



ASSET MANAGEMENT PLAN

Part B: Wastewater

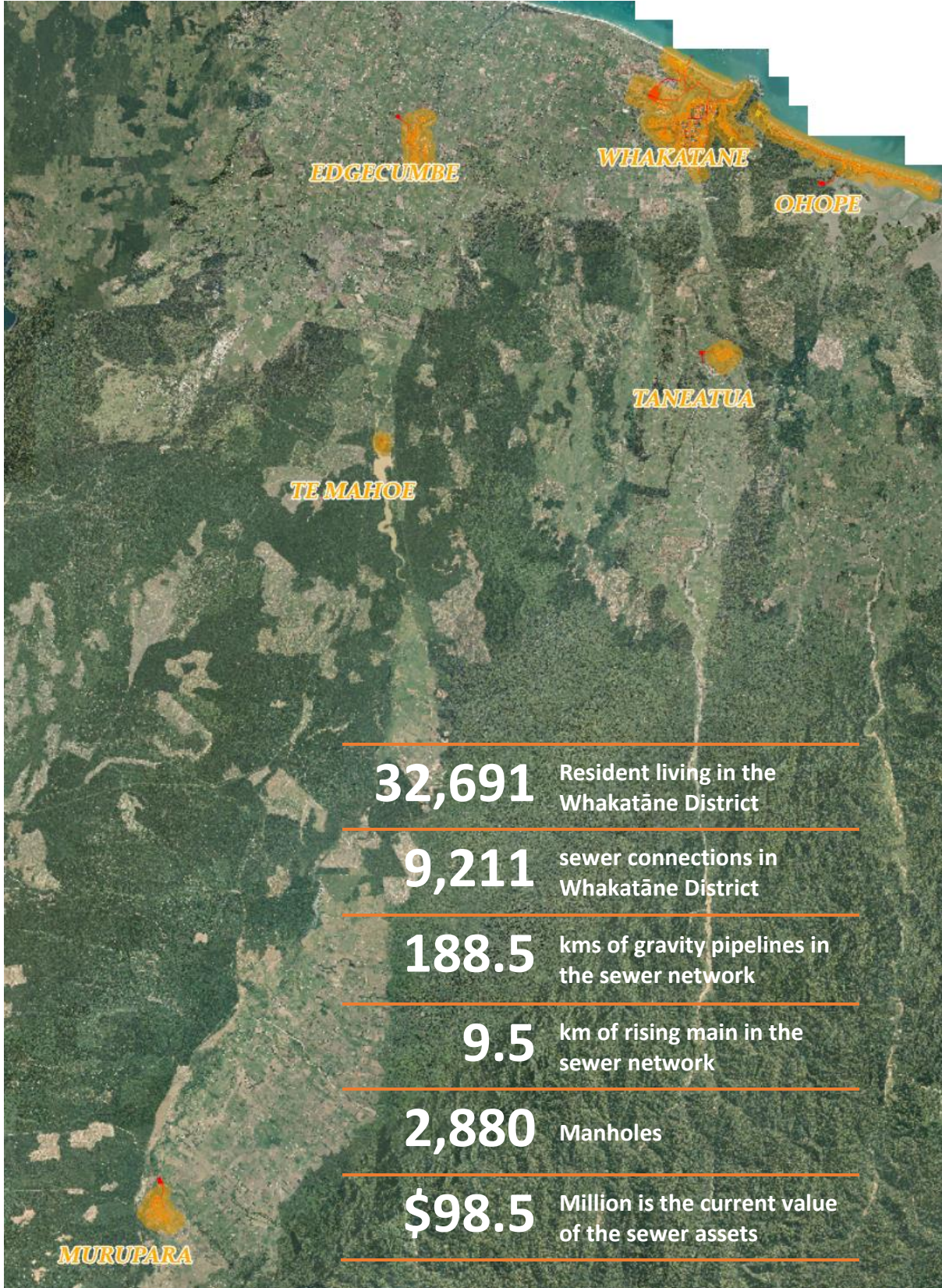
30 JUNE 2018

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**Asset Management Plan
Part B – Wastewater**

This Asset Management Plan provides the specific asset management information for the wastewater (sewage treatment and drainage) activity, for the period 2018-2028.



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Executive Summary

Sewer is an integral part of the Three Waters business (water supply, sewer and wastewater) managed directly by Whakatāne District Council (the Council). Altogether, the Council manages six sewer schemes (Figure 1-1) which cover over 1691 hectares of land and 75% of the population in the district. The Council provides a variety of infrastructure to manage sewer within our identified urban and residential areas. Our sewer system includes sewer service line, manholes, underground pipes, pump stations and sewer treatment plant. The Council collects the sewage from connected houses and businesses, treats it to an acceptable level before disposing of it safely. This activity also includes the Council's Tradewaste functions which include the monitoring and treatment of sewage from businesses. The Council undertakes these sewer treatment and drainage activities because of statutory obligations, duty of care and public demand.

The Council has developed this Asset Management Plan (AMP) to formally document the management approach being used to provide and maintain efficient, reliable, safe and sustainable sewer services. The Council's sewer activity primarily contributes to the following community outcomes:

- Reliable and Affordable Infrastructure
- Community Needs
- Valuing Our Environment

To achieve these objectives, this AMP has been planned under the International Infrastructure Management Manual (IIMM) 2015 which is a significant improvement from the previous asset management plan. The planning framework is shown in *Figure 1-2*.

Key issues:

- **Resource Consent for discharge.** Treated wastewater cannot legally be discharged without a resource consent under the Resource Management Act 1991 ("RMA"). The resource consents for the Whakatāne, Tāneatua, Edgecumbe and Murupara wastewater treatment plants (WWTP) all expire on 1 October 2026 and these must be replaced to enable treated wastewater to be discharged. These resource consents cannot simply be renewed. The RMA requires any application for a replacement consent for an existing activity to be treated in the same way as an application for a new consent.
- **Population, growth and demand.** The continuing growth and demand within the Whakatāne and Ōhope urban areas will require future upgrades to existing infrastructure. The main impacts are likely to include:
 - Increased pressure on existing infrastructure
 - Increase in operations and maintenance costs (which will be recovered by customer rates)
 - Possible increase in the generation of contaminants, such as road wash-off, and industrial run-off discharging into sewer systems.
- **Wet weather events.** Sewerage systems are not designed to accommodate wet weather events. During the extreme wet weather events of the 2010, 2011, 2014 and 2017 floods, inflow and infiltration into some of the sewerage networks was greater than expected which placed additional strain on the infrastructure. In particular, during the 2014 flood events, water from the Wainui Te Whara catchment overflowed into the Whakatāne urban area creating significant problems in pumping station electrical switchboards. The

southern end of Edgecumbe township is prone to flooding requiring additional protection of the wastewater pumping station infrastructure.

- **Climate change.** Climate change and its related impact on sewer infrastructure is of growing concern. The Council needs determine the potential implications of climate change and plan for this when considering ongoing infrastructure renewals and upgrade requirements. Investigation of the sewer network and developing strategies for possible upgrades and/or new capital works associated with climate change has been planned in the Long Term Plan (LTP)
- **Affordability/levels of service.** The Council is working with the community to determine programmes of service and ensure the long term sustainability of assets. Key drivers such as community health and expectations, as well as ongoing legislative responsibilities help assist with the prioritisation of projects.

Addressing issues

- Growth and demand issues are being addressed through demand management planning and network modeling. The Council is working to improve the condition assessment data held on Three Waters related infrastructure.
- With regard to climate change, the Council:
 - Monitors trends in climate change and will be reviewing the engineering standards and guidelines to cater for drought scenarios and flooding events
 - Liaises and shares information with central and regional Government
 - Redefines hazard zones (i.e. boundaries with waterways and the coastal boundary);
 - Provides long term planning for low lying communities (coastal, inner harbour, river, stream etc.) and infrastructure requirements as a result of increased rainfall.
- Sewer system inadequacies and affordability issues are being addressed through projects in the LTP.

In general, the sewer activity is driven by an increase in the levels of service to meet current planning and regulatory requirements. Capital projects worth approximately \$39 million have been identified within the next ten-year period with the majority of projects relating to obtaining new resource consents for wastewater discharge.

Costs

Over 54 capital projects have been scheduled in the next 10 years with 52% on levels of service, 46% on renewal and 2% on growth. The total value of these project is \$31.6 million.

The operational and maintenance costs scheduled for the next 10 years is \$49 million.

The revenue forecast for the next 10 years is \$56 million.

The context of this AMP includes:

- 📖 Sewer asset information is detailed in Section 2 giving an overview of the infrastructure and how the Council manages this information.
- 📖 Levels of Service are key business drivers and influence all asset management decisions. The Council's sewer activity contributes primarily to the community outcomes and is described in Section 3 - Levels of Service.

- ✎ Planning for future growth and demand is imperative to provide an economically sustained pathway to meet the needs of the district and visitors to the district. The provision of the sewer activity and its management is an essential element in the planning process. Section 4 of this AMP described how the Council manages growth and demand in sewer activity.
- ✎ Lifecycle management is covered in Section 5. This section outlines the broad strategies and work programs required to achieve the goals and objectives set out in previous sections of this plan. This section provides guidance on decision making techniques that aim to provide the most effective solution in delivering of defined levels of service.
- ✎ The financial forecasts are outlined in Section 6. This section includes information on the Council's financial strategy, key assumptions, expenditure and revenue required to fulfil its wastewater activities.
- ✎ The Council recognises that this AMP is a living document that will require continuous monitoring, changing and adjusting over time. Section 7 describes the methods that will be used to achieve this.

Next steps

Actions resulting from this AMP are:

- ✓ Recognition that the AMP is a living document that will be reviewed and updated on an ongoing basis.
- ✓ A continual improvement of the Council's knowledge and detailed asset information, including ongoing asset condition assessment and further collection of appropriate meta data on assets.
- ✓ Alignment of the AMP with the Three Waters Strategy – Sewer Roadmap (30 – 50 years).
- ✓ Development of key supporting documents to the AMP, including the Operation and Maintenance Plan, the Emergency Management Plan and the Infrastructure Risk Management Plan.
- ✓ Obtaining feedback from our customers and the wider community and adjusting asset management directions and levels of service where necessary.
- ✓ Development of a communication plan that identifies the multiple stakeholders that Council interacts with.
- ✓ Commit to community engagement and education programmes.

1 Introduction and Strategic Context

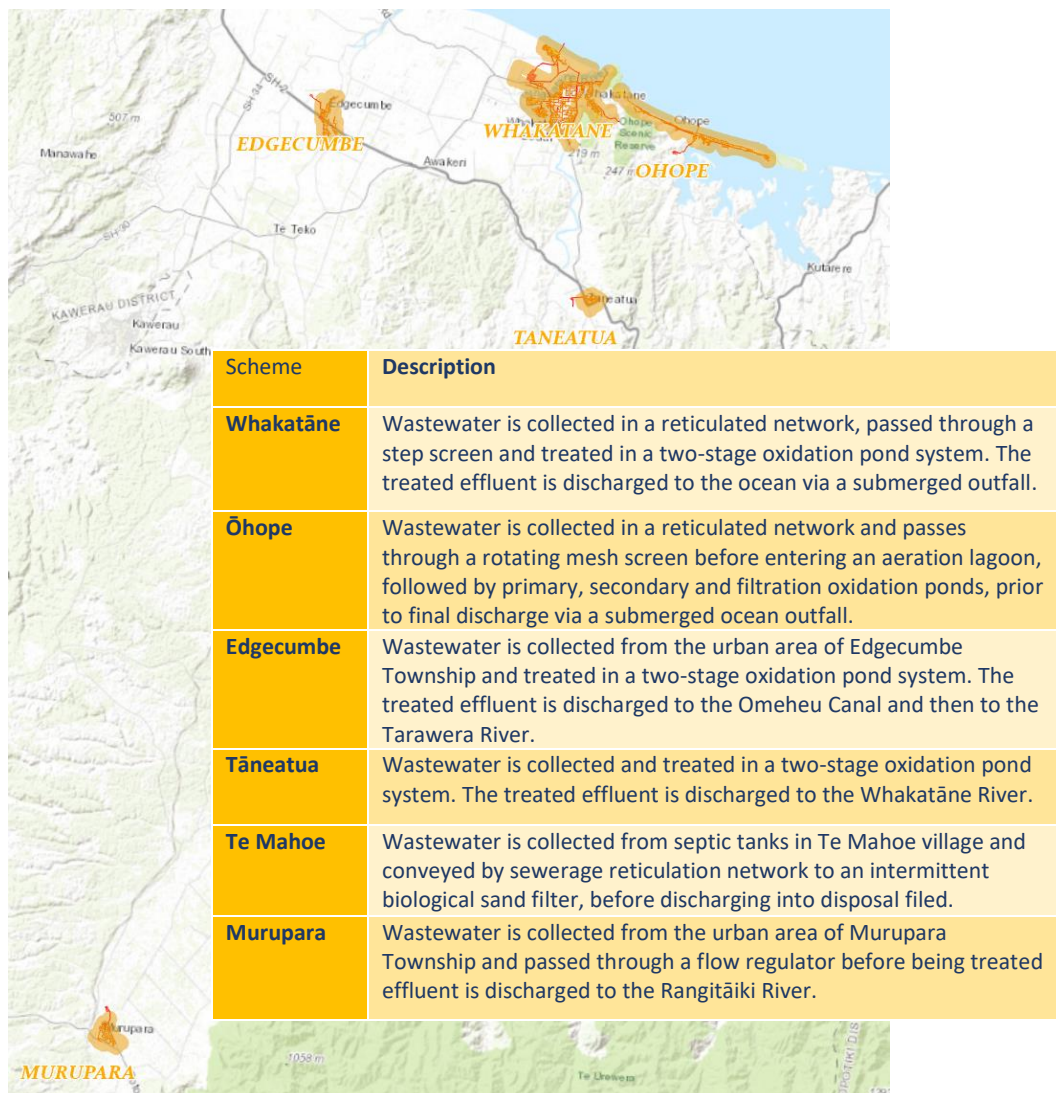
1.1 Service/Activity description

Whakatāne District Council (the Council) owns a variety of infrastructure to manage sewage within our identified urban and residential areas of Whakatāne, Edgecumbe, Tāneatua, Ōhope, Te Mahoe and Murupara. This infrastructure includes: service lines (laterals/junctions), manholes, gravity and rising pipelines, pump stations and wastewater (sewerage) treatment plants. The Council collects the sewage from connected households and businesses, treats it to an approved level and disposes of it safely. This activity also includes Tradewaste functions from businesses. The Council monitors the treatment of Tradewaste before its appropriate disposal.

The Council has developed this Asset Management Plan (AMP) to provide and maintain efficient, reliable, safe and sustainable wastewater services.

Below in Figure 1-1 is a brief overview and description of the urban sewer areas. The Council manages sewer within identified urban and residential areas. Within the rural areas and the wider district, the Bay of Plenty Regional Council (BoPRC) manages all the on-site sewage disposal activity via septic tanks or other treatment devices.

Figure 1-1 Sewer Schemes Overview



1.2 Key partnerships and stakeholders

Currently there are no partners involved in the delivery of sewer related services to the Community.

1.2.1 Key partnerships

- Neighbouring District Councils
- Bay of Plenty Regional Council
- Community groups
- Toi Te Ora Public Health and Ministry of Health
- Schools, Ministry of Education
- Department of Conservation.

1.2.2 Stakeholders

- The Whakatāne District community of owners, residents and ratepayers
- Ratepayers Associations
- Iwi consultation groups
- Iwi Chairs Forum (this has been outlined in more detail in the Community Consultation section)
- Emergency service providers (Police, Ambulance, Fire, Civil Defence)
- Utility companies – power, communication, gas
- Environmental groups
- Environmental and recreation interest groups
- Government agencies (Audit NZ, Ministry for the Environment), Housing NZ etc.
- Contractors
- Professional service providers
- Whakatāne District Council – Councillors, Committee and Community Boards, Chief Executive Officer and General Managers
- Three Waters Team
- Other Council teams including Policy and Planning, Regulatory Services, Information Services, Human Resources, Financial and Corporate

1.3 Overview of Assets

The Council manage six sewer schemes (*Figure 1-1*) which covers over 1691 hectares of land and services 75% of the district's population. Our sewer system includes sewer service lines (laterals), manholes, underground pipes, pump stations and sewer treatment plant.

Table 1-1 provides an overview of the different types of sewer assets managed by the Council. Further details are provided in **Section 2** below.

Table 1-1 Overview of Assets and Valuation

Asset	2017 Valuation Data
Gravity Main (km)	188.6
Rising Main (m)	9,453
Outfall (m)	5,204
Pump Stations	48
Treatment Plant	6
Manholes	2,880

Valuation of an asset can enable more effective and sustainable decision making and improve financial efficiency. Whakatāne, the largest scheme, has the highest proportionate Optimum Replacement Costs (ORC). Other significant areas are Ōhope, Edgecumbe and Murupara.

Table 1-2 shows the ORC for each scheme as a proportion of the whole. Further details are provided in **Section 2**.

Table 1-2 Gross Replacement Values (\$) of Sewer Assets for each scheme

Scheme	Gross Replacement Value(\$)
Whakatane	\$56,756,986
Ohope	\$21,311,646
Edgecumbe	\$9,394,375
Murupara	\$5,354,058
Taneatua	\$3,710,580
Te Mahoe	\$700,546
Unknown*	\$1,234,587
Total	\$98,462,777

*Unknown: Assets cannot be allocated into specific scheme due to lack of information in the asset register

Our sewer assets perform well during day to day activities but there are aspects of the system that do not meet the required levels of service during adverse weather events. Further, continued development within Whakatāne township places additional demands upon the system. Additional works are required to meet the levels of service in some of our schemes. There is also increased focus on the quality of discharge and the impacts it may have on the natural waterways into which it discharges.

1.4 Goals and Objectives of Asset Management

Sewer systems are an important element in the delivery of the critical quality of life services to our community. Good asset management makes an essential contribution to the governance and management of a public entity’s business and is an integral part of the Council’s wider servicing and financial planning processes. It becomes more true as population growth is experienced, making more demands on public service activities.

As outlined in the Strategic Environment Section within Part A of the AMP, the Council’s wastewater activity primarily contributes to the following community outcomes:

- Reliable and affordable infrastructure
- Community needs
- Valuing our environment

In order to achieve these outcomes, it is important that any technical, customer services, operational and maintenance contracts are clearly linked to achieve this.

The activity outcomes developed with the Levels of Service represented in the AMP are described as follows and are aligned with the Customer Values as shown in Table 1-3.

Table 1-3 Customer Values and Activity Strategic Outcomes

Customer Value	Activity Strategic Outcomes (Levels of Service)
Availability Adequacy Quality	<ul style="list-style-type: none"> ▶ To provide high quality, efficient and reliable wastewater systems that are affordable needs of the urban and commercial areas.
Safety Environmental sustainability	<ul style="list-style-type: none"> ▶ Minimise any possible health hazards from the collection or management of wastewater. ▶ Facilities provided are safe with no danger of accident r injury to users. ▶ Protection of the environment by mitigating the quantity of contaminants discharged into receiving waters.

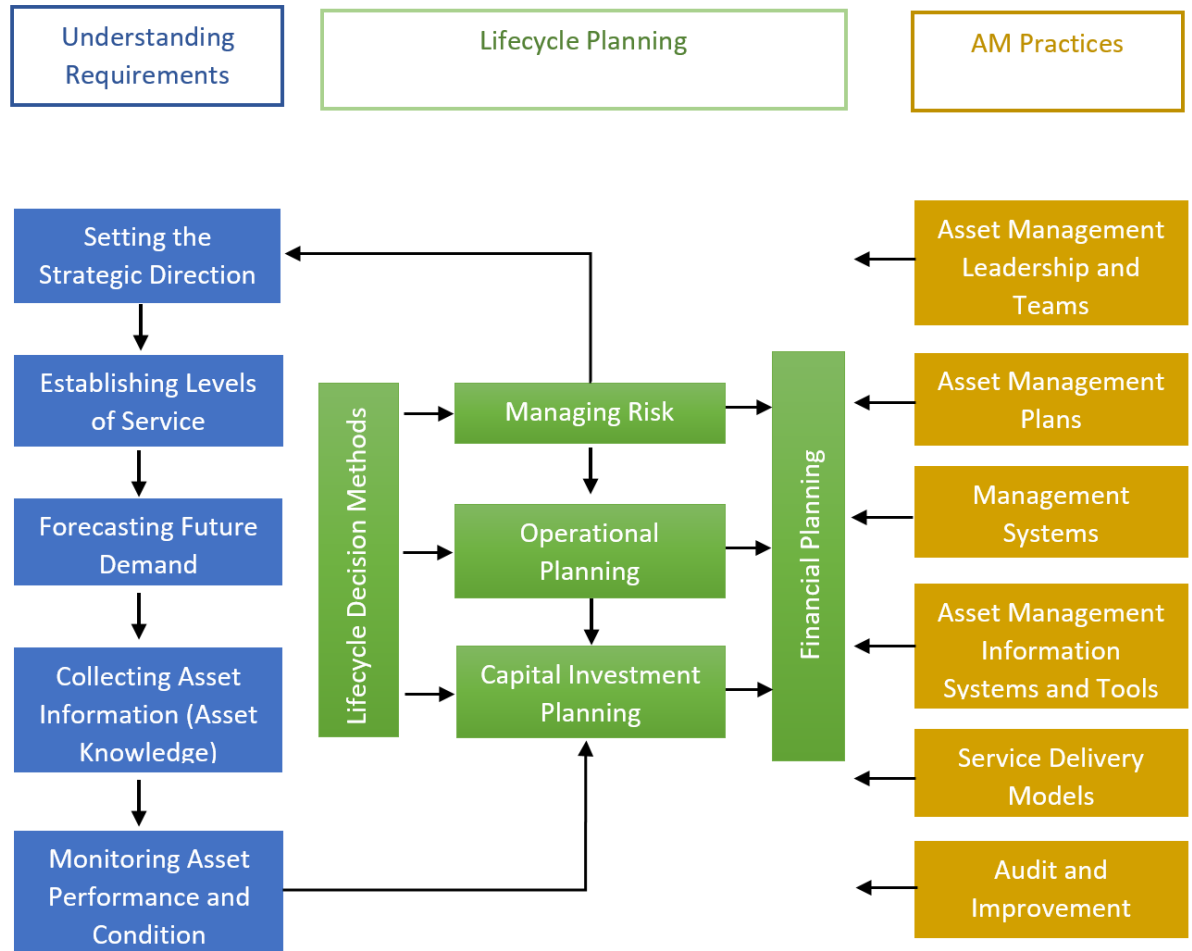
1.5 Plan Framework

The key elements of the plan are:

- Strategic direction (Asset Management Plan – Part A)
- Levels of service
- Future demand
- Asset knowledge
- Performance monitoring
- Lifecycle management
- Risk management
- Operational planning
- Capital planning
- Financial planning

Figure below is the Road Map for preparing an AMP. (Source: International Infrastructure Management Manual 2015)

Figure 1-2 Asset Management Plan Framework



1.6 Core and Advanced Asset Management

This asset management plan is prepared as a “core” AMP in accordance with the International Infrastructure Management Manual. The core AMP outlines the approach to risk and critical assets described, top-down condition and performance assessment, future demand forecasts, description of supporting asset management processes, 10 year financial forecasts, 3 year asset management improvement plan.

Future revisions of this AMP will move towards an “advanced” AMP by implementing the following approaches:

- 📖 Analysis of actual asset condition based on visual inspections and performance trends
- 📖 Additional customer engagement in setting appropriate Levels of Services (LoS) and Optimised Decision-Making (ODM)
- 📖 Incorporating corporate risk management processes to major assets
- 📖 Improvement programmes with focus on advanced maintenance scheduling
- 📖 Incorporation of new technologies, where applicable, to deliver ODM.

2 Asset information

This section provides an overview of the sewer asset data, including how the asset information is collected, asset population, age profile, criticality, asset condition and asset valuation, etc.

2.1 Asset Data Management

Data is captured and stored to monitor performance against service levels, support optimisation of asset management practices and to plan for future growth.

This AMP was developed utilising the Council's old existing asset management system, "Hansen". From the 1 July 2017, the Council is implementing and moving towards a more robust and user friendly Asset Management System called Xivic, as a result of this vast improvements will be seen with the iteration of the Sewer Treatment and Drainage AMP.

2.1.1 Asset Data Management – How data is held

Two asset systems are used to hold Three Waters asset data:

- Hansen asset management system is the primary reciprocator for asset data, which:
 - ☞ Stores physical attributes of assets
 - ☞ Stores financial information of assets
 - ☞ Stores maintenance history of assets.
- GIS system is the spatial analysis system, which:
 - ☞ Shows the assets in a user friendly mapping system that can be utilised by all staff.

2.1.2 Asset Data Systems – How data is updated

Data is updated in the following areas and/or from the following sources, when:

- ☞ New assets are created or vested in the Council
- ☞ Assets are renewed, replaced, upgraded or decommissioned
- ☞ Data is received from field staff and work orders
- ☞ Data is received from specific investigations, such as condition assessments, CCTV inspections, data collection exercises etc.

2.1.3 Asset Data Systems - How data is used

- ☞ Information to customers, general public and stakeholders
- ☞ Understanding age, performance and condition of assets
- ☞ Investigation and systems analysis for capacity, growth, future renewal and upgrade programmes
- ☞ Asset valuation and insurance purposes
- ☞ For financial analysis

2.1.4 Asset Data Capture Program

As with all assets, asset data capture is a critical component in improving the Council's knowledge of its assets and business activity. In 2012, the Council undertook a Critical Assets Identification and Maintenance data capture programme known as 'AICAM project'. This focused on data capture and condition assessment of critical assets in a prioritised manner. Currently there are gaps in the Council's asset database whereby the non-critical assets

require data verified and capture. The Council is undertaking on-going annual programmes to close this gap.

Quantities for wastewater assets are given in the Table 2.1 below. It should be noted that the following financial information is based on 30 June 2017 data.

Table 2-1 Sewer Asset Quantities

Asset	2017 Valuation Data
Service Line (each)	9,211
Gravity Main (km)	188.6
Rising Main (m)	9,453
Outfall (m)	5,204
Pump Stations	48
Treatment Plant	6
Manholes	2,880
Resource Consent	17

2.1.5 Data Confidence and Reliability

Based on a recent external valuation for the sewer, the data supplied and use was given a combined rating of B – C which is a confidence level ($\pm 25\%$). This rating clearly shows the Council's data within the Hansen database has anomalies and requires further attention. For this reason, Council is moving towards the new asset management system. Below is the current asset confidence rating from the 2017 valuation. It was noted that in some instances, the 2014 valuation data had to be utilised due to missing data.

Table 2-2 Asset confidence Ratings

Asset Type	Costs/Rate	Quantity	Total Life	Remaining Life	Current Value (ODRC)
Service Line	C	C	B	C	B
Gravity Main	B	C	A-B	B-C	B
Rising Main	B	D	A-B	B-C	B-C
Pump Station	C	B	B	B	B-C
Treatment Plant	C	B-C	B	B	B-C
Outfall	C	B	B	B	B
Resource Consent	C	B	C	C	B-C

2.2 Asset Condition

It is critical that the Council has a clear knowledge of the condition of assets and how well they are performing. An asset register including condition has been developed in the new asset management system to enable the Council to understand future expenditure patterns and management decisions regarding maintenance and renewals.

The condition assessment model shown in Table 2-3 below, is the basis of assessing the asset condition of the sewer asset. The Council’s guideline for the asset condition assessment is based on the definition within IIMM 2015.

Table 2-3 Condition and performance rating system

Grade	Condition	Description of Condition
0	Non-Existent	Asset is abandoned, ‘moth-balled’, decommissioned or no longer exists as part of the network
1	Very Good	Well-maintained, sound physical condition. No work required
2	Good	Showing slight defects and deterioration. Acceptable physical condition. No work required
3	Fair or Moderate	Showing minor defects and deterioration. Routine maintenance required to return to acceptable LoS. Short term failure unlikely.
4	Poor	Showing defects and deterioration. Monitor, consider treatment and placement on renewals programme. Short term failure likely.
5	Very Poor	Serious defects, failed, failure imminent or has stopped working, unsafe to operate. Asset unserviceable. Replacement or renewal required within 12 months.

2.3 Critical Asset

Asset criticality defines the importance of an asset component or an asset facility to the safe operation of the service. It is defined by the consequences that will occur if an asset or asset component fails.

In 2012, the Council undertook a Critical Assets Identification Collection and Maintenance data capture programme known as ‘AICAM project’. This focused on data capture and condition assessment of critical assets in a prioritised manner. This data is currently being transferred into the Council’s new AMS. The selection criteria for sewer critical assets include size, function and associated asset criticality set out in Table 2-4 below.

Table 2-4 Critical Asset Selection Criteria

Asset type	Description of criteria
Pipes	Pipe with diameter >= 250 Rising main
Oxidation Pond	All Oxidation Ponds
Outfall pipe	All
Manholes	All manholes associated with critical pipes
Pump stations	All

2.4 Asset Population

The Council manages six wastewater schemes covering over 1691 hectares of land and servicing 75% of the population within the district who have reticulated wastewater services.

2.4.1 Sewer pipes

Sewer pipes form the majority of the built sewerage network. The Council current owns and operates 188.6 km of gravity pipe, 9.5km of rising main and 5.2km of outfall pipe. These pipes vary in size from 100mmØ to 450mmØ. The network predominantly comprises small diameter pipes and the majority of the pipe size being 150mmØ (63% in total length) and the majority of the pipe materials is Asbestos Cement (AC).

Whakatāne urban area is the largest of all Council’s schemes and as expected, has the greatest number of assets and highest wastewater valuation within the district.

Figure 2-1 shows the pipe length, pipe type and valuation of each scheme. Figure 2-2 shows the system size (length x diameter), materials and installation years for different schemes. Most of the Council’s sewerage schemes and reticulated networks were built between the 1960s and 1980. The majority of the wastewater resource consents expire in 2026 which will require the Council to apply for new resource consents to discharge.

Figure 2-1 Pipe length, year installed, and valuation of each scheme

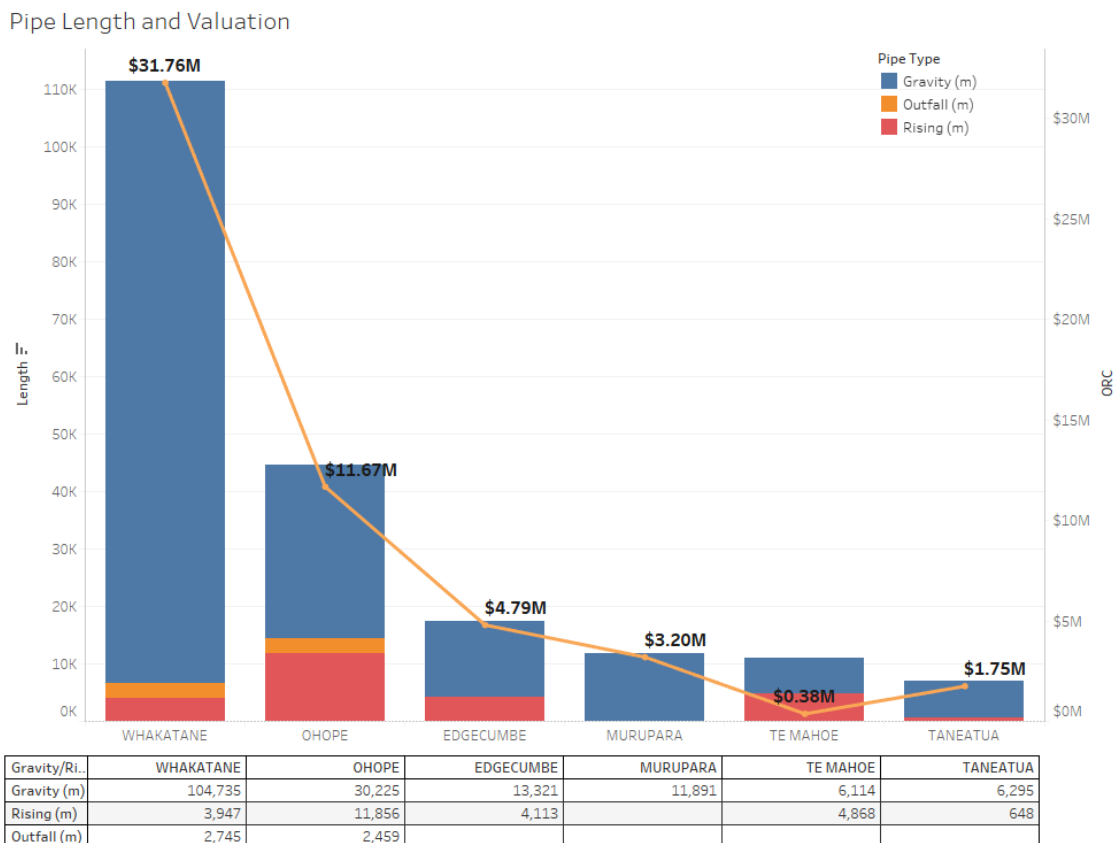


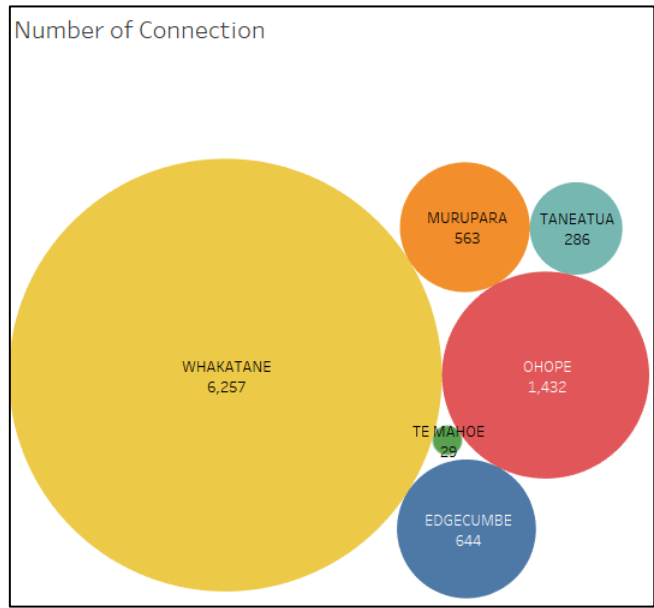
Figure 2-2 Pipe system size, materials and installation periods of each Scheme



2.4.2 Service Connections (Laterals)

The Council provides approximately 9,200 sewer connections to the district’s residents and businesses. Service lines, also known as ‘laterals’ provide the connection from the sewer main to the customer’s property. Depending on the age of the property, the pipe material is likely to be either earthenware or PVC and the normal connection size is 100mmØ. The Council’s maintenance responsibility is for the lateral ending at the property boundary. Figure 2-3 shows the number of connection in each scheme.

Figure 2-3 Number of connection of each scheme



2.4.3 Sewer Manholes

The Council owns approximately 2,880 manhole and chambers. Manholes and chambers provide maintenance access to pipelines and are located where there is a change of diameter, direction and/or grade. Most manholes are constructed from precast reinforced concrete with cast iron covers and frames. Generally, the ages of the manholes are similar to their adjoining pipes. Manhole depths vary and are deeper at the discharge locations. It should be noted that the manhole depth and diameter data is not available for over 90% of these assets. This data gap in information will be addressed during the next three years.

Figure 2-4 shows manhole numbers, the year installed and the valuation of each scheme.

Figure 2-5 shows the manhole average age in different schemes.

Figure 2-4 Manhole Number, Installed Year and Valuation of Each Scheme*

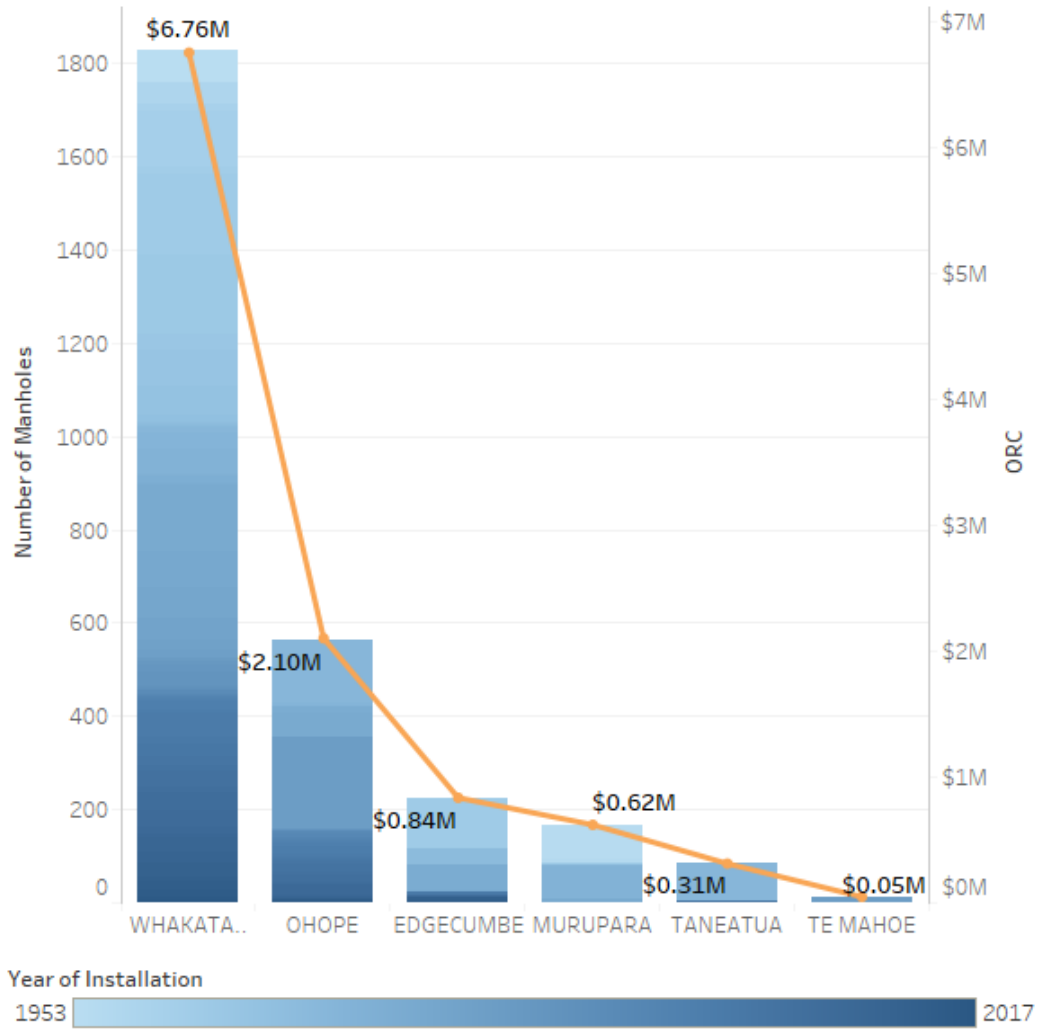
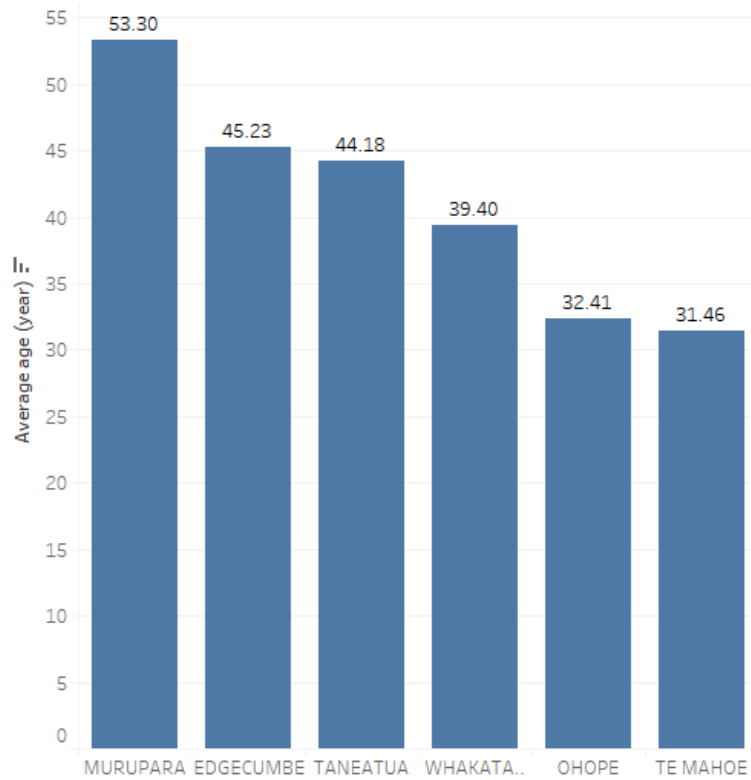


Figure 2-5 Manhole Average Pipe Age of Each Scheme



2.4.4 Sewer Pump Stations

The Council owns, operates and manages 48 sewer pump stations. Pump stations are utilised in low lying areas at the lowest point of a reticulated gravity system where they pump the sewage to the treatment plant. At treatment plants, the Council has pumping stations to pump treated effluent to the receiving environment in line with obligations under the resource consent for discharge. Pumping stations are located within the urban areas of Whakatāne, Ōhope, Tāneatua, Edgecumbe and Te Mahoe schemes. Murupara is the only wastewater network scheme that operates entirely by gravity from the collection of sewage to the discharge of treated effluent. The locations of the sewer pump stations of Whakatāne, Ōhope and Edgecumbe are shown in Figure 2-6.

Figure 2-6 Sewer Pump Station Location



2.4.5 Treatment Plants

Wastewater treatment plants are specifically designed to treat incoming sewerage to a level that can enable it to be discharged into the environment without causing adverse environmental effects. Each of the six schemes has a treatment system that operates under a Recourse Consent to Discharge ensuring that the appropriate quality of effluent being discharged meets requirements.

The treatment system of each system is listed in Table 2.5.

Table 2-5 Sewage Treatment Plant

2015/2016	Ōhope	Whakatāne	Tāneatua	Edgecumbe	Te Mahoe	Murupara
Dwelling/population serviced	1726/2844	6048/18750	253/786	632/1638	27/60	641/1656
Type of system	Oxidation pond	Oxidation pond	Oxidation pond	Oxidation pond	intermittent sand filter	Oxidation pond
Pond Capacities (m3)	32,680	295,620	24,000	28,500	N/A	66,000
Valuation (ORC)	\$2,285,673	\$4,167,772	\$751,412	\$1,083,305	\$152,818	\$449,077

2.4.6 Summary of Asset Valuation

Tables 2-6 and 2-7 provide a summary of the Sewer Asset Valuation report to 30 June 2017.

Table 2-6 Sewer Asset by Scheme

Scheme	ORC(\$)	ODRC(\$)	AD(\$)
Whakatāne	\$56,756,986	\$26,361,283	\$797,112
Edgecumbe	\$9,394,375	\$4,785,354	\$135,552
Ōhope	\$21,311,646	\$11,158,985	\$320,606
Murupara	\$5,354,058	\$1,832,034	\$68,937
Tāneatua	\$3,710,580	\$1,581,659	\$50,994
Te Mahoe	\$700,546	\$407,347	\$14,371
Unknown	\$1,234,587	\$687,390	\$17,603
Total	\$98,462,777	\$46,814,052	\$1,405,175

Table 2-7 Sewer Asset by type

Asset Type	ORC(\$)	DORC(\$)	AD(\$)
Service Line	\$16,789,143	\$6,086,139	\$239,845
Gravity Main	\$60,610,575	\$30,233,229	\$758,074
Rising Main	\$1,389,744	\$1,033,382	\$18,125
Pump Station	\$7,733,510	\$2,292,741	\$199,215
Treatment Plant	\$8,893,061	\$5,849,717	\$124,081
Outfall	\$2,546,155	\$1,214,062	\$43,720
Resource Consent	\$500,590	\$104,781	\$22,114
Total	\$98,462,777	\$46,814,052	\$1,405,175

2.5 Resource Consent

Resource consents are a requirement for many sewer management works due to the potential impact on receiving environments. It is important to capitalise and value resource consent for the network.

The Council has a database of consent that relates to sewer management activities, these are provided in the table below. In accordance with both Regional and District Plans, there are a number of requirements that must be met during the life of the consent. These requirements will stipulate monitoring conditions in the consent and will require the consent holder to report on the compliance with those conditions.

Whakatāne, Edgecumbe, Tāneatua and Murupara Resource Consents expire in 2026 at which time Council will need to seek new Resource Consents. The Council will be required to undertake works to improve the treatment of the sewage, in order to comply with new consent conditions. This is a key driver for the treatment plant upgrades planned through the Council's Long Term Plan 2018-2028 and highlighted within the Council's 30-year infrastructure strategy.

Table 2.8 provides an overview of all discharge permits, including their purposes, locations and relevant dates.

Wastewater

Table 2-8 Discharge Permits, including purposes, locations and dates

Permit Number	Permit Activity Type	Permit Purpose	Permit Location	Permit Granted date	Permit Expiry Date
20368	Discharge Wastewater	Discharge treated effluent from oxidation ponds into the Bay of Plenty	Whakatāne urban area	8/06/1978	1/10/2026
62659	Discharge To Air	Discharge odorous gases from Whakatāne sewage treatment facility to the air	Kope Canal Road Whakatāne	8/08/2006	30/10/2026
20702	Discharge Wastewater	Discharge effluent from Edgecumbe oxidation ponds into the Omeheu Canal	Edgecumbe Soldiers Road	1/05/1980	1/10/2026
62657	Discharge To Air	Discharge odorous gases from Edgecumbe sewage treatment facility to the air	Edgecumbe sewage treatment facility located at Edgecumbe Soldiers Road Edgecumbe	1/11/2004	30/09/2026
20778	Discharge Wastewater	Discharge effluent from the Murupara Borough Oxidation Ponds into the Rangitāiki River	Murupara Borough Oxidation Ponds into the Rangitāiki River	5/03/1981	1/10/2026
62656	Discharge To Air	Discharge odorous gases from Murupara sewage treatment facility to the air	Murupara sewage treatment facility	1/11/2004	30/09/2026
20049.0.01-DC	Discharge Wastewater	Discharge waste water from Oxidation Ponds to be constructed at Tāneatua into the natural waters of the Whakatāne River	Whakatāne River at a point downstream of Tāneatua	6/04/1971	1/10/2026
62658	Discharge To Air	Discharge odorous gases from Tāneatua sewage treatment facility to the air	Tāneatua sewage treatment facility	1/11/2004	30/09/2026
65984.0.01-DC	Discharge Other	Discharge of treated effluent from the Ōhope Waste water treatment plant to the Pacific Ocean	Ōhope Waste water treatment plant	23/11/2016	30/09/2035
60569	Discharge To Air	Discharge aerosols and odorous gases from the Ōhope Waste water treatment plant and desludging operations to the air	Wainui Road, Ōhope	10/07/2002	31/07/2021
RM16-0143-DC.01	Discharge To Land	To discharge treated wastewater to land	16 Te Mahoe School Road, Lake Matahina, Te Mahoe	28/07/2016	30/06/2051

3 Levels of Service

Levels of Service (LoS) are key business drivers and influence all asset management decisions. The Council's sewer activity primarily contributes to the following community outcomes:

- Reliable and Affordable Infrastructure
- Community Needs
- Valuing Our Environment

Sewer strategic levels of service developed in the AMP are described as follows:

- To provide high **quality, efficient** and **reliable** wastewater systems that are affordable and meet the reasonable needs of the urban and commercial areas.
- To **minimise** any possible health hazards from the collection or management of wastewater.
- To provide facilities that are **safe** with no danger of accident injury to users.
- To **protect** the **environment** by mitigating the quantity of contaminants discharged into receiving waters.

The legislative framework also affects LoS standards. A number of legislative mechanisms aim to avoid and/or mitigate any potential adverse environmental effects associated with sewer management. These are set at national, regional and district levels.

Based on the contents above, the Council has developed SMART (Specific, Measurable, Achievable, Relevant, Time bond) measures as described in Section 3.3.

3.1 Legislative and strategic framework

Table 3-1 provides a general outline of applicable legislative provisions and the Whakatāne District Council strategic documents

Table 3-1 Legislative and strategic environment

National	
Legislation	Requirement
The Resource Management Act 1991	<p>The Resource Management Act 1991 (the RMA) promotes the sustainable management of natural and physical resources. It specifies the roles and responsibilities in terms of managing effects on the environment.</p> <p>In relation to wastewater management, the RMA requires the adverse effects associated with activities such as wastewater treatment plants, discharges of effluent and pump stations to be avoided, remedied or mitigated. This is imposed through the Regional and District Plans.</p> <p>Section 7 of the RMA states that ‘all persons exercising powers and functions under the Act, in relation to managing the use, development and protection of natural and physical resources, shall have particular regard to kaitiakitanga’ (guardianship).</p> <p>Section 8 states that ‘In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)’.</p> <p>Section 15 regulates discharges to water, land and air while Section 30 imposes the function of controlling these discharges on Regional Councils.</p> <p>Section 31 requires District Councils to be responsible for achieving integrated management of the use of land and associated natural and physical resources of their District.</p> <p>Specific to the management of the nation’s water resources, Sections 69 and 70 of the RMA allow rules relating to water quality to be incorporated into a Regional Plan. Section 107 imposes restrictions on the granting of certain discharge permits where there are likely to be significant effects on the receiving environment without regard for Section 107(2).</p> <p>Central government may become involved further with wastewater management by using tools provided for in the RMA. These include national policy statements, national environmental standards (which may set water quality standards) and government submissions on Councils’ plans.</p>
Local Government Act 2002	<p>Specific to environmental stewardship, section 14 of the Local Government Act 2002 (the LGA) includes a number of guiding principles:</p> <ul style="list-style-type: none"> • making itself aware of community views • providing opportunities for Māori to participate in decision-making processes • collaborating and cooperating with other local authorities as appropriate • ensuring prudent stewardship of resources • taking a sustainable development approach. <p>Councils are required to identify overall long-term priorities and to plan for the future. The LGA outlines the responsibilities of local authorities and the decision making process for activities undertaken on behalf of their community, primarily through the requirement to adopt a Long Term Plan (LTP).</p>

Section 125 requires an assessment of sanitary services. The purpose of the assessment is to ensure that public health continues to be protected. This assessment must include a description of existing services in the district (both public and private), a forecast of future demand, and identification and assessment of options for meeting this demand. Details are covered in the Community Consultation section below and the [Life Cycle Management](#) Section.

The Whakatāne District Council’s Water and Sanitary Assessment (2005, 2008 and then revised again in 2011) identified a number of issues relating to the reticulated wastewater. These issues included:

- Potential failure of deteriorating pipes (Earthenware, Concrete and AC).
- Overflows from pump stations following heavy rain (particularly in Edgecumbe and Whakatāne).
- Inflow and infiltration.
- Odour issues (treatment and reticulation)
- Lack of data on performance – not all collected.
- Rapid population rise in some areas vs decline in others.
- Lack of information and asset data knowledge for some schemes.

Bay of Plenty Regional council (BOPRC)

Document	Requirement
Regional Natural Resources Plan	<p>The purpose of the Regional Natural Resources Plan is to promote sustainable and integrated management of land and water resources within the Bay of Plenty Region. This plan outlines the rules and regulations for earthworks and discharges. Under these rules and regulations, certain sewer management related development requires Land Use Consents, such as:</p> <ul style="list-style-type: none"> • Earthworks • Any activity that results in discharges of wastewater containing contaminants into water or onto land <p>Land Use Consent applications will invariably include an Erosion and Sediment Control Plan. The purpose of these plans is to illustrate which erosion and sediment control measures are intended for the development.</p>
Regional Coastal Environment Plan	<p>The purpose of the Regional Coastal Environmental Plan is to promote the sustainable management of the natural and physical resources of the Bay of Plenty coastal environment.</p> <p>This plan outlines the rules and requirements regarding earthworks, structures and discharges to the coastal environment from sewer management related development (amongst others). As such, BOPRC issues coastal permits to control such activities.</p>

District

Document	Requirement
Whakatāne District Plan	<p>The Whakatāne District Plan assists the Council to carry out its functions under the Resource Management Act 1991 in order to achieve the purpose of the Act to promote the sustainable management of natural and physical resources.</p> <p>In this context, the Whakatāne District Plan outlines the rules, objectives, policies and requirements for land based activities above Mean High Water Springs (MHWS). This</p>

	<p>includes earthworks, discharges and structures associated with wastewater management. The District Plan also set out the standards and controls for noise, hazardous substances (spill management), and contaminated land.</p> <p>The District Plan also contains designations where land has been designated for network utility or large public works that enable works to be undertaken in accordance with the purpose of the designation.</p> <p>The District Plan acknowledges the need to develop, operate and maintain network utilities throughout the District while avoiding, remedying or mitigating the adverse effects on the environment.</p> <p>The Proposed Whakatāne District Plan is currently subject to a Variation (Variation 6) that relates to Coastal Hazards. This Variation imposes greater controls on works in the Coastal Protection Zone and Coastal Hazard Policy Areas and may apply to works such as pump stations and pipes.</p>
Bylaws	The Whakatāne District Council Combined Waters Bylaw 2017 incorporates Sewer Management. The bylaw regulates and promotes efficient and safe use of water and associated land, structures and infrastructure.
Reserve Management Plans	<p>Reserve Management Plans are prepared in accordance with the Reserves Act 1977 by the Council for reserves that it administers. The management plans outline the use, maintenance, protection, preservation and development of the reserve for the purposes for which it is classified.</p> <p>Where wastewater management assets such as pump stations are to be located on a reserve, regard should be given to the purpose of the reserve pursuant to the Reserves Act 1977 and whether the proposed works conflict with the stated purpose of the reserve.</p> <p>A Reserve Management Plan is prepared in consultation with the community and any changes to the management plan or works that are not in accordance with the plan may require public consultation.</p>
Engineering Code of Practice	The Engineering Code of Practice establishes Sewer Performance Standards in the Whakatāne District. The Council is currently revising the Engineering Code of Practice and reviewing whether collaboration with other Territorial Authorities is warranted. Complete review and adoption is anticipated in mid-2020.

3.2 Community consultation

The Council has engaged in a variety of consultation approaches in order to seek public opinion and to communicate its decisions and programmes to residents in the district. Additionally, other external organisations undertook public surveys comparing services within various regions.

Customer research carried out which contained sewer questions includes:

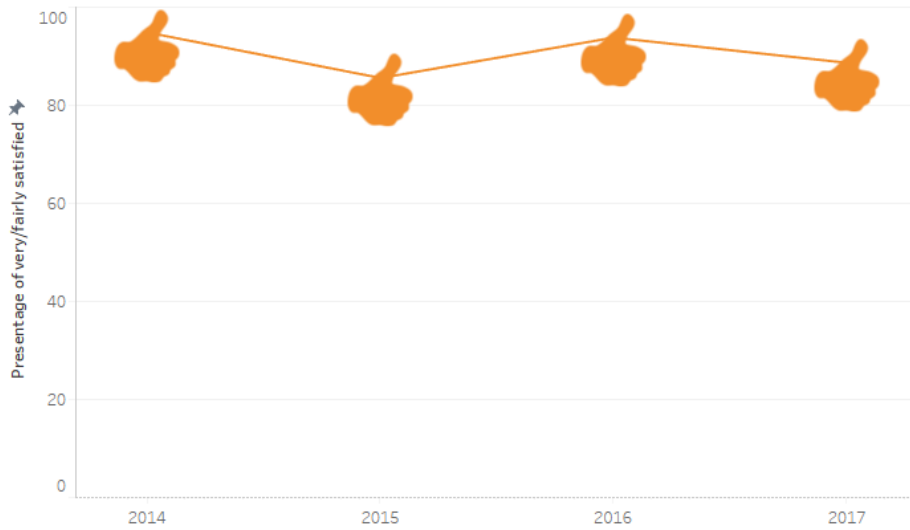
- Whakatāne Te Hara
- Whakatāne District Council Annual Residents Survey
- Communitrak™ Survey 2017
- NZ Water Consumer Survey 2017

- Customer service requests and complaints
- LTP Consultation and Assessment of Water and Sanitary Services

3.2.1 Whakatāne District Council Annual Residents Survey

The result of the survey is shown in Figure 3.1. The result of the survey shows the percentage of very/fairly satisfied is above 80% every year.

Figure 3-1 Annual Residents Survey Result form 2014

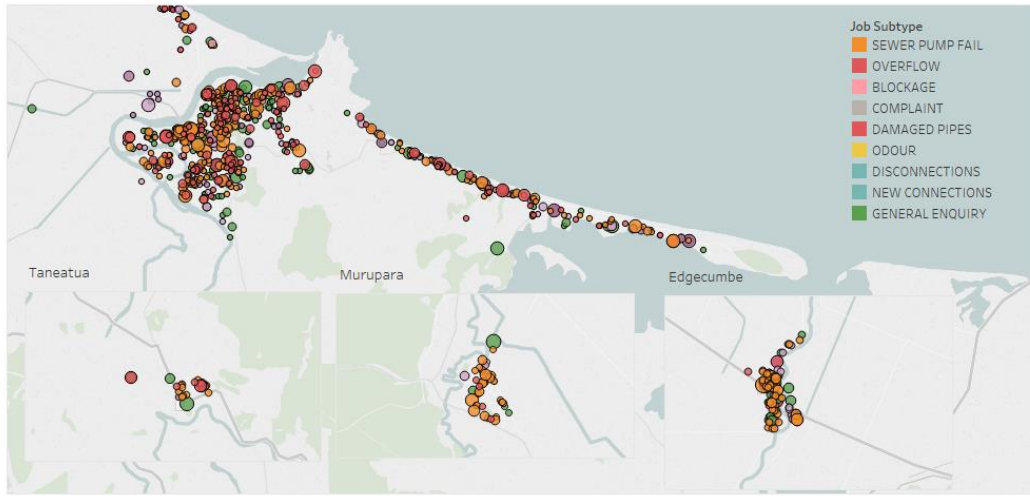


3.2.2 Customer Service Request and Complaints

The Council operates a customer service call centre. All Request for Services (RFS) are collected and recorded in the Council’s Ozone system which has been operating since 2009.

Figure 3.2 shows all sewer RFS since 2009. This information is across the district and broken down into the various types of requests. The largest portion of RFS is for sewer over flow (20.25%) and blockage (34.83%).

Figure 3-2 Request for Service



Job Type for Sewer

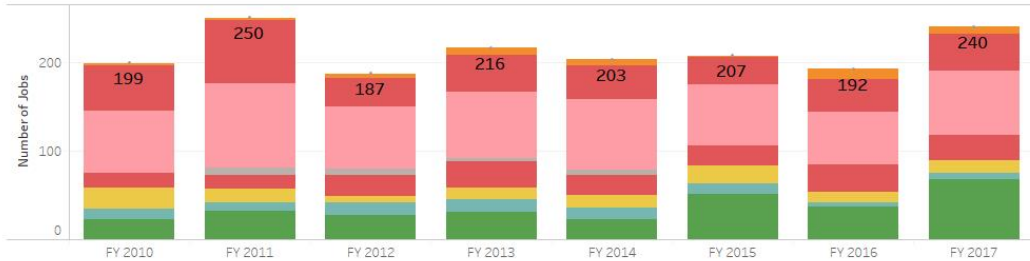
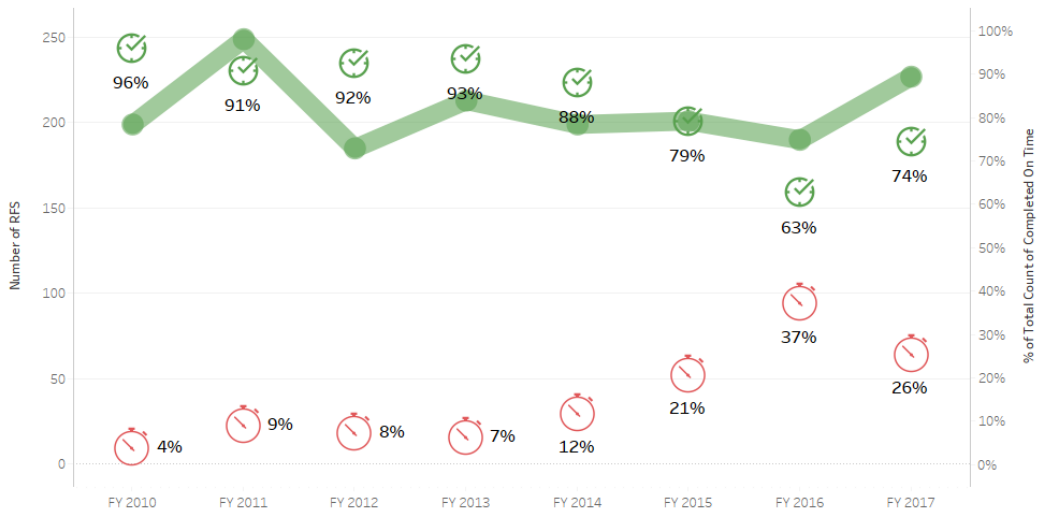


Figure 3.3 shows the number of RFS between July 2009 and July 2017 and the percentage of resolved within the target timeframe are shown in the below diagram.

Figure 3-3 Number of RFS and Percentage of Completed On Time



3.3 Performance Measures

Performance measures are used to indicate how well the organisation is delivering levels of service. The two main performances that the Council aims to achieve on the sewer service are:

1. To provide high quality, efficient and reliable wastewater systems that are affordable and meet the reasonable needs of the urban and commercial communities.
2. To minimise any possible health hazards from the collection or management of wastewater. Facilities provided are safe with no danger of accident injury to users.

A further break down of these into either customer or technical performances are described as:

- Customer performance measure, which is the service the customer receives.
- Technical performance measure, which measures the service that the organization provides (and which may use technical indicators of performance such as the condition of the asset).

Tables 3-2 and 3-3 outline the Council’s performance measures for Levels of Service related to sewer services.

Table 3-2 Levels of Service - Performance Measures

Level of Service	To provide high quality, efficient and reliable wastewater systems that are affordable and meet the reasonable needs of the urban and commercial communities				
Customer Value	The core customer values this service aims to provide are: <ul style="list-style-type: none"> ▶ Accessibility ▶ Quality ▶ Safety 				
Customer Measures	(1) User satisfaction with the sewage system (2) The total number of complaints received about sewerage odour per 1000 connections (3) The total number of complaints received about sewerage system faults per 1000 connections (4) The total number of complaints received about sewerage system blockages 1000 connections (5) The total number of complaints received about the council’s response to issues with our sewerage system per 1000 connections (6) Response time to attend to sewerage overflows resulting from a blockage of other fault in the Council’s sewerage system (7) Response time to resolve a sewerage overflow resulting from a blockage or other fault in the Council’s sewerage system				
Target	Current performance	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
1.	86	90-95	90-95	90-95	90-95
2.	1.71	25	25	25	25
3.	11.16	20	20	20	20
4.	8.14	25	25	25	25
5.	0.67	2	2	2	2
(6)	92% attended within 3 hours, median time between job received and time	90% < 3 hours	90% < 3 hours	90% < 3 hours	90% < 3 hours

Level of Service	To provide high quality, efficient and reliable wastewater systems that are affordable and meet the reasonable needs of the urban and commercial communities				
	work started 0.02 hours.				
(7)	92% resolved within 10 hours, median time between job received and time work started 3 hours.	90% < 10 Hours	90% < 10 Hours	90% < 10 Hours	90% < 10 Hours
Technical Measures	<ol style="list-style-type: none"> 1. Implementation of planned wastewater pipes cleaning programme 2. Implementation of planned pump station cleaning programme 3. Planned servicing of pumps and pump stations 4. Capital/renewal works to be constructed in compliance with Council's Engineering Standards and Guidelines 5. Completion of Asset renewal programmes annually as planned 				
Target	Current performance	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
1.	80% compliance with the programme	85% compliance with the programme	90% compliance with the programme	90% compliance with the programme	90% compliance with the programme
2.	85% compliance with the programme	90% compliance with the programme	90% compliance with the programme	90% compliance with the programme	90% compliance with the programme
3.	85% compliance with the programme	90% compliance with the programme	90% compliance with the programme	90% compliance with the programme	90% compliance with the programme
4.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
5.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
How we will achieve this Level of Service	<ol style="list-style-type: none"> 1. Programme large capital works into LTP programme. 2. Network modelling to identify network inefficiencies and parts that are not meeting engineering code of practice standards 3. Programmed CCTV inspection of pipes 4. Asset condition surveys 				
How we will measure if target is achieved	<ol style="list-style-type: none"> 1. Residents Perceptions Survey 2. Monitoring KPIs 3. Reports to council committees 4. Annual reporting to Council on capital projects 5. In-house monitoring and sampling results, in line with resource consent 6. Request for Service (RFS) monthly reporting 				

Table 3-3 Levels of Service - Performance Measures - Environmental and Safety

Level of Service	Any possible health hazards from the collection or management of wastewater are minimised, and facilities provided are safe with no danger of accident or injury to users. Protection of the environment by mitigating the quantity of contaminants discharged into receiving waters.				
Customer Value	The core customer values this service aims to provide are: <ul style="list-style-type: none"> • Quality • Safety • Environmental sustainability 				
Customer Measures	(1) The number of dry weather wastewater overflows from the system per annum, expressed per 1000 wastewater connections (2) Number of injury incidents reported as a result of poorly maintained wastewater system (3) Compliance with resource consents from the Regional Council <ol style="list-style-type: none"> a. Number of abatement notices b. Number of infringement notices c. Number of enforcement orders d. Number of convictions received by the Council in relation to the resource consents for discharge from council's sewerage systems 				
Target	Current performance	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
(1)	1.81	25	25	25	25
(2)	Zero incidents	Zero incidents	Zero incidents	Zero incidents	Zero incidents
(3)(a)	Zero	Zero	Zero	Zero	Zero
(3)(b)	Zero	Zero	Zero	Zero	Zero
(3)(c)	Zero	Zero	Zero	Zero	Zero
(3)(d)	Zero	Zero	Zero	Zero	Zero
Technical Measures	<ol style="list-style-type: none"> 1. Compliance with Health and Safety Plans in Contracts (Contractor Safety) 2. Report on accidents/incidents to manager 3. Compliance with network maintenance & routine inspections (i.e. pump stations, hazards such as restrictions) 4. Compliance with Resource Consents for operations and discharge 5. Monitor performance of the treatment systems 				
Target	Current performance	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
1.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
2.	Within 12 hours	Within 12 hours	Within 12 hours	Within 12 hours	Within 12 hours
3.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
4.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
5.	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance

Level of Service	Any possible health hazards from the collection or management of wastewater are minimised, and facilities provided are safe with no danger of accident or injury to users. Protection of the environment by mitigating the quantity of contaminants discharged into receiving waters.
How we will achieve this Level of Service	<ol style="list-style-type: none"> 1. Enforcing and compliance of Health and safety provisions in contracts 2. Maximising the efficiency of operations and maintenance 3. Monitor trade waste activities as per trade waste Bylaw 4. Maximise remote monitoring of performance of plants
How we will measure if target is achieved	<ol style="list-style-type: none"> 1. Reports from the Regional Council 2. Annual report to Council 3. Monitoring KPIs

3.4 Gaps

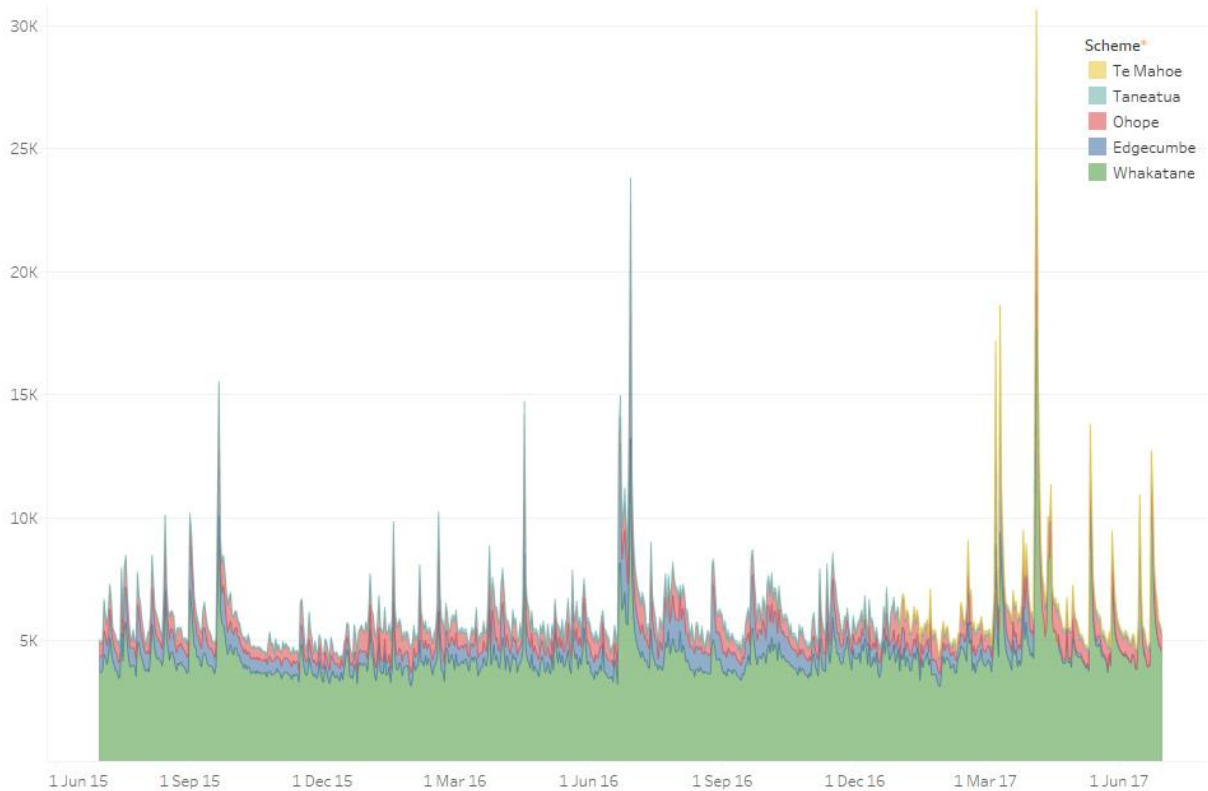
The performance targets in this AMP are to maintain levels of service in most areas. The customer research and the Council’s service records indicate that there remains a level of dissatisfaction with sewer service in parts of the scheme.

The key issues are:

- Inflow and infiltration is very high for most of the scheme except for Ōhope and Murupara (no data available for Murupara) especially during heavy rains (see Figure 3-4)
- An increased visitor population during holiday periods adds pressure onto existing systems
- Limited understanding and ‘as built’ data knowledge of some sewer assets
- Some assets are ageing and need replacement
- Waste water computer modelling is required to fully understand ongoing growth and infrastructure requirements
- Past natural hazards which caused damage to sewerage infrastructure, in particular within the Edgecumbe scheme, require further investigation
- Potential failure of deteriorating pipes’ condition, an assessment of infrastructure required
- Rapid population rise in some areas versus a decline in others
- Odour in specific locations
- Non-reticulated communities

Figure 3-4 shows the linkage between sewerage production and major rain events.

Figure 3-4 Daily sewerage production coinciding with major rain events



3.5 Future

The purpose of good asset management is to provide the desired levels of service through the management of assets in the most cost-effective manner for existing and future customers.

Although some levels of service will be determined by legislation, community consultation is the most important mechanism for establishing levels of service. Typically, sewer assets have long lives and the Council has to consider the sustainability of these assets into the future. Decisions made today will affect future customers. The use of Annual Residents Surveys continues to provide useful data around customer expectations and their perceptions of the Council and its activities.

4 Growth and Demand

Part A of the AMP outlines the growth projections for the district. Planning for future growth and demand is imperative in order to provide an economically sustainable pathway to meeting the needs of residents and visitors to the district. The provision of sewer activity and its management is an essential element in the planning process.

The Council is currently preparing a Growth Strategy and once completed, this will provide direction regarding growth and demand effects. It is anticipated that the major growth area will be within Whakatāne and Ōhope townships which are likely to require upgrades to sewer infrastructure.

The Council’s current resource consents for Whakatāne, Edgcumbe, Tāneatua and Murupara will expire in 2026 while Ōhope’s resource consent discharge to air (for odour) will expire in 2021. This means that the Council will be required to undertake works to improve

the treatment of sewage in order to comply with new consent conditions. This is a key driver for the treatment plant upgrades planned through the Council's Long Term Plan 2018-2028.

The communities of Matatā, Te Teko, Rūātoki, Waimana, Minginui and Ruatāhuna have no reticulated wastewater collection systems in place and all of these are on maintenance zones regulated by the BOPRC.

The Council is looking into the development of a proposed integrated wastewater system, which would incorporate a new reticulated sewerage system for Matatā, connecting to Whakatāne treatment plant via Edgecumbe. The integrated wastewater system could also include connecting Tāneatua's wastewater to utilise the treatment ponds at Whakatāne. The integrated wastewater system is not budgeted for in this LTP and will only be considered when appropriate external funding can be secured.

The key demand drivers that are relevant to the sewer activity include:

- Population considerations
- Community expectations
- Resource Consent renewal
- Climate Change
- Public and Environmental Health.

The main impacts are likely to include:

- Increased pressure on existing infrastructure due to an increase in the amount of sewage and Tradewaste
- Increased pressure on existing infrastructure due to climate change (more wet weather, extreme storm events and rising sea levels)
- A requirement for robust asset data and network modelling to assist in decision making
- An increase in assets vested in the Council
- An increase in maintenance, operations and depreciation costs for residents
- An increase in the generation of other contaminants such as Tradewaste.

4.1 Population Considerations

4.1.1 Population Trend

The Whakatāne District consists of a number of urban communities that vary in population and projections and generally the predicted population trends show, a static population with indication of population decline after 2030. However, this decline is not uniform across the District with some areas, primarily within Whakatāne and Ōhope, expecting growth. Although decline is expected in some rural areas, it should be noted that decline in population does not translate to a decline in sewer demand.

4.1.2 Population Profiles

The increasing age of the population and less than average incomes in Whakatāne District makes it challenging for many people to pay for services. This could mean that the community may in future prefer a reduced levels of service in lieu of rate rises, which could ultimately reduce demand for services, particularly in areas where communities are reliant on private treatment e.g. septic tanks.

4.1.3 Impacts on the Sewer Activity

Table 4.1 below identifies the primary Whakatāne wastewater schemes and the existing issues around capacity, expected growth and demand in these schemes. Of these, growth and demand effects are expected to occur in the Whakatāne and Ōhope schemes which will be upgraded to meet levels of service. Minimal population growth is anticipated in the remaining schemes. A new reticulated wastewater scheme which was planned for Matatā, this has been taken out of LTP pending external funding approval. The future of this new scheme is uncertain.

Table 4-1 Demand and capacity of each scheme

Schemes	Expected Growth & Demand	Properties Serviced	Reticulation	Manholes	Service Lines	Pumpstations	Treatment	Sea Outfall	Diffuser	Consent	Capacity
Whakatane	Slight increase expected	5,406	X	√	√	X	√	√	√	Consented to 2026	Current 18,500 and can increase the capacity with minor upgrades
Ōhope	Slight increase expected	1,445	√	√	√	√	√	√	√	Consented for discharge to air 2021 (consent renewal underway)	4,500 permanent residents and 8,000 residents and visitors
Tāneatua	No change	284	√	√	√	√	√	NA	NA	Consented to 2026	Design Population 2,000
Te Mahoe	No change	29 dwellings & school	√	√	√	NA	√	NA	NA	Consented to 2052	Design population 150
Edgecumbe	No change	641	√	√	√	√	√	NA	NA	Consented to 2026	Design Population 3,000
Murupara	No Change/potential decrease	561	√	√	√	NA	√	NA	NA	Consented to 2026	Design Population 4,000

The predicted impact on the wastewater activity by each of the growth area is shown in Table 4.2 below.

Table 4-2 Impact on the Wastewater Activity by Growth Area

Area	Impact on wastewater activity
Piripai	The sewer trunk main has been extended and connected to the system.
Huna Road development	New reticulation pipes pump stations and upgrades will be required.

4.1.4 Management Strategies

Management is typically undertaken through land use zoning in the District Plan. This determines where residential, commercial and industrial development may take place and the conditions or restrictions that are placed on the development.

The overall population of the District is expected to be static or declining, except for both Whakatāne and Ōhope where the population is expected to steadily increase as tourism expands. There is the potential to develop more light industry within Whakatāne but at this stage the uptake of existing industrial land has been slow. Computer network modelling, once data verification and capture has been undertaken, will be used to assess capacity issues and to programme timely upgrades and renewals. All development must comply with the Council's Engineering Code of Practice which is currently being revised.

The programmed use of CCTV inspections will assist with reconciling the accuracy of some asset data, as well as identifying the condition of the assets, thus allowing the timely upgrade and/or renewals of pipeline assets to be programmed.

4.2 Community Expectations

4.2.1 Desirable Levels of Service

Through the LTP consultation and customer feedback processes, the community has identified the following main outcomes that relate to sewer:

- Clean protected environment
- Environmentally responsible development
- High-quality affordable infrastructure
- Healthy people and quality housing.

Information from customers regarding their expectations on the effectiveness of the delivery and costs associated with sewer services has been collected using a number of mechanisms including:

- Customer surveys
- Submissions on the Annual Plan and LTP
- Analysis of customer calls
- Community consultation
- Analysis of facilities use.

Recent consultation for Matatā, Te Teko has been described in detail in the Community Consultation section. The main purpose of these meetings and consultation was to involve the community in discussions regarding the potential development of a reticulated scheme.

The high cost of constructing a new scheme was of concern to the community. The Council is therefore assessing the potential for attracting increased funding from external organisations including central government.

4.2.2 *Impacts on the Sewer Activity*

The LTP is the key document that defines for the community what the Council plans to do regarding wastewater activity, including why and when this will occur.

Community expectations relate to the delivery and overall quality of the service and a harmonious relationship between expectations and service delivery can alleviate issues at critical planning stages. Levels of service for this activity are outlined in the levels of service section.

A key issue that the Council needs to address is the gap between expectations of service and the ability/willingness of the community to pay. This is exacerbated by the prohibitive costs for smaller communities to connect to a reticulated network and the differing expectations of townships. The more affluent areas generally have higher expectations than the less affluent areas.

4.2.3 *Management Strategy*

The Council and the community have identified the following community management requirements to be achieved:

- Decision making processes shall be transparent, open and inclusive
- The Council, the community and the Maori community shall work in partnership.
- Impacts due to infill developments and new developments shall be largely managed through resource consent and the building consent processes.

Ongoing investigations such as network modelling, routine maintenance, funding applications, continued communication and consultation with the local residents, are all tools that can be combined to align community expectations with levels of service and their associated costs.

4.3 *Resource Consent Renewal*

Resource consents are a requirement for many sewer management works due to the potential impact on receiving environments. In accordance with both Regional and District Plans, there are a number of requirements that must be met during the life of the consent. These requirements stipulate monitoring conditions within the consent and will require the consent holder to report on the compliance with those conditions.

4.3.1 *Impact on the Sewer Activity*

Over the next nine years, the resource consents for Whakatāne, Edgecumbe, Tāneatua and Murupara will expire in 2026 and Ōhope's resource consent discharge to air (for odour) will expire in 2021. This means that the Council will be required to undertake works to improve the treatment of the sewage, in order to comply with new consent conditions. This is a key driver for the treatment plant upgrades planned through the Council's Long Term Plan 2018-2028.

4.3.2 *Management Strategy*

The Council has planned for this in the LTP. Key projects have been scheduled to accommodate the resource consent renewal process in the next 10 years and ongoing within the 30-year strategy.

4.4 Climate Change

The March 2004 amendments to the RMA 1991 require Councils to consider the effects of climate change. This is backed by conclusive evidence both nationally and internationally that the climate is changing, resulting in rising sea levels, increases in weather extremes, such as “weather bombs”. More storms, intense rainfall, flooding and drought all impact on water quality and quantity, and the interactions between the human and physical environment.

Rising sea levels will limit growth along the coastal regions because of potential flooding and erosion, placing development pressure on infill land and inland areas.

In the April 2017 stormwater event, a number of cyclones hit the Whakatāne District causing widespread damage. As a result, stormwater engulfed the wastewater oxidation ponds in both the Edgecumbe and Tāneatua schemes. Although both treatment plant facilities had overtopping floodwaters the public perceived that there was an inherent contamination of sewage within the residential and rural areas.

This stormwater event also cut the power across the district which meant that the Council lost operational control of most sewage pumping stations for a short period. The Council needs to increase its resilience and is therefore considering including an option for the connection of backup generator via generator power plugs at all pumping stations.

4.4.1 Impacts on the Sewer Activity

The impacts of climate change are well documented with the main effects on wastewater activity being:

- Potential increase in pollution through wastewater overflows
- Additional inflow and infiltration into reticulation network, effectively requiring network capacity upgrades
- Potential impacts on groundwater quality
- An effect on surface water quality from increased runoff during rainfall events and unrestricted activities within catchment areas
- Potential damage to structures such as outfalls, diffusers, treatment plants, etc. during extreme events
- Lack of resilience within the wastewater network systems and the need for smart intervention during events.

4.4.2 Management Strategies

Climate change and its related impacts cannot be avoided. Therefore, factoring in future climate change events is an essential task for the Council with regard to long-term land use planning and hazard mapping, Civil Defence planning and determining the infrastructure requirements moving forward is necessary to ensure communities’ expectations are met with regard to well-being for all, and safe and reliable services.

Within the Whakatāne urban area, the areas identified for potential future development are generally flat and low lying. The Council has embarked on a study to determine the required floor levels for any future housing developments. This work will recognise that some existing areas may be below present flood levels which means these areas may require a ‘retreat’ methodology as wastewater servicing may not be an option.

Other management strategies include:

- The Council will monitor trends in climate change and if necessary, review the Engineering Standards and Guidelines to cater for drought scenarios and flooding events
- Liaising with Central and Regional governments
- Redefining Hazard Zones (i.e. the Council's boundaries with waterways and the coastal boundary)
- Long-term planning for low-lying communities (coastal, inner harbour, river, stream etc.) and infrastructure requirements as a result of increased rainfall
- Education of the community on this issue.

4.5 Public and Environmental Health

Efficient wastewater systems collect, treat and dispose of contaminated waters without compromising public health and safety or the environment. Community growth translates into higher demand on wastewater systems and an increased risk of system failures. Urbanisation and increasing population densities lead to increased requirement for wastewater services, both of which result in added demand for wastewater collection and pressure on the existing infrastructure.

4.5.1 Impacts on the Sewer Activity

The monitoring of developments and the ability of wastewater systems to cope, together with structured growth planning is essential to avoid oversupply of wastewater on a reticulation system. An oversupply would mean that pumps would struggle to keep up with wastewater volumes which can lead to wastewater overflowing into the environment. The presence of contaminated wastewater on community streets and properties creates a public health risk and any untreated overflows would pollute the environment. Conversely, if insufficient treatment is allowed for, (such as suitable upgrades not being identified ahead of time for capacity requirements and treatment standards), this can have adverse effects on the environment and on public health.

4.5.2 Management Strategies

- Growth and demand must be carefully monitored and planning is needed to control any potential negative public health or environmental outcome. System capacity upgrades should be prioritised.
- The Council is reviewing a developer contribution policy that would require developers who place increased demand on the infrastructure to make a contribution towards upgrading the existing infrastructure.
- Regionally, resource consent conditions require constant monitoring of discharge quality to ensure environmental values are not compromised in any way. The key to safeguarding environmental health is through the use of Best Management Practices (BMP's), monitoring, regulations and education.
- New developments are required to meet and/or exceed the Council's Engineering Standards with resource consents.
- Industry that produces hazardous substances and/or contaminants are required to treat sewer onsite or discharge via an approved Tradewaste consent into the wastewater network.
- Education campaigns to advise residents around what can enter the wastewater system.

4.6 Demand Management Planning

The objective of demand management planning is to actively educate and modify customer demands for services so that the Council can maximise the utilisation of existing assets and/or reduce and/or defer the need for construction of new assets. The use of demand modelling tools is essential for future scenario planning. Some examples of new and improved services to meet customer demand include:

- Environmental controls
- Environmentally sensitive design
- Possible re-use of grey water
- Research of alternatives to ‘hard’ engineering options
- Use of GIS to maintain up-to-date details of the sewer network
- Investigation into non-asset solutions.

4.6.1 Management Strategies

Demand management strategies provide alternatives to the creation of new assets in order to meet demand and look at ways of modifying customer demands to maximise the utilisation of existing assets thus deferring and/or reducing the need for capital investment.

Demand management is practiced continuously to maintain the total demand at reasonable and sustainable levels. The key components of demand management when promoted as a package or strategy can dramatically reduce the demand on the network. The key components of demand management strategies with examples are outlined in Table 4.3 below.

Table 4-3 Demand Management Strategies

Demand Component	Strategy
Legislation/ Regulation	<ul style="list-style-type: none"> ▶ Compliance with resource consents
Education	<ul style="list-style-type: none"> ▶ Educate the community on the relationship between use and wastewater production ▶ Demonstrate how reducing wastewater results in cost savings and positive impact on the environment ▶ Educate the community regarding items that should not enter the system ▶ Set design levels of service and advising the community
Incentives	<ul style="list-style-type: none"> ▶ Dual flush toilet systems reduce water bills and reduce the sewage generated within the wastewater network and treatment facilities

Operational	<ul style="list-style-type: none"> ▶ Minimise inflow, infiltration and illegal connections ▶ Regularly inspect mains using CCTV and inspect property connections for signs of inflow and infiltration ▶ Seal vulnerable system manholes and other entry points from direct stormwater ingress ▶ Develop works programmes for renewals, upgrades and new works ▶ Undertake an optimisation review of existing plant and the reticulation network ▶ Create up-to-date wastewater models
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In addition to the strategies outlined in Table 4.3, new technologies can be effective in reducing impacts of growth and demand and the associated costs. These include:

- New materials which provide for a longer life of the assets become available
- New and enhanced construction/rehabilitation methods can deliver cost and time savings for renewal projects
- New treatment systems can achieve high quality water discharged to rivers and streams at reasonable costs.

5 Lifecycle Management

This Lifecycle Management section provides the broad strategies and work programmes required to achieve the goals and objectives set out in previous sections of this plan. This section provides guidance on decision techniques that aim to provide the most effective solution to delivering defined objectives.

The lifecycle decision methods are described in Part A of this AMP. The sewerage system lifecycle decisions making uses methods that balance performance, risk and cost, which is a principle of ISO 55001.

Table 5-1 Lifecycle Management Decision Criteria

	<i>Decision Criteria</i>
<i>Performance</i>	Community satisfaction, asset output, Levels of Services, etc.
<i>Risk</i>	Risk to the asset user, risk of failure, risk of service interruption, safety risk, reputation, etc.
<i>Cost</i>	Cost of ownership, operations and maintenance cost, financial return, net present value, etc.

5.1 Lifecycle Management – Background Data

Further to the asset information as described in Section 2 of this AMP, other key information is shown in Table 5-2 below:

Table 5-2 Asset Information

Asset	2017 Valuation Data	Valuation
Service Line (each)	9,211	\$16.79 million
Gravity Main (km)	188.6	\$60.61 million
Rising Main (m)	9,453	\$1.39 million
Outfall (m)	5,204	\$2.55 million
Pump Stations	48	\$7.73 million
Treatment Plant	6	\$8.89 million
Resource Consent	17	\$0.50 million

5.2 Lifecycle Management – Managing Risk

Part A of the AMP details the Council’s approach to risk management. This section covers the specific risk management implemented by the Council and how these apply to the current and future sewerage activities.

Risk assessments at the activity level focus on risks associated with management of the activity and the enabling infrastructure. Activity risk assessment considers risks identified at both the corporate and the operational level. Risk assessment at this level is the principal focus on this section.

5.2.1 Key Risks

A key issue for the Council is to understand the nature and possible consequences of the risks posed by hazards and ensure these risks are managed to acceptable levels. The Council has highlighted a number of key risk areas across the activity including:

- Sewage overflows and system capacity
- Assets failures/interruptions due to lack of maintenance, lack of planning
- Assets interruptions due to nature hazards, including climate change, etc.
- Legislation/policy change e.g. treated sewage discharge quality
- Lack of resources and knowledge.

5.2.2 Risk Register

The risk registers provided in Tables 5.3 and 5.4 for the current and future sewer treatment and drainage activities of the Council have been developed in consultation with key staff and the operations manager. Risk factors in the risk register were evaluated by the methods described in Part A of the AMP.

Table 5-3 Asset Management Risks - General

Asset Management Risks - General

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)	Effectiveness	Net Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor			Consequence	Likelihood	Factor		
WWR01	Lack of resources – the ability to attract key staff and or retain skilled staff.	<ul style="list-style-type: none"> ▶ Operational ▶ Financial 	4	4	16	<ul style="list-style-type: none"> ▶ District promotion (lifestyle) ▶ Dedicated HR staff ▶ Recruitment consultancy used (senior staff) ▶ Benchmarked salary levels (confirm with HR). 	Good	4	2	8	<ul style="list-style-type: none"> ▶ HR Manager ▶ Three Waters Operational Manager ▶ General Manager Infrastructure 	<ul style="list-style-type: none"> ▶ Look at review of recruitment policy (current lack of policies) Family/Lifestyle friendly policies ▶ Look at improving career development Draft policy/programme ▶ Review salary levels and incentives ▶ Implement the Performance Development system.
WWR02	Knowledge management – inability to retain knowledge or have sufficient systems in place to manage data/information, especially regarding asset performance and condition. Loss of institutional knowledge. IT failure.	<ul style="list-style-type: none"> ▶ Financial ▶ Operational 	4	4	16	<ul style="list-style-type: none"> ▶ Asset changes/updates – Information currently provided by contractors ▶ Condition surveys undertaken ▶ IT practices (backup, virus, security etc.) ▶ Asset management systems (e.g. Xivic) ▶ Responsibilities defined 	Fair	4	3	12	<ul style="list-style-type: none"> ▶ HR Manager ▶ Three Waters Assets and Planning Manager ▶ General Manager Infrastructure 	<ul style="list-style-type: none"> ▶ Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. ▶ Suitable training for staff ▶ Protocols for update and ongoing auditing ▶ Customisation of Asset Management systems to meet needs
WWR03	Project Management – projects inadequately scoped, budgeted, managed and documented, and reviewed, inadequate consultation with owners, resource consent issues, etc. resulting in time & cost, loss of image and other impacts.	<ul style="list-style-type: none"> ▶ Operational ▶ Financial ▶ Reputation/Image ▶ Health and Safety 	4	4	16	<ul style="list-style-type: none"> ▶ Project management training for key staff ▶ Dedicated in-house Project Management team for larger projects ▶ Annual Plan/LTP Process (is the initial consultation) ▶ Use of trained external resource ▶ Media communication plan ▶ Appropriate resources (e.g. software/information systems) 	Good	3	2	6	<ul style="list-style-type: none"> ▶ HR Manager ▶ Three Waters Project Delivery Manager ▶ Three Waters Assets Engineer 	<ul style="list-style-type: none"> ▶ Ensure adequate (quality) training for key staff as appropriate to roles and responsibilities ▶ Initial project information better communicated ▶ Improve project closure/reviews ▶ Define accountabilities and map organisation wide impacts and priorities

Asset Management Risks - General

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)	Effectiveness	Net Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor			Consequence	Likelihood	Factor		
WWR04	Maintenance and Operations Contract Management – unsatisfactory resulting in unnecessary or excessive costs and/or insufficient output or quality. Poor Contractor performance.	<ul style="list-style-type: none"> Operational Financial Reputation/ Image Health and Safety 	4	4	16	<ul style="list-style-type: none"> Contract procurement process in place Contract conditions (KPI's, penalties) Financial reporting Contracts Procedure Manual 	Good	3	2	6	<ul style="list-style-type: none"> Three Waters Operational Manager Operations Team Leaders 	<ul style="list-style-type: none"> Further improve Auditing and Reporting (including performance) Contract review and improvement
WWR05	Capital Works Contract Management – unsatisfactory resulting in unnecessary or excessive costs and/or insufficient output or quality. Poor Contractor performance.	<ul style="list-style-type: none"> Operational Financial Reputation/ Image Health and Safety 	4	4	16	<ul style="list-style-type: none"> Standard Capital Works Contracts Approved design and specification by owner Contract conditions (KPI's, penalties) Financial reporting 	Good	3	3	9	<ul style="list-style-type: none"> Three Waters Project Delivery Manager Three Waters Assets Engineer 	<ul style="list-style-type: none"> Further improve Auditing and Reporting (including performance) Contract review and improvement
WWR06	Asset Management – not up to date, or insufficient quality of process and output.	<ul style="list-style-type: none"> Operational Legislative Financial 	4	4	16	<ul style="list-style-type: none"> Asset Management processes and practices Asset Management Plan - Improvement Plan being undertaken Asset Management System Implementation Improve Data Capture processes 	Good	3	2	6	<ul style="list-style-type: none"> Three Waters Assets and Planning Manager Three Waters Assets Engineer 	<ul style="list-style-type: none"> Asset Management Plan - Improvement Plan Continuing Staff Development On-going external review On-going budget provision Increase IT resources Better data capture through business as usual activities
WWR07	Inadequate condition/performance assessments – lack of reliable data for renewals/replacements and valuations.	<ul style="list-style-type: none"> Operational Financial 	4	4	16	<ul style="list-style-type: none"> Internal and external feedback Pipe condition assessments (sampling and CCTV) Pump station assessments Asset Management System Implementation Two Asset Engineers now employed On-going data collection programme 	Fair	3	2	6	<ul style="list-style-type: none"> Three Waters Assets and Planning Manager Three Waters Assets Engineer 	<ul style="list-style-type: none"> Continual assessments Improve asset management system Continue Staff training Staff continuity Develop condition assessment programme Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. External backup.
WWR08	Compliance with Legislation and legal requirements – inability or failure to comply with consents, statute and national standards. Increase in requirements.	<ul style="list-style-type: none"> Legislative Financial Reputation/ Image 	4	3	12	<ul style="list-style-type: none"> Compliance with resource consents, RMA, subsidy requirements Contract conditions Staff training and development Feedback from BOPRC Use of external advice/resources Some auditing of works contracts (e.g. traffic management, safety, OSH) Monitoring of expiring consents and identifying new consents to be improved (define responsibilities) 	Good	4	2	8	<ul style="list-style-type: none"> General Manager Infrastructure Manager Three Waters 	<ul style="list-style-type: none"> Key staff to keep updated on current legislation Regular communications to staff Development of Council procedures Communicating effects of legislative change to Council/ LTP process Develop programme for internal audit

Asset Management Risks - General

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)	Effectiveness	Net Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor			Description	Consequence	Likelihood		
WWR09	Public Health and Safety – accidents causing injury and or damage to Whakatane residents/visitors/or property resulting in claims and or negative publicity (e.g. falls and trips over protruding assets).	<ul style="list-style-type: none"> Health and Safety Reputation/ Image Financial 	4	3	12	<ul style="list-style-type: none"> Fencing Signage Design and location Safety inspections RFS feedback LTP Consultation Compliance with legislation and standards 	Good	4	2	8	<ul style="list-style-type: none"> Three Waters Operational Manager Three Waters Assets and Planning Manager Three Waters Assets Engineer 	<ul style="list-style-type: none"> On-going review of Council's liability and H & S policy. Other community consultation
WWR10	Extreme Natural Hazards – (landslips/ earthquake/ tsunami/ volcanic/ major storm event) causing damage to assets and or hindering development.	<ul style="list-style-type: none"> Environmental Health and Safety Operational Financial 	5	3	15	<ul style="list-style-type: none"> Emergency Response Plan – Network inspection and hazard identification Member of Lifeline Group. (Emergency Response Group) Civil Defence Plan Lifelines Group Critical Assets Identified Suppliers and Contractors identified and list is maintained Structure audits and renewals Engineering Code of Practice Building code/standards Utilities staff member is part of the Bay of Plenty 'Lifelines' group 	Fair	3	4	12	<ul style="list-style-type: none"> Three Waters Operational Manager Three Waters Assets and Planning Manager General Manager Infrastructure 	<ul style="list-style-type: none"> Liaise with Regional agencies to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring
WWR11	Technology – inability to track technology, engineering developments/techniques, local and national trends and to utilise where relevant.	<ul style="list-style-type: none"> Operational 	3	4	12	<ul style="list-style-type: none"> Local government networking Staff development and training Use of external advice/resources 	Good	3	2	6	<ul style="list-style-type: none"> Three Waters Operational Manager Three Waters Assets and Planning Manager General Manager Infrastructure 	<ul style="list-style-type: none"> IT Policy/ IT Roadmap Further staff development and training
WWR12	Possible Political Interference , or inability of elected members to fulfil roles and responsibilities or disregard for community views.	<ul style="list-style-type: none"> Operational Reputation/ Image 	3	5	15	<ul style="list-style-type: none"> Councillors roles well defined and implemented Legislative requirements/ LTP process Reports to Council and Community boards Councillor induction/ handbook Councillors conferences 	Good	2	4	8	<ul style="list-style-type: none"> Chief Executive General Manager Infrastructure 	<ul style="list-style-type: none"> Improved communication to Council Manage process through CE

Asset Management Risks - General

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)	Effectiveness	Net Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor			Consequence	Likelihood	Factor		
WWR13	External Economic Influences (Cost Escalations) – terrorism, rising costs (e.g. fuel), pandemic, worldwide incidents	<ul style="list-style-type: none"> ▶ Economic ▶ Financial 	3	2	6	<ul style="list-style-type: none"> ▶ Local government networking ▶ Responding to national directives ▶ Monitoring world events and reacting as appropriate 	Fair	3	3	9	<ul style="list-style-type: none"> ▶ General Manager Infrastructure ▶ Three Waters Operational Manager ▶ Three Waters Assets and Planning Manager 	<ul style="list-style-type: none"> ▶ Track national and global trends. Monitor key economic developments and liaise with central government.
WWR14	Decrease in Funding – Both internal and external sources of funding. Risk of not applying for funding on time or not identifying potential areas where funding is required.	<ul style="list-style-type: none"> ▶ Operational ▶ Financial ▶ Reputation/ Image 	4	4	16	<ul style="list-style-type: none"> ▶ Asset management process ▶ Monitor other funding opportunities ▶ Prioritising projects/ LTP process ▶ Liaising with other Councils ▶ Insurance Policy ▶ Applying for funding from Central Government schemes 	Good	3	2	6	<ul style="list-style-type: none"> ▶ General Manager Infrastructure ▶ Three Waters Operational Manager ▶ Three Waters Assets and Planning Manager 	<ul style="list-style-type: none"> ▶ Maintain and manage clear lines of communication with key external agencies ▶ Forecast likely scenarios regarding effects of budget changes ▶ Using sustainable practices ▶ Increasing efficiency ▶ Rationalise spending
WWR15	Inadequate Planning for Growth – resulting in under-capacity infrastructure.	<ul style="list-style-type: none"> ▶ Operational ▶ Financial ▶ Reputation/ Image 	4	3	12	<ul style="list-style-type: none"> ▶ Subdivision/ Development control ▶ District plan provisions ▶ Growth Strategy ▶ Asset Management Planning ▶ Network modelling 	Good	3	2	6	<ul style="list-style-type: none"> ▶ Three Waters Assets and Planning Manager ▶ Director for Environment and Policy 	<ul style="list-style-type: none"> ▶ Further development of Growth Strategy and Development Contributions Policy ▶ Further develop network models and strategies to respond to growth
WWR16	Increased Rainfall Intensity and Frequency – causing flooding, unpredictable weather events, global warming.	<ul style="list-style-type: none"> ▶ Operational ▶ Financial 	4	2	8	<ul style="list-style-type: none"> ▶ Reviewing of rainfall intensity history (figures used in design) 	Fair	3	3	9	<ul style="list-style-type: none"> ▶ Three Waters Operational Manager ▶ Three Waters Assets and Planning Manager 	<ul style="list-style-type: none"> ▶ Monitor trends ▶ Plan for over design events ▶ Used climate/ revised rainfall figures ▶ Consider changing rainfall patterns in future capital works programmes

Table 5-4: Asset Management Risks – Wastewater

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)			Net Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor			
WWR17	Network Break or Blockage: Failure of network (pipes etc.) resulting in overflows, possible contamination of environment and public. Potentially resulting in infection or injury.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety 	4	4	16	<ul style="list-style-type: none"> ▮ Processes and procedures ▮ Maintenance Contracts ▮ Capital works programme ▮ CCTV condition assessment surveys ▮ Assessment of I/I through modelling ▮ Public feedback/ monitoring of complaints ▮ GIS/Xivic updates 	Good	4	3	12	<ul style="list-style-type: none"> ▮ Three Waters Operational Manager ▮ Three Waters Assets and Planning Manager ▮ Project Delivery Manager 	<ul style="list-style-type: none"> ▮ Ongoing monitoring KPI's in maintenance contracts and asset management ▮ Continue to monitor trends and events in public feedback ▮ Improvement in Xivic asset data system ▮ Plan capital works as appropriate 	
WWR18	Handover of assets - low quality assets being handed over from developers and/or contractors.	<ul style="list-style-type: none"> ▮ Operational ▮ Financial ▮ Reputation/ Image 	4	2	8	<ul style="list-style-type: none"> ▮ Engineering Code of Practice ▮ Development/Subdivision control ▮ Consent Processes (LUC, SUB and BC) ▮ Vesting of Asset Process ▮ Project Completion Report 	Good	3	2	6	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Assets Engineers ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Approved contractors ▮ Improve monitoring and inspections ▮ Improved enforcement of Engineering Code of Practice ▮ Improve Consent and Vesting Processes. 	
WWR19	Services Failure: Power/Telecom failure of provided services causing outage of 6 hours or more.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety 				<ul style="list-style-type: none"> ▮ Telemetry/Electrical ▮ Emergency generator supply agreement ▮ Emergency pump station storage ▮ Back-up generator availability identified ▮ Relationships with power and telecoms companies (notification of outages and backup options) ▮ Internal IT backup 	Good	2	2	4	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Purchase backup generators ▮ Increase on site storage to meet 8hr dry 	
WWR20	Wastewater Treatment Plant Failure: Failure of Wastewater Treatment Plant (ponds etc.) resulting in possible contamination of environment and public. Potentially resulting in infection or injury.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety ▮ Reputation/ Image ▮ Legislative 				<ul style="list-style-type: none"> ▮ Discharge and air resource consents ▮ Emergency response procedures ▮ Management plans in place for all WWTP ▮ Operations manuals ▮ Awareness of current risk areas/points ▮ Improvements to WWTP ponds ▮ Water balance assessment (at Ōhope) to understand pond inflow from other sources 	Good	4	1	4	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Condition assessment of Wastewater Treatment Plant (WWTP) ▮ Planned upgrades to ponds and treatment facilities 	

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)	Net Risk (Considering measures in place)			Person(s) Responsible	Management Options	
			Consequence	Likelihood	Factor		Effectiveness	Consequence	Likelihood			Factor
WWR21	Pump Station Failure: Failure of pump stations resulting in possible contamination of environment and public. Potentially resulting in infection or injury.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety ▮ Reputation/ Image 				<ul style="list-style-type: none"> ▮ Maintenance Contracts ▮ Telemetry ▮ Some backup generators ▮ Standby and some backup pumps ▮ Pump replacement programme ▮ Engineering code of practice ▮ Operations manuals ▮ I&I investigations conducted in key areas ▮ Security at pump stations 	Good	3	2	6	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ Project Delivery Manager 	<ul style="list-style-type: none"> ▮ Inflow and infiltration capacity issues during extreme weather conditions to be investigated ▮ Network model being developed ▮ Implement Capital Works Programme that came from the I&I investigations and Network modelling report
WWR22	Odours from Treatment Plants.	<ul style="list-style-type: none"> ▮ Environmental ▮ Reputation/ Image ▮ Legislative 	3	5	15	<ul style="list-style-type: none"> ▮ Operations Manuals ▮ Maintenance Contracts ▮ Resource consents ▮ Management plan ▮ Emergency response plan ▮ Public complaints/ feedback 	Fair	3	3	9	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Improvements to WWTP's ▮ Improve monitoring of trends/ complaints ▮ Review operations manuals for completeness
WWR23	Network Capacity Failure – failure of network to cope with capacity from flows (sewage and infiltration) resulting in overflows, possible contamination of environment and public. Potentially resulting in infection or injury.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety ▮ Reputation/ Image ▮ Financial 	4	5	20	<ul style="list-style-type: none"> ▮ Network modelling ▮ Development/ Subdivision control ▮ Maintenance Contract ▮ Inflow/Infiltration monitoring/ CCTV ▮ Network improvements/ upgrades 	Good	4	2	8	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Improve network upgrade programme now modelling is complete ▮ Residential and Industrial growth strategy ▮ Capital Works project identified and included in the LTP
WWR24	Extreme weather patterns: causing overload of network resulting in overflows, possible contamination of environment and public. Potentially resulting in infection or injury.	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety ▮ Financial 				<ul style="list-style-type: none"> ▮ Network modelling ▮ Development/ Subdivision control ▮ Maintenance Contract ▮ Inflow/Infiltration monitoring/ CCTV ▮ Network improvements/ upgrades 	Fair	4	2	8	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ Improve network upgrade programme now modelling is complete ▮ Residential and Industrial growth strategy ▮ Capital Works project identified and included in the LTP

5.2.4 Risk Action Plan

Table 5.5 below is compiled from the Risk Register and highlights the most significant net risks faced by the sewerage services activity. The main risks are listed in order of severity (Net risk) as assigned in consultation with key Council officers.

Table 5-5 Risk Action Plan

Risk Reference	Risk Descriptor	Risk Type	Net Risk	Action	Responsibility	Timeframes
STR02	Knowledge management – inability to retain knowledge or have sufficient systems in place to manage data/information, especially regarding asset performance and condition. Loss of institutional knowledge. IT failure.	<ul style="list-style-type: none"> ▮ Financial ▮ Operational 	12	<ul style="list-style-type: none"> ▮ Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. ▮ Suitable training for staff ▮ Protocols for update and ongoing auditing ▮ Customisation of Asset Management systems to meet needs ▮ Development of Staff Retention Policy 	<ul style="list-style-type: none"> ▮ HR Manager ▮ Three Waters Assets and Planning Manager ▮ General Manager Infrastructure 	▮ On-going
STR10	Extreme Natural Hazards – (landslips/ earthquake/ tsunami/ volcanic/ major storm event) causing damage to assets and or hindering development.	<ul style="list-style-type: none"> ▮ Environmental ▮ Health and Safety ▮ Operational ▮ Financial 	12	<ul style="list-style-type: none"> ▮ Liaise with Regional agencies to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ General Manager Infrastructure 	▮ On-going
STR05	Capital Works Contract Management – unsatisfactory resulting in unnecessary or excessive costs and/or insufficient output or quality. Poor Contractor performance.	<ul style="list-style-type: none"> ▮ Operational ▮ Financial ▮ Reputation/ Image 	9	<ul style="list-style-type: none"> ▮ Contract procedures manual (needs to be finalised - currently in draft format) (including closure/ review) ▮ Further improve Auditing and Reporting (including performance) ▮ Contract review and improvement 	<ul style="list-style-type: none"> ▮ Three Waters Project Delivery Manager 	▮ On-going
STR13	External Economic Influences (Cost Escalations) – terrorism, rising costs (e.g. fuel), pandemic, worldwide incidents.	<ul style="list-style-type: none"> ▮ Economic ▮ Financial 	9	<ul style="list-style-type: none"> ▮ Track national and global trends. Monitor key economic developments and liaise with central government. 	<ul style="list-style-type: none"> ▮ General Manager Infrastructure ▮ Three Waters Project Delivery Manager 	▮ On-going
STR16	Increased Rainfall Intensity and Frequency – causing flooding, unpredictable weather events, global warming.	<ul style="list-style-type: none"> ▮ Operational ▮ Financial 	9	<ul style="list-style-type: none"> ▮ Monitor trends ▮ Plan for over design events ▮ Used climate/revised rainfall figures ▮ Consider changing rainfall patterns in future capital works programmes 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager 	▮ Climate change adjusted rainfall figures used. Ongoing trends considered
STR17	Flooding due to under capacity network elements.	<ul style="list-style-type: none"> ▮ Health and Safety ▮ Reputation/ Image ▮ Operational ▮ Financial 	9	<ul style="list-style-type: none"> ▮ Complete Sewer Catchment Management Plans (SWCMP's) ▮ Undertake Sewer Catchment Management Plans (SWCMP's) for smaller catchments ▮ Continue to review levels of service. Review RFS and plan capital works. ▮ Update capital works programme through LTP and annual plan 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ General manager Infrastructure 	▮ On-going
STR18	Flooding due to extreme weather events.	<ul style="list-style-type: none"> ▮ Health and Safety ▮ Reputation/ Image ▮ Operational 	9	<ul style="list-style-type: none"> ▮ Continue to review Levels of Service and RFS data ▮ Update capital works plan through LTP and annual plan ▮ Community Education/ Awareness ▮ Create tight building/development controls in areas identified to be prone to overland flow 	<ul style="list-style-type: none"> ▮ General Manager Infrastructure ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager 	▮ On-going

Risk Reference	Risk Descriptor	Risk Type	Net Risk	Action	Responsibility	Timeframes
STR19	Silt/sediment and debris blocking catchpits and manholes, inlets/outlets and roadside drains reducing capacity and causing flooding.	<ul style="list-style-type: none"> ▮ Financial ▮ Operational ▮ Reputation/ Image ▮ Health and Safety ▮ Environmental 	9	<ul style="list-style-type: none"> ▮ Identification of areas with problem vegetation and sediment deposition ▮ Ongoing review of Levels of Service. Review RFS and plan improvement works as appropriate ▮ Community Education/ Awareness 	<ul style="list-style-type: none"> ▮ Three Waters Operational Manager 	<ul style="list-style-type: none"> ▮ On-going
STR21	Contamination affecting receiving waters caused by lack of effective source controls & lack of maintenance (landfill, physical works, fuel).	<ul style="list-style-type: none"> ▮ Operational ▮ Environmental ▮ Health and Safety ▮ Legislative 	9	<ul style="list-style-type: none"> ▮ Retrospective 'pickup' of old developments ▮ Comprehensive Catchment Consent (in draft at present) ▮ Enforcement ▮ Education programme 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ WDC Communications section 	<ul style="list-style-type: none"> ▮ On-going
STR01	Lack of resources – the ability to attract key staff and or retain skilled staff	<ul style="list-style-type: none"> ▮ Operational ▮ Financial 	8	<ul style="list-style-type: none"> ▮ Look at review of recruitment policy (current lack of policies) Family/Lifestyle friendly policies ▮ Look at improving career development Draft policy/programme ▮ Review salary levels and incentives ▮ Implement the Performance Development system. 	<ul style="list-style-type: none"> ▮ HR Manager ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ General Manager Infrastructure 	<ul style="list-style-type: none"> ▮ On-going
STR08	Compliance with Legislation and legal requirements – inability or failure to comply with consents, statute and national standards. Increase in requirements.	<ul style="list-style-type: none"> ▮ Legislative ▮ Financial ▮ Reputation/ Image 	8	<ul style="list-style-type: none"> ▮ Key staff to keep updated on current legislation ▮ Regular communications to staff ▮ Development of Council procedures ▮ Develop programme for internal audit 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ General Manager Infrastructure 	<ul style="list-style-type: none"> ▮ On-going
STR09	Public Health and Safety – accidents causing injury and or damage to Whakatane residents/visitors/or property resulting in claims and or negative publicity (e.g. falls and trips over protruding assets).	<ul style="list-style-type: none"> ▮ Health and Safety ▮ Reputation/ Image ▮ Financial 	8	<ul style="list-style-type: none"> ▮ On-going review of Council's liability and H & S policy. ▮ Other community consultation 	<ul style="list-style-type: none"> ▮ Three Waters Assets and Planning Manager ▮ Three Waters Operational Manager ▮ Project Delivery Manager 	<ul style="list-style-type: none"> ▮ On-going
STR12	Possible Political Interference, or inability of elected members to fulfil roles and responsibilities or disregard for community views.	<ul style="list-style-type: none"> ▮ Operational ▮ Reputation/ Image 	8	<ul style="list-style-type: none"> ▮ Improved communication to Council ▮ Manage process through CE 	<ul style="list-style-type: none"> ▮ Chief Executive ▮ General Manager Infrastructure 	<ul style="list-style-type: none"> ▮ On-going

5.3 Lifecycle Management – Operations and Maintenance

Operational and maintenance plans document how the assets will be operated on a day to day basis, including instances when portions of the asset fail, by carrying out activities that are aimed at keeping the asset in service and meeting asset management objectives.

5.3.1 Operational Objectives and Performance Measures

In the [Levels of Service](#) section, the framework shows a hierarchy of objectives, organisation objectives, asset management objectives, levels of service through to operational and technical objectives.

5.3.2 Routine Maintenance Plan

Maintenance, includes unplanned (reactive), planned (proactive) and recurring (cyclic) maintenance work activities.

Reactive (unplanned) maintenance

Reactive maintenance is the Council's response to service requests and public complaints. The urgency of the response required depends on the risk associated with the request or complaint and is defined through the Levels of Service. Response time for urgent and routine requests is specified in the Levels of Service.

Example of reactive maintenance activities are:

- Responding to requests for services to do with overflow or surcharge incidents within the wastewater system
- Clearing blockages to restore the free flow of sewage through the network pipes
- Replacement of missing manhole covers and repairing loose covers as reported by public
- Post response investigations to establish the extent of the problem following service restoration

Urgent response is required when publishing health and safety is of concern.

Preventive maintenance

Preventive maintenance works are carried out to a predetermined schedule or planned in association with other works. Preventative maintenance includes repair work that is identified and managed through a maintenance management system. Preventive maintenance activities include:

- High risk asset inspection and cleaning at specified frequencies, such as sewer pump stations, sewer rising main and sewer pipe in overflow prone areas
- Pump stations with routine inspection and cleaning, annual detail inspections
- Manhole condition assessment and repairs where required as identified through routine inspection.

Cyclic Maintenance

Cyclic maintenance is the replacement of lower value components/sub-components of assets that is undertaken on a regular cycle. This work generally falls below the capital replacement threshold.

Currently the Council does not have a fully developed computer based maintenance management system (CMMS), although a comprehensive CMMS is planned to be implemented as part of the new asset management system within the next 2 years.

The Council's Operations Team conducts regular programmed inspections and maintenance for non-pipeline reticulated sewerage assets. Detailed checklists are completed during inspections and include areas such as: security, workplace safety, building and grounds maintenance, and the condition of assets.

Maintenance of mechanical, electrical and telemetry/communication assets are carried out by the Council's Operations Team and the Council's contractor on a routine basis, with condition of assets recorded during this process.

5.4 Lifecycle Management – Renewal

Assets are generally renewed when they are unable to perform due to structural defects and/or performance failures. Asset renewals replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability and include replacement and rehabilitation.

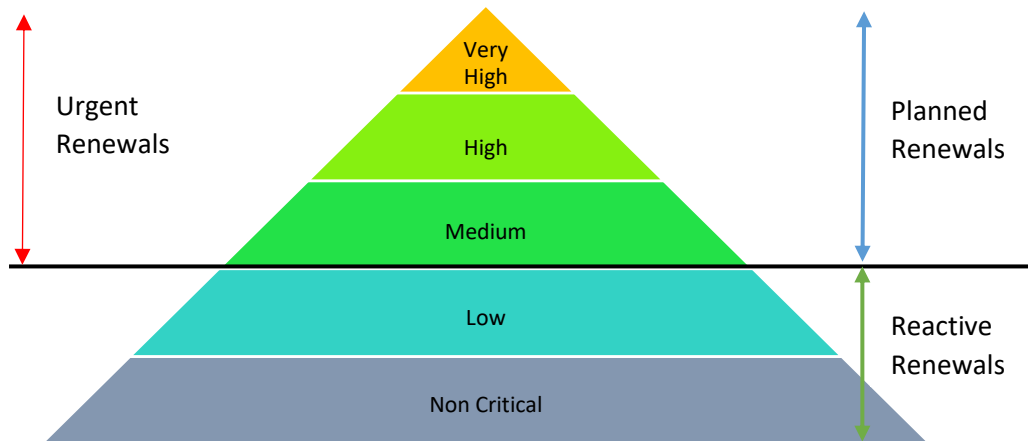
Asset renewals are not targeted at increasing the level of service or the capacity of an asset to serve growing demand. However, integrating renewal planning with improvement works (new capital works) planning provides cost optimisation opportunities.

The Council is aiming to improve the way assets are defined for inclusion into the asset renewal programme and will be adopting the following approach:

- The base life of the assets – from Asset Management Systems
- The maintenance history and expenditure – from Asset Management Systems and the Council's RFS system
- Condition assessment of the assets – routine inspections, pipe sampling, visual inspection etc.
- Risks based approach – criticality of the asset, public safety
- External factors
 - Natural disaster events
 - In-line with transportation renewal programme
 - Three-party works within the same asset corridor
 - Regulatory requirements (i.e. safety)
 - Operating environment
 - Construction defects
 - Aggressive soils /environment and etc.

Figure 5-1 below shows an example of renewal priorities based on criticality

Figure 5-1 Types of renewals based on criticality



5.5 Lifecycle Management – Creation and Acquisition

Most of the new sewer assets are created by third parties, mainly developers, and handed over or vested to the Council to manage. The Council has indirect input into this process through the preparation of wastewater design standards, the Engineering Code of Practice, and construction, operations and maintenance guides for sewer asset.

The Council will also design and construct new works to accommodate levels of service, changes in demand requirements, and/or due to growth requirements. Asset creation involves the design and construction of new assets which increase the capacity or performance of the system. Generally, design and construction is outsourced via the Council’s tender and procurement processes and at the completion of a project, asset data as well as ‘as-built’ drawings are handed to the 3 Waters Asset Team to update the asset management system.

5.6 Lifecycle Management – Disposal

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. The Council disposes of an asset when it becomes uneconomical to maintain and/or replace.

Generally, when renewing wastewater pipelines these are either pipe burst to increase capacity or are relined to give new life. In both cases the original pipe becomes ‘host’ pipe and remains within the ground.

At times the original pipe is abandoned as a new location is adopted. In these incidents it is cost beneficial to leave the original ‘end of life’ pipeline in the ground. This original pipe is normally plugged at either end and left in the ground or in some circumstances, filled with flowable, slurry fill. In extreme situations, the original pipe will be exhumed and the ground completely compacted and filled, with the surface area reinstated.

Often there will be costs associated with decommissioning and disposing of sewer assets, in particular above ground structures such as sewage pumping stations and treatment plants.

5.7 Lifecycle Management – Future Improvement

This AMP is prepared as a core AMP, meaning that assumptions are used, asset data have been graded for confidence, and the past asset management system has gaps associated with asset data. Future revisions of the asset management plan will move towards ‘intermediate to advanced’ asset management practices to optimise lifecycle management.

Over the course of the next two years, the new asset management system will be sufficiently populated to allow for renewals modelling to be undertaken as part of the renewals planning process. The projected 10-year renewal expenditure will be improved as data confidence, accuracy and asset condition assessments update asset data. Current budgets may be adequate to maintain the current levels of service. As better asset data and management of the data becomes available, confidence will be built and budgets will require modification to meet future renewal programme requirements.

There are no formal Operation and Maintenance Plans for day to day lifecycle management but a number of procedures exist within the Council. The Council is working towards utilising the new asset management system incorporating a maintenance management system which is expected to be implemented over the next 2 years.

To reduce large future cost, the Council is discussing strategies with stakeholders and affected parties. Strategies include:

- Improving our education programme to bridge the gap in the community's understanding of the Council's wastewater systems and what should and should not be put down household sinks and toilet systems.
- Designing any renewals and new developments to accommodate future demand within a reasonable time period.
- Using pre-approval of quality material/products with appropriate longevity of life within the Council's reticulation network.
- Monitoring and guiding construction of the network to ensure a quality asset is built.

6 Financial Forecasts

To undertake a sustainable, long-term approach to asset management, it is essential to prepare long-term financial forecasts. This section sets out financial forecasts put forward in the LTP (2018-2028) for sewer activity.

6.1 Financial Strategy

This plan provides the substantiation for budget forecasts put forward in the LTP (2018-2028) for wastewater reticulation and treatment asset management. The Council plans to:

- Implement an improvement approach to asset management planning in the short term. Improvement plans are included in each AMP and any improvement project will be monitored quarterly as part of the Council's performance reporting system.
- Prepare, maintain and periodically review an AMP outlining sustainable long-term asset management strategies. AMPs are considered living documents and are an integral part of Three Waters daily activity with a full review occurring on a three-yearly timeframe, well in advance of the LTP. The AMP may be re-issued outside programmed timelines if significant issues arise.
- Report variations in the adopted Annual Plan budgets against the original AMP forecasts and explain the level of service implications of any budget variations.

6.2 Key Assumptions

This section details the key assumptions made in presenting the information contained within this AMP and in preparing forecasts of required operating and capital expenditure, asset values, depreciation expense and carrying amount estimated. It is presented so that readers can understand the level of confidence in the data behind the financial forecasts.

The following assumptions have been made in preparing the 10-year expenditure forecasts:

- Asset information is as complete as possible at 30 June 2017. This is based on GIS and historical Hansen asset data.
- Only wastewater assets managed by the Threes Waters department have been valued. Assets such as private infrastructure and the Council’s Community and Open Spaces wastewater assets have not been included.
- The determination of asset replacement value, depreciated value and renewal projections are based on the valuation data as at 30th June 2017.
- All projected expenditure is stated in 2017-18 dollar values, with no allowance made for inflation.
- Operation costs are based on historical expenditure.
- Maintenance and operations allocations are based on maintaining current service levels.
- The data confidence for the sewer asset types are described in *Table 2-2* in Section 2.1.5.

6.3 Capital Expenditure

Figures 6.1 and 6.2 below show the capital expenditure forecast in the next 10 years. The expenditure forecast in Figure 6-1 and Figure 6-2 is detailed in Table 6-1.

Figure 6-1 Capital Expenditure Forecast in 10 Years by difference drivers

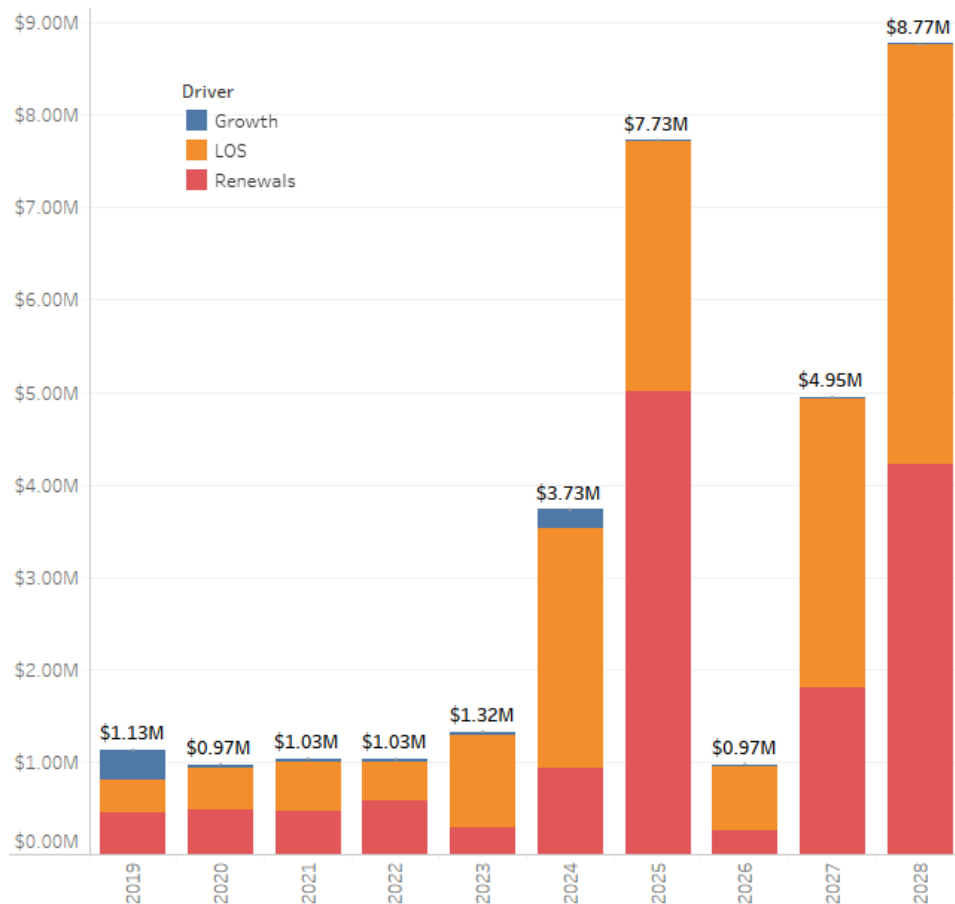


Figure 6-2 Major Project Forecast in 10 Years

Group Project	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Gran..
Treatment Plants Upgrade	\$0.28M	\$0.04M			\$0.28M	\$0.01M			\$2.59M	\$3.02M	\$6.22M
Resource consents for wastewater discharges		\$0.10M	\$0.11M	\$0.22M	\$0.55M	\$0.79M	\$0.35M	\$0.59M	\$1.34M		\$4.05M
Reticulation System Renewal	\$0.28M	\$0.44M	\$0.37M	\$0.55M	\$0.21M	\$0.25M	\$0.30M	\$0.14M	\$0.16M	\$0.63M	\$3.31M
Emergency Storage McAlister Pump Station						\$1.70M					\$1.70M
Risk Assessment	\$0.09M	\$0.16M	\$0.19M	\$0.12M	\$0.16M	\$0.19M					\$0.92M
Monitoring of wastewater	\$0.07M	\$0.14M	\$0.04M	\$0.04M	\$0.04M	\$0.05M	\$0.05M	\$0.17M	\$0.05M	\$0.05M	\$0.69M
WHK WW - Bridge St Rising Main									\$0.61M		\$0.61M
Mc Alister PS Rising Main						\$0.57M					\$0.57M
WHK WW Inflow Infiltratn Reduction			\$0.11M			\$0.11M			\$0.12M		\$0.34M
Monitoring of WW Discharges	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.04M	\$0.04M	\$0.04M	\$0.34M
WHK WW - Huna Rd Development	\$0.30M										\$0.30M
WW10 - Monitoring of WW Discharge	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.03M	\$0.28M
Condition Assessment	\$0.05M	\$0.03M	\$0.01M	\$0.04M	\$0.01M	\$0.01M	\$0.03M	\$0.01M	\$0.02M	\$0.01M	\$0.23M
WW5 - Wastewater model network updates			\$0.15M								\$0.15M

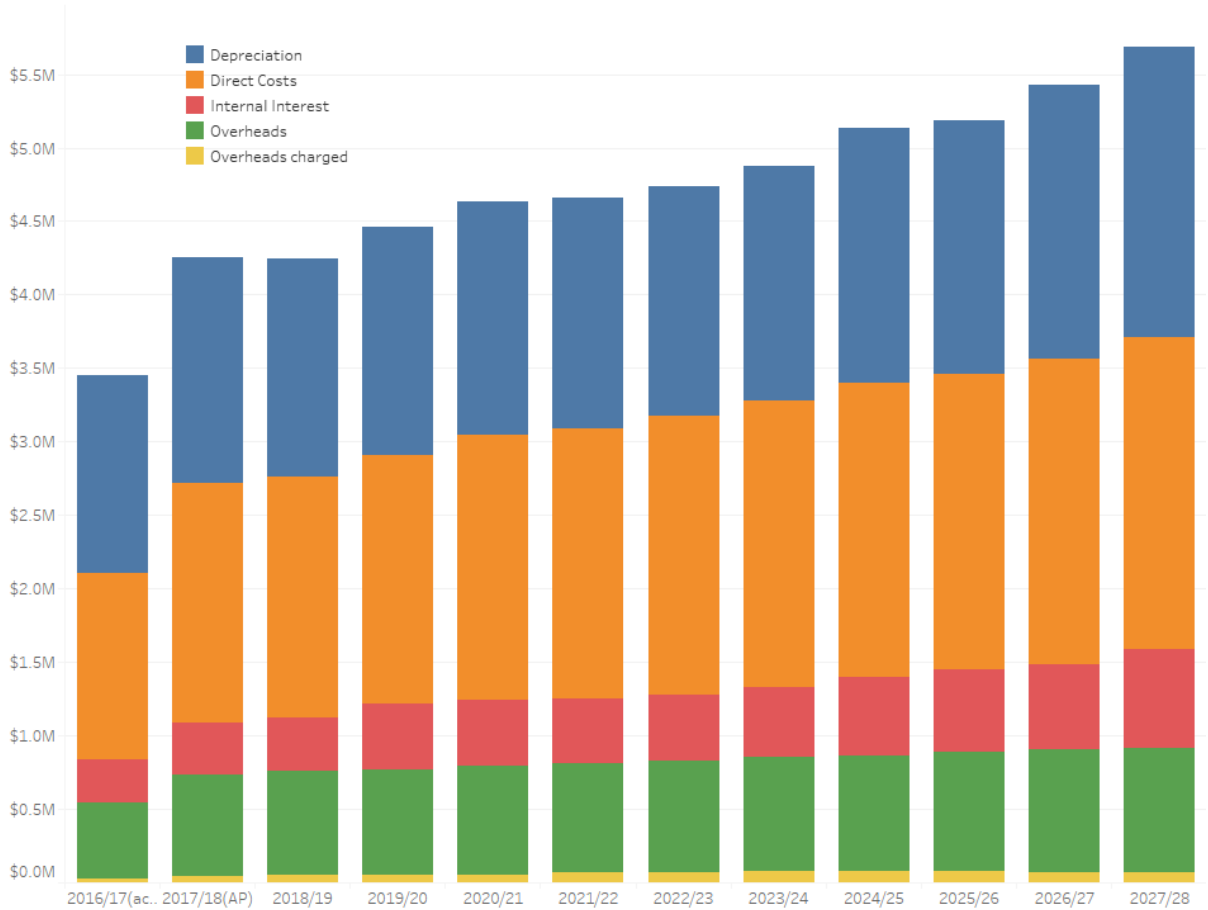
Figure 6-3 Capital Project Forecast (Details)

Project Name	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Grand T..
WHK WW - Huna Rd Development	\$300K										\$300K
WHK WW - Upgrade WW Treatmt PI	\$215K				\$237K				\$365K	\$375K	\$1,192K
WHK WW-Pipe	\$175K	\$103K	\$184K	\$188K	\$110K	\$57K	\$58K	\$59K	\$61K	\$62K	\$1,058K
WW3 & 12 & 15 - Risk assessmen	\$92K	\$163K	\$167K	\$117K	\$164K	\$190K					\$894K
WW10 - Monitoring of wastewater	\$65K	\$144K	\$42K	\$43K	\$44K	\$45K	\$46K	\$166K	\$49K	\$50K	\$695K
Muru WW - Treatment Plant Upgr	\$50K								\$1,765K	\$1,874K	\$3,688K
WHK WW PUMP REPL.	\$39K	\$60K	\$61K	\$47K	\$48K	\$71K	\$44K	\$56K	\$55K	\$66K	\$546K
Monitoring of WW Discharges	\$30K	\$31K	\$32K	\$32K	\$33K	\$34K	\$35K	\$36K	\$37K	\$37K	\$336K
WW 2 Asset verification and co	\$30K	\$10K		\$22K							\$62K
WW10 - Monitoring of WW Discha	\$25K	\$26K	\$26K	\$27K	\$28K	\$28K	\$29K	\$30K	\$30K	\$31K	\$280K
Edgecumbe pump station civil r	\$15K	\$15K	\$16K	\$16K			\$17K			\$19K	\$98K
Ohope pump station civil renew	\$15K	\$15K	\$16K	\$16K			\$17K			\$19K	\$98K
Taneatua WW Upgrade WW Treatme	\$15K	\$36K							\$231K	\$375K	\$657K
Edgecumbe pump stations land m	\$12K										\$12K
OHOPE WW CONDITION ASSESSMENTS	\$10K			\$5K			\$6K		\$6K		\$27K
WHK WW PIPE CONDITION ASSESSME	\$10K	\$10K	\$11K	\$11K	\$11K	\$11K	\$12K	\$12K	\$12K	\$12K	\$112K
OHOPE WW PUMP STATION UPGRADES	\$6K	\$6K			\$7K				\$15K		\$33K
EDG WW PUMP REPLACEMENT	\$5K		\$5K						\$6K		\$16K
Taneatua pump replacements	\$5K			\$11K							\$16K
Taneatua Telemetry & Electrica	\$5K							\$6K			\$11K
WHK WW Telemetry & Elect Upgrd	\$5K	\$5K	\$16K	\$5K	\$17K	\$6K	\$6K	\$6K	\$18K	\$6K	\$90K
OHOPE WW PUMP REPLACEMENT	\$3K	\$18K			\$19K		\$31K				\$70K
EDG WW RETIC MINOR WORKS			\$53K							\$62K	\$115K
Edgecumbe Telemetry and Electrical Upgrades		\$8K			\$9K			\$9K			\$27K
Mc Alister PS Rising Main						\$565K					\$565K
MURUPARA WW PIPE CONDITION ASS		\$10K									\$10K
MURUPARA WW SEWER RETICULATION		\$103K				\$113K	\$116K				\$332K
Ohope WW - Wastewater pipe rep		\$103K		\$269K						\$375K	\$747K
Taneatua pump station civil renewals (lids			\$16K							\$19K	\$35K
Taneatua WW - Pipe Condition A							\$12K			\$2K	\$14K
Te Mahoe reticulation system pipes							\$12K				\$12K
Te Mahoe Water Treatment Plant						\$11K				\$19K	\$30K
Upgrading of WasteWater Treatment Plant					\$44K				\$231K	\$375K	\$649K
WHK WW - Bridge St Rising Main									\$609K		\$609K
WHK WW - Emergency Storage McA						\$1,695K					\$1,695K
WHK WW InflowInfiltratnReductn			\$105K			\$113K			\$122K		\$340K
WW3 & 12 & 15 - Risk assessment and Implement..			\$27K								\$27K
WW5 - Wastewater model network updates			\$149K								\$149K
WW11 - Resource consents for wastewater disch..		\$103K	\$105K	\$215K	\$552K	\$791K	\$347K	\$594K	\$1,339K		\$4,046K

6.4 Operation and Maintenance Expenditure

Figure 6.3 below shows the operation and maintenance expenditure for last financial year (actual), current financial year (current annual plan) and the forecast for the next 10 years. The details in Figure 6-3 are explained in Table 6-2.

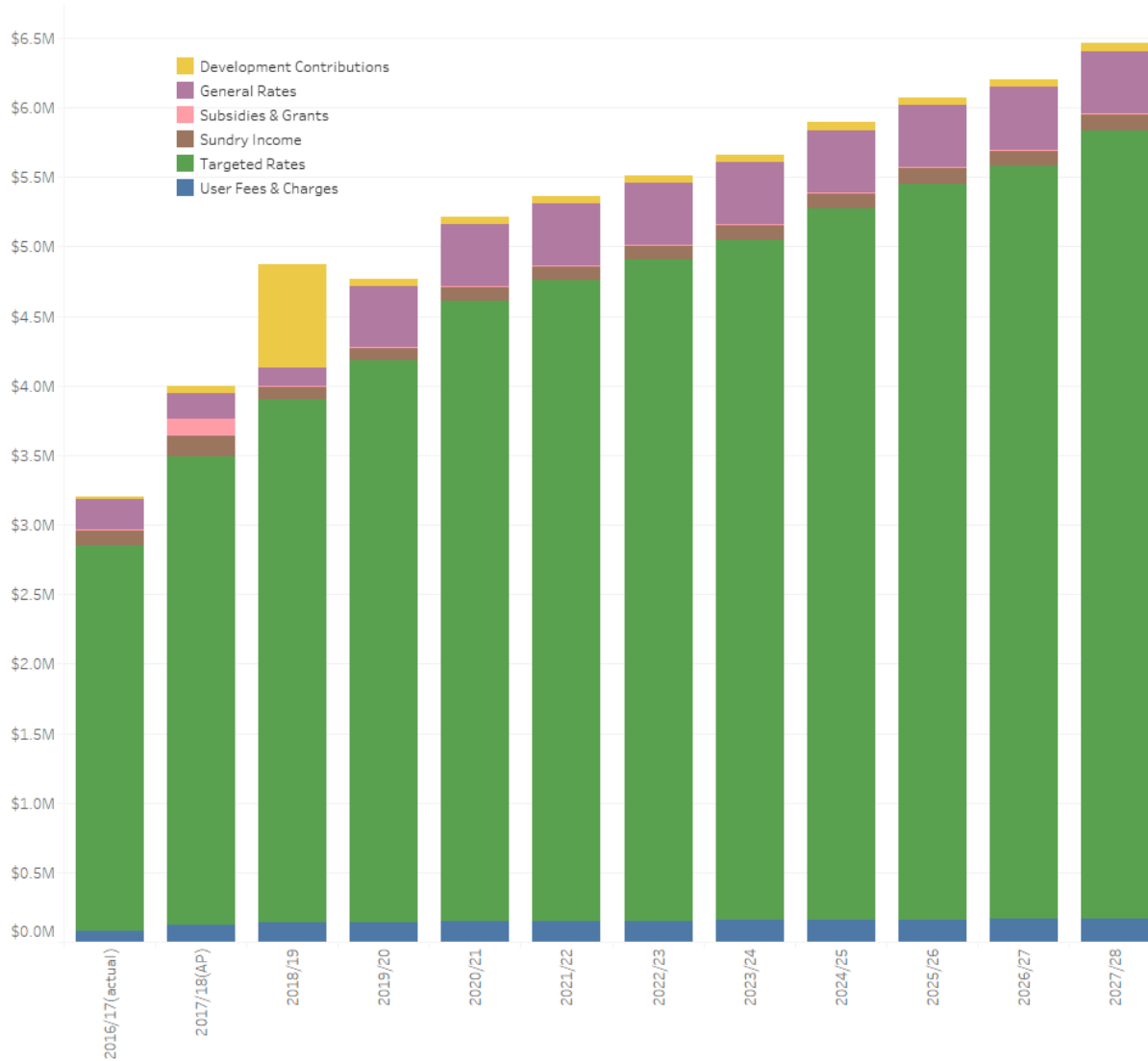
Figure 6-4 Operation and Maintenance Cost



6.5 Revenue

The revenue for past and current years plus forecast for 2019 through to 2028 are shown in Figure 6-4 below.

Figure 6-5 Revenue Forecast from 2019 to 2028



7 Plan Implementation

The Council recognises that this asset management plan is a ‘live’ document in need of constant monitoring, change and improvement.

7.1 Back to Basics

The goal of asset management is:

To meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers.

To achieve this goal, it is important that the Council is clear on the appropriate scope of the asset management system and has a clear path towards the end goal. The Council is the service provider for the sewerage function and its primary goal is meeting customers’ requirements in a sustainable manner. Recognising the need for collaboration with multiple stakeholders, keeping a strong commitment to community engagement and providing educational material are important parts of asset management principles.

7.2 Asset Management Improvement Process

The past two versions of the AMP have been treated as shelf documents deliverable every three years. Due to a fundamental mind-set change within the Council, this AMP is a live asset management document that will continually be updated to record changes, improvements and achievements.

The Council has adopted a strategic management approach to improvement planning, developing AMPs, implementing improvement processes and associated practices. This Improvement Plan is integral to that approach, quantifying current business practice and measuring progress toward an identified future position. The improvement plan includes:

- The cycle of AMP monitoring, reviewing, revising and auditing to improve the effectiveness of AMP outputs and compliance with audit criteria, legislative requirements and best appropriate practice.
- The definition of service standards reflecting community outcomes through public consultation. The AMP is used to identify service level options and costs, and the delivery of these services.
- Identifying and prioritising effectively to cost-effectively improve the quality of the AMP, and therefore decision making and service delivery.
- Identifying indicative time-scales, priorities, human and financial resources required to achieve asset management planning objectives.

The development of this AMP is based on existing levels of service, the best available current information and knowledge of the Council’s staff. This will enable the Council to optimise decision-making, review outputs, develop strategies, improve risk management and extend the planning horizon.

7.3 Guideline and Standards

This AMP has referred to the International Infrastructure Management Manual – International Edition 2015. The Council will monitor the application of ISO 55000 over the coming years and may use as a guidance of best practice in the future.

7.4 AMP Review and Monitoring

It is intended that the development of this AMP is part of an ongoing process and that the document will be reviewed and updated regularly. This review process involves using improved knowledge of customer expectations (community consultation) and information from Asset Management Systems and databases. Ongoing development will make use of improved data collection and management system, respond to legislative and policy changes, and address evolving issues.

To date this document has not been reviewed however a review for compliance with the requirements of the relevant legislation, especially the LGA 2002 shall be a primary improvement item.