WASTEWATER ASSET MANAGEMENT PLAN

JUNE 2018

QUALITY RECORD SHEET

WASTEWATER ASSET MANAGEMENT PLAN

Issue Information	
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Authorisation	
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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

The AMP provides:

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

This AMP seeks, at a core level, to demonstrate how the wastewater collection and disposal will be delivered to agreed levels of service and in a cost effective manner for communities of Featherston, Greytown, Martinborough and Lake Ferry.

Demand for the service and the impacts, if any, of growth and development is given consideration as well as the increasing call for improved environmental outcomes for the receiving environment for the four community wastewater collection and treatment schemes.

Section 13 describes the wastewater asset in some detail, its current performance, current condition where known and proposes a plan of rehabilitation and improvement works for infrastructure.

In addition, a detailed renewal programme for wastewater 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 $353,000 per year for period 2018/2019 to 2027/28.

A renewal programme for sewer reticulation and facilities has been identified for the term of the Long Term Plan. More investigative work is required to increase the level of confidence in the long term financial planning.

The South Wairarapa District Council's Wastewater Strategy has been a key factor in developing the Project for which consents were applied for in 2014-2016. The key aspects of the Strategy that continue to be applied are:

- Take a long-term view of solutions (50+ year horizon) in an integrated way across all three urban Wastewater Treatment Plants.
- Develop the best practicable option for each site and on a combined basis offering a high degree of performance certainty fundamentally based on parameters of risk, public health, environmental effects, and community affordability.
- To ensure continued consultation with key stakeholders in developing and implementing the preferred long-term options.
- To obtain the required degree of certainty through a commitment in the short term (i.e. to 2028) to optimise performance of the existing plant where practicable.
- Deliver sustainable projects based on the philosophy of implementing the best practicable option and "Do it once – Do it Right".

In summary the Wastewater Asset Management Plan seeks to maintain current levels of service for its serviced populations. Indications are that asset capacity will be reviewed for Greytown and Martinborough over the period of the LTP due to population increase and other growth pressures. However more stringent regulatory requirements aimed at improving environmental outcomes will continue to be the main driver for asset upgrades and improvements in Featherston, Greytown, Martinborough and Lake Ferry.

2 ISSUES

2.1 OBJECTIVES

Objective of this information sheet is to:

- Describe the challenges and aspirations faced by wastewater services.
- Inform Councillors, Council staff, community boards of the strategic direction for wastewater services for the short term and long term.

2.2 KEY ISSUES

The key issues faced by wastewater services are:

- The reticulation networks date from the early 1940's (earthenware) and a large expansion in the period of 1970 – 1980 (asbestos cement). Significant infiltration into the network is related to the old earthenware sewers. Because infiltration and inflow (I & I) is such a large factor affecting the performance of the system, there is a need for Council to continue to identify those areas in Featherston and Greytown where the effects are greatest and focus on reducing this problem in those areas. I & I also has a significant effect on the operation of the treatment and disposal systems.
- Uncertainty in population changes.
- Treatment and disposal upgrades for Featherston, Greytown and Martinborough to decrease the actual and potential effects of wastewater treatment and disposal on the environment.
- Affordability in the long term.

2.3 STRATEGIC DIRECTION FOR WASTEWATER SERVICES

2.3.1 Short-term Strategic Direction

The short term direction of wastewater services is to:

- Increase our confidence in the Wastewater Services asset attributes to allow renewals to be funded in a progressive manner.
- Continued reduction in the level of I & I into the network.
- Install additional treatment technology at all three wastewater treatment sites.
- Implement wastewater disposal to land in all three towns.
- Defer some renewals work to accelerate the wastewater to land projects after consultation with ratepayers.

2.3.2 Long-term Strategic Direction

The long-term strategic direction of wastewater services is to:

- Plan for population and demographic changes.
- To optimise expenditure we must consider the way to get 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 and describes the asset management progress over the last 21 years.

3.1 ASSET MANAGEMENT HISTORY

The wastewater AMP was first developed in 1996. Since then it has been reviewed on a regular basis and updated in 2017. The 2014 version of the AMP has been reviewed this time taking note of:

- 2010 LGA requirements (30 year planning).
- Council policy and strategic plans.
- National and regional plans including the Wellington Regional Council Natural Resources Plan.
- Continuing changes in the general local authority operating environment.
- Non-financial performance measures formalised by the Department of Internal Affairs (DIA).
- 2015 Local Government DIA compulsory level of service measures.

3.2 AMP OBJECTIVE

The overarching objective for the AMP is to demonstrate that the wastewater activity delivers the expectations set out in the Council's stated outcomes.

So that these expectations can be met the AMP needs to:

- Inform the LTP in a consistent and competent way but at a relatively high level.
- Describe the wastewater activity in more detail.
- Detail the intended levels of service, how they are measured and maintained.
- When and how operational and capital expenditure for the 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 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 wastewater reticulation and disposal assets within the serviced urban communities of Featherston, Greytown, Martinborough and Lake Ferry.

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 $29 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 3-1: Scope of Assets

Scheme	Year Installed	Population Served (2013)	Wastewater Mains (kms)	Replacement Cost $000
Featherston	1965	2,434	23.4	$10,145
Greytown	1940	2,438	21.3	$8,676
Martinborough	1960	1,569	23.4	$9,270
Lake Ferry	2007	-	2.4	$ 1,085
	Total	**6,441**	**70.5**	**$ 29,176**

3.4 RELATIONSHIP WITH OTHER PLANS

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

- Long Term Plan (LTP).
- The Council's Water AMP.
- The Infrastructure Strategy 2018.
- The Wairarapa Combined District Plan 2014.
- Wastewater Drainage bylaw.

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

- Regional Freshwater Plan, Greater Wellington Regional Council.
- Natural Resources Plan, Greater Wellington Regional Council.
- Other affected party protocols and policy documents e.g. Fish and Game, tangata whenua.
- Wastewater Guidelines, Ministry for the Environment (MFE)

3.5 NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014.KEY RELATIONSHIPS

This AMP recognises the following key stakeholders:

Table 3-2: Identification of Stakeholders

External Stakeholders	Main Interest
Central Government	Ensure that Local Government Act is complied with (via Auditor-General)
Resident Population	Reliable Wastewater services at an affordable cost
Local Businesses	Wastewater services to suit commercial needs and expansion, at affordable cost
Public Service Providers	Reliable Wastewater services at an affordable cost
Ministry of Health	Wastewater 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	Discharges are managed within agreed consent parameters including proposed natural resources plan
Internal 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

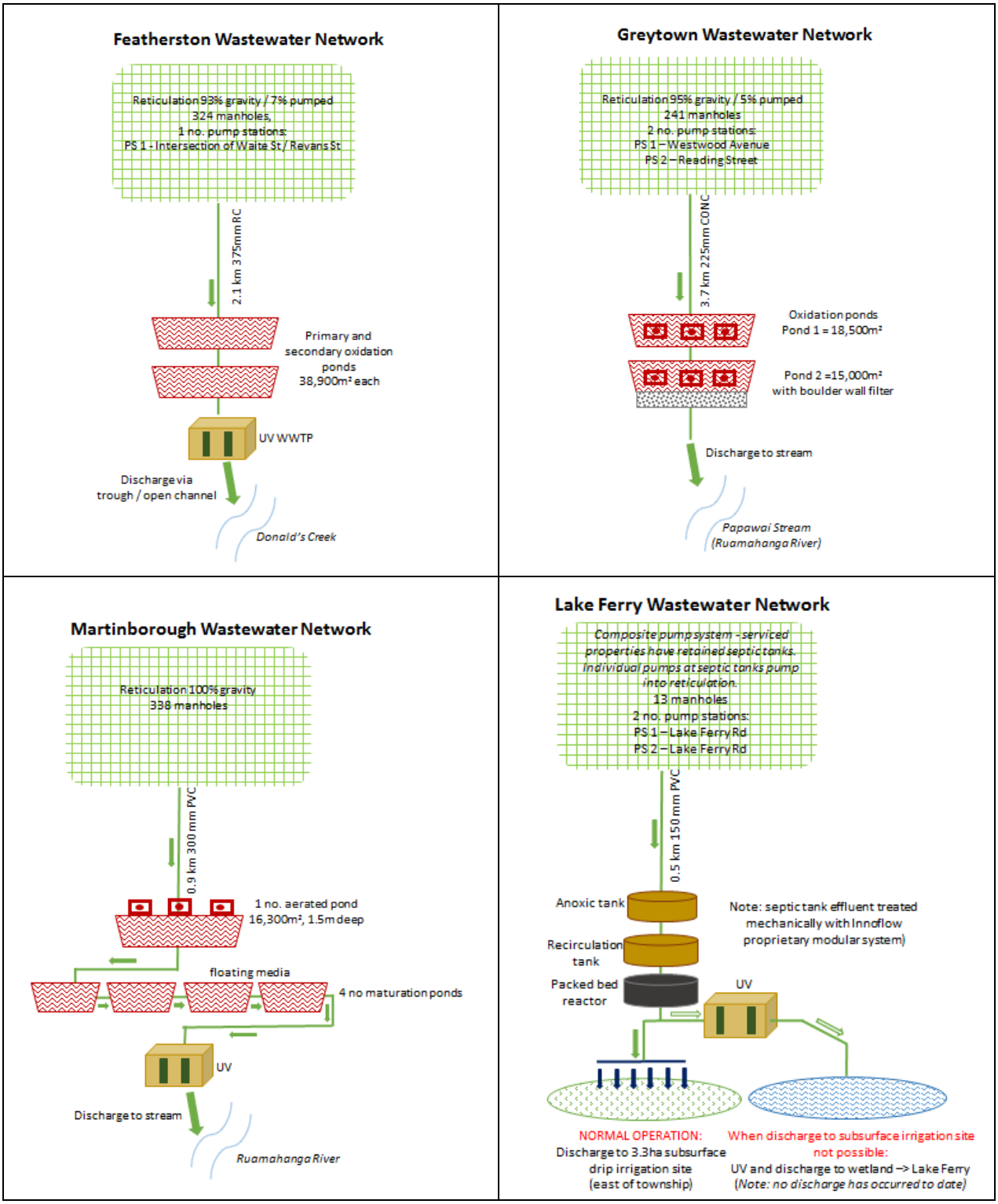
4 THE WASTEWATER ACTIVITY

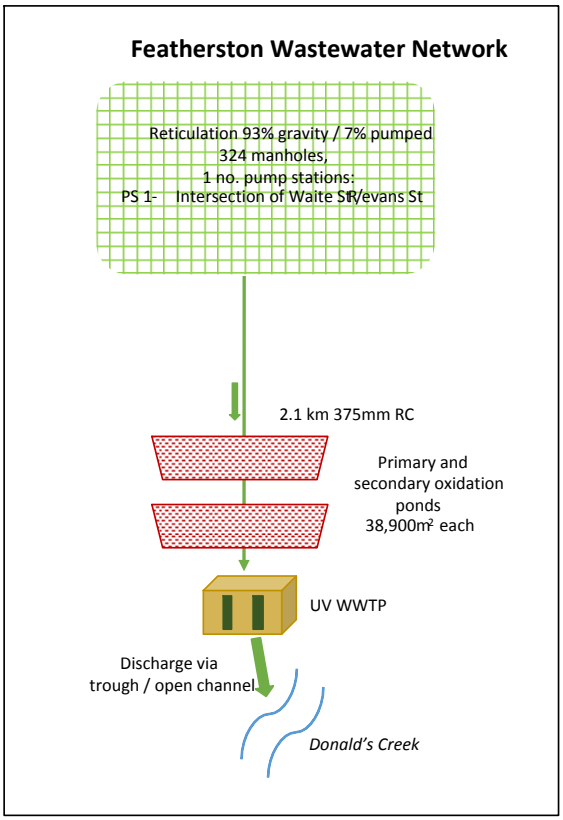
This section of the AMP covers the rationale for ownership and description of the wastewater service assets.

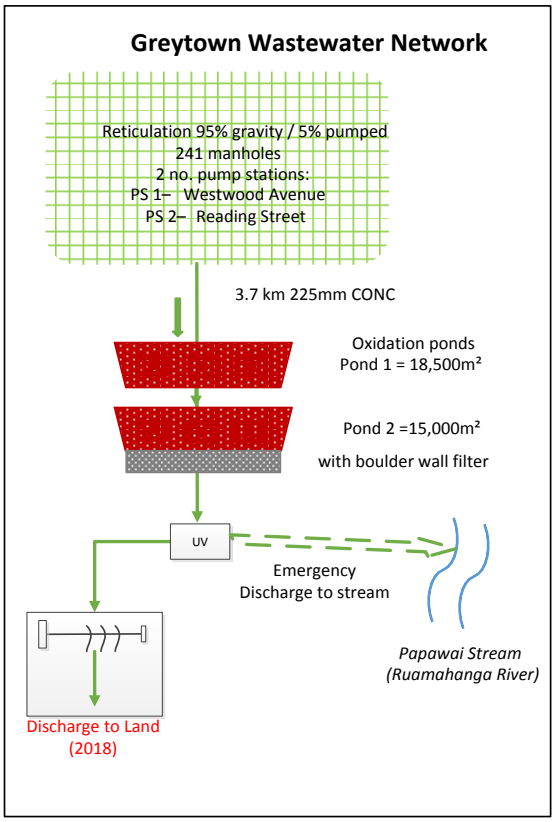
4.1 ACTIVITY DESCRIPTION

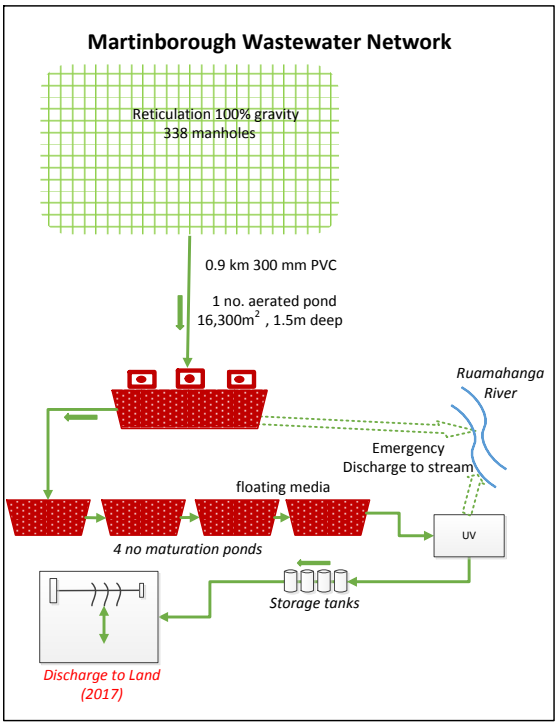
4.1.1 Wastewater Overview

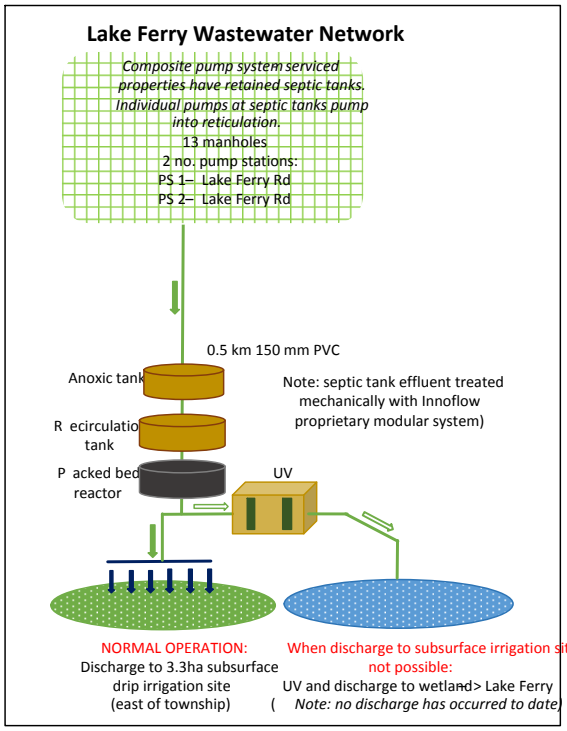
Figure 4-1: Featherston, Greytown, Martinborough and Lake Ferry Schematics




Featherston Wastewater Network
Reticulation 93% gravity / 7% pumped
324 manholes,
1 no. pump stations:
PS 1- Intersection of Waite St/Evans St
2.1 km 375mm RC
Primary and
secondary oxidation
ponds
38,900m² each
UV WWTP
Discharge via
trough / open channel
Donald's Creek


Greytown Wastewater Network
Reticulation 95% gravity / 5% pumped
241 manholes
2 no. pump stations:
PS 1– Westwood Avenue
PS 2– Reading Street
3.7 km 225mm CONC
Oxidation ponds
Pond 1 = 18,500m²
Pond 2 =15,000m²
with boulder wall filter
UV
Emergency
Discharge to stream
Papawai Stream
(Ruamahanga River)
Discharge to Land
(2018)


Martinborough Wastewater Network
Reticulation 100% gravity
338 manholes
0.9 km 300 mm PVC
1 no. aerated pond
16,300m², 1.5m deep
Ruamahanga
River
Emergency
Discharge to stream
floating media
4 no maturation ponds
UV
Storage tanks
Discharge to Land
(2017)


Lake Ferry Wastewater Network
Composite pump system serviced
properties have retained septic tanks.
Individual pumps at septic tanks pump
into reticulation.
13 manholes
2 no. pump stations:
PS 1– Lake Ferry Rd
PS 2– Lake Ferry Rd
0.5 km 150 mm PVC
Anoxic tank
R ecirculatio
tank
P acked bed
reactor
UV
Note: septic tank effluent treated
mechanically with Innoflow
proprietary modular system)
NORMAL OPERATION:
Discharge to 3.3ha subsurface
drip irrigation site
(east of township)
When discharge to subsurface irrigation site
not possible:
UV and discharge to wetland> Lake Ferry
(Note: no discharge has occurred to date)

4.1.2 Wastewater Schemes Descriptions

In the South Wairarapa district, there are four wastewater community systems with 3,502 properties connected.

4.1.2.1 Featherston - Urban

The Featherston urban scheme Is mainly a gravity reticulated system (93%) with minor pumping (7%). A pond based treatment facility followed by UV disinfection discharges into Donald's Creek some 1.5km south of the township.

Proposed changes to the Featherston scheme are currently going through the resource consent process. The application is seeks consent for staged discharge to land, with an expected commencement date of mid-2018.

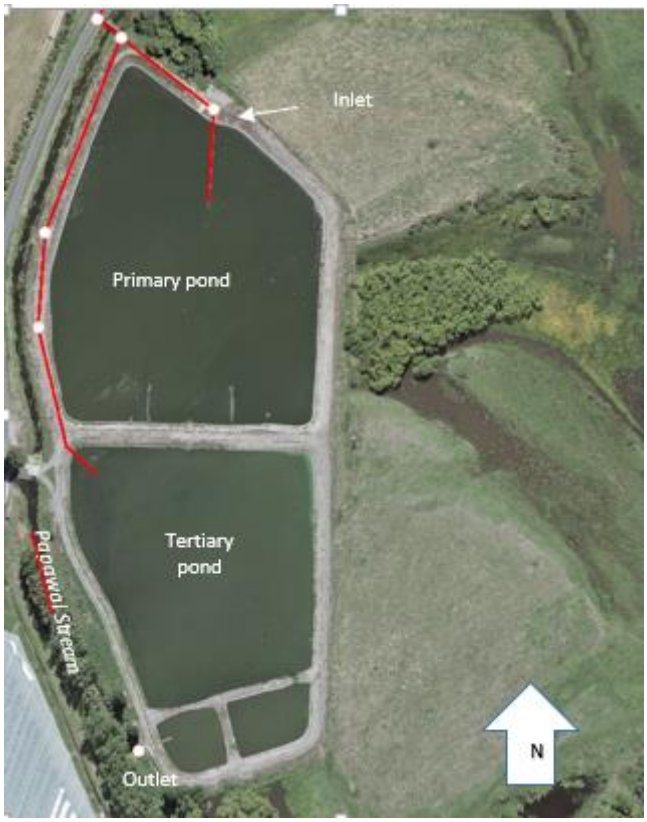
4.1.2.2 Greytown - Urban

The Greytown urban reticulation is a gravity system. At present 95% of the Greytown urban area is connected to the wastewater system. A small number of properties are still on septic tanks.

A pond based treatment facility is located at the end of Pah Road, 3.7km from Greytown.

The treated effluent discharges into the Papawai Stream and flows into the Ruamahanga River some 1,500 metres downstream of the effluent discharge point.

Council is currently constructing the first stage of discharge to land, with expected completion in May 2018.



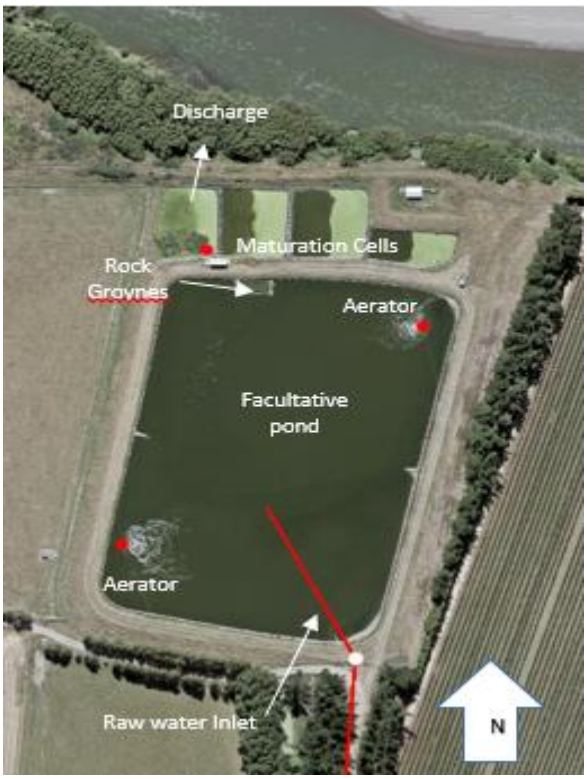
4.1.2.3 Martinborough - Urban

Martinborough operates entirely as a gravity system.

Wastewater flows by gravity from individual connections through the sewer to a single anaerobic pond.

Following treatment in the maturation ponds effluent is discharged via an outlet structure into the Ruamahanga River.

Operation of the first stage of discharge to land in the adjacent field started in November 2017.



4.1.2.4 Lake Ferry-Rural/Coastal

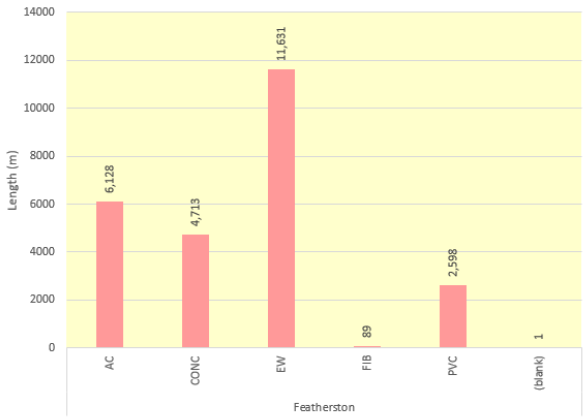
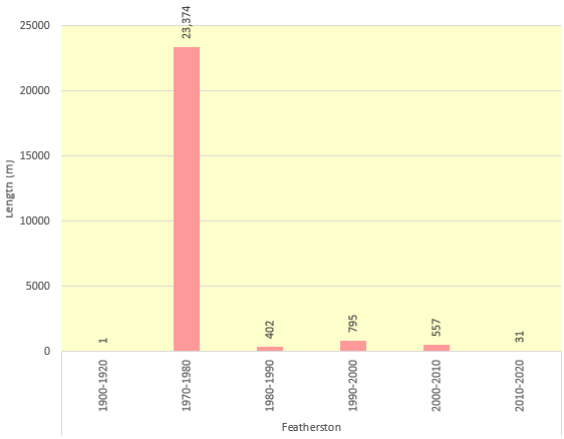
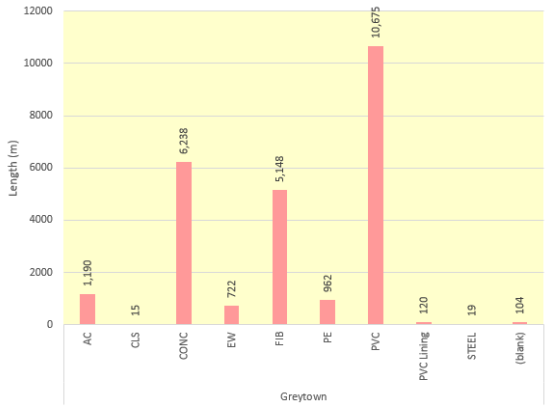
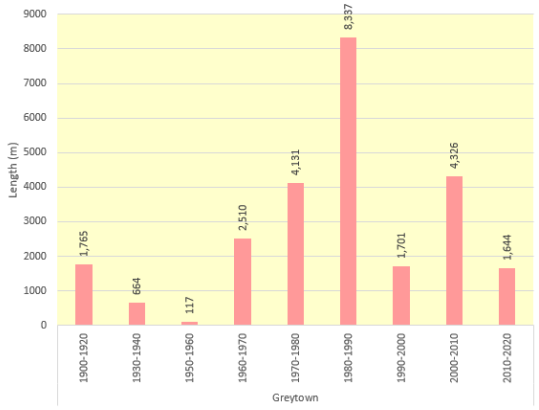
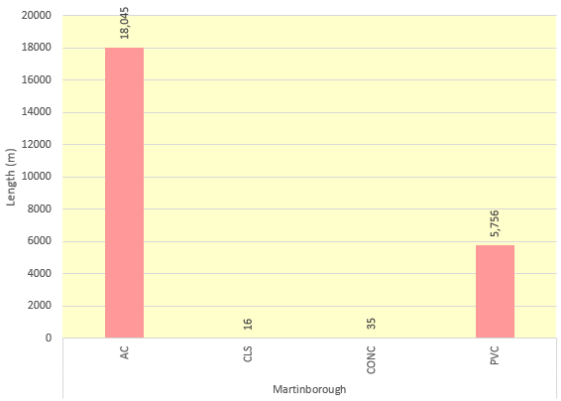
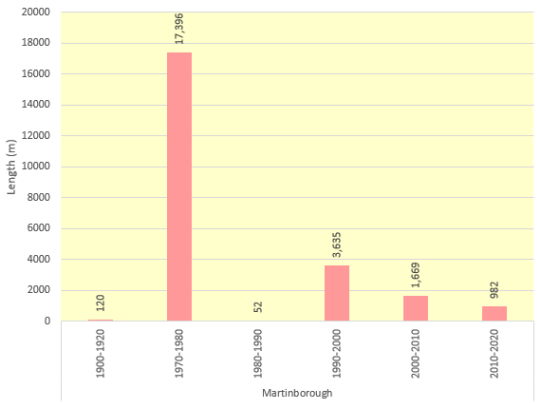
This small community system services properties at the Lake Ferry settlement and was commissioned in 2007.

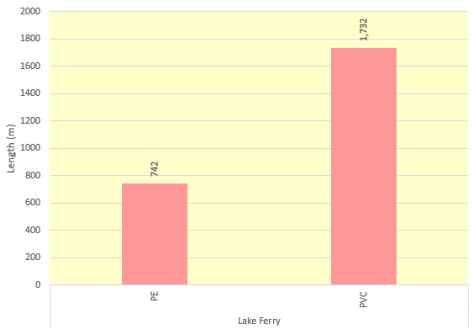
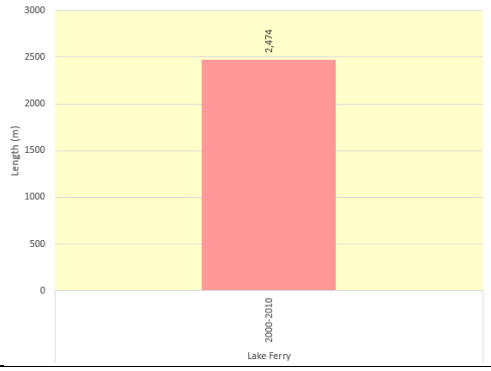
Serviced properties retain on-site septic tank systems and the effluent from the septic tanks is either pumped or gravitated depending upon location to local pump stations and then to a centralised treatment plant and disposal field east of the settlement.

4.1.3 Reticulation

The makeup of the four communities' reticulation material, length and install date is presented below.

Figure 4-2: Reticulation – Pipe Material and Install Date Distribution

Pipe Material	Install Date Distribution
	
Featherston - Material Earthenware account for the majority of the pipe (54%)	**Featherston – Install Date** The majority of pipe (92%) was installed during the period 1975 to 1979
	
Greytown - Material Wide range of material used	**Greytown – Install Date** The majority of the pipe installed from 1940 to 2009
	

Pipe Material	Install Date Distribution
Martinborough - Material Asbestos Cement (AC) account for the majority of the pipe (74%)	**Martinborough – Install date** The majority of pipe (73%) was installed during the period 1975 to 1979
	
Lake Ferry – Material PVC account for the majority of the pipe (65%)	**Lake Ferry – Install Date** All Pipes installed in 2007

4.2 CHANGES FOR THE ACTIVITY

Council's wastewater treatment plants for the communities of Featherston, Greytown and Martinborough are pond based closed systems and all discharge secondary treatment effluent to adjacent waterways.

The operating and regulatory environment has changed significantly since these systems were provided in the 1960s and 70s. Major upgrades are required at all three plants to meet current resource consent requirements and the upgrade costs will place a significant financial burden upon participating ratepayers over time.

Acknowledging current public and regulatory expectations, the manner in which Council and its community view its wastewater treatment assets and their future has been reviewed, subject to public and ratepayer consultation and input. The resulting Council Wastewater Strategy has been formally adopted. The Strategy has been a key factor in developing the project for which consents were applied for in 2014 for Greytown and Martinborough.

The Wastewater Strategy is 100% discharge to land and in accordance with this strategy 35-year consents have commenced in April 2016 for Martinborough and Greytown to discharge fully to land in a staged approach. The Featherston application was lodged in March 2017 and is currently being discussed with GWRC at the time of this AMP.

4.3 ACTIVITY RATIONALE

The health and general wellbeing of Council's communities is the fundamental reason why Council provides adequate systems for the collection and disposal of wastewater.

Council via its outcomes 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, wastewater is most effectively collected by means of reticulated wastewater networks 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 for wastewater disposal within affordable levels.

4.4 SIGNIFICANT EFFECTS OF THIS ACTIVITY

Activities generate effects both positive and negative. In terms of the four well beings the wastewater service activity effects are summarised and presented below.

Table 4-1: Significant Effects of this Activity

Well Being	Positive	Negative
Social	Community health benefits arising from a secure collection and disposal system	Health and safety risks associated with asset operations and overflow incidents
Environmental	Community based treatment infrastructure offers a minimal and sustainable environmental footprint complying with current consent requirements	The effects of treated waste water disposal upon the surface receiving waters and groundwater values
Economic	Affordable cost of infrastructure participation promoting an appropriate environment for residential and commercial development	Possible loss of income and business in the event of excessive participation costs and infrastructure failure
Cultural	Wastewater collection and disposal services are non-discriminatory in benefit for all community and ethnic groupings	Potential community and iwi concerns in regard to waterway health and associated values arising from the disposal of treated wastewater

5 STRATEGIC ENVIRONMENT

This section sets out community outcomes, goals, statutory requirements and shows the key legislation and regulations associated with the wastewater 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 owns these outcomes. The community outcomes to which wastewater activity primarily contributes are presented below:

Table 5-1: Community Outcomes to which Wastewater Activity Primarily Contributes

Community Outcomes	How the Wastewater Activity Contributes
Healthy and economically secure people	By ensuring that adequate public systems are provided and wastewater is adequately treated, at an affordable cost
Sustainable South Wairarapa	By ensuring that all of the reticulated systems operate as efficiently as possible; that the conditions are complied with

5.2 THE WASTEWATER ACTIVITY GOAL

Council has developed goals, policies and objectives to provide direction for the Wastewater Service over the next ten years. They underpin the Council's vision for the District.

The wastewater goal is:

> *To collect, treat, and discharge wastewater from the urban areas of Featherston, Greytown, and Martinborough and the coastal settlement of Lake Ferry so as to provide public health protection with minimal effects on the environment*.

The principal policy objectives required to meet this goal are presented below:

Table 5-2: 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	Ability to provide wastewater disposal on an sustainable basis and to meet appropriate standards in respect of public health
To minimise adverse effects on the environment	Discharge from treatment plants complies with their respective resource consents
To comply with legal requirements	Resource consents
To achieve defined technical standards	As provided by NZS4404:2010 and other applicable standards
To implement policies of Council	Implemented as required
To promote development throughout the district	Ability to provide wastewater disposal on an sustainable basis
To achieve defined standards of system management	Compliance with resource consents and infiltration is within the required parameters

Having a three 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 the wastewater activities are presented below.

Council must comply with any relevant legislation enacted by Parliament. Commentary related to the key legislation is provided below. Different legislation has differing levels of impact on the wastewater services activities; this is indicated under the impact range (broad ***, moderate **, limited *).

Table 5-3: 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	-	*
Health Act 1956	General responsibility “to improve, promote and protect public health within its district	***
Health and Safety at Work Act 2015 (and amendments)	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)	-	*
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	***

5.4 COUNCIL DISTRICT WIDE WASTEWATER MANAGEMENT STRATEGY

Following extensive review of historic practices and the Wastewater Treatment Plant (WWTP) assets, community consultation was undertaken to confirm constraints, opportunities, and priorities. The outcome was the Council Wastewater Strategy (the Strategy). The Strategy is recognised and implemented through Council's management documents, including this AMP and the LTP and Annual Plan. The Strategy has been a key factor in developing the Projects for which consents were applied for in 2014 for Greytown and Featherston and 2017 for Martinborough.

The key aspects of the Strategy adopted are as follows:

- Due to the significant capital costs involved and financial constraints of the Council Community, to take a long-term view of solutions (50+ year horizon) in an integrated way across all three urban WWTPs. Lake Ferry was not included as had a long term solution.
- The need to develop the best practicable option for each site and on a combined basis offering a high degree of performance certainty fundamentally based on parameters of risk, public health, environmental effects, and community affordability.
- To ensure continued consultation with key stakeholders, including iwi, and community groups (which has been ongoing since 2008), and Wellington Regional Council (WRC, as the regulator) in developing and implementing the preferred long-term options.
- To obtain the required degree of certainty through a commitment in the short term (i.e. to 2022) to optimise performance of the existing plant where practicable, and implement the preliminary stages of the best practicable option at each site.
- Deliver sustainable projects based on the philosophy of implementing the best practicable option and "Do it once – Do it Right".

The detail of the programme to deliver the Strategy is described in Section 11.7.

5.5 NATIONAL AND REGIONAL PLANS

National Policy Statement for Freshwater Management (NPS-FM): The 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 Council. 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.

5.6 BYLAWS

Council has reviewed the bulk of its bylaws and has implemented a suite of combined bylaws with Masterton District Council. This includes Wastewater Drainage (Part 11) and Trade Waste (Part 12). The Consolidated Bylaws 2012 came into force throughout the Masterton and South Wairarapa Districts on the 1st September 2013.

6 FUTURE POPULATION AND DEMAND TRENDS

This section provides details of population and demand forecasts, which affect the management, and utilisation of all Wastewaters 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 9,800. This represents growth of about 11% in the period 2001 to 2013.

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.

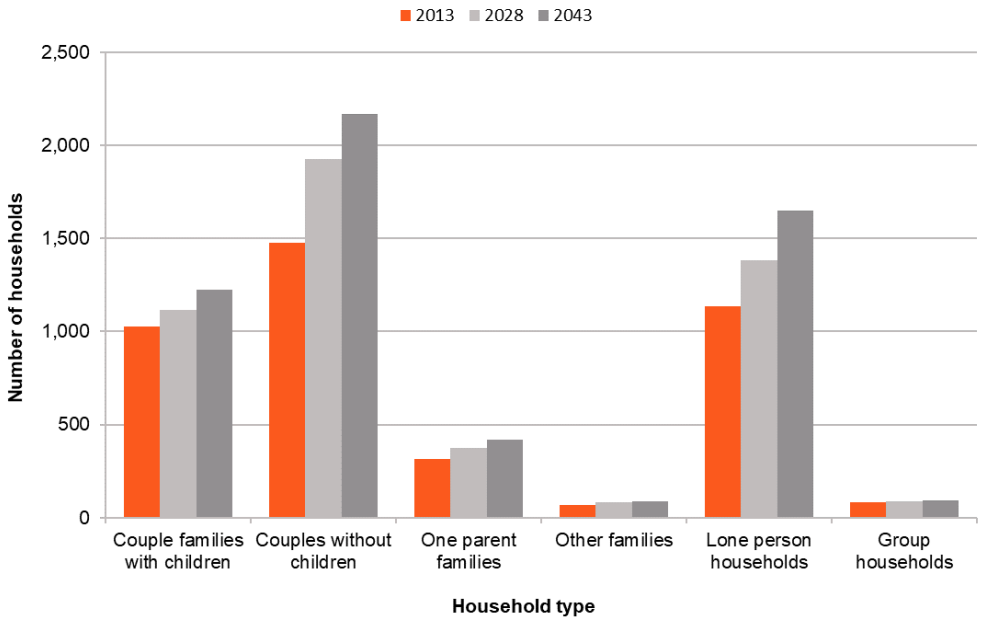
Table 6-1: Future Growth Trends

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.

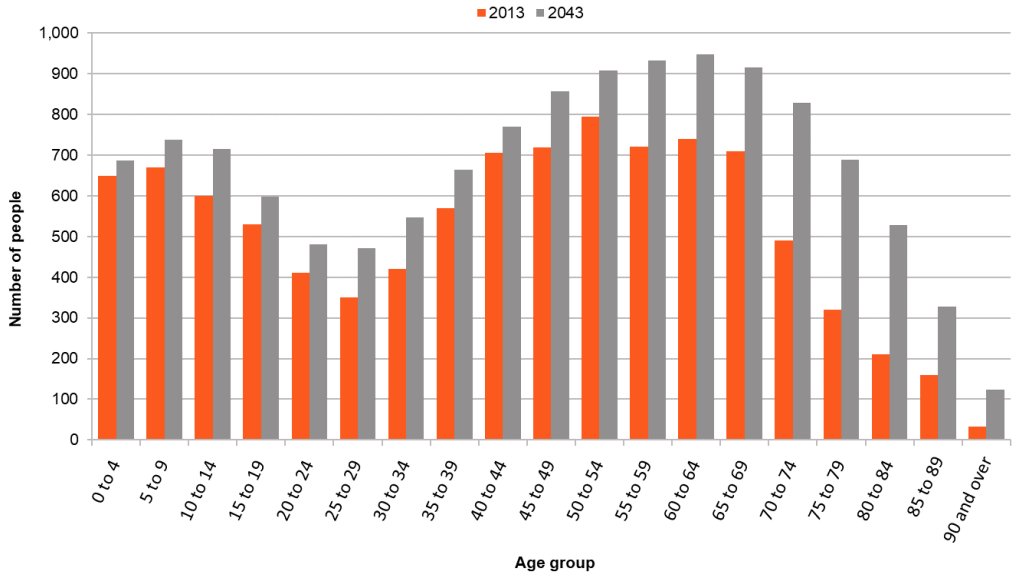
Figure 6-1: Households by type, South Wairarapa District Council – 2013, 2028 and 2043



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

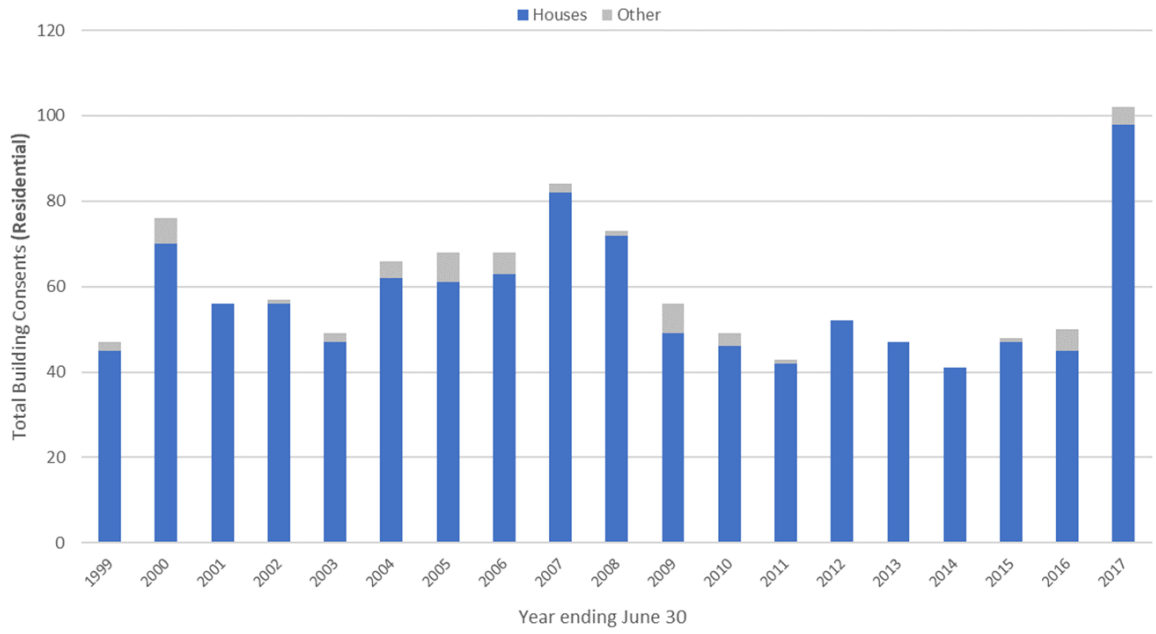
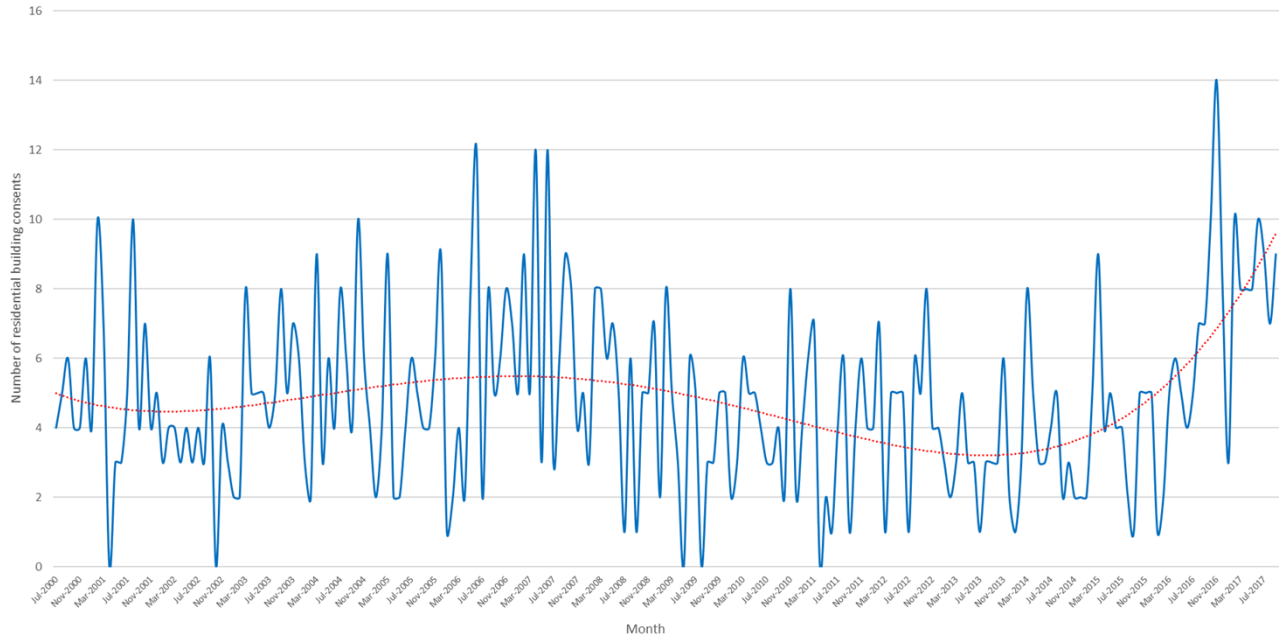


Figure 6-4: Monthly Residential Building Consents, July 2000 – September 2017



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 6-3: 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

There are indicators that there will be additional capacity requirements upon the existing wastewater assets e.g. a new gravity main on Papawai Road for Greytown. This has been factored into the LTP budgets. We also forecast additional capital expenditure in Martinborough between 2028 and 2048.

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.

Table 6-1: Development History

Locality	Number of New Serviceable Lots		Total
	2006 - 2014	2015 - mid 2017	
Featherston	26	30	87
Greytown	64	60	159
Martinborough	116	92	154
Total	**206**	**182**	**388**

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

6.4 WASTEWATER DISCHARGE PATTERNS AND TRENDS

6.4.1 Wastewater Scheme Capacity

The wastewater design flows for the four communities are provided below.

Table 6-2: Wastewater Scheme Capacities

Scheme	Average Demand (m^3/day) 2016/17	Peak Demand (m^3/day) 2016/17	Treatment Capacity (m^3/day)	Resource Consent Allowance (m^3/day)
Greytown	685 m3/day	1,439m3/day	750m^3/day winter biological loading	1,500 m3/day 95%ile 750 m3/day mean
Featherston	2,482m3/day	9,907 m3/day	1970m^3/day winter loading 3850m^3/d summer	9000 m3/day DWF 12000m3/day WWF
Martinborough	262 m3/day	1,133 m3/day	500m^3day winter biological loading	650 m3/day mean 4300 m3/day max
Lake Ferry	20-30 m3/day	96 m3/day	30m^3/day	200 m3/day 700 m3 /week

The pond systems have limitations for winter biological loads, but the change to land discharge will assist in treatment and Council is not exceeding the allowable flows detailed in the consent.

6.5 DEMAND MANAGEMENT PLAN

6.5.1 Background

Growth can increase demand upon Council's wastewater assets and Council must be responsive to any change in demand for services. Conversely decline in demand requires an equal response from Council.

In the case of growth, effective asset management for wastewater should consider whether responding to demand means spending more on an asset (asset based solution) or simply spreading usage across other available asset (non-asset based solution) or limiting in an acceptable manner the usage that growth might impose on asset capacity.

Inter dependencies between water borne assets across the three communities of Featherston, Greytown and Martinborough may provide some opportunity to manage changes in demand either by intervention, or asset aggregation/linkage where this is technically feasible. Asset aggregation has been considered in the wastewater strategy.

6.5.2 Infiltration and Inflow

I & I is considered to be significant during winter. Groundwater Infiltration (GWI) study carried out within the Featherston reticulation in December 2013 showed GWI inference that varied from <3 m3/km/day (low) to 35 m3/km/day (extreme).

The Council's Wastewater Strategy is to implement I&I reduction in Martinborough (2019/22), Greytown (2019/22) and Featherston (2013/20). This will enable the treatment and disposal capital works to be designed at an optimal level. The Council's Wastewater Upgrade Capital programme is discussed in Section 11.7.3.

6.6 SUSTAINABILITY

Significant activity changes described in Section 11 and 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 wastewater 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.

6.6.1 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 6-3: 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 (stormwater, wastewater) to ensure good health
3	Monitor condition and quality of public 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 issue, funding and resourcing where appropriate

6.6.2 Scheme Sustainability

Council have indicated there are no capacity issues within the reticulation or treatment. With current forecast population growth it is considered that the existing capacity of the four schemes will be sufficient in the medium to long term apart from Greytown which will require a new gravity main to be installed along Papawai Road in the 2018/19 financial year. The cost of this is estimated at $588,000 and has been included in the LTP budget.

6.6.3 Resource Consents Held

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

Table 6-4: 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	

Table 6-5: Water, Water Race and Wastewater Resource Consents Held Continued

Site	File Reference	Service	Consent ID	Consent Type	Expires
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 Stormwater 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 Stormwater 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 wastewater service.

7.1 BACKGROUND

Risk Management methodology aims to be consistent with the intentions AS/NZS ISO 31000: 2009 "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 third party property damage and losses insurances.
- Loss of service; extent, duration and impact of natural disasters.
- Contingency planning for foreseeable emergency situations.

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 level 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 has been 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 and impact and management of risk was reviewed in 2017 with a risk summary table established. The risk summary table details where the residual risk was considered high or significant and existing or proposed mitigation. The high or significant gross risks assessed are presented in Appendix 5.

Table 7-1: Risk Summary Table (excerpt from Appendix 5)

Risk No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
1	Higher Level Policies, Procedures and Controls					
	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	Organisational Management					
	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					
	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					
	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
	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 Asset Risk Assessment

Critical assets are considered those assets in which failure would result in a major disruption to the disposal of wastewater 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). High Criticality assets are best defined as assets which have a high consequence of failure.

A criticality assessment has not been carried out over all the wastewater services. A critical assets study is to be undertaken to identify 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 in general 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 2016 Infrastructure Assets Covered by the LAPP Fund is presented in Appendix 3.

8 THE SERVICES WE PROVIDE

The Levels of Service for the Wastewater 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 wastewater 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 wastewater collection and treatment system with a minimum of inconvenience.
- Statutory requirements that require Council, as asset owners, 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 is able to respond to legislative and regulatory changes over time and at least 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: 2012 Levels of Service (Customer Performance Measures)

How it Contributes to our Community Outcomes	How we Measure our Performance	Performance Targets (For the financial year)					Source of Information
		Target /Base	Actual 2015/16	Actual 2016/17	Target 2017/18	2018/19-2027/28	
Service Level 1: Council provides Wastewater Services that effectively collect and dispose of wastewater							
Sustainable South Wairarapa	Ratepayers and residents satisfaction with Wastewater Services	67% 2008	58% 2013	49%	51%	53% - 70%	NRB Survey yearly
Service level 2: Wastewater disposal does not create any smells, spill or health issues and causes minimal impact on the natural environment							
Sustainable South Wairarapa	% of resource consent conditions complied with to mainly complying or better*	90% 2008	96%	96%	90%	90%	Council's records
	No. of complaints per 1000 connections received about sewage odour	-	1.0	0.9	<15	<15	Council's records
	No. of complaints per 1000 connections received about sewage system faults	-	2.2	1.5	<15	<15	Council's records
	No. of complaints per 1000 connections received about sewage system blockages	-	10.5	12.6	<15	<15	Council's records
	No. of complaints per 1000 connections received about the response to issues with wastewater	-	0.2	0	<15	<15	Council's records
	Proportion of urgent Waste water service requests responded to within 6 hours of notification	100% 2015	87%	84%	95%	95%	Council's records

* This allows for a small number of "technical" breaches associated with the myriad of resource consent conditions which may be due to short-term, unplanned impacts on operating conditions, equipment failure etc. The indicator should not be read as an intention to plan for non-compliance.

How the Council provides the service to the customer is described as a 'technical' level of service.

8.4 LEVELS OF SERVICE REVIEW

The 2018 levels of service provided by the wastewater assets were derived from Council's community outcomes and are based on user expectations and goals. The Council did not review its community outcomes at that time however, the levels of service for the serviced communities were not expected to vary significantly during the term of the AMP.

However, in order to maintain current levels of service as outlined earlier, consistent effort and resource is required within the term of this AMP and beyond to enhance existing treatment infrastructure and to develop and maintain a realistic and defendable programme of asset renewal works within the wastewater treatment and reticulation systems.

8.4.1 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.

8.4.2 Compliance with Customer Performance Levels

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

Service Level 1- Council provides Wastewater Services that effectively collect and dispose of wastewater

a) Ratepayers and residents satisfaction with wastewater services.

Council engages its customers and stakeholders via its Annual Plan and LTP processes and annual 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 (NRB) Survey results for 2016/17 are presented in Table 8-2:

The performance target for 2016/17 was 70%.

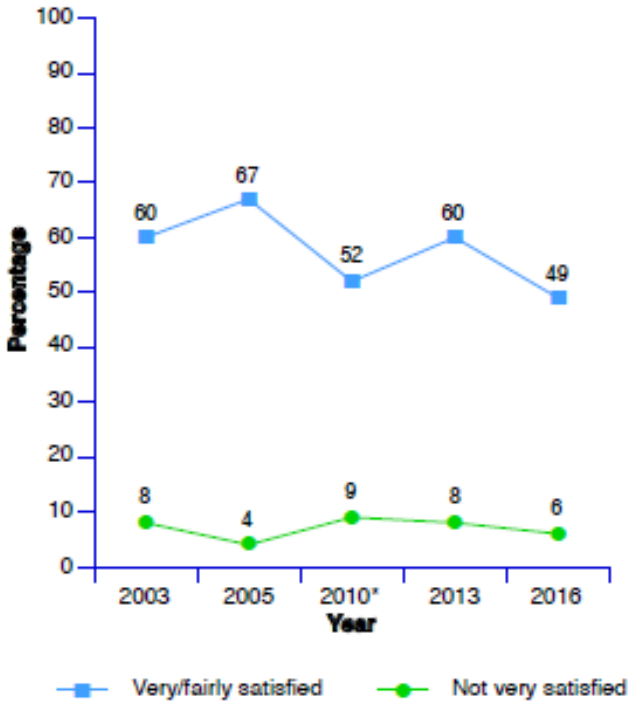
Table 8-2: 2016 Survey - Satisfaction with Sewage Treatment and Disposal

Community	Very Satisfied	Fairly Satisfied	Very/Fairly Satisfied	Not Very Satisfied	Don't Know
Featherston	26%	32%	58%	4%	38%
Greytown	18%	30%	48%	3%	49%
Martinborough	13%	28%	41%	10%	49%
Overall	**19%**	**30%**	**49%**	**6%**	**45%**

Note: Lake Ferry is not reported in the survey.

The survey results for the 2003, 2005, 2010, 2013 and 2016 "Overall Customer Satisfaction" is presented below and indicate that the customer satisfaction level is lower than in 2003. It is of concern that the satisfaction measure has decreased, however this may be due to the increased awareness of current and past practices due to the communication with ratepayers regarding the change to disposal of wastewater to land as the Council Wastewater Strategy to increase disposal to land is implemented, future survey results should reflect this.

Figure 8-1: Overall Satisfaction with Quality of the Wastewater Service



Service level 2: Wastewater disposal does not create any smells, spill or health issues and causes minimal impact on the natural environment

a) Percentage of resource consent conditions complied with to mainly complying or better.

During the 2016/17 period this was not achieved, results for all the four schemes are:

- Fully compliant – 82 conditions.
- Technical non-compliance – 13 conditions.
- Significant non-compliance – 3 conditions.
- Environmental non-compliance - 5 conditions.

Greater Wellington Regional Council has noted that in all cases Council is aware of the issues raised and are attempting to address and remedy the identified non - compliances in the replacement consent applications for the Martinborough, Featherston and Greytown sites.

b) No. of complaints per 1000 connections received about sewage odour (<15).

During the period 2016/17 this was achieved, 4 complaints were attended to by Council contractors. Performance total for wastewater connections is 4,084 equates to 0.9 per 1000 connections.

c) No. of complaints per 1000 connections received about sewage system faults (<15).

During the period 2016/17 this was achieved, 7 complaints were attended to by Council contractors. Performance total for wastewater connections is 4,084 equates to 1.5 per 1000 connections.

d) Number of blockages per 1000 connections (<15).

During the period 2016/17 this was achieved, 51 blockages were attended to by Council contractors. Performance total for wastewater connections is 4,084 equates to 12.62 per 1000 connections.

e) No. of complaints per 1000 connections received about the response to issues with sewage (<15).

During the period 2016/17 this was achieved, no complaints were received about the response by Council contractors. Performance total for wastewater connections is 4,084 equates to 0 per 1000 connections.

f) Proportion of urgent Wastewater Service requests responded to within 6 hours of notification.

During the period 2016/17, 52 out of 62 requests (84%) were responded to within 6 hours. The 2016/17 target was 95%. Council's contract with Citycare has a KPI for urgent permanent repairs to be completed within 3 working days.

8.5 RULES FOR NON-FINANCIAL PERFORMANCE MEASURES

8.5.1 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 came into force on 30 July 2014. Local authorities were required to incorporate the performance measures in the development of the 2015-2025 LTP.

The performance measures were reported against for the first time in the 2015/2016 Annual Report.

As provided by Section 261B of the LGA: Non-Financial Performance Measures Rules the performance measures are:

- Performance measure 1 - System Adequacy
- Performance measure 2 - Discharge Compliance
- Performance measure 3 - Fault Response Times
- Performance measure 4 - Customer satisfaction

These new performance measures do not provide a defined level but rather show how the Council is performing, i.e. the number of complaints received. The existing performance levels (as shown in the 2015/25 LTP) have key performance indicators e.g. requests responded to within one hour. The performance measures are presented in Table 8-3.

8.5.2 2018-2028 Wastewater Services: Levels of Service

The interpretation of the Non-Financial Performance Measures Rules are shown on the DIA website.

Table 8-3: Service LTP 2015 – 2025 Wastewater Services Levels of Service

Community Outcomes 2012	Level of Service	Performance Measure	Target	16/17
Healthy and economically secure people	1. System and Adequacy	Number of dry weather wastewater overflows from the territorial authority's wastewater system, expressed per 1000 connections to that wastewater system.	< 10	1.49
Sustainable South Wairarapa	2. Discharge Compliance	Compliance with the territorial authority's resource consents for discharge from its wastewater system measured by the number of: a. abatement notices b. infringement notices c. enforcement orders, and d. convictions, received by the territorial authority in relation those resource consents	< 2	0 0 0 0
	Wastewater disposal does not create any smells, spill or health issues and causes minimal impact on the natural environment	% of resource consent conditions complied with to mainly[1] complying or better	90%	96%
Sustainable South Wairarapa	3. Fault Response Times	Where the territorial authority attends to wastewater overflows resulting from a blockage or other fault in the territorial authority's wastewater system, the following median response times measured: Attendance time: From the time that the territorial authority receives notification to the time that service personnel reach the site, and Resolution time: From the time that the territorial authority receives notification to the time that service personnel confirm resolution of the blockage or other fault.	< 1 hr < 4 hrs	68% Median time: .75 hrs 73% Median time: 2.77 hrs
Healthy and economically secure people	4. Customer Satisfaction	The total number of complaints received by the territorial authority about any of the following: a. sewage odour b. sewerage system faults c. sewerage system blockages, and d. the territorial authority's response to issues with its sewerage system, expressed per 1000 connections to the territorial authority's sewerage system.	< 15 < 15 < 15 < 15	0.9 1.5 12.62 0
Healthy and economically secure people	Council provides wastewater services that effectively collect and dispose of wastewater	Number of blockages per 1000 connections	< 10	12.44
Sustainable South Wairarapa	Council provides Wastewater Services that effectively collect and dispose of wastewater	Ratepayers and residents satisfaction with Wastewater Services	70%	49%

Note: The caption in red is the DIA rules and the captions in blue are the Council's 2015 performance levels.

Note: Maintaining the target satisfaction level of 70% in the period 2018/19 to 2027/28 may be difficult to achieve. The target has been set at 60% for the 2020/21 survey and 70% after that. While the upgrade of the treatment and disposal facilities over the next ten years will assist in increasing the satisfaction level it may be that the satisfaction levels will not achieve 70% level until the disposal to land projects have been completed and shown to be achieving their objectives.

9 ACTIVITY MANAGEMENT PRACTICES

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

9.1 MANAGEMENT OF ASSET DATA

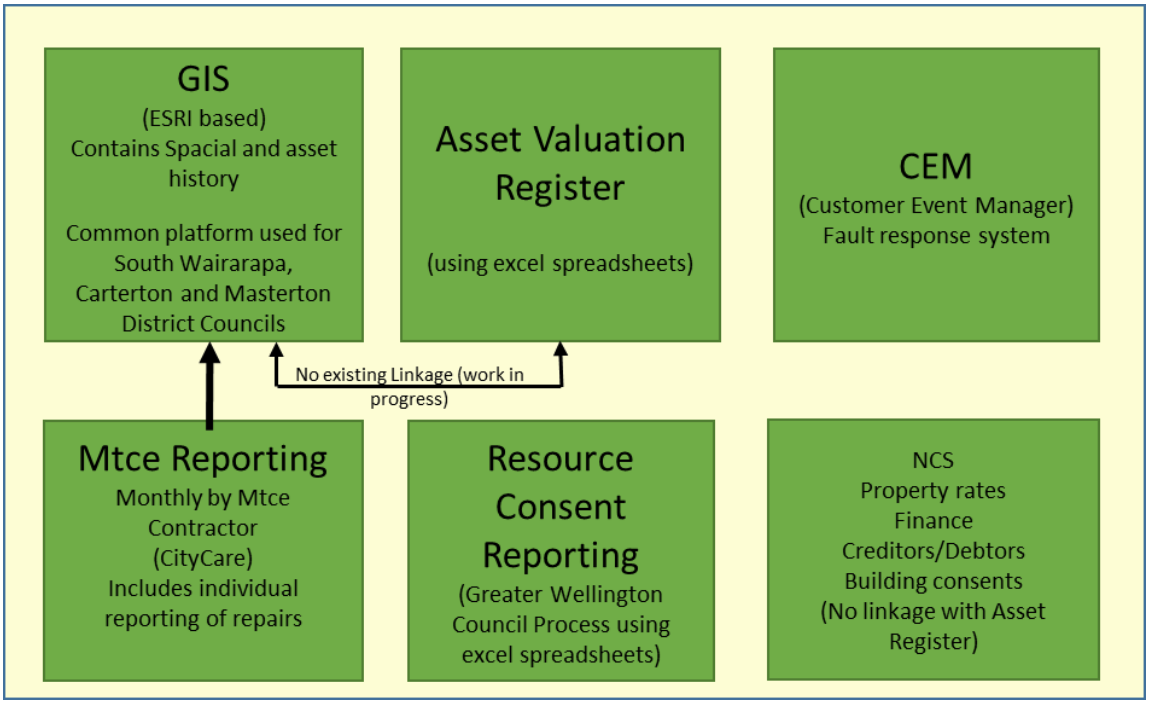
Some formal asset management packages have been used previously but are not used presently as Council is currently reviewing its data acquisition and packaging systems to be incorporated into the new regional GIS platform in collaboration with Masterton and Carterton District Councils.

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 9-1: 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 Geographic Information System (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 and requires entering. This information will then transfer over to the asset register along with the financial expenditures.

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 and selected information is displayed. 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 AMP's.

9.3.2 Asset Collation

In order to collect all new asset information, the information is provided to the GIS nominee in the form of a hard copy. This information comes from Council 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 attributes like: type, size, length, installed by, material, address, condition, data modification date, date installed, verified by, x and y coordinates, street name, town, and any additional information relative to the particular asset.

Once within the GIS the new asset is then entered into the asset register spreadsheet with the new ID, the asset information and financials from the works. The same process is followed for renewals: information is updated and transferred over to the asset register. The spreadsheet is then able to provide information on financial life expectancy for assets based on assumptions of useful life for different types of assets.

NAMMS (National Asset Management Steering Group) Condition Rating Model is implemented for asset condition rating. When maintenance works are completed, a new condition rating is provided to update records. This condition rating information is updated in the GIS, AssetFinda and asset register.

9.3.3 System and Process Improvements

Council has installed AssetFinda software to create a more seamless process that allows consistency between the GIS and asset condition data. AssetFinda uses the condition information within the GIS that corresponds to an asset providing a living record (providing a link 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.

9.3.4 Customer Event Manager (CEM)

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.
- The package also provides real time information in regard of work progress and time spent.

9.3.5 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 a future programme of work. Specific response times are defined for particular defects and these are tracked for statutory reporting. An after-hours service is available for customer service/requests which are then routed to Council's Contractors for response.

9.3.6 Fault Reporting

Normal working hour faults are recorded by Council and activated by contractors as required.

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

9.4 RESOURCE CONSENT REPORTING

The reporting to Greater Wellington Regional Council on resource consent compliance throughout the year is specific to the consent. The reporting format depends on whether it is data or exception reporting. If exception reporting or data exceeds the targets set above, in normal format in the case of consent non-compliance.

The council operates a consent monitoring programme, called CS-Vue which sends reminders to the Infrastructure Services team for conditions and reports on compliance to manage the resource consents.

9.5 MAGIQ

The property rating, building and resource consents in the Magiq database (formerly known as NCS) are linked to the GIS Viewer which is part of the GIS database. The property rates database, building and resource consents are linked to the GIS Viewer which is part of the GIS database.

9.6 CONTRACT PROCUREMENT AND MANAGEMENT

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

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 concludes at the end of June 2018 with an option for up to a 3-year contract extension. 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.

9.7 MAINTENANCE DECISION MAKING PROCESSES

The majority of maintenance works are reactive. Other maintenance works are cyclically planned 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.

9.8 SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEMS

9.8.1 Background

Council operates a 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 that include:

- Three water treatment plants (Greytown and Martinborough and Boar Bush).
- Three wastewater treatment plants (Featherston, Martinborough and Lake Ferry).
- Two wastewater pump stations (Featherston and Greytown).

The system is used for:

- Monitoring the operation of sites.
- Reporting, trending 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.

9.8.2 Update

A review has identified potential to streamline systems throughout Wairarapa for SCADA systems. The council is in the process of changing to Abbey Systems telemetry, with currently two sites presently monitored:

- One water treatment plant (Featherston/Greytown)
- One wastewater plant (Martinborough)

A phased change will slowly swap over the systems as they need upgrading, or work is undertaken on the current telemetry systems.

9.9 FUTURE STRATEGY FOR COUNCIL'S SCADA

Council's strategy for the ongoing use of SCADA is:

- Maintain SCADA system at a high level to ensure system reliability and ongoing 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

Wastewater infrastructure at Featherston, Greytown, Martinborough and Lake Ferry can be described as low technology, least energy and as such not requiring a high level of operator expertise and other resource involvement.

As environmental standards and consent requirements increase in complexity resulting in additional technological investment, operator and asset management input, it is anticipated that a more robust and thorough approach will be required to ensure service levels and external obligations are met.

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 the 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 in Greytown (and thereby demand for increased asset capacity). It is not expected the same level of growth will occur in the rest of the district. However there may be additional benefits to be gained from network modelling to aid Council's decision making and management of the wastewater networks, for example:

- Aid with identifying and prioritising areas where significant infiltration is affecting the performance and capacity of the wastewater network.

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 new standard outlines 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 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 KEY ASSUMPTIONS

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 will remain significantly the same for the next three years.
- Council and its serviced community will require a similar level of expectation in relation to service levels.
- Council will continue to own all wastewater 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 Wastewater AMP are all predicated on the basis that Council will obtain resource consents for Featherston for disposal of wastewater to land. Greytown and Martinborough have 35 year resource consents for disposal of wastewater to land which were obtained in 2016.
- 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 condition.

11 FINANCIAL PROJECTIONS

This section sets out financial statements, funding strategy, depreciation forecast and charges for the wastewater service in 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 wastewater disposal 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 sewerage system pay a flat charge and others whose properties are capable of being connected but which are not connected, pay a uniform annual charge (50% of the flat 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 loan and the infrastructure contributions reserve.

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.
- Recent contract works carried out by Council (including neighbouring councils).
- Contractors, manufacturers and suppliers.

11.3.1 Asset Schedules – Water and Wastewater 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 and engineering judgement. Asset additions and disposals information, since the previous valuation carried out in 2015, was provided by Council.

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

Table 11-1: Wastewater Valuation Component Accuracy

Component	ORC (Optimum Replacement Cost)			ODRC (Optimum Depreciated Replacement Cost)		
	Quantity	Unit Cost	Value	Life	R/Life	Value
Pipe reticulation	B	B	B	B	C	B
Pumps & valves	B	B	B	B	B	B
Oxidation ponds	B	B	B	B	B	B

11.4 VALUATION FORECASTS

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

Table 11-2: Wastewater Valuation (30th June 2018)

Valuation 2018	ORC $000	ODRC $000	AD $000
Pipe Reticulation	$19,343	$8,754	$292
Pumps, Valves	$3, 682	$1,291	$67
Oxidation Ponds	$6,152	$4,835	$65
Total	**$29,177**	**$14,880**	**$424**

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 optimum replacement cost 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.

11.5 DEPRECIATION

Council partially funds depreciation for the wastewater services via rates.

11.6 CAPITAL EXPENDITURE PROGRAMME

The capital expenditure programme for period 2018/19 to 2019/28 is presented below.

Table 11-3: Capital Expenditure Programme for Period 2018/19 to 2019/28

CAPEX - Wastewater	CAPEX	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	Type	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Reticulation renewals	Ren	307	315	322	329	337	344	351	358	365	373
Disposal to land (GTN)	LOS	767	0	0	0	0	0	0	0	0	0
Disposal to land (MBA)	LOS	0	0	0	0	0	0	0	0	0	559
Disposal to land (FTN)	LOS	409	504	516	0	0	0	0	0	0	0
New Gravity main Papawai Rd (GTN)	Cap	588	0	0	0	0	0	0	0	0	0
Gravity main (FTN)	Ren	204	0	0	0	0	0	0	0	0	0
Total Wastewater CAPEX:		**2,274**	**818**	**838**	**329**	**337**	**344**	**351**	**358**	**365**	**932**

Note: CAPEX Types: Ren = Renewal, LOS = Improve Level of Service, Cap = Increase capacity

11.7 WASTEWATER TREATMENT AND DISPOSAL UPGRADE PROGRAMME

11.7.1 Background

During the last LTP process, Council undertook a comprehensive process in developing projects at the three sites for disposal of wastewater to land near Featherston, Greytown and Martinborough. This included over two years of reviews, technical investigations and option assessment, and consultation and engagement of key stakeholders. Following the development of the Wastewater Strategy, Council identified a budget of over $29 million for implementation of wastewater disposal to land across the three sites.

11.7.2 Affordability

The South Wairarapa community is one of the smallest and most economically constrained in New Zealand. In addition, it has not one but three full urban WWTP's to operate, maintain, and upgrade as regulations and expectations change. The assumption through this process was that works would be fully funded by ratepayers as no government or other subsidy will be available. "Public-private partnerships" have proven difficult and unsuccessful for similar schemes throughout NZ. As a result, the spending must be spread over a sufficient timeframe so as to not result in unaffordable increases in rates (either from direct spending or the cost of borrowing).

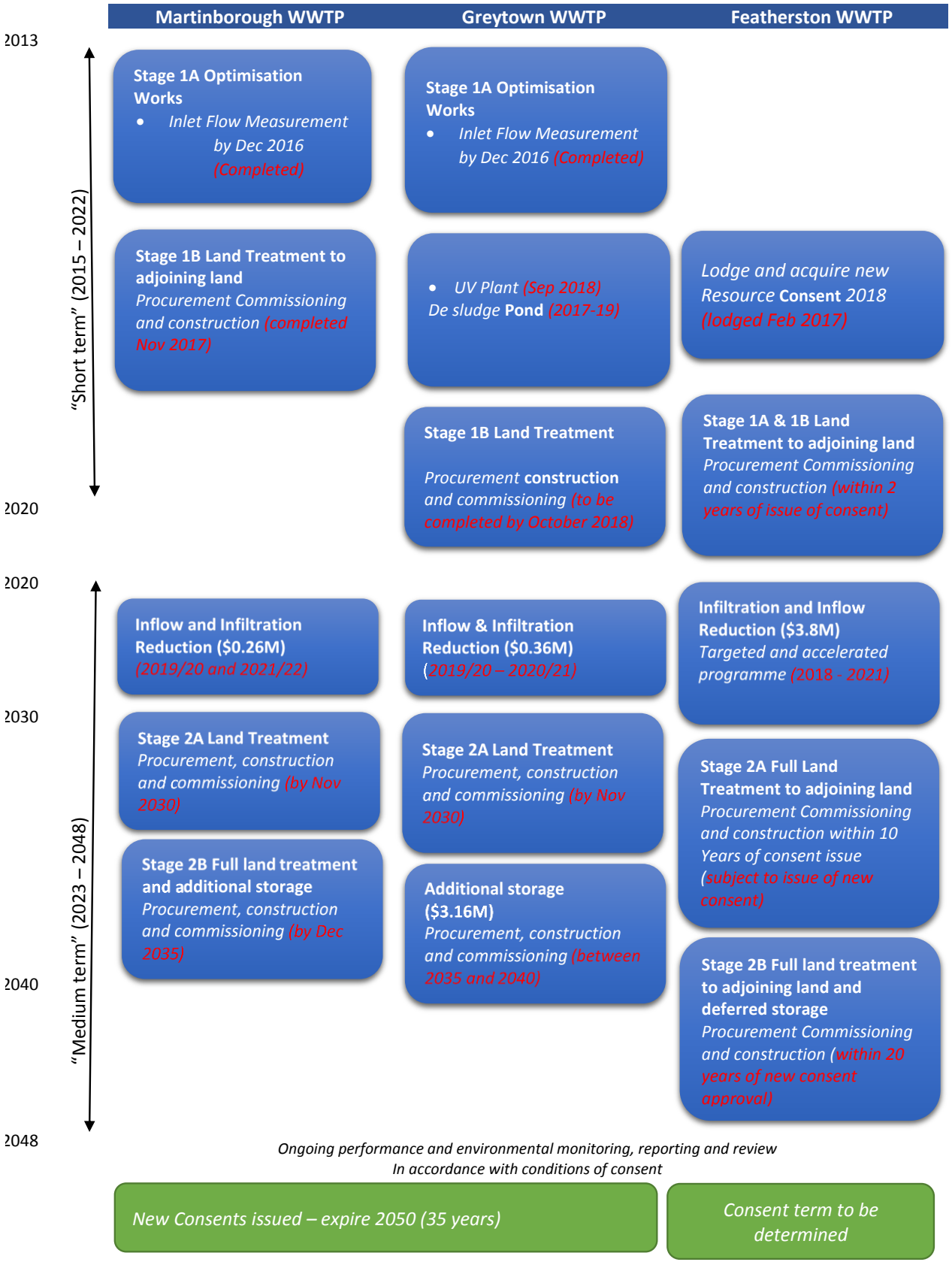
The affordability assessment concluded that the $29M of new capital funding must be spread over at least 28 years (from 2012 to 2040) in order to be sustainable, which is reflected in the capital programme proposed.

11.7.3 Catchment Based Programme

It was determined that the most appropriate programme is a catchment based one with a programme of managed incremental improvements at each site in a manner which optimises the improvement over the catchment in terms of the available budget.

A prioritised programme of optimisation works and treatment upgrades was developed across all three sites to deliver the best practicable option for each site, and collectively. A summary of the capital programme for the short term (2018 – 2028) and long term (2028 – 2048) is presented below.

Figure 11-1: Council WWTP Upgrade Capital Programme (Short Term programme 2015-2028)



11.7.4 Estimated Capital Costs

Below are the estimated capital costs of the long term consents to dispose of wastewater to land for the period 2017/18 – 2027/28.

Description		Total Estimate $000_	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28
Martinborough													
A	Pond Optimisation (Primary Screening, Re-use Floating Media and an Overflow Weir)	$80	$80										
B	Land Treatment (Composite Discharge Regime) Council Land Adjacent - Design and Delivery of Irrigation Infrastructure	$450	$450										
C	Pipeline to Pain Farm	$559											559
D	Preliminary Design Full Irrigation Scheme	$25	$25										
Sub-Total Martinborough		**$1,114**	**$555**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$559**
Featherston													
A	Inflow/Infiltration Investigation and Physical Remedial Works - Accelerated Programme	$300	$300										
B	Land Treatment (Composite Discharge Regime). Irrigation Pumps, Piping Modification (78 Ha Stage 1)	$1,427		$409	$503	$515							
Sub-Total Featherston		**$1,727**	**$300**	**$409**	**$503**	**$515**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Greytown													
A	Sludge Removal and Disposal	$300	$150	$150									
B	Inlet Screening	$150	$150										
C	UV and Plant Building (make provision for irrigation pumps etc.)	$350	$350										
D	Land Treatment (Composite Discharge Regime). Irrigation Pumps, Piping and Irrigation Infrastructure (16 Ha Stage 1)	$1,066	$450	$616									
Sub-Total Greytown		**$1,866**	**$1,100**	**$766**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Grand total		**$4,707**	**$1,955**	**$1,175**	**$503**	**$515**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$559**

12 IMPROVEMENTS TO ASSET MANAGEMENT PLANNING

This section details the 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 AMP's having being produced. However it is not clear to what extent asset management strategies since then have influenced the direction of asset development. It is probable that existing consent non-compliance, pending 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. Defendable long term reticulation renewal programmes have not been significantly developed and renewal work in the meantime has tended to be reactive driven.

12.2 IMPROVEMENT PLAN

12.2.1 Improvement Plan Purpose

As part of the 2015-2025 LTP an Improvement Plan was put in place. The purpose of the Improvement Plan was to:

- Implement AM planning processes relevant to the timescale of the 2015-2025 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 since that plan was put in place.

Improvement items identified in the Council Wastewater AMP 2012 are presented below. 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: Improvement Plan

Year	Description	Progress to Date
2015/2016	Continue network condition data acquisition. Develop condition compliance protocol	Piped network observation and assessment

2013/2018	Complete consent renewal acquisition processes and implement consent requirements. Martinborough WWTP and Greytown WWTP	Martinborough and Greytown WWTP consents obtained to 2051 and Featherston WWTP consent application has been lodged with GWRC
2014/2015	Prepared full revision of the AMP for the 2015-2025 LTP	It was considered that an update of the AMP was more appropriate
2017/2018	Prepare full revision of the AMP for the 2018-2028 LTP	Completed 2018

12.2.3 2018 Improvement Plan

The Council's 2018 Improvement Plan was 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[1]	Demand	Demand Management Plan	The consent to take water required a Plan by early 2015. This plan formalised the demand management strategies that the Council is presently using	Completed 2015	Internal	H
2	W WW[2]	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		M
3	W WW	AM Practices	AM policy	Consider adopting an AM Policy and confirming the level of AM required and actions required	2018 AssetFinda		M
4	W WW	AM Practices	Develop long term Improvement Programme	Develop long term improvement programme to achieve the Council's appropriate practice policy in the long term	2018		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	2020 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	internal	M

No.	Service	AM Area	Improvement Item	Description	Year(s)	Cost	Priority
					infrastructure capacity		
7	W WW	AM Practices	Process that allows consistency between the GIS and the asset register	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	2018 Refer 3	Internal and external	H
8	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
9	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
10	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)	2018 Refer 3	Internal and external	H
11	W	Water Safety Plans	Implementation of improvements shown in the Water Safety Plans	As detailed in the individual Water Safety Plans	As detailed in the individual Water Safety Plans		
12	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	On-going	Internal and external	M
13	W WW	AM Practices	Integrate valuation and condition information	Integrate valuation and condition information into the new GIS database (shared with MDC and CDC).	2018 Refer 3	Internal and external	H

Note 1: W = Water
Note 2: WW = Wastewater

12.3 AMP REVIEW OVER TIME

To ensure the AMP remains useful and relevant the following on-going process of AMP 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, 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 collected.

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 Wastewater Service assets.

13.1 RENEWALS/CAPITAL IMPROVEMENTS

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

13.2 ASSET DESCRIPTION

For the following sections on system condition, capacity, loading, and projected loading the reticulation pipelines are assessed on a scheme basis.

13.2.1 Featherston

Essentially a gravity system (93%) with minor pumping (7%) by property. Wastewater flows by gravity from individual connections through the sewers to a primary and secondary oxidation pond configured plant. The Featherston oxidation ponds are located off Longwood Road some 2.1 km from the edge of the urban development. The ponds have a total surface area of 38,900m^2 and incorporate a clay sealing layer, polyethylene sealed sides and wavebands. Secondary treated effluent is discharged after UV disinfection treatment (installed in December 2011) into Donald's Creek below Longwood Road.

13.2.2 Greytown

Essentially a gravity system (95%) with minor pumping (5%). At present 90% of the Greytown urban area is connected to the sewer. A few properties are still on septic tanks but eventually will be connected as opportunities arise. Wastewater flows by gravity from individual connections through sewers to primary and secondary ponds.

The Greytown wastewater ponds are located at the end of Pah Road, some 2.5km from Greytown. Pond No 1 has coarse air bubble aeration and an area of 18,500m2 and Pond No 2 has an area of 15,000m2. Both ponds are clay lined and have concrete wavebands. An internal boulder wall filter was constructed in 2000 for pond No 2. This was a requirement of the resource consent process and is aimed at improving effluent quality.

The effluent discharges into Papawai Stream. The Papawai Stream flows into the Ruamahanga River some 1,500 metres downstream of the effluent discharge point.

Irrigation to the adjacent council owned land will be in operation by May 2018 ahead of the consent conditions which requires implementation by September 2018 (UV) and irrigation to land by January 2021.

13.2.3 Martinborough

Martinborough operates entirely as a gravity system. Wastewater flows by gravity from individual connections through the sewers to a single aerated pond. The pond has an area of 16,300m^2 and incorporates a clay sealing layer and waveband. Mechanical aerators were installed in 1998 and four maturation ponds were constructed in 2006 to improve the quality of effluent. It is sited some 1.3km from the end of Weld Street.

Treated effluent is discharged following UV disinfection treatment (installed and commissioned in Dec 2011) via an outlet structure into the Ruamahanga River.

Irrigation to the adjacent council owned land has been in operation since November 2017 as per the consent conditions.

13.2.4 Lake Ferry Coastal Community

The reticulation is based around gravity and pumped flow of filtered effluent from property on site tanks through a small diameter reticulation system. Collected effluent is then pumped to the treatment plant which is a proprietary textile packed bed reactor system complete with ultra violet disinfection. Treated effluent is discharged to a land based system or a wetland. The wetland operates when soil moisture content levels within the irrigation beds become too high and soakage is unavailable. To date the wetland option has not been used.

13.3 WASTEWATER RETICULATION

13.3.1 Urban Pipeline Material

The Featherston system is a mixture of earthenware, AC, reinforced concrete and uPVC. Approximately 90% of the total reticulation is 150mm pipe. There has been the greatest use of earthenware and AC pipe with decreasing amounts of reinforced concrete and uPVC.

Greytown is predominantly concrete and AC. The use of uPVC is increasing with the balance being earthenware pipe.

Most of Martinborough is AC pipe, the remainder is uPVC pipe.

The Lake Ferry Scheme reticulation is comprised of uPVC and MDPE pipes (nearly 50% rising sewers).

13.4 ASSET CAPACITY/PERFORMANCE

Table 13-1: Daily Pumping

Pump Sites	Average Daily Operation (Hours)
Featherston	4 - 6 (seasonal)
Greytown	< 1 (seasonal)

Note: Pumping hours from SCADA monitoring records.

Table 13-2: Pond Storage Capacity

Pond Name	Storage Volume (m^3)	Peak Retention at Average Dry Weather Flow (ADWF)
Featherston Urban		
Oxidation Pond No 1 Oxidation Pond No 2 Pipeline System *1	54,460 combined 410	45 days total 12 hours
Greytown Urban		
Oxidation Pond No 1 Oxidation Pond No 2 Pipeline System *1	25,900 21,000 370	70 days total 14 hours
Martinborough Urban		
Pond No 1 Pipeline System *1	22,800 300	47 days 15 hours
Lake Ferry Settlement		
Pumping Chambers and Individual Site Tanks	-	24 hours holding capacity

Note: Volumes based on average depth of 1.4 metres. *1 estimated only.

13.5 SYSTEM LOADING RETICULATION PIPELINES

13.5.1 Featherston Urban

- There is one 375mm sewer from the reticulation system to the oxidation ponds.
- Approximately 90% of the reticulation is serviced by 150mm diameter sewers.
- A number of areas within the reticulation system are overloaded due to storm-water infiltration. The extent of this continues to be confirmed through investigation of current and new CCTV records. Excess flows at times are in the order of 4 to 5 times the estimated Average Daily Flow (ADF).
- There is little industrial activity in Featherston and only limited commercial activity.
- Domestic sources generate the majority of the wastewater.
- Based on typical figures for the generation of wastewater 2,482m3/day of wastewater is produced in terms of an ADF for 2016/17.

13.5.2 Greytown Urban

- Twin 225mm sewers convey wastewater from the reticulation joining into a single 225mm sewer just beyond the former Borough boundary from where it is conveyed 2.5km to the oxidation ponds.
- Approximately 56% of the reticulation system is serviced by 150mm diameter sewers.
- Some areas of the Greytown system accumulate gravel and debris within the sewers.

- There is limited commercial/industrial activity contributing to the sewerage system. This activity does not significantly add to the normal domestic load.
- Greytown ADF for 2016/17 was 685m^3/day.
- Some sections of reticulation within Greytown are not considered to be satisfactory as confirmed through CCTV investigation. On-going investigation and identification of these sections will continue over the term of this AMP.

13.5.3 Martinborough Urban

- Twin 200mm sewers convey wastewater from the southern and western side of town joining into a single 200mm sewer along Weld Street. This pipe carries wastewater to the pond 750 metres away and located beside the Ruamahanga River.
- The majority of sewers are either 150mm or 200mm diameter AC pipes.
- There is little industrial activity in Martinborough and only limited commercial premises. Domestic sources generate the majority of the wastewater.
- Martinborough ADF for 2016/17 was 262m^3/day.
- Reticulation condition within Martinborough is considered to be adequate.

13.5.4 Lake Ferry Coastal

- All serviced properties have an inspected and complying septic tank. The treated primary effluent from the septic tanks is either gravitated or pumped to the reticulated system.
- Two pump stations lift the collected wastewater to a modular package treatment plant on elevated land behind the community.
- ADF is estimated to be 20 – 30 m^3 increasing to 100m^3 at peak loading periods over the Christmas holiday period.

13.6 PUMPING STATIONS

13.6.1 Featherston Urban

The Featherston pumping station is situated at the corner of Revan's and Donald Street. Twin pumps operate in a wet well and under normal circumstances service the northern region beyond Waite Street to ensure that wastewater flows to the oxidation ponds. The pump station is sufficient for this purpose except in situations where the pump malfunctioning leads to overflows within the northern region of the network. Improvements have been made to prevent local overflows while provisions are in place for managing emergency overflows.

13.6.2 Greytown Urban

The Greytown pumping station is sited behind No 9 Reading Street and currently services 7 properties only. It is sufficient for the current purpose.

13.6.3 Martinborough Urban

No Pump Stations.

13.6.4 Lake Ferry

Two pump stations as shown on the schematic plan.

13.7 OXIDATION PONDS

13.7.1 Featherston Urban

The overall retention in the ponds is currently 45 days at average dry weather flow (ADWF) and normal water levels. The Biological Oxygen Demand (BOD5) using actual loading is 17 kg BOD per hectare per day (BID/ha/day) which is well below the design parameter of 84 kg BOD/ha/day. This demonstrates that the system is and is expected to remain considerably under loaded.

Ultra Violet disinfection was installed in December 2012 to remove pathogens prior to discharge.

13.7.2 Greytown Urban

The overall retention in the ponds is currently 70 days at ADWF.

The Biological Oxygen Demand (BOD5) using actual loadings is 42 kg BOD/ha/day which is well below the design parameter of 84 kg BOD/ha/day. This demonstrates that the system is and is expected to remain considerably under loaded.

Improvements have been made to Pond No 2 with the construction of an internal permeable rock baffle system. This was a requirement of the recently expired resource consent and has helped achieve an improvement in effluent quality predominantly through E coliform reduction.

13.7.3 Martinborough Urban

The overall retention in the single pond is currently 47 days at ADWF. The Biological Oxygen Demand (BOD5) using actual loadings is 40 kg BOD/ha/day which is well below the design parameter of 84 kg BOD/ha/day. This demonstrates that the system is and is expected to remain considerably under loaded.

Maturation ponds were constructed in 2006 aimed at reducing the level of suspended solids in the treated effluent prior to discharge. UV lamp disinfection was commissioned in December 2010.

13.7.4 Lake Ferry

There is no oxidation pond at Lake Ferry. Septic Tank derived effluent only wastewater is treated mechanically using an Innoflow proprietary modular system which can be expanded to cater for growth/load when required. Design Flow 100 cubic metres per day at peak usage times e.g. holiday periods.

13.8 PROJECTED LOADING

13.8.1 Reticulation Pipelines

The reticulation systems in the urban areas of Featherston, Greytown and Martinborough are assumed to have limited capacity for future development. Although the reticulation systems were designed to cope some expansion of population the following factors will place limitations on that development:

- Storm water infiltration into pipelines.
- Condition of pipelines.
- Topographical constraints.

The reticulation system will be investigated to help identify problem areas and sub-regions where limited extension is possible. The following are identified as areas where development may be restricted:

- North end of Featherston
- Sub-region of Featherston currently serviced by the existing pumping station
- North end of Greytown

13.8.2 Pumping Stations

The current pumping stations in Featherston and Greytown are capable of servicing a limited number of properties. Development in these areas may require a review of their operation and possible upgrading.

Additional pumping stations may be required in those areas where development is permitted but topographical constraints do not allow connection by means of gravity.

13.8.3 Ponds

In general the capacities of the wastewater ponds are not expected to be a limiting factor in terms of the development of the overall sewerage systems. However the following factors may influence future development:

- The management/ reduction of peak wet weather flows.
- Operation and maintenance of ponds including sludge removal over time to maintain retention/ storage capacity values.
- Effluent quality standards.
- Resource consent requirements.

Until 2007 the Martinborough wastewater system operated with a single pond. A series of four maturation cells were constructed to improve the suspended solids content of the effluent entering the Ruamahanga River.

13.9 ASSET CONDITION

13.9.1 Reticulation Plans

The information is contained on the GIS system except for the Lake Ferry Settlement.

13.9.2 Condition data is estimated

A selection of documented data exists on the condition of the underground assets for the wastewater system. For Featherston condition estimates and renewal programming for the next three years have been made from the examination of earlier CCTV records and consultant reporting. This investigative work is expected to continue across all three serviced areas over the next three years to improve confidence in the condition data we have.

In the absence of condition records, ranking has generally been undertaken according to pipe material and age.

An estimate of the condition of each asset has been made in terms of the asset grading system set out in the International Infrastructure Asset Management Manual, Australia/New Zealand Version 3.0 – 2006. 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

Description	Condition Grading
Featherston Urban	
Oxidation Ponds	2
Monitoring Manholes	1
Outlet Structure	2
Disposal Trough	2
Pump Station	3
Pumps (new + spare)	1,3
Telemetry & Control Systems	1
Greytown Urban	
Pump Station	1
Oxidation Ponds	2

Rock Baffles	1
Outlet Structure	2
Monitoring Manholes	1
Aeration System	1
Martinborough Urban	
Oxidation Pond	2
Outlet Structure	2
Monitoring Manhole	1
Aerators	1
Telemetry & Control Systems	1
Irrigation Pumps	1
Travelling irrigator	1
Lake Ferry Settlement	
Innoflow Technologies Treatment System	1
Pump stations	2
Telemetry and Control Systems	1

13.10 OPERATIONAL MAINTENANCE STRATEGIES

13.10.1 Reticulation

Asset performance e.g. reticulation sewer blockages which can cause a reduction in level of service or temporary loss of service and in some cases public health issues might in some cases indicate asset deficiency which might be either maintenance or condition related.

Wastewater sewer blockages are subject to a specific service level on an annual basis, hence are reported annually. It is in Council's interests then that service interruptions due to blockage failure are minimised.

Blockages are categorised according to sewer failure or obstruction for another reason. Where sewer is replaced following a service interruption, recovered sewer as a matter of procedure is stored for further examination.

13.10.2 Treatment Plants

Wastewater treatment plants with the exception of the Lake Ferry wastewater treatment plant, are inspected daily. Pond condition and performance are noted with exceptions in terms of odour or pond colour reported to Infrastructure Services staff.

13.11 LEVELS OF SERVICE (TECHNICAL PERFORMANCE MEASURES)

Table 13-4: Service Level 1 - The Council Provides Wastewater Services That Effectively Collect and Dispose of Wastewater

Activity Outcomes	Technical Performance	Technical Performance Measure	Performance Measure Procedure
Ensures that the needs of local and visitor communities are met ahead of growth and development. Contributes to the public health of the community	Number of blockages per 1000 connections	< 10 per 1000 connections per annum	NCS and CEM databases
	Ratepayers and residents satisfied with Wastewater Services	Achieve Peer Group National Average satisfaction levels of 75%	NRB Survey yearly
	Plan for and confirm capital improvement programme by obtaining expert advice	Review if necessary and appropriate for within the Annual plan and LTP	Forward Work Programme
	Identify and action reticulation upgrade and renewal programmes	Update condition information and modelling programmes	Wellington Water report 2017

Table 13-5: Service Level 2- Wastewater Disposal Does Not Create Any Smells, Spill or Health Issues and Causes Minimal Impact on the Natural Environment

Activity Outcomes	Technical performance	Technical Performance Measure	Performance Measure Procedure
Ensures that the needs of local and visitor communities are met ahead of growth and development. Contributes to the public health of the community	Resource consent conditions complied with	90% Mainly Complying	Annual Report to GWRC
	Number of odour related requests for services/complaints	<15 per 1000 connections per annum	NCS and CEM databases
	Total number of overflows from sewer reticulation system	<10 per 1000 connections per annum	NCS and CEM databases
	Manage Growth	Process applications for new development in accordance with the CDP and NZS 4404:2010	Appropriate Consent Conditions including capital contributions

These measures are used to:

- Assess effectiveness of operational contract in terms of adherence to contractual routine and fault response times
- Gauge and evaluate developing reticulation and treatment infrastructure faults
- Confirm that asset condition information is consistent with operational experiences.

13.12 SERVICED POPULATIONS

13.12.1 Changes planned to levels of service as a result of changes in legislation or customer pressure

In spite of Council's intentions 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.

13.13 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 design capacity. Work over and above restoring an asset to original capacity is new works expenditure.

13.13.1 Renewal Plan Identification

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

Inappropriate deferral of renewal / rehabilitation work for Council's underground wastewater assets will:

- Postpone inevitable work and may result in higher cost to future ratepayers.
- May result in a reduction of the levels of service over time with frequent unscheduled and unnecessary supply interruption.

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

Significant sections of reticulation in the Featherston and Greytown communities are forty to fifty years of age and approaching the end of their useful service life. Leaky pipe joints and deteriorated pipe including property service laterals allow excess infiltration into the reticulation when ground water levels are elevated especially over winter months. In addition storm water entry (inflow) to the reticulation during heavy rainfall events is identified as a contributor to excess reticulation and treatment plant flow load.

Such sewers require renewal or renovation and the development of a targeted long term renewal programme to ensure best return for investment remains a priority work.

To this end, during 2017 condition re-assessment work was undertaken by reviewing in situ sewer records in the Featherston network. Consequently a programme of work has been developed.

13.14 RENEWAL PROGRAMME

13.14.1 Background and Assumptions

The renewal programme across the range of reticulation and facility assets is being developed and is generally based on age, material and hence assumed condition.

The Wastewater Strategy provides for significant renewals expenditure over the period 2018/19 to 2027/28. The majority of the renewals will be in Featherston. These renewals are being instigated to assist in reducing the level of I & I. At this stage the AMP renewal programme shown below doesn't consider these renewals, further iterations of this AMP (prior to approval by Council) will include information regarding the integration of the Wastewater Strategy renewals with the 30 year renewals' programme.

The general assumptions for developing the renewals plan shown within this AMP are presented in Table 13-6.

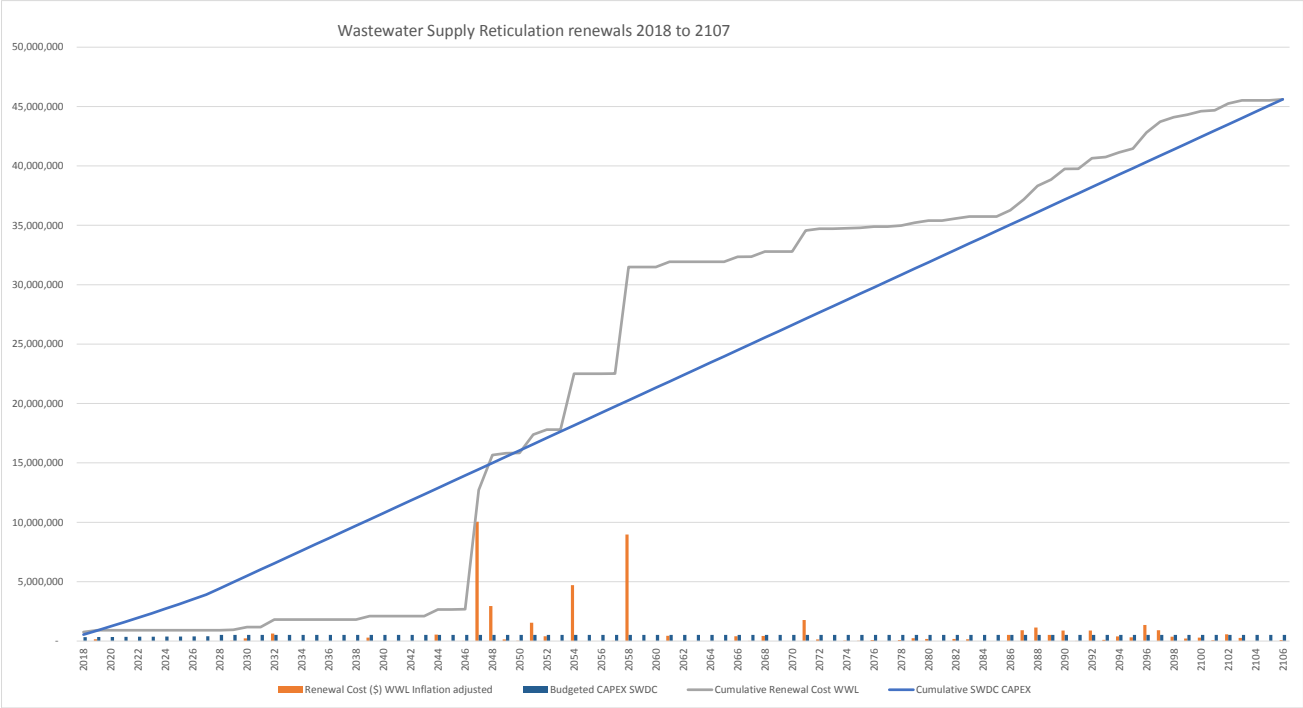
Table 13-6: General Assumptions for Renewals

ID	Worksheet	Line	Change Description
1	F Pipe Renewals	n/a	1 no. manhole per 80m pipe length assumed based asset register pipe length / no. of manholes
2	G Pipe Renewals	n/a	1 no. manhole per 90m pipe length assumed based asset register pipe length / no. of manholes
3	M Pipe Renewals	n/a	1 no. manhole per 70m pipe length assumed based asset register pipe length / no. of manholes
4	F Pipe Renewals	n/a	1 no flush tank renewal in 2032 added as one off cost in 'Year' column
5	F Pipe Renewals	n/a	1 no flush tank renewal in 2032 added as one off cost in 'Year' column
6	LF Pipe Renewals	n/a	No pipe renewals calcs done - pipe assets installed from 2007 onwards, therefore not within 2014 AMP forecast timeframe
7	All 'renewals'	n/a	8% increase on unit rates applied for overhead factor up (professional fees, establishment) - as per valuation report 2012 (Appendix section 1.2)
8	WW Facilities Renewal	n/a	Base lives assumed for renewals forecasting shown in green table
9	F adj pipe life G adj pipe life M adj pipe life	n/a	Base lives assumed for WW pipes for adjusted replacement year and renewal forecast: AC = 60 yrs EW = 60 yrs FIB = 60 yrs Conc = 60 yrs PVC = 80 yrs PE = 80 yrs PVCu = 80 yrs
10	General	n/a	Pipe renewals forecast do not include laterals
11	WW Facilities Renewal	n/a	All ponds installed 1973, push out with common end of life point for all components: pond bunds, wavebands and clay liners pushed out to 2053 (1973 + 80 years)

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

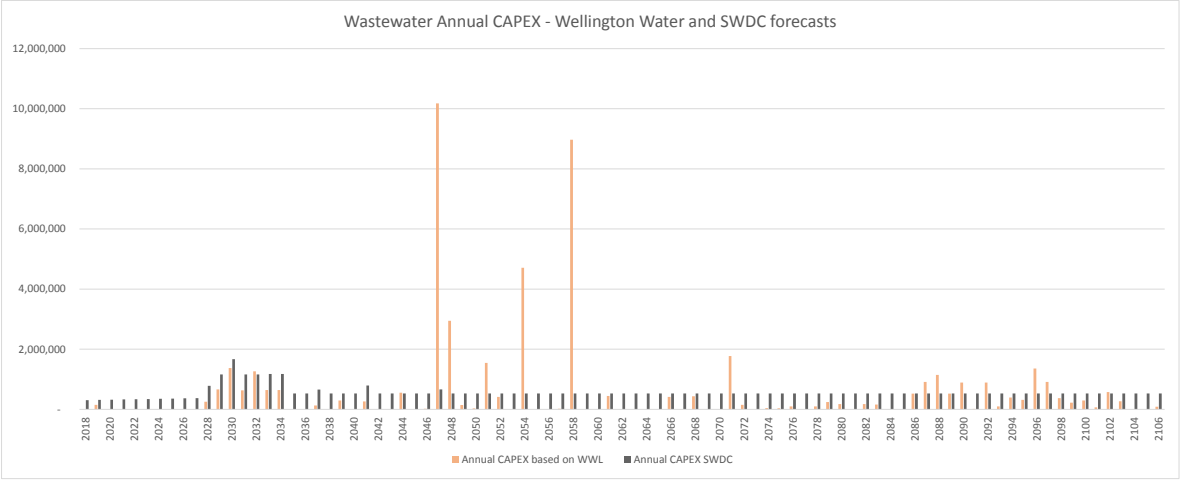
13.14.2 Indicative Renewal Expenditure

The following provides indicative reticulation renewal expenditure based on the Wellington Water report compared to SWDC budgeted expenditure for the period from 2018 to 2107. SWDC plans to complete underground reticulation renewals gradually over the period to avoid the large spikes in expenditure indicated by the WWL report. Scheduling of work taking into account the above factors would consider the consequences of failure of critical pipeline assets. This renewal programme uses the pipe lives shown above.



13.14.3 Council's Wastewater Capital Expenditure Summary

The following graphs show the indicative wastewater capital expenditure (CAPEX) from the Wellington Water report and the SWDC planned capital expenditure. Apart from the wastewater to land projects, the majority of the CAPEX is for underground reticulation renewals which SWDC plan to complete gradually over the period to avoid the large spikes in expenditure indicated by the WWL report. The second graph shows the cumulative spend which shows that SWDC forecasts will enable all predicted work to be completed by the end of the period covered by the WWL report using the approach of spreading the renewal costs more or less evenly over the period.



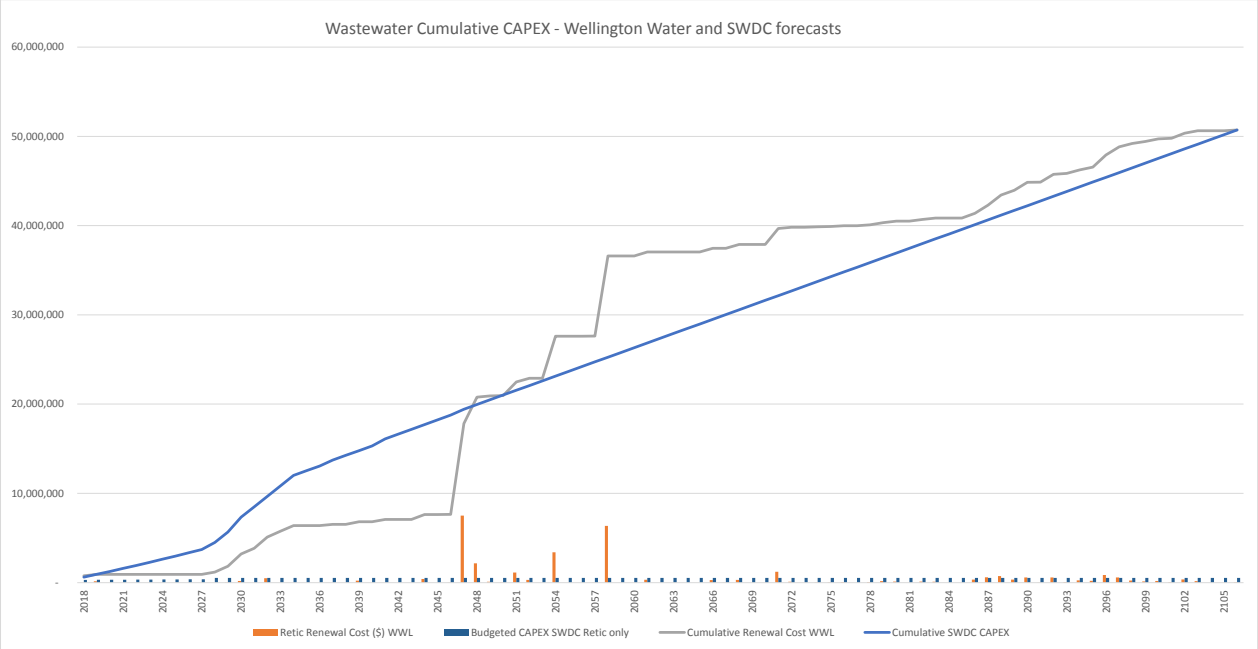


Table 13-7: Wastewater Strategy Renewal Programme for Featherston

Street/Location	Replacement Year	Diam (mm)	Length	Type	Methodology	Cost $000
Hardy Grove	16/17	150	200	AC	In Line	$60
Waite Street/Ponds		375	1230	RCRRJP	In Line/Off Line Renewal PVC/PE	$308
	14/15 and 15/16					
Woodward Street (east)		150	160	AC	In Line	$40
Waite Street only						
Woodward Street/ Bethune Street		150	400	EW	In Line Trenchless	$120
Laterals		100	400	EW	In Line	$60
Contingency						$60
					Total	$648
Ludlam	16/17	150	223	EW	In line	$67
Bethune (to Fitzherbert St)		150	223	EW	In Line	$67
Wakefield(to Fox St)		150	225	EW	in Line	$68
Wakefield (Fox to Bell)		150	229	EW	In Line	$69
Fitzherbert Street (Bethune-More)	16/17	150	241	TBC	Pipeline type to be confirmed	$96
Laterals		100	300	EW		$45
Contingency						$41
					Total	$453

Street/Location	Replacement Year	Diam (mm)	Length	Type	Methodology	Cost $000
Bell Street (Wakefield to end)	17/18	150	320	TBC	Pipeline Diameter to be confirmed	$96
Watt Street(Bell to Harrison)		150	226	TBC	Pipeline Type to be confirmed	$68
Bell Street (Hickson to end)		150	360	EW		$108
Other EW Line to be identified		150	750	EW		$225
Laterals		100	300	EW	In Line	$45
Contingency						$54
			5787		Total	$596
TOTAL PROGRAMME						$1,696

13.15 CREATION PLAN

Asset improvements proposed over the term of the LTP are driven largely by changing environmental and social expectations. These improvements relate to the three wastewater treatment plants at Featherston, Greytown and Martinborough through land acquisition for land treatment and wastewater treatment infrastructure.

13.16 DISPOSAL PLAN

There is no asset disposals apart from renewals of existing asset envisaged within the term of this AMP.

14 APPENDICES

14.1 APPENDIX 1 - REFERENCES

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

Appendix Table 1: References

No.	Title	Issue Date	Sector	Author/ Consultant
1	Featherston Drinking Water Supply MOH Drinking Water subsidy Application	February 2014	Water	Opus
2	Public Health Risk Management Plan (PHRMP) - Featherston	March 2011	Water	Opus
3	PHRMP - Greytown	March 2011	Water	Opus
4	PHRMP - Martinborough	March 2011	Water	Opus
5	Featherston Groundwater Infiltration Investigation	December 2013	Wastewater	AWT
6	SWDC Asset Data & Renewals Planning Project	September 2017	W & WW	Wellington Water

14.2 APPENDIX 2 - PRELIMINARY OPERATIONS EXPENDITURE

The budgeted operations and maintenance costs for operating the four wastewater schemes is presented below.

Wastewater	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	63	75	80	75	92	119	147	154	152	175
User Levies Income										
Sewer Connections	3	3	3	3	3	3	3	3	3	4
Septic Tank Disposals	12	12	13	13	13	14	14	14	15	15
Rental/Hire										
Rental /Hire - FSTN	109	112	115	118	121	124	127	131	135	139
Rental /Hire - GTN	74	76	78	80	82	84	87	89	92	95
Contributions Income										
Sewer Contributions - FTN	21	23	26	26	26	23	21	21	21	21
Sewer Contributions - GTN	208	229	239	239	281	322	322	291	302	302
Sewer Contributions - MBA	35	40	39	40	42	39	30	21	21	21
Personnel Costs										
Salaries & Wages	11	12	12	12	12	12	13	13	13	14
Operating Costs										
Consultants	5	5	5	5	5	5	6	6	6	6
Legal Expenses	3	3	4	4	4	4	4	4	4	4
Subscriptions & Memberships	1	1	1	1	1	1	1	1	1	1
Telephone Expenses	1	1	1	1	1	1	1	1	1	1
Occupancy Costs										
Utilities	150	154	158	162	166	171	175	180	186	192
Rates/Rent Payable	14	14	15	15	15	16	16	17	17	18
Internal Charges										
Corporate Services	144	144	153	151	154	162	161	162	170	168
Professional Services	150	154	157	160	164	167	171	175	177	179
Finance Costs										
Depreciation	598	655	679	691	695	705	714	717	727	754
Insurance	23	24	24	25	26	26	27	28	29	30
Interest	535	586	593	600	604	604	600	576	548	572
Works Costs										
Professional services	6	6	6	6	6	6	6	7	7	7
Resource Consents	16	16	17	21	21	22	22	23	24	24
Investigations CCTV	50	51	53	54	55	57	58	60	62	64
Investigations (Other)	5	5	5	5	6	6	6	6	6	6
Routine Maintenance	320	329	337	345	354	364	374	385	396	409
Monitoring & Testing	45	46	47	51	53	54	56	57	59	61
Pond Desluding (GTN & FSTN)	104	107	0	0	0	107	110	0	0	0
Total Wastewater cost of service:	**(1,655)**	**(1,743)**	**(1,673)**	**(1,715)**	**(1,681)**	**(1,761)**	**(1,768)**	**(1,691)**	**(1,693)**	**(1,738)**
Represented By:										
Total Income	525	571	592	594	660	728	752	726	741	771
Total Expenditure	2,180	2,313	2,265	2,309	2,341	2,489	2,520	2,417	2,434	2,510
Net Cost of Service	**(1,655)**	**(1,743)**	**(1,673)**	**(1,715)**	**(1,681)**	**(1,761)**	**(1,768)**	**(1,691)**	**(1,693)**	**(1,738)**

14.3 APPENDIX 3 - 2016 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 - RISK ANALYSIS TABLE

Appendix Table 4: Risk Analysis Table

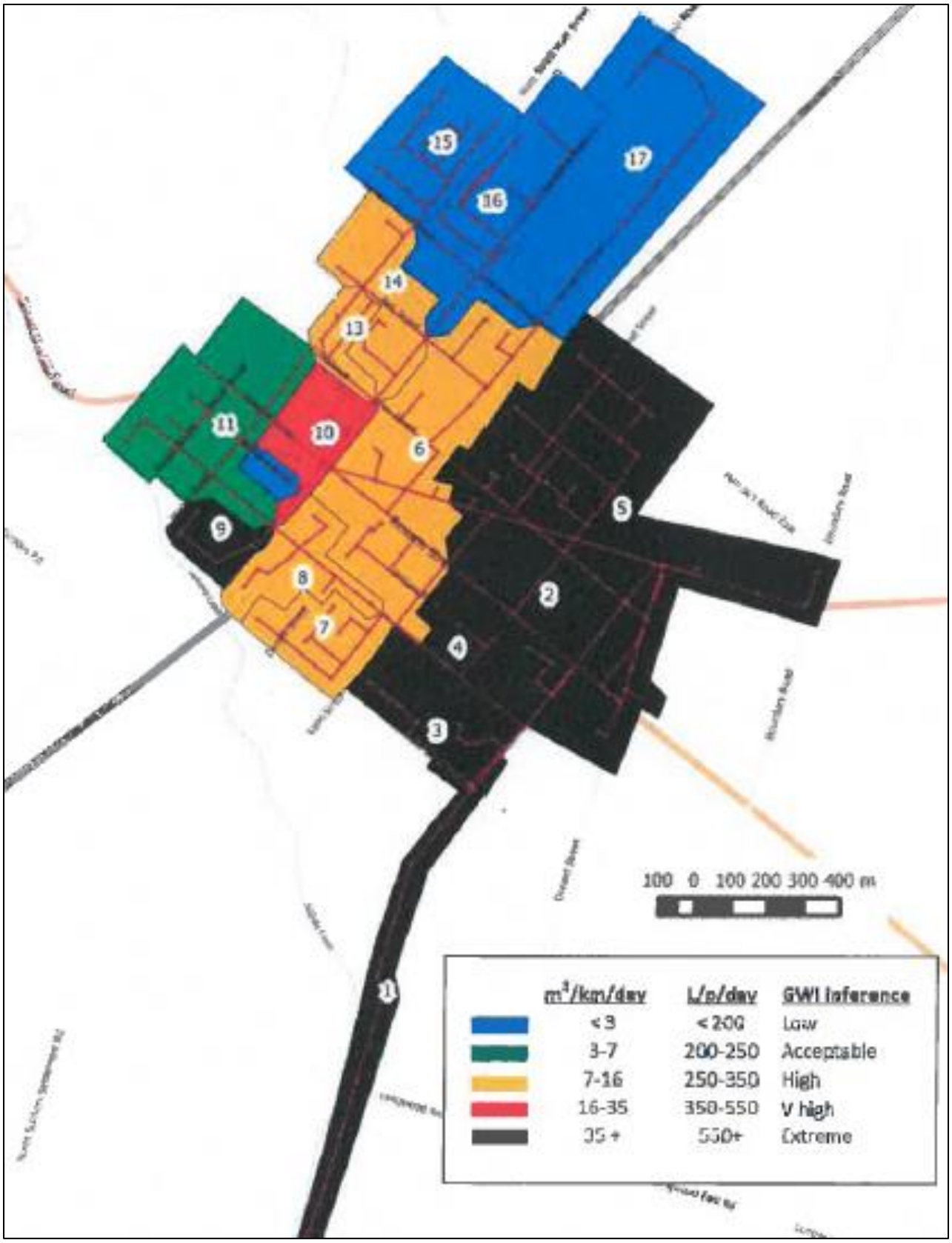
No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
1	**Higher Level Policies, Procedures and Controls**					
1.5	The Council does not have an acceptable position on the impact of climate change on service delivery	Financial loss due to liability for 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 e.g.: 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 AMP s 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**					

No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
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
4	**Human Resources**					
4.3	Information in people's 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 and 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	

No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
6.3	Criticality assessment not undertaken	Failure of critical assets resulting 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 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
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 part. 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 grading 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	

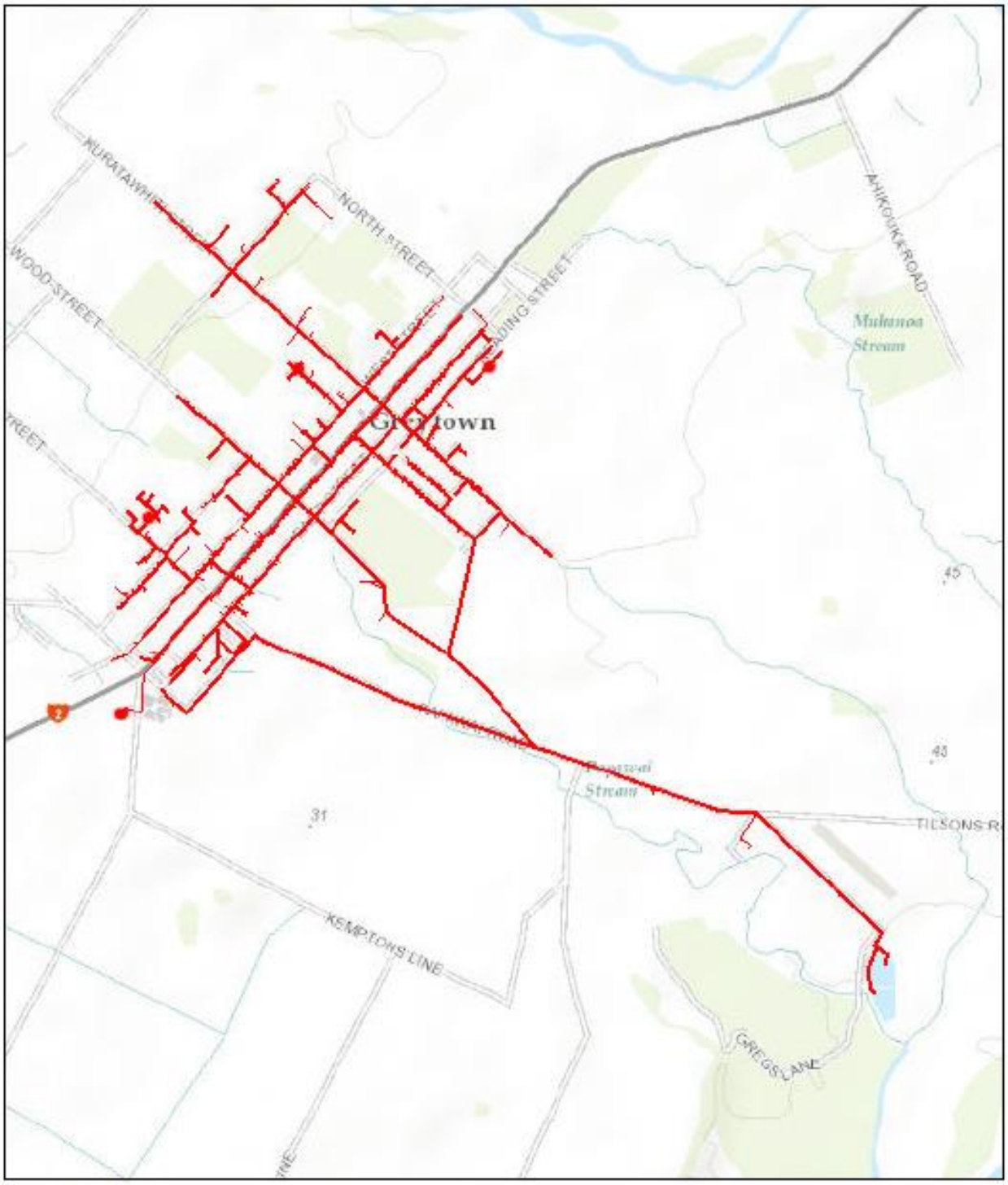
No.	Weakness or Vulnerability	Risk	Gross Risk	Mitigation Strategies	Residual Risk	Improvement Required
8.9	Vandalism at facility	Reduced LoS	Significant	Warning via SCADA of any issue at facilities	Moderate	
8.10	Rising Mains - Insufficient Capacity	Insufficient water during peak usage periods	Significant	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	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	
9	Asset Risks Wastewater					
9.12	SCADA Failure	No alarm available	Significant	Backup systems and procedures	Moderate	NIL

14.5 APPENDIX 6 - FEATHERSTON INFILTRATION STUDY: CLASSIFICATION ON FEATHERSTON FOR GROUND WATER INFERENCE



14.6 APPENDIX 7 - SCHEMATIC DIAGRAMS FOR URBAN INFRASTRUCTURE

Greytown Sewer Reticulation



October 18, 2017

1:25,000

0 275 550 1,100 Metres

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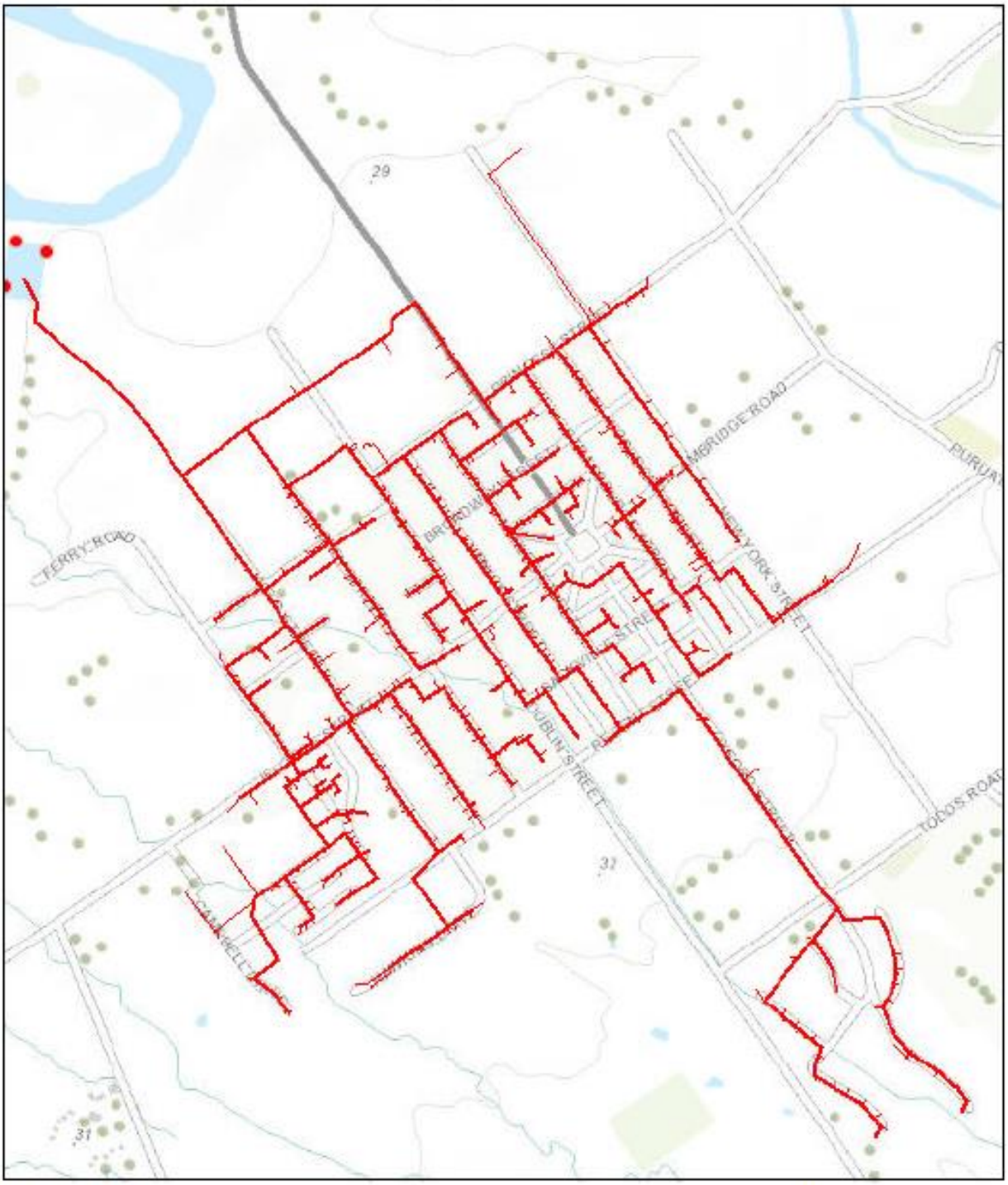
Martinborough Sewer Reticulation



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1:15,000

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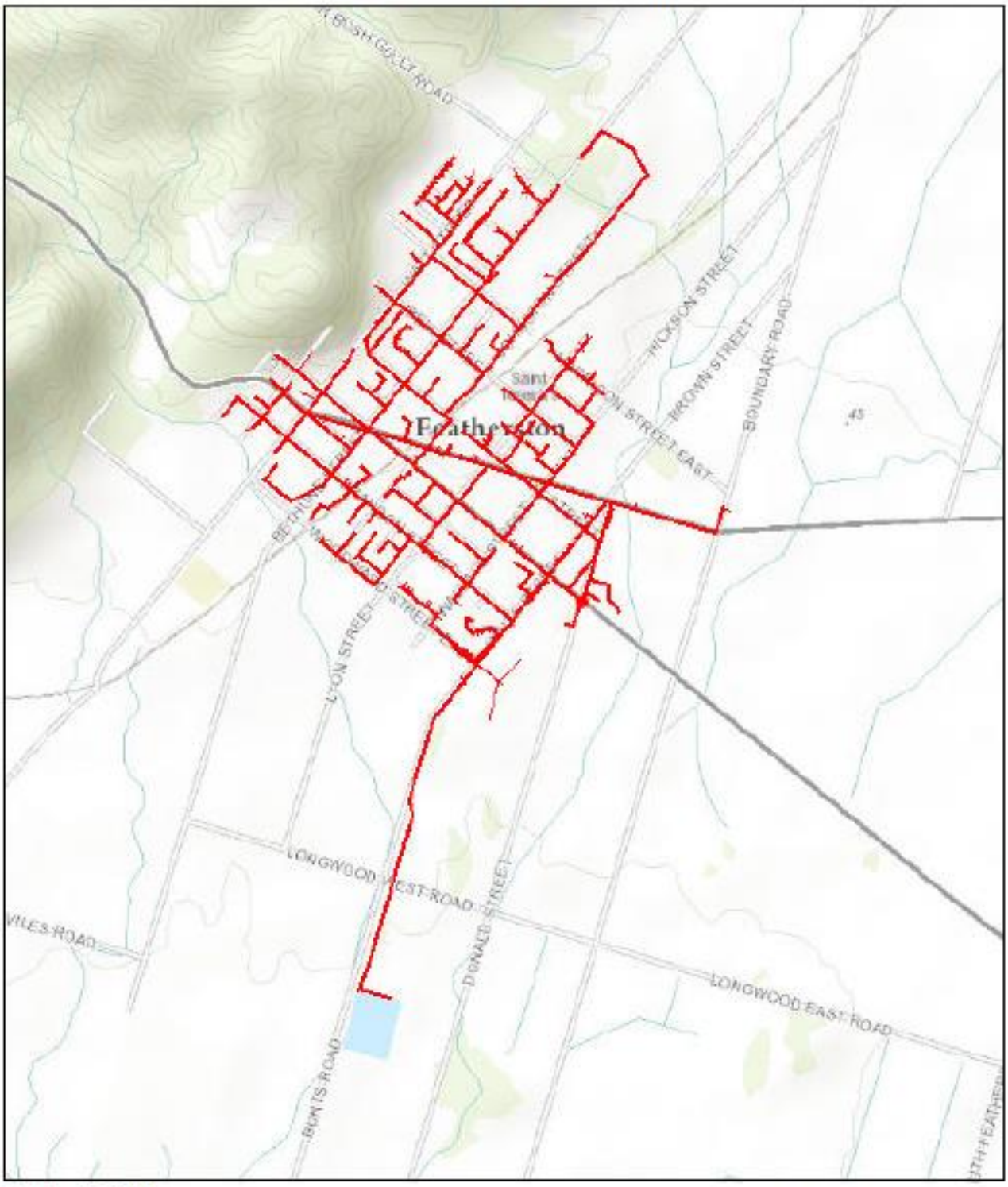
Featherston Sewer Reticulation



October 18, 2017

1:20,000

0 225 450 900 Metres

Lake Ferry Sewer Reticulation

October 18, 2017

1:5,000

0 55 110 220 Metres

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