WATER ASSET MANAGEMENT PLAN
JUNE 2018

QUALITY RECORD SHEET
WATER ASSET MANAGEMENT PLAN

Issue Information	
Issue Purpose	Draft
Issue Date	September 2017
Version Number	1.0

Authorisation	
South Wairarapa District Council	Lawrence Stephenson (SWDC)
Prepared by:	Lawrence Stephenson (SWDC)
Reviewed by:	Jennie Mitchell, Group Manager Corporate Support
Date:	February 2018
Reviewed by:	Jennie Mitchell, Group Manager Corporate Support
Date:	June 2018

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY I

2 ISSUES II

2.1 OBJECTIVES II

2.2 KEY ISSUES II

2.3 STRATEGIC DIRECTION FOR THE WATER SERVICES II

3 INTRODUCTION 3

3.1 ASSET MANAGEMENT HISTORY 3

3.2 AMP OBJECTIVE 3

3.3 SCOPE OF THE AMP 3

3.4 RELATIONSHIP WITH OTHER PLANS 4

3.5 KEY RELATIONSHIPS 4

4 THE ACTIVITY 6

4.1 ACTIVITY DESCRIPTION 6

4.2 WATER SOURCES RURAL (STOCK WATER RACES - MOROA AND LONGWOOD) 9

4.3 CHANGES FOR THE WATER SUPPLY ACTIVITY 11

4.4 ACTIVITY RATIONALE 11

4.5 SIGNIFICANT EFFECTS OF THIS ACTIVITY 11

5 STRATEGIC ENVIRONMENT 12

5.1 COMMUNITY OUTCOMES 12

5.2 THE WATER ACTIVITY GOALS 12

5.3 KEY LEGISLATION AND REGULATION– IMPLICATIONS FOR ASSET MANAGEMENT 13

5.4 NATIONAL AND REGIONAL PLANS 14

5.5 BYLAWS 14

6 FUTURE POPULATION AND DEMAND TRENDS 15

6.1 POPULATION TRENDS 15

6.2 DEMOGRAPHIC TRENDS 19

6.3 DEVELOPMENT HISTORY 19

6.4 WATER CONSUMPTION PATTERNS AND TRENDS 19

6.5 POTENTIAL DEVELOPMENT 20

6.6 DEMAND MANAGEMENT STRATEGIES AND PLANNING 21

6.7 FUTURE DEMAND DRIVERS 22

6.8 SUSTAINABILITY 23

7 RISK MANAGEMENT 25

7.1 BACKGROUND 25

7.2 RISK ASSESSMENTS 25

7.3 INSURANCE 27

7.4 WATER SAFETY PLANS 27

8 THE SERVICES WE PROVIDE 28

8.1 CUSTOMER PROFILE 28

8.2 KEY SERVICE DRIVERS 28

8.3 2018 LTP LEVELS OF SERVICE (CUSTOMER PERFORMANCE MEASURES) 28

8.4 LEVELS OF SERVICE REVIEW 30

8.5 LEVELS OF SERVICE (TECHNICAL PERFORMANCE MEASURES) 30

8.6 COMPLIANCE WITH CUSTOMER PERFORMANCE LEVELS 31

8.7 LGA - RULES FOR NON-FINANCIAL PERFORMANCE MEASURES 33

9 ACTIVITY MANAGEMENT PRACTICES 35

9.1 MANAGEMENT OF ASSET DATA 35

9.2 BUSINESS PROCESSES 35

9.3 GIS as an Asset Record at Council 36
9.4 Customer Event Manager 37
9.5 Resource Consent Reporting 37
9.6 MAGIQ 37
9.7 Contract Procurement and Management 37
9.8 Maintenance Decision Making Processes 38
9.9 SCADA Systems 38
9.10 General Management Approach 39
9.11 Hydraulic Models 39
9.12 ISO 55000 Asset Management 2014 40
10 ASSET MANAGEMENT PLAN ASSUMPTIONS 41
10.1 Overview 41
10.2 Key Assumptions 41
11 FINANCIAL PROJECTIONS 42
11.1 Financial Statements and Projections 42
11.2 Funding Strategy 42
11.3 Valuation June 2018 42
11.4 Depreciation 44
11.5 Capital Expenditure Programme 44
12 Improvements to Asset Management Planning 45
12.1 Overview 45
12.2 Improvement Plan 45
12.3 Asset Management Plan Review Over Time 47
13 Managing the Assets – Lifecycle 48
13.1 Renewals/Capital Improvements 48
13.2 History 48
13.3 Reticulation Plans 50
13.4 Asset Condition 51
13.5 System Capability 53
13.6 System Loading 54
13.7 Projected Loading 56
13.8 Renewal/Replacement Plan 57
13.9 Renewal Programme 58
13.10 Creation Plan 61
13.11 Disposal Plan 61
14 APPENDICES 62
14.1 Appendix 1- References 62
14.2 Appendix 2 - Preliminary Operations and Maintenance Expenditure 2018 - 2028 63
14.3 Appendix 3 – 2011 Infrastructure Assets Covered by the LAPP Fund 64
14.4 Appendix 5 – Flow Meter Locations 65
14.5 Appendix 6 - Capacity Assessment Summary 67
14.6 Appendix 7 - WSP: Improvement Plan 68
14.7 Appendix 8 - Risk Analysis Table 69
14.8 Appendix 9 – Schematic Diagrams for Urban Infrastructure 72

1 EXECUTIVE SUMMARY

The Asset Management Plan (AMP) provides:

- Strategic overview of the water services.
- The environment within which Council operates.
- Considers levels of service as derived from Council's stated community outcomes.
- Past and current management practices.
- Improvement planning matters under consideration.

This AMP seeks, at a core level, to demonstrate how the water supply services will be delivered to agreed levels of service and in the most cost effective manner to the communities of Featherston, Greytown and Martinborough.

South Wairarapa district population projections from ID Consultants (2013-2048) indicate there will be growth in the district over this period. Population projections for Featherston, Greytown and Martinborough indicate that all three communities will have positive growth over the next 30 years.

The AMP in Section 13 describes the water services assets in some detail, current performance, capacity and condition where known and proposes a plan of rehabilitation and improvement works for the infrastructure.

In addition, a detailed renewal programme for water main reticulation and facilities has been identified over the period 2018 to 2048, using the investigations and asset consolidation work from Wellington Water. Preliminary estimates are based mainly on asset age, with some confirmation of asset condition where other work has taken place. Council's preliminary funding programme for reticulation, plant and headworks renewals is $333,000 per year for period 2018/2019 to 2027/28.

Council presently allows for continuous renewal of critical treatment plant items, such as the annual replacement of UV lamps. Other critical items are retained as spare, held in stock or replacement on failure for common items.

Cap funding for the upgrade of the Featherston water supply was obtained in 2011 and the project completed in May 2017 with further extension of the bore field to supply water all year to Featherston and Greytown.

In summary the AMP seeks to maintain current levels of service for its serviced populations. Indications are that there will be demand for increased asset capacity over the period of the Long Term Plan with the proposed sub-divisions in Greytown and the restructure investigation of the urban zoning area in Martinborough. Featherston has also been evaluated for urban zones which shows there is capacity to accommodate future subdivisions and no need to upgrade the water infrastructure to accommodate this growth.

2 ISSUES

2.1 OBJECTIVES

The objective of this AMP is to:

- Describe the challenges and aspirations faced by the water service at SWDC.
- Inform Council staff, Council and community boards of the strategic direction for the water services for the short term and long term.

2.2 KEY ISSUES

The key issues faced by the water services are:

- The reticulation networks date from the early 1940's and a large expansion in the period of 1960 – 1980 (using Asbestos Cement pipe (AC)). A significant percentage of these older reticulation mains will most likely need replacement over the next 20 years or so.
- New Zealand Drinking Water upgrades and on-going compliance, including any impacts from the Havelock North enquiry.
- Impact of Natural Resources Plan and Ruamahanga Whaitua process.
- Operating water race schemes with low water use efficiencies.
- Affordability in the long term.

2.3 STRATEGIC DIRECTION FOR THE WATER SERVICES

2.3.1 The Short-term Strategic Direction

The short term direction of the water service is to:

- Increase our confidence in the water services asset attributes to allow renewals to be funded in a progressive manner.
- Upgrade the water supplies to provide potable water to our customers and allow legislative compliance.
- Leakage reduction in urban areas to assist in optimising capital investment and reduce water wastage.

2.3.2 The Long-term Strategic Direction

The long-term strategic direction of the water service is to:

- Plan for population and demographic changes.
- Optimise Council expenditure obtain the best value.
- Ensure that renewals are progressed in a practical and affordable manner.

3 INTRODUCTION

This section sets out the scope and objectives of this Asset Management Plan (AMP), describes the interrelationships with other planning documents of the South Wairarapa District Council (Council) and describes the asset management progress over the last 21 years.

3.1 ASSET MANAGEMENT HISTORY

This AMP was first developed in 1996. Since then it has been reviewed on a regular basis and updated in January 2018. The 2014 version of the AMP has been reviewed taking note of:

- 2010 LGA Requirements (30 year planning).
- Ministry of Health and Drinking Water Standards requirements.
- Continuing changes in the general local authority operating environment.
- Non-financial performance measures formalised by the Department of Internal Affairs.
- Potential new legislation as a result of the Havelock North drinking water enquiry.

3.2 AMP OBJECTIVE

3.2.1 Objectives of the AMP

The over-arching objective for the AMP is to demonstrate that the activity delivers in all respects meeting in full the expectations set out in the Council's stated outcomes.

So that these expectations can be met the AMP will:

- Inform the LTP in a consistent and competent way but at a relatively high level.
- Describe the water activity in more detail.
- Detail the intended levels of service, how they are measured and maintained.
- Detail when and how operational and capital expenditure for the water activity will be funded over the time frame of the LTP and the proposed Infrastructure Strategy (30 years).
- Give consideration to maintenance and renewal linkage methodologies.
- Ensure that sustainable outcomes are identified for the future.
- Identify asset risk and how that is managed according to the scale of the asset.
- Allocate priority to improvement planning.

3.3 SCOPE OF THE AMP

This AMP sets out how the Council manages its water race networks and water treatment and reticulation assets within the serviced rural and urban communities of Featherston, Greytown and Martinborough.

The AMP aims to inform in a way that is appropriate for a readership which includes executive management and elected members of the Council, interest groups, stakeholders, and other interested members of the general community.

The replacement value of the assets covered by this AMP totals $51 Million (2018 valuation) as presented below. These are the draft valuation figures to be confirmed in the first quarter of the 2018/19 financial year when the final valuation is completed.

Table 1: Scope of Assets

Scheme	Year Installed	Population Served (2013)	Wastewater Mains (kms)	Replacement Cost $000
Featherston	1965	2,434	36.0	$14,366
Greytown	1940	2,438	30.9	$21,495
Martinborough	1960	1,569	42.4	$15,148
	Total	**6,441**	**109.3**	**$51,010**
Water race	Late 1880's	-	265.0	

3.4 RELATIONSHIP WITH OTHER PLANS

This AMP is a key component of the Council planning process, linking with the following Council plans and documents:

- Long Term Plan (LTP)
- Wastewater AMP
- The future Water Use Strategy Plan
- The Combined Wairarapa District Plan 2011
- Council Water Supply Bylaw
- Infrastructure Strategy

There are linkages to other plans (local and national) as follows:

- National Policy Statement for Freshwater Management 2014.
- Regional Freshwater Plan, Natural Resources Plan, Greater Wellington Regional Council.
- Other affected party protocols and policy documents e.g. Fish and Game, Tangatawhenua.

3.5 KEY RELATIONSHIPS

This AMP recognises the following key stakeholders and agencies:

Table 2: Identification of Stakeholders

External Stakeholders	Main Interest
Central Government	Ensure that Local Government Act is complied with (via Auditor-General)
Resident Population	Reliable Water services at an affordable cost
Local Businesses/Industries	Water services to suit commercial needs and expansion, at affordable cost
Public Service Providers	Reliable Water services at an affordable cost
Ministry of Health	Water is managed within health and consent guidelines to protect public health
Tangata Whenua	Ngati Kahungunu and Rangitane Teo Wairarapa. Respect for spiritual/cultural significance of water and land affected
Council's Service Providers	On-going work; processes and systems to facilitate efficient operations
Wellington Regional Council	Water abstractions and takes are managed within agreed consent parameters including proposed natural resources plan and Ruamahanga Whaitua Process
Internal Stakeholders	Main Interest

External Stakeholders	Main Interest
Elected Officials	Owner of assets, responsible for sustainable service levels under LGA
Executive	Compliance with regulations, service reliability, quality and economy
Asset Managers	As above plus policy, planning and implementation of infrastructure and service management activities (e.g. operations, demand management, maintenance, construction). Health and safety. Effective corporate support for decision-making, service management, procurement, finance, communications, I.T., staff and other resources
Planners	AMP support for Long Term Plans. Infrastructure support for current/future district activities (housing, business, recreation)
Finance	Proper accounting for assets and for services consumed by asset management activities. Reliable, justified projections of future costs
Customer Services	Systems which minimise and resolve complaints/enquiries about service
Information Services	Clarity of technical and budget requirements for systems and support
Public service providers	Include schools, dentists, doctors, hospitals, and other government organisations

4 THE ACTIVITY

This section of the AMP covers the rationale for ownership and description of the water supply assets.

4.1 ACTIVITY DESCRIPTION

4.1.1 Water Supply Overview

Figure 1: Featherston and Greytown Schematic

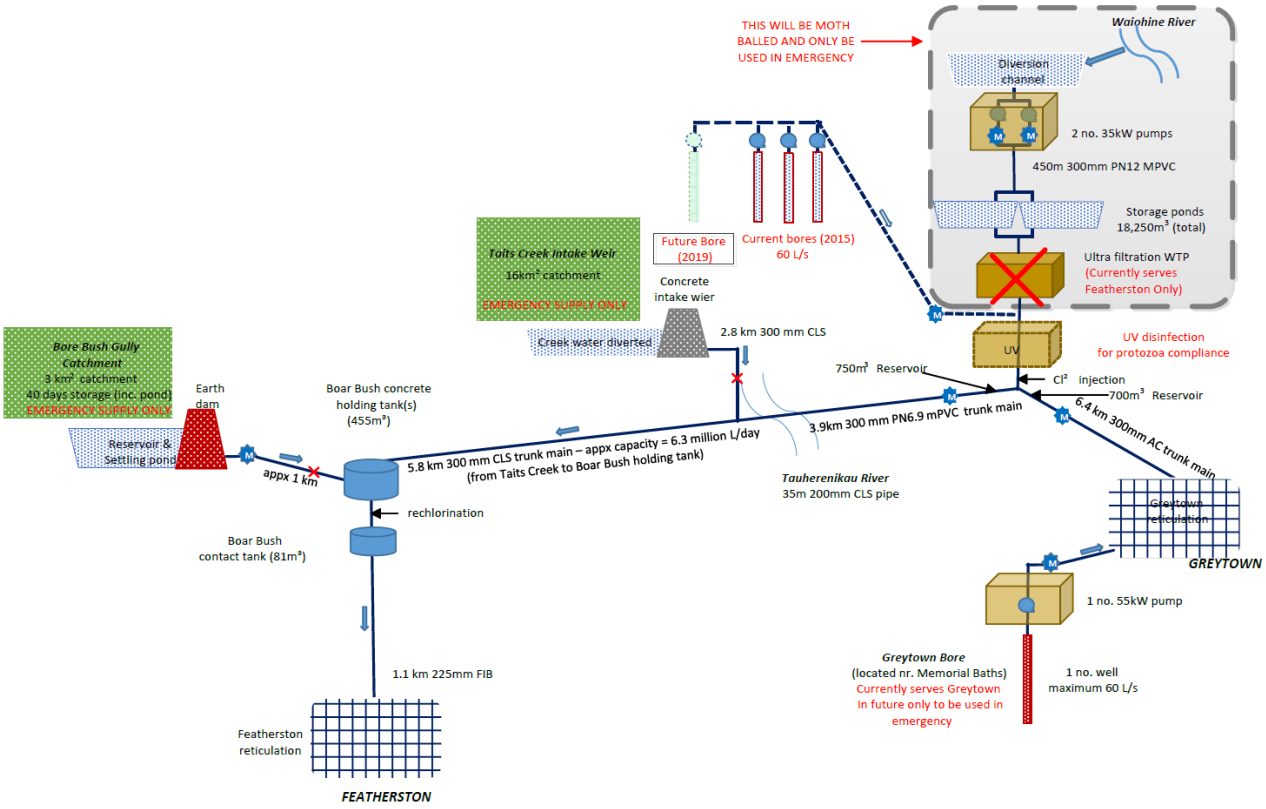
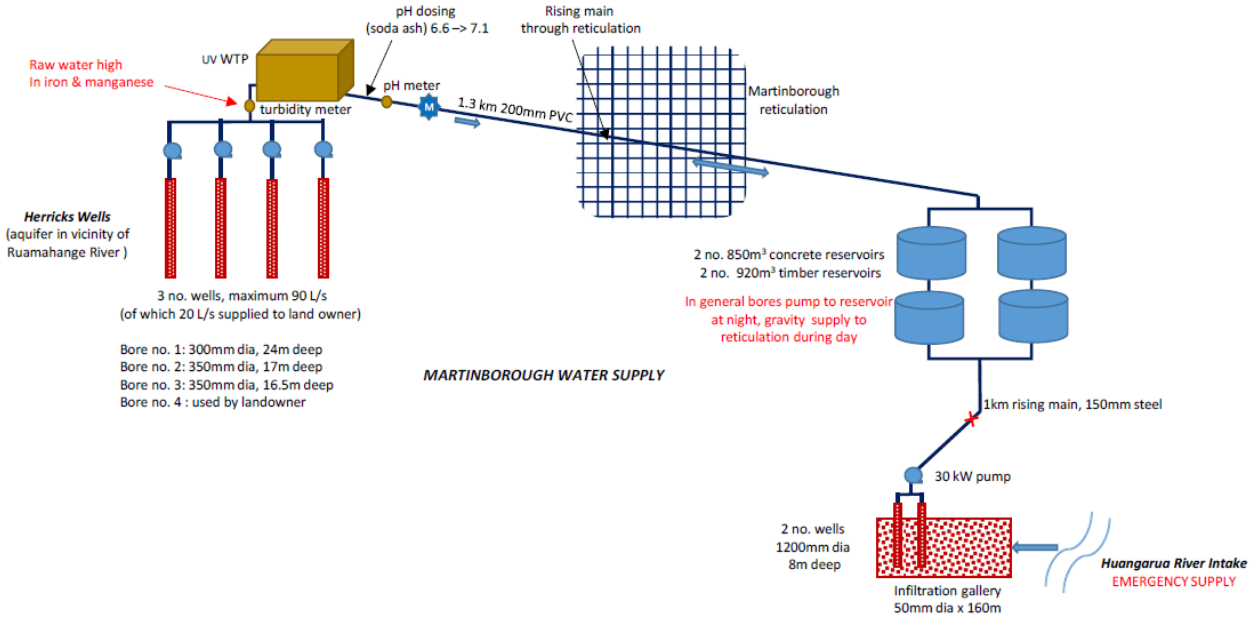


Figure 2: Martinborough Schematic



4.1.2 Water Sources Urban

Six sources supply water to the urban populations of Featherston, Greytown and Martinborough, these are:

Featherston - Boar Bush Gully Catchment

A catchment area of approximately 3 km² supplies runoff to an earth dam. The reservoir behind the earth dam contains approximately 40 days storage and includes a settling pond immediately upstream. Water flows by gravity from the reservoir to the Boar Bush Holding Tanks.

This source is currently operated as an emergency supply only.

Featherston - Taits Creek Intake Weir

A concrete intake weir is located across Tait's Creek to the north of Featherston. The weir is designed to divert water from the creek into a 300mm gravity trunk main which supplies water to the Boar Bush Holding Tanks. The catchment area upstream of the weir is about 16km² with the 9km length of trunk main having a capacity of 6.3 million litres per day.

This source is currently operated as an emergency supply only.

Featherston & Greytown - Waiohine Valley

Water is abstracted from three bores sited next to the Waiohine River. The bore water is pumped up to the Featherston/Greytown Water Treatment Plant (WTP) for treatment.

The WTP disinfects the water through an ultra-violet (UV) plant and supplies both Greytown and Featherston. A 3.9km 300mm PVC pipe supplies water from the UF plant to connect to existing pipeline crossing the Tauherenikau River. The pipe joins the 300mm gravity trunk main from Taits Creek which supplies water to the Boar Bush holding tanks which have a capacity of 455,000 litres.

The old supply from the Waiohine diversion channel was decommissioned in May 2017 due to the improved water quality and reliability from the bores.

Greytown – Supplementary Bore

There is a supplementary source of water for Greytown where groundwater is abstracted from a single bore along Kuratawhiti Street outside the Memorial Baths. Water is pumped directly into the existing mains with chlorine disinfection.

This source will be operated as an emergency supply after increased capacity and storage of the Waiohine Valley WTP.

Martinborough - Ruamahanga Wells

This is the preferred source of water for Martinborough being the groundwater aquifer in the vicinity of the Ruamahanga River.

The groundwater is abstracted from four bores approximately 2.5km south east of Martinborough and approximately 650m from the older terraces upon which Martinborough township is located. Water is pumped directly to four town reservoirs each having a capacity of 850,000 to 920,000 litres. These supply water by gravity flow via a 1.8km length of main. Resource consent conditions allow total abstraction at 90 litres per second (l/sec) (combined abstraction from three bores). As part of the agreement with the land owner, Council provides him up to water at 20 l/sec from a 4th bore. The wells have elevated levels of manganese.

Martinborough – Huangarua River Intake

A channel intake is located adjacent to the Huangarua River approximately 200m north of Gladstone Road. The diverted water then flows approximately 50m into a well and is then pumped 1km to the four reservoirs.

This source is currently operated as an emergency supply only.

Pirinoa

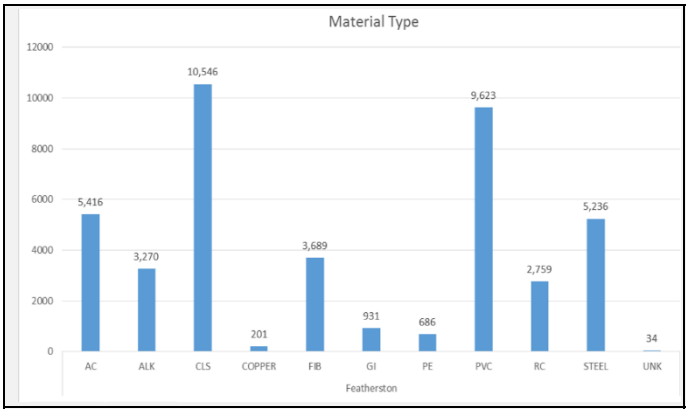
Pirinoa is a small community water scheme serving the equivalent of 10 properties, about 25 people including the School, Store and Community Hall.

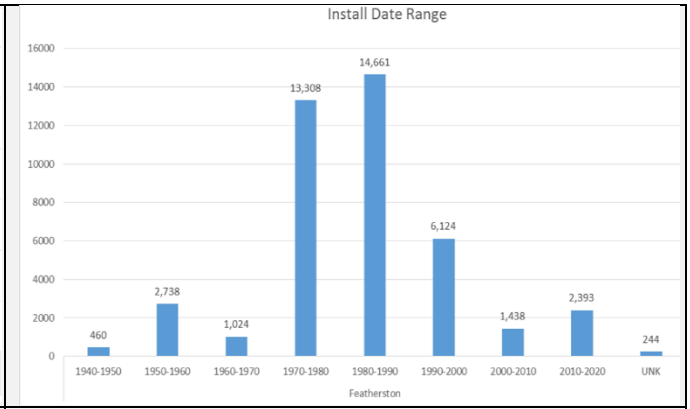
The pipe network is owned by the community and the treatment plant was installed and is operated by council. The water is from a shallow bore with filtration and ozone disinfection and pumped about 900m to network. The network is made from low density alkythene, which was replaced in 2017 to reduce water losses.

4.1.3 Reticulation

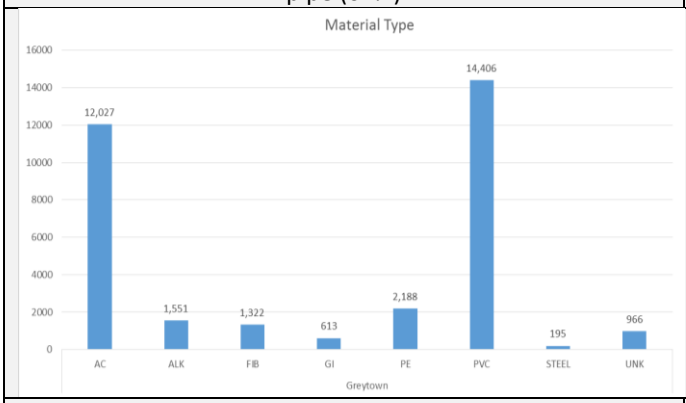
The makeup of the three communities' reticulation material, length and installation date is presented below (service connections are not included):

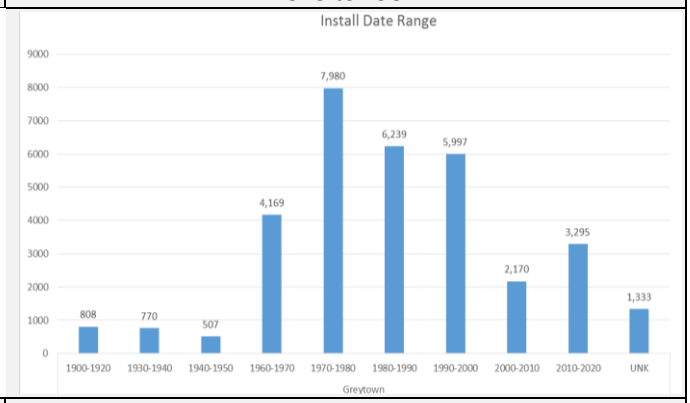
Figure 3: Reticulation – Pipe Material and Installation Date Distribution



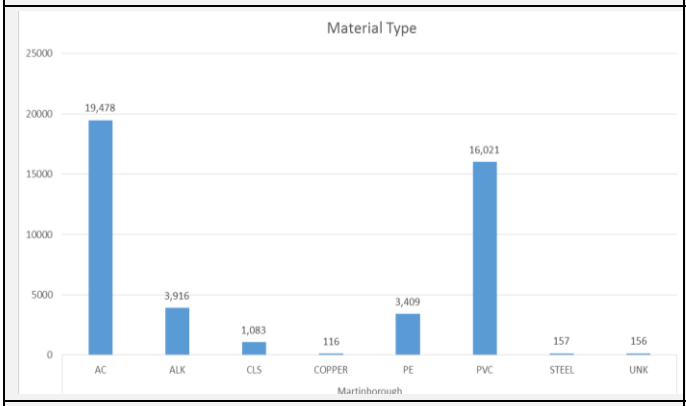


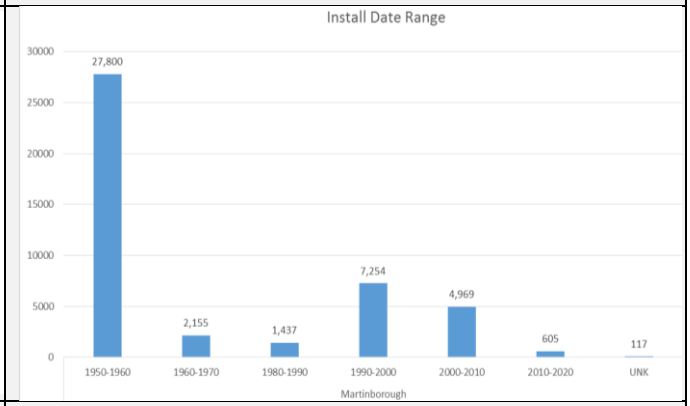
Featherston - Material Concrete Lined Steel and AC account for the majority of the pipe (64%)	**Featherston – Install Date** The majority of pipe (78%) was installed during the period 1975 to 1984





Greytown - Material PVC and AC account for the majority of the pipe (95%)	**Greytown – Install Date** Majority of pipe was installed during the period 1960 and 1999





Martinborough - Material PVC and AC account for the majority of the pipe (88%)	**Martinborough – Install date** The majority of pipe (71%) was installed during the period 1960 to 1964

4.2 WATER SOURCES RURAL (STOCK WATER RACES - MOROA AND LONGWOOD)

4.2.1 Water Race Background

The South Wairarapa District contains two water race systems that total approximately 270km in length. The Longwood water race takes water at 250 litres per second from the Tauherenikau River; the Moroa water race takes 500 litres per second from the Waiohine River.

The Moroa and Longwood water races have resource consents which allow them to take water for the race (for stock watering purposes), and discharge contaminants to waterways at the end of the water race branches.

The water race systems also provide an important service in run-off control and management of storm water. They have developed their own individual ecosystems and are an established part of the environment. For those with alternative water sources or who do not farm their land intensively, costs for upkeep of the race systems can seem a burden. However, the best option for the community, as a whole, is to keep the water races, and the water races cannot continue to function within their consented conditions unless all people whose land the water race passes through understand and adopt the voluntary code of practice.

Council only maintain a short section of the main water race below the intakes. The water race road culverts are presently maintained and where necessary replaced by the Council's roading group.

4.2.2 Water Race Issues

a) Although some people who have the races passing through their land do not want them there, surveys of users have shown that most people do want them. The water races were created decades ago (1890's) to allow dry land to be farmed. For some users their existence is vital and without them many farmers could not sustain their current operations. In some cases the water races enable farmers to have an economically viable farm.

b) Intakes are monitored via telemetry and manually operated for flows that vary with changing river conditions. Long term flow control would assist in their operation and management

c) Without fencing on the water races, stock can and do have a detrimental effect on the water quality.

d) The present resource consents expire in 2020 (Longwood) and 2025 (Moroa). Significant funding will be required prior to this date for the consent application, any potential hearings and future infrastructure improvements.

4.2.3 Water Race Source

Two sources supply water to the rural areas of Featherston and Greytown.

4.2.3.1 Featherston - Tauherenikau River (Longwood Water Race)

An in-river weir is created on occasion for the race to maintain the depth to supply the intake, which is repaired as required after floods. A concrete pipe intake structure situated in the Tauherenikau River supplies water via a 600mm culvert to the Longwood Water Race system. This supplies primarily stock water to rural properties via a system of approximately 40km of open channel within the defined water district.

4.2.3.2 Greytown - Waiohine River (Moroa Water Race)

A diversion channel located adjacent to the Waiohine River diverts the water from the Waiohine River. The Greytown water supply is extracted from the channel and the remainder of the flow is

conveyed into the Moroa Water Race for stock watering purposes. Within the defined water district there is approximately 225km of open race delivering water.

4.3 CHANGES FOR THE WATER SUPPLY ACTIVITY

As with most assets the changing external regulatory environment, alongside that of Council's customer expectations places obligation upon the asset owner, Council, to continually assess the efficiency and acceptability of its water supply infrastructure to stakeholders.

Future changes to the activity within the term of this AMP revolve around drinking water quality and compliance and demand management. The drivers for activity change are:

The requirement for potable water supplies to comply with the New Zealand Drinking Water Standards 2008 in the short term. Currently Council's water supplies do not fully comply for protozoa protection

Possible legislative changes following the findings of the Havelock North Enquiry

Secure supply for communities with lesser reliance on surface water sources resulting in a greater continuity of service during times of water shortage or poor raw water quality

Placing a true commodity value upon water and adopting an integrated approach (inclusive of advocacy, education and economic instruments) toward the reduction of treated water use

4.4 ACTIVITY RATIONALE

The health and general well-being of Council's communities is the fundamental reason why Council provides adequate systems for the extraction, treatment and distribution of potable water.

Council, clearly sees a strong linkage between "healthy and economically secure people" and its contribution to "ensuring that adequate public systems are provided at an affordable cost."

In all serviced areas water is most effectively treated and distributed by means of reticulated piped systems which allow the costs associated with maintaining these systems and providing efficient and sustainable infrastructure to be spread over the serviced population base. This also helps to keep costs to individual users within affordable levels.

4.5 SIGNIFICANT EFFECTS OF THIS ACTIVITY

Activities generate effects both positive and negative. In terms of the four well beings the effects are summarised as follows:

Table 3: Significant Effects of this Activity

Well Being	Positive	Negative
Social	Community health benefits arising from a secure and quality supply	Health and Safety risks associated with asset operations
Environmental	A community supply offers a more collective and sustainable environmental footprint, complying with current consent requirements	The effects of water extraction from surface and groundwater extraction points
Economic	Affordable potable water promoting an encouraging environment for residential and commercial development	Possible property damage arising from main failure
Cultural	Potable water is non-discriminatory in benefit for all community and ethnic groupings	Potential community and iwi concerns in regard to waterway health and associated values

5 STRATEGIC ENVIRONMENT

This section sets out community outcomes, goals, statutory requirements and shows the key legislation and regulations associated with the water service.

5.1 COMMUNITY OUTCOMES

The Local Government Act 2002 (2011 amendment) requires local authorities to identify outcomes for their districts. These are a picture of the type of community people want to live in over the next 10-15 years. All community members own these outcomes. The Community Outcomes to which water activity primarily contributes are presented below:

Table 4: Community Outcomes to Which Water Activity Primarily Contributes

Community Outcomes	How the Water Supply Activity Contributes
Healthy and economically secure people	By ensuring that adequate public supplies are provided, at an affordable cost, and that private supplies are properly monitored
Vibrant and strong communities	By ensuring that adequately located and pressured connections for firefighting are provided in reticulated communities
Sustainable South Wairarapa	By ensuring that all of the reticulated systems operate as efficiently as possible, that the conditions of the water permits are complied with and that average consumption per annum is maintained or reduced

5.2 THE WATER ACTIVITY GOALS

Council has developed goals, policies and objectives to provide direction for the water service over the next ten years. They underpin the Council's vision for the district.

The water activity goals are:

To provide reliable and sustainable reticulated water supplies to the townships of Featherston, Greytown and Martinborough.

To provide stock water race supply networks from the Tauherenikau and Waiohine Rivers.

To encourage water conservation and the wise use of this valuable resource.

The principal policy objectives required to meet these goals are presented below:

Table 5: Principal Policy Objectives

Objectives	Comments
To achieve defined standards of customer service	Achieving the Levels of Service as detailed in this AMP and the LTP
To protect the health and safety of the Community	The water provided is safe to drink
To minimise adverse effects on the environment	Discharges from treatment plants and the water race system comply with their respective resource consents
To comply with legal requirements	Resource consents and Drinking Water Standards
To achieve defined technical standards	As provided by NZS4404:2010 and other applicable standards
To implement policies of South Wairarapa District Council	Implemented as required
To promote development throughout the District	Ability to provide safe water on a sustainable basis

Objectives	Comments
To achieve defined standards of system management	Compliance with drinking water standards and water conservation
To provide a Bb grading for the community supplies of Featherston, Greytown and Martinborough	Ensuring the water source is protected, treated and supplied to the required standard

Having a ten year AMP in place that has been independently audited and reviewed at three yearly intervals, supports the key goals of this policy.

5.3 KEY LEGISLATION AND REGULATION– IMPLICATIONS FOR ASSET MANAGEMENT

Legislation is established by Central Government and must be complied with at Local Government Level. Significant legislation and regulations affecting water activities are presented below.

Council must comply with any relevant legislation enacted by Parliament. Commentary related to some of the key legislation is provided below. Different legislation has differing levels of impact on the Water Service activities; this is indicated under the Impact Range (Broad ***, Moderate **, Limited *).

Table 6: Key Legislation and Regulation

Legislation & Regulation	General Description	Wastewater Services Range
Building Act 2004 (and amendments)	-	*
Civil Defence Emergency Management Act 2002	Encourage and enable communities to achieve acceptable levels of risk, civil defence emergency management across the areas of reduction, readiness, response, and recovery	***
Climate Change (Emissions Trading and Renewable Preference) Act 2008	-	*
Climate Change Response Act 2002 (and amendments)	-	**
Energy Efficiency and Conservation Act 2000	-	*
Environmental Protection Authority Act 2011	-	*
Epidemic Preparedness Amendment Act 2010	-	*
Fire Service Act 1975	-	**
Health (Drinking Water) Amendment Act 2007	Protect the health and safety of people and communities by promoting adequate supplies of safe and wholesome drinking water from all drinking-water supplies	***
Health Act 1956	General responsibility “to improve, promote and protect public health within its district”	***
Health and Safety at Work Act 2015	Promote the prevention of harm to all people at work, and others in, or in the vicinity of, places of work.	***
Historic Places Act 1993 (and amendments)	-	*

Legislation & Regulation	General Description	Wastewater Services Range
Infrastructure (Amendments Relating to Utilities Access) Act 2010	-	**
Local Government Act 2002 (and amendments)	The Act defines the purpose of local government	***
Local Government Act 1974 (and amendments)	-	**
Local Government (Rating) Act 2002	-	*
Ngai Tahu Claims Settlement Act 1998	-	*
Public Works Act 1981 (and amendments)	-	*
Reserves Act 1977 (and amendments)	-	*
Resource Management Act 1991 (and amendments)	Promote the sustainable management of natural and physical resources	***
Utilities Access Act 2010	Utility operators and corridor managers to comply with a national code of practice that regulates access to transport corridors	***

5.4 NATIONAL AND REGIONAL PLANS

The National Policy Statement for Freshwater Management (NPS – FM) 2014 directs regional council's to consider specific matters about fresh water when they are developing regional plans for fresh water. The changes made to the NPS-FM are not considered to have an immediate impact on the property and operations of SWDC. The main implications are for regional councils and the development of their regional plans. Any impact would be limited to any regional resource consent applications such as discharge permits, diversion or water take permits that were sought in the future.

5.5 BYLAWS

Council has reviewed the bulk of its bylaws and has implemented a suite of combined bylaws with Masterton District Council. The Consolidated Bylaws 2012 came into force throughout the Masterton and South Wairarapa districts on the 1st September 2013.

5.5.1 Water race

The existing Moroa and Longwood race systems bylaw was reviewed in early 2014 but not updated after consultation. Key changes that have been proposed to the existing Water Race Bylaws are:

- The individual Moroa and Longwood bylaws are proposed to be combined into a single document.
- The bylaw is updated to be appropriate for current issues.
- The bylaw is more flexible in accommodating alternative use proposals and wider water use opportunities.
- This is due to be reviewed in early 2018 with the Water Rate Users Group for consultation later in 2018.

6 FUTURE POPULATION AND DEMAND TRENDS

This section provides details of population and demand forecasts, which affect the management, and utilisation of the waters assets and details demand management strategies.

6.1 POPULATION TRENDS

6.1.1 Usually Resident Population

The District's Usually Resident Population count (census data from Statistics NZ - SNZ) shows a population of around 9,156 in 1991 and reducing to 8,748 in 2001. This was followed by a period of growth through to 2013 where the population was 9,531. This represents growth of about 9% in the period 2001 to 2013. This growth rate is similar to Greytown (7.6%) and Martinborough (8.4%) but Featherston showing a continuous reduction (averaging 0.7% per year) over the last 22 years. The census figures from 1991 to 2013 are presented below.

6.1.2 Aging Population

The rate of natural population change is related to fertility and mortality rates. In New Zealand natural population growth is slowing in response to a declining fertility rate and an aging population. South Wairarapa District population projections follow this general trend with a decreasing birth rate and increasing death rate over time.

6.1.3 Population Trends

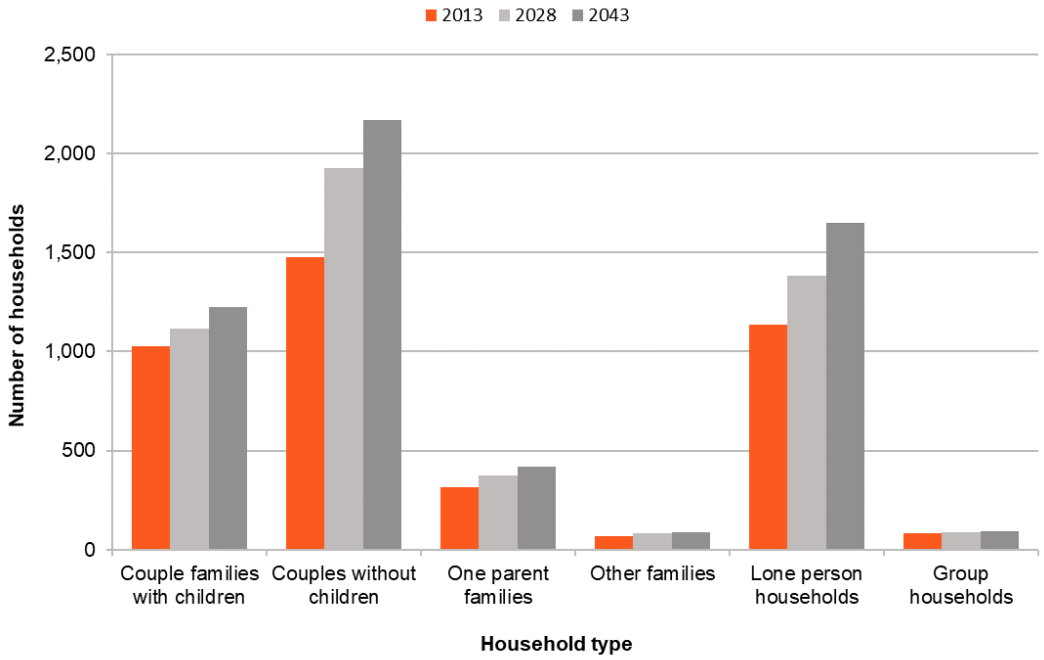
The projections through to 2043 are compiled by '.id Consultants' (ID), an Australian, Melbourne based company with a New Zealand presence since 2010. The forecasts from ID have allowed us to explore what is driving population change in the South Wairarapa communities.

- Forecast information predicts how the population, age structure and household types will change between now and 2043.The resident population in the district is currently around 10,406 people and is expected to increase to 11,421 by 2028 and approximately 12,733 by 2043.
- Projections used for our last LTP indicated a population of 10,250 by 2043 so the latest projections reflect the increased growth in the District over the last three years, which is expected to continue.
- The median age is currently 45.2 (compared with 38 nationally) and is projected to increase to 49 by 2043.
- ID Consultants' projections for the future reveal the following trends:
- Populations in all three towns are predicted to grow at around 1% per annum for the next 25 years. Rural growth is about a third of this at 0.3% pa, with overall growth for the district at 0.9% p.a. for the next 25 years.

Area	Population 2013	Population 2043	Change in population	Average annual pop change (%)
Featherston	2,434	3,127	694	0.80%
Greytown	2,438	3,581	1,142	1.30%
Martinborough	1,569	2,325	757	1.30%
Rural	3,360	3,700	340	0.30%
Total Population	**9,800**	**12,733**	**2,933**	**0.90%**

- When looking at where this growth would come from, the dominant household type in the South Wairarapa district are couples without children and lone person households as second. Couples without children make up 36% of all households in 2013 and 39% in 2043. Lone person households make up 28% of all households in 2013 and 29% in 2043.
  Although there are more families in 2043 than 2013, they decrease in terms of share of all households.

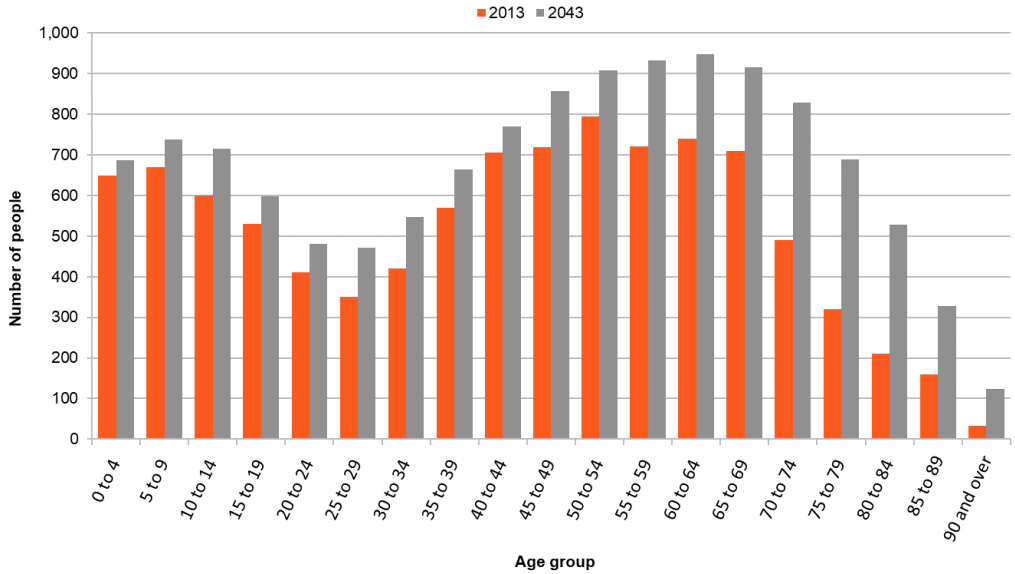
Figure 6-1: Households by type, South Wairarapa District Council – 2013, 2028 and 2043



Overall there will be population gains in all age groups. The most evident gains are of persons aged over 60 years of age. In terms of shares of total population, residents aged over 70 comprised 13% of the total population in 2013 and 20% by 2043. Persons aged under 20 years in South Wairarapa make up 25% of the 2013 population and 21% of the 2043 total population.

The movement in the percentage of the population of "working age" (up to age 65) is not as dramatic as might have been expected. In 2013 61% of the population was in the working age group, by 2043 this will be 56%. This 5% drop is not as significant as might be expected in terms of the issues created by a rapidly aging population.

Figure 6-2: Age structure, South Wairarapa District Council – 2013 and 2043



The following two graphs show the trends over recent years in the number of building consents in the South Wairarapa District. The trends clearly back up the known growth in the district over recent years.

Figure 6-3: Annual Residential Building Consents, by type 1999 – 2017

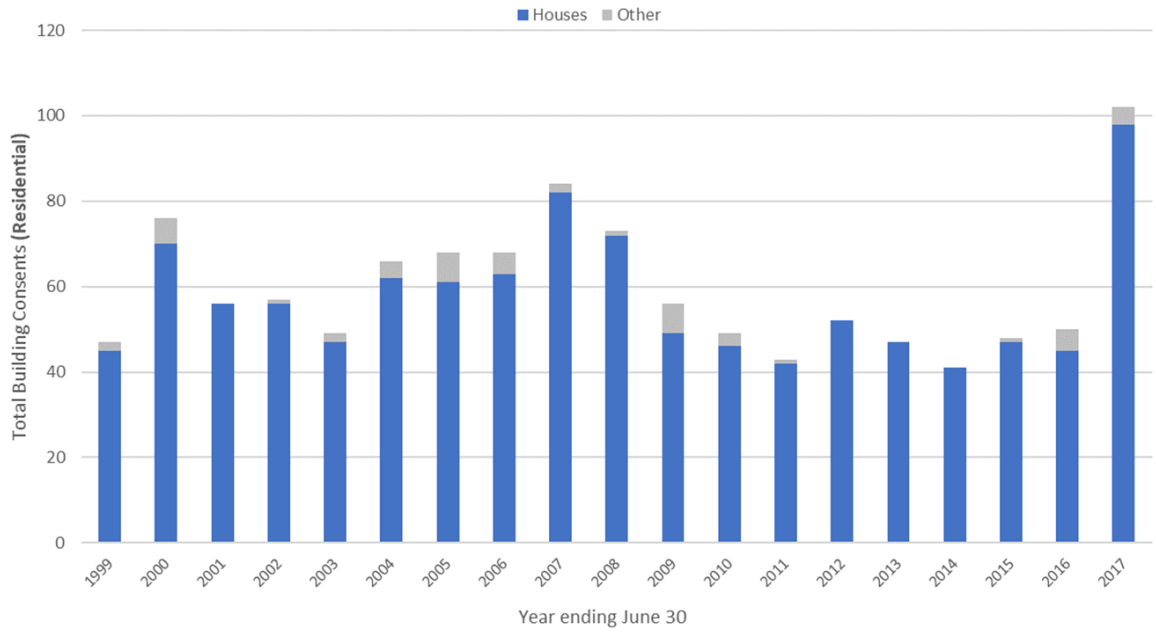
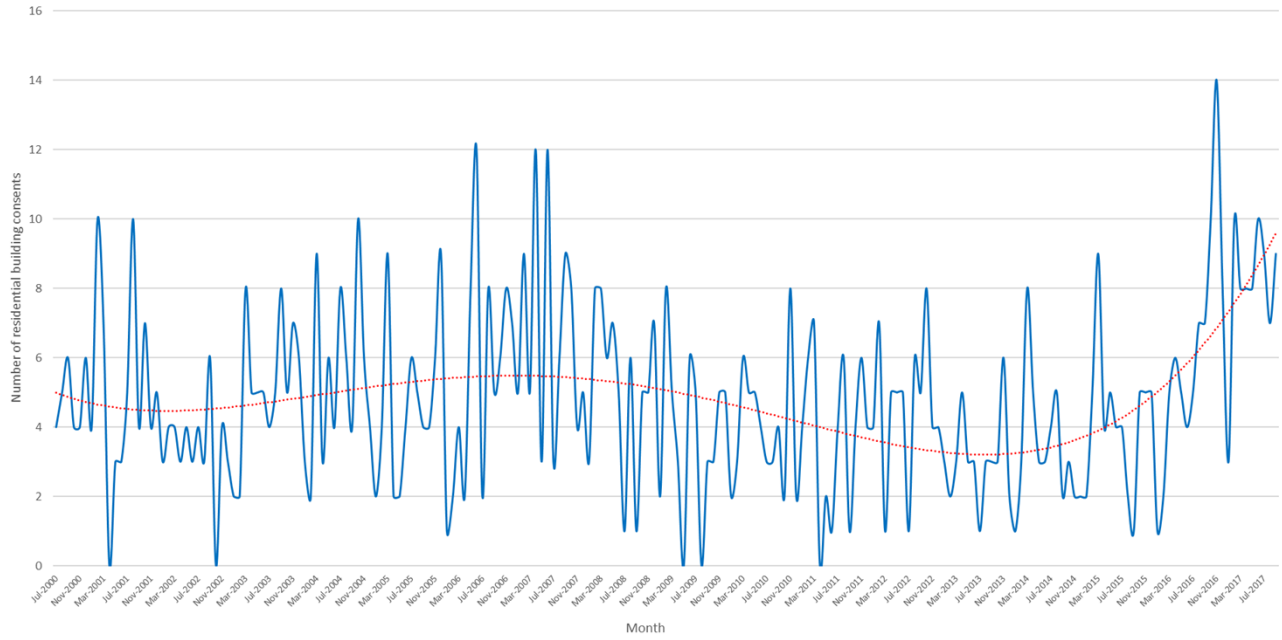


Figure 6-4: Monthly Residential Building Consents, July 2000 – September 2017



Finally, ID have given the following predictions of ongoing new build activity in the district in five year groups through to 2043. This shows a spike in the period 2019 to 2013 to 68 new dwellings pa and then a steady number of dwellings in each of the next five year groups ranging from 58 to 66 new dwellings pa.

This confirms our assumptions that our communities will continue to grow steadily over the period of this LTP and for the following 15 years as well.

This is helpful to inform our decisions regarding future infrastructure requirements for each of our towns.

Table 6-1: Assumed development rates (five yearly) – South Wairarapa District Council

Years	Total additional dwellings	Additional dwellings per annum
2014-2018	285	57
2019-2023	341	68
2024-2028	332	66
2029-2033	310	62
2034-2038	309	62
2039-2043	292	58
TOTAL	**1,869**	**62**

6.2 DEMOGRAPHIC TRENDS

The reported indicators in this category indicate an additional/reduced capacity requirement upon the existing water assets for Featherston. However, in Greytown the projected growth will require Council to increase the pipe capacity and storage at the Waiohine WTP. In Martinborough, long term the main pipe will need increased capacity to manage flow and pressure fluctuations.

6.3 DEVELOPMENT HISTORY

The additional serviced sections that have been created since 2006 for each community, by way of new subdivision or infill development are presented below.

In the current economic environment little growth by way of additional property is forecast for the term of this AMP for all communities.

Table 6-2: Development History

Locality	Number of New Serviceable Lots		Total
	2012 - 2014	2014- 2017	
Featherston	26	30	56
Greytown	64	60	124
Martinborough	116	92	208
Total	**206**	**182**	**388**

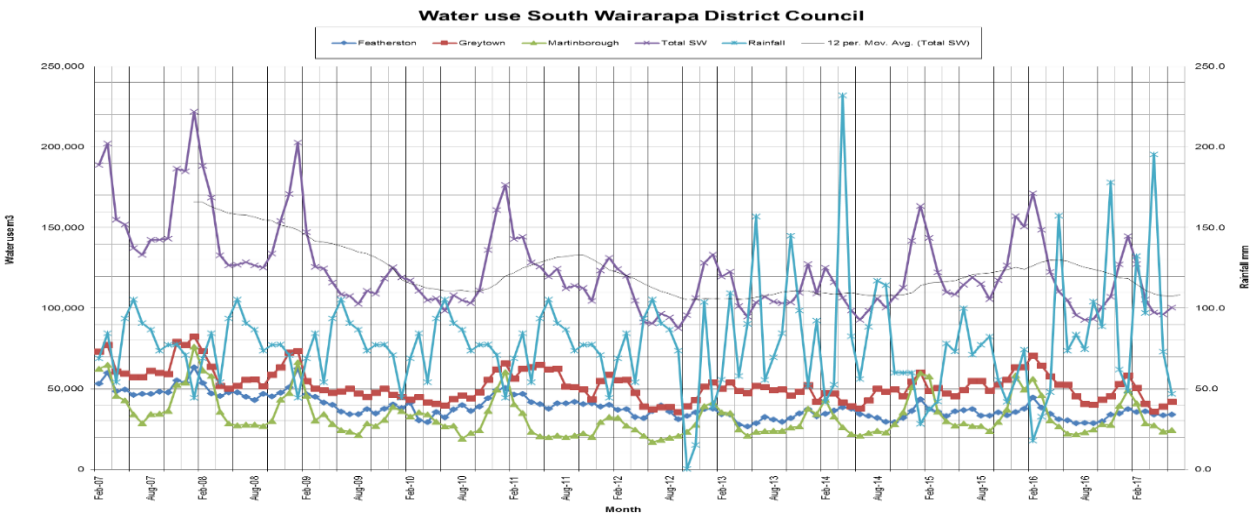
There are currently a number of large developments happening in Greytown, potentially increasing the population by 50% and the urban zoning for Martinborough is under review due to pressure on the current urban area.

6.4 WATER CONSUMPTION PATTERNS AND TRENDS

6.4.1 Water Consumption Patterns

The average daily water uses for the period 2007 to 2017 is presented below and indicate that water consumption over all three towns has shown a downward trend after the introduction of universal water metering in 2008.

Figure 6-5: Daily Water Consumption 2007 to 2017



The adoption of universal metering has reduced the magnitude of peak demand and overall water consumption. These outcomes are consistent with Council's objectives of encouraging sustainable usage of the resource. This trend has stabilised with variation depending on the annual rainfall.

In spite of reducing consumption Council plans to maintain active water conservation and leak detection programmes.

Leakage surveys are carried out for each of the three serviced communities on an annual basis.

6.4.2 Trends

The following sections detail trends that may have an effect on consumption patterns.

6.4.2.1 Legislative Change

Legislative change can significantly affect Council's ability to meet minimum levels of service with changes likely to require improvements to infrastructure. This may occur in the short/medium term due to the outcome of the Havelock North water enquiry.

6.4.2.2 Customer Expectations

Customers require a high standard of water supply. Water quality and availability issues are currently being addressed through the identified programme of capital works shown in section 13.

There are also ongoing expectations for water supply network extension beyond the urban area(s). Unless special circumstances apply, Council will not allow service extension into the rural zoned areas.

6.4.2.3 User Pays

In addition to the standard annual charge, Council introduced comprehensive metering for all supply customers in 2009. The regime adopted provides for a user pay charge of $1.84 per cubic metre usage in excess of an assessed annual usage of 350 cubic metres per property. The rate, annual charge and allocation are subject to review annually.

6.5 POTENTIAL DEVELOPMENT

Potential for further urban development and a consequent servicing requirement has been considered by Council for each serviced area. The number of additional lots has been calculated within the limits of the existing urban/rural boundaries using developable land available less what would be allowed for roading as presented below:

Table 6-3: Potential Development Lots

Locality	Maximum	Minimum
Featherston	199	165
Greytown	698	446
Martinborough	66	66

Any impact on infrastructure capacity due to realisation of this potential is likely to be gradual and spread over an extended period of time beyond the horizon of the 2018 – 2028 LTP.

Where a privately promoted subdivision occurs and imposes additional loading on the supply system the developers are required to pay contributions to join the existing system. This would appear as income under development or financial contributions and used for augmenting the capacity of the system. This contributions policy applies to all the three towns as determined by

the Combined District Plan. The calculation of the financial contributions is modified when required to cover costs of implementing increased capacity to allow servicing of the subdivision(s).

The connected numbers for the individual water supplies and information on supply capacity is presented in Appendix 6.

6.6 DEMAND MANAGEMENT STRATEGIES AND PLANNING

Urban growth is likely to increase demand upon Council's water assets and Council needs to be proactive in ensuring they have the capacity to meet increased demand when it occurs. Conversely decline in demand requires an equal response from Council e.g. decommissioning of assets may be an appropriate response, although seen to be an unlikely event in normal circumstances.

In the case of growth, effective asset management for water should consider whether responding to demand means spending more on an asset (asset based solution) or simply spreading usage across other available assets (non-asset based solution) or limiting in acceptable manner the usage that growth might impose on asset capacity. The promotion and incentivising of on-site rain water harvesting systems has been considered as an example of a non-asset approach toward managing demand and growth.

Inter dependencies between water borne assets across the three communities of Featherston, Greytown and Martinborough will provide opportunity to manage changes in demand either by intervention, or asset aggregation/linkage. An example of this is the new water source at the Waiohine River intake, which supplies water for both Greytown and Featherston. No further asset aggregation is planned.

The managed failure of water assets in any form is not part of Council's forward strategy.

6.6.1 Demand Management Strategies

Council have a number of existing and proposed strategies to manage the demand for water and therefore the requirement for additional infrastructure, increased operational costs and minimise the effect on the environment.

The Greytown and Martinborough bore take consents required the development of demand management plans by no later than end of July 2015 and submission to the regulator. This work was completed on time. This AMP formalises the Council's existing and proposed demand management strategies are presented below.

Table 6-4: Demand Management Strategies and Implementation

Strategy	Objective	Existing or Proposed	Description
Operations	Reduce unaccounted for water by leakage detection.	Existing	Ongoing leak detection programme
	Unaccounted water (water loss) monitoring	Proposed	Greater understanding of water loss
	Technical Standards	Existing	Ensuring new assets are constructed and tested (to the appropriate standards) prior to commissioning
	Codes of Practice	Existing	Ensuring maintenance is carried out to relevant standard reducing incidence of faults/leaks
	Response time	Existing	Prompt response and rectification of reported leaks

Strategy	Objective	Existing or Proposed	Description
	Water Restrictions	Existing	Used to manage peak demand. Water restrictions typically include limits on the use of garden hoses
Renewal / Rehabilitation programme	Ensure assets are not utilised beyond their useful life (where the risk of unpredictable failure is greatly increased)	Existing	Long term renewal programme
Council Water Bylaw	To prohibit water wastage and to ensure prudent use	Existing	Requires consumers to comply with any water restrictions, periods of unusually high demand or emergencies

Table 6-5: Demand Management Strategies and Implementation Continued

Strategy	Objective	Existing or Proposed	Description
Education	Water conservation programmes aimed at increasing community awareness of the benefits of conserving water and reducing water demand.	Existing	Programmes include information on ways to conserve water and using the print media or Council's website
		Proposed	Public signage in key locations
			New household conservation technologies (showerheads, dual flush toilets etc)
Water metering and Usage charging	Strategy has resulted in an overall drop in consumption in all three communities	Existing	Water meters are installed for all urban connections and users pay a flat charge and a rate for all water consumed over 350m^3

6.7 FUTURE DEMAND DRIVERS

These are driven by:

- Growth
- Consumption usage patterns
- Irrigation
- Water loss rates (leakage)

It is anticipated that these factors are reflected in changes in domestic and non-domestic water usage as presented below.

Table 6-6: Future Demand Drivers

Water Demand Drivers	Domestic	Commercial	Industrial
Growth	Population change in reticulated areas	Increase in commercial areas	Some expansion with subdivisions
Consumption	Domestic usage	Commercial water usage	Extent of "wet" industries
Irrigation	Domestic garden watering	Park irrigation	Nil
Losses	All	All	All

6.8 SUSTAINABILITY

Significant activity changes described in Section 13 and the nominated community outcomes indicate the wish to adopt a sustainable asset management and development approach.

The key indicators to the achievement of sustainability are:

- A considered and consistent approach to the acceptance of new development and its impact on water infrastructure.
- Low energy intensive and best life cycle cost treatment systems that provide outcomes consistent with current or newly acquired resource consents.
- Overall environment outcomes that are affordable for the community and acceptable to all other interests.

The assumption is that the definition of sustainability is accepted and agreed to by the community and all other parties and that the Council's position remains unaltered.

6.8.1 30-Year Service Delivery Initiatives for Water and Wastewater

Different demands are experienced on both the Water and Wastewater Services during periods of population growth and decline. It is important that the general initiatives presented below are applied.

Table 6-7: 30 Year Service Delivery Initiatives

No.	Initiative
1	Closely monitor growth and demand – with just in time provision of infrastructure – pipe and facilities
2	Monitor condition of land where disposal of waste occurs (storm water, wastewater) to ensure good health
3	Monitor condition and quality of potable and stock water, with trigger levels set against standards. Develop "what if" action plan to address reducing water quality where encountered
4	Delivery of robust asset condition profile with renewals profile – funding in place to replace
5	Work with agencies to deliver overarching cohesive solutions to water catchment issues, funding and resourcing where appropriate

6.8.2 Scheme Sustainability

Presently the schemes have sufficient capacity and since the introduction of universal water metering there has been a reduction in the magnitude of peak demand and overall water consumption. The anticipated future growth in Greytown and Martinborough will require some additional infrastructure which has been included in our LTP budgets.

6.8.3 Resource Consents Held

The resource consents for water, water races and wastewater held or presently being applied for are presented below. The years in brackets indicate proposed expiry dates.

Table 6-8: Water, Water Race and Wastewater Resource Consents Held

Site	File Reference	Service	Consent ID	Consent Type	Expires
Featherston Sewage	WAR97008001	Wastewater	2625	Discharge To Water	2012 (2047)
		Wastewater	23139	Discharge To Land	
		Wastewater	30723	Discharge To Water	
Featherston and Greytown Water Supply	WAR120244	Water	31689	Take	2037
	3 New bores at WTP	Water	-	Variation of 31689	2037
Greytown And Featherston Water Supply	WAR99014201	Water	6349	Take	2019
Greytown Sewage	WAR080254	Wastewater	26633	Discharge To Water	2051
		Wastewater	33180	Discharge To Land	
		Wastewater	33181	Discharge To Air	
		Wastewater	33182	Discharge To Land	
Lake Ferry Sewage	WAR040096	Wastewater	30785	Sewage Discharge To Land	2025
			30786	Sewage Discharge To Water	
			30787	Discharge To Air	
Martinborough Sewage	WAR120258	Wastewater	31707	Discharge To Water	2051
		Wastewater	32044	Discharge To Land	
		Wastewater	32045	Discharge To Air	
		Wastewater	33045	Discharge To Land	
Longwood Water Race	WAR010201	Water race	21377	Take	2020
		Water race	21593	River/Stream Diversion	
		Water race	21595	Bed Disturbance	
		Water race	21594	Comprehensive Storm water Discharge	
Martinborough Water Supply	WAR120245	Water	31690	Take	2037
Moroa Water Race	WAR010200	Water race	21378	Take	2025
		Water race	21379	River/Stream Diversion	
		Water race	21586	Comprehensive Storm water Discharge	
Boar Bush / Taits Creek	WAR120050	Water	31362	Surface Take - Taits Creek	2030
			31364	Surface Take - Boar Bush Stream	
Huaranga River Water Take	WAR120051	Water	31366	Surface Take	2030

7 RISK MANAGEMENT

This section looks at the Risk Management processes utilised by Council for assessing and managing risk within the Water Services.

7.1 BACKGROUND

Council's Risk Management methodology aims to be consistent with the intentions of AS/NZS 4360: 2004 Risk Management Standard to a scale appropriate to its asset.

In this context, Council's risk management criteria are:

- The fulfilment of legal and statutory obligations.
- Identification of critical assets where this is appropriate.
- The safeguarding of public and employee's health and safety requirements.
- Obtain 3rd party property damage & losses insurances.
- Loss of service-extent and duration, impacts of natural disasters.
- Contingency planning for foreseeable emergency situations.

AS/NZS 4360: 2004 has now been superseded by AS/NZS ISO 31000: 2009 and Council now uses this standard when reviewing their risk management.

7.2 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 - Activity management risk assessment
- Level 3 - Critical asset risk assessment

7.2.1 Organisational Risk Assessment

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. To date the Council does not have a district wide risk policy. A Council risk policy will be developed that encompasses levels 1 to 3 above.

7.2.2 Activity Management Risk Assessment

Activity management risk assessment uses the same principal and consequence tables as the organisational assessment, but the focus is at a more detailed level. During this process, specific risk events are identified which would affect the operational ability or management of the activity as a whole.

Council water and wastewater activity, probability, impact and management of risk were reviewed in 2017 with a risk summary table established. The risk summary table presented below details where the residual risk was high or significant and existing or proposed mitigation. The high or significant gross risks assessed are presented in Appendix 8.

Table 7-1: Risk Summary Table

Risk No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
1	Higher Level Policies, Procedures and Controls					
2.3	Assumptions for financial forecasting not always understood	Additional costs incurred because assumption/ uncertainties not accounted for i.e.: asset valuations, depreciation	Significant	/managers need to be aware of assumptions and uncertainties behind financial forecasting information	Significant	Improvement of quality of information, condition assessment
3	Organisational Management					
3.3	Lifelines Plan not up to date or implemented	Large scale asset failure due to a naturally occurring event resulting in prolonged and substantial loss of service to District	Significant	Ensure Lifelines Plan up-to-date and recommendations implemented that includes having a high level of risk reduction, readiness, response and recovery during and following Civil Defence Emergency	Significant	Update lifelines plan
3	Human Resources					
4.5	Inadequate attention to staff succession	Organisational knowledge lost with staff leaving	High	Implement good staff/management succession plan and document procedures	Significant	Implement good staff/management succession plan and document procedures
4	Asset Management					
6.1	Network modelling, condition assessments not undertaken.	Capital Works programme not optimised. Renewal works not completed due to lack of knowledge causing failure of assets. Future forecasting not accurate	Significant	Undertake condition assessments of network and develop robust renewals programme based on sound knowledge	Significant	Continue work with Wellington Water for condition assessment and renewals programme
6.5	Asset management systems not up-to-date or completed	Failure of utility systems because maintenance work not completed or management system not operational.	Significant	Asset Management System in place and updated as required	Significant	Review AM system practices and processes

7.2.3 Critical Assets Risk Assessment

Critical assets are considered those assets in which failure would result in a major disruption to the supply of water or levels of service. Usually the identification of critical assets is based on pipe diameter or population served.

The criticality of an asset reflects the consequence of the asset failing (not the probability). Assets with high criticality are best defined as assets which have a high consequence of failure.

A criticality assessment was partially completed as part of the Wellington Water report. A further critical assets study is to be undertaken and adopt risk mitigation strategies for the operation, maintenance and renewal of all critical assets.

7.3 INSURANCE

Council has insurance cover for the water and wastewater services, staff and property with QBE Insurance (Australia) Limited (the main insurer for above ground assets) and LAPP (for below ground assets). The insurance cover is updated on a regular basis following valuations to ensure the insurance cover is appropriate for its purpose.

Details of the 2017 infrastructure assets covered by the LAPP Fund is presented in Appendix 3.

7.4 WATER SAFETY PLANS

7.4.1 Legislation

The Health (Drinking Water) Amendment Act 2007 requires drinking water suppliers to prepare and implement a Water Safety Plan (WSP) for any water supply serving more than 500 people. These WSPs must be submitted for approval by a drinking-water assessor, and reviewed and resubmitted for approval every five years thereafter.

7.4.2 WSP Processes and Programme

WSP (previously Public Health Risk Management Plan's or PHRMPs) have public health consequence as their focus. The WSPs were written with improvement sections. The Ministry of Health's assessors undertook their first annual review in 2016 and subsequently identified a number of items which had not been completed. Some items were completed but the focus by the Council's utilities team was on water treatment upgrades.

The programme for revision of the WSPs are presented below:

Table 7-2: WSP Revision Programme

Community	Latest Version	Revision Required by DWA	Comments
Featherston	2016	1st Jan 2018 Drafted	Capital Projects. Source changed to groundwater and UV disinfection installed. WSP to be updated to reflect this.
Greytown	2016	1st Jan 2018 Drafted	Source to be changed to Waiohine WTP recently upgraded with UV Emergency bore has no protozoa barrier so compliance will not be achieved. WSP to be updated to reflect this.
Martinborough	2016	2021	Implementation was checked 21/9/2016, only 1 non-conformance was identified regarding the calibration of the HACH1720E turbidity meter. This has subsequently been rectified.

8 THE SERVICES WE PROVIDE

The levels of service for the water services are defined in this section and the performance measures by which the service levels will be assessed. The service levels are aimed at supporting the community outcomes and meeting the strategic goals.

8.1 CUSTOMER PROFILE

Our regular customers include the owners of all properties serviced by and paying the nominated service charges for a community water reticulation and treatment system.

Important stakeholders and affected parties include:

- Greater Wellington Regional Council
- Ngati Kahungunu
- Rangitane O Wairarapa
- Fish and Game NZ
- Department of Conservation
- Wairarapa District Health Board
- Regional Public Health

Serviced properties require a continuous service at an affordable cost. Stakeholders and other affected parties appreciate open and regular dialogue with the Council and expect to retain the full confidence of Council.

8.2 KEY SERVICE DRIVERS

Key service drivers include:

- The urban communities desire to continue participation in a modern and environmentally sound water treatment and distribution system with a minimum of inconvenience.
- Statutory requirements that require Council, as asset owners and managers, to meet appropriate standards in respect of public health.
- A regulatory environment that requires Council as a resource consent holder to achieve compliance with all consent conditions.
- An operating environment that is responsive to legislative and regulatory changes over time and within given change timelines.

8.3 2018 LTP LEVELS OF SERVICE (CUSTOMER PERFORMANCE MEASURES)

The customer level of service is described as how the customer receives the service as presented below. The linkage between the community outcomes and the customer levels of service are shown in section 5.1.

Table 8-1: 2015 LTP Levels of Service (Customer Performance Measures)

Community Outcomes	How we Measure our Performance	Performance targets (for the financial year)						Source of Information
		Target/Baseline	Actual 2014/15	Actual 2015/16	Actual 2016/17	2018/19	2019/20-2027/28	
	Service Level 1 - The Council provides reliable and safe drinking water supplies							
Sustainable South Wairarapa	Compliance with resource consent conditions/water permit conditions to "mainly complying" or better	95%	97%	98%	100%	100%	100%	Annual Report to GWRC
	Service Level 2 - The water provided is safe to drink							
Healthy & economically secure people	Water supply systems comply with Ministry of Health Bacteriological Drinking Water Standards guidelines 2008	95% 2008	MBA: Yes GTN: No FTN: No	MBA: Yes GTN: No FTN: No	MBA: No GTN: No FTN: No	MBA: Yes GTN: Yes FTN: Yes	MBA: Yes GTN: Yes FTN: Yes	Compliance report
	Water supply systems comply with Ministry of Health Protozoal Drinking Water Standards guidelines 2008	95% 2008	MBA: No GTN: No FTN: No	MBA: No GTN: No FTN: No	MBA: No GTN: No FTN: No	MBA: Yes GTN: Yes FTN: Yes	MBA: Yes GTN: Yes FTN: Yes	Compliance report
	Ratepayers and residents satisfied with level of service for water	77%	74%	74%	59%	65%	75%-80%	NRB Survey
Potable water demand	The average consumption of drinking water per day per resident within the territorial authority.	<400 Lt	-	728	605	<400 Lt	<400 Lt	Council's records
Customer satisfaction	The total number of complaints received by the local authority about drinking water taste per 1000 connections	< 15	-	1.73	0	< 15	< 14 - <12	Council's records
	The total number of complaints received by the local authority about drinking water odour per 1000 connections	<15	-	2.01	0.29	<15	<14 - <12	Council's records
	The total number of complaints received by the local authority about drinking water pressure or flow per 1000 connections	<15	-	4.03	2.87	<15	<14 - <12	Council's records
	The total number of complaints received by the local authority about continuity of supply per 1000 connections	<15	-	5.75	12.1	<15	<14 - <12	Council's records
	The total number of complaints received by the local authority about drinking water clarity per 1000 connections	<15	-	3.16	2.01	<15	<14 - <12	Council's records
	Total of all water complaints	-	-	16.68	17.27	<75	<70-<60	Council's records

Table 8-2: 2015 LTP Levels of Service (Customer Performance Measures) continued

Community Outcomes	How we Measure our Performance	Performance targets (for the financial year)						Source of Information
		Target/Baseline	Actual 2014/15	Actual 2015/16	Actual 2016/17	2018/19	2019/20-2027/28	
Fault response times where the local authority attends a call-out in response to a fault or unplanned interruption to its networked reticulation system, the following median response times measured	Attendance for urgent call-outs: from the time that the local authority receives notification to the time that service personnel reach the site	< 1 Hr	-	66%	72% Median time 0.5 h	75% < 1 Hr	80% - 90% < 1 Hr	Council's records
	Resolution of urgent call-outs: from the time that the local authority receives notification to the time that service personnel confirm resolution of the fault or interruption.	< 8 Hrs	-	82%	89% Median 4.28 h	90% < 8 Hrs	90% < 8 Hrs	Council's records
	Attendance for non-urgent call-outs: from the time that the local authority receives notification to the time that service personnel reach the site	< 2 working days	-	76%	73% Median 1.02 d	75% < 2 working days	80% - 90% < 2 working days	Council's records
	Resolution of non-urgent call-outs: from the time that the local authority receives notification to the time that service personnel confirm	< 5 working days	-	88%	84% Median 1.46 d	85% < 5 working days	90% < 5 working days	Council's records
	Service Level 3 -There is adequate water for urban fire fighting							
Vibrant & strong communities	Fire hydrants tested annually that meet NZ Fire Service Code of Practice	20%	-	-	21%	20%	20%	Council's records

8.4 LEVELS OF SERVICE REVIEW

The 2015 levels of service provided by the water asset were derived from Council's community outcomes, Department of Internal Affair's guidelines and are based on user expectations and goals. The Council has reviewed these as part of the 2018-28 LTP process.

8.5 LEVELS OF SERVICE (TECHNICAL PERFORMANCE MEASURES)

How the Council provides the service to the customer is described as a 'technical' level of service. The 2015 levels of service are presented below.

Table 8-3: Levels of Service (Technical Performance Measures 2015)

Activity Outcomes	Technical Performance	Technical Performance Measure	Performance Measure Procedure
Service Level 1- The Council provides reliable and safe drinking water supplies			
Providing continuous, efficient and quality water supply to our communities, ensure the health of customers	Compliance with resource consent conditions	Adhere to extraction limits. Conduct water-use review for water races	Maintain required records and submit to consenting authority annually
	Water conservation measures imposed to manage demand during water shortages	Utilise actions outlined in demand management	Issue media notices and letter drops to consumers Rates newsletter
	Identify and action reticulation renewal programmes	Update condition information	Implement forward work programme
	Contractor service delivery performance	Contract specification	Timely exception reporting
Service Level 2- The water provided is safe to drink			
Ensures that the needs of local and visitor communities are met ahead of growth and development. Contributes to the public health of the community	Compliance Drinking Water Standards of NZ (consideration of affordability may determine future actions)	Approved WSPs in place.	Update existing WSP's and submit to MoH for approval. Enact recommendations for implementation
	Customer Value and safety	Nil boil water advisories except when emergency sources are in use	E. Coli sampling within the Drinking Zones comply with Drinking Water Standards
	Ensure new development contributes to capital expansion works	Develop a capital improvement programme funded across the serviced community	Appropriate Consent Conditions including capital contributions. Implement improvement programme

8.5.1 Changes Planned To Levels of Service as a Result of Changes in Legislation or Customer Pressure

In spite of Council's intention to maintain the same service levels, the changing regulatory environment may in time require the Council to review its technical levels of service.

New consent conditions and enhanced environmental expectations from Council's customers or other affected interests may require a review of levels of service in the future beyond the term of this AMP.

8.6 COMPLIANCE WITH CUSTOMER PERFORMANCE LEVELS

The compliance notes are from the 2016/17 Annual Report unless stated.

Service Level 1- The Council provides reliable and safe drinking water supplies

a) Compliance with resource consent conditions/water permit conditions to "mainly complying" or better.

2016/17: Council provides annual reports to Greater Wellington for water supply consents. The compliance reports are available to Council Sept/Oct yearly. Our reports showed Pirinoa (Full Compliance), Waiohine River Take (Full Compliance), Martinborough Water Supply (Full

Compliance). All public water supplies including emergency takes were rated as fully compliant.

Service Level 2 - The water provided is safe to drink

a) Water supply systems comply with Ministry of Health Bacteriological Drinking Water Standards guidelines 2008 (measure in 2017 was a percentage, however it is assessed as compliant or not compliant).

2016/17: Compliance with the Drinking Water Standards 2008 bacteriological requirements was not achieved. Martinborough, Featherston and Greytown do not comply with NZWDS 2008 bacteriological due to the type of treatment and 4 late samples. The recent upgrade brought the supply up to this standard from May 2017 with continuous monitoring and it is expected to comply from the 2017/18 year. Sampling is undertaken on a weekly basis by Council's Contractor in accordance with the Drinking Water Standards. 554 routine bacteriological samples were taken from the three public supplies with no positive E.coli results for the year.

b) Water supply systems comply with Ministry of Health Protozoal Drinking Water Standards guidelines 2008

2016/17: Featherston and Greytown did not comply with NZWDS 2008 protozoa due to the type of treatment for the full year. The recent upgrade has brought the supply up to this standard from May 2017. Martinborough supply is also due for an upgrade in March 2018 to meet the standard.

Council test turbidity and cryptosporidium fortnightly. Sampling is complete and no spores detected. All supplies are expected to be fully compliant for the 2017/18 year.

c) Ratepayers and residents satisfied with level of service for water

Council engages its customers and stakeholders via its Annual Plan and LTP processes and three yearly community surveys to establish satisfaction levels. Surveys and associated customer satisfaction levels are used as a reference point at the time levels of service are being considered. The National Research Bureau Survey results for 2016/17 are presented below:

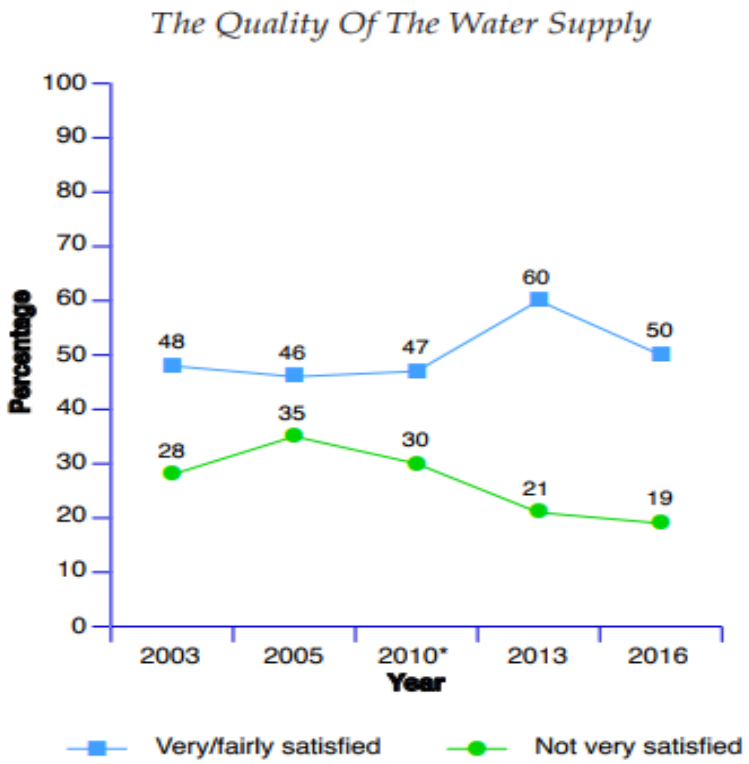
The satisfaction with the level of service of the water supply: Performance Target for 2016/17 is 77%. This was not achieved, however the number of unsatisfied respondents continued to decrease.

Table 8-4: 2016 Survey - Satisfaction with Quality of the Water Supply

Community	Very satisfied	Fairly satisfied	Very/Fairly satisfied	Not very satisfied	Don't know
Featherston	12%	41%	53%	24%	23%
Greytown	25%	31%	56%	12%	31%
Martinborough	14%	27%	41%	22%	38%
Overall	17%	33%	50%	19%	31%

The survey results for the 2003, 2005, 2010, 2013 and 2016 "Overall Customer Satisfaction" is presented below and indicates that the customer satisfaction level has decreased in the last survey, but the level of dissatisfaction also decreased. The percentage of customers who felt they were unable to comment increased from 22% in 2013 to 33% in 2016.

Figure 4-1: Overall Satisfaction with Quality of the Water Supply



Service Level 3 - There is adequate water for urban fire fighting

a) Fire hydrants tested annually that meet NZ Fire Service Code of Practice

This programme continued since 2014 on a five year rotation programme. All hydrants tested in 2017 complied.

8.7 LGA - RULES FOR NON-FINANCIAL PERFORMANCE MEASURES

8.7.1 Background

In 2010, the Local Government Act 2002 was amended to require the secretary for local government to make rules specifying non-financial performance measures for local authorities to use when reporting to their communities. The aim was to help the public to contribute to discussions on future levels of service for their communities and to participate more easily in their local authority's decision-making processes.

Performance measure rules were implemented on 30 July 2014. Local authorities are required to incorporate the performance measures in the development of their long-term plans.

The performance measures have been reported against in the 2015/16 and 2016/17 annual reports.

As provided by section 261B of the LGA (via the Department of Internal Affairs DIA): Non-Financial Performance Measures Rules, the performance measures are:

- Performance measure 1 - Safety Of Drinking Water
- Performance measure 2 - Customer Satisfaction
- Performance measure 3 - Demand Management
- Performance measure 4 - Fault Response Times
- Performance measure 5 - Maintenance of the Reticulation Network

These performance measures do not provide a defined level but rather show how the Council is performing, i.e. the number of complaints received. See table 8-4 above for details on the results for the 2014/15, 2015/16 and 2016/17 years.

9 ACTIVITY MANAGEMENT PRACTICES

This section outlines the information available on the assets, information systems used and process used to make decisions on how the assets will be managed. It also provides details on planning for monitoring the performance of the AMP.

9.1 MANAGEMENT OF ASSET DATA

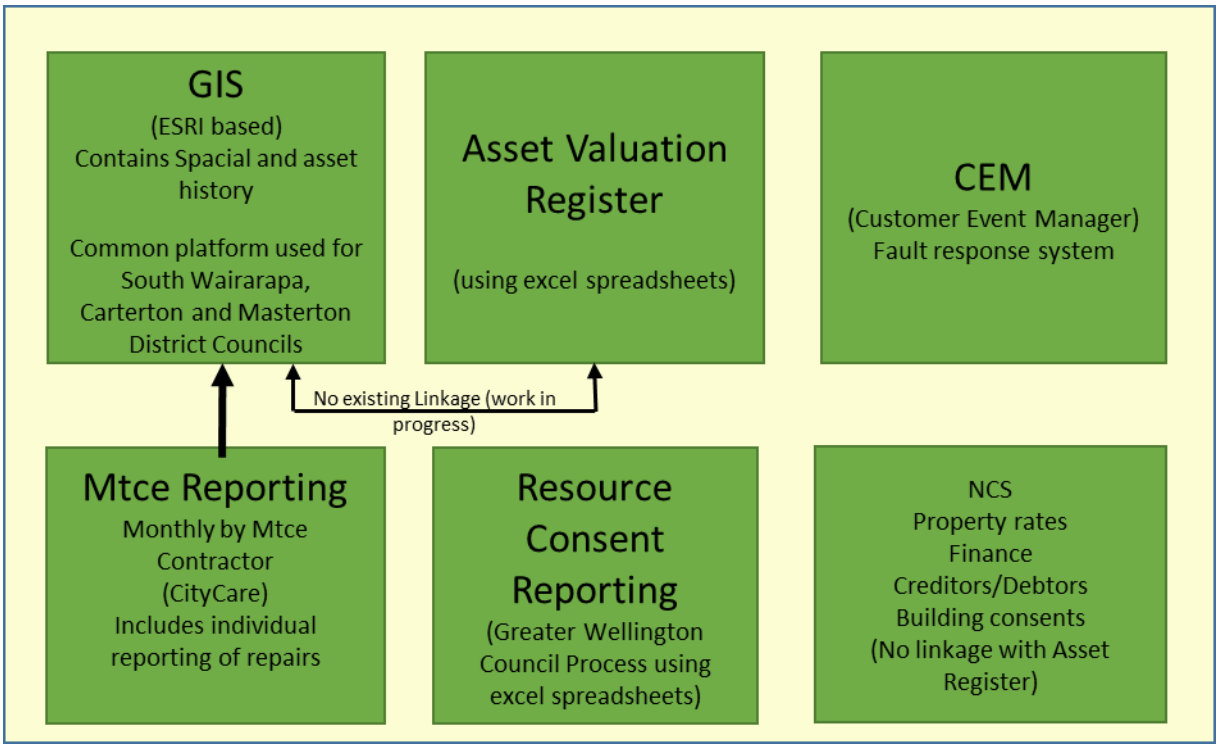
A formal asset management package using a new regional GIS platform in collaboration with Masterton and Carterton District Council's is now being used.

In addition, SWDC has installed new software, AssetFinda, to assist with the management of data regarding infrastructure assets. AssetFinda will provide increased integration and better information to enable the infrastructure team to manage the three waters assets more effectively.

9.2 BUSINESS PROCESSES

The business process used by Council and their relationship with other systems is presented below.

Figure 5: Council Business Processes



Council have a number of shared services with Carterton and Masterton District Councils, these include:

- Combined District Plan
- Solid Waste contract
- Road maintenance
- Bylaws common with Masterton District Council
- Regulatory and Health

9.3 GIS AS AN ASSET RECORD AT COUNCIL

9.3.1 General

The GIS is used broadly to record asset information and is utilised for locational purposes of operating assets. The GIS is updated when an asset has maintenance, operation has ceased, the asset is upgraded or the asset is replaced. The GIS is also updated when a new asset is created with this information being recorded in AssetFinda.

The GIS is a two dimensional visual of Council assets and is used internally and externally in the form of a viewer interface. The information behind this viewer is entered by the GIS nominee and selected information is displayed for users. The GIS is therefore a database for spatial information rather than a spreadsheet that has the capabilities to provide information on financial life expectancy for AMPs.

9.3.2 Asset Collation

All new asset information is provided to the GIS nominee in hard copy. This information comes from Council's contractors and internal staff. As new assets come in they are put into the GIS and assigned a new asset ID. The fields in the asset table are populated with the information that is provided from the works, except any financial information. This information includes the following attributes : type, size/diameter, length, installed by, material, address, condition, data modification date, date installed, verified position, (x and y coordinates), street name, town, and any additional information relative to the particular asset.

AssetFinda records all this information with the new ID, the asset information and financials from the works. The process is the same for renewals: information is updated in the GIS recorded within AssetFinda. Information on financial life expectancy for assets will be updated using council records and Valuation data.

During 2017, Council commissioned a report from Wellington Water using historic data and condition assessments gathered by Council contractors. This report has given us an improved understanding of the asset condition of existing assets which has been incorporated into AssetFinda.

NAMMS (National Asset Monitoring Steering Group) Condition Rating Model is used for asset condition rating, however this is being reviewed against the upcoming 'Evidence Based Investment Decision Making for 3 Water Pipe Network Programme (Pipe Renewals Guidelines Programme).' When maintenance works are completed, a new condition rating is provided and updated in the GIS and the asset valuation register which will update AssetFinda.

9.3.3 System and Process Improvements

Council has installed AssetFinda software which works with the current GIS system for consistency between the two systems. AssetFinda uses the condition information within the GIS that corresponds to an asset management system that can be updated as a living record (linkage to Asset Valuation Register).

Condition assessment needs to be implemented by all contractors who return information to Council for updating. This is only relative to maintenance of assets or renewals.

The contractors should be trained in identifying the appropriate condition for every asset in terms of its structural integrity.

9.4 CUSTOMER EVENT MANAGER

Customer Event Manager (CEM) is a package that comes with the CityCare contract that:

- Provides an electronic interface between Council's contract supervisors and the Contractors for the issuing of work instructions (pre-planned and emergency works).
- Contains asset and condition information associated with repair works on under and above ground services.
- Provides real time information regarding work progress and time spent.
- Historic information to incorporate into AssetFinda for the basis of condition assessments.

9.4.1 Customer Service Requests

Customer service requests are recorded into CEM and form the basis for a contractor instruction to rectify. These are recorded for future action within a current or future programme of work. Specific response times are defined for particular defects and these are tracked for statutory reporting (Annual Report) where relevant.

9.4.2 Fault Reporting

Normal working hour faults are recorded in CEM by Council and this activates a request to the contractor if required.

All after hours faults are taken by the contractor (CityCare) at their Christchurch office. They then log and activate the response.

9.5 RESOURCE CONSENT REPORTING

The reporting to Greater Wellington Regional Council on resource consents throughout the year is specific to the consent. The reporting format depends on whether it is data or exception report. In the case of consent non-compliance this is worked through in collaboration with GWRC.

The council operates a consent monitoring programme, shared with Masterton and Carterton, called CS-Vue which automatically sends out reminders for conditions and reports on compliance to manage the resource consents.

9.6 MAGIQ

There is some linkage between the GIS and Magiq (formerly known as NCS). Magiq is Council's main database. The GIS is not linked to all NCS modules. The property rates database, building and resource consents are linked to the GIS Viewer which is part of the GIS database.

9.7 CONTRACT PROCUREMENT AND MANAGEMENT

Council seeks to offer to its serviced ratepayers an affordable water service and seeks also to minimise interruption to that service. In the event of malfunction Council aims to provide an appropriate response to ensure minimal loss of service and minimal impact upon public and environmental health.

Reticulation maintenance and treatment plant management are undertaken by a single contract provider, CityCare under the supervision of the Infrastructure Services Group.

This contract has been in place since 2012 and was rolled over at the end of September 2017 for a further 2 years. Reticulation renewal and capital improvement works have been and continue to be subject to a contestable tender process.

Maintenance methodologies reflect current practice and link with the requirements of current material and work specifications within the terms of the current contract with CityCare.

9.8 MAINTENANCE DECISION MAKING PROCESSES

The majority of maintenance works are reactive based. Other maintenance works are cyclically based particularly where infrastructure is more complex e.g. UV lamp replacement and flow measurement device servicing and data acquisition systems used for measuring water flows.

9.9 SCADA SYSTEMS

9.9.1 Background

Council operates an Qtech Systems Telemetry or SCADA (Supervisory Control and Data Acquisition) system. The system is used to monitor & control critical aspects of treatment plants and pump stations.

Eight sites are presently monitored, including:

- 3 Water Treatment Plants (Greytown and Martinborough and Boar Bush).
- 3 Wastewater Treatment Plants (Greytown not included).
- 2 Wastewater Pump Stations (Featherston and Greytown).

The system is used for:

- Monitoring the operation of sites.
- Reporting trends and analysing historical data.
- Alarm monitoring (operators are informed of alarms via text messages to mobile phones).
- Some control functions.

Monitoring of water and wastewater schemes by the Council's SCADA system has grown to the point that without the current SCADA system, maintaining the existing levels of service would be difficult. SCADA has given the ability for Council to ascertain faults and instigate repairs without affecting the service to the consumer and has significantly increased efficiency and reliability of the utility schemes.

The SCADA system is considered a critical system in Council's operation and service delivery.

9.9.2 Update

A review has identified potential to stream-line systems throughout Wairarapa for SCADA systems. The council is in the process of changing to Abbey Systems telemetry, with currently two sites presently monitored being the Greytown Water Treatment Plant (which services both Featherston and Greytown) and Martinborough WWTP.

A phased change will gradually move monitoring over to the Abbey Systems telemetry as sites are upgraded or work completed on the systems with expected change-over to be completed in 2020.

9.9.3 Future Strategy for Council's SCADA

Council's strategy for the on-going use of SCADA is:

- Maintain SCADA system at a high level to ensure system reliability and on-going reporting ability.
- Increase availability of information to the Infrastructure Services staff in a format that will enable increased efficiencies in operation and management.
- Develop the reporting functions of the SCADA system.

9.10 GENERAL MANAGEMENT APPROACH

Water treatment infrastructure at Featherston, Greytown and Martinborough varies in complexity. All systems are relatively energy intensive, the change from the Waiohine Ultra - Filtration plant to ultraviolet (UV) in 2017 has reduced the energy usage and is now similar to the Martinborough plant. Other sites at Greytown and Martinborough are less complex in nature but retain differences in treatment according to source water type.

The reticulation within the three communities can be described in network terms as conventional in layout and capable of providing the appropriate level of urban fire protection.

As Council strives to achieve full protozoa compliance to meet NZ Drinking Water Standards across the three water supplies additional complexity in the form of UV disinfection infrastructure will be established and will require additional management and monitoring effort.

Water Safety Plans (WSP) have been developed for all the supplies. The Featherston-Greytown is operative but was updated with the recent upgrade and has an improvement schedule to enable supply of both towns. The operative Martinborough WSP is being implemented.

Pirinoa reticulation has recently been upgraded by the council to improve reliability and reduce the frequent leaks.

9.11 HYDRAULIC MODELS

Reliable calibrated hydraulic models provide a robust decision-making tool in which numerous operational scenarios can be readily evaluated to assist Council in determining optimal network improvements to meet future or changing needs.

The current population projection for the District suggests that growth and increasing demand is likely to occur within the term of the current LTP, particularly in Greytown where there will be demand for increased asset capacity. Future anticipated growth in Martinborough over the next 10 to 30 years could also require additional capacity.

There may be additional benefits to be gained from network modelling to aid Council's decision making and management of the water supplies, for example:

- Investigating whether further optimisation of pump operation is possible, with the additional aim of reducing leakage, pressure and flow fluctuations, in particular in Greytown.
- Identifying appropriate solutions to resolve restrictions around network extensions in sub-region areas of the reticulation, whilst ensuring levels of service and fire-fighting capacity are maintained.

9.12 ISO 55000 ASSET MANAGEMENT 2014

This international standard was released in January 2014 and makes the previous BSI PAS55 Asset Management (2008) standards redundant. The 2014 standard outlined the requirements for a management system for achieving a balance between cost, risk and performance in asset management to help guide asset related decision making and activities.

At the time of writing this AMP the Council has yet to review whether their current Council's asset management practices will be changed to seek conformance with ISO 55000. However, improvement areas have been identified in this AMP which will assist in the move towards aligning with the requirements of ISO 55000.

10 ASSET MANAGEMENT PLAN ASSUMPTIONS

10.1 OVERVIEW

Forecasting assumptions and uncertainties are essential in the operation of Council's assets to indicate the levels of risks associated with those assumptions. Where necessary additional strategies can be implemented to reduce the risk.

The LGA 2002 - Schedule 10, Part 1 (11) requires the Council to clearly define all the significant forecasting assumptions and risks underlying the financial estimates, assumptions concerning the useful life of significant assets and an estimate of the potential effects of the uncertainty on the financial estimates provided.

10.2 KEY ASSUMPTIONS

The key assumptions underlying this AMP are:

- Asset information will continue to be acquired to complete a full understanding of the community reticulation networks condition over the three networks.
- The external regulatory environment is expected to change as a result of the Havelock North drinking water enquiry.
- Council and its serviced community will require a similar level of service.
- Asset improvements aimed at producing more stable and compliant potable water supplies will be delivered to meet national standards subject to affordability.
- Council will continue to own all water assets.
- Population: The model is based on a number of assumptions including economic growth and levels of migration and therefore subject to some uncertainty.
- Council's planning and budgets, statements of levels of service and the Water AMP are all predicated on the basis that Council will achieve compliance with NZ Drinking Water Standards.
- Resource consents held by the Council will not be changed significantly.
- The Council will obtain the necessary resource consents for planned projects.
- Existing legislation will remain in place and that the structure and responsibilities of the Council will remain the same over the period covered by the LTP.
- Climate change is happening but that there will be no significant impact on the Council's activities within the period covered by the LTP.
- Council will take into account the predicted impacts of climate change as it plans, builds and renews its infrastructure.
- Renewals: A long term renewal programme across the range of reticulation and facility assets has been developed and is based on a number of assumptions, age, type and assumed condition based on the 2017 report from Wellington Water.

11 FINANCIAL PROJECTIONS

This section sets out financial statements, funding strategy, depreciation forecast and charges for the Water Service provided by Council.

11.1 FINANCIAL STATEMENTS AND PROJECTIONS

The preliminary operations and maintenance projections for the period 2018 to 2028 are presented in Appendix 2.

11.2 FUNDING STRATEGY

The general approach to the funding of the annual net cost of all of the public water supply system starts from the premise that those who (either directly or indirectly) benefit should pay.

Presently, the owners of all properties that are connected to a public water system pay a flat charge and pay an excess fee if water usage is above 350m³ per annum per property. Ratepayers whose properties are capable of being connected but which are not connected, pay a targeted water supply rate (50% of the full charge) in recognition of the benefit of being able to connect at a future time without capital contribution. It is necessary that this policy continue in future.

Capital expenditure will continue to be mainly funded by loans and the infrastructure contributions.

11.3 VALUATION JUNE 2018

Extracted from the 2018 (as at 30th June) Valuation of Infrastructure Assets prepared by Opus International Consultants Ltd.

The unit costs presented in the valuation were obtained from a variety of sources, including:

- Opus International Consultants costing database.
- Previous valuations.
- Rawlinsons Construction Pricing Manual (QV Costbuilder).
- Contractors, manufacturers and suppliers.

Due to the unavailability of recent local contract rates, historic costs were updated to 30 June 2018 values using the appropriate price indices. This has been evaluated using the information provided by Wellington Water for contract rates for the valuation in 2018.

11.3.1 Asset Schedules – Water Assets

The valuation inventory for these assets was originally developed for the 2000 valuation and subsequently updated regularly by Council using GIS information, local knowledge, recent contract information of upgrading works, engineering judgement, asset addition and disposal information, since the previous valuation carried out in 2015.

The overall accuracy of the data used in the 2018 valuation is presented below:

Table 11-1: Valuation Component Accuracy

Component	ORC (Optimum Replacement Cost)			ODRC (Optimum Depreciated Replacement Cost)		
	Quantity	Unit Cost	Value	Life	R/Life	Value
Water						
Pipe reticulation	B	B	B	B	B	B
Valves & hydrants	B	B	B	B	B	B
Treatment plant	A	B	B	B	B	B
Water reservoirs	B	B	B	B	B	B
Water race	B	B	B	B	B	B
Wastewater						
Pipe reticulation	B	B	B	B	C	B
Pumps & valves	B	B	B	B	B	B
Oxidation ponds	B	B	B	B	B	B

Water valuation as at 30th June 2018 for the water supply service is presented below:

Table 11-2: Water Valuation 2018

Component (across three towns)	ORC $000	ODRC $000	AD $000
Pipe Reticulation	$30,104	$14,601	$422
Valves and Hydrants and Meters	$6,815	$3,045	$131
Headworks	$6,478	$3,823	$139
Treatment Plants	$3,362	$963	$201
Reservoirs	$4,066	$1,588	$67
Water Race	$186	$49	$2
Total	**$51,010**	**$24,069**	**$963**

In detail:

- ORC means optimum replacement cost and is derived by multiplying asset quantity by appropriate unit rates which reflect overall current construction costs.
- ODRC means the above less an allowance for depreciation based on age and remaining life.
- AD is the annual depreciation.

The methodology used for this forecast is based on the NZ Local Authority Asset Management Manual and Valuation and Depreciation Guidelines. These are the draft valuation figures to be confirmed in the first quarter of the 2018/19 financial year when the final valuation is completed.

11.4 DEPRECIATION

Up until 30 June 2017 Council fully funded depreciation for the water services via rates. From the 2017/18 financial year, Council changed its policy to partially fund depreciation for water services.

11.5 CAPITAL EXPENDITURE PROGRAMME

The capital expenditure programme for period 2018/19 to 2027/28 is presented below.

Table 11-3: Capital Expenditure Programme for Period 2018/19 to 2027/28

CAPEX - Water Supply	CAPEX Type	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000
Cyclical renewals	Ren	333	342	350	358	366	374	381	389	397	405
Storage tank refurb (GTN/FTN)	Ren	307	0	0	0	0	0	0	0	0	0
4th Bore (GTN/FTN)	LOS	161	0	0	0	0	0	0	0	0	0
Reservoirs	LOS	0	126	0	0	0	0	0	0	0	0
MBA Manganese Removal	LOS	0	0	430	0	0	0	0	0	0	0
Flurodisation	LOS	0	0	0	176	0	0	0	0	0	0
Total Water Supply CAPEX:		**801**	**468**	**780**	**534**	**366**	**374**	**381**	**389**	**397**	**405**

Note: CAPEX types are Ren = Renewal, LOS = Level of Service improvement, Cap = Increased Capacity

12 IMPROVEMENTS TO ASSET MANAGEMENT PLANNING

This section details the planned improvements to AM systems that will increase the level of confidence in the AMP.

12.1 OVERVIEW

AM planning has been in place since 1996 with several AMPs having being produced. Existing consent non-compliance, run out and the management of these issues has dominated activity since at least 2008.

Whilst basic levels of service have been maintained during the period, asset renewal and enhancement has not been progressed as quickly as anticipated. A defendable long term reticulation renewal programme has been developed in conjunction with Wellington Water Limited (WWL).

12.2 IMPROVEMENT PLAN

12.2.1 Improvement Plan Purpose

The purpose of the improvement plan is to:

- Implement AM planning processes relevant to the timescale of the 2018-2028 LTP.
- Identify and prioritise ways to cost-effectively improve the quality and hence outcomes of the AMP.
- As above in conjunction with the adopted milestones, identify indicative time-scales, priorities, and human and financial resources required to achieve AM planning objectives.

12.2.2 2015 Improvement Plan Progress

Council is committed to on-going improvement in the quality of its AM practices until appropriate practice levels are achieved. This is reflected in the implementation of the 2015 improvement program and the achievements in that period.

The following table outlines the improvement items identified in the previous Council Water AMP 2015. Improvement Items that have been partially completed, or not completed have been carried forward into the new programme or reason given for non-progression.

Table 12-1: 2015 Improvement Plan Progress to Date

Year	Description	Progress to Date
2017/2018	Continue network condition data acquisition. Develop condition compliance protocol	Piped network observation and assessment WWL 2017 report
2018-2020	Review consent renewal acquisition processes and implement consent requirements Review and improve reliability at Waiohine Plant to supply Featherston and Greytown – 4th bore and increased storage	Consent variation for the groundwater source within existing consent. Renewal of consent required in 2019
2018	Prepare full revision of the AMP for the 2018-2028 LTP	It was considered that a update of the AMP was more appropriate
2018	Implement AssetFinda	Information sent to company for install on 1st March

12.2.3 2018 Improvement Plan

The Council's Improvement Plan is focused on the following key areas:

- Information Management (AM practice and processes).
- Scheme Knowledge.
- Renewals.
- Risk assessments.

Following the development of the current AMP, further improvements have been identified which can be achieved through the projects presented below.

Table 12-2: Improvement Programme

No.	Service	AM Area	Improvement Item	Description	Year(s)	Cost	Priority
1	W WW	Risk	Criticality of assets assessment	A critical assets study undertaken to identify critical assets and identify and adopt risk mitigation strategies for the operation, maintenance and renewal of all critical assets	2018	$30k with Wellington Water	M
2	W WW	AM Practices	AM policy	Consider adopting an AM Policy and confirming the level of AM required and actions required	2017	-	M
3		Asset Data	AM system	System to monitor condition assessment and run valuations. To improve the current GIS system and register there needs to be a more seamless process that allows consistency between the GIS and the asset register (AssetFinda)	2018	$15k implement $12k annual	H
4		AM Practices	Develop long term Improvement Programme	Develop long term improvement programme to achieve the Council's appropriate practice policy in the long term	2019	-	M
5	W	Lifecycle	Optimisation of water meters replacement	Studies in New Zealand have shown that it is important to replace water meters at the correct time. Renewing too late allows reading inaccuracies (in favour of the user) but replacing too early does not provide the most value out of the asset	2022 replacement strategy to be confirmed	$400k approx	M
6	W WW	Demand	Recording actual development (see 6.1.4)	The AMP and its managers will record actual development on an annual basis and its impacts on the activity asset base and demand management practices	On- going. Measure against calculated infrastructure capacity	Internal	M
7	W WW	AM Practices	Condition assessment implemented by all contractors	Condition assessment needs to be implemented by all contractors who return information to Council for updating. This is only relative to maintenance of assets or renewals	On-going Improvement	Internal and external	H

No.	Service	AM Area	Improvement Item	Description	Year(s)	Cost	Priority
8	W	AM Practices	Training for contractors in identifying the appropriate condition - structural integrity	The contractors should be trained in identifying the appropriate condition for every asset in terms of its structural integrity	On-going Improvement	Internal and external	H
9	W WW	AM Practices	Implement a collaborative system that uses the condition information within a GIS	It is important to locate a collaborative system that uses the condition information within a GIS that corresponds to an asset management system that can be updated as a living record (linkage to Asset Valuation Register) AssetFinda	2018	Costing above	H
10	W	Water Safety Plans	Reviews of Water Safety Plans	As detailed in the individual Water Safety Plans	As detailed in the individual Water Safety Plans		
11	W WW	Lifecycle	Extend and update asset condition data including testing CLS	Extend and update asset condition data (reticulation network), This to include sampling and testing AC pipes to understand remaining lives. Representative sampling of the 5.8 km long concrete lined steel pipe serving the Boar Bush (including joints) to be taken	CLS completed 2017 AC Ongoing	Internal and external	M
12	W WW	AM Practices	Integrate valuation and condition information	Integrate valuation and condition information into the new GIS database	2018 On going	Internal and external	H
13	W WW	AM Practices	Annually review rehabilitation and renewal objectives	From the GIS data base annually review rehabilitation and renewal objectives based on re-assessed remaining life and adjust renewal programmes as needed	Ongoing	Internal	H
14	W WW	Risk	Council risk policy to be developed	To date the Council does not have a district wide risk policy.	2019	Internal	H

Note: W = Water, WW = Wastewater

12.3 ASSET MANAGEMENT PLAN REVIEW OVER TIME

To ensure the AMP remains useful and relevant the following on-going process of AM plan monitoring and review activity will be undertaken:

- Review and formally adopt levels of service.
- Revise AMP annually to incorporate and document changes to works programmes, any outcome of service level reviews and new knowledge resulting from the AM improvement programme.
- Quality assurance audits of AM information to ensure the integrity and cost effectiveness of data collection.

13 MANAGING THE ASSETS – LIFECYCLE

This section details the broad strategies and specific work programmes required to achieve the goals and standards outlined in previous sections of this AMP. It presents the lifecycle management plan for the water supply assets.

13.1 RENEWALS/CAPITAL IMPROVEMENTS

These works are generally procured by way of public tender in accordance with Council's procurement policy except where specialist services are required or timelines require a more expeditious approach.

13.2 HISTORY

13.2.1 Water Source – Greytown and Featherston

The Featherston water supply was first established in the 1930's and at this time, sourced water from two sources: Taits Creek and Boar Bush. The quality of these sources is highly variable and in the early 2000's a pipeline was installed between the original supply and the Waiohine Valley ultrafiltration plant which supplied Greytown at that time. The Waiohine Valley plant was installed in 1999 and abstracted water from the Waiohine River before ultrafiltration treatment. The new pipeline allowed water from the ultrafiltration plant to be used at Featherston when the water quality in Taits Creek and Boar Bush was not suitable.

In 2005, a new shallow bore source was established for the Greytown supply and the Waiohine supply became the primary water source for the Featherston township. The Taits Creek and Boars Bush intakes are still in place but they are now retained as emergency sources only.

In 2011 Council received a Ministry of Health (MoH) subsidy funding to establish a new ground water source for the Featherston supply. A bore field has been established and proven (three bores in place). The subsidy included a 2 stage project:

- Stage 1: Establishment of borefield and connect the field to the inlet line to the Waiohine plant. This was completed in June 2016.
- Stage 2: Extend the treatment plant building and install UV disinfection of the borefield. This was completed and operational in May 2017.

13.2.2 Water Quality – Greytown and Featherston

Water is now abstracted from three bores sited next to the Waiohine River. The bores are between 5-20m into the layer that appears to have some connection to the river. Information about the bores is shown below:

Table 13-1: Woodside Bores

Bore	Bore*	Screen depths
Woodside Bore 1	12 m depth, 350mm pipe	5.28 - 11.28 (3.8mm slot)
Woodside Bore 2	12.2 m depth, 350mm pipe	5.68 - 9.68 (10mm slot)
Woodside Bore 3	13.3 m depth, 350mm pipe	4.5 - 12.5 (3.5mm slot)
Greytown Bore (Memorial Park)	11 m depth, 350mm pipe	8.3 - 11 (3.5mm slot)

Note: All depths are below casing level

13.2.3 Existing Treatment – Greytown and Featherston

The bore water is pumped up to the Featherston/Greytown WTP for treatment. Water passes through the upgraded ultra-violet plant for pH correction with soda ash before being dosed with chlorine and stored on site in a 750m³ treated water storage tank. The previous ultra-filtration was relatively old technology and was very operator intensive, requiring twice- daily chemical cleaning which used up to 20% of the treated water, hence the upgrade to UV is a huge improvement.

Water flows under gravity through a 3.9km 300mm PVC pipe which supplies water from the WTP to the existing pipeline crossing the Tauherenikau River. The pipe joins the 300mm gravity trunk main from Taits Creek which supplies water to a chlorine boosting station located at Boar Bush Reservoirs. A contact tank (250m³) and storage reservoir (450m³) are also located at this site. From the Boar Bush reservoir, the water reticulates under gravity to the Featherston community.

The old supply from the Waiohine diversion channel has been mothballed since the upgrade in May 2017 due to the improved water quality and reliability from the bores. Long term options for the UF equipment will be evaluated in 2018.

Water from the WTP also feeds the Greytown reservoir which holds 450,000 litres before it flows via the 7km gravity trunk main to Greytown. The majority of this trunk main has been replaced with PVC with the remaining 2.7km to be replaced in 2018.

The new UV treatment plant is fully compliant with the DWSNZ 2008 for protozoa and bacterialogical removal.

13.2.4 Alternative Source, Reticulation and Additional Storage for Martinborough

There is an alternative source of water for Greytown at the Memorial Park Bore. It is required when the principal source of water from the Waiohine River has operational difficulties at the UV plant at Woodside.

The groundwater is abstracted from a single bore along Kuratawhiti Street outside the Memorial Baths. Water is pumped directly into the existing mains via a 300mm main over 450 metres to join the network at West Street.

13.2.5 Martinborough Source Water Requires Treatment

The existing water supply to Martinborough is sourced from groundwater on Herricks Farm adjacent to the Ruamahunga River near SH53. There was historically no treatment of this water mainly due to precipitants forming in the reticulation pipes following chlorination.

A MOH capital assistance programme of work (CAP) for upgrading of the supply to current drinking water standards was approved in 2008. This programme of work which included the provision of UV treatment to achieve protozoa compliance has been completed. The UV controllers are due to be upgraded in 2018 which will supply bacterialogical compliance by increasing the dose rate for the UV units.

Table 13-2: Ruamahanga Bores

Bore	Bore*	Screen depths
Ruamahanga Bore 1	12.5 m depth, 350mm pipe	9.5 - 11.5 (5mm slot)
Ruamahanga Bore 2 (emergency)	14 m depth, 350mm pipe	8.5 - 11 (5mm slot)
Ruamahanga Bore 3	13.3 m depth, 350mm pipe	8 - 12 (3.8mm slot)
Ruamahanga Bore 4	9 m depth, 350mm pipe	7 - 9 (2.5mm slot)

Note: All depths are below casing level

In developing the groundwater source it was recommended that a second bore be constructed if future yields exceed 50 *l/s*. A second bore was installed in 1998/99 to provide additional water and security of supply. Also an additional water main from Ruamahanga Bores to New York Street was completed. A third bore was commissioned in June 2003 as the designated second bore has been provided to the landowner and can only be used for emergency purposes. A 4th bore was installed and completed in 2010.

Water is pumped directly to three town reservoirs each having a capacity of 850m³ to 920m³. These supply water by gravity flow via a 1.8km length of main. Resource consent conditions allow total abstraction at 90 l/sec (combined abstraction from the three bores). As part of the agreement with the land owner, Council provides him water at 20 l/sec.

13.2.6 Alternative Source, Reticulation and Additional Storage for Martinborough

A channel intake is located adjacent to the Huangarua River approximately 200m north of Hinakura Road. The diverted water then flows approximately 50m into a well and is then pumped 1km to the reservoirs. This is not a preferred source of water for Martinborough and is used for emergency water supply only.

13.2.7 Pirinoa Scheme

Pirinoa is a small community scheme serving the equivalent of 10 properties (about 25 people), including the school, store and community hall.

The pipe network is owned by the community and the treatment plant was installed and is operated by council. The water is from a shallow bore with filtration and ozone disinfection and pumped about 900m to network. The network is made from low density alkythene, which was replaced in 2017 to reduce water losses and operating costs. The replacement pipe was medium density polyethylene, with individual metered water lateral to bring it in line with the district standard.

13.3 RETICULATION PLANS

Detailed information for the reticulation network is contained on the existing GIS system. Indicative layout plans for each community are detailed in Appendix 9**.**

The LTP summarises the Council's strategic and management long-term approach for the provision and maintenance of potable water 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.

Territorial authorities have numerous responsibilities relating to the supply of water. One such responsibility is a duty under the Health Act 1956 to improve, promote, and protect public health within their districts. This implies that in the case of the provision of potable water, councils have an 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.

In the South Wairarapa district, there are presently two public water supply systems – Greytown (for Greytown and Featherston) and Martinborough, with 3,794 properties with 3,939 connections to the system, with another 259 properties that can be connected.

13.4 ASSET CONDITION

13.4.1 Condition data is estimated with some verification

There is some documented data on the condition of the assets for the reticulation component of the water supply system(s), based on photos from new connections and the repair data. Best estimates have been made in consultation with key staff using a broad brush approach and from site inspections. Addressing existing inadequacies, if any, is an on-going process.

The main source of information for future improvements are the maintenance records and pipe type and age as described in the asset schedules along with the Wellington Water report.. Pipeline samples are kept for examination following repairs. Generally recent renewal work has focused upon replacing the older AC and reinforced concrete pipelines with PVC in critical distribution locations.

13.4.2 Condition assessed as in IIMM Manual

An estimate of the condition of each asset had been made in terms of the asset grading system set out in the International Infrastructure Management Manual Australia/New Zealand Edition Version 3.0 – 2006 (IIMM Manual).

This system grades assets using six broad categories of condition.

0 - Non-existent

1 - Very Good

2 - Good

3 - Fair

4 - Poor

5 - Very Poor

The generalised condition grading is presented below (for individual asset grading refer to Council valuation register).

Table 13-3: Miscellaneous Asset Condition – Water supply assets

Description	Condition Grading
Featherston Rural Longwood Water Race (40km)	3
Greytown Rural Moroa Water Race (225km)	3
Featherston Urban Taits Creek Intake	2

Description	Condition Grading
Boar Bush Dam	2
455 m^3 concrete tank	3
81 m^3 concrete tank	4
Chlorination equipment - complete	3
Building	1
Control System - alarms, telemetry, housing	2
Sampling manhole, magmeter and flow recorder	1
Valves (headworks)	2
Valves (reticulation)	1 - 3
Fire hydrants	1 - 2
Surface boxes (valves, hydrants)	3
Water connections	1 - 2
Greytown Urban	
Bores (3)	1
Pumps (3)	1
Controller room	1
Pump VSDs and equipment	1
Electric control systems	1
Control system - alarms, telemetry	1
UV Plant (Mar 17)	1
Building	1
Magmeter, datalogger & turbidimeter, UVT, pH probe	1
Miscellaneous Pipework (pumphouse, pumphouse to reservoir)	1
Valves (reservoir site)	1 - 3
Chlorination and Monitoring equipment - complete	1 - 3
Residual chlorine monitor	1
Building (reservoir site)	2 (redundant)
700 m^3 concrete tank	1
750 m^3 timber tank	3
Sampling manhole, magmeter and flow recorder	1
Valves (reticulation)	1
Fire hydrants	1 - 2
Surface boxes (valves, hydrants)	1 - 2
Water Connections	3
Filtration Plant – mothballed – TBC final solution	1 - 2
Well, 1.2 dia x 4m deep	2 (mothballed)
Pumps (2)	2
Valves (pumphouse)	2
Switchboard (pumphouse)	2
Building (Pumphouse)	1
No. 1 Pond (plastic lined)	1
No. 2 Pond (plastic/concrete)	2
Miscellaneous Pipework (reservoir site)	3
Control system - alarms, telemetry, landline (pumphouse & reservoir)	3
Feed Pumps (2) and building	3
Martinborough Urban	
A - Ruamahanga	
Bore #1, 300 dia x 12m	3
Bore #2, 300 dia x 12m	3

Description	Condition Grading
Bore #3, 350 dia x 14m	1
Bore# 4, 350 dia x 14m	1
Pump No. 1	5 (Being replaced)
Pump No. 2	
Pump No. 3	3
Pump No. 4	1 - 2
Transformer & electric control systems	1
Chlorinating equipment	2
Control system - alarms, telemetry	1
UV Plant (Dec 11)	
Building	1
Magmeter, datalogger & turbidimeter.	1
	2
Huangarua	
Wells	
Infiltration gallery (Not connected to river)	3
Pump	3
Control system and alarms, telemetry	3
Building	2
	2
Reservoir Site	
850 m^3 concrete tank	
850 m^3 concrete tank	3
920 m^3 timber tank	3
920 m^3 timber tank	2
Chlorinating equipment	1
Control system - alarms, telemetry	1
Building	2
Valves	1 – 2
Magflometer and datalogger	1 – 2
	1 – 2
E - Council Office	
Datran computer and telemetry system	3
Abbey computer and SCADA system	1

13.5 SYSTEM CAPABILITY

Table 13-4: Daily Pumping (based on typical usage patterns)

Pump Sites	Average Daily Operation (Hours)
Waiohine River – Featherston & Greytown	5 – 7 (seasonal)
Greytown Bore – Greytown	15- 20 (all year round)
Ruamahanga Well – Martinborough	6 - 12 (seasonal)
Huangarua - Martinborough	emergency backup

Table 13-5: Reservoir Storage Capacity

Reservoir Name	Storage Volume (cubic metres)	Available Supply at Peak Usage
Featherston Urban		
Boar Bush Dam(emergency only) Holding tank Mixing tank	82,000 gross 455 81	3 hours to 20 days, depending upon source
Featherston/ Greytown Urban		
Timber tank Greytown Concrete tank	750 700	0.5 days combined for Featherston & Greytown and at 3000m³/d
Martinborough Urban		
No. 1 Tank No. 2 Tank Timber Tank Timber Tank	850 850 920 920	2 days based on full development and fire requirements

Note: Assumes no pumping/replenishment and based on storage only

13.6 SYSTEM LOADING

13.6.1 Reticulation Pipelines – Featherston Urban

There was originally only one supply main of 225mm diameter from the holding tanks to the Featherston network. In 2011 an additional 200mm supply line was laid in Underhill Road extending from the 300mm diameter principal supply main providing an alternative should a failure occur between Watt Street and the Boar Bush storage tanks.

The reticulation layout is square rather than elongated with most streets being serviced by 100mm mains.

The central part of Featherston is serviced by a ring main of 150mm and 200mm diameter predominately Concrete-Lined Steel Pipe.

Pressure and flow distribution is relatively even with few areas suffering from fluctuations as a result of undersized pipes.

There is little industrial activity in Featherston and only limited commercial activity. Domestic activity generates the greatest demand for water.

Based on flow records for the 12 month period July 2016 to June 2017 the average daily demand (ADD) is 1097m³/day.

The daily average flow is 12.2 l/s with an average daily peak flow of 27 l/s (2.5 x ADD).

Reticulation within Featherston is considered to be satisfactory.

13.6.2 Reticulation Pipelines – Greytown Urban

There is a single 300mm Asbestos-Cement trunk main which supplies the reticulation system in Greytown that has been substantially replaced, with the remaining 2.7km to be replaced in 2018. This will be the main source of water supply to Greytown for fully compliant water.

The reticulation layout is elongated with a number of areas not properly serviced by a ring main system.

The main feeder line is a 150mm unplasticized polyvinyl chloride (uPVC) pipe laid through the centre of town.

Some areas of Greytown (mainly within the urban fringe) may suffer from pressure and flow fluctuations during peak flow times.

Hydrant testing shows that the pressure distribution is in the range 500 - 600 kPa (kilopascal) while the flow varies in the range 16 - 41 l/s.

There is little industrial activity in Greytown and only limited commercial activity. Domestic activity generates the greatest demand for water.

Based on flow records for the 12 month period July 2016 to June 2017 the average daily demand (ADD) is 1353m³/day.

The daily average flow is 16.9 l/s with an average daily peak flow of 32 l/s (2 x ADD).

13.6.3 Reticulation Pipelines - Martinborough Urban

Martinborough is supplied with water under pressure from three submersible pumps 2.5km from the town or by gravity from the reservoirs. A fourth submersible pump is an emergency source and mainly used by the landowner as part of a lease agreement.

Water that is surplus to demand is pumped to four reservoirs which then supplies the town by gravity.

There is a 150mm Asbestos-Cement ring main laid around the main residential development of Martinborough.

The Martinborough water supply serves the urban area of Martinborough and immediately surrounding rural (urban fringe) activities.

There is little industrial activity in Martinborough. However in addition to domestic usage the other significant seasonal use of water in Martinborough is for irrigation of vineyards and horticultural areas.

It is estimated from monthly water usage trends that 33% of peak flow rate is used for non-domestic, mainly irrigation/frost protection purposes.

Based on flow records for the 12 month period July 2016 to June 2017 the average daily demand (ADD) is 786m³/day.

The daily average flow is 9.1 l/s with an average daily peak flow of 32 l/s (2.5 x ADD).

13.6.4 Pumping Stations

Pumping Performance

The Greytown WTP is supplied by three bore pumps operating together, each capable of pumping up to 20 l/s to the Woodside timber tank via the UV WTP. This has been fully operational since May 2017. .

The bore constructed at Memorial Park in Greytown in 2005 is the primary water source for the community.

The submersible pumps at the Ruamahanga Well, Martinborough are of similar capacity and are able to be operated either separately or in combination. A second bore was commissioned in 1999 for the use of the landowner as part of the lease agreement (and Council under emergency provisions) while a third bore was commissioned June 2003. The fourth bore was installed and commissioned at Martinborough in December 2010.

The emergency pump at Huangarua is rarely operated and only under emergency situations and is sufficient for use over limited periods only. Huangarua is not a preferred source of water.

13.6.5 Tanks and Reservoirs

Featherston Urban

The UV Plant at Greytown is the usual source for Featherston with some 900m³ available in reserve in addition to the holding tanks at Boar Bush.

Boar Bush Gully Dam has a capacity of 20 to 30 days storage when full. Boar Bush Dam is supplied from catchment runoff and is therefore sensitive to prolonged dry spells.

The Taits Creek intake which is a run off river take with no storage can provide a reserve supply in the event of non-availability of the Boar Bush source.

Both sources are emergency supplies under resource consents issued by GWRC and are only used when the UF plant at Greytown is unable to provide a supply.

Featherston and Greytown

Control levels on the pumps mean that the level in the tank will fluctuate to meet the maximum daily demand. This control system may be easily changed to suit circumstances, such as weather conditions and weekly demand.

The river levels adjacent to the borefield seem to have an effect on individual bores for turbidity. This may affect the long-term extraction rates of the bores.

Martinborough Urban

The storage capacity was increased in 2009 by the construction of a 920m^3 timber tank. This was to assist with extended periods of non-supply due to the Ruamahanga Well(s) not being available through failure or power outage.

13.7 PROJECTED LOADING

13.7.1 Reticulation Pipelines

The reticulation system in the urban areas of Featherston, Greytown and Martinborough may have limited capacity for future development. The reticulation system has been investigated to help identify problem areas and sub-regions where limited extension is possible.

The following have been identified as areas where if development occurred it may be restricted until extension works are provided:

- Main Street, Featherston. Rider main may be required. This is to be further investigated.
- Kuratawhiti/Mole/Udy Street region of Greytown. Wood/Mole Street ring main will partially solve the problem. As indicated a 200mm ring main (Humphries-Mole-Kuratawhiti Street) is required to cater for future demand.

- Puruatanga/Todds Road area of Martinborough. Extension and upgrading of reticulation required

Note: The existing reticulation networks in the three towns are generally able to meet the fire requirements within the urban boundaries.

13.7.2 Pumping Stations

Featherston and Greytown

The Waiohine pump-house was upgraded in 1999 to cope with the demands of both Featherston and Greytown. Until 2005 there was reliance on a single source which required increased maintenance on pumps.

A supplementary bore supply on the river berm near the pump-house proved unsatisfactory. Construction of a supplementary bore in Memorial Park Kuratawhiti Street was completed 2005/2006 and provides substantial high quality water directly into the reticulation system.

Martinborough

In 1991 the Wellington Regional Council prepared a report which summarised characteristics of the Ruamahanga Wells. The report suggested that the existing bore should support the required yield however due to the stratified nature of the aquifer and possible high screen entrance velocities at higher pumping rates, that a second bore be constructed if in the future yields in excess of 50 l/s are required. Two additional bores have been commissioned since then meaning that a conservative extraction regime has now been implement, increasing reliability of supply

13.7.3 Reservoirs

In general the reservoir capacity is a limiting factor in terms of development of a public water supply system. However, there are options for alleviating future limitations including the following:

- Additional reservoir capacity for Featherston.
- Additional bore at Waiohine for greater capacity in times of outages or high demand.
- Additional reservoir capacity for Greytown.
- Reduction on use of water for irrigation in Martinborough.

13.8 RENEWAL/REPLACEMENT PLAN

Renewal expenditure is major work which 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.

13.8.1 Renewal Plan Identification

Renewal and rehabilitation programmes are aimed at reinstating the level of service originally offered by the pipeline when first constructed using currently used pipeline materials, rehabilitation practices, techniques and to current technical specifications.

Deferral of renewal/ rehabilitation work for Council's underground water assets will:

- Postpone inevitable work and likely result in higher costs to future ratepayers.
- Result in a reduction of the levels of service over time and the likelihood of unscheduled unnecessary supply interruption.

- This is not considered to be an appropriate approach for this Council and its serviced communities.

13.9 RENEWAL PROGRAMME

13.9.1 Background and Assumptions

The renewal programme across the range of reticulation and facility assets is being developed and is generally based on age, type and condition based on information obtained from work carried out on the pipelines and information in the Wellington Water report. Historic data will also be incorporated into AssetFinda to further improve confidence in the network.

The general assumptions for developing the renewals plan shown within this AMP are presented below.

Table 13-6: General Assumptions for Renewals

ID	Worksheet	Change Description
1	Resource Consents	Renewal cost assumed to occur 2 years prior to actual consent expiry
2	Resource Consents	Consents renewal period = 30 years
3	Resource Consents	No allowance for overheads / internal Council costs (assumed allowed for elsewhere)
4	Unit Cost	0% factor up for 2017 to 2018 rates for pipe assets, 3.5% factor up for buildings
5	All 'Pipe Renewals'	Assumed that pipe reticulation renewals will not require rider mains
6	All 'Pipe Renewals'	Hydrant renewals only for +100mm diameter pipe
7	All 'Pipe Renewals'	2018 valuation does not include services line pipes, assumed existing service lines are re-connected during pipe renewal (i.e. no allowance for renewal of service lines)
8	All 'Pipe Renewals'	2 valves renewed per 100m of pipe renewed
9	All 'Pipe Renewals'	1 manifold renewed per 20m of pipe renewed
10	All 'Pipe Renewals'	1 hydrant per 135 m of pipe renewed (for 100mm dia. and above only)
11	All 'Pipe Renewals'	10 year rolling average applied on renewals

13.9.2 Reticulation Renewals

The pipe renewals programme shown within this AMP has used standard pipe lives of:

- Concrete Lined Steel (CLS) - 100 years.
- Alkathene (ALK) - 80 years.
- Reinforced Concrete (RC) - 60 years.
- PolyVinyl Choride (PVC) Pipe - 80 years.
- Polyethylene (PE) – 80 years.

Asbestos Cement (AC) pipe life has been adjusted for the three communities that contain AC pipe using the Opus Pipe Condition Assessment database. This database provides an indication of the expected life of AC/(fibrelite)FIB pipe under various pressures. The outcome of the AC assessment for the three communities is presented below.

The AC pipe life assessment required further work to provide greater clarity of the expected useful lives of AC pipes within the three communities. This provides increased confidence in the long term funding requirement for reticulation.

The 5.8 km long concrete lined steel pipe serving the Boar Bush reservoir is a critical asset. Although the pipe is only 40% through its expected life, the condition of the pipe will be very dependent on how the pipe was installed. A recent repair on the pipe (due to a washout) showed the pipe was in good condition, with very little deterioration of the lining. It is good practice to carry out testing of this pipe type (including the joints) to provide greater confidence of its expected life.

Table 13-7: Expected Life of AC/FIB Pipe

Community	Pipe Diameter (mm)	Pressure (m)	Expected Life (Years)
Martinborough	100	45 to 65	55
	150		57
	250		65
Greytown	100	40	61
	300		80
Featherston	100	40 to 60	57
	150		57
	200		59

Note: From Opus Pipe Condition Assessment database

AC pressure pipe laid in the 1950's and 60's typically represents the asset most vulnerable due to deterioration and loss of service. Concrete lined steel pipe is also very vulnerable if poor installation practices occurred.

The renewal programme for water main reticulation and facilities has been identified over the period 2018 to 2048 and more investigative work continues to increase the level of confidence in the long term renewals plan. Council's preliminary funding programme for reticulation renewal is $333,000 per year for the period 2018/19 to 2027/28.

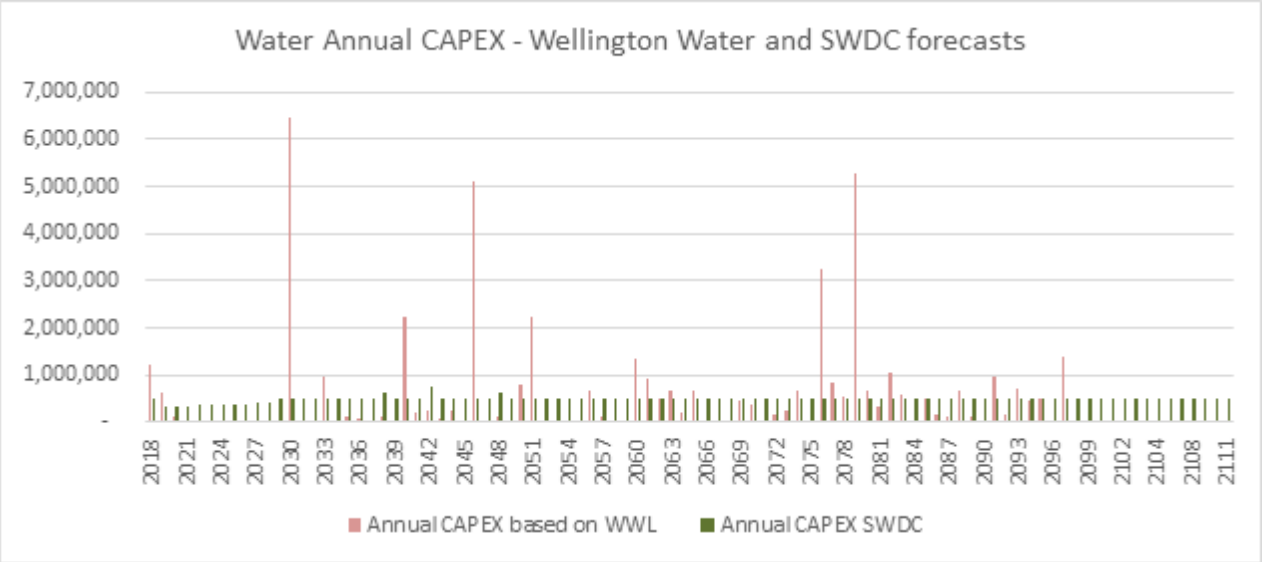
Cyclical componentry renewal is presently undertaken with replacement of UV lamps annually.

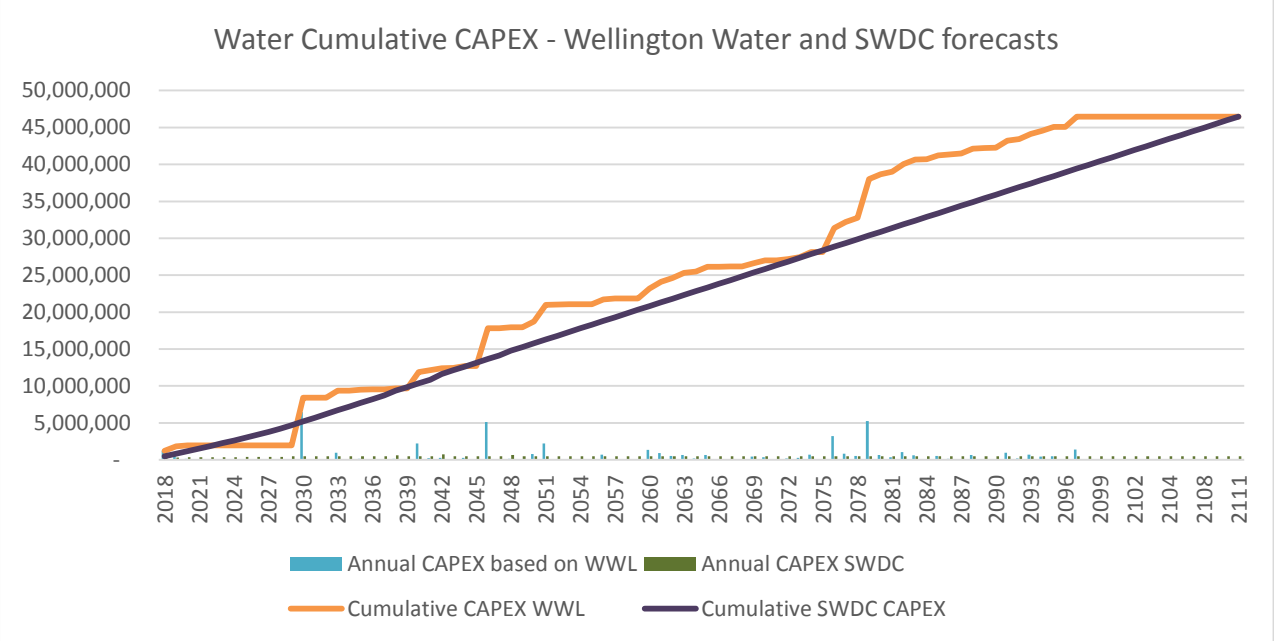
Elsewhere, electrical componentry is renewed as required either driven by repetitive fault and failure or pre warned end of useful life information.

Council's water supply capital expenditure forecast is presented below. This graph is based on the projected renewals from the Wellington Water (WWL) report.

The financial forecasts for years 11 to 30 are based on the Wellington Water predicted renewals programme spread evenly over the twenty year period so as not to create spikes in expenditure or rates.

The first graph compares the annual spend proposed by WWL to the SWDC approach of spreading the cost evenly over the period through to 2111. The second graph compares the cumulative spend based on WWL projections versus the SWDC cumulative spend over the period from 2018 to 2111.





13.9.3 Facilities (Treatment and Pumping)

The UV lamps are replaced every 12 to 18months. There are also onsite spares retained for critical breakages.

Elsewhere, electrical componentry which can have a relatively short life span is renewed as required either driven by repetitive fault and failure or pre -warned end of useful life information.

The asset schedules and AssetFinda provide assumptive detail on useful life remaining for various components within the treatment and pumping portion of the water supply infrastructure.

13.9.4 Council's Water Renewals Summary

Council's Water Renewals Summary is presented below. The graph shows the timing of expenditure for renewals over the AMP period and indicates what materials are being renewed at each stage.

13.10 CREATION PLAN

Asset improvements proposed over the term of the LTP are driven largely by changing social expectations and regulatory requirements and also expected population growth in the region, particularly in Greytown and Martinborough. These improvements relate to the water treatment plants for Featherston and Greytown water supply.

13.11 DISPOSAL PLAN

The mothballed UF plant will need consideration. It can be retained or reused elsewhere, or dismantled and sold for parts. There is discussion of a training plant for water operators in the Wellington region, so potentially this may be a suitable use.

14 APPENDICES

14.1 APPENDIX 1- REFERENCES

The following table details reports and other significant reference areas associated with the water and wastewater utilities.

Table 14-1: Reports and Other Significant Reference Areas

No.	Title	Issue Date	Sector	Author/Consultant
1	Featherston Drinking Water Supply MOH Drinking Water subsidy Application	February 2014	Water	Opus
2	WSP – Featherston/Greytown	June 2015 Reissued Feb 2017	Water	Opus
3	WSP - Greytown	June 2015	Water	Opus
4	WSP - Martinborough	June 2015	Water	Opus
5	Featherston Groundwater Infiltration Investigation	Dec 2013	Wastewater	Association of Water Technologies
6	Wellington Water Report	Sep 2017	Water and Wastewater	WWL

14.2 APPENDIX 2 - PRELIMINARY OPERATIONS AND MAINTENANCE EXPENDITURE 2018 - 2028

The budgeted operations and maintenance costs for operating the three water supplies is presented below.

Table 14-2: Preliminary Operations and Maintenance Costs

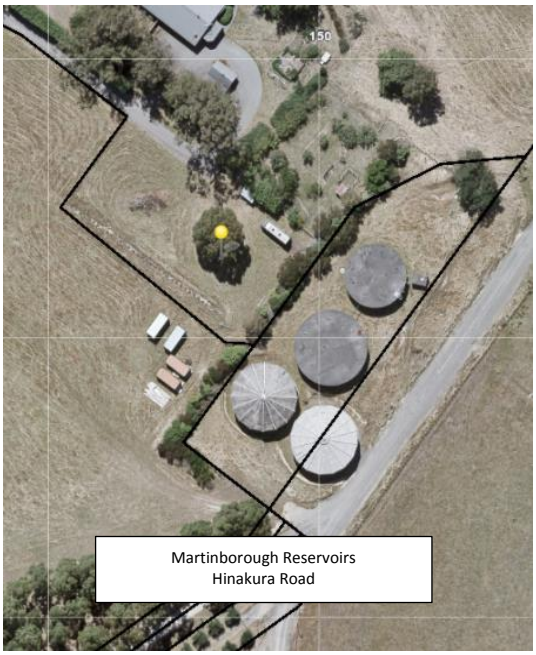
Water Supply	30/06/2019	30/06/2020	30/06/2021	30/06/2022	30/06/2023	30/06/2024	30/06/2025	30/06/2026	30/06/2027	30/06/2028
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Interest Income										
Loan redemption	10	14	18	22	25	11	10	11	13	15
User Levies Income										
Water Connections	2	2	2	2	2	2	2	2	2	3
Fees (FTN)	55	57	58	59	61	63	64	66	68	70
Fees (GTN)	55	57	58	59	61	63	64	66	68	70
Fees (MBA)	55	57	58	59	61	63	64	66	68	70
Final Reading Fee	7	7	7	8	8	8	8	8	9	9
										0
Contributions Income										
Water Supply Contributions FTN	39	42	49	49	49	42	39	39	39	39
Water Supply Contributions GTN	65	71	75	75	88	101	101	91	94	94
Water Supply Contributions MBA	65	75	71	75	78	71	55	39	39	39
Personnel Costs										
Salaries & Wages	11	11	11	11	11	12	12	12	12	12
Operating Costs										
Staff Wellbeing										
Advertising	2	2	2	2	2	2	2	3	3	3
Public Consultation Expenses	3	3	3	3	3	3	3	3	3	3
Software Licences	4	4	4	4	4	5	5	5	5	5
Subscriptions & Memberships	1	1	1	2	2	2	2	2	2	2
Telephone Expenses	2	2	2	2	2	2	2	2	2	3
Occupancy Costs										
Utilities	170	175	179	183	188	193	199	204	211	217
Rates/Rent Payable	20	21	21	22	22	23	24	24	25	26
Internal Charges										
Corporate Services	187	187	198	196	199	211	209	210	221	217
Professional Services	158	163	166	170	174	178	182	187	189	191
Finance Costs										
Depreciation	1,010	1,046	1,077	1,099	1,067	1,082	1,093	1,059	1,074	1,084
Insurance	59	63	65	67	69	71	73	75	77	79
Interest	67	67	85	92	93	71	70	70	70	70
Works Costs										
Professional Services	30	31	32	32	33	34	35	36	37	38
Resource Consents	80	82	18	19	19	20	20	82	85	19
Routine Maintenance	670	689	705	741	761	781	803	826	851	878
Water Conservation	8	8	8	9	9	9	9	10	10	10
Water Meter Reading	7	7	7	8	8	8	8	8	9	9
Compliance & Safety	2	2	2	2	2	2	2	2	2	2
Monitoring & Testing	48	50	51	52	69	49	51	52	54	71
Connection Expenses (Water)	5	5	5	5	6	6	6	6	6	6
Pirinoa Water Supply Maintenance	5	5	5	5	6	6	6	6	6	6
Longwood Water Race (FTN)	65	67	68	70	72	74	76	78	81	83
Moroa Water Race (GTN)	70	72	74	76	77	80	82	84	87	89
Water Supply Chlorination	50	51	53	54	55	57	58	60	62	64
Total Water Supply Cost of service:	**(2,380)**	**(2,432)**	**(2,449)**	**(2,519)**	**(2,521)**	**(2,556)**	**(2,623)**	**(2,717)**	**(2,783)**	**(2,779)**
Represented By:										
Total Income	353	381	396	408	432	423	408	390	401	409
Total Expenditure	2,734	2,813	2,845	2,927	2,954	2,979	3,031	3,107	3,183	3,188
Net Cost of Service	**(2,380)**	**(2,432)**	**(2,449)**	**(2,519)**	**(2,521)**	**(2,556)**	**(2,623)**	**(2,717)**	**(2,783)**	**(2,779)**

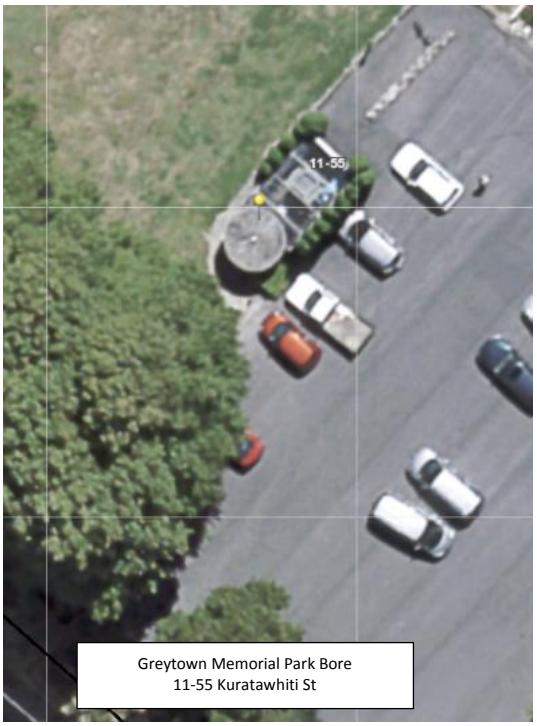
14.3 APPENDIX 3 – 2011 INFRASTRUCTURE ASSETS COVERED BY THE LAPP FUND

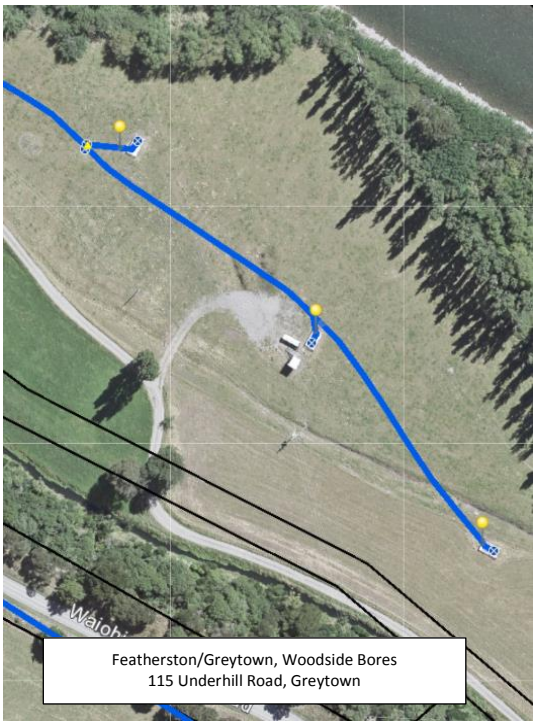
LOCAL AUTHORITY PROTECTION PROGRAMME
South Wairarapa District Council
2016 Infrastructure Assets Covered By the LAPP Fund

Asset Class No.	Asset Category	Asset Type	Asset Description		Year Built	Quantity (>$1 Million Listed Separately)	Units	Covered By LAPP?	Estimated Replacement Cost
			Location	Description					
1.0	***Water Services***								
1.1	**Bulk Water Supplies**								
1.1.1	Headworks	Headworks	Across District	Civil Structure				Y	$4,706,000
1.1.1	Headworks	Reservoirs	Martinborough					Y	$1,478,000
		Reservoirs	Greytown/Fetherstone					Y	$2,111,800
1.1.1	Headworks	Treatment Plant	Across District					N	$2,961,000
1.1.2	Distribution	Water Race	Across District	Concrete				Y	$172,000
1.1.3	Local Reticulation	Reticulation	Across District	Brittle (60%)		62.4	km	Y	$14,477,400
		Reticulation	Across District	Ductile (40%)	1950s+	41.6	km	Y	$9,651,600
		Valves/Hydrants	Across District					Y	$6,316,900
1.2	**Wastewater Services**								
1.2.1	Sewerage Systems	Sewage Treatment	Martinborough	Civil Structures				Y	$852,000
	Sewerage Systems	Sewage Treatment	Greytown	Civil Structures				Y	$1,538,000
	Sewerage Systems	Sewage Treatment	Featherston	Civil Structures				Y	$1,578,000
	Sewerage Systems	Sewage Treatment	Lake Ferry	Civil Structures				Y	$291,000
1.2.1	Sewerage Systems	Sewage Treatment	Across District	Pumps, Valves				N	$3,346,000
1.2.1	Sewerage Systems	Reticulation	Across District	Brittle (74%)	1970s +	53.3	km	Y	$17,377,526
		Reticulation	Across District	Ductile (26%)		18.57	km	Y	$6,105,617
1.2.2	Stormwater Systems	Reticulation	Across District	Brittle (74%)	1960s+	11.9	km	Y	$5,463,000
		Reticulation	Across District	Ductile (26%)		1.3	km	Y	$607,000
1.2.2	Stormwater Systems	Headwalls	Across District					N	$313,000
1.2.2	Stormwater Systems	Water Race	Across District					N	$552,000
	TOTAL INFRASTRUCTURE ASSET VALUE								**$79,897,843**
	TOTAL INFRASTRUCTURE ASSET VALUE COVERED BY LAPP								**$72,725,843**

14.4 APPENDIX 5 – FLOW METER LOCATIONS








Waiohine Valley Road


Boar Bush Gully Road

14.5 APPENDIX 6 - CAPACITY ASSESSMENT SUMMARY

The connected numbers for the individual water supplies and information on supply capacity is presented below.

Table 14-4: Water Supply Capacity Assessment Summary

Locality	Existing Connected Property Nos	Existing Residential Equivalents(RE's) census 2013	Assessed Average Daily Demand (m^3)	Assessed Maximum Daily Demand (m^3)	Actual Average Daily Demand m^3 (over three years)	Available Storage at max. demand (hrs)	Head works Capacity (Limited by)	Potential Additional RE's	Spare Capacity RE's	Comment
Martinborough	1,331	1,569	1,469	2,290	1064	39	Average Daily Consent Limit (ADCL)	222	265	Conservative estimate
Greytown (Bore) Stand Alone	1,372	2,438	1,540	2,290	1623	NIL	Nil Storage	391	0	Emergency alternative
Featherston only (Waiohine Plant)	1,333	2,434	1,580	1,555	1128	12	Bore Capacity Limit and Treated Water Storage	210	1,852	Currently operating below capacity
Greytown / Featherston Waiohine Plant	2,705	4,872	3,120	3,845	2,751	10	Bore Capacity Limit and Treated Water Storage	601	490	Frontline supply
Totals (All supplies)	4,036	6,441	4,589	6,884	3,881	N/A		823	755	

Assumptions:
Capacity means current Headworks Capacity based on a 15 hour production day
Growth as predicted by iD Consultants
No network restrictions in the reticulation taken into account
No additional consent limitations or dry weather restrictions factored in
Waiohine UV Plant Production Limited to 5184m^3/day production, but 3024m^3/day sustainable bore yield (2017 assessment)
Consumption Trending Extrapolation is not considered in this reporting

14.6 APPENDIX 7 - WSP: IMPROVEMENT PLAN

The improvements shown in the 2018 WSP Improvement Plans is presented below.

Table 14-5: 2018 WSP Improvement Plans

Project Type	Description
Greytown and Featherston	
Capital and Significant Projects	Investigate the options for improving the yield at Woodside bores
	Construct additional bore to increase available flow
	Install fencing around reservoir and contact tank at Boar Bush
	Install further storage tanks so that total storage volume meets standard of 24 hours
Operational Improvements and Minor Projects	Train one operator to a level of National Diploma in Water Treatment
	Continue development of backflow prevention plan to identify high risk premises and the installation of backflow prevention devices and develop and implement a region wide backflow prevention policy
	Undertake condition assessment on bulk supply pipeline. Determine appropriate action (if required) following assessment
	Develop and implement a replacement plan for the existing asbestos cement reticulation network
	Develop and implementation of AMPs to record reactive maintenance, preventative maintenance and replacements
	Undertake a review of the operational manual for the treatment plant
	Provide additional training for operators and ensure that the operator is able to adequately recognise the cause of all plant alarms and how to adequately respond to them
Featherston, Greytown and Martinborough	
	Telemetry system is being changed to new SCADA system at all sites.

14.7 APPENDIX 8 - RISK ANALYSIS TABLE

Table 14-6: Risk Analysis Table

No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
1	Higher Level Policies, Procedures and Controls					
1.5	The Council does not have an formal position on the impact of climate change on service delivery	Financial loss due to liability for property damage, loss of asset. Not able to provide service.	Significant	Council needs policy and relevant action plans including relevant design parameters) on Climate Change.	Low	Strategies to implement Council's future policy on the effects of climate change
2	Financial					
2.1	Lack of long-term financial planning	Higher than necessary financial costs	Significant	Existing network models are up to date and available	Low	
2.2	Service levels vs funding and works not clear	Service levels not being met due to lack of funding as decision makers not aware of implications for Service Levels.	Significant	Set performance targets for next 10 years and monitor and report on performance. Impacts of delayed capital works reported to Council.	Low	
2.3	Assumptions for financial forecasting not always understood	Additional costs incurred because assumption/uncertainties not accounted for i.e. asset valuations, depreciation	Significant	Finance/managers need to be aware of assumptions and uncertainties behind financial forecasting information.	Significant	Improvement of quality of information
2.4	Unforeseen Additional Costs	Reputation of Council detrimentally affected	Significant	Ensuring AMPs and asset information up to date	Low	New AMPs seek to update information or identify processes that assist
2.8	Insurance cover needs review	Insurance not adequate and unnecessary costs incurred	High	Insurance cover reviewed to ensure adequate cover on annual basis.	Low	
3	Organisational Management					
3.3	Lifelines Plan not up to date or implemented	Large scale asset failure due to a naturally occurring event resulting in prolonged and substantial loss of service to District	Significant	Ensure Lifelines Plan up-to-date and recommendations implemented that includes having a high level of risk reduction, readiness, response and	Significant	Update lifelines plan

No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
				recovery during and following Civil Defence Emergency.		
4.3	Information in peoples heads or inappropriate recording of information	Organisational knowledge lost with staff leaving	Significant	Ensure staff document and appropriately file everything that is relevant. Ensure good management succession when existing staff leave.	Moderate	Formalise and update maintenance schedules and procedures, contingency, operation and maintenance manuals.
4.4	Insufficient staff or not appropriately skilled	Programmed work not completed due to insufficient staffing or skill levels, having negative impact on service levels and creating public health risk.	High	Skill levels are appropriate	Low	Formal training programme required that includes the use of activity management plans
4.5	Inadequate attention to staff succession	Organisational knowledge lost with staff leaving	High	Implement good staff/management succession plan and document procedures	Significant	Implement good staff/management succession plan and document procedures
6	**Asset Management**					
6.1	Network modelling, condition assessments not undertaken.	Capital Works programme not optimised. Renewal works not completed due to lack of knowledge causing failure of assets. Future forecasting not accurate.	Significant	Undertake condition assessments of network and develop robust renewals programme based on sound knowledge.	Significant	Undertake condition assessments of network and develop robust renewals programme
6.2	As-built information can be slow or incorrect coming from maintenance staff, Contractors, Consultants	Council faces legal action because of incorrect information provided (particularly with regard to LIMS)	Significant	Ensure As-builts up to-date and on record promptly. Ensure GIS capability	Low	
6.3	Criticality assessment not undertaken	Failure of critical assets resulting in environmental damage or not meeting service levels	Significant	Undertake criticality assessment of assets and implement strategy for managing critical assets	Moderate	Undertake criticality assessment of assets and implement strategy for managing critical assets
6.5	Asset management systems not up-to-date or completed	Failure of utility networks because maintenance work not completed or management system not operational.	Significant	Asset Management System in place and updated as required	Significant	Review AM system practices and processes

No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
6.8	Capital works delayed due to unforeseen circumstances	Programmed Capital Works not completed. Target Service Levels not met	Significant	Staff held accountable for delays & staff trained in project management.	Moderate	Develop projects process that provides for project plans to be prepared for every approved renewal and capital development item.
6.9	Deferred renewal and maintenance not recorded or not done	Deferred maintenance not recorded causing unexpected, additional costs from asset failure	High	Record all deferred maintenance and renewals	Moderate	Ensure all deferred renewals work recorded and management aware of impact on service levels if not funded.
6.10	Not all easements recorded or obtained	Council faces legal action or cannot carry out its activities because it does not have legal right to cross a property	Significant	Keep up-to-date record of easements. Establish clear policy for processes to be followed when easements are required.	Moderate	Easement information needs to be improved with all identified easements provided with details of interested party. Legal situation to be clarified.
6.11	Insufficient documentation of escalating process decision making	Response to emergency situations reduced, higher expenditure	Significant	Employment of staff with the appropriate qualifications and skills	Low	
8	Asset Risks - Water					
8.1	Some treatment plants not capable of meeting drinking water standards	Dissatisfaction of customers from not meeting target water supply gradings due to non-compliance with drinking water standards.	Significant	Upgrade of water supplies to meet standards underway with monitoring programme in place.	Low	
8.7	SCADA Failure	No alarm available, no water	Significant	Back-up systems and procedures	Moderate	
8.9	Vandalism at facility	Reduced Level of Service	Significant	Warning via SCADA of any issue at facilities	Moderate	
8.10	Rising Mains - Insufficient Capacity	Insufficient water during peak usage periods	Significant	Good understanding of schemes capacities and on-going monitoring of usage	Moderate	
8.11	Operator Error	Failure to achieve consent conditions or facility failure	Significant	Employment of staff with the appropriate qualifications, skills and training	Moderate	
8.12	Power failure for extended periods	No water - reservoirs run dry	Significant	Standby generators made available in an event of extended power failure	Moderate	
8.15	Snow and wind	Power failure - no water, reservoirs run dry	Significant	Standby generators made available in an event of extended power failure	Moderate	
8.16	Flooding	Intakes flooded - poor water quality or inability to pump water	Significant	Management and operational staff have the skills to manage natural events	Moderate	

14.8 APPENDIX 9 – SCHEMATIC DIAGRAMS FOR URBAN INFRASTRUCTURE

Figure 14-1: Featherston and Greytown Headworks and Reticulation

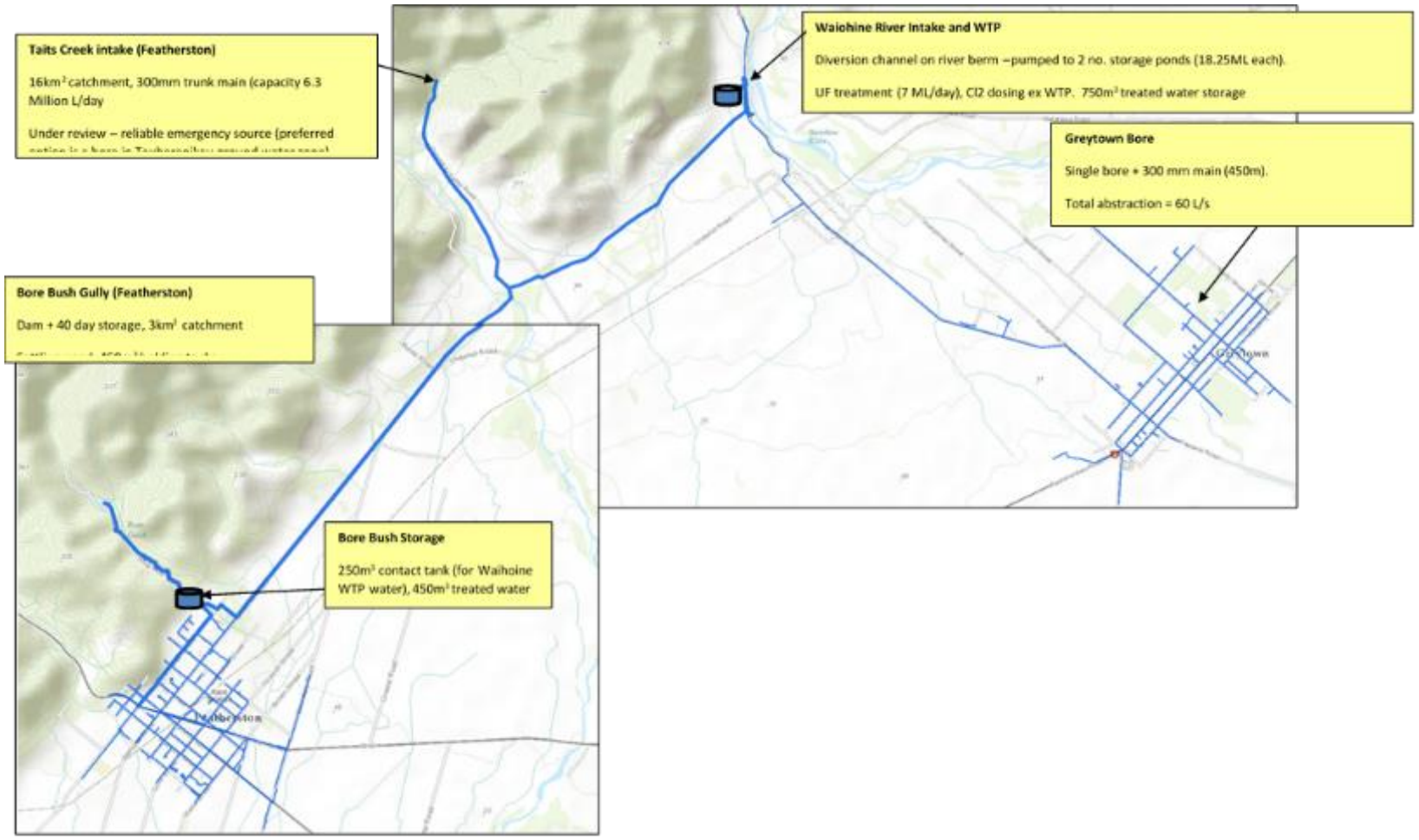


Figure 14-2: Martinborough Headworks and Reticulation

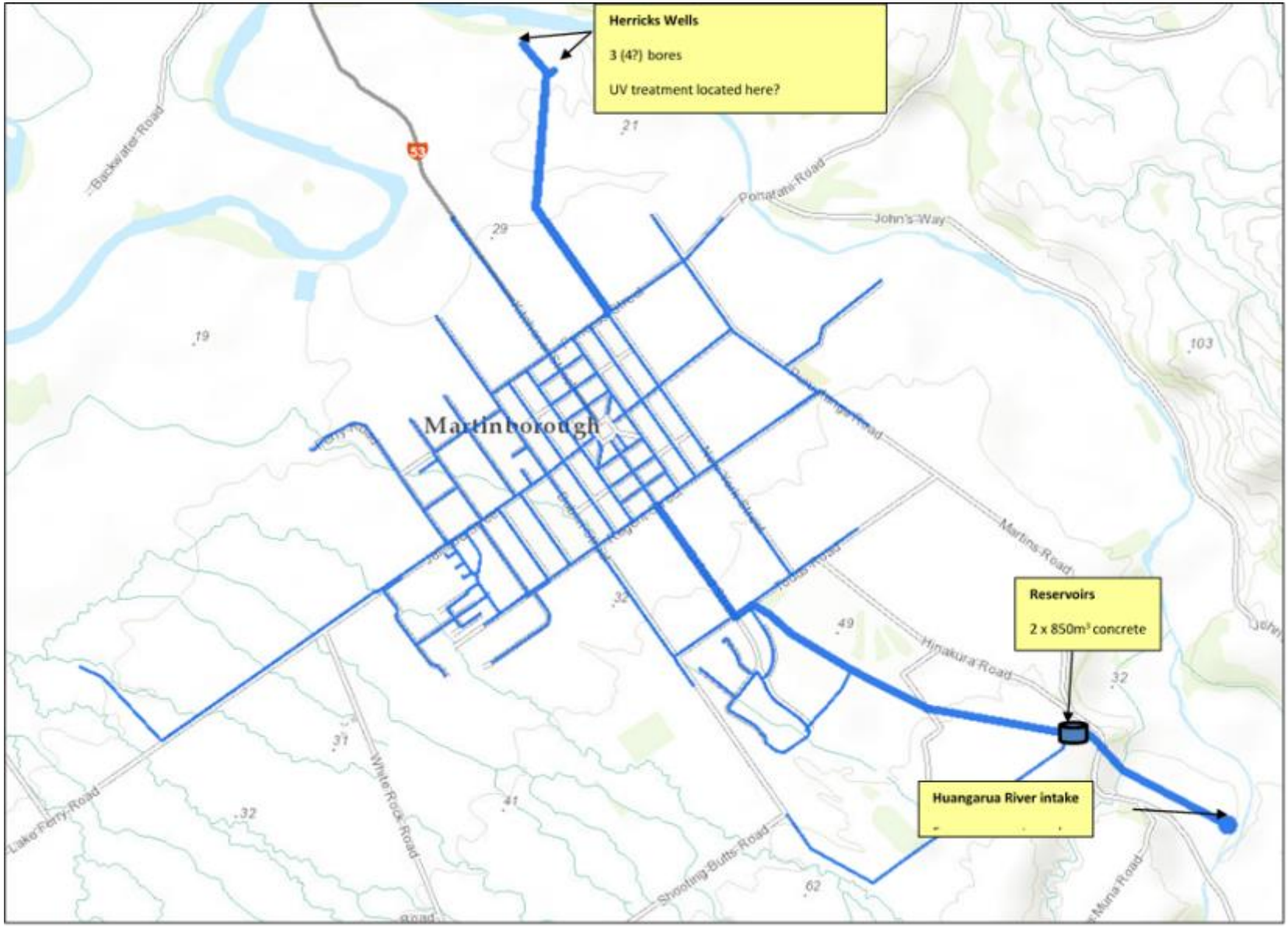


Figure 6-3: Water Race Details

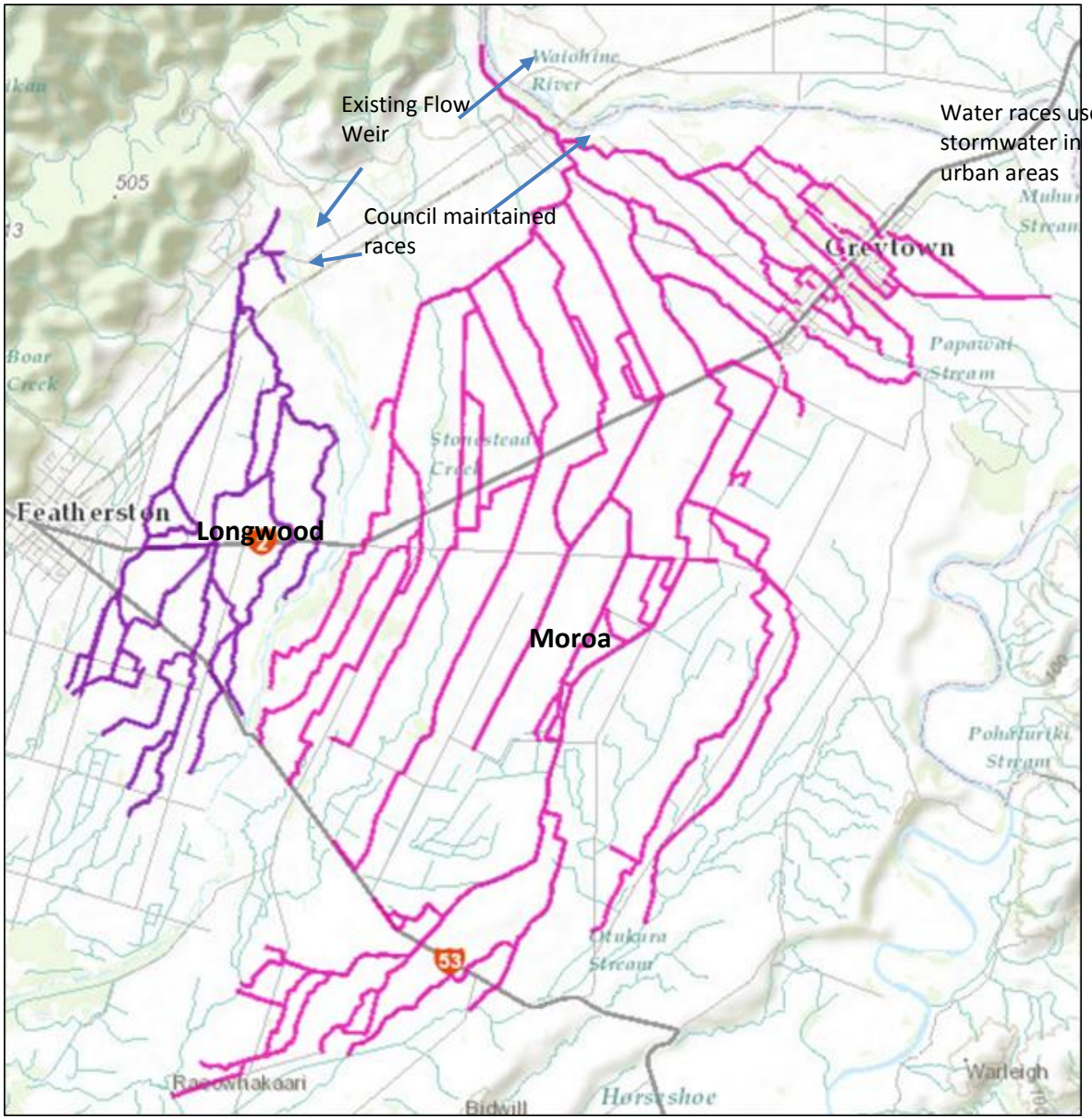


Figure 14-4: Water Race Water Quality Monitoring sites