	829	834	839	844	849	854	890
Upper Takaka	19											
Kaiteriteri	577	577	577	577	577	577	578	579	579	579	579	579
Pohara	50	51	51	52	52	53	53	54	54	55	200	213
Collingwood	216	216	217	217	217	217	218	218	218	218	218	219
Waimea	153											
Rural												
Dovedale	486	486	486	486	488	489	491	492	494	495	497	535
Eighty Eight Valley	481	481	481	481	481	482	482	483	484	484	485	527
Redwood Valley	514	514	514	514	515	517	518	519	520	522	523	545

Note: The figures in the Rural water supply schemes reflect the number of units supplied to each rural scheme.
A unit = 2 m^3/day for the Dovedale & Redwood Valley schemes
A unit = 1 m^3/day for the Eighty Eight Valley scheme

F.3 Future New Capital Requirements

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. The need for the new 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)(I)-(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: Water Supply Capital Forecast – by Scheme

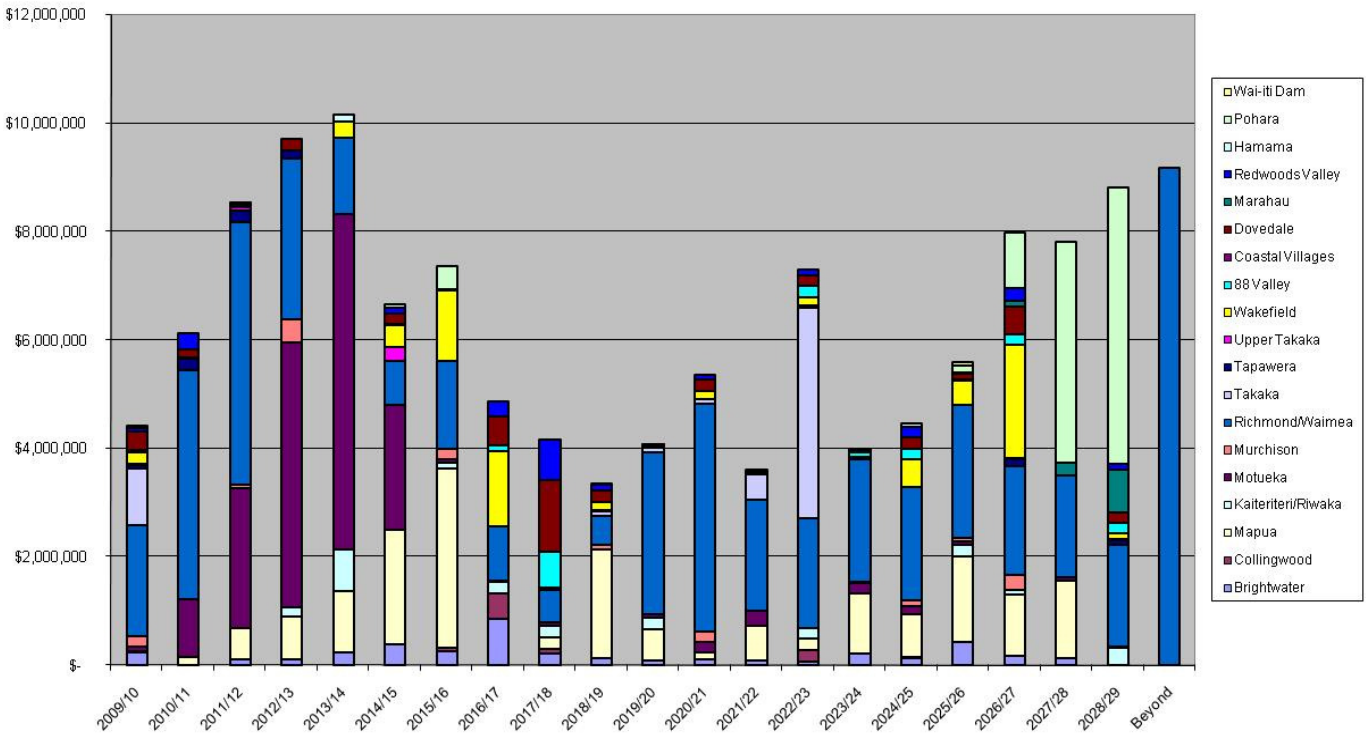
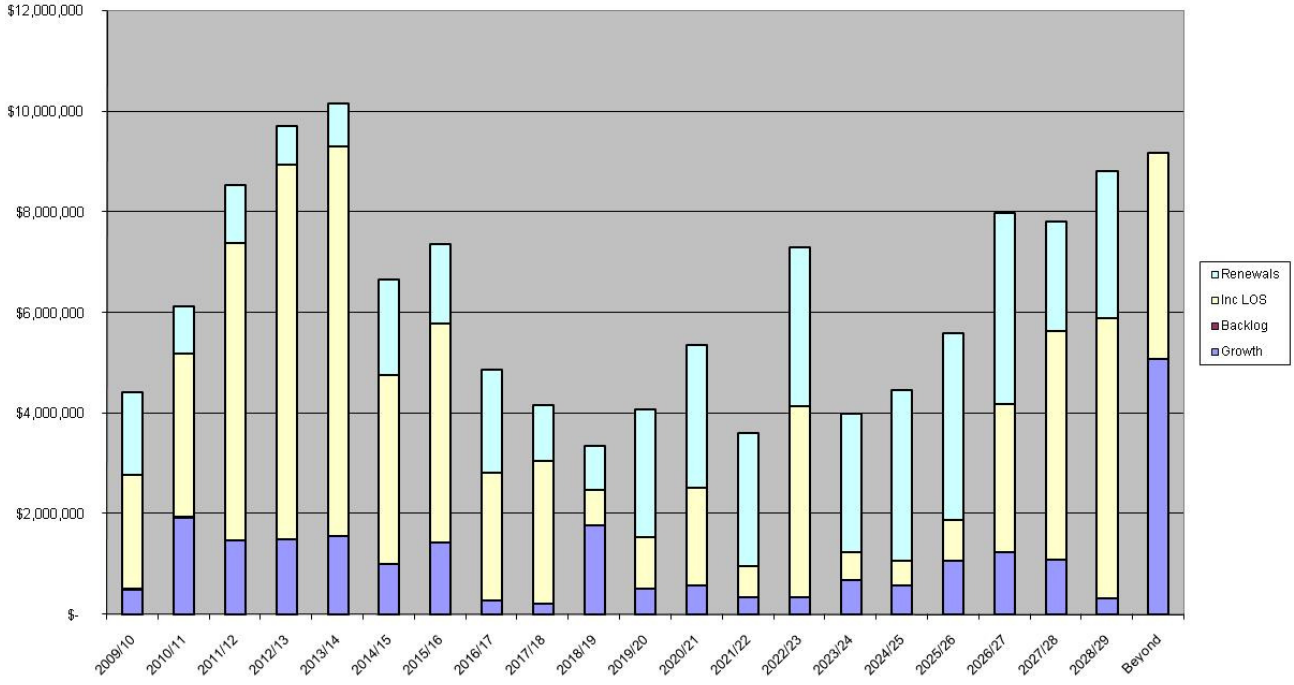


Figure F-2: Water Supply Capital Forecast – By Project Driver

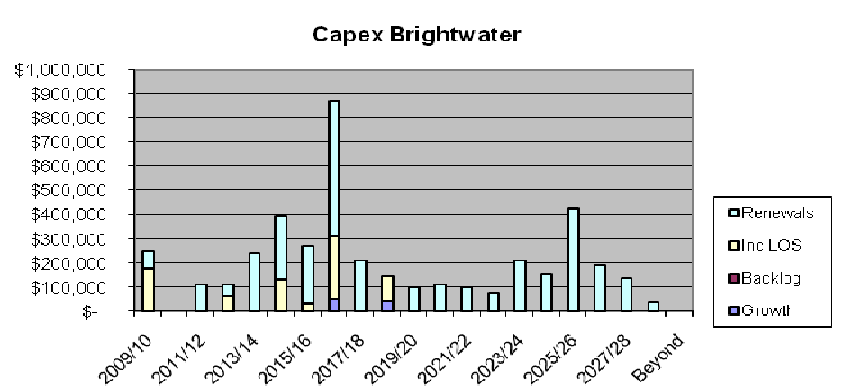


These charts have been developed from a database of projects that provide a full list of the individual projects along with project cost estimate, allocations against project drivers, project programming and other project specific information. This project database is included at the end of this Appendix.

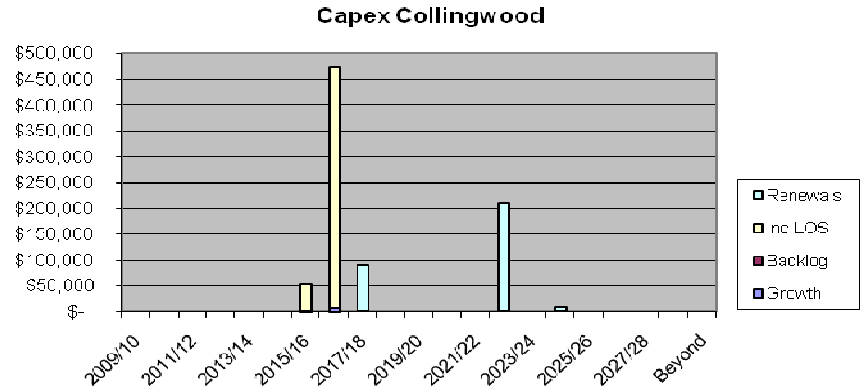
F.4 Future New Capital Requirements by Scheme

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.

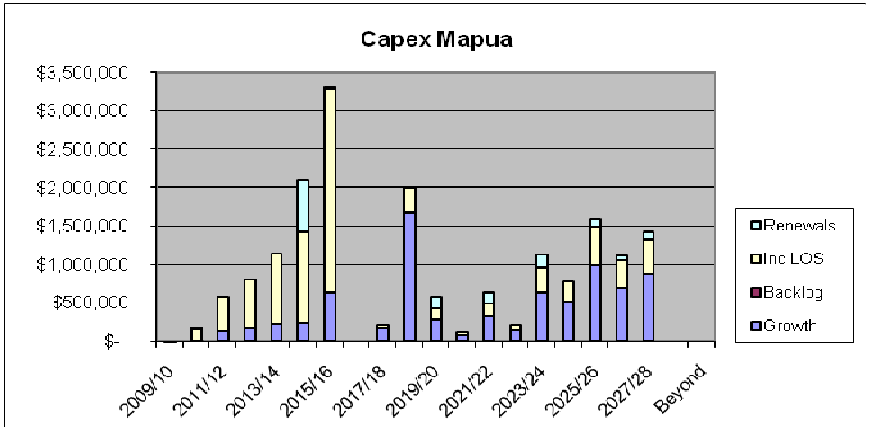
Figure F-3: Water Supply Capital Forecast by Scheme



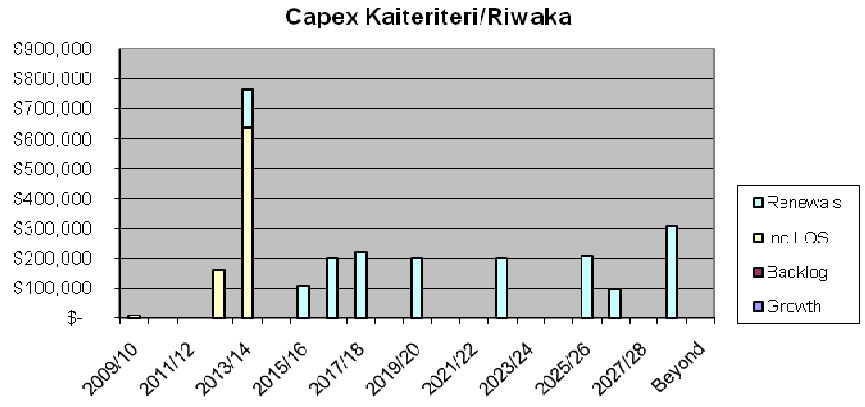
Major Capital Works:
- Treatment Upgrade yrs 2015-2017 ($348,800)
- SH6 main replacement, Ranzau Rd - 3 Brothers Corner, yrs 2015 - 2017 ($696,500)



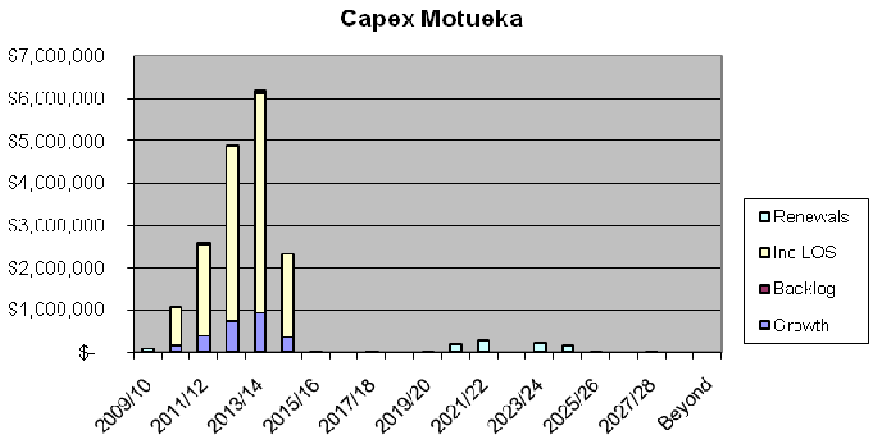
Major Capital Works:
- Treatment Upgrade yrs 2015-2017 ($524,300)



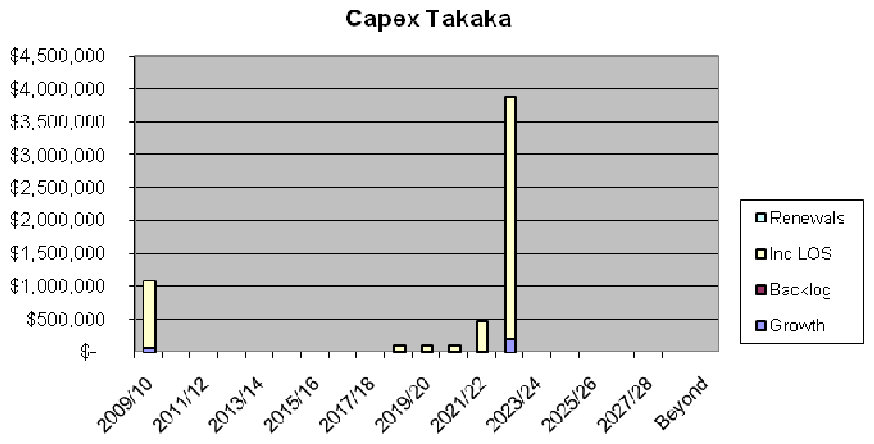
Major Capital Works:
- Mapua portion of Coastal Pipeline ($9,048,800) over 20 year period
- Aranui Road Main Replacement, yr 2014/15 ($692,100)
- CTA Reticulation($7,427,800) over 20 year period



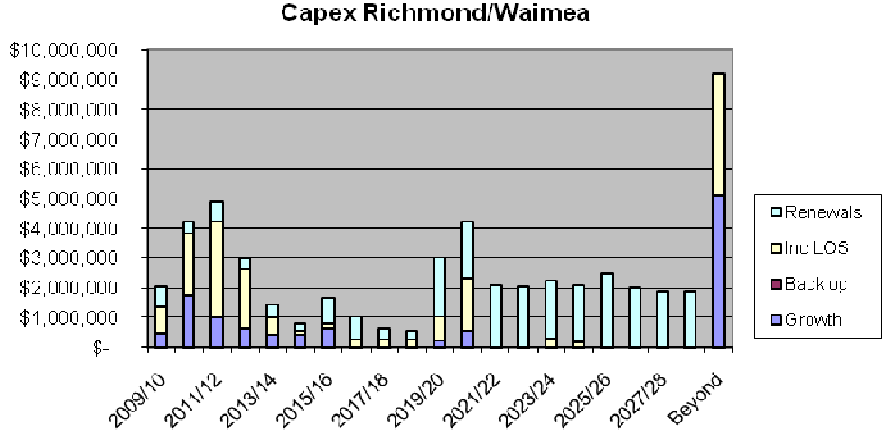
Major Capital Works:
- Treatment Upgrade yrs 2012-2014 ($793,100)



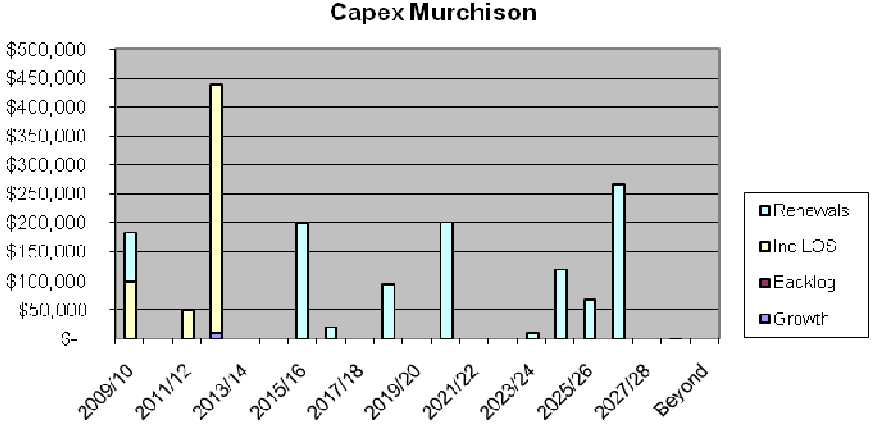
Major Capital Works:
- New Town Supply, yr 2010 - 2015 ($11,057,800)
- High Street South Main Renewal, yr 2020 - 2022 ($395,600)
- Motueka portion of Coastal Pipeline, yrs 2010 - 2015 ($5,850,000)



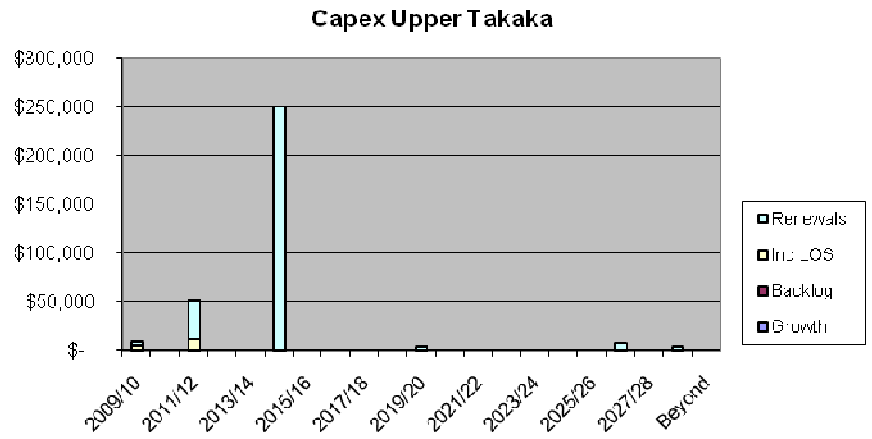
Major Capital Works:
- Fire Fighting improvements in CBD, yr 2009/10 ($1,065,300)
- New Town Supply, yrs 2018 - 2023 ($4,604,700)



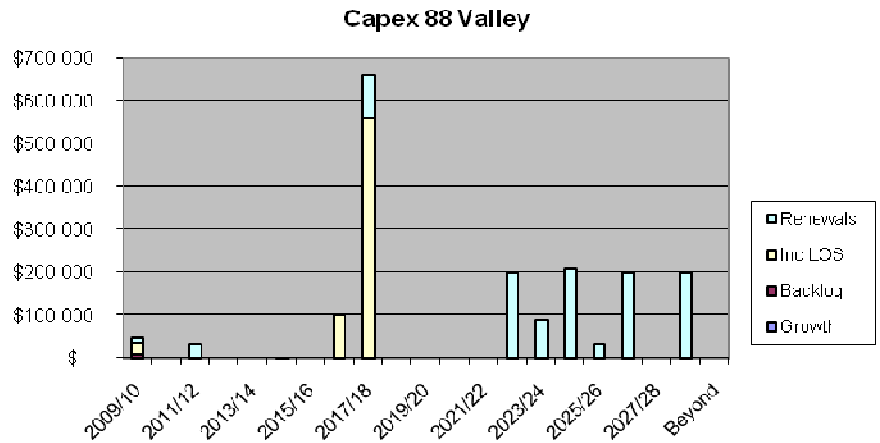
Major Capital Works:
- Richmond East New Infrastructure etc address growth, yrs 2009 - 2016 ($4,458,000)
- New Treatment Plant, yrs 2009 - 2013 ($5,870,800)
- New Groundwater Source yrs 2009 - 2021 ($1,209,300)



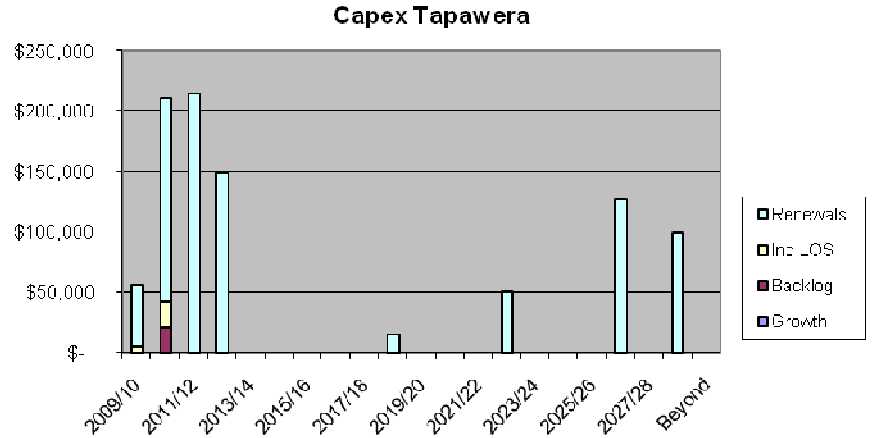
Major Capital Works:
- Treatment Upgrade, yr 2011 - 2013 ($485,800)



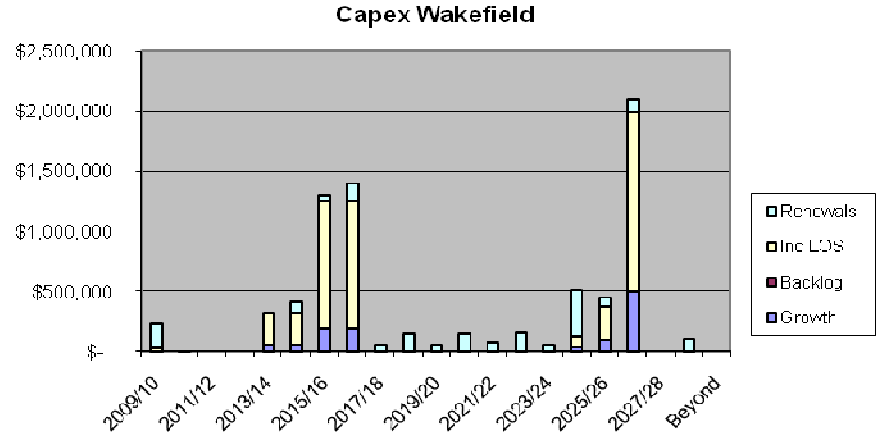
Major Capital Works:
- General pipeline renewals, yrs 2014/15 ($250,000)



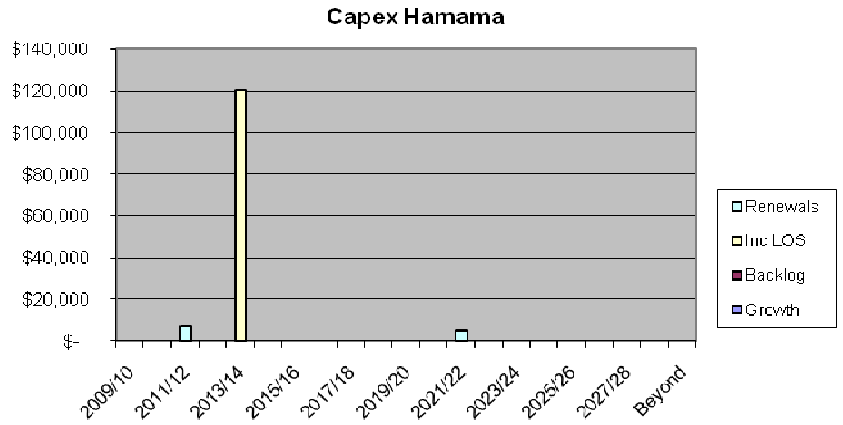
Major Capital Works:
- Treatment Upgrade, yrs 2013 - 2018 ($657,800)



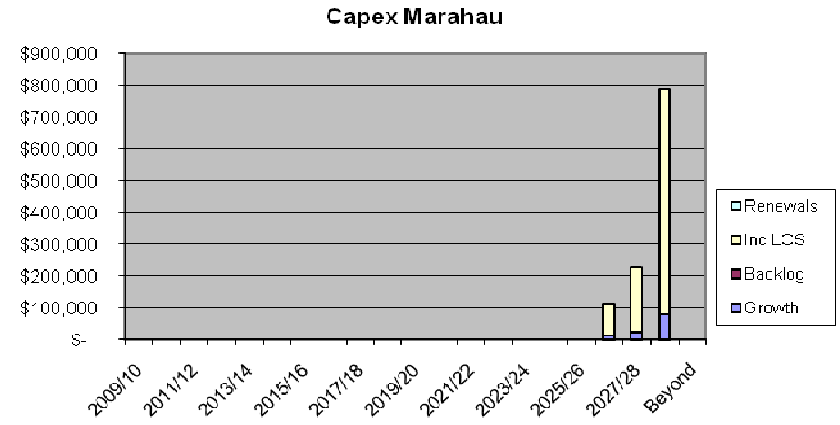
Major Capital Works:
- New Rising Main from Pump Station, yr 2009 - 2011 ($234,800)



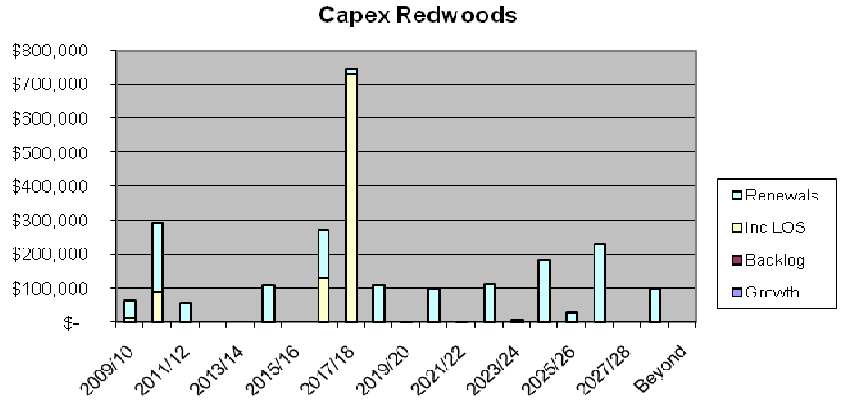
Major Capital Works:
- Wakefield & 88 Valley Rezoning, yrs 2024 - 2027 ($2,491,800
- New Source Construction, yrs 2013 - 2017 ($3,123,500)



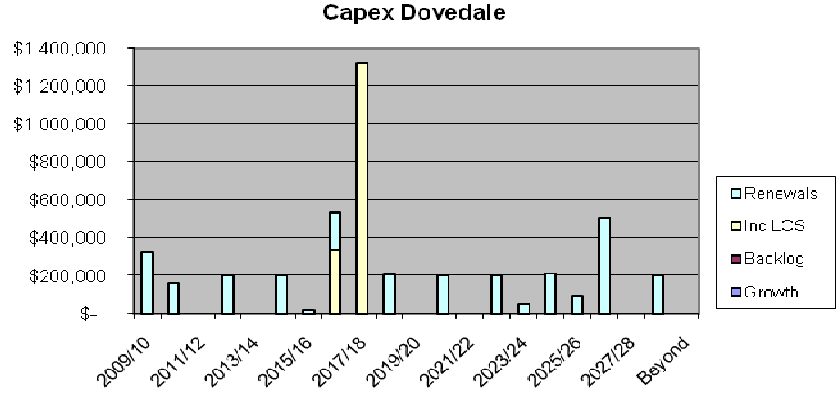
Major Capital Works:
- Installation of Individual Household Treatment Units, yrs 2013/2014 ($120,300)



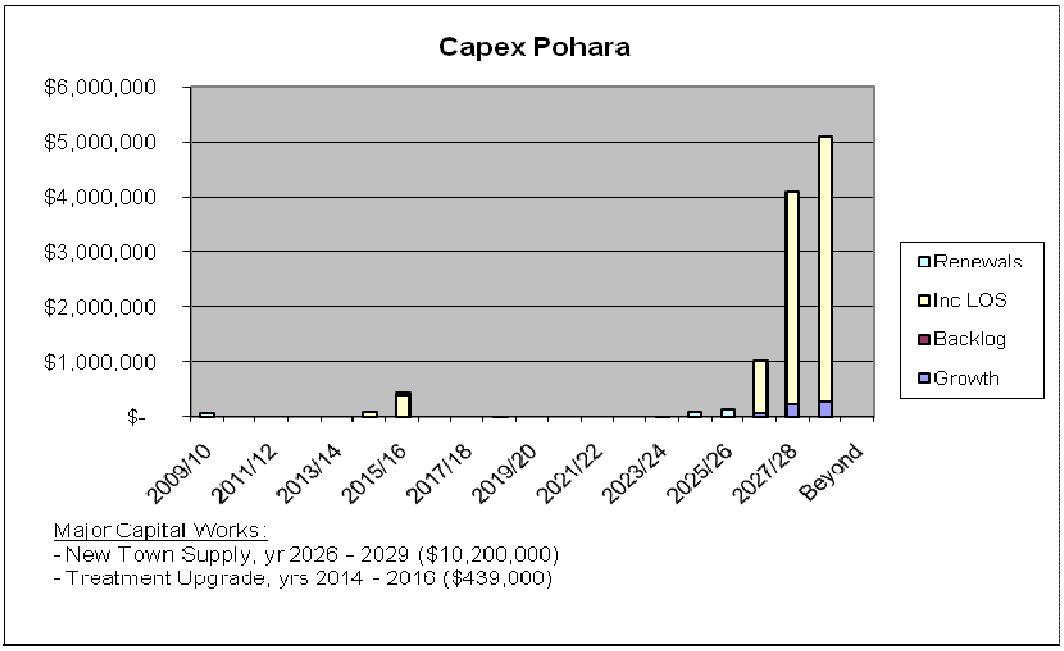
Major Capital Works:
- New Town Supply, yrs 2026 - 2029 ($1,128,700)

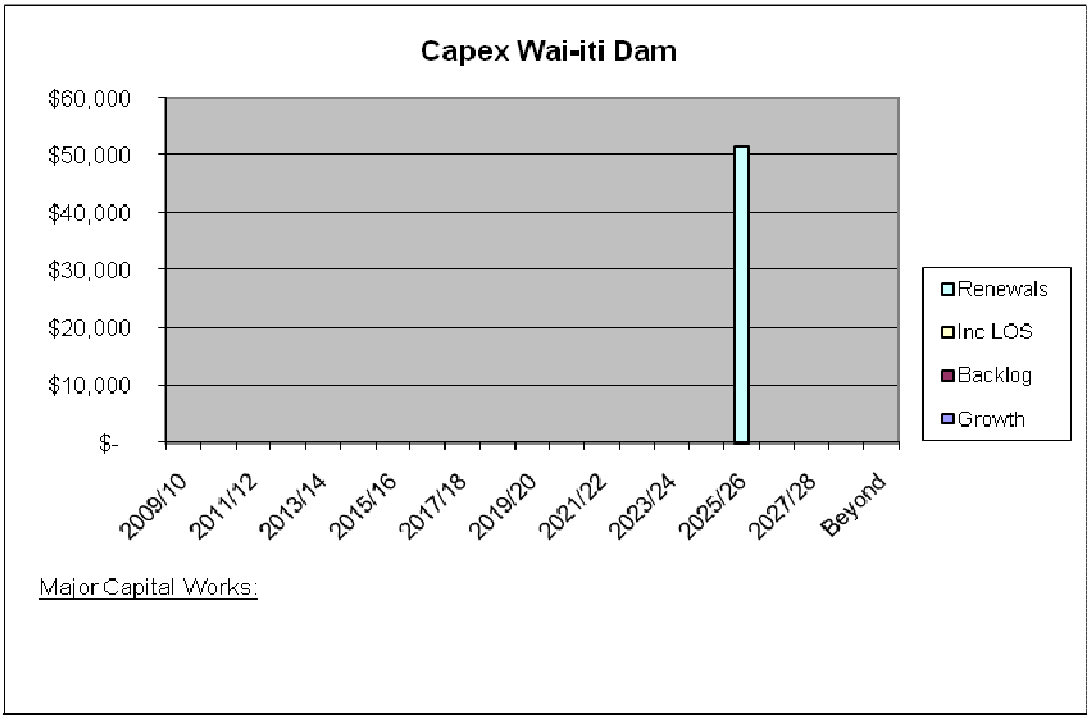


Major Capital Works:
- Treatment Upgrade at Golden Hills, yrs 2016 - 2018 ($391,000)
- Treatment Upgrade at O'Connors Creek, yrs 2016 - 2018 ($471,100)
- Golden Hills Pipeline Replacement, yrs 2009 - 2011 ($199,000)



Major Capital Works:
- New Motueka River Valley Water Supply, yrs 2016 - 2018 ($1,654,200)


Capex Pohara
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
2009/10
2011/12
2013/14
2015/16
2017/18
2019/20
2021/22
2023/24
2025/26
2027/28
Beyond
Renewals
Inc LOS
Backlog
Growth
Major Capital Works:
- New Town Supply, yr 2026 - 2029 ($10,200,000)
- Treatment Upgrade, yrs 2014 - 2016 ($439,000)


Capex Wai-iti Dam
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$-
2009/10
2011/12
2013/14
2015/16
2017/18
2019/20
2021/22
2023/24
2025/26
2027/28
Beyond
Renewals
Inc LOS
Backlog
Growth
Major Capital Works:

F.5 Development of New Capital Requirement Forecasts

During April to September 2008, a number of workshops with the project team were held to identify new works requirements. New works were identified by:

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

Each project identified was developed with a scope and a project cost estimate. Common project estimating templates were 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 and summarising of the Capital Costs per project, per scheme, per project driver and per year. This has been used as the source data for input into council's financial system for financial modelling.

The full spreadsheet of projects is included as follows:

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	88 Valley	Higgins Road - Bird Road Link	$ 9,000	$ 9,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	88 Valley	Mt Heslington Rd Pipeline Upgrade	$ 21,200	$ 21,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	88 Valley	Intake access & pipeline renewal	$ 89,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 89,200	$ -	$ -	$ -	$ -	$ -	$ -
4	88 Valley	Reservoir Upgrade	$ 14,400	$ 14,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	88 Valley	Treatment Upgrade	$ 657,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,670	$ 559,130	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	88 Valley	88 Valley Pipeline Renewals	$ 900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -
7	88 Valley	Reservoir	$ 14,494	$ -	$ -	$ -	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,263	$ -	$ -	$ -	$ -	$ -
8	88 Valley	Meter Renewals	$ 66,090	$ -	$ -	$ 33,045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,045	$ -	$ -	$ -	$ -
9	Brightwater	Bryant Road Ridermain renewal	$ 39,400	$ 39,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	Brightwater	Exploratory Bore	$ 20,000	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Brightwater	B/water Well Field Lightband Rd	$ 94,600	$ -	$ -	$ -	$ 94,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	Brightwater	Factory Road main	$ 269,200	$ -	$ -	$ -	$ -	$ -	$ 269,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	Brightwater	New Tanker fill hydrant-Saleyards	$ 8,300	$ 8,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	Brightwater	Richmond / Brightwater Link	$ 4,100	$ 4,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Brightwater	Teapot Valley extension	$ 145,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 145,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	Brightwater	Treatment Upgrade	$ 348,800	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,880	$ 313,920	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	Brightwater	Well Head Improvements	$ 165,600	$ 165,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Brightwater	SH6main replace,RanzRd-3Brothr	$ 696,500	$ -	$ -	$ -	$ -	$ -	$ -	$ 139,300	$ 557,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	Brightwater	Brightwater Pipeline Renewals	$ 900,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ -
20	Brightwater	Fire Hydrant Renewals	$ 153,649	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 153,649	$ -	$ -	$ -	$ -	$ -
21	Brightwater	Meter Renewals	$ 757,792	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ 37,890	$ 37,890	$ -
22	Brightwater	B/wat Main WatPS T/ment Plant	$ 19,222	$ 19,222	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Brightwater	Brightwater Reservoir	$ 328,158	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 328,158	$ -	$ -	$ -	$ -
24	Brightwater	Well Field Lightband Rd Headworks	$ 58,788	$ 15,456	$ -	$ -	$ -	$ 41,995	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -
25	Brightwater	Teapot Vly PS	$ 11,752	$ 1,046	$ -	$ -	$ -	$ -	$ 9,660	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,046	$ -	$ -	$ -	$ -	$ -
26	Brightwater	Valve Renewals	$ 154,471	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 77,236	$ -	$ -	$ -	$ 77,236	$ -	$ -	$ -
27	Collingwood	Treatment Upgrade	$ 524,300	$ -	$ -	$ -	$ -	$ -	$ -	$ 52,430	$ 471,870	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	Collingwood	Meter Renewals	$ 88,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 88,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
29	Collingwood	Collingwood Bore Headworks	$ 46,169	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,246	$ -	$ 7,924	$ -	$ -	$ -	$ -	$ -
30	Collingwood	Collingwood PS	$ 79,636	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 79,636	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31	Collingwood	Collingwood WTP & Reservoir	$ 90,129	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,129	$ -	$ -	$ -	$ -	$ -	$ -	$ -
32	Dovedale	Old House Road main renewal	$ 33,900	$ 33,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	Dovedale	Knots PS upgrade	$ 50,600	$ 50,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
34	Dovedale	Dovedale Pipeline Renewals	$ 2,000,000	$ 40,000	$ 160,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -
35	Dovedale	New Mot Rivr Valley Water Supp	$ 1,654,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 330,840	$ 1,323,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
36	Dovedale	Bensemann's BP tank reservoir	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -	$ -
37	Dovedale	Beuke's BP tank reservoir	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -	$ -
38	Dovedale	Fire Hydrant	$ 9,147	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,147	$ -	$ -	$ -	$ -	$ -	$ -
39	Dovedale	Humphries Creek PS	$ 76,682	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,619	$ 26,062	$ -	$ -	$ -
40	Dovedale	Knots PS	$ 26,062	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,062	$ -	$ -	$ -
41	Dovedale	Moore's BP tank reservoir	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -	$ -
42	Dovedale	Neudorf Hill BP tank reservoir	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -	$ -
43	Dovedale	Restrictor Renewals	$ 73,071	$ 73,071	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	Dovedale	Rosedale Saddle BP tanks reservoir	$ 15,473	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,473	$ -	$ -	$ -
45	Dovedale	Source Treatment Plant	$ 41,687	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,868	$ -	$ -	$ -	$ 2,834	$ -	$ 6,251	$ -	$ 28,735	$ -	$ -	$ -
46	Dovedale	Tehepe Lower PS	$ 64,942	$ 26,994	$ -	$ -	$ -	$ -	$ -	$ 4,835	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,025	$ -	$ 27,088	$ -	$ -	$ -
47	Dovedale	Tehepe Upper PS	$ 53,942	$ 26,846	$ -	$ -	$ -	$ -	$ -	$ 4,835	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,261	$ -	$ -	$ -
48	Dovedale	Thorn's PS	$ 116,737	$ 25,390	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,732	$ -	$ 89,615	$ -	$ -	$ -
49	Dovedale	Valve Renewals	$ 38,195	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,195	$ -	$ -	$ -	$ -	$ -	$ -
50	Dovedale	Winn's PS	$ 127,284	$ 43,858	$ -	$ -	$ -	$ -	$ -	$ 8,056	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,582	$ 38,788	$ -	$ -	$ -
51	Dovedale	Winn's Reservoir	$ 2,172	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,172	$ -	$ -	$ -	$ -	$ -	$ -	$ -
52	Dovedale	Winns Valley Res	$ 5,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600	$ -	$ -	$ -	$ -
53	Hamama	Install Household T/ment Units	$ 120,300	$ -	$ -	$ -	$ -	$ 120,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
54	Hamama	Source/Reservior	$ 7,473	$ -	$ -	$ 7,473	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	Hamama	Valve Renewals	$ 5,481	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,481	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
56	Kaiteriteri/Riwaka	Additional valves - trunk main	$ 4,700	$ 4,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
57	Kaiteriteri/Riwaka	Main Rd Riw-Tanker fill hydrant	$ 2,700	$ 2,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
58	Kaiteriteri/Riwaka	Kaiteriteri Pipeline Renewals	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ 200,000	$ -	$ -
59	Kaiteriteri/Riwaka	Meter Renewals	$ 433,139	$ -	$ -	$ -	$ -	$ 129,942	$ -	$ 108,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 86,628	$ -	$ 108,285	$ -
60	Kaiteriteri/Riwaka	High Level Reservoir	$ 12,366	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,366	$ -	$ -	$ -
61	Kaiteriteri/Riwaka	Kaiteri High Level Booser PS	$ 31,767	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31,767	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
62	Kaiteriteri/Riwaka	Kaiteriteri High Level Reservoir	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
63	Kaiteriteri/Riwaka	Kaiteriteri Lower Booser PS	$ 117,710	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 117,710	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	Kaiteriteri/Riwaka	Kaiteriteri Main Reservoir	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
65	Kaiteriteri/Riwaka	River Rd Well Headworks	$ 68,128	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 58,851	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,277	$ -	$ -	$ -	$ -
66	Kaiteriteri/Riwaka	Treatment Upgrade	$ 793,100	$ -	$ -	$ -	$ 158,620	$ 634,480	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
101	Mapua	Aranui Road main replacement	$ 692,100	$ -	$ -	$ -	$ -	$ -	$ 692,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
102	Mapua	Mapua Pipeline Renewals	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ -
103	Mapua	Meter Renewals	$ 301,614	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,807	$ -	$ 150,807	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
104	Mapua	Brabant Drive Booster PS	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
107	Mapua	Pine Hill Reservoir & PS	$ 74,694	$ -	$ 9,833	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 64,861	$ -	$ -	$ -
109	Mapua	Queen St Pumps Flow Meter	$ 3,288	$ 3,288	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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
110	Mapua	Restrictor Renewals	$ 57,247	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57,247	$ -	$ -	$ -	$ -	$ -	$ -
111	Marahau	New town supply	$ 1,128,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 112,870	$ 225,740	$ 790,090	$ -
112	Motueka	Additional valves	$ 24,700	$ 24,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
113	Motueka	High Street South main renewal	$ 395,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 197,800	$ 197,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
114	Motueka	Old Wharf Rd add fire hydrant	$ 2,700	$ 2,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
116	Motueka	Motueka Pipeline Renewals	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ -
118	Motueka	Meter Renewals	$ 637,327	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ -
122	Murchison	Treatment Upgrade	$ 485,800	$ -	$ -	$ 48,580	$ 437,220	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
123	Murchison	Well Head Improvements	$ 96,900	$ 96,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
124	Murchison	Murchison Pipeline Renewals	$ 600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 198,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -
125	Murchison	Meter Renewals	$ 224,079	$ 67,224	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 89,632	$ -	$ -	$ -	$ -	$ -	$ -	$ 67,224	$ -	$ -	$ -	$ -
126	Murchison	92 Fairfax St Main PS	$ 207,907	$ 12,549	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,733	$ -	$ 2,579	$ -	$ -	$ -	$ -	$ 8,283	$ 118,847	$ -	$ 53,337	$ -	$ 2,579	$ -
127	Murchison	92 Fairfax St Main PS Headworks	$ 15,912	$ 6,179	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,733	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
128	Murchison	Chalgrave St Reservoir	$ 13,176	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,176	$ -	$ -	$ -
130	Pohara	Intake-T/ment Plant main replacement	$ 55,500	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
131	Pohara	Treatment Upgrade	$ 439,100	$ -	$ -	$ -	$ -	$ -	$ 65,865	$ 373,235	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
132	Pohara	Construct New Town Supply	$ 10,200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,020,000	$ 4,080,000	$ 5,100,000	$ -
133	Pohara	Meter Renewals	$ 49,931	$ 14,979	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,972	$ -	$ -	$ -	$ -	$ -	$ 14,979	$ -	$ -	$ -	$ -	$ -
134	Pohara	Fire Hydrant	$ 72,672	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,672	$ -	$ -	$ -	$ -
136	Pohara	Pohara Vly Source/T/ment Plant	$ 92,476	$ 29,639	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,283	$ 54,554	$ -	$ -	$ -	$ -	$ -
137	Pohara	Valve Renewals	$ 59,897	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 59,897	$ -	$ -	$ -	$ -
138	Redwoods Valley	Bulls Eye Resevoir Tank	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
139	Redwoods Valley	Golden Hills PS	$ 93,969	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,718	$ 9,970	$ -	$ -	$ 2,547	$ 11,256	$ -	$ -	$ -	$ 57,477	$ -	$ -	$ -
140	Redwoods Valley	Maisey Rd Reservoir 1	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
141	Redwoods Valley	O'Connor Creek PS	$ 116,651	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,940	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 46,526	$ 6,451	$ 43,734	$ -	$ -	$ -
142	Redwoods Valley	O'Connor Creek Well 1 Headworks	$ 4,626	$ -	$ 3,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -	$ -
143	Redwoods Valley	O'Connor Creek Well 2 Headworks	$ 4,626	$ -	$ 3,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -	$ -
144	Redwoods Valley	Redwood Booster PS 1	$ 37,567	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,917	$ -	$ -	$ -	$ 24,111	$ 10,539	$ -	$ -	$ -
145	Redwoods Valley	Redwood Booster PS 2 Maisey Rd	$ 37,554	$ 15,021	$ -	$ -	$ -	$ -	$ 6,760	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,772	$ -	$ -	$ -	$ -	$ -
146	Redwoods Valley	Meter Renewals	$ 72,373	$ -	$ -	$ 57,898	$ -	$ -	$ 3,619	$ -	$ -	$ -	$ -	$ 3,619	$ -	$ -	$ -	$ 7,237	$ -	$ -	$ -	$ -	$ -	$ -
147	Redwoods Valley	River Rd Well Headworks	$ 48,749	$ -	$ 17,407	$ -	$ -	$ -	$ -	$ -	$ 13,935	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,407	$ -	$ -	$ -	$ -	$ -
148	Redwoods Valley	Valve Renewals	$ 21,673	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,673	$ -	$ -	$ -
149	Redwoods Valley	Neal Property Pipeline Renewal	$ 19,400	$ 19,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
150	Redwoods Valley	Treatment Upgrade-Golden Hills	$ 391,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 58,650	$ 332,350	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
151	Redwoods Valley	Treatment Upgrade-O'Connor Ck	$ 471,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,665	$ 400,435	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
152	Redwoods Valley	Golden Hills Pipeline Replacement	$ 199,000	$ 19,900	$ 179,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
153	Redwoods Valley	O'Connors Creek bore upgrade	$ 100,000	$ 10,000	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
154	Redwoods Valley	Redwoods Pipeline Renewals	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -
155	Richmond/Waimea	Churchill Ave new main	$ 80,200	$ 8,020	$ 72,180	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
156	Richmond/Waimea	Fauchelle Avenue main replacement	$ 161,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 161,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
157	Richmond/Waimea	Hill St Low Level Main Extension	$ 129,700	$ 12,970	$ 116,730	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
158	Richmond/Waimea	Oxford Street main renewal	$ 136,600	$ 13,660	$ 122,940	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
159	Richmond/Waimea	Richd Well Pumps Elect Upgrade	$ 96,300	$ 96,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
160	Richmond/Waimea	Seismic protectn Low Lvl Reservoir	$ 100,000	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
161	Richmond/Waimea	Seismic protectn High Lvl Reservoir	$ 100,000	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
162	Richmond/Waimea	Well Head Security	$ 77,400	$ 77,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
163	Richmond/Waimea	Queen Street Main Replacement	$ 517,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 77,610	$ 439,790	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
164	Richmond/Waimea	Richmond Sth-Low Lvl Reservoir	$ 2,129,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,129,800
165	Richmond/Waimea	Richmond Sth-High Lvl Reservoir	$ 1,040,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,040,500
166	Richmond/Waimea	Richmond Sth-Heights Reservoir	$ 296,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 296,900
167	Richmond/Waimea	Richmond East-High Level Reservoir	$ 1,784,800	$ 356,960	$ 1,427,840	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
168	Richmond/Waimea	Richmond East-Heights Reservoir	$ 302,300	$ -	$ -	$ -	$ -	$ -	$ 60,460	$ 241,840	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
169	Richmond/Waimea	Richmd East-High Level Rezone4	$ 211,400	$ -	$ -	$ 42,280	$ 169,120	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
170	Richmond/Waimea	Rich East-Hghts Rising Main&PS	$ 633,600	$ -	$ -	$ -	$ -	$ -	$ 126,720	$ 506,880	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
171	Richmond/Waimea	R/S Ris/Main-LowQnSt-LowLvl Res	$ 2,255,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,255,700
172	Richmond/Waimea	R/S Ris/Main/Pump Stn-LL-HL Res	$ 844,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 844,400
173	Richmond/Waimea	R/S-Ris/Main-HL Resvr-Heights Res	$ 563,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 563,900
174	Richmond/Waimea	Rich Sth - HL Paton Road Main	$ 304,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 304,300
175	Richmond/Waimea	Richd Sth - LL Paton Road Main	$ 424,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 424,900
176	Richmond/Waimea	Rich South - HL Hill St South	$ 456,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 456,100
177	Richmond/Waimea	Oxford Street Main replacement	$ 285,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57,160	$ 228,640	$ -	$ -	$ -	$ -	$ -	$ -
178	Richmond/Waimea	Replace Waverly Street Main	$ 239,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47,920	$ 191,680	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
179	Richmond/Waimea	Ri/Wai Low Rzone3-WilliamSt Rzn	$ 736,900	$ -	$ -	$ -	$ 147,380	$ 589,520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
180	Richmond/Waimea	Rich/Wai Low Rezone2-CBD Rezone	$ 511,800	$ -	$ 102,360	$ 409,440	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
181	Richmond/Waimea	Richmond Darcy St Main Upsize	$ 204,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 40,900	$ 163,600	$ -	$ -	$ -	$ -	$ -
182	Richmond/Waimea	Richmond East-Hill St North HL	$ 171,800	$ -	$ 34,360	$ 137,440	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
183	Richmond/Waimea	Richmond Waimea Rezone 1	$ 219,500	$ 43,900	$ 87,800	$ 87,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
184	Richmond/Waimea	Richmd Sth-Hill Plough-Hill St	$ 868,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 868,800
185	Richmond/Waimea	Rich East-High Lvl Rising Main	$ 640,700	$ 128,140	$ 512,560	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
186	Richmond/Waimea	Rich East-Park Dr&Selbourne Ave	$ 329,400	$ -	$ -	$ -	$ 65,880	$ 263,520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
187	Richmond/Waimea	Richmond East - Champion Road	$ 385,100	$ -	$ -	$ -	$ -	$ 77,020	$ 308,080	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
188	Richmond/Waimea	Richmond Water Treatment Plant	$ 5,870,800	$ 205,478	$ 264,186	$ 3,228,940	$ 2,172,196	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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
189	Richmond/Waimea	New Groundwater Source	$ 4,209,300	$ 126,279	$ 378,837	$ -	$ -	$ -	$ -	$ -	$ 210,465	$ 210,465	$ 210,465	$ 968,139	$ 2,104,650	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
190	Richmond/Waimea	Lee Valley Dam	$ 750,000	$ 250,000	$ 250,000	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
192	Richmond/Waimea	Meter Renewals	$ 3,953,743	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ -
193	Richmond/Waimea	Appleby Well Headworks	$ 30,481	$ -	$ -	$ -	$ -	$ 9,970	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -	$ 19,173	$ -	$ -	$ -
194	Richmond/Waimea	Cropp Pl Pump station	$ 3,379	$ 3,379	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
195	Richmond/Waimea	Fire Hydrant Renewals	$ 649,892	$ -	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 84,486	$ -	$ 84,486	$ -	$ 84,486	$ -	$ 84,486	$ -	$ -	$ -	$ -
196	Richmond/Waimea	Hill St Hart Rd PS	$ 18,834	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18,834	$ -	$ -	$ -	$ -	$ -	$ -	$ -
197	Richmond/Waimea	Hill St Sth PS	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
198	Richmond/Waimea	Lwr Queen St PS Cntrl Building	$ 52,638	$ 17,040	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,452	$ 16,915	$ -	$ -	$ -	$ -	$ -	$ -	$ -
199	Richmond/Waimea	Queen St Main Reservoir	$ 147,299	$ 20,117	$ -	$ -	$ -	$ -	$ -	$ 2,579	$ 20,987	$ -	$ -	$ -	$ -	$ 23,989	$ -	$ 6,516	$ -	$ -	$ 73,111	$ -	$ -	$ -
200	Richmond/Waimea	Queen St Main Reser/pump statn	$ 5,869	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,869	$ -	$ -	$ -
201	Richmond/Waimea	Richmond Well Heads	$ 242,679	$ 185,028	$ 12,695	$ -	$ 19,803	$ 19,803	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ 4,013	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
202	Richmond/Waimea	Tasman Base Telemetry	$ 19,260	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,260	$ -	$ -	$ -	$ -	$ -	$ -	$ -
203	Richmond/Waimea	Valhalla Booster PS	$ 24,307	$ -	$ -	$ -	$ 14,372	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,935	$ -	$ -	$ -	$ -	$ -	$ -	$ -
204	Richmond/Waimea	Valhalla Reservoir	$ 4,484	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
205	Richmond/Waimea	Valve Renewals	$ 1,072,697	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ -
206	Richmond/Waimea	Pipeline Renewals	$ 16,500,000	$ -	$ -	$ 247,500	$ -	$ -	$ -	$ 247,500	$ -	$ -	$ -	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ -
207	Richmond/Waimea	Best Island RES	$ 15,824	$ 7,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,912	$ -	$ -	$ -	$ -	$ -
208	Richmond/Waimea	Seismic protec-Champion Rd reservoir	$ 200,000	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
209	Richmond/Waimea	Champion Rd High Lvl Reservoir	$ 5,231	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
210	Richmond/Waimea	Champion Rd Main Reservior &PS	$ 36,114	$ -	$ -	$ -	$ -	$ 5,587	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,527	$ -	$ -	$ -
211	Richmond/Waimea	Waimea Treatment Plant & PS	$ 528,505	$ 114,768	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,357	$ -	$ -	$ -	$ 21,299	$ 53,529	$ 24,645	$ 5,772	$ 33,018	$ 252,116	$ -	$ -	$ -	$ -
212	Richmond/Waimea	Waimea Wells Headworks	$ 306,805	$ -	$ 70,565	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,141	$ -	$ -	$ -	$ -	$ -	$ 227,099	$ -	$ -	$ -	$ -
213	Takaka	Construct New Wat Supply Schemes	$ 4,604,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 92,094	$ 92,094	$ 92,094	$ 460,470	$ 3,867,948	$ -	$ -	$ -	$ -	$ -	$ -	$ -
214	Takaka	Firefightg Capacity improv-CBD	$ 1,065,300	$ 1,065,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
216	Tapawera	New rising main from PS	$ 234,800	$ 23,480	$ 211,320	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
217	Tapawera	Tapawera Pipeline Renewals	$ 300,000	$ -	$ -	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
218	Tapawera	107Main Rd Source/T/ment Plant	$ 155,379	$ 33,251	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,538	$ -	$ -	$ -	$ 50,343	$ -	$ -	$ -	$ 56,247	$ -	$ -	$ -
219	Tapawera	Fire Hydrant Renewals	$ 51,908	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,908	$ -
220	Tapawera	Meter Renewals	$ 129,901	$ -	$ -	$ 64,951	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 64,951	$ -	$ -	$ -
221	Tapawera	Tapawera Reservoir	$ 5,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600	$ -	$ -	$ -
222	Tapawera	Valve Renewals	$ 47,575	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47,575	$ -
223	Upper Takaka	New fire hydrants and valves	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
224	Upper Takaka	Reservoir Upgrade	$ 11,600	$ -	$ -	$ 11,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
225	Upper Takaka	Upper Takaka Pipeline Renewals	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
226	Upper Takaka	Fire Hydrant	$ 8,305	$ -	$ -	$ 8,305	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
227	Upper Takaka	Meter Renewals	$ 14,614	$ -	$ -	$ 7,307	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,307	$ -	$ -	$ -
228	Upper Takaka	Upper Takaka WTP & Source	$ 27,504	$ 4,484	$ -	$ 14,668	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,868	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484	$ -	$ -
229	Upper Takaka	Valve Renewals	$ 9,101	$ -	$ -	$ 9,101	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
230	Wai-iti Dam	Wai iti Storage Dam	$ 51,673	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,673	$ -	$ -	$ -	$ -
231	Wakefield	Wakefd&88 Vall Wat Supp Upgrades	$ 2,491,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 124,590	$ 373,770	$ 1,993,440	$ -	$ -	$ -
232	Wakefield	Bird Lane PS	$ 2,700	$ 2,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
233	Wakefield	Seismic protection of reservoir	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
234	Wakefield	Spr Grv Main Rd rural main renewal	$ 6,500	$ -	$ 6,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
235	Wakefield	Main PS	$ 107,500	$ 107,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
236	Wakefield	New Source Construction	$ 3,123,500	$ -	$ -	$ -	$ -	$ 312,350	$ 312,350	$ 1,249,400	$ 1,249,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
237	Wakefield	Wakefield Pipeline Renewals	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -
238	Wakefield	Meter Renewals	$ 495,654	$ -	$ -	$ -	$ -	$ -	$ -	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ -	$ -	$ -	$ -	$ -
239	Wakefield	Bird Rd PS Booster Pump	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -
240	Wakefield	Brightwater Link PS	$ 34,816	$ 34,816	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
241	Wakefield	Fire Hydrant Renewals	$ 141,191	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,595	$ 70,595	$ -	$ -	$ -	$ -
242	Wakefield	Restrictor	$ 22,340	$ 11,170	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,170	$ -	$ -	$ -	$ -	$ -
243	Wakefield	Treeton Pl (Wai-iti Hills) PS	$ 17,952	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,952	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
244	Wakefield	Valve Replacements	$ 146,461	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 146,461	$ -	$ -	$ -	$ -	$ -
245	Wakefield	Wakefield Reservoir	$ 4,484	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
246	Wakefield	Wakefield Treatment Plant & PS	$ 70,551	$ 70,551	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
250	Richmond/Waimea	Telemetry	$ 1,200,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 120,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ -
251	Motueka	R3 Motueka New Town Supply - Component for General District DC	$ 2,536,163	$ -	$ 160,619	$ 379,030	$ 731,632	$ 917,127	$ 347,733	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
252	Motueka	Motueka New Town Supply - Component for Targetted Rate	$ 8,606,046	$ -	$ 545,034	$ 1,286,174	$ 2,482,672	$ 3,112,118	$ 1,179,975	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
253	Motueka	Motueka New Town Supply - Component for Urban WS Account	$ 4,294,569	$ -	$ 271,981	$ 641,823	$ 1,238,897	$ 1,553,002	$ 588,828	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
254	Mapua	R3 CTA/Coastal Pipeline - Component for CTA DC	$ 7,836,551	$ -	$ 34,107	$ 126,325	$ 174,912	$ 222,793	$ 244,265	$ 634,761	$ -	$ 178,849	$ 1,680,890	$ 285,014	$ 81,127	$ 324,509	$ 140,448	$ 636,108	$ 514,219	$ 986,779	$ 694,967	$ 876,533	$ -	$ -
255	Mapua	CTA/Coastal Pipeline - Component for Urban WS Account	$ 8,639,897	$ -	$ 122,216	$ 452,817	$ 626,652	$ 913,324	$ 1,172,261	$ 2,661,693	$ -	$ 31,562	$ 320,760	$ 146,826	$ 41,793	$ 167,171	$ 72,352	$ 327,692	$ 264,901	$ 508,341	$ 358,013	$ 451,547	$ -	$ -
256	Motueka	Motueka New Town Supply - Component for Commercial	$ 625,587	$ -	$ 39,619	$ 93,494	$ 180,471	$ 226,228	$ 85,774	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
257	Motueka	Motueka New Town Supply - Component for Existing Users	$ 845,388	$ -	$ 53,539	$ 126,343	$ 243,880	$ 305,713	$ 115,911	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Does Not Include Inflation

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 Transportation 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
Transportation	5,034
Stormwater	2,919
Total	20,393

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

APPENDIX H. RESOURCE CONSENTS AND PROPERTY DESIGNATIONS

H.1 Introduction

The statutory framework defining what activities require resource consents 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 quantity, 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

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.

An important aspect of the water supply activity is to ensure that all community water takes, whether they be from ground water or surface water, are managed responsibly.

Under the RMA and the TRMP, water permits are required for the volume of water abstractions required for community water supplies. Resource consents may also be required for dams, weirs (and other structures in stream beds), treatment plants and other infrastructure associated with the water supply systems.

Generally, resource consents are in place, or are in the process of being renewed, for all community water supplies that Council manages. Council has also made an application to increase the water take from the Central Plains aquifer to secure future domestic supplies for Motueka township and the Coastal Tasman communities.

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

H.2 Resource Consents

A register of all active resource consents for Council's water supply systems has been developed. The number and type of resource consents relating to water assets has increased significantly over the past 5 years and as a result, use of spreadsheets for managing the consents has become inefficient. MWH have developed a database (NM2) of all engineering resource consents (water, wastewater, refuse, stormwater). 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 water annual monitoring programme.

Identifying the full suite of on-going resource consent requirements for water 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 active resource consents held for the water supplies 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: Register of Resource Consents for the Water Supply Activity

Scheme	Consent No.	Type of consent	Effective date	Expiry date
Collingwood	NN020325	Water take	30/10/2002	21/5/2019
Collingwood	RM030480	Water take/land use	4/6/2003	31/5/2019
Collingwood	RM030680	Water take	1/10/2003	?
Murchison	RM040976	Water take	11/7/2007	31/5/2020
Richmond	NN960213	Water take	21/9/1998	31/5/2016
Redwood - River Rd	NN960434	Water take	24/4/1996	31/5/2011
Lower Queen St	NN960432	Water take	11/9/1997	31/5/2011
Takaka	RM071184V1	Water take	28/4/2008	28/4/2014
Takaka	RM071185V2	Discharge	28/4/2008	28/4/2014
Pohara- Winter Creek	NN720010	Water take	30/4/1996	1/10/2026
Hamama	RM031060	Water take	10/5/2004	31/5/2019
Tapawera	RM040256	Water take	11/7/2004	31/5/2019
Dovedale	RM040249	Water take	10/12/2004	31/5/2019
Redwood Valley	NN960431	Water take	26/6/1997	31/5/2011
Motueka- Fearon St	NN000256	Water take	25/7/2000	31/5/2015
Motueka- Old Wharf Rd	NN000254	Water take	26/7/2000	31/5/2015
Motueka - Pah St	NN000257	Water take	1/7/2000	31/5/2015
Torrent Bay	RM040248	Water take	20/7/2004	31/5/2015
Brightwater	NN020022	Water take	12/6/2003	31/5/2017
Wakefield- Clifford Rd	NN010213	Water take	?	31/5/2014
Wakefield- 88 Valley Rd	NN000374	Damming/Water take	13/5/2002	31/5/2005[1]
Upper Takaka - Whiskey Creek	RM040264	Water take	7/8/2007	31/5/2010
Upper Takaka- Whiskey Creek	RM070748	Land use	7/8/2007	31/5/2010
Dovedale- Humphries Crk	RM040249	Water take	19/11/2007	31/5/2010
Dovedale	RM070770	Land use	19/11/2007	31/5/2010
Redwood Valley	RM041164	Land use	4/11/2007	31/5/2028
Waimea Inlet	RM060492	Land use	27/6/2006	27/6/2041
Golden Hills- Waimea West	NN970139	Water take	11/4/2002	31/5/2017
Ruby Bay- Pinehill Stream	RM061006	Land use/Disturbance	22/1/2007	22/1/2042
Kaiteriteri	RM070348	Land use/Disturbance	29/6/2007	29/6/2042
Kaiteriteri	RM070349	Land use/Disturbance	29/6/2007	29/6/2042
Riwaka	NN000255	Water take	26/7/2000	31/5/2015

Note to Table –1:

1. *An application has been submitted for the renewal of the Wakefield – 88 Valley Road Water Take resource consent. Council are currently in the consultation phase at the time of writing this AMP.*

Where permits for discharges, water or coastal activities, or consents for river beds are required, the RMA restricts those consents to a maximum of 35 years only. Hence there needs to be an on-going programme of 'consent renewals' for those components of Council's water supplies, as well as a monitoring programme for compliance with the conditions of permitted activities or resource consents.

TDC will ensure that the process / programme for lodging applications for the renewal of resource consents will be undertaken in plenty of time before they expire, and for monitoring and reporting the Council's actual performance against all of the relevant conditions of each consent.

Short-term consents are required from time to time for construction activities.

Generally there is no monitoring of resource consent conditions undertaken at present with the exception of meter reading. Council intend to initiate a programme of monitoring, including, but not limited to stream flow and scheme take.

H.3 Property Designations

Designations are another way provided by the RMA of identifying and protecting lands for existing and public works. Council has designated 28 sites for various public water supply purposes in the TRMP, mainly existing water reservoirs and pump stations.

Council has also notified two additional designations for water supply purposes in the Richmond West Development Area – to enable the water wells along Lower Queen Street to be shifted further inland, and to provide a site for a water treatment plant.

A full schedule of existing designations for the water activity is included in Appendix 1 of Part II of the Tasman Resource Management Plan.

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.

Figure - 1 shows the projected renewals expenditure on a scheme by scheme basis. The renewals costs are also included in the tables and charts in Appendix F.

I.2 Forecast of Renewals Expenditure for Next 20 years

Tables showing a summary and total breakdown of the expenditure forecast for renewals over the next 20 years are provided at the end of this Appendix. The expenditure is detailed scheme by scheme.

I.3 Renewal Standards

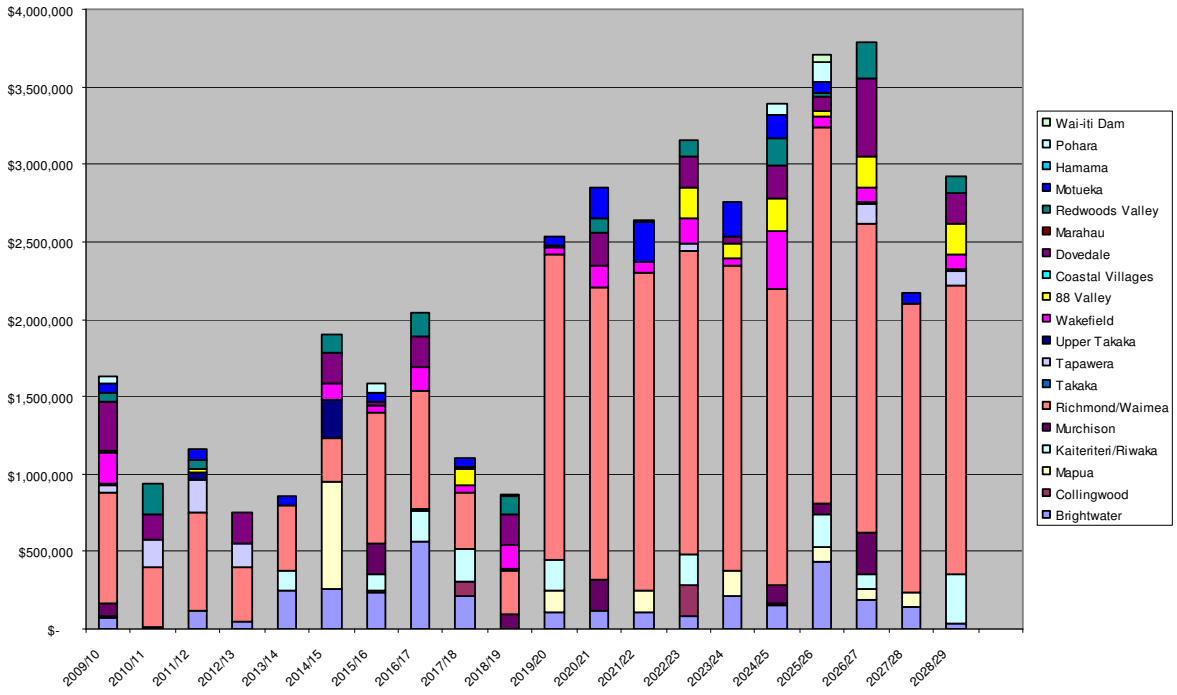
The work to be performed and materials to be used shall comply with the current TDC Engineering Standards.

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: Water Supply - 20 Year Renewals Expenditure Forecast



Total Water 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
2	88 Valley	Mt Heslington Rd Pipeline Upgrade	$ 21,200	$ 10,600	$ 10,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	88 Valley	Intake access & pipeline renewal	$ 89,200	$ 89,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 89,200	$ -	$ -	$ -	$ -	$ -
6	88 Valley	88 Valley Pipeline Renewals	$ 900,000	$ 900,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000
7	88 Valley	Reservoir	$ 14,494	$ 14,494	$ -	$ -	$ -	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,263	$ -	$ -	$ -	$ -
8	88 Valley	Meter Renewals	$ 66,090	$ 66,090	$ -	$ -	$ 33,045	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 33,045	$ -	$ -	$ -
9	Brightwater	Bryant Road Ridermain renewal	$ 39,400	$ 39,400	$ 39,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	Brightwater	B/water Well Field Lightband Rd	$ 94,600	$ 47,300	$ -	$ -	$ -	$ 47,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	Brightwater	Factory Road main	$ 269,200	$ 134,600	$ -	$ -	$ -	$ -	$ -	$ 134,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	Brightwater	SH6main replace,RanzRd-3Brothr	$ 696,500	$ 696,500	$ -	$ -	$ -	$ -	$ -	$ -	$ 139,300	$ 557,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	Brightwater	Brightwater Pipeline Renewals	$ 900,000	$ 900,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -
20	Brightwater	Fire Hydrant Renewals	$ 153,649	$ 153,649	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 153,649	$ -	$ -	$ -	$ -
21	Brightwater	Meter Renewals	$ 757,792	$ 757,792	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ -	$ -	$ 113,669	$ 37,890	$ 37,890
22	Brightwater	B/wat Main WatPS T/ment Plant	$ 19,222	$ 19,222	$ 19,222	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	Brightwater	Brightwater Reservoir	$ 328,158	$ 328,158	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 328,158	$ -	$ -	$ -
24	Brightwater	Well Field Lightband Rd Headworks	$ 58,788	$ 58,788	$ 15,456	$ -	$ -	$ -	$ 41,995	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -
25	Brightwater	Teapot Vly PS	$ 11,752	$ 11,752	$ 1,046	$ -	$ -	$ -	$ -	$ 9,660	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,046	$ -	$ -	$ -	$ -
26	Brightwater	Valve Renewals	$ 154,471	$ 154,471	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 77,236	$ -	$ -	$ -	$ 77,236	$ -	$ -
28	Collingwood	Meter Renewals	$ 88,089	$ 88,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 88,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
29	Collingwood	Collingwood Bore Headworks	$ 46,169	$ 46,169	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,246	$ -	$ 7,924	$ -	$ -	$ -	$ -
30	Collingwood	Collingwood PS	$ 79,636	$ 79,636	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 79,636	$ -	$ -	$ -	$ -	$ -	$ -
31	Collingwood	Collingwood WTP & Reservoir	$ 90,129	$ 90,129	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,129	$ -	$ -	$ -	$ -	$ -	$ -
32	Dovedale	Old House Road main renewal	$ 33,900	$ 33,900	$ 33,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	Dovedale	Knots PS upgrade	$ 50,600	$ 50,600	$ 50,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
34	Dovedale	Dovedale Pipeline Renewals	$ 2,000,000	$ 2,000,000	$ 40,000	$ 160,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000	$ -	$ 200,000
36	Dovedale	Bensemann's BP tank reservoir	$ 7,737	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -
37	Dovedale	Beuke's BP tank reservoir	$ 7,737	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -
38	Dovedale	Fire Hydrant	$ 9,147	$ 9,147	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,147	$ -	$ -	$ -	$ -	$ -
39	Dovedale	Humphries Creek PS	$ 76,682	$ 76,682	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 50,619	$ 26,062	$ -	$ -
40	Dovedale	Knots PS	$ 26,062	$ 26,062	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 26,062	$ -	$ -
41	Dovedale	Moore's BP tank reservoir	$ 7,737	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -
42	Dovedale	Neudorf Hill BP tank reservoir	$ 7,737	$ 7,737	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,737	$ -	$ -
43	Dovedale	Restrictor Renewals	$ 73,071	$ 73,071	$ 73,071	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	Dovedale	Rosedale Saddle BP tanks reservoir	$ 15,473	$ 15,473	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,473	$ -	$ -
45	Dovedale	Source Treatment Plant	$ 41,687	$ 41,687	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,868	$ -	$ -	$ -	$ 2,834	$ -	$ 6,251	$ -	$ 28,735	$ -	$ -
46	Dovedale	Tehepe Lower PS	$ 64,942	$ 64,942	$ 26,994	$ -	$ -	$ -	$ -	$ -	$ 4,835	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,025	$ -	$ 27,088	$ -	$ -
47	Dovedale	Tehepe Upper PS	$ 53,942	$ 53,942	$ 26,846	$ -	$ -	$ -	$ -	$ -	$ 4,835	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,261	$ -	$ -
48	Dovedale	Thorn's PS	$ 116,737	$ 116,737	$ 25,390	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,732	$ -	$ 89,615	$ -	$ -
49	Dovedale	Valve Renewals	$ 38,195	$ 38,195	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,195	$ -	$ -	$ -	$ -	$ -
50	Dovedale	Winn's PS	$ 127,284	$ 127,284	$ 43,858	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,056	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,582	$ 38,788	$ -	$ -
51	Dovedale	Winn's Reservoir	$ 2,172	$ 2,172	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,172	$ -	$ -	$ -	$ -	$ -
52	Dovedale	Winns Valley Res	$ 5,600	$ 5,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600	$ -	$ -	$ -
54	Hamama	Source/Reservior	$ 7,473	$ 7,473	$ -	$ -	$ 7,473	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
55	Hamama	Valve Renewals	$ 5,481	$ 5,481	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,481	$ -	$ -	$ -	$ -	$ -	$ -	$ -
58	Kaiteriteri/Riwaka	Kaiteriteri Pipeline Renewals	$ 1,000,000	$ 1,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000	$ -	$ -	$ 200,000
59	Kaiteriteri/Riwaka	Meter Renewals	$ 433,139	$ 433,139	$ -	$ -	$ -	$ -	$ 129,942	$ -	$ 108,285	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 86,628	$ -	$ 108,285
60	Kaiteriteri/Riwaka	High Level Reservoir	$ 12,366	$ 12,366	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,366	$ -	$ -
61	Kaiteriteri/Riwaka	Kaiteri High Level Booser PS	$ 31,767	$ 31,767	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 31,767	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
62	Kaiteriteri/Riwaka	Kaiteriteri High Level Reservoir	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
63	Kaiteriteri/Riwaka	Kaiteriteri Lower Booser PS	$ 117,710	$ 117,710	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 117,710	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
64	Kaiteriteri/Riwaka	Kaiteriteri Main Reservoir	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
65	Kaiteriteri/Riwaka	River Rd Well Headworks	$ 68,128	$ 68,128	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 58,851	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,277	$ -	$ -	$ -
101	Mapua	Aranui Road main replacement	$ 692,100	$ 692,100	$ -	$ -	$ -	$ -	$ -	$ 692,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
102	Mapua	Mapua Pipeline Renewals	$ 300,000	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -
103	Mapua	Meter Renewals	$ 301,614	$ 301,614	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,807	$ -	$ 150,807	$ -	$ -	$ -	$ -	$ -	$ -	$ -
104	Mapua	Brabant Drive Booster PS	$ 5,000	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
107	Mapua	Pine Hill Reservoir & PS	$ 74,694	$ 74,694	$ -	$ 9,833	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 64,861	$ -	$ -
109	Mapua	Queen St Pumps Flow Meter	$ 3,288	$ 3,288	$ 3,288	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
110	Mapua	Restrictor Renewals	$ 57,247	$ 57,247	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57,247	$ -	$ -	$ -	$ -	$ -
113	Motueka	High Street South main renewal	$ 395,600	$ 395,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 197,800	$ 197,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -
116	Motueka	Motueka Pipeline Renewals	$ 300,000	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -
118	Motueka	Meter Renewals	$ 637,327	$ 637,327	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -	$ 63,733	$ -
124	Murchison	Murchison Pipeline Renewals	$ 600,000	$ 600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 198,000	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	$ -	$ -	$ 200,000	$ -	$ -
125	Murchison	Meter Renewals	$ 224,079	$ 224,079	$ 67,224	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 89,632	$ -	$ -	$ -	$ -	$ -	$ -	$ 67,224	$ -	$ -	$ -
126	Murchison	92 Fairfax St Main PS	$ 207,907	$ 207,907	$ 12,549	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,733	$ -	$ 2,579	$ -	$ -	$ -	$ -	$ 8,283	$ 118,847	$ -	$ 53,337	$ -	$ 2,579
127	Murchison	92 Fairfax St Main PS Headworks	$ 15,912	$ 15,912	$ 6,179	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,733	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
128	Murchison	Chalgrave St Reservoir	$ 13,176	$ 13,176	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,176	$ -	$ -
130	Pohara	Intake-T/ment Plant main replacement	$ 55,500	$ 55,500	$ -	$ -	$ -	$ -	$ -	$ -	$ 55,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
133	Pohara	Meter Renewals	$ 49,931	$ 49,931	$ 14,979	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,972	$ -	$ -	$ -	$ -	$ -	$ 14,979	$ -	$ -	$ -	$ -
134	Pohara	Fire Hydrant	$ 72,672	$ 72,672	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,672	$ -	$ -	$ -
136	Pohara	Pohara Vly Source/T/ment Plant	$ 92,476	$ 92,476	$ 29,639	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,283	$ 54,554	$ -	$ -	$ -	$ -
137	Pohara	Valve Renewals	$ 59,897	$ 59,897	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 59,897	$ -	$ -	$ -
138	Redwoods Valley	Bulls Eye Resevoir Tank	$ 4,484	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
139	Redwoods Valley	Golden Hills PS	$ 93,969	$ 93,969	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,718	$ 9,970	$ -	$ -	$ 2,547	$ 11,256	$ -	$ -	$ -	$ 57,477	$ -	$ -
140	Redwoods Valley	Maisey Rd Reservoir 1	$ 5,231	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
141	Redwoods Valley	O'Connor Creek PS	$ 116,651	$ 116,651	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,940	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 46,526	$ 6,451	$ 43,734	$ -	$ -
142	Redwoods Valley	O'Connor Creek Well 1 Headworks	$ 4,626	$ 4,626	$ -	$ 3,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -
143	Redwoods Valley	O'Connor Creek Well 2 Headworks	$ 4,626	$ 4,626	$ -	$ 3,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -
144	Redwoods Valley	Redwood Booster PS 1	$ 37,567	$ 37,567	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,917	$ -	$ -	$ -	$ 24,111	$ 10,539	$ -	$ -
145	Redwoods Valley	Redwood Booster PS 2 Maisey Rd	$ 37,554	$ 37,554	$ 15,021	$ -	$ -	$ -	$ -	$ 6,760	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,772	$ -	$ -	$ -	$ -
146	Redwoods Valley	Meter Renewals	$ 72,373	$ 72,373	$ -	$ -	$ 57,898	$ -	$ -	$ 3,619	$ -	$ -	$ -	$ -	$ 3,619	$ -	$ -	$ -	$ 7,237	$ -	$ -	$ -	$ -	$ -
147	Redwoods Valley	River Rd Well Headworks	$ 48,749	$ 48,749	$ -	$ 17,407	$ -	$ -	$ -	$ -	$ -	$ 13,935	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,407	$ -	$ -	$ -	$ -

Total Water 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
148	Redwoods Valley	Valve Renewals	$ 21,673	$ 21,673	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,673	$ -	$ -
149	Redwoods Valley	Neal Property Pipeline Renewal	$ 19,400	$ 15,520	$ 15,520	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
152	Redwoods Valley	Golden Hills Pipeline Replacement	$ 199,000	$ 199,000	$ 19,900	$ 179,100	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
154	Redwoods Valley	Redwoods Pipeline Renewals	$ 800,000	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000
156	Richmond/Waimea	Fauchelle Avenue main replacement	$ 161,400	$ 161,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 161,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
159	Richmond/Waimea	Richd Well Pumps Elect Upgrade	$ 96,300	$ 48,150	$ 48,150	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
163	Richmond/Waimea	Queen Street Main Replacement	$ 517,400	$ 517,400	$ -	$ -	$ -	$ -	$ -	$ -	$ 77,610	$ 439,790	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
192	Richmond/Waimea	Meter Renewals	$ 3,953,743	$ 3,953,743	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687	$ 197,687
193	Richmond/Waimea	Appleby Well Headworks	$ 30,481	$ 30,481	$ -	$ -	$ -	$ -	$ 9,970	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ -	$ -	$ -	$ 19,173	$ -	$ -
194	Richmond/Waimea	Cropp Pl Pump station	$ 3,379	$ 3,379	$ 3,379	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
195	Richmond/Waimea	Fire Hydrant Renewals	$ 649,892	$ 649,892	$ -	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 77,987	$ -	$ 84,486	$ -	$ 84,486	$ -	$ 84,486	$ -	$ 84,486	$ -	$ -	$ -
196	Richmond/Waimea	Hill St Hart Rd PS	$ 18,834	$ 18,834	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 18,834	$ -	$ -	$ -	$ -	$ -	$ -
198	Richmond/Waimea	Lwr Queen St PS Cntrl Building	$ 52,638	$ 52,638	$ 17,040	$ -	$ -	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,452	$ 16,915	$ -	$ -	$ -	$ -	$ -	$ -
199	Richmond/Waimea	Queen St Main Reservoir	$ 147,299	$ 147,299	$ 20,117	$ -	$ -	$ -	$ -	$ -	$ 2,579	$ 20,987	$ -	$ -	$ -	$ -	$ 23,989	$ -	$ 6,516	$ -	$ -	$ 73,111	$ -	$ -
200	Richmond/Waimea	Queen St Main Reser/pump statn	$ 5,869	$ 5,869	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,869	$ -	$ -
201	Richmond/Waimea	Richmond Well Heads	$ 242,679	$ 242,679	$ 185,028	$ 12,695	$ -	$ 19,803	$ 19,803	$ -	$ -	$ -	$ -	$ -	$ 1,338	$ -	$ 4,013	$ -	$ -	$ -	$ -	$ -	$ -	$ -
202	Richmond/Waimea	Tasman Base Telemetry	$ 19,260	$ 19,260	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,260	$ -	$ -	$ -	$ -	$ -	$ -
203	Richmond/Waimea	Valhalla Booster PS	$ 24,307	$ 24,307	$ -	$ -	$ -	$ 14,372	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,935	$ -	$ -	$ -	$ -	$ -	$ -
204	Richmond/Waimea	Valhalla Reservoir	$ 4,484	$ 4,484	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
205	Richmond/Waimea	Valve Renewals	$ 1,072,697	$ 1,072,697	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635	$ 53,635
206	Richmond/Waimea	Pipeline Renewals	$ 16,500,000	$ 16,500,000	$ -	$ -	$ 247,500	$ -	$ -	$ -	$ 247,500	$ -	$ -	$ -	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500	$ 1,600,500
207	Richmond/Waimea	Best Island RES	$ 15,824	$ 15,824	$ 7,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,912	$ -	$ -	$ -	$ -
209	Richmond/Waimea	Champion Rd High Lvl Reservoir	$ 5,231	$ 5,231	$ 5,231	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
210	Richmond/Waimea	Champion Rd Main Reservior &PS	$ 36,114	$ 36,114	$ -	$ -	$ -	$ -	$ 5,587	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,527	$ -	$ -
211	Richmond/Waimea	Waimea Treatment Plant & PS	$ 528,505	$ 528,505	$ 114,768	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,357	$ -	$ -	$ -	$ 21,299	$ 53,529	$ 24,645	$ 5,772	$ 33,018	$ 252,116	$ -	$ -	$ -
212	Richmond/Waimea	Waimea Wells Headworks	$ 306,805	$ 306,805	$ -	$ 70,565	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 9,141	$ -	$ -	$ -	$ -	$ -	$ 227,099	$ -	$ -	$ -
216	Tapawera	New rising main from PS	$ 234,800	$ 187,840	$ 18,784	$ 169,056	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
217	Tapawera	Tapawera Pipeline Renewals	$ 300,000	$ 300,000	$ -	$ -	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
218	Tapawera	107Main Rd Source/T/ment Plant	$ 155,379	$ 155,379	$ 33,251	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,538	$ -	$ -	$ -	$ 50,343	$ -	$ -	$ -	$ 56,247	$ -	$ -
219	Tapawera	Fire Hydrant Renewals	$ 51,908	$ 51,908	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,908
220	Tapawera	Meter Renewals	$ 129,901	$ 129,901	$ -	$ -	$ 64,951	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 64,951	$ -	$ -
221	Tapawera	Tapawera Reservoir	$ 5,600	$ 5,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,600	$ -	$ -
222	Tapawera	Valve Renewals	$ 47,575	$ 47,575	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 47,575
225	Upper Takaka	Upper Takaka Pipeline Renewals	$ 250,000	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ 250,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
226	Upper Takaka	Fire Hydrant	$ 8,305	$ 8,305	$ -	$ -	$ 8,305	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
227	Upper Takaka	Meter Renewals	$ 14,614	$ 14,614	$ -	$ -	$ 7,307	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,307	$ -	$ -
228	Upper Takaka	Upper Takaka WTP & Source	$ 27,504	$ 27,504	$ 4,484	$ -	$ 14,668	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,868	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484
229	Upper Takaka	Valve Renewals	$ 9,101	$ 9,101	$ -	$ -	$ 9,101	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
230	Wai-iti Dam	Wai iti Storage Dam	$ 51,673	$ 51,673	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 51,673	$ -	$ -	$ -
234	Wakefield	Spr Grv Main Rd rural main renewal	$ 6,500	$ 6,500	$ -	$ 6,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
235	Wakefield	Main PS	$ 107,500	$ 86,000	$ 86,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
237	Wakefield	Wakefield Pipeline Renewals	$ 800,000	$ 800,000	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000	$ -	$ 100,000
238	Wakefield	Meter Renewals	$ 495,654	$ 495,654	$ -	$ -	$ -	$ -	$ -	$ -	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ 49,565	$ -	$ -	$ -	$ -
239	Wakefield	Bird Rd PS Booster Pump	$ 4,484	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -
240	Wakefield	Brightwater Link PS	$ 34,816	$ 34,816	$ 34,816	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
241	Wakefield	Fire Hydrant Renewals	$ 141,191	$ 141,191	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 70,595	$ 70,595	$ -	$ -	$ -
242	Wakefield	Restrictor	$ 22,340	$ 22,340	$ 11,170	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,170	$ -	$ -	$ -	$ -
243	Wakefield	Treeton Pl (Wai-iti Hills) PS	$ 17,952	$ 17,952	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,952	$ -	$ -	$ -	$ -	$ -	$ -	$ -
244	Wakefield	Valve Replacements	$ 146,461	$ 146,461	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 146,461	$ -	$ -	$ -	$ -
245	Wakefield	Wakefield Reservoir	$ 4,484	$ 4,484	$ 4,484	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
246	Wakefield	Wakefield Treatment Plant & PS	$ 70,551	$ 70,551	$ 70,551	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
250	Richmond/Waimea	Telemetry	$ 1,200,000	$ 600,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 60,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000

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 water infrastructure have been estimated as follows:

Water	
Wells and pumps	10 – 80 years
Pipes, valves, meters	15 – 80 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 water supply activity to meet a desired level of service. Council will monitor and assess the state of the water 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 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:

Water Supply	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)	3,868	5,527	7,863	9,083	9,418	6,793	7,500	5,441	4,776	3,967
Opening Loan Balance	15,551	18,345	22,592	28,913	36,077	43,184	46,384	49,925	50,865	51,005

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:

Water Supply	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)	1,150	1,403	1,784	2,269	2,783	3,154	3,397	3,558	3,597	3,573
Loan Principal	1,081	1,280	1,542	1,919	2,310	2,661	2,950	3,638	3,833	3,923

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 Water Supply Activity in the Tasman District.

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

Water Supply	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											
General rate	91,000	101,650	101,650	101,650	101,650	101,650	101,650	101,650	101,650	101,650	101,650
Targeted Rate	4,054,218	5,239,175	6,030,058	7,451,461	8,359,977	8,942,305	9,420,524	10,813,982	10,865,767	11,463,908	11,302,046
Development Contributions	1,170,409	686,424	734,538	734,538	542,192	686,424	717,079	721,453	725,790	712,705	690,871
Fees & Recoveries	376,727	223,012	228,732	423,230	777,104	148,968	563,434	549,369	505,760	154,688	284,756
Sundry Income	129,673	125,084	146,070	149,281	149,870	150,202	150,314	150,328	150,238	150,147	150,064
TOTAL INCOME	5,822,027	6,375,345	7,241,048	8,860,160	9,930,793	10,029,549	10,953,001	12,336,782	12,349,205	12,583,098	12,529,387
OPERATING COSTS											
Urban Water	2,817,970	3,220,384	3,457,051	3,521,728	3,481,109	3,546,047	3,964,605	4,522,453	4,441,483	4,593,382	4,515,521
Takaka	9,865	30,605	31,652	20,153	20,154	20,154	20,154	20,155	20,154	20,154	20,155
Motueka	136,658	152,010	164,514	171,223	178,153	185,425	202,907	84,763	85,223	85,732	86,325
88 Valley	49,472	48,531	52,741	55,029	57,414	59,916	65,947	72,387	73,028	73,681	74,355
Dovedale	113,345	126,559	138,138	144,480	151,121	158,091	174,914	192,865	194,666	196,494	198,351
Redwood Valley	102,613	107,156	117,725	123,512	129,569	135,926	151,270	167,643	169,285	170,952	172,647
Hamama	7,989	6,000	6,600	6,930	7,277	7,640	18,519	20,556	20,762	20,969	21,179
Pohara	24,311	27,586	30,304	31,789	33,344	34,978	38,917	43,120	43,541	43,970	44,404
Loan Interest	903,609	1,150,135	1,403,382	1,783,848	2,269,284	2,783,031	3,154,101	3,396,764	3,558,070	3,596,947	3,573,299
Depreciation	1,704,974	2,399,202	2,707,637	2,811,575	3,156,866	3,295,972	3,668,794	3,775,755	4,128,011	4,198,034	4,501,474
TOTAL OPERATING COST	5,870,806	7,268,168	8,109,744	8,670,267	9,484,291	10,227,180	11,460,128	12,296,461	12,734,223	13,000,315	13,207,710
NET COST OF SERVICE (SURPLUS)	48,779	892,823	868,696	(189,893)	(446,502)	197,631	507,127	(40,321)	385,018	417,217	678,323
TOTAL FUNDS REQUIRED											
NET COST OF SERVICE (SURPLUS)	48,779	892,823	868,696	(189,893)	(446,502)	197,631	507,127	(40,321)	385,018	417,217	678,323
Capital	3,672,480	4,468,635	6,182,228	8,599,045	9,759,344	10,217,835	6,719,784	7,420,626	4,919,757	4,221,562	3,402,055
Transfer to Reserves	570,644	243,448	198,118	930,378	1,261,352	451,617	574,041	945,324	626,341	502,715	445,290
Loan Principal	696,250	1,080,828	1,279,747	1,541,988	1,919,085	2,310,467	2,661,081	2,950,442	3,637,549	3,832,995	3,922,782
	4,988,153	6,685,734	8,528,789	10,881,518	12,493,279	13,177,550	10,462,033	11,276,071	9,568,665	8,974,489	8,448,450
SOURCE OF FUNDS											
Restricted Reserves Applied	-	418,675	293,797	207,091	253,860	463,847	931,962	1,009,427	862,694	804,032	820,451
Loans Raised	3,283,179	3,867,857	5,527,355	7,862,852	9,082,553	9,417,731	5,861,277	6,490,889	4,577,960	3,972,423	3,126,525
	3,283,179	4,286,532	5,821,152	8,069,943	9,336,413	9,881,578	6,793,239	7,500,316	5,440,654	4,776,455	3,946,976
NON FUNDED DEPRECIATION											
Depreciation to be funded at income statement level	1,704,974	2,399,202	2,707,637	2,811,575	3,156,866	3,295,972	3,668,794	3,775,755	4,128,011	4,198,034	4,501,474
	1,704,974	2,399,202	2,707,637	2,811,575	3,156,866	3,295,972	3,668,794	3,775,755	4,128,011	4,198,034	4,501,474
	4,988,153	6,685,734	8,528,789	10,881,518	12,493,279	13,177,550	10,462,033	11,276,071	9,568,665	8,974,489	8,448,450

Note: Figures do not include inflation.

APPENDIX M. FUNDING POLICY, FEES AND CHARGES

M.1 Funding Strategy

The focus of the AMPs has been on identifying the optimum (lowest life cycle) cost for operating / maintaining, renewing, developing and disposing of the assets necessary to produce the desired level of service. The Council funding strategy is based on the following:

(a) Water supply services have been assessed as having 100% user benefit and are not funded by rate appropriation.

(b) A group account shall be operated for urban schemes.

(c) All urban water supply areas once established shall be part of one combined District urban water account, shall be metered, and shall have standardised charges (except for the industrial agreement users). Membership is compulsory within the defined supply area.

(d) Water is currently charged at a fixed daily rate and a rate per unit volume. The fixed daily rate is levied on *all* metered properties inside the urban water supply area, even if not occupied.

(e) The group account shall subsidise the initial capital cost of all new schemes that meet minimum criteria by one third. Connections onto the new scheme are expected to either provide a lump sum for the remainder of the cost, or finance a loan which the Council will manage via a uniform annual charges usually over a 20-30 year period.

(f) Inside the existing urban supply areas, developers pay 100% for reticulation within the development and pay a contribution towards the future upgrading of the existing networks (Development Impact Contributions)

(g) New rural extensions off urban schemes are self funding by the users with no subsidy from the group Urban Account.

(h) In the rural schemes, new connections pay a capital contribution fee and are self funding for the costs of installed new reticulation.

Funding sources available for water supply schemes include:

- User charges
- Development Contributions (DCs)
- Loans
- Private (developer/community) funded works.

New urban schemes must meet five criteria to obtain Council approval to subsidise the capital funding:

- there must be a community health need,
- there must be a need to comply with a minimum development standard,
- there must be consultation with potential users (although their wishes may be overridden by the above factors),
- the scheme must be economically viable, and
- such schemes are compulsory for all properties within the defined areas.

Major capital projects may be loan funded. When loans are made, the loan is taken for a fixed period, usually 20-30 years, with a fixed annual principal repayment as a capital expense on the account, and interest payments as an operating expense. For the purpose of the financial forecasts, all new works and renewal work has been assumed to be loan funded.

M.2 Schedule of Fees and Charges

The fees and charges for the water supply assets are shown in Section M.2.1 (Urban), M.2.2 (Rural), and M.2.3 (Community).

M.2.1. Urban Water Group Account

a) Metered Connections

Rate	Type	2008/2009	2009/2010
Targeted rate of cents per cubic metre of water used	Residential	94.5 cents	$1.17 cents
	Major Industrial	37.9 cents	39.22 cents

b) Standard Rate

Rate	2008/2009	2009/2010
Irrespective of usage – cents per day	33.75 cents	41.40 cents

c) Rural Extension Rate

The following low pressure supply areas are part of the Group Account - these are adjacent to or connected to one of the urban schemes:

- Best Island
- Wakefield
- Brightwater/Hope
- Richmond
- Mapua/Ruby Bay

Rural extension work is funded by:

	2008/2009	2009/2010
Best Island, Wakefield, Brightwater/Hope, Richmond Targeted rate based on the supply of unit of water per day. One unit = $2m^3$	$234.00	$647.19
Mapua/Ruby Bay - Targeted rate based on the supply of unit of water per day. One unit = $1m^3$	$117.00	$323.60

d) Connection Charges

Payable by a property that connects to the low pressure supply in one of the Group Account Rural Extension areas.

Connection Charge per Property	2009/2010 1 July – 30 June (GST Incl.)
Rural Extension Water Supples	$3,700 incl GST plus outwork + administration + GST

Payable by a property that connects in any urban area that is part of the Group Water Account.

Connection Charge	2009/2010 1 July – 30 June (GST Incl.)
All urban areas	$1,340 incl GST plus outwork + admin + GST
Special water reading fee	$50 per reading

e) Non Lump Sum Rates

These are targeted rates to meet the loan repayments for the capital cost of new schemes. Typically these relate to the two-thirds user contribution. These are for properties that elected not to make a lump sum contribution:

Rate	2008/2009	2009/2010
Kaiteriteri-Stephens Bay Water Supply Scheme	$123.00	$123.00
Collingwood Water Supply Scheme	$394.00	$394.00

M.2.2. Rural Water Supply Schemes

The rural water supply schemes are set up so that a unit of water will be supplied to the client each day via a restrictor. The units are not all the same in quantity delivered.

	1 water unit =	2008/2009	2009/2010
Dovedale:	$2m^3$/day		
First unit supplied		$456.00	$546.15
Second and subsequent units supplied		$319.00	$382.10
Redwood Valley	$2m^3$/day	$300.00	$313.74
Eighty-Eight Valley	$1m^3$/day	$52.00	$53.04

a) Eighty-Eight Valley Rural Water Supply

This area also has a targeted rate per property that was introduced to more equally share the cost of building up a credit balance to pay for future capital works.

Rate	2008/2009	2009/2010
Targeted Rate Per Property:	$60.00	$61.20

b) Rural Water Supply Connection Charges

This is the fee payable to connect to the scheme, for:

Connection Charge	2009/2010 1 July – 30 June (GST Incl.)
Dovedale Redwoods Valley Eighty Eight Valley	Only if capacity is available
First Unit	$3,700 incl GST plus outwork + admin + GST
Additional Units	$640/unit incl GST plus outwork + admin + GST

M.2.3. Community Water Supply Funding

a) Motueka Urban Water Supply Area

Motueka is only partly serviced and will only join the Group Water Account when the proposed full scheme is completed.

The expenditure up to the year when Motueka joins the Group Account is to be funded by:

Rate	2008/2009	2009/2010
Targeted rate of cents per cubic metre of water used	94.5 cents	$1.17
Targeted rate set differentially on where the land is situated for capital and/or maintenance expenditure	$71.00	$72.42

b) Pohara Water Supply

Operating costs remain at similar levels to previous years. The scheme has traditionally paid the same amount for their metered water connections as the District Group Urban account.

Metered Connections

Rate	Type	2008/2009	2009/2010
Targeted rate of cents per cubic metre of water used	Residential	94.5 cents	$1.17

Standard Rate

Rate	2008/2009	2009/2010
Irrespective of usage – cents per day	33.75 cents	41.40 cents

c) Hamama Rural Water Supply

Rate	2008/2009	2009/2010
Rate is based on a cents per dollar of land value	0.0357 cents	0.0287 cents
Connection Charge	$150.00	$153.00

d) Takaka Fire wells Water Supply Area

A targeted rate will be set differentially based on where the land is situated. This rate covers the maintenance of fire wells within the Takaka Township area.

Rate	2008/2009	2009/2010
Per property in Takaka	$88.00	$0.00

Note: Once the proposed Takaka water supply scheme is completed and operational, the above rate will cease and the following new rates will apply.

Funding of Capital Cost:

Rate	2008/2009	2009/2010
Golden Bay Ward per property	$0.00	$15.00
Takaka Residential per property	$0.00	$51.00
Takaka Commercial CBD - cents per dollar of capital value	0 cents	0.0975 cents

Funding of Maintenance Cost:

Rate	2008/2009	2009/2010
Takaka Residential and Commercial CBD per property	$0.00	$45.00

e) Wai-iti Dam Costs

Rate	2008/2009	2009/2010
Per property	$280.00	$315.00

f) Waimea Water Augmentation (Lee Valley)

Rate	2008/2009	2009/2010
Per property	$25.00	$25.00

M.3 Funding Strategy for Motueka Water Supply, Coastal Pipeline and CTA Reticulation

The construction of the Motueka Water Supply, the Coastal Pipeline and the CTA Reticulation is one of that largest infrastructure projects for Council in the next 20 years. The funding strategy to fund this project is complex and inter-related. Council have prepared the attached report to document how the projects are to be funded, however, this may change after adoption of the LTCCP.

If development in the CTA advances more quickly than forecast, it is within Councils discretion to readjust the timing of some aspects of the CTA reticulation. Council has provided allowance within Item 254 (R3 CTA/Coastal Pipeline – Component for CTA DC), which it can utilize at its discretion to provide pipework into the CTA as and when development has occurred if it is deemed that earlier reticulation to the area is beneficial.

APPENDIX N. DEMAND MANAGEMENT

N.1 Introduction to Water Demand Management

Demand management, as a comprehensive, integrated and long term approach, seeks to improve the overall productivity of water use over the long term and deliver water services matched to the needs of end users. Council has implemented some water demand measures which have provided some success in managing water demand, however there is still some high and often inefficient water use in the District. Improving our demand management will:

- Achieve more sustainable use of water in line with Council's levels of service and the community outcomes;
- Optimise capacity/performance of existing assets;
- Reduce or defer the need for new assets;
- Meet the Council's policy to ensure that water is taken from the District's rivers and aquifers at a sustainable rate;
- Reduce environmental impacts from water withdrawals and wastewater effluent disposal;
- Demonstrate that the Council can "walk-the-talk" on demand management, particularly during times of water restrictions for consumers; and
- Respond to customer needs.

Historically there has been a perception that the objective of demand management is to change the way consumers use water, however this ignores the potentially significant and sometimes wasteful consumption by the utility itself, for example through reticulation system leakage and operational use such as flushing.

In order to determine the need for water demand management, available water demand data was analysed as described in the following sections. The best water demand management measures and tools are then described, followed by Council's demand management policies and a description of Council's current demand management measures. The final section provides recommendations for future demand management measures.

N.2 Introduction to Demand Analysis

N.2.1 Types of Water Use

Water use from a reticulation system can be categorised as either authorised consumption or water loss. Authorised consumption can be metered or unmetered consumption that is either billed or unbilled. It is expected that the majority of the authorised consumption within the TDC schemes will be metered billed consumption with the exception of consumption from the restricted connections which will be unmetered billed consumption. Authorised consumption is discussed in the following section, Demand Analysis Results.

N.2.2 Water Loss

Water loss can be either:

1. the apparent losses due to meter inaccuracies or unauthorised consumption, or
2. real losses due to leakage from water mains, service laterals, hydrants and reservoirs.

The majority of water loss will typically be real losses due to leakage. The annual water losses can be estimated using the international 'best practice' standard water balance developed by the International Water Association (IWA) Water Loss Task Force. This entails developing estimates or using measured volumes for

each component of water use and subtracting them from the bulk water supply volume to estimate the volume of real losses.

It should be noted that some cities still refer to water loss as a percentage of unaccounted for water. However, it has been confirmed at recent international water conferences and in the Benchloss New Zealand 2008 water loss software (produced by the New Zealand Water and Waste Association) that the influence of changes in total consumption makes percentage of losses a flawed performance measure. In addition, unaccounted for water is no longer an appropriate term (as after the water balance is completed, all types of water loss become "accounted for") and the correct term should be non-revenue water. There are three main categories of non-revenue water (NRW): unbilled authorised consumption; apparent losses; and real losses.

Unbilled authorised consumption is typically negligible and may include uses such as fire fighting and mains flushing.

Apparent losses represent the "paper" losses that occur when volumes of water reach a use, but are not properly measured or recorded. Strategies to reduce apparent losses include auditing for illegal connections and customer meter calibration and replacement programmes. Reduction of apparent losses will be most effective in communities that have significant illegal connections due to high water rates or have universal metering without a proactive meter calibration and replacement programme.

The annual volume of real losses is made up of three components:

1. Background leakage – small undetectable leaks at joints and fittings;
2. Reported bursts – events with larger flows which cause problems and are reported to the water supplier; and
3. Unreported bursts – significant events that do not cause problems and can only be found by active leakage control.

Strategies to reduce real losses or leakage are discussed in the section on Council's current water demand management measures below.

N.3 Demand Analysis Results

N.3.1 Available Demand Data

Each of Council's schemes (10 urban, 3 rural and 3 community) has at least one bulk flow meter, depending on the number of water sources (with the exception of the Hamama community scheme which has no metering).

Between November 2003 and April 2007 the bulk flow meters were read annually as a minimum and weekly during the summer months to monitor demand against the consent limits. Since July 2007, all bulk meters have been read weekly year round.

Some of the bulk supply meters are connected to the Council's telemetry system, providing real time data. However the telemetry system is not widely used as a source of metered data at the moment due to issues with data reliability. There are also other permanent meters which measure flow at key points within the supply network which are read in conjunction with the bulk supply meters.

All of the urban supply schemes have universal metering, with meters on individual properties at the point of supply. Meters on residential and commercial water connections are read on a 6 monthly basis. The meter reading frequency is staggered throughout the year for different supply areas. Large customer meters are read on a monthly basis including Nelson Pine Ltd (MDF Plant), Alliance Meats (Freezing Works), ENZA (Frucor), Dynochem and Fonterra (Brightwater Dairy Factory).

Rural restricted customers are not metered, but a database is kept up to date detailing all rural restricted connections and the maximum amount of water that can be taken per day (for example restrictors in the 88 Valley area are sized to supply a multiple of 1.0 m³/day per property on a trickle feed).

N.3.2 Historical Demands

The demand characteristics for each supply system were calculated from the bulk supply meter data as summarised in Table N-1 below. The 2006 annual average daily demand per connection varies significantly from scheme to scheme as the figures are based on the total bulk consumption which will include water loss and demand from residential, rural restricted and commercial properties.

Table N-1: Demand Characteristics for Each Scheme Based on Bulk Water Meter Readings

Scheme	Population[1]	Number of Connections		Period for Available Data [4]	2006 Average Annual Daily Demand[5]		Summer Peak Month Demand (m^3/day)	Summer Peak Week Demand (m^3/day)
		Residential & Commercial[2]	Restricted[3]		L/connection /day	m^3/day		
Richmond	10,500	4,958	90	Nov 03 – May 08	864	5,845	7,191	8,191
Brightwater / Hope	2,000	928	180	Nov 03 – May 08	1,412	1,311	2,016	2,329
Waimea / Mapua - Ruby Bay	1,680	812	258	Nov 03 – May 08	1,977	5,411	9,121	9,786
Wakefield	1,500	683	51	Nov 03 – May 08	788	578	1,060	1,176
Motueka	1,200	815	-	-	-	-	-	-
Murchison	680	281	2	Jan 06 – May 08	1,091	307	-	-
Redwood Valley	550	-	316	Jan 06 – May 08	1,798	566	-	-
Dovedale Valley	450	-	293	Jan 06 – May 08	3,218	943	-	-
Collingwood	450	102	1	Jan 06 – May 08	533	55	-	-
Tapawera	400	145	1	Jan 06 – May 08	2,957	432	-	-
Kaiteriteri / Riwaka	300	464	-	Jan 06 – May 08	821	381	-	-
Eighty Eight Valley	200	-	180	Jan 06 – May 08	1,372	248	-	-
Pohara	150	49	-	-	-	-	-	-
Upper Takaka	50	17	25	-	-	-	-	-

1. Approximate populations only (Source: Register of Community Drinking Water Supplies in New Zealand).
2. Source: TDC Water Meter Data Yearly Unit Consumption Figures 2007-2008 – As at 30 June 2008.
3. Source: TDC Contractor Reports – Note Richmond rural restricted connections separated from Brightwater/Hope based on 1/3 Richmond, 2/3 Brightwater/Hope.
4. Between November 2003 and April 2007 only data for summer months are available, the exception is for 2006. Continuous weekly data is available from July 2007.
5. Average annual demand calculated for the 2006 calendar year, which is currently the only year with a full set of data readily available. Based on total consumption including leakage, residential and commercial demand.

The average consumption per connection (including both residential and commercial connections) was calculated from the 6 monthly individual property meter readings and are shown in the graphs below in litres per connection per day. These consumption figures will include property leakage but not system leakage due to the meter location at the property boundary. The rural schemes are excluded from these graphs as they do not have property meters. The Waimea supply portion of the Waimea/Mapua-Ruby Bay scheme has been excluded as it contains several large commercial and industrial customers which comprise approximately 95% of the demand from the Waimea source.

The first graph shows the five largest urban schemes and the largest community scheme (Motueka) in descending order of population. These larger schemes typically had an average metered consumption per connection at the point of supply in the order of 600 to 900 litres per connection per day. The summer consumption will typically be included in the June readings which includes consumption from the beginning of January to the end of June (although meter reading lag will shift these dates).

Based on the typical population 2.4 people per connection, properties in the larger schemes are using an average of between 250 and 375 L/capita/day (this excludes system leakage). This is higher than the New Zealand Standard 4404:2004 Land Development and Subdivision Engineering allowance of 250 L/capita/day (which includes system leakage). Further analysis is required to accurately estimate the residential per capita demands in each scheme, such as separating residential from commercial consumption.

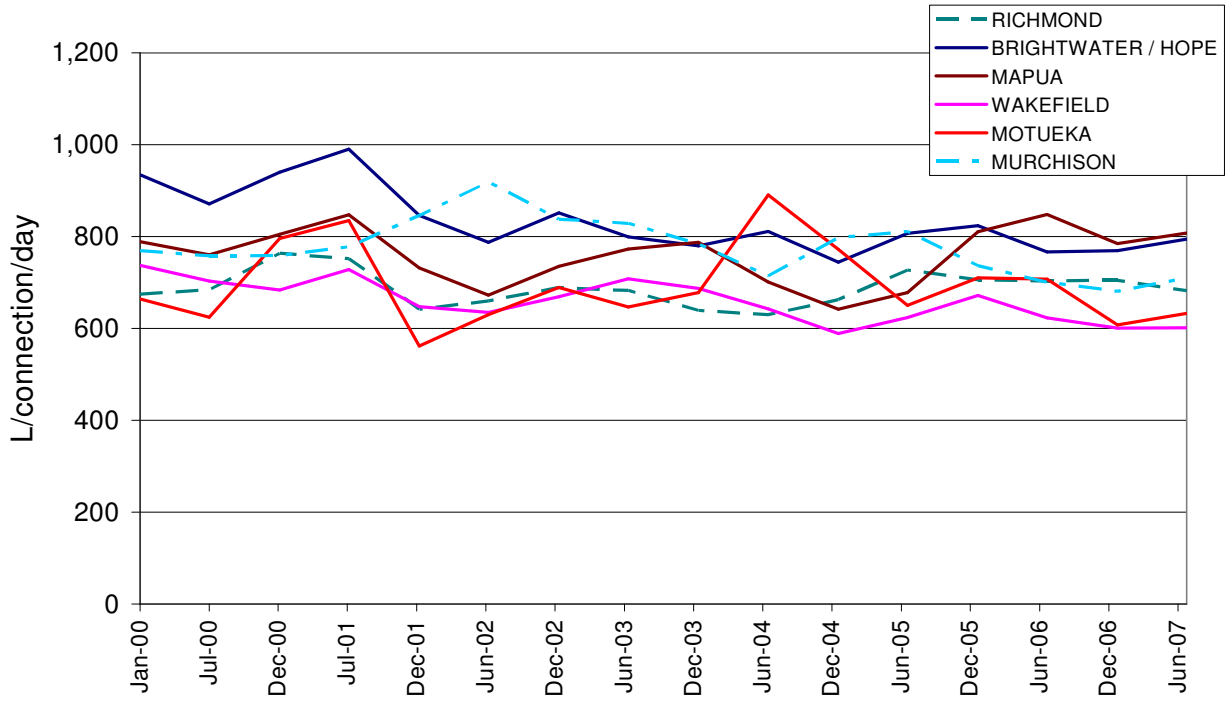


Figure N-1: Average Metered Consumption per Connection for the Six Largest Urban Schemes (6 monthly property meter readings)

The second graph shows the five smallest urban schemes in descending order of population. These smaller schemes show more variation. Four of the five schemes typically had an average metered consumption per connection in the order of 300 to 600 litres per connection per day. The Tapawera scheme had significantly higher consumption in the range of 800 to 1,000 L/connection/day. The Tapawera scheme's per property consumption peaked in 2005 at 1,400 L/connection/day and has been decreasing since then to the normal range of 800 to 1,000 L/connection/day.

Based on the typical population 2.4 people per connection, properties in the small urban schemes are using an average of between 125 and 250 L/capita/day (this excludes system leakage). This is inline with the New Zealand Standard 4404:2004 Land Development and Subdivision Engineering allowance of 250 L/capita/day (which includes system leakage).

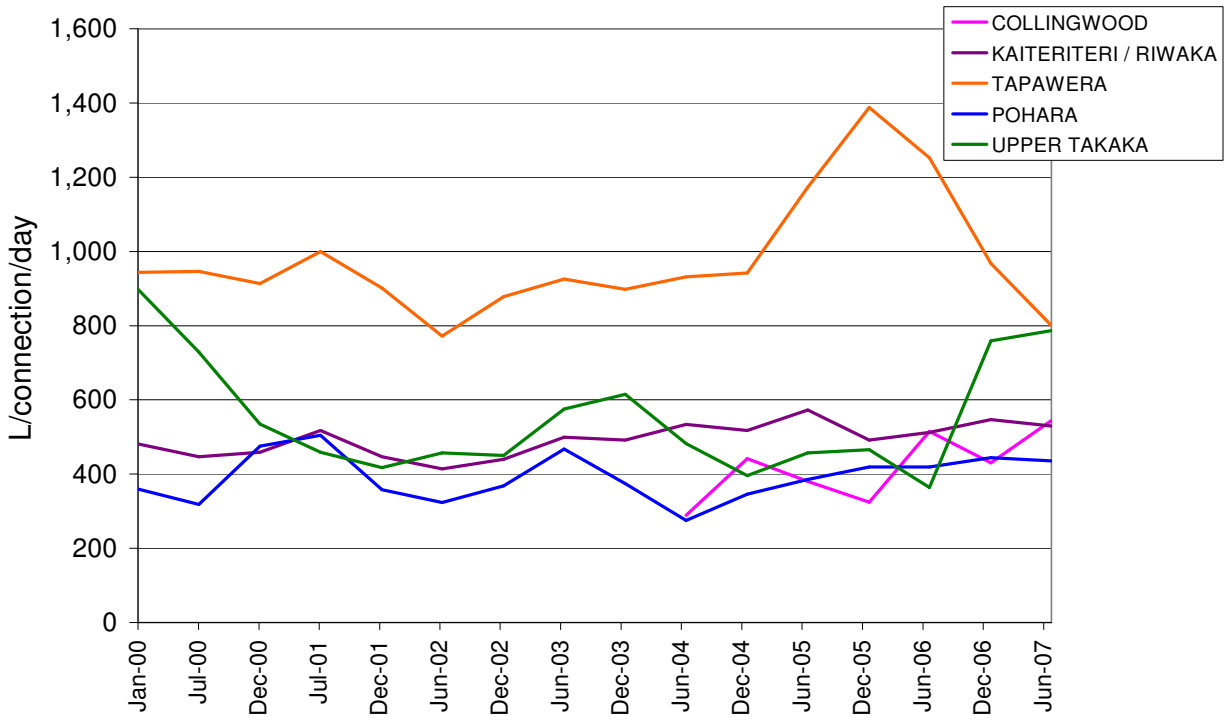


Figure N-2: Average Metered Consumption per Connection for the Five Smallest Urban Schemes

Figure N-2 Average Metered Consumption per Connection for the Five Smallest Urban schemes (6 monthly property meter readings)

No specific data is currently available on water loss or non-revenue water volumes for any of the supplies. Significant additional analysis will be required to estimate the non revenue water volume from the data currently available, due to the following:

- Water meter reading lag as meters are read continuously year round;
- The assignment of data to townships rather than supply zones; and
- The lack of property metering on rural restricted systems.

As discussed in Appendix B, a few schemes have been identified with poor asset condition and suspected system leakage, including Tapawera, Murchison, Wakefield and Takaka (in descending order of suspected leakage).

Demands are expected to increase significantly in the future due to population growth, therefore it will be necessary to offset the need for new infrastructure by reducing water demands through demand management.

N.3.3 Hydraulic Modelling

Hydraulic modelling work was undertaken in 2005 using H2OMAP to build and calibrate a model for Brightwater / Hope, Richmond, Waimea and Wakefield water supply systems. The calibrated model was then used to develop planning models for the 2006, 2011 and 2026 planning horizons. The models have been subsequently converted from H2OMAP into Infoworks WS modelling software.

The models are a useful tool to assist with identifying system deficiencies, assessing potential system upgrades and planning future system development. The models can also be used to optimise operation of the system.

The modelling work previously undertaken used a Peak Day to Average Day Ratio of 2.0. The calculated annual average to peak summer week demand ratio is in the order of 1.4 to 1.8, which indicates that the peaking factor of 2.0 is appropriate and conservative for infrastructure design.

Information on Peak Hour to Average Day Ratio is limited and can only be obtained from data collected from the telemetry data or specific field testing. Demand profiles are available for the Brightwater / Hope, Richmond, Waimea and Wakefield supplies which were derived for calibration day of the hydraulic models.

The current accuracy of the models is limited due to deficiencies with the input data that was available at the time of the original calibration work. An accurate flow balance was not achieved due to the lack of flow data into and out of reservoirs. Significant development has also occurred since the model was constructed. Therefore, the models need be updated and recalibrated. It is planned that this work will be undertaken on a system by system basis, prioritising the work based on the extent of development, proposed system upgrades and known problems within each zone.

N.3.4 Conclusions from the Demand Analysis

The demand analysis undertaken for this AMP has shown the following:

- The five larger urban schemes and the largest community scheme typically had an average metered consumption per connection at the point of supply in the order of 600 to 900 litres per connection per day (equivalent to 250 to 375 L/capita/day which indicates good potential for demand reduction).
- The five smaller urban schemes typically had a lower average metered consumption per connection in the order of 300 to 600 litres per connection per day (equivalent to 125 to 250 L/capita/day), except for the Tapawera scheme.
- The Tapawera scheme had significantly higher consumption than the other smaller urban schemes and peaked in 2005 at 1,400 L/connection/day. Its consumption has been decreasing since then to a typical range of 800 to 1,000 L/connection/day (this could be due to water loss reduction efforts). There is good potential for further demand reduction in the Tapawera scheme.
- A few schemes have been identified with poor asset condition and suspected system leakage, including Tapawera, Murchison, Wakefield and Takaka.
- Further analysis is required to estimate the system non-revenue water and leakage volumes (system leakage is excluded from the metered consumption estimates above due to the location of the meter at the property boundary).

N.4 Water Demand Management Measures and Tools

Water demand management measures and tools can be used by both the Council and consumers to manage and improve efficiency of water use. The objectives and basic framework in which each management tool will sit can be summarised as follows:

- **Council Policy** – Legislation such as policies and bylaws provide the Council with means to manage water use through rules and regulations.
- **Management of the Water Supply Infrastructure** – The existing infrastructure requires ongoing monitoring and maintenance to ensure that the water delivery system is efficient. Further improvements in optimising the supply system can also be done through water pressure management and leakage minimisation.
- **Consumer-Oriented Measures** – Consumers can contribute by incorporating water efficient practices in the household, including water recycling and reuse, and installation of low flow devices.
- **Public Education and Consumer Awareness** – Education and information sharing on the limitations of the water resource and supply system will increase public awareness and provide consumers with management tools that they can implement in their own household.

Within this framework, these tools and measures can be summarised into three categories as shown in Table N-2.

Table N-2: Framework for Categorising Water Demand Management Measures and Tools

Tool Category	Framework			
	Council Policy	**Management of Infrastructure**	**Consumer Oriented**	**Consumer Awareness**
General Tools	Bylaws & District Plans	Metering and Pricing		Public Education
Tools to reduce Peak Flow	Flow Restrictors	Alternatives for non-potable water use (grey water reuse and rainwater harvesting)	Outdoor Water Audits Water Restrictions	Public Education on irrigation practices Water efficient landscaping
Tools to reduce Base & Annual Flow	Water Loss Reduction	Indoor Water Audits	Water efficient appliances and fixtures	Education on water conservation e.g. leaky taps

N.5 An Explanation of the Council's Demand Management Policies for the Activity

Council has not developed a water demand management plan for each of the water supply systems, and it will use all reasonable and practicable measures to maintain and enhance the efficiency of the water treatment, reservoir, and reticulation components to minimise losses and to manage customer demand.

Council are proposing to develop Water Demand Management Plans for implementation of practical and targeted actions focusing on prioritised areas for reducing demands in each community. These plans will be prepared for each scheme after further analysis; including improving bulk metering to provide better demand data, further demand analysis, and night flow monitoring to assess the level of leakage, cost-benefit analyses to provide short-lists of the best demand management measures.

In addition to this, its general water conservation policy is as follows:

a) Pricing: The charge for water by way of meter means that the more water individuals use, the more that they have to pay.

b) Compulsory 'dual flushes' are required to be installed on all newly installed water closets.

c) The Council encourages the installation of private rainwater tanks and discourages the use of waste masters (and promotes composting as a preferable alternative). It also supports the installation of low flow showerheads and grey water re-use and recycling.

Also, the Council is conscious that the rate of population growth, and the consequent high demand for greater volumes of water, has the potential to negatively affect the natural water resources of the district. Although this matter will, to a large extent, be addressed by the Council when it considers the Council's applications for resource consent, the Council will continue to carefully investigate all options (regarding both available sources and their management) before making its applications.

Preservation of the District's water resources is an important sustainable development issue, and the Council recognises this and seeks to operate its water supplies to minimise wastage.

N.6 Council's Current Demand Management Measures

Considering all of the potential demand management tools and measures outlined above, the following sections explain Councils' water demand management measures.

N.6.1 Water Restrictions

When droughts occur, rationing may be applied (through Part V of the Tasman Resource Management Plan) to water takes in affected Water Management Zones, including the Council's water supply water takes. Depending on the duration and severity of the drought, the following water rationing steps may be applied at the discretion of the Council:

Water Management Zone	Rationing Steps
All water management zones except for the Riwaka Zone	Step 1 – Allocation less 20% = (quantity) m^3 per week Step 2 – Allocation less 35% = (quantity) m^3 per week Step 3 – Allocation less 50% = (quantity) m^3 per week
Riwaka Zone	Step 1 – Allocation less 10% = (quantity) m^3 per week Step 2 – Allocation less 25% = (quantity) m^3 per week Step 3 – Allocation less 40% = (quantity) m^3 per week

The Council may need to apply water restrictions on users when their water takes are rationed. They may also need to apply restrictions when demand exceeds the system's ability to supply the water, although this will be rare.

Restrictions will usually take the form of garden watering and irrigation restrictions. These will be advertised through local media.

N.6.2 Water Conservation and Public Education

The aim of water conservation programmes is to increase the communities' awareness of the benefits of conserving water. There are currently three existing pamphlets available to the public which outline the value of water in TDC and suggest tips and remedies for saving water.

It is proposed to also develop, in conjunction with rural user groups, a pamphlet directed at assisting new property owners make the transition from a full urban environment to a restricted rural supply.

During times of drought, when resource consent restrictions limit the available water abstraction, a multimedia approach is taken to educate and inform the public. This includes letter drops and radio advertisements. In addition water user committees are called upon to play a role in raising water conservation awareness within their communities.

The future strategy is to promote water conservation following incidents, which raise the profile of this issue. This approach maximises the impact of the message. Other examples of water conservation initiatives could include rainwater harvesting or grey water reuse systems.

N.6.3 Water Metering and Pricing Strategy

The District wide metering of urban consumers has raised public awareness of water consumption. The initial reduction of water usage following the introduction of meters has stabilised to a fairly constant level of demand in relation to the property type.

It is assumed that the introduction of metered supplies made a significant contribution to eliminating most of the wasteful activities. Additional increases in the charging will have a limited effect on further reducing

demand, unless the charges were high enough to make it economic for households to invest in new water efficient appliances or grey water reuse systems. Alternative pricing strategies for controlling demand, such as winter and summer charging have yet to be formally considered.

No further allowance has been made in the Plan to use pricing as a tool to manage demand.

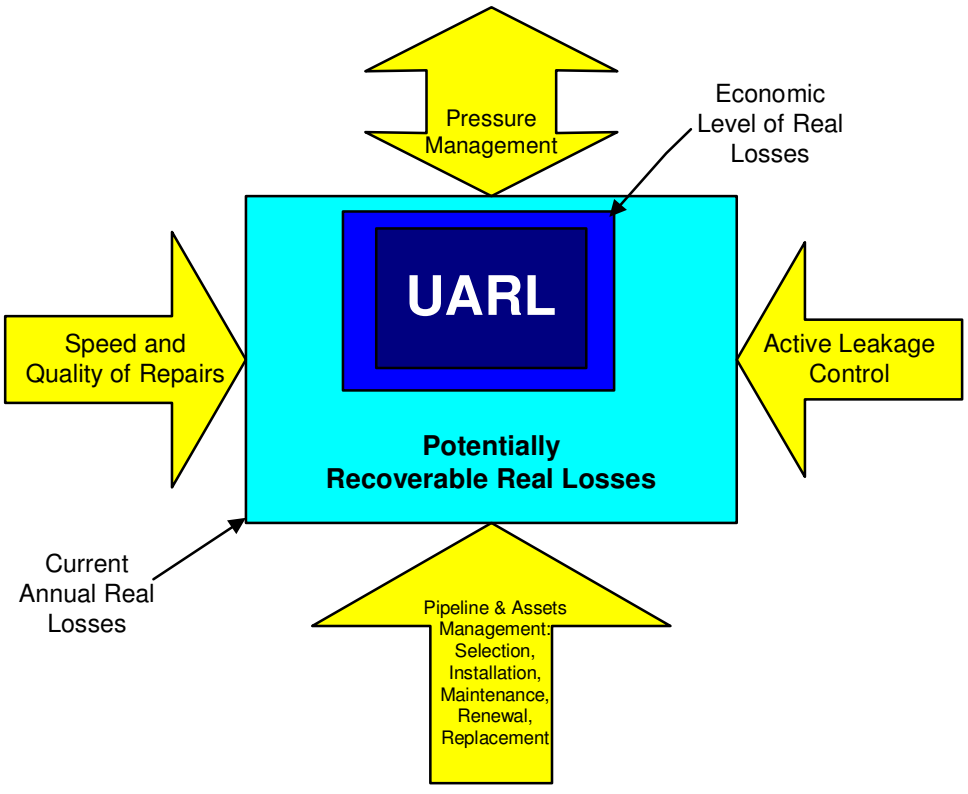
Council currently charges for water based on a fixed charge plus a constant volumetric charge per m^3 of water consumed. A more proactive demand management approach to water pricing is an increasing rate per m^3 of water consumed where higher users pay more for their higher demands (also called an inclining block rate where the volumetric charge is not constant but increases with each jump in water demand).

Customer meters typically under-register as they age, leading to a loss of revenue for the water utility (this is called "apparent loss" in the assessment of system water losses). It is possible that loss of meter accuracy is a significant issue for some of the Council's schemes as meters have been installed since the late 1980s and a meter replacement programme has only recently been initiated. In addition, Council currently does not have a database on meters. Council needs to develop a proactive meter replacement programme prioritised by meter age or the cumulative volume of water through the meter.

N.6.4 Water Leakage Control, Detection and Repairs

Strategies to reduce real losses can be grouped into four key areas, as shown by the arrows in the following diagram.

Figure N-3: Four Key Strategies to Reduce Real Losses



Water Leakage control is currently pursued by Council at 3 levels:

1. ***Proactive Leakage Repairs and Theft Prevention:***

   During annual dry periods Councils proactively searches for leakages and repairs. This is most effective in rural areas where leakage shows up as green patches. Through publicity, Council also

raises public awareness to report leakage. The Council also has a 2 yearly programme to check all restrictors for signs of tampering or theft.

2. Targeted Leakage Reduction:

Where high water use is observed Council will conduct targeted investigations and repairs. In the last three years Council have identified particularly high water loss in Tapawera, Murchison, Brightwater and Wakefield and have;

- identified poor performing mains and replaced them; and
- undertaken specific acoustic leakage detection and repair projects in Tapawera and Murchison.

3. Proactive Leakage Reduction Programme:

Council has yet to develop a leakage control programme. Council is moving toward this, but is investing at present by developing the water network models and capturing water data so the programme is targeted (refer Section 34.2.5).

Council is proposing to assess the level of water loss in each scheme from both the top-down (using the international standard water balance approach advocated by the New Zealand Water and Waste Association) and the bottom-up (through night flow monitoring based on the principle that leakage represents the highest proportion of night time demands). Council will also develop a proactive leak reduction programme, using a pilot community as the first step to determine the effectiveness of this work.

N.6.5 Network Modelling

Council has developed water network models of Richmond, Waimea, Brightwater, Wakefield and Mapua water supply schemes. It is intended that these will provide the foundation tool to enable assessment of high loss parts of the network and thus targeting leakage reduction programmes. The models need further calibration to enable this to happen.

N.6.6 Restricted Supplies

In rural areas where the cost per user of installing an on-demand reticulated supply are high, restricted supplies with on-site storage tanks are designed to reduce the capital and operational costs.

N.6.7 Pressure Management

There is a direct relation between leakage and system pressure. In addition, certain types of consumption can also be influenced by pressure, for example garden irrigation.

The two main steps in pressure management and their associated benefits are:

- Minimise surge: extend infrastructure working life; and
- Reduce excess pressures: reduce flow rates from existing leaks; reduce new leak frequencies; extend infrastructure working life, and provide a calmer network.

The Richmond and Waimea systems have the highest potential for pressure management and are proposed to be investigated further. The Richmond scheme is divided into two different pressure zones. This approach permits lower pressures to be maintained in lower areas and avoids subjecting lower zone pipelines to excessive pressures if supplied from a higher pressure zone. The network models (refer Section 11.2) are being used to review Richmond zoning, taking into account pressure management opportunities, as well as growth patterns, network distribution needs, storage volumes and site constraints. This includes investigations on how to improve the current system and reduce pressures (for example through flow modulated pressure zones).

N.7 Recommendations for Future Demand Management Measures

Tasman District Council have existing water supply issues such as abstraction limitations, high water use and high levels of leakage. Council need to ensure cost effective and sustainable use of the water resources in the District through effective water demand management.

A staged approach is proposed for improving Council's water demand management as shown in the following table:

Table N-3: Proposed Approach for Improving Council's Water Demand Management

#	Action	Description	Benefit
1	Bulk Meter Installation & Night Flow Monitoring	Identify locations for installation of new bulk meters with data loggers (or connections to SCADA however this is expected to be more expensive), for example reservoir outlets. Develop a night flow monitoring programme to estimate and monitor the level of leakage in each scheme from the bottom-up.	Ongoing monitoring of leakage in top priority schemes
2	Further Demand Analysis	Further analyse historic water demands in each water supply system (16 in total) and identify trends and patterns in water use. Assess water supply issues for each system.	Identify Schemes with Highest Demands
3	Assess Level of Water Loss	Undertake an annual water balance for at least the most recent year of data in each urban system (10 in total) to assess the portion of water that is non-revenue (i.e. water loss, meter under-registration etc). Identify potential for water loss reduction in each urban system including estimation of the economic level of leakage for each system. Identify high leakage areas to prioritise for proactive leakage reduction.	Identify top priority schemes for further leak reduction and night flow monitoring
4	Proactive Leak Reduction in Pilot Community	Develop a leakage reduction programme in a pilot community to prioritise on high leakage areas. Includes leak location and infrastructure repair/renewal.	Pilot to demonstrate effectiveness of leakage reduction
5	Hydraulic Modelling Upgrades	Undertake recalibration of the existing Infoworks water supply models, based on the latest GIS, population, water connection and demand data. The models are to be recalibrated on a system by system basis, prioritised based on development, proposed upgrades and known problems.	Provides a tool to assess the system performance, develop monitoring programmes and assess benefit of improvements.
6	Meter Replacement Programme	Develop a database of all flow meters including location, year of installation/replacement, diameter, brand and calibration results. Develop a proactive meter replacement programme prioritised by cumulative volume of water through the meter or meter age.	Increased revenue and higher accuracy for water demands
7	Cost-Benefit Analysis	Assess relevancy of demand management measures to each scheme and undertake a high level cost-benefit analysis for the short-listed options.	Identify options with best benefit to cost ratio for implementation
8	Demand Management Plans	Develop a water demand management implementation plan for each scheme through workshops and incorporating results from previous actions.	Implementation plan to improve water demand management in each scheme
9	Pressure Management	Identify through hydraulic modelling the areas within the Richmond and Waimea systems that have the highest potential for pressure management.	Identify priority areas for pressure management

N.8 Estimated Costs for Future Demand Management Measures

Order of magnitude cost estimates have been prepared for each of the recommended future demand management measures as shown in the following table:

Table N-4: Cost Estimates for Future Demand Management Measures

	Description of Task	Cost Estimate	Year
Bulk Meter Installation & Night Flow Monitoring	Bulk Meter Assessment	$10,000	2009 - 2019
	Installation of Bulk Meters (10 assumed)	$60,000	2009 - 2019
	Night Flow Monitoring	$25,000	2009 - 2019
Further Demand Analysis	Collate, process and assess demand data	$25,000	2010/11
Assess Level of Water Loss	Undertake water balance in each scheme and assess economic level of leakage to prioritise leak reduction	$20,000	2012/13
Proactive Leak Reduction in Pilot Community	Develop a leakage reduction programme in a pilot community to prioritise on high leakage areas[2]	$40,000	2012/13
Hydraulic Modelling Upgrades	Recalibrate Waimea and Richmond supply system	$45,000	2009/10
	Recalibrate Mapua supply system	$25,000	2010/11
	Recalibrate Brightwater supply system	$25,000	2015/16
	Recalibrate Wakefield supply system	$25,000	2015/16
Meter Replacement Programme	Develop a database of bulk and customer meters and develop a proactive meter replacement programme	$20,000	2010/11
Cost-Benefit Analysis	Assess relevancy of demand management measures to each scheme and undertake a high level cost-benefit analysis for the short-listed options	$20,000	2011/12
Demand Management Plans	Develop a water demand management implementation plan for each scheme	$25,000	2012/13
Pressure Management	Assessment of potential pressure managed areas and implementation of pilot study area (assumed 2 valves and 2 prvs).	$30,000	2012/13
	TOTAL	**$395,000**	

[2] Leak reduction programme costs include leak location but not infrastructure repair/renewal

APPENDIX O. THE SUPPLY OF WATER FOR FIRE FIGHTING PURPOSES

O.1 Fire-fighting Levels of Service

In urban schemes, the water supply system is designed to meet the NZ Fire Service Fire fighting Water Supplies Code of Practice 2003 (standard W3). In highly commercial, central business district areas, a W4 standard will be provided at the discretion of the Council. The Council considers it the responsibility of building owners to provide their own systems if their building requires a higher fire fighting standard to be met.

Table O-1: The Supply of Water for Fire Fighting Purposes

Standard	Reticulated Flow l/s	Max No. of hydrants from which the required flow is to be obtained within a 270m radius	Max. spacing of fire hydrants	Reserve storage capacity or alternative supply in water supply scheme
W3	25	2	135m	0.5 hour at 25l/s 45,000 litres
W4	50	3	135m	1 hour at 50l/s 180,000 litres

No fire fighting capability is provided from rural water supply systems.

In the areas of Motueka that are not reticulated, and in Takaka, there are several fire wells and standpipes provided for fire fighting purposes. The Council does not guarantee that these will meet the requirements of the Code.

O.2 The Degree to Which Fire Hydrants Presently Meet the Requirements of the Fire Service Standards

System modelling has been carried out in Richmond/Waimea, Mapua/Ruby Bay, Wakefield and Brightwater in 2007. Generally the water supply systems modelled meet the W3 standard for fire fighting requirements but with a few exceptions:

- *Wakefield* - Three areas which do not comply with the W3 25l/s fire flow classes; Clifford Road, Martin Avenue and the Whitby Road areas.
- *Brightwater* - Main Road Hope from Aniseed Valley Road to Bateup Road does not meet all the requirements for the W3 25l/s fire flow classes
- *Waimea* - One area of network in Hill Street North just fails to meet the Fire Code residual pressure (10m) requirement. Several Champion Road hydrants located on the 100mm main on the west side of the road, fail the fire code requirements for W3 fire risks but the area complies when using the hydrants across the road on the large diameter main (450mm).
- *Richmond Low Level*- One area of the low level pressure zone network which includes Gilbert Street, Warren Kelly, Sutton Street and Appaloosa Avenue fails to meet the Fire Code residual pressure (10m) requirement under 25l/s flows. This area has recently been subject to re-zoning of the adjacent Waimea PZ and this has lead to a single 100mm main feeding this area along Gilbert Street. Two solution options are presented in section 7.1.5 to resolve this fire flow compliance issue.
- *Richmond High Level* - Three areas of the Richmond high level pressure zone fail to meet the Fire Code residual pressure (10m) requirement. Two are located at either end of Hill Street, one area is very minor located at the top of Hillplough Heights while the other area is located on Park Drive

and includes 4 non compliant hydrants. This area is supplied by a section of 100mm NB cast iron main and solution options are considered in the next chapter, which resolve this non-compliance issue. The Vallhalla High level system provides W3 fire risk class compliance under gravity conditions, while both the Hart Road rural restricted and Cropp Place micro- zone are not designed to provide fire flow compliance, and do not do so

- *Mapua/Ruby Bay* - Brabant Drive area of Ruby Bay and the upper Higgs Road area.

Two areas of the Richmond and Waimea systems were examined to determine fire fighting capacity for commercial W4 fire risk classes, the industrial areas of the Waimea network and the Richmond commercial district.

The Waimea system has a very high capacity due to the 450mm principal main and performs well under fire fighting stresses. 150l/s class W6 compliance is achieved along Nayland Road with a residual pressure of 15m and adjacent to Nelson Pine factory on Queen Street the simulated residual pressure is 55m.

The commercial town centre of Richmond was analysed for class W4 50l/s fire flows in the area bounded by Oxford Street and Talbot Street and Beach Road to Salisbury Roads. Two Oxford Street hydrants just failed to comply with the W4 50l/s fire flow with a simulated residual pressure of 6m. All other areas of the Richmond commercial district described above complied with W4 fire flow requirements.

Other urban water supply systems with known fire fighting deficiencies include:

- Upper Takaka's fire fighting capability does not meet the W3 standard.
- The following areas of Collingwood do not meet the W3 standard - south end of Beach Road and high area around Swiftsure Street.
- The areas covered by fire wells in Motueka and Takaka do not meet the W3 standard.

A project to install a reticulated fire fighting water supply system in Takaka CBD is planned for 2009/10. The remainder of the town will receive a fire fighting supply with the construction of a new town potable water system.

A new town potable water supply scheme for Motueka is planned for construction in 2012 – 2015. This will address deficiencies in the current fire fighting system.

O.3 Monitoring Of Fire Fighting Supplies and Future Intentions for the Service

The fire wells are to continue to be tested annually. Hydraulic modelling will be undertaken for a number of other urban water supply systems. The fire flows will be assessed as part of this exercise.

The current hydraulic models will be maintained and recalibrated in a regular basis.

APPENDIX P. SIGNIFICANT NEGATIVE EFFECTS ARISING FROM THIS ACTIVITY

The significant negative effects on the community of undertaking the water supply activity are as follows:

- Disruption to the community during the construction of future schemes
- An increase in rates is likely to be required to assist in funding future schemes
- Water restrictions applied in times of drought cause disruption to the community, particularly to those who use the water supply for irrigation purposes.
- Malfunction of a pump station, pipeline, reservoir or treatment plant could cause disruption in supply to the community
- Spillage of chemicals used in the water treatment could pollute the environment
- The above ground assets may be considered a negative visual impact
- Water is abstracted from surface water and groundwater sources. The removal of water from the natural environment results in the water being unavailable for other uses such as irrigation or recreational.

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.

Q1.1 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 the pipework in the urban water supplies is in satisfactory condition. The only known exceptions to this are:
  - the AC pipe in Richmond - and this is being progressively replaced over time
  - the polyethylene laterals in Murchison – these are being progressively replaced over time
  - Upper Takaka – it is estimated that approximately 80% of the reticulation requires replacing due to poor quality

- The pipework in the rural water supplies has some condition problems, however, it is considered that the cost/benefit of large scale asset replacement is such that is better not to replace. Council has in place plans and measures to identify and replace the worst performing areas and replace pipes as considered affordable.

- Council is in the process of developing a risk-based method for creating pipe renewal programmes. Currently this is being trialled on the Richmond water supply.

Q1.2 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.

Q1.3 Network Capacity

The Council has a growing knowledge and understanding of network capacity, however, the knowledge is not complete. Council is collecting asset data and modelling the networks to enhance the understanding of system capacity. To date, hydraulic models have been created for Richmond, Mapua/Ruby Bay, Wakefield and Brightwater.

System capacity upgrades have been planned where shortfalls are known or where growth is expected, however, the models will provide new information that may create a need for new projects and/or re-prioritisation of existing projects.

Q1.4 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.

Q1.5 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 factory that gets a connection to a new water supply) will contribute to the scheme, and if so, how much water they will demand?
- 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 (Coastal Tasman Area, Motueka,

Pohara, Takaka, Marahau) 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.

Q1.6 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 estimate 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 – ie. 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.

Table Q-1: Life Cycle Estimate Accuracies

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

Table Q-2 below details the following significant projects in the first 3 years have the following accuracy levels:

Table Q-2: Significant Project Estimate Accuracies

Project	Project Stage & Estimate Accuracy	Project Value in First 3 Years	Factors that Could affect Estimate Accuracy
Coastal pipeline	Preliminary Design / Investigation	$2,674,475	Changes in growth projections. Land purchase. Ground conditions.
Motueka New Town Supply	Preliminary Design / Investigation	$1,658,670	Ground conditions. Clashes with other services
Takaka Fire Fighting		$1,065,300	Reinstatement costs in SH could be greater than anticipated.
Richmond New Ground Water Source	Concept / Feasibility	$505,116	Land investigation costs only at this stage. Results from this stage could impact on the costs for the rest of the project.
Richmond Treatment Plant	Concept / Feasibility	$3,698,604	DWSNZ:2008 may require a higher level of treatment than costed. Turbidity levels and general water quality may affect treatment requirements.
Richmond East	Preliminary Design / Investigation	$2,597,300	Changes in Growth projections could affect the size of the schemes costed. Project accommodates NCC growth which is not fully known. Ground Conditions are not fully known.
Richmond Rezoning	Preliminary Design / Investigation	$773,580	Clashes with other services, reinstatement within the CBD.

Q1.7 Changes in Legislation and Policy

The legal and planning framework under which local government operates is ever changing. This can significantly affect the feasibility of projects, how they are designed and constructed and how they are funded. The most significant change in legislation that has been incorporated into this AMP is the need for compliance with DWSNZ:2005. The projects have been programmed to meet the requirements where possible, but in some cases, Council feel they will be able to prove all practicable steps are in place to meet compliance deadlines, thereby allowing negotiation with MoH on the timing.

Q.2 Risk Management

Q2.1 Risk Management Framework

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.*"

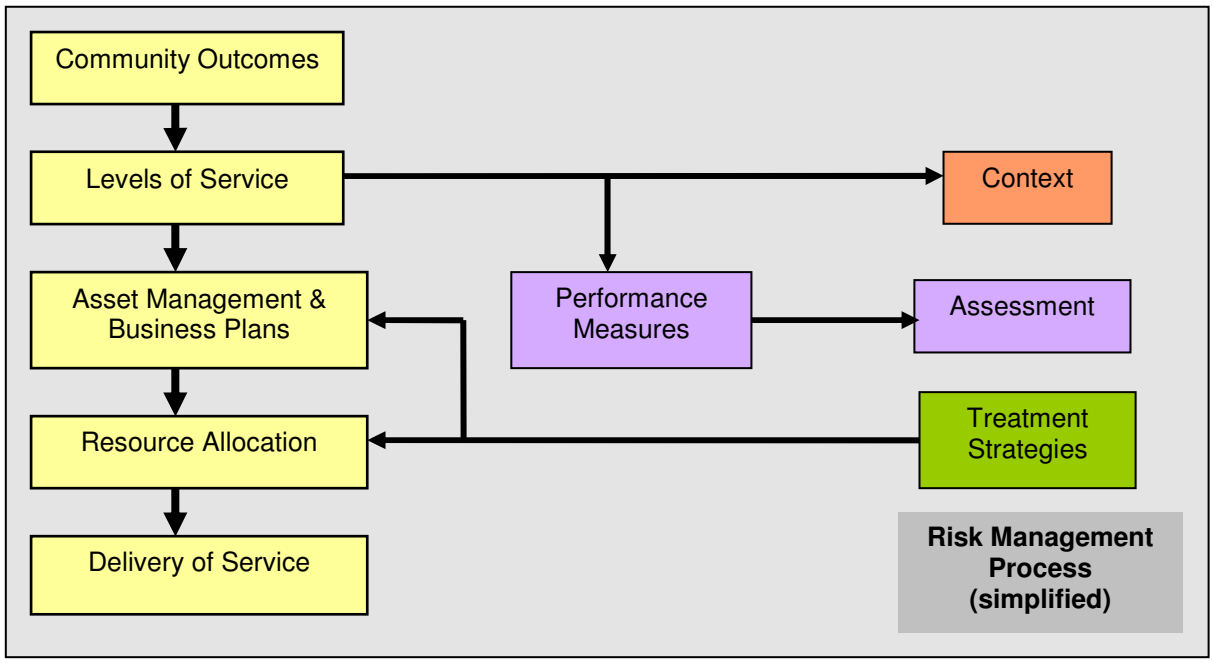


Figure Q-1: Integration of Risk Management Process into LTCCP Process

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).

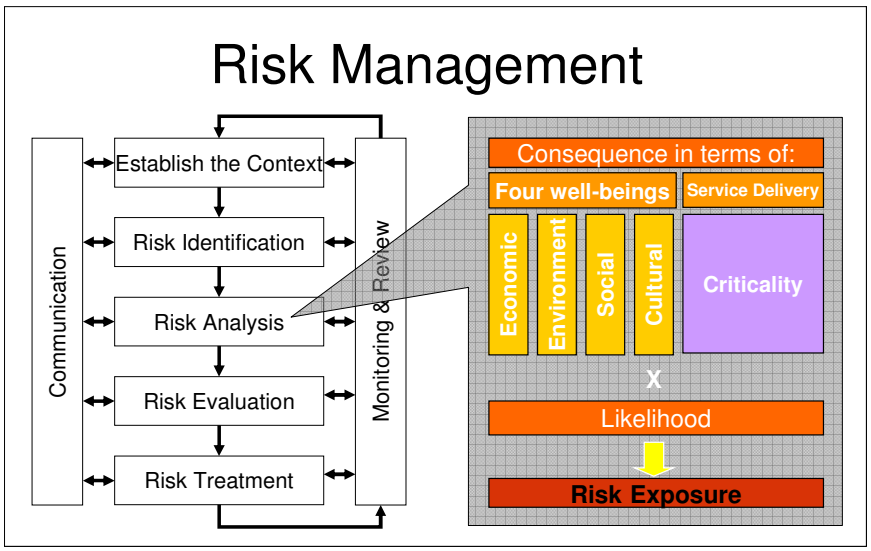


Figure Q-2: Integrated Risk Management Process

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-3: 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
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

Q2.2 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 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.

Q2.3 Level 2 - Asset Group Risk Assessment

The same principal and consequence tables have been applied, but the focus has been at an Activity Level.

Major asset groups within the activity have been identified. 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-4, a checklist of mitigation measures that should be considered for each type of asset group.

Table Q-4: Mitigation Measures Check List

Mitigation Measures to be considered	Asset Group					
	Water Source	Treatment Plant	Reservoirs	Pump Stations	Critical Mains	General Reticulation
Duplicate main					✓	
Re-Direction Capabilities					✓	✓
Additional Storage			✓			
Duty/Stand-by Pump Arrangement				✓		
Telemetry		✓	✓	✓		
Stand-by / Portable Generators		✓		✓		
Well Head Security	✓					
Seismic Valving	✓		✓	✓	✓	✓
Duplicate Wells	✓					
Critical Spares	✓	✓		✓		
Increase Monitoring		✓				
By-Pass Capabilities			✓		✓	✓
Vulnerability Checks	✓	✓	✓	✓		
Back up Communications	✓	✓		✓		
Valving				✓	✓	✓
Emergency Response Plan	✓	✓	✓	✓	✓	✓
Drought Contingency Plans	✓	✓	✓	✓	✓	✓
Water Restriction	✓	✓	✓	✓	✓	✓
As Builts / Data Management	✓	✓	✓	✓	✓	✓

Q2.4 Level 3 - Critical Assets Risk Assessment

The next step in the Integrated Risk Management Approach will be 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, the level of risk management has not been implemented but has been included in the Improvement Plan.

Q2.5 Projects to address Risk shortfalls

The Risk Assessment Process is not complete at this Stage. It is not planned to start the Level 3 assessments until Level 1 and 2 and complete. In Levels 1 and 2, through the Establishing the Context, Risk Identification, Risk Analysis and Risk Evaluation Stages (refer Table Q-4). However the Risk Treatment has not been completed and this is included in the Improvement Plan.

Notwithstanding the state of IRM process, the specific risk mitigation measures that have been planned within the 20 year water programme include:

- Completing the IRM framework
- Completing PHRMPs for all Water Supply Systems
- A programme of telemetry installation and upgrade.
- Seismic protection at 4 key reservoirs (Wakefield, Champion Road and Richmond High and Low Level Reservoirs).
- A programme of Well Head security improvements.
- A programme of additional valving on trunk mains.

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

R.1 Community Outcomes

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

R.2 Levels of Service

Levels of service are described in Section 2

R.3 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, Groups & 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 (We provide)	We will know we are meeting the Level of Service if …..	Current Performance	Future Performance (by Years 1-3)	Future Performance (by Year 10)
1. We provide water takes are sustainable	All water takes have resource consents with appropriate conditions which we consistently meet	A current resource consent is in place for each water take with the exception of Wakefield – 88 Valley Road. This expired in 2005, Council is currently in consultation following submission of a renewal application. No abatement notices for breach of resource consents have been received in the last 3 years.	100%	100%
2. Our water is safe and pleasant to drink.	No advisory notices are issued to boil water.	There is currently a permanent boil water advisory notice in place at Dovedale. A new source at Dovedale is planned for development in 2016 – 2018	0	0
	Our water supplies have a Public Health Risk Management Plan (PHRMP) in place.	2 of 16 supplies currently have a PHRMP in place (Tapawera and Upper Takaka) The remainder will be approved by the specified deadlines.	Year 1 = 10% Year 2 = 50% Year 3 = 88%	100%
	Grading of water supplies meets DWSNZ. For Richmond that means a grading of Bb. All other communities will aim for Cc.	Recent changes in legislation and release of the new DWSNZ mean that no water supplies currently comply with the grading. The Table below shows the timings of the planned upgrades:	2/16 schemes comply	All schemes comply

Scheme	Upgrade Planned
Richmond	2011 – 2013
Waimea	2011 – 2013
Mapua/Ruby Bay	2011 – 2013
Wakefield	2013 – 2017
Brightwater	2015 – 2017
Tapawera	2008 – 2009
Murchison	2011 – 2013
Upper Takaka	2008 – 2009
Kaiteriteri	2012 – 2014
Collingwood	2015 – 2017
88 Valley	2016 – 2018
Dovedale	2016 – 2018
Redwoods Valley	2016 – 2018
Motueka	2010 – 2015
Pohara Valley	2014 – 2016
Hamama	2014 - 2015

Levels of Service (We provide)	We will know we are meeting the Level of Service if …..	Current Performance	Future Performance (by Years 1-3)	Future Performance (by Year 10)
	Testing of water supplies confirms that the water meets DWSNZ.	Council carries out water compliance testing on all of its public water supplies to DWSNZ:2005. Council notifies the Medical Office of Health of any non-compliance and resolves the matter in association with the Medical Officer of Health, until clear results are achieved.	Continue to do the same. 100% notification of any non-compliance	Continue to do the same. 100% notification of any non-compliance
3. Our water is efficiently delivered to meet customer needs	Water pressure to all urban and rural supply customers meets minimum pressure requirements as stipulated in the TDC Engineering Standards	All supplies meet the required minimum pressure criteria, detailed below, with a few isolated areas of exception (e.g. Upper Higgs Road, Mapua and an area above Hill Street, Richmond) Urban supplies: > 300kPa Rural supplies: > 150kPa	95% of area covered by schemes meet the Standards	95% of area covered by schemes meet the Standards
	Acceptable water losses are identified for each water supply and a water loss reduction programme is in place to achieve those targets.	Programmes for water loss reduction are already in place for Tapawera and Murchison.	By Year 1 – 3, Year 2 – 4 and Year 3 – 8 out of the 16 supplies will have water loss programmes in place	By 2019, 11 out of the 16 supplies will have water loss programmes in place
4. Our water supply systems provide fire protection to a level that is consistent with a national standard	Urban water supply systems are able to meet W3 standard Code of Practice for Fire Fighting Water Supplies	Of the 10 Urban water supplies, 8 meet fire-fighting standards. Only Cropp Place (a small high elevation area in Richmond) and Murchison have some areas where fire fighting cannot be met. Rural water supplies and community water supplies don't provide fire-fighting capacity. Takaka and Motueka have a network of fire wells, however these only provide a limited fire-fighting service. The fire wells at Takaka are due for upgrade in year 1	90%	100%

Levels of Service (We provide)	We will know we are meeting the Level of Service if …..	Current Performance	Future Performance (by Years 1-3)	Future Performance (by Year 10)
5. Our water supply systems serve those that should be serviced	Our urban water supply systems are able to service new water supply connections from properties inside Council Water Supply Areas.	New urban connections are not presently being accepted in Mapua/Ruby Bay. This will be resolved with the CTA development.	By 2012, 9 of the 10 urban supplies will be able to accept new connections	By 2019, all urban water supplies will be able to accept new connections
	Councils Water and Sanitary Service Assessments (WSSA) identifies communities which could benefit from a new Council owned water supply scheme and makes a decision on whether to plan for a new scheme to be developed.	WSSA completed in 2005 identified Motueka as a Priority 1 community for water supply. The communities of Marahau/Sandy Bay, Tasman/Kina, Pohara, Ligar Bay, Tata Beach, Takaka and Patons Rock were identified as Priority 2 communities.	The WSSA will be reviewed in 2010/11	Continue to do the same
6. Our water supply activities are managed at a level that the community is satisfied with	Our surveys show that 80% of customers are satisfied with the water supply service they receive.	In the July 2008 TDC/Communitrak survey, 80% of customers were satisfied with the service provided	80%	85%
7. 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 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 specified timeframes. During the first 12 months of Contract 688 >90% was achieved (e.g. emergency incident – service restoration within 4 hours)	90%	90%
	We have a facility for receiving and handling emergency calls after hours.	Council has an after-hours call centre that receives calls 24/7. 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 an operative risk management framework in place and have planned mitigation measures.	Council does not have a risk management plan in place. This will be developed during Year 1 and in place and operating by Year 3	Plan developed in Year 1 and in place and operating by Year 3	In place and operating
	We have the following water storage in the water supply systems: Urban: - 1 days at average annual demand	9 of the 10 urban schemes meet the urban storage requirements. Wakefield will have a new reservoir in 2009 which will allow it to meet storage requirements.	Year 1 = 12 of 13 schemes, Year 2 & 3 =	All urban and rural schemes

Levels of Service (We provide)	We will know we are meeting the Level of Service if …..	Current Performance	Future Performance (by Years 1-3)	Future Performance (by Year 10)
	Rural: - 6 hours at average annual demand	All 3 rural schemes meet the rural storage requirement	all schemes have required storage	have required storage
	We have constructed and maintain hydraulic models of our water supply systems to ensure we have the best knowledge and understanding of each system.	Hydraulic models have been constructed and are maintained for 5 of our 13 urban & rural water systems. Richmond, Waimea, Mapua, Brightwater, Wakefield.	Year 1 = 40% Year 2 = 45% Year 3 = 50%	70%

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

This appendix gives an overview of:

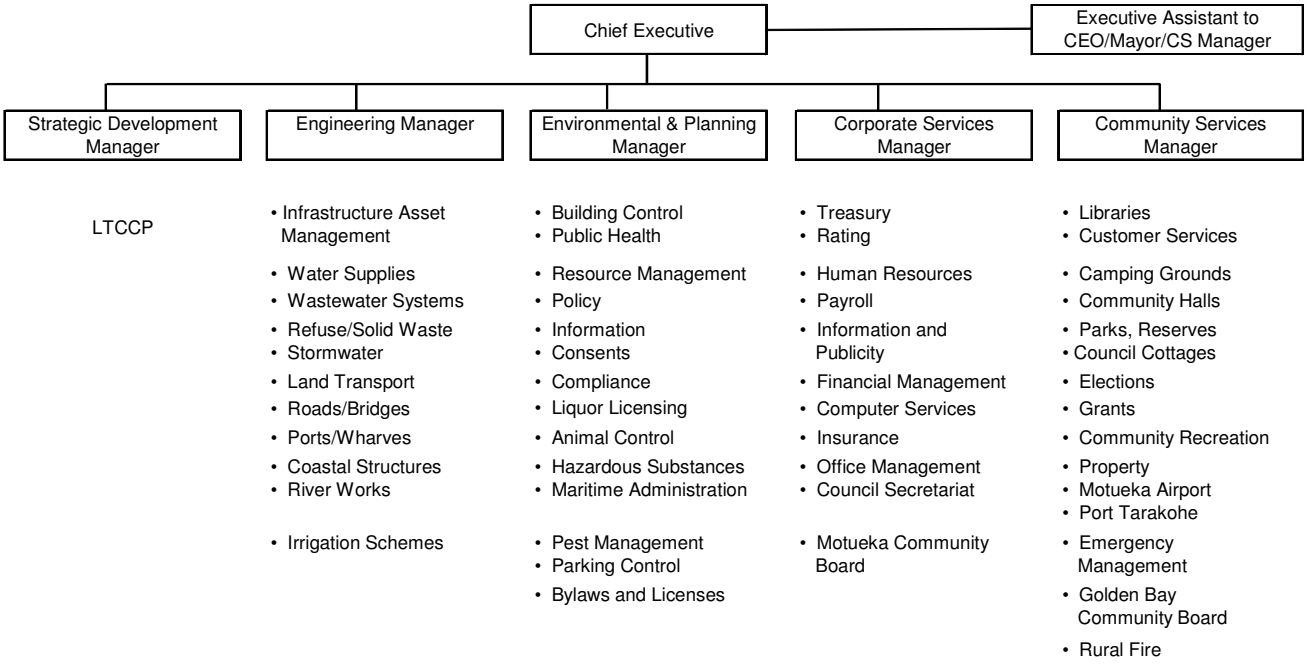
- Council's organisational structure
- How asset data is managed
- What asset management systems and processes are used
- How decisions are made.

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, car parks, 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 water supply 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 the 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 (totalised 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 are updated in the database.	1	1
Property Water Use	Water Meter Readings	Water Meter readings stored in NCS – only intended for urban water connections. Property water meter location data is held by water billing – meter	2	1

Data Type	Data Storage	Management Strategy	Data Confidence	
			Accuracy	Completeness
		reading notes.		
System Operation	Telemetry / SCADA	The Council's telemetry / SCADA system is in a continual state of development.	n/a	n/a
	Bulk flow monitoring			
	Water Quality	Records of the water quality testing, treatment plant and pump station inspections are carried out in accordance with maintenance contract requirements. Consultants MWH currently hold these, on behalf of the Council as part of the administration of the Contracts. A WINZ database system monitors water quality compliance information and assists in identifying trends in data.		
	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 or hydrant testing but the NZ Fire Service carries out some hydrant 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 Figure S-2 below:

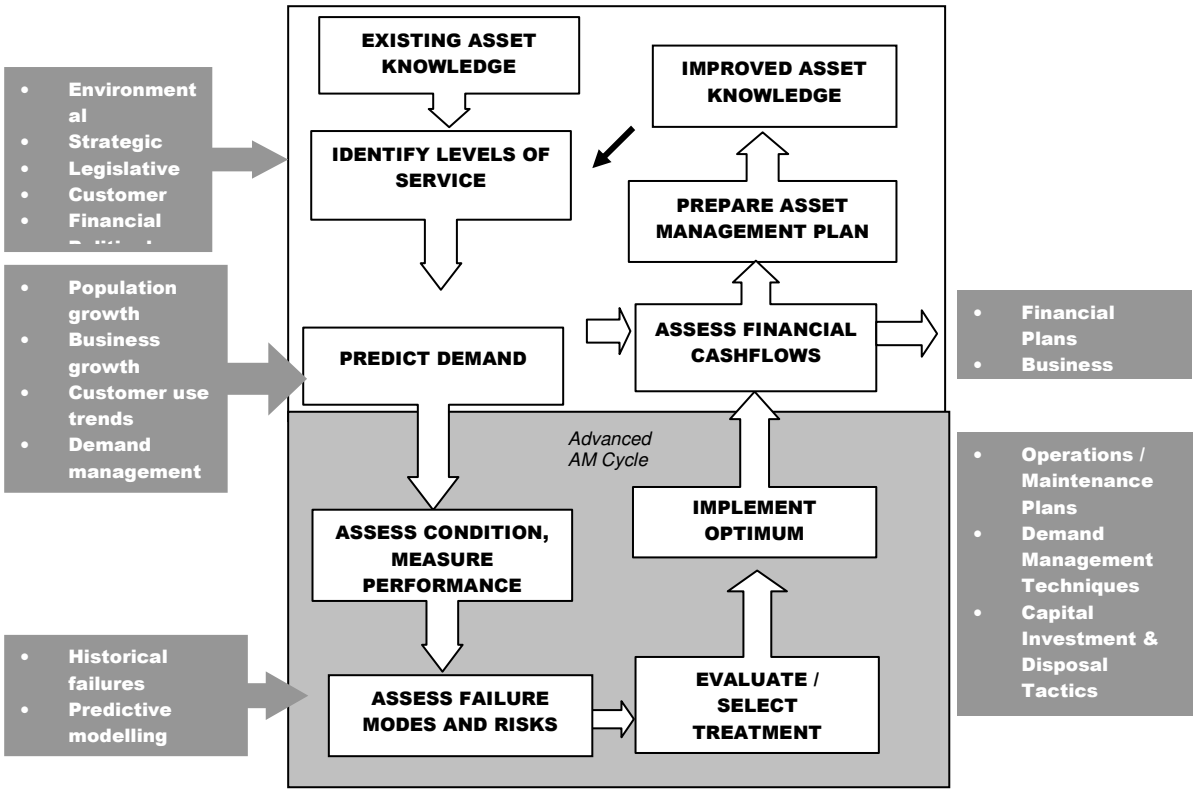


Figure S-2: Asset Management Process and Developing Asset Management Strategies (Source IIMM)

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 water 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: ○ Pipe break reports where pipe condition and nature of break is recorded by service in the field and logged into digital loggers that 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

Process Step	Processes and Systems
	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: o "bundling" with other projects – across assets and services – eg roading, wastewater, power, telecom o Optimised replacement – ie. whether the replacement asset should be the same size, capacity or manufacture, or are there justifications to replace with something different o 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: o Assessment of construction and non-construction costs (ie. Engineering, consenting costs, land costs) o An assessment of contingency needed – on a consistent basis between estimates o An evaluation of the project drivers – increased level of service, backlog, growth or renewal. o An evaluation of a programme of implementation – spanning years to ensure appropriate time allowed for developing the project o 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 database that records the outcomes of the estimate in a manner that allows summation of the work value against various criteria – scheme, project driver

Process Step	Processes and Systems
	(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 13.2 and Appendix Q for description.
Optimised Decision Making	• Hydraulic models of the 5 main water supply systems (Richmond, Waimea, Brightwater, Wakefield and Mapua) have been developed and calibrated using the Infoworks WS modelling software. There are also models of the proposed Motueka and Coastal Tasman Area/Coastal Pipeline water supply scheme. 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, identify high water loss areas, test demand management options and generally provide improved system knowledge.

APPENDIX T. BYLAWS

Council will prepare a programme to ensure that all bylaws are reviewed within the next 3 years.

Current bylaws enacted by Council and relevant to water supply management are:

1. Waimea Water Supply Bylaw, 1972
2. Richmond Water Works and Water Supply Bylaw, 1993
3. Hamama Water Supply Bylaw
4. Water Supply Bylaw 2008.

APPENDIX U. STAKEHOLDERS AND CONSULTATION

U.1 Consultation

U1.1 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[3]. These Communitrak™ surveys assess the levels of satisfaction with key services, including water supply 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.

U1.2 Consultation Outcomes

The most recent NRB Communitrak™ survey was undertaken in June/July 2008. 56% of those surveyed were serviced by a Council Water Supply. Of all residents surveyed (including those who did not have a Council service) 56% were satisfied with the Water Supply. This is summarised and compared against previous survey results in Figure U-1.

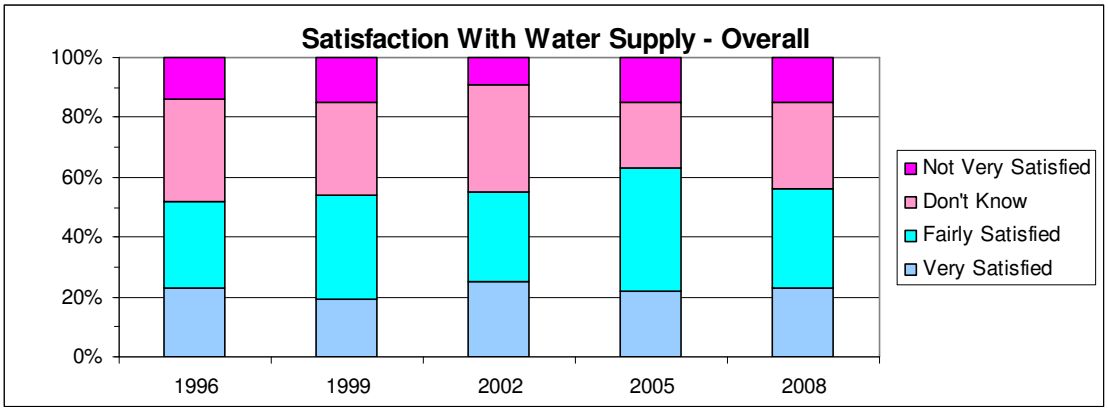


Figure U-1: Satisfaction with Water Supply – Overall

This shows that the number of either "very satisfied" or "not very satisfied" has increased which to some extent offsets each other. The overall satisfaction level has dropped since 2005 from 63% to 56%. This is on par with Council's Peer Group average (57%) and below the National average.

For the people that receive a Council supply the level of satisfaction is higher – around 80% and little change since 2005, as shown in Figure U-2.

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

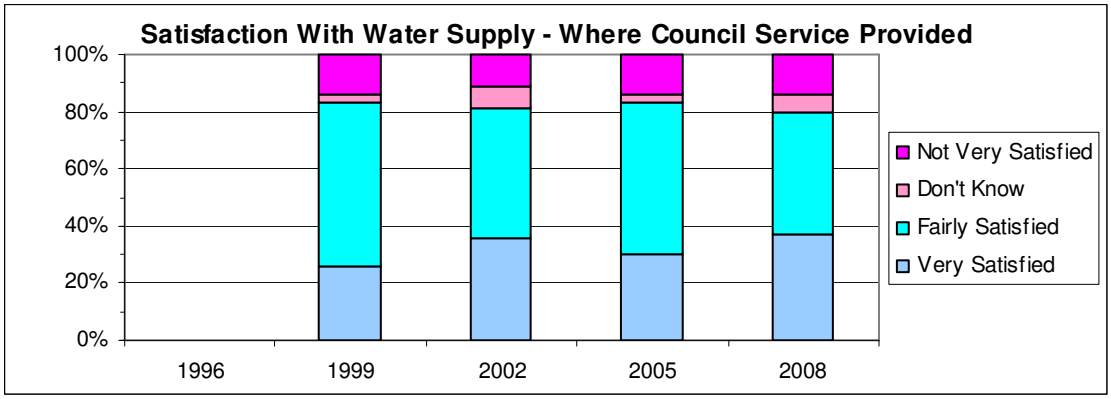


Figure U-2: Satisfaction with Water Supply – Council Service Provided

Encouragingly more people are very satisfied since 2005 (up from 30% to 37%).

When asked whether they would like more to be spent, or less or about the same on water supply given that Council cannot spend more with increasing rates or user charges, 83% said they would like to see the same or more. This is shown in Figure U-3 and compared to previous results.

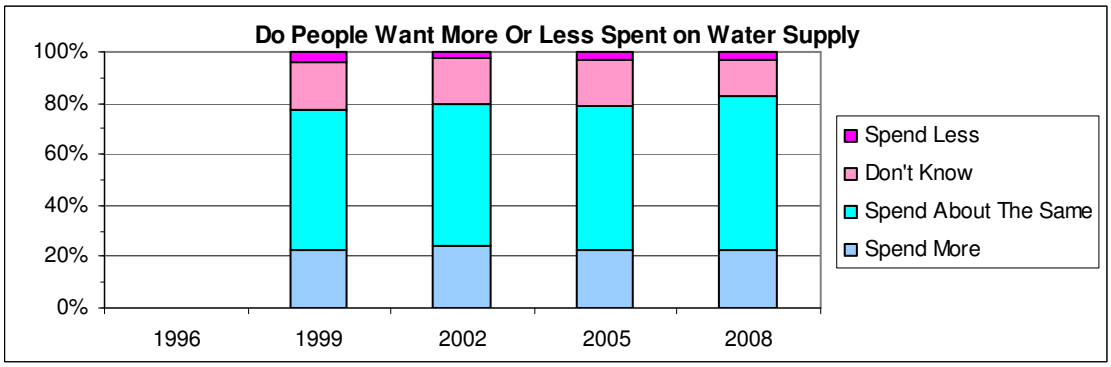


Figure U-3: More or Less Spending on Water Supply

This shows that few people want to spend less, and most want to spend the same or more.

It is concluded from this survey that:

- Residents that are connected to Council water supplies are satisfied with the service received and are comfortable with the cost relative to the level of service provided
- Few people want to spend less on water supply
- Over 20% want more spent knowing that this will mean higher charges
- There is a lower level of satisfaction with water supply service when residents not on a Council scheme are considered. This possibly could mean there is unmet demand for a Council service, however survey is not structured to answer this question, so such a conclusion is stretching the data too far.

U.2 Stakeholders

A list of stakeholders is included in Appendix A, Section A.3.

APPENDIX V. IMPLEMENTATION AND IMPROVEMENT PROGRAMME

Activity management improvements are necessary to achieve the appropriate (an 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 the improvements that have been achieved since the last AMP Improvement Plan. Other improvements that have been achieved are:

- Review of Levels of Service
- Review of Engineering Standards and Policies
- Development of the water resource consent register database – NM2

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

Improvement	Comments
Implement the Information Management Strategy and Improve implementation of computerised AM System.	Council has developed its Asset Management System (Confirm) and use it to track and record customer enquires, maintain its asset register and track non-routine maintenance of assets. Confirm has been integrated with other asset management tools such as SilentOne and Council's GIS (Explore Tasman)
Determine appropriate Risk Management Approach	Council has adopted a risk management approach, refer to Appendix Q.
Continue to conduct hydraulic flow assessments	Council has developed hydraulic models for Richmond, Waimea, Mapua/Ruby Bay, Wakefield and Brightwater.
Asset Revaluation	Review and update of the asset register and valuation was completed in June 2007
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.
Identifying Acceptable water loss levels	A programme of leak detection has commenced. Tapawera and Murchison have been investigation for unaccounted for water loss. The majority of leaks detected have been repaired. Water usage in Tapawera has been reduced by 30% as a result.

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 forecasts
- 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 yr Financial Forecast	Priority
AMP Update	Review and update the AMP on a 3 year cycle. Next revision due in 2011.	Needed to comply with the LGA:2002 requirements.	$70,000 every 3 years	High
Asset Valuations	Review and update the water Asset Valuation on a 3 yearly cycle. Next review due in 2010.	Needed to comply with the LGA:2002 requirements.	$15,000 every 3 years	High
Risk Management	Council intends to apply a consistent approach to risk management across all asset groups. Three levels of risk assessment will carried out; Organisation, Asset Group and Critical Assets.	Will identify 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, SilentOne etc.	Confirm enables a 'one stop shop' for Asset Management. It increases the knowledge and understanding of the Council's asset and 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 general Improvement Plan Activities budget.	High
Hydraulic Models	Construct hydraulic models for Murchison, Collingwood, Motueka and Kaiterteri/Riwaka.	Provides necessary information about existing system capacity and aids robust decision making for future developments, upgrading requirements and future renewals.	$120,000 over the 10 year period	High
Hydraulic Model Maintenance	Recalibration and maintenance of the hydraulic models for Richmond/Waimea, Mapua, Wakefield and Brightwater.	Provides a tool to assess the system performance, develop monitoring programmes and assess benefit of improvements.	$120,000 over the 10 year period	Medium

Item	Improvement	Benefits	Estimated Cost in 10 yr Financial Forecast	Priority
Model Management Guidelines	Develop guidelines for the ongoing management of existing hydraulic models.	Ensures the hydraulic models are kept up to date.	$10,000	Medium
Water and Sanitary Services Assessments	Identify areas where communities would benefit from a higher level of service. WSSA to be completed every 3 years. Next revision due 2009/10.	Feed into the reviewing of the current levels of service and identifying capital upgrade/renewal projects.	$40,000 every 3 years	Medium
Resource Consent Database	Expand the database to include all resource consents related to the water supply system.	Not all land use permits, legitimising pipeline crossings of waterways and estuaries have been included in the database. These consents could expire without renewal applications being lodged.	Included in the general allowance of $50, 000 per annum for Improvement Plan Activities	Medium
Resource Consent Monitoring	Develop and implement a programme of monitoring to ensure water takes comply with resource consent conditions	Ensures Council do not breach their resource consent conditions.		Medium
Brochure for Public Information	Prepare a brochure setting out the Council's and landowners responsibility for water management and maintenance. This will also be put on the TDC website.	Public gain a better understanding of the water supply asset and where the Council's responsibility ends.	Included in the general allowance of $50, 000 per annum for Improvement Plan Activities	Medium
Public Health Risk Management Plans	An approved PHRMP to be in place for every Council Water Supply	Assesses for each supply, the risks to public health and how these might be minimised or managed. Will detail out the upgrade requirements necessary.	$270,000	High
Water Demand Management	Undertake the demand management items as detailed in Section V1.7 of Appendix V.	Will help Council ensure a cost effective and sustainable use of the water resources in the district.	$395,000	High
Robust Renewals Programme	Develop a renewals programme for pipelines, meters and valves. Based on targeted areas with a risk based decision support tool.	Provides a more efficient and auditable way of renewing pipelines, meters and valves.	$15,000 to develop programme. Capital expenditure identified in Financial Forecasts	Medium

Item	Improvement	Benefits	Estimated Cost in 10 yr Financial Forecast	Priority
Tapawera Asset Data Compilation	No complete set of accurate plans for Tapawera water supply.	Facilitates the operation and maintenance of the system.	$20,000	Medium
Rural Schemes Markation	More accurate GIS information for location of valves, tank connections and junctions.	Greater efficiency in the operation and maintenance of the system.	$3,000	Medium

APPENDIX W. DISPOSALS

The Council does not have formal strategy documents relating to asset disposals.

There are no current, or planned areas of operation that TDC wishes to divest itself off. 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

In all cases asset disposal processes must comply with Council's legal obligations under the Local Government Act 1974, which covers:

- public notification procedures required prior to sale
- restrictions on the minimum value recovered
- use of revenue received from asset disposal.

APPENDIX X. GLOSSARY OF ASSET MANAGEMENT TERMS

Abbreviations and Acronyms

AMP	Activity Management Plan
LGA	Local Government Act
LTCCP	Long Term Council Community Plan
DWSNZ	Drinking Water Standards for New Zealand
PS	Pump Station
PHRMP	Public Health Risk Management Plan
TRMP	Tasman Regional Management Plan
RWS	Rural Water Supply
TDC	Tasman District Council
UWS	Urban Water Supply
WSSA	Water and Sanitary Services Assessment

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 which employs predictive modelling, risk management and optimised renewal decision making techniques to establish asset lifecycle treatment options and related long term cashflow 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 which 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 cashflow 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 (eg. swimming pool complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.
Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic 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 (ie. water) or service area (ie. Water quality) against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Life	A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.
Life Cycle	Life cycle has two meanings: The cycle of activities that an asset (or facility) goes through while it retains an identify as a particular asset ie. from planning and design to decommissioning or disposal. The period of time between a selected date and the last year over which the criteria (eg. costs) relating to a decision or alternative under study will be assessed.
Life Cycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
Life Cycle Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.

Long Term 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 (eg. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition-based.
Recreation	Means voluntary non-work activities for the attainment of personal and social benefits, including restoration (recreation) and social cohesion.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally involves repairing the asset using available techniques and standards to deliver its original level of service without resorting to significant upgrading or replacement.
Renewal	Works to upgrade, refurbish, rehabilitate or replace existing facilities with facilities of equivalent capacity or performance capability.

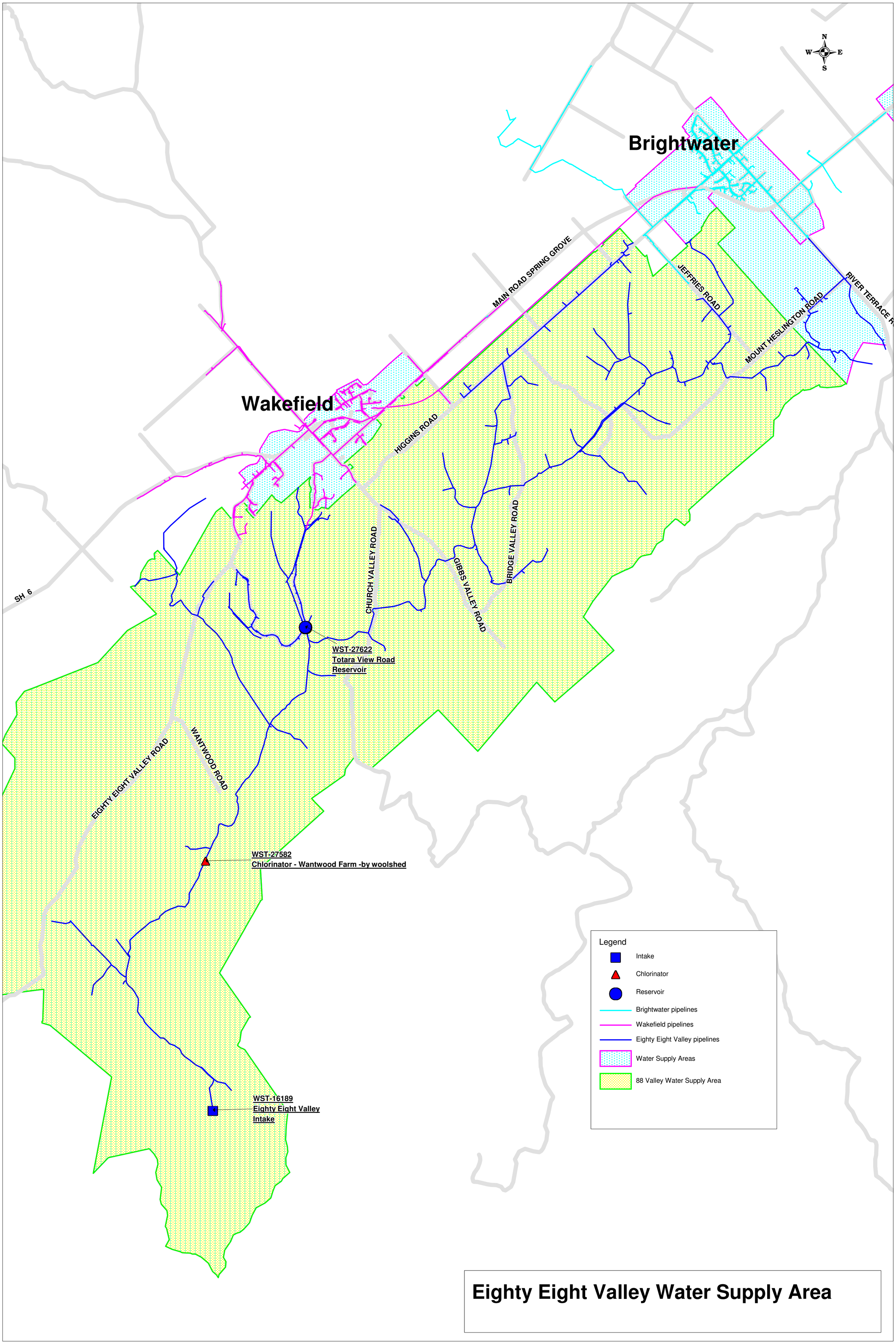
Renewal Accounting	A method of infrastructure asset accounting which recognises that infrastructure assets are maintained at an agreed service level through regular planned maintenance, rehabilitation and renewal programmes contained in an AMP. The system as a whole is maintained in perpetuity and therefore 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, ie. replacement value for determining maintenance levels or market value for life cycle costing.

APPENDIX Y. WATER SUPPLY AREA BOUNDARIES AND FACILITIES

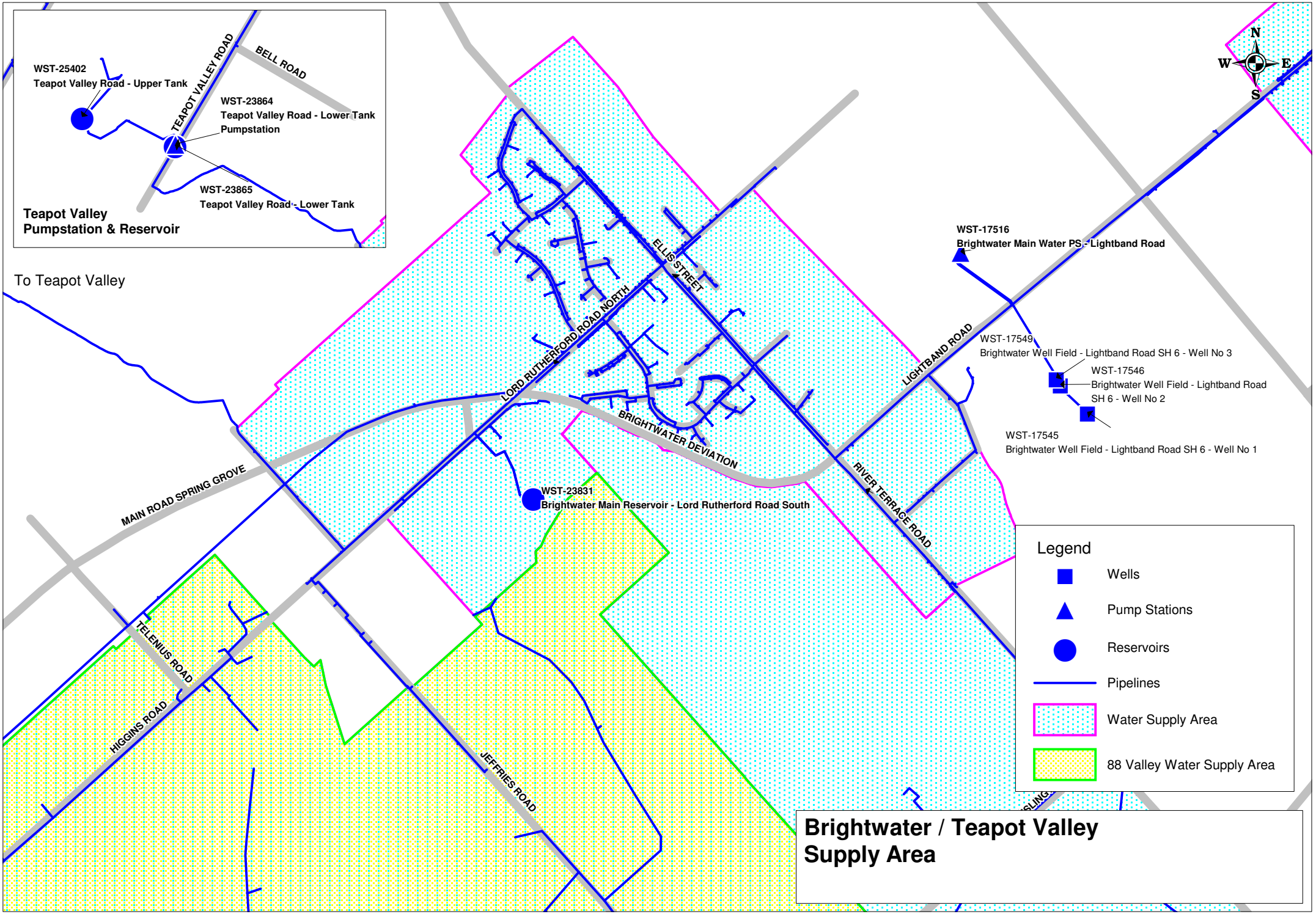
The area boundaries are correct as at July 2008. The boundaries are revised periodically.

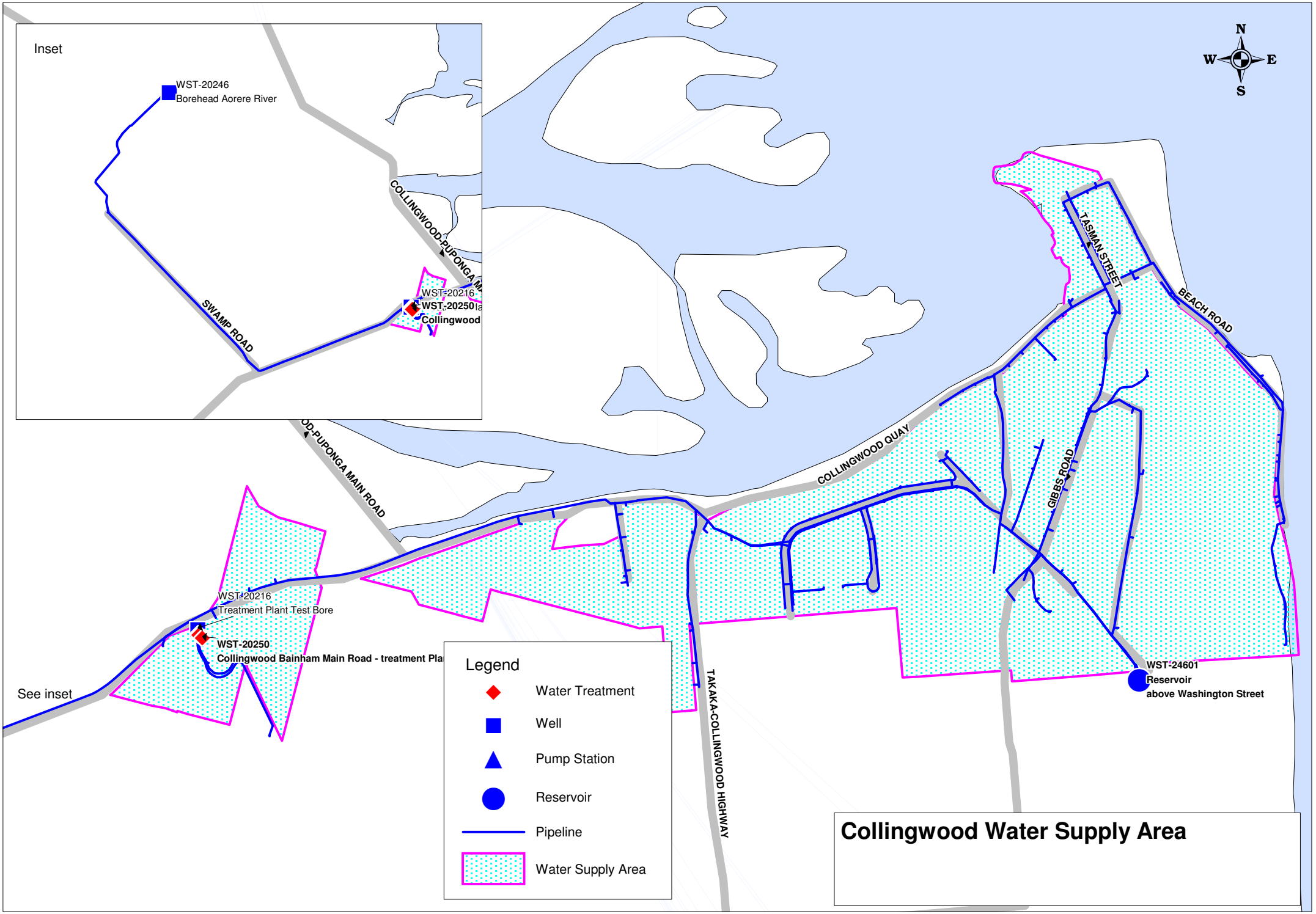
- Brightwater/Teapot Valley
- Collingwood
- Dovedale
- Eighty Eight Valley
- Kaiteriteri
- Mapua
- Motueka
- Murchison
- Pohara
- Redwood Valley
- Richmond/Waimea North (Richmond Supply Wells)
- Richmond/Waimea North (Waimea Water Treatment and Supply Wells)
- Richmond/Waimea South East
- Richmond/Waimea South West
- Tapawera
- Upper Takaka
- Wakefield

The current version is located in the LTCCP.



Eighty Eight Valley Water Supply Area


WST-25402
Teapot Valley Road - Upper Tank
TEAPOT VALLEY ROAD
BELL ROAD
WST-23864
Teapot Valley Road - Lower Tank
Pumpstation
WST-23865
Teapot Valley Road - Lower Tank
Teapot Valley
Pumpstation & Reservoir
To Teapot Valley
N
W
E
S
WST-17516
Brightwater Main Water PS - Lightband Road
ELLIS STREET
LORD RUTHERFORD ROAD NORTH
LIGHTBAND ROAD
WST-17549
Brightwater Well Field - Lightband Road SH 6 - Well No 3
WST-17546
Brightwater Well Field - Lightband Road
SH 6 - Well No 2
WST-17545
Brightwater Well Field - Lightband Road SH 6 - Well No 1
BRIGHTWATER DEVIATION
RIVER TERRACE ROAD
WST-23831
Brightwater Main Reservoir - Lord Rutherford Road South
MAIN ROAD SPRING GROVE
TELENIUS ROAD
HIGGINS ROAD
JEFFRIES ROAD
Legend
Wells
Pump Stations
Reservoirs
Pipelines
Water Supply Area
88 Valley Water Supply Area
Brightwater / Teapot Valley
Supply Area


Inset
WST-20246
Borehead Aorere River
SWAMP ROAD
COLLINGWOOD-PUPONGA MAIN ROAD
WST-20216
WST-20250
Collingwood
N
W
E
S
TASMAN STREET
BEACH ROAD
COLLINGWOOD QUAY
GIBBS ROAD
WST-20216
Treatment Plant Test Bore
WST-20250
Collingwood Bainham Main Road - treatment Pla
See inset
TAKAKA-COLLINGWOOD HIGHWAY
WST-24601
Reservoir
above Washington Street
Legend
Water Treatment
Well
Pump Station
Reservoir
Pipeline
Water Supply Area
Collingwood Water Supply Area

N
W E
S

WST-12377
Humphries Creek High level intake

WST-21307
Humphries Creek High level Treatment Plant

WST-21262
Dovedale Main Intake -
-Humphries Creek, Dovedale Road

WST-24802
Humphries Creek
Intake

WST-21264
Contact Tank
Humphries Creek

WST-21215
Rosedale Road

WST-21217
Rosedale

WST-21150
Rose Road

WST-21205
Rosedale

WST-24793
Rosedale

WST-21160
Blackbird Valley

WST-24245

WST-12287
Meudorf Saddle

WST-12335
Thorns Pumpstation
Win Valley Road

WST-27306
Thorns Reservoir

WST-21313
Silcocks Reservoir

WST-12288
Blackbird Valley Road

WST-12366
Te Hepe Lower PS - Sunday Creek Road

WST-12362
Sunday Creek Road

WST-22882
Te Hepe Reservoir
Sunday Creek

WST-35118
Te Hepe Top PS -
Sunday Creek Road

WST-12372
Te Hepe Reservoir
Sunday Creek Road

WST-24296
Wins Pumpstation
- Win Valley Road

WST-24286
Eden Valley Road
Notts Pumpstation

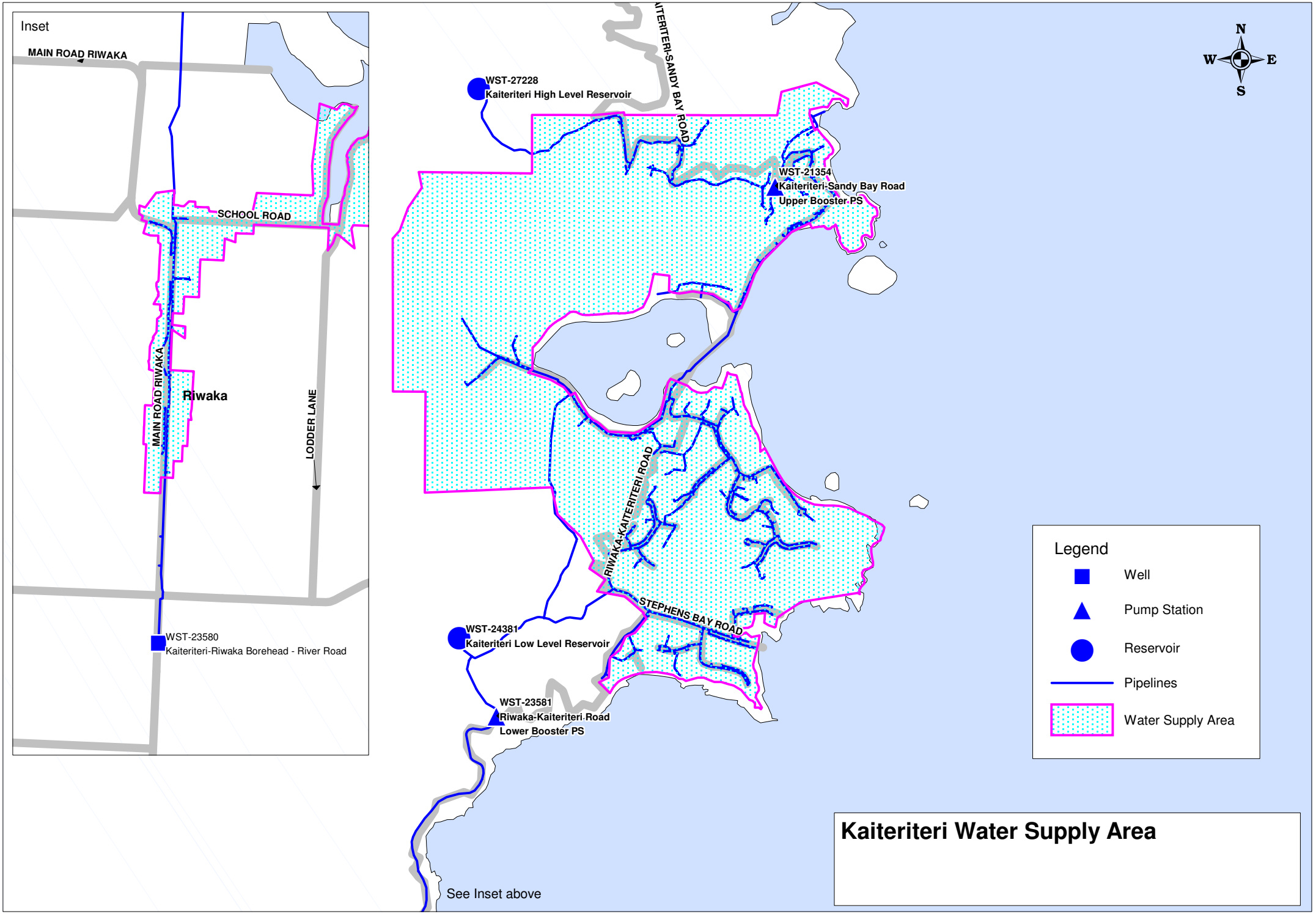
WST-21297
Win Valley Reservoir

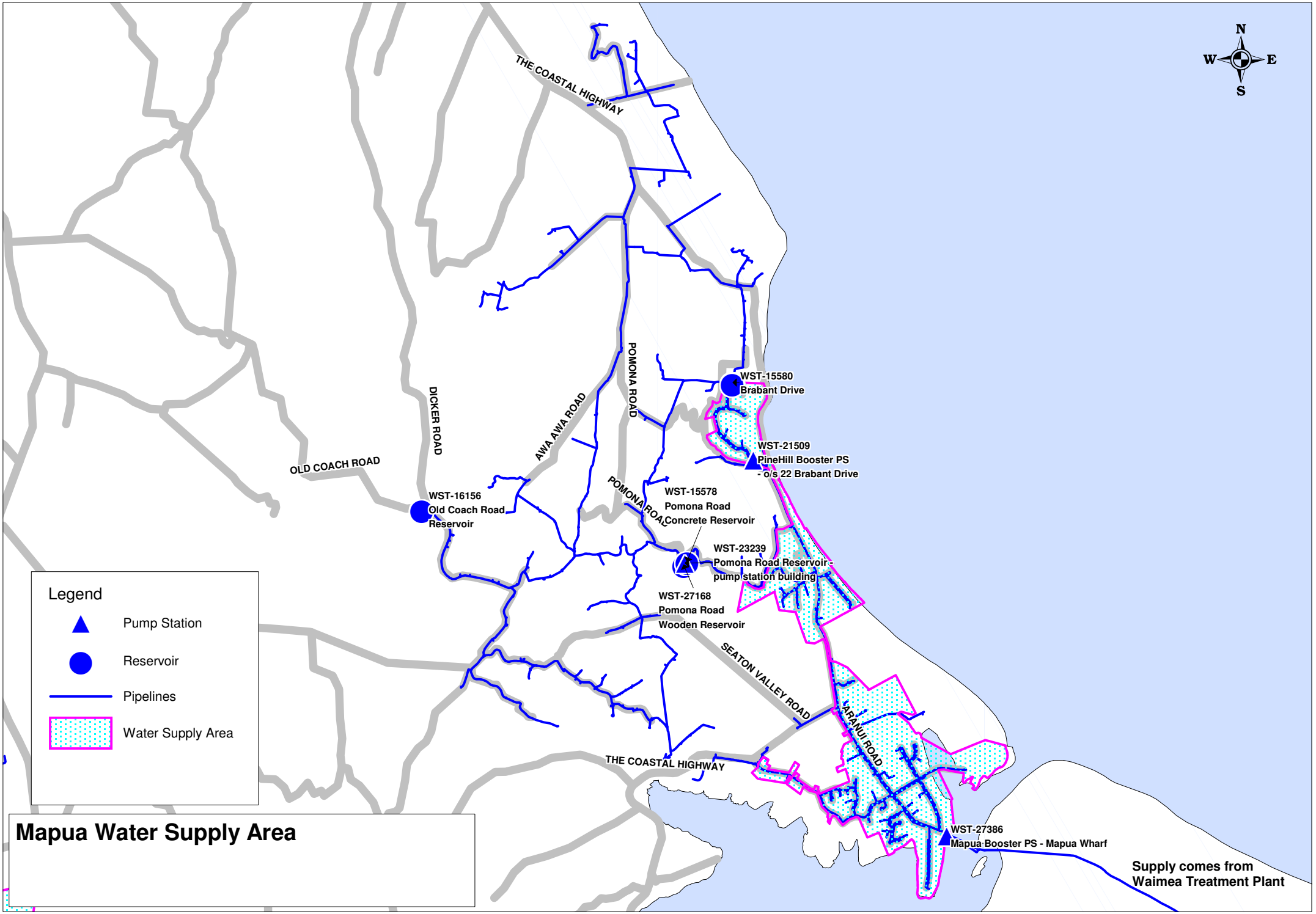
WST-27314
Notts Reservoir
Eden Valley

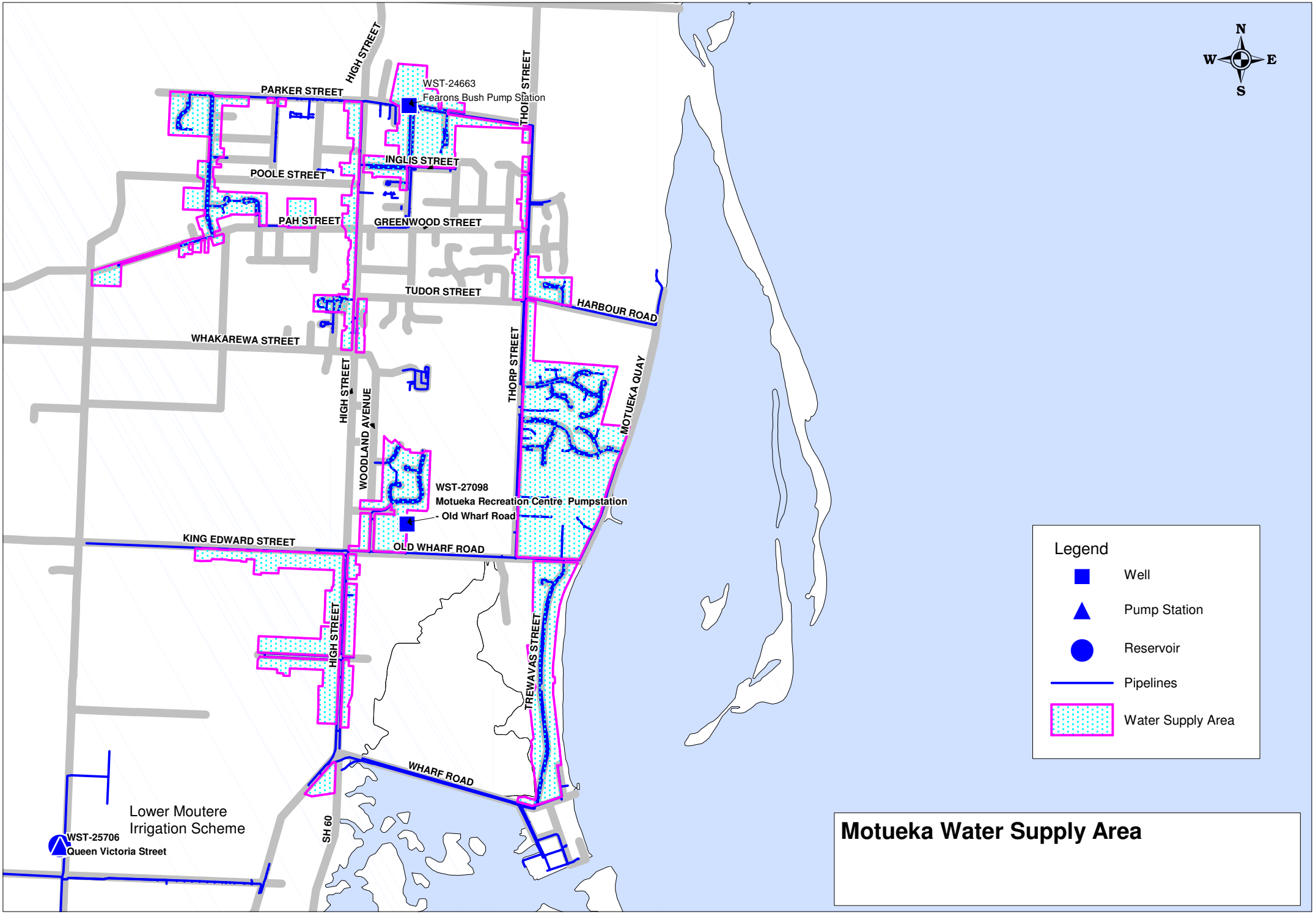
ROSEDALE ROAD
ROSE ROAD
MOUTERE HIGHWAY
KELLING ROAD
MEUDORF ROAD
BLACKBIRD VALLEY ROAD
MARTIN ROAD
THORPE-CORMACK ROAD
DOVEDALE ROAD
SUNDAY CREEK ROAD
COZENS ROAD
THORN ROAD
WIN VALLEY ROAD
SUNDAY VALLEY ROAD
BRANDY CREEK ROAD

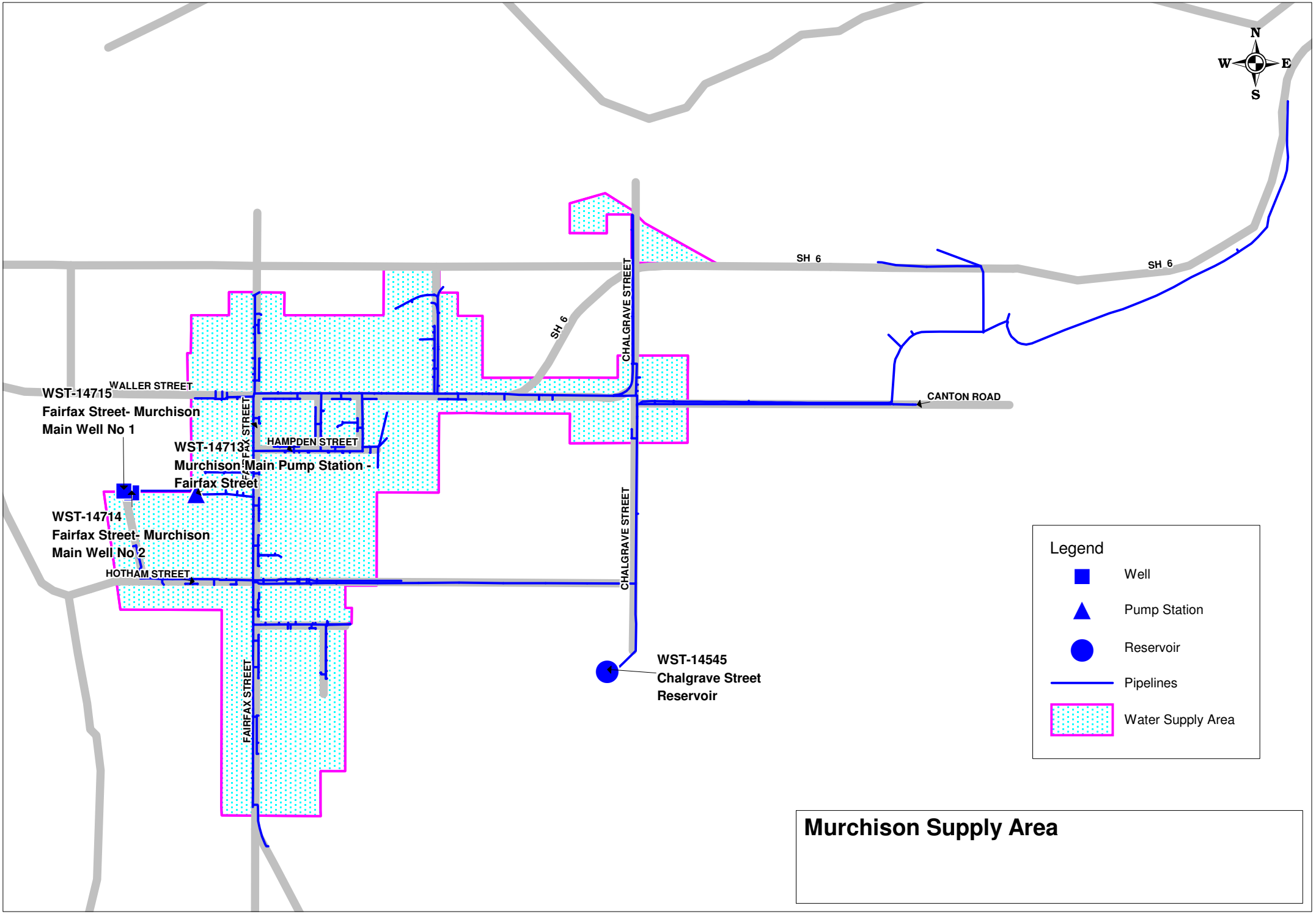
Legend
- Break Pressure tank
- Pump Station
- Reservoir
- Intake
- Pipeline
- Water Supply Area

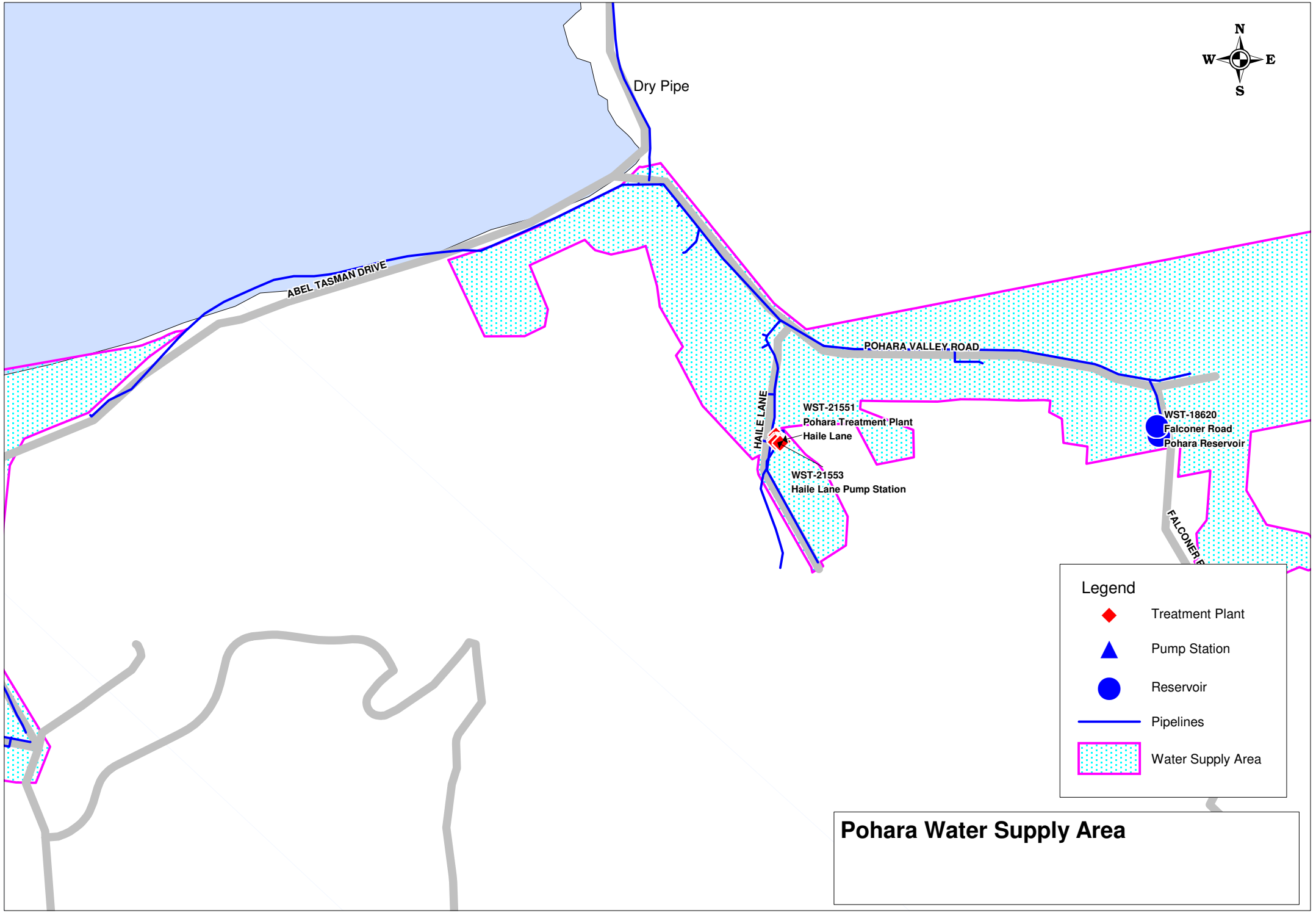
Dovedale Water Supply Area


Inset
MAIN ROAD RIWAKA
SCHOOL ROAD
MAIN ROAD RIWAKA
Riwaka
LODDER LANE
WST-23580
Kaiteriteri-Riwaka Borehead - River Road
KAITERITERI-SANDY BAY ROAD
WST-27228
Kaiteriteri High Level Reservoir
WST-21354
Kaiteriteri-Sandy Bay Road
Upper Booster PS
RIWAKA-KAITERITERI ROAD
STEPHENS BAY ROAD
WST-24381
Kaiteriteri Low Level Reservoir
WST-23581
Riwaka-Kaiteriteri Road
Lower Booster PS
See Inset above
N
W
E
S
Legend
Well
Pump Station
Reservoir
Pipelines
Water Supply Area
Kaiteriteri Water Supply Area


N
W
E
S
THE COASTAL HIGHWAY
DICKER ROAD
AWA AWA ROAD
POMONA ROAD
OLD COACH ROAD
WST-15580
Brabant Drive
WST-21509
PineHill Booster PS
- o/s 22 Brabant Drive
WST-16156
Old Coach Road
Reservoir
WST-15578
Pomona Road
Concrete Reservoir
WST-23239
Pomona Road Reservoir -
pump station building
WST-27168
Pomona Road
Wooden Reservoir
SEATON VALLEY ROAD
KARANUI ROAD
THE COASTAL HIGHWAY
WST-27386
Mapua Booster PS - Mapua Wharf
Supply comes from
Waimea Treatment Plant
Legend
Pump Station
Reservoir
Pipelines
Water Supply Area
Mapua Water Supply Area


N
W
E
S
HIGH STREET
PARKER STREET
WST-24663
Fearons Bush Pump Station
THORP STREET
INGLIS STREET
POOLE STREET
PAH STREET
GREENWOOD STREET
TUDOR STREET
HARBOUR ROAD
WHAKAREWA STREET
HIGH STREET
WOODLAND AVENUE
THORP STREET
MOTUEKA QUAY
WST-27098
Motueka Recreation Centre Pumpstation
- Old Wharf Road
KING EDWARD STREET
OLD WHARF ROAD
HIGH STREET
TREWAVAS STREET
WHARF ROAD
Lower Moutere
Irrigation Scheme
WST-25706
Queen Victoria Street
SH 60
Legend
Well
Pump Station
Reservoir
Pipelines
Water Supply Area
Motueka Water Supply Area


N
W
E
S
SH 6
SH 6
SH 6
CHALGRAVE STREET
CHALGRAVE STREET
CANTON ROAD
WALLER STREET
HAMPDEN STREET
HOTHAM STREET
FAIRFAX STREET
FAIRFAX STREET
WST-14715
Fairfax Street- Murchison
Main Well No 1
WST-14713
Murchison Main Pump Station -
Fairfax Street
WST-14714
Fairfax Street- Murchison
Main Well No 2
WST-14545
Chalgrave Street
Reservoir
Legend
Well
Pump Station
Reservoir
Pipelines
Water Supply Area
Murchison Supply Area


N
W
E
S
Dry Pipe
ABEL TASMAN DRIVE
POHARA VALLEY ROAD
HAILE LANE
WST-21551
Pohara Treatment Plant
Haile Lane
WST-21553
Haile Lane Pump Station
WST-18620
Falconer Road
Pohara Reservoir
FALCONER
Legend
Treatment Plant
Pump Station
Reservoir
Pipelines
Water Supply Area
Pohara Water Supply Area

N
W
E
S

Mapua

STRINGER ROAD
THE COASTAL HIGHWAY
WESTDALE ROAD
HODDY ROAD

WST-15873
Moutere Highway

WST-27107
Maisey Road Reservoirs

WST-15874
Maisey Road Booster Pump Station

WST-15878
O'Connors Creek Water Pump Station Bore

WST-15877
O'Connors Creek Water Pump Station

REDWOOD ROAD
THE COASTAL HIGHWAY
COTTERELL ROAD
REDWOOD ROAD
MOUTERE HIGHWAY
MOUTERE HIGHWAY
REDWOOD VALLEY LANE

WST-19503
River Road Bore

RIVER ROAD

REDWOOD VALLEY ROAD
REDWOOD PARK ROAD

WST-21973
Golden Hills Road Pump Station

WAIMEA WEST ROAD
GOLDEN HILLS ROAD

WST-21993
Adjacent Bull's eye tank

WST-15853

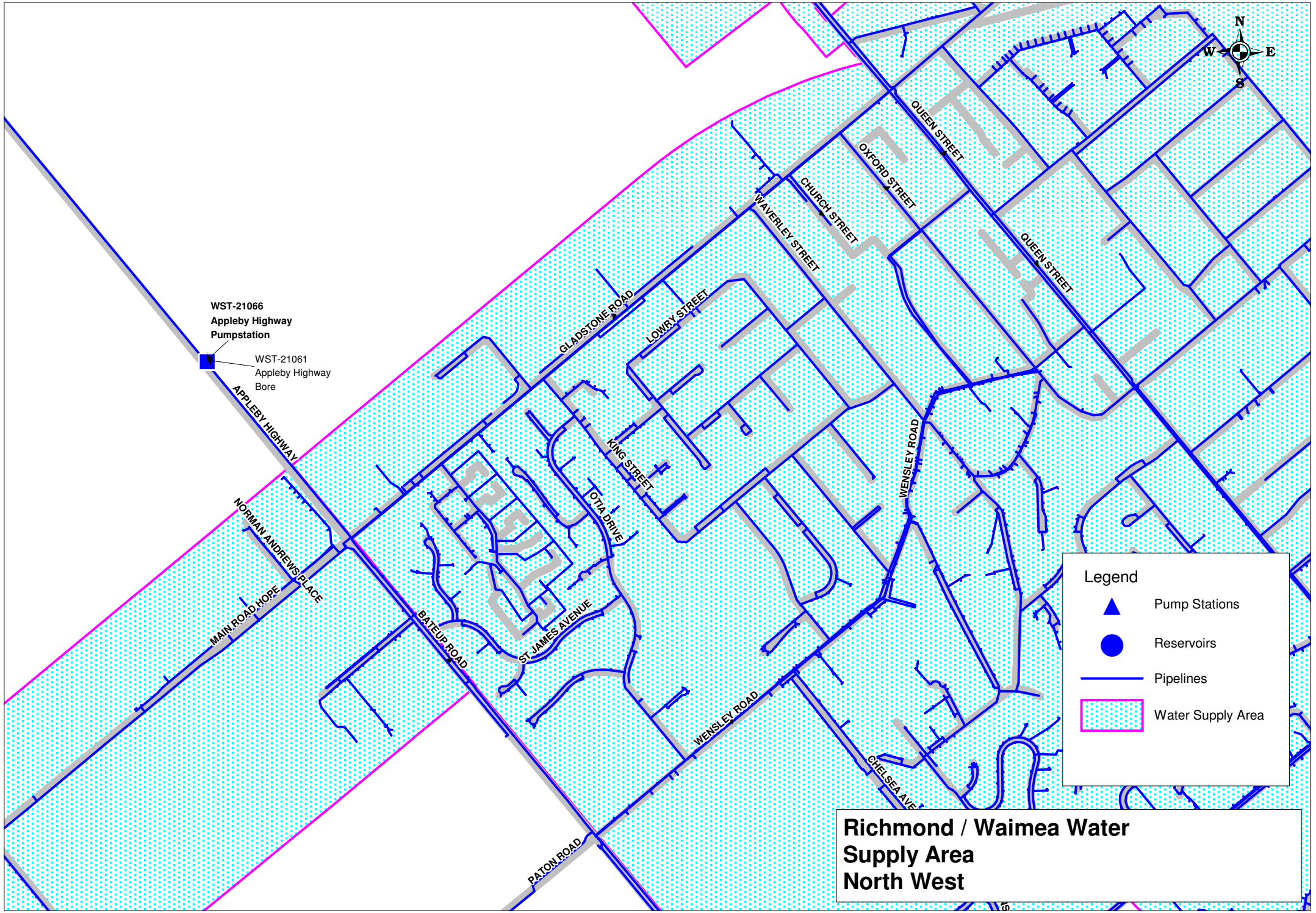
WST-21997
Redwoods #1 Booster Pump Station

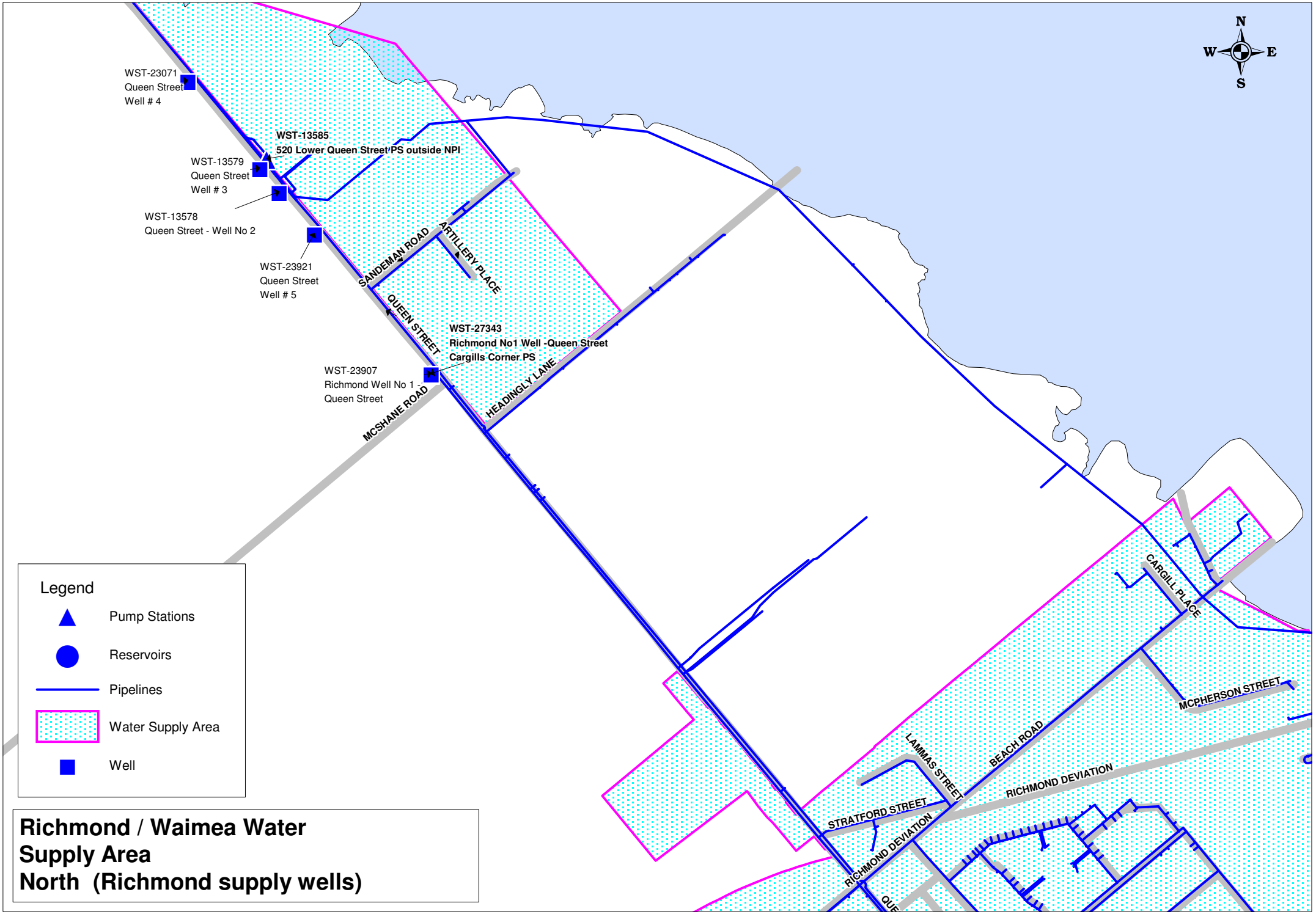
EVES VALLEY ROAD

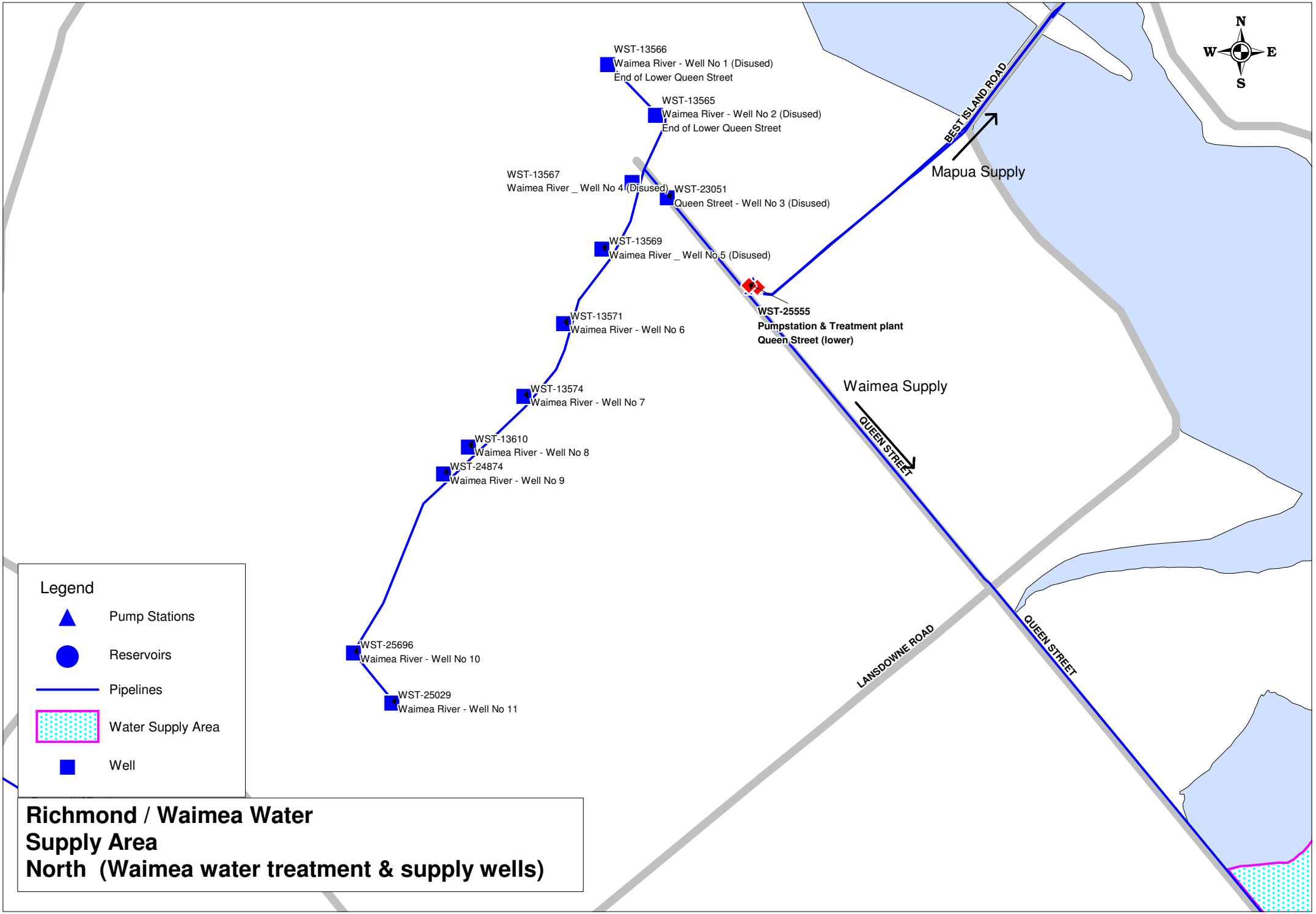
0.5 0 0.5 1 1.5
Kilometers

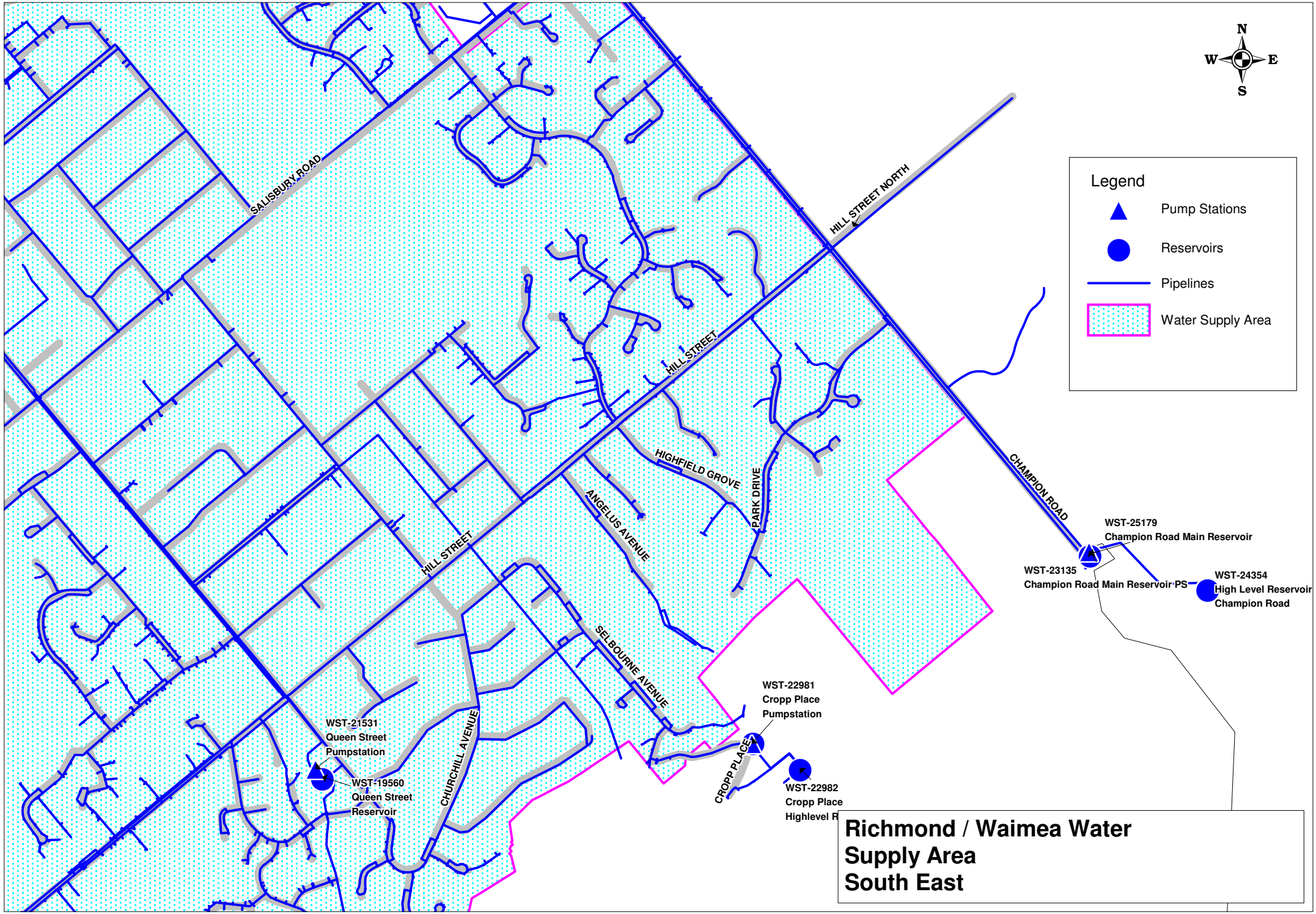
Scale: 1:25,000

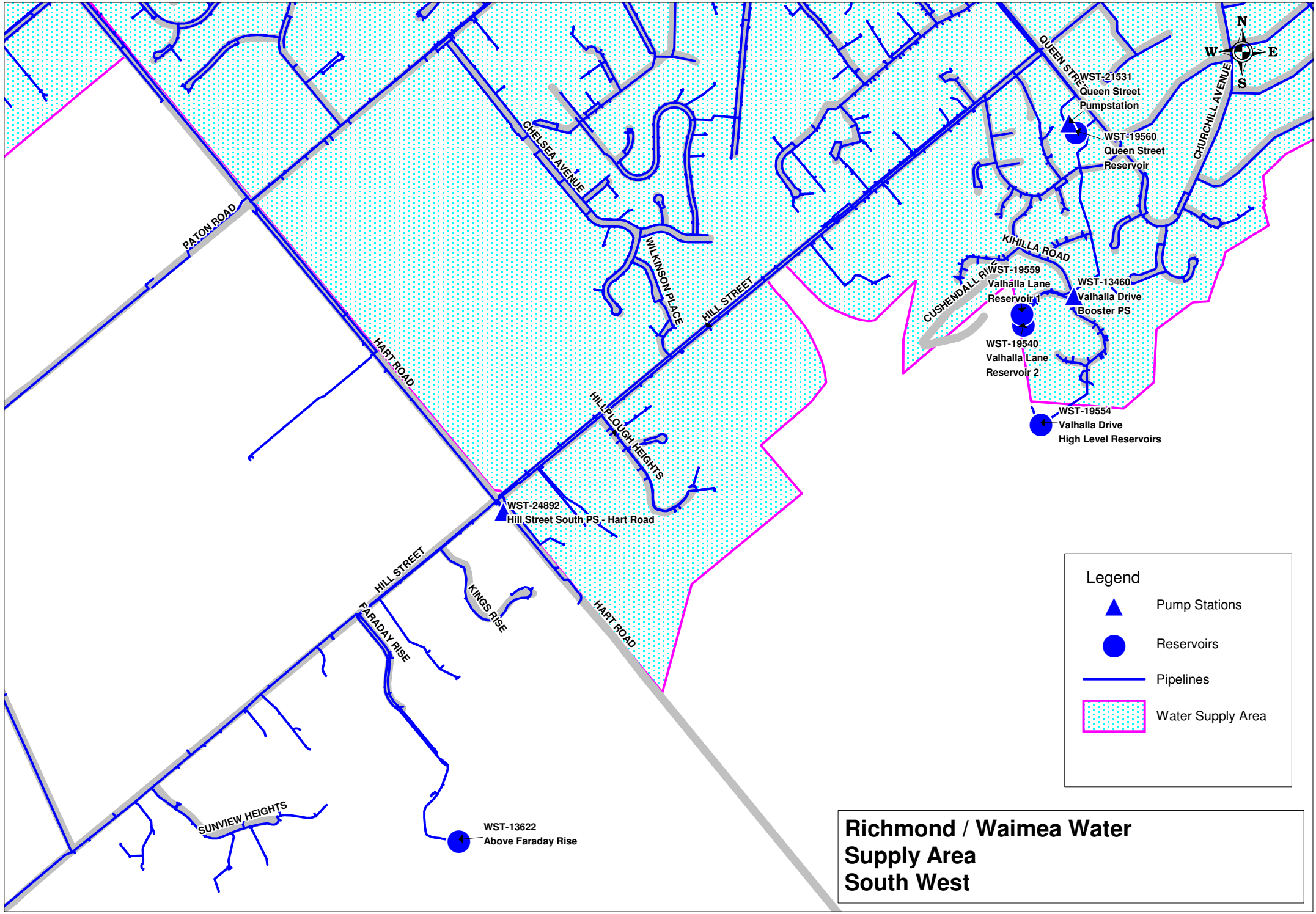
Redwood Valley Water Supply Area

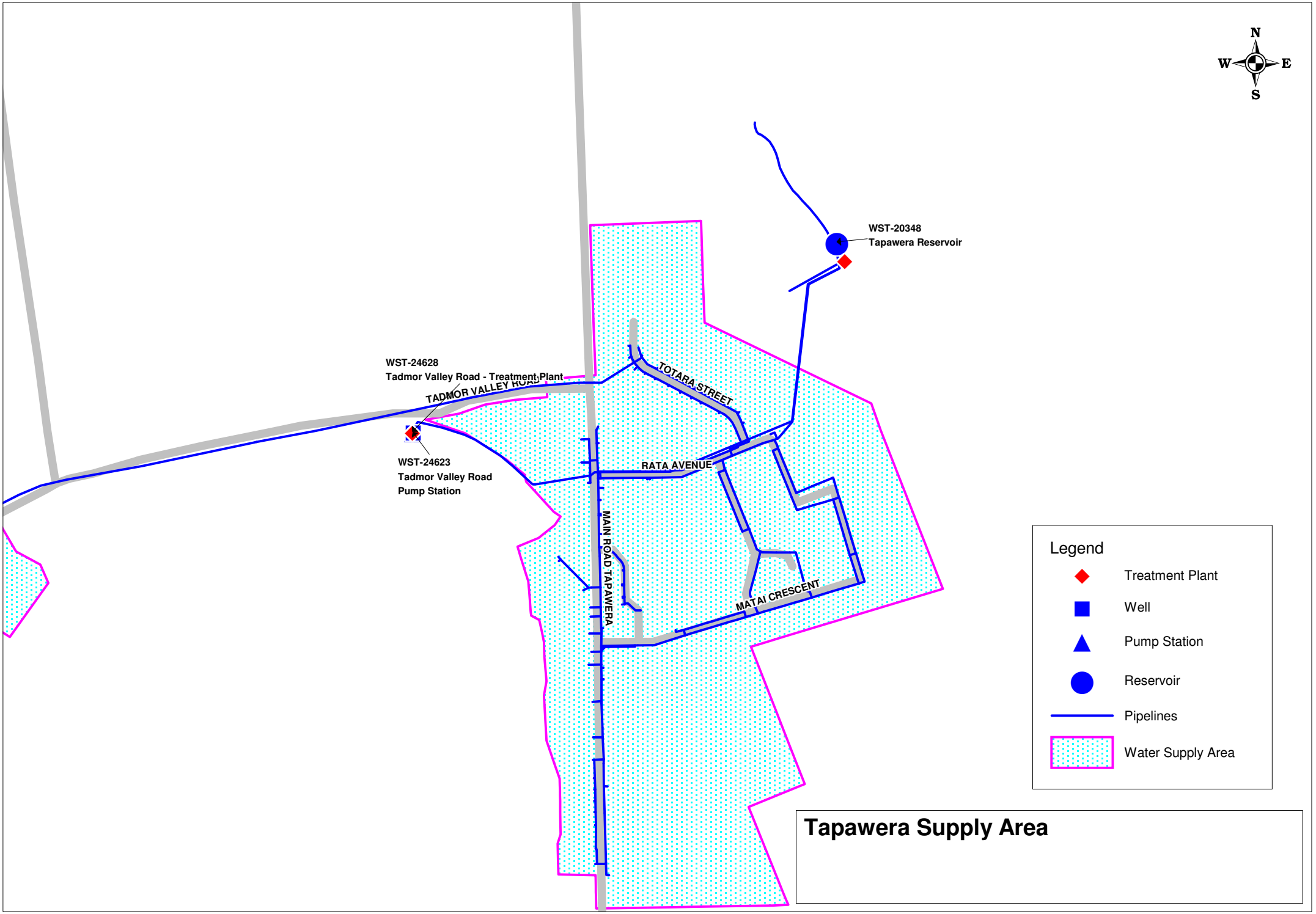

N
W
E
S
WST-21066
Appleby Highway
Pumpstation
WST-21061
Appleby Highway
Bore
APPLEBY HIGHWAY
NORMAN ANDREWS PLACE
MAIN ROAD HOPE
GLADSTONE ROAD
LOWRY STREET
WAVERLEY STREET
CHURCH STREET
OXFORD STREET
QUEEN STREET
QUEEN STREET
KING STREET
TOTIA DRIVE
WENSLEY ROAD
BATEUP ROAD
ST JAMES AVENUE
WENSLEY ROAD
CHELSEA AVE
PATON ROAD
Legend
Pump Stations
Reservoirs
Pipelines
Water Supply Area
Richmond / Waimea Water
Supply Area
North West

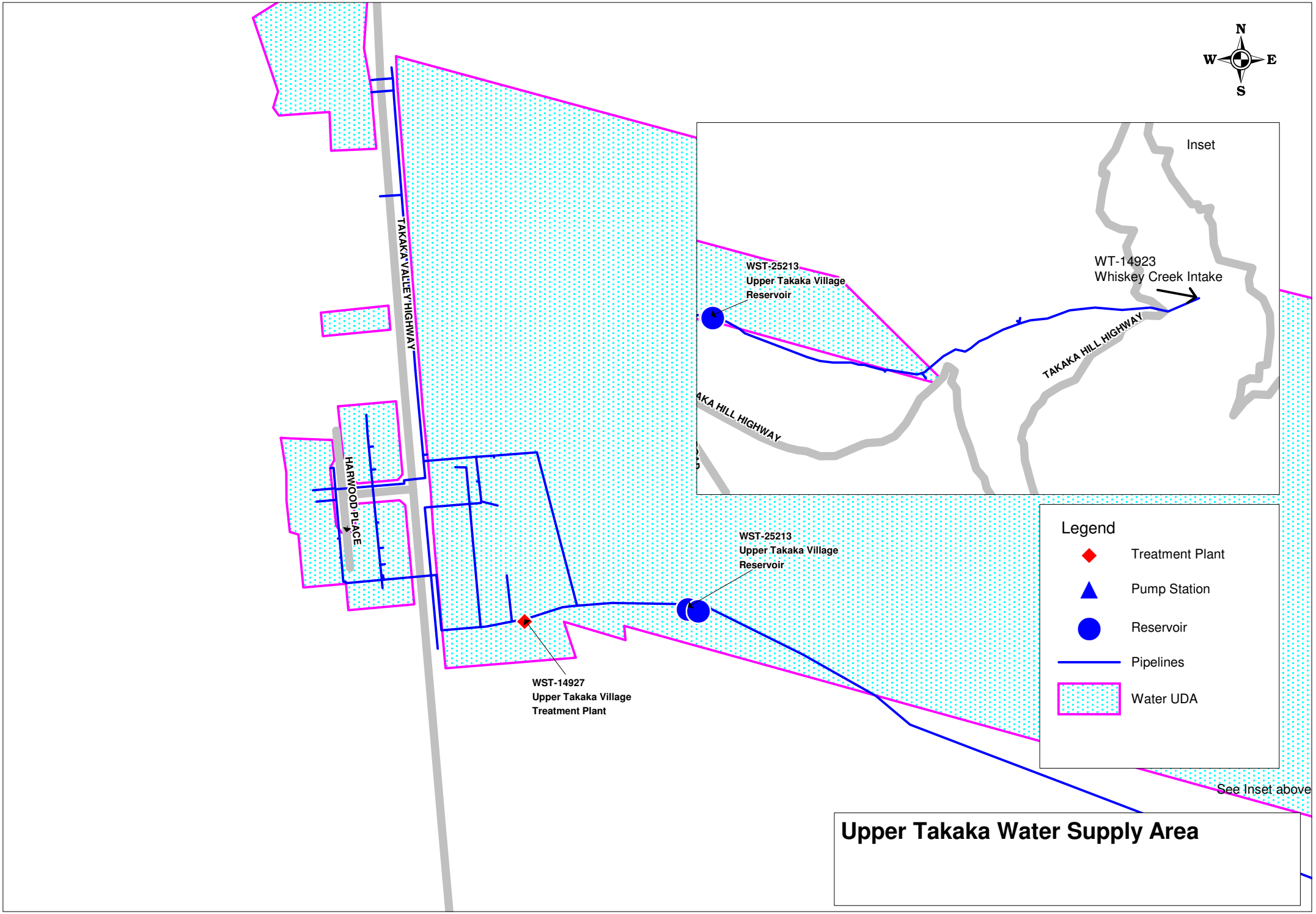

N
W
E
S
WST-23071
Queen Street
Well # 4
WST-13585
520 Lower Queen Street PS outside NPI
WST-13579
Queen Street
Well # 3
WST-13578
Queen Street - Well No 2
WST-23921
Queen Street
Well # 5
SANDEMAN ROAD
ARTILLERY PLACE
QUEEN STREET
WST-27343
Richmond No1 Well -Queen Street
Cargills Corner PS
WST-23907
Richmond Well No 1 -
Queen Street
HEADINGLY LANE
MCSHANE ROAD
CARGILL PLACE
MCPHERSON STREET
LAMMAS STREET
BEACH ROAD
RICHMOND DEVIATION
STRATFORD STREET
RICHMOND DEVIATION
Legend
Pump Stations
Reservoirs
Pipelines
Water Supply Area
Well
Richmond / Waimea Water Supply Area
North (Richmond supply wells)

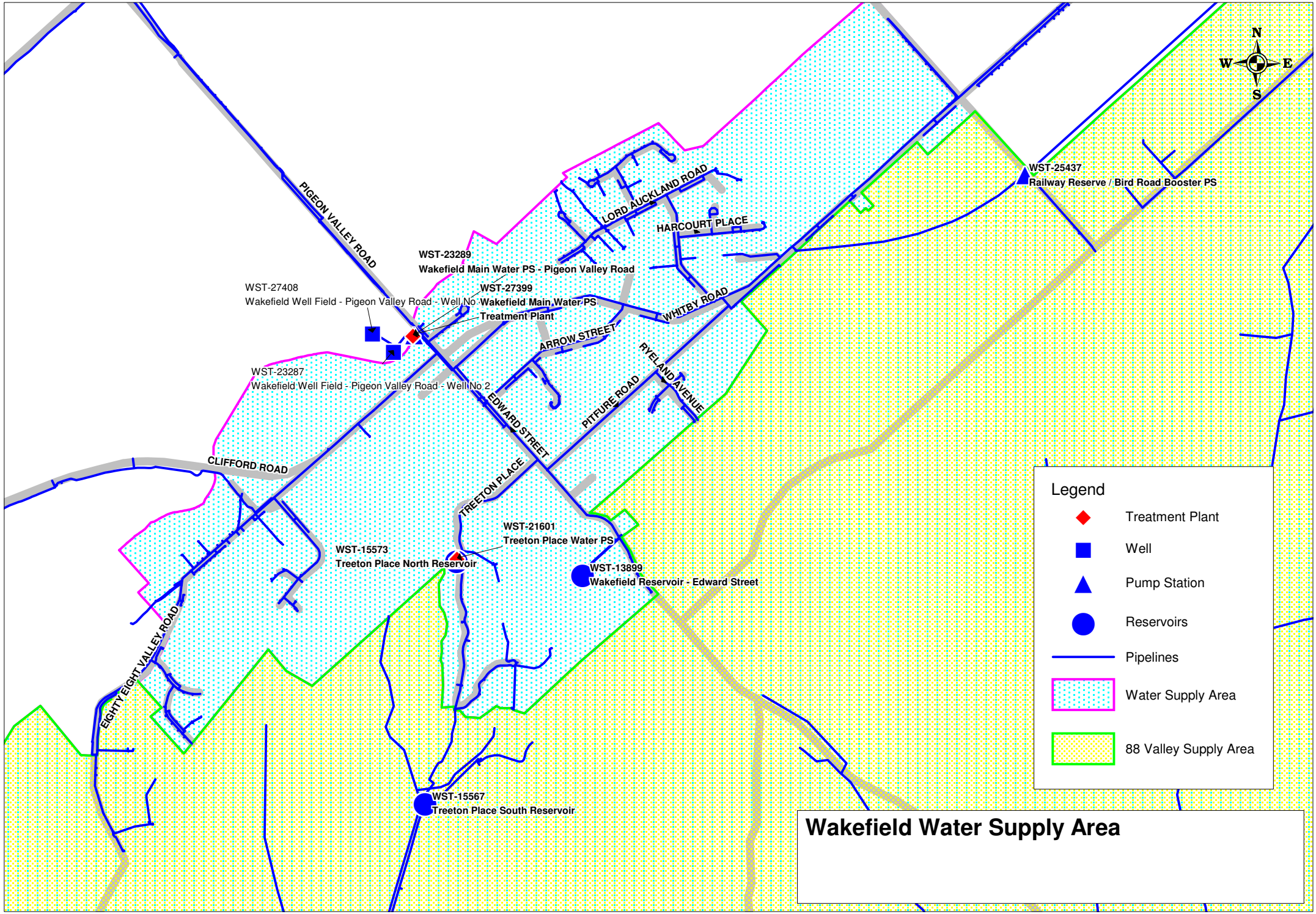

WST-13566
Waimea River - Well No 1 (Disused)
End of Lower Queen Street
WST-13565
Waimea River - Well No 2 (Disused)
End of Lower Queen Street
WST-13567
Waimea River _ Well No 4 (Disused)
WST-23051
Queen Street - Well No 3 (Disused)
WST-13569
Waimea River _ Well No 5 (Disused)
WST-13571
Waimea River - Well No 6
WST-13574
Waimea River - Well No 7
WST-13610
Waimea River - Well No 8
WST-24874
Waimea River - Well No 9
WST-25696
Waimea River - Well No 10
WST-25029
Waimea River - Well No 11
WST-25555
Pumpstation & Treatment plant
Queen Street (lower)
BEST ISLAND ROAD
Mapua Supply
Waimea Supply
QUEEN STREET
QUEEN STREET
LANSDOWNE ROAD
N
W
E
S
Legend
Pump Stations
Reservoirs
Pipelines
Water Supply Area
Well
Richmond / Waimea Water
Supply Area
North (Waimea water treatment & supply wells)


N
W
E
S
Legend
Pump Stations
Reservoirs
Pipelines
Water Supply Area
SALISBURY ROAD
HILL STREET NORTH
HILL STREET
HILL STREET
HIGHFIELD GROVE
PARK DRIVE
ANGELUS AVENUE
CHAMPION ROAD
SELBOURNE AVENUE
CHURCHILL AVENUE
CROPP PLACE
WST-25179
Champion Road Main Reservoir
WST-23135
Champion Road Main Reservoir PS
WST-24354
High Level Reservoir
Champion Road
WST-22981
Cropp Place
Pumpstation
WST-22982
Cropp Place
Highlevel R
WST-21531
Queen Street
Pumpstation
WST-19560
Queen Street
Reservoir
Richmond / Waimea Water
Supply Area
South East


N
W
E
S
QUEEN STREET
WST-21531
Queen Street
Pumpstation
WST-19560
Queen Street
Reservoir
CHURCHILL AVENUE
CHELSEA AVENUE
WILKINSON PLACE
HILL STREET
KIHILLA ROAD
CUSHENDALL RISE
WST-19559
Valhalla Lane
Reservoir 1
WST-13460
Valhalla Drive
Booster PS
WST-19540
Valhalla Lane
Reservoir 2
WST-19554
Valhalla Drive
High Level Reservoirs
PATON ROAD
HART ROAD
HILLPLOUGH HEIGHTS
WST-24892
Hill Street South PS - Hart Road
HILL STREET
KINGS RISE
FARADAY RISE
HART ROAD
SUNVIEW HEIGHTS
WST-13622
Above Faraday Rise
Legend
Pump Stations
Reservoirs
Pipelines
Water Supply Area
Richmond / Waimea Water
Supply Area
South West


N
W
E
S
WST-20348
Tapawera Reservoir
WST-24628
Tadmor Valley Road - Treatment Plant
TADMOR VALLEY ROAD
WST-24623
Tadmor Valley Road
Pump Station
TOTARA STREET
RATA AVENUE
MAIN ROAD TAPAWERA
MATAI CRESCENT
Legend
Treatment Plant
Well
Pump Station
Reservoir
Pipelines
Water Supply Area
Tapawera Supply Area


N
W
E
S
Inset
WST-25213
Upper Takaka Village
Reservoir
WT-14923
Whiskey Creek Intake
TAKAKA HILL HIGHWAY
TAKAKA VALLEY HIGHWAY
HARWOOD PLACE
WST-25213
Upper Takaka Village
Reservoir
WST-14927
Upper Takaka Village
Treatment Plant
Legend
Treatment Plant
Pump Station
Reservoir
Pipelines
Water UDA
See Inset above
Upper Takaka Water Supply Area


N
W
E
S
PIGEON VALLEY ROAD
LORD AUCKLAND ROAD
HARCOURT PLACE
WHITBY ROAD
ARROW STREET
RYELAND AVENUE
EDWARD STREET
PITTFURE ROAD
CLIFFORD ROAD
TREETON PLACE
EIGHTY EIGHT VALLEY ROAD
WST-25437
Railway Reserve / Bird Road Booster PS
WST-23289
Wakefield Main Water PS - Pigeon Valley Road
WST-27399
Wakefield Main Water PS
Treatment Plant
WST-27408
Wakefield Well Field - Pigeon Valley Road - Well No 1
WST-23287
Wakefield Well Field - Pigeon Valley Road - Well No 2
WST-21601
Treeton Place Water PS
WST-15573
Treeton Place North Reservoir
WST-13899
Wakefield Reservoir - Edward Street
WST-15567
Treeton Place South Reservoir
Legend
Treatment Plant
Well
Pump Station
Reservoirs
Pipelines
Water Supply Area
88 Valley Supply Area
Wakefield Water Supply Area

APPENDIX Z. AMP STATUS AND DEVELOPMENT PROCESS - WATER

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		29/10/08
3	Draft for Council Review	Name: Jeff Cuthbertson Authority: Asset Manager		9/12/08
4	Draft for Public Consultation	Name: Peter Thomson Authority: Engineering Manager		3/02/09
5	Final Plan Adopted by Council Council Resolution	Name: Richard Kempthorne Authority: Mayor Reference: _____		

Z.2 AMP Development Process

Project Sponsor:	Peter Thomson
Asset Manager:	Jeff Cuthbertson
Project Manager:	Richard Lester
AMP Author:	Becky Marsay
Project Team:	Jeff Cuthbertson, Kim Arnold, Richard Burridge – Water Quality, DWSNZ Compliance Paul Barratt, Phil Benvin, Gary Beaumont – Operations and Maintenance Denis O'Brien, Daniel Smit

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: 1. Scoping of AMP Upgrade Project 2. Review Of Levels Of Service 3. Review of Document Upgrade Needs	Richard Lester
		Conduct a Peer Review	Peter Thomson
2 3	AMP Document Consistency AMP Document Format	Review documents in advance and prepare instructions to authors on how to upgrade	Becky Marsay
4	AMP readability	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		29/10/08
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	Becky Marsay	AMP Author		9/12/08
Capital Upgrade List Complete	Denis O'Brien	Programme Manager		29.10.08
Capital Upgrade List Complete - Asset Manager Acceptance	Jeff Cuthbertson	Asset Manager		9/12/08
All Issues on "Parking Lot" addressed	Becky Marsay	AMP Author		9/12/08
Capex Expenditure Spreadsheet Template Reviewed	Richard Lester	Project Manager		29/10/08
Project Estimate Spreadsheet Template Reviewed	Denis O'Brien	Programme Manager		29.10.08
All Capex Estimates Reviewed and including assessment of Programme, Project Drivers, Levels of Accuracy and assumptions/uncertainty	Becky Marsay	AMP Author		9/12/08
Opex Costs Spreadsheet Arithmetic Review	Becky Marsay	AMP Author		9/12/08
Opex Cost forecast – fitness for purpose	Jeff Cuthbertson	Asset Manager		9/12/08
Improvement Plan Prepared to instructions	Richard Lester	Project Manager		29/10/08
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	Becky Marsay	AMP Author		26/01/09
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