Wastewater

Activity Management Plan 2021-31

August 2021

Ashburton DISTRICT COUNCIL

www.ashburtondc.govt.nz

Document control

Revision	Name	Author	Reviewed by	Date
1.0	Draft	Chris Stanley		2020-12-17
2.0		Emily Reed		June 2021

Contents

List of tables

List of figures

1. Introduction

In the Ashburton District, there are presently three community-based wastewater schemes to which 9,769 properties are connected – Ashburton (including Lake Hood), Methven and Rakaia. The balance of properties in the District dispose of their wastewater by other means, typically through single property septic tank systems.

This plan summarises the Council's strategic and management long-term approach for the operation and maintenance of community-based wastewater schemes.

2. Key issues for Wastewater

Despite their age, the reticulated networks generally operate satisfactorily. Renewals have been in progress for decades, and will continue well into the future. Due to the prevalence of on-property sewer mains there is a large proportion of relining taking place, which relies on the old mains not failing before they can be relined.

Planning for the future involves ensuring adequate capacity in the reticulation and at treatment plants, addressing issues that are beginning to compound at Ocean Farm, and ensuring that we are well-placed for the renewal of our key consents in the 2030s.

As with all the three waters, we are also operating under some uncertainty around governance, funding and management arrangements, although wastewater is less likely to be directly affected by large shifts in the way it is operated than drinking water.

2.1. Future management and governance structure

The government is undertaking a detailed, top-to-bottom review and reform programme for the three waters services, to determine how to improve the management of drinking water, wastewater, and to a lesser degree stormwater. This is in response to a number of significant recent events around the country, including cost overruns on two large wastewater schemes, contamination and illness outbreaks, and concerns from the Auditor General and Productivity Commission about investment and regulation of three waters infrastructure. In particular, attention was drawn to a "dispersal of responsibilities in the sector"[1]. This work is being led by the Department of Internal Affairs.

As of July 2020, the Government's "starting intention is public multi-regional models for water service delivery to realise the benefits of scale for communities and reflect neighbouring catchments and communities of interest". This is intended to create fewer larger entities, owned by local authorities.

The fine details of the final arrangements are still to be determined. This will be developed by the local government sector in conjunction with central government. There is a timetable of approximately 3 years, running through to July 2023, comprising three main phases:

Councils sign up to a memorandum of understanding (MoU) agreeing to work together in good faith to consider multi-region groupings. This phase does not commit ADC to anything, and Council has agreed to this.

Councils opt-in to multi-region groupings and begin the planning. At this point there is a binding commitment made to joining the larger entities. The new entities form and establish themselves, beginning operation somewhere in late 2022.

Each phase is likely to be accompanied by a tranche of funding. This funding is partly a response to a need for greater investment and partly a recognition that COVID-19 has had an effect on funding.

While we understand the general shape of the reforms, the specifics are uncertain. The effects are likely to be felt in the areas of governance and funding, and consequently in prioritisation, if funds and projects are considered regionally or cross-regionally.

ADC has not committed to joining any new entity, so our current planning and the timing of projects is based on status quo continuing.

[1] Government review of three waters services (Cabinet Paper), https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-review-Cabinet-Paper_Redactions-applied/$file/Three-waters-review-Cabinet-Paper_Redactions-applied.pdf

2.2. Aging infrastructure

The reticulation networks for Ashburton and Methven date from the early 1920s and 1930s, with a lesser expansion in the period of 1960 – 1980. These old pipelines lead to two main problems:

- There is significant infiltration into the networks, mainly from cracked pipes, faulty joints or lateral connections. This can be addressed through localised interventions, but this is not cost-effective compared to fully relining or renewing the pipes.
- Old pipes are at risk of failing catastrophically, which makes relining them impractical and necessitates excavation and replacement. This is problematic (and expensive) in areas with on-property mains which may be located underneath houses, buildings or gardens.

The use of relining to avoid having to excavate on-property pipes has expanded in recent years, and is at a level of around $400,000 per year. Trenching and full replacement is still ADC's preferred method because it carries a few advantages, in particular that it provides a more reliable and long-lasting solution (80+ years compared to an estimated 50 years for relined pipe) and allows for lateral connections, and the laterals themselves, to be made or renewed more securely.

The existing renewal programme is expected to continue at about the same level over the next 10 years.

2.3. Infiltration and Inflow

The effect of I&I on the ADC networks tends to be seen as generally higher flows, peaking especially when the weather is wet or groundwater is high. The cost of treating this wastewater flow is in additional electricity consumption and wear and tear and runtime on pumps and aerators.

Relining and renewal is the best way to solve the problem for a long time, but due to the cost it is a slow process. Where there are issues, such as overflows caused by surcharging, these areas are prioritised for intervention. These are few of these areas at present.

ADC has in the past trialled methods for spot repairs to pipes and manholes, but these produced very limited results. The problem is believed to be widely distributed, many small faults and leaks, rather than a few large ones. This makes targeted intervention difficult to justify.

2.4. Consent renewal

The resource consents for the wastewater activity are due for renewal in the 2030s: Rakaia in 2033, Methven in 2034 and Ashburton in 2039. In anticipation of higher standards, capital expenditure is likely to be needed at these treatment facilities, either to achieve higher treatment levels or to increase disposal area.

Ocean Farm and Rakaia have already had extra land purchased nearby to provide options for extending irrigation areas. What is yet unknown is whether the focus will remain primarily on nutrient loadings, or whether treatment processes will need to be made more sophisticated to deal with emerging contaminants, such as viruses.

We have not proposed any major projects in the short term, but with the uncertainty about the future regulatory environment it is possible that a clearer strategic direction may emerge in the next few years, which will be reflected in subsequent AMPs and LTPs.

2.5. Ocean Farm

The wastewater disposal facility at Ocean Farm was completed in 2007. Since the beginning there have been problems with the site, mainly around the wetland and sprinklers.

The wetland vegetation established inconsistently, which has led to excessively slow flows in some cells, and channels have been cut to relieve this impediment. The cells are also beginning to experience bank erosion and sludge build-up, both of which need addressing.

The hydraulics of the irrigation system lead to poor irrigation coverage, reducing the amount of grass grown and thus the amount of nitrogen removed through the cut-and-carry operation. Surface application of the effluent also affects its marketability.

Finally, the sprinklers are prone to blocking due to fine particles and algae. This has proved difficult to screen at the storage pond, due to the large volumes and frequent backwash cycles. A new type of filter has been trialled and appears promising, but trials had to be suspended due to the Covid-19 pandemic.

2.6. Future demand

The wastewater systems are well placed to service the projected population increases in short to medium term. Reducing/minimising infiltration in key areas will continue to be a priority.

2.6.1. Ashburton

The Ashburton River Crossing pipeline, which is due for completion in December 2020, will cater for the expected increase in infill development, and zone development across all of the Ashburton catchments. The Ashburton Relief Sewer upgrade that will begin in late 2020 and will be completed in early 2022 will provide for future flows from the Ashburton Business Estate and the proposed new residential zones around the south-east of Ashburton currently not serviceable by gravity means. The Ashburton Borough catchment sewer renewal (completed in 2015) provides for existing and future flows in the industrial and borough areas.

Average Dry Weather Flow (ADWF) is presently estimated at 78% of the treatment capacity. The plant was design for and receives significant wet weather flows. The existing treatment and disposal facility is considered to have sufficient capacity for the projected growth. Any reduction in I & I will assist to extend the period before any treatment capacity needs to be considered.

2.6.2. Methven

Network modelling undertaken in 2017 identified no capacity issues during normal or peak winter flows (<600 m3/day). Methven WWTP was upgraded in 2000 with design parameters of 4000 people and ADWF of 1000 m3/day. This volume has been reached during periods of wet weather but the effects are minor.

The WWTP discharge consents require renewal in 2034 and additional treatment and or additional land may be required. ADC owns more land than is currently being used for land disposal. Decreases in I & I will minimise or delay the impact of any WWTP upgrade or expansion.

2.6.3. Rakaia

The reticulation of the Rakaia scheme was designed to cater for a population of 1,700 and the WWTP cater for population of 1,000. The existing authorised connections equate to the WWTP design. It is considered that growth is unlikely to exceed design capacity by 10% in the foreseeable future. Additional connections can be allowed if flows are kept within the operational parameters of the

WWTP. Network modelling (similar to that carried out in Ashburton and Methven) to understand the extent of any inflow and infiltration will be instigated.

Additional land near the current site has been purchased to provide options for treatment plant expansion if necessary in future due to township growth and/or more stringent land disposal consent conditions.

2.6.4. District Plan

The Ashburton District Plan sets a framework for development and the management of resources in the District. It establishes objectives and policies for managing the environmental effects of development, it defines the various zones (residential, rural, business, open space, etc.), and the rules for what activities are permitted to occur in each zone.

Future expansions of the serviced area will be generally aligned with the growth directions signalled in the District Plan, however, the provision of wastewater services to the Residential D zones will be development driven and prioritised once Residential C zoned areas have been appropriately catered for.

3. Wastewater

3.1. What we do

In the Ashburton District there are three community-based wastewater schemes as presented below. These schemes service approximately 64% of the usually resident population of the district.

Table 1: Community-based Wastewater schemes

Scheme	Population (approx.)	Network length	Treatment	Disposal	Consent expiry date
Ashburton	18,750	152.3 km	Wilkins Rd 0.7ha aeration pond and three oxidation ponds (15.6 ha)	Ocean Farm 9ha wetlands, 282 ha grass irrigation	2039
Methven	1,700	18.5 km	Two oxidation ponds (0.7 ha with aerators and 1.2 ha)	Rapid infiltration area (0.4 ha) Three rapid infiltration basins	2034
Rakaia	1,100	14.3 km	Package plant with UV disinfection (1999)	10.6 ha of grass irrigation & 5.5 ha of sludge disposal	2033

Operations and maintenance is covered by a contract with Ashburton Contracting Limited. This contract was retendered in 2020 and is discussed further later.

Refer also 13.1 Appendix A – Current Valuation by Scheme

Refer also 13.2 Appendix B – Wastewater Scheme Details

3.2. Why we do it

Council operates wastewater schemes to help protect the health and safety of the community and environment.

The Health Act 1956 requires Councils to improve, promote and protect public health within their Districts.

4. Goal for Wastewater

Council wastewater services aim to provide communities with safe, reliable and sanitary disposal of wastewater at an affordable cost.

Our principles

These are the guiding principles for how we will function and deliver activities and services to the community.

- Plan and provide fit for purpose services.
- Work with the community and engage in meaningful conversations.
- Lead the community with clear and rational decision-making.
- Represent the district on regional / national issues and partner with others when needed.

Our contribution to Community Outcomes

Wastewater contributes to the following Community Outcomes as shown below.

	Residents are included and have a voice	A district of great spaces and places	A prosperous economy based on innovation and opportunity	A balanced and sustainable environment
Wastewater	✓	✓	✓	✓

5. Levels of service and performance measures for Wastewater

5.1. What are we trying to achieve

In 2014 the Department of Internal Affairs (DIA) produced a set of mandatory performance measures for all territorial authorities to report on, along with guidance for their measurement. These performance measures do not provide a defined level but rather show how the Council is performing, i.e. the number of complaints received.

Given their strong overlap with the 2012-22 LTP performance measures, it was decided to adopt these new mandatory measures from 1 July 2014 onwards, retain the existing performance levels where these did not replicate DIA measures and show targets for the DIA performance measures.

The amended performance measures and targets are outlined in the table below.

Table 2: Wastewater performance measures and targets

WHAT WE'RE WORKING TOWARDS (Levels of service)	HOW WE'LL MEASURE PROGRESS (Performance measures)		HOW WE'RE PERFORMING NOW	WHAT WE'RE AIMING FOR			
			2019/20 results	2021/22	2022/23	2023/24	2024/25 – 2030/31
We provide an efficient and sustainable wastewater service	Dry weather overflow incidents * *The number of dry weather sewerage overflows from the Council's sewerage systems, expressed per 1,000 sewerage connections to that sewerage system.*		0.20	≤1.0/ 1000 connections	≤1.0 / 1000 connections	≤1.0 / 1000 connections	≤1.0 / 1000 connections
	Compliance with resource consents * *Compliance with Council's resource consents for discharge from its sewerage systems measured by the number of the following received by Council:*	Abatement notices	0	0	0	0	0
		Infringement notices	0	0	0	0	0
		Enforcement orders	0	0	0	0	0
		Convictions	0	0	0	0	0
Council contractors respond to wastewater failures and requests with median response times	Median response time (in hours) to callouts* *Where Contractors attend a call-out on Council's behalf to a fault or unplanned interruption to a Council networked reticulation system, the median response times are measured, from the time Council receives the notification to the time that service personnel reach the site, and to the time that Council received notification of resolution of the problem:*	Call-out attendance time	0.50 hours (30 mins)	1 hour	1 hour	1 hour	1 hour
		Call-out resolution	3.00 hours	4 hours	4 hours	4 hours	4 hours
The majority of residents are satisfied with our wastewater services	Customer satisfaction with wastewater services* *The total number of complaints received by Council expressed per 1,000 connections about::*	A) Sewage odour B) Sewerage system faults C) Sewerage system blockages D) Council's response to issues with our sewerage system	5.7 complaints/ 1,000 connections	≤10 complaints/ 1,000 connections	≤10 complaints/ 1,000 connections	≤10 complaints/ 1,000 connections	≤10 complaints/ 1,000 connections

5.2. How will we know if we are achieving it

5.2.1.1. Reporting of Performance Measures

Council manages performance to monitor levels of service and improve service delivery. Reporting performance information is a key element of performance management. Interpreting results and communicating them to Council, management and the community provides a picture of service performance across Council. Performance measures for wastewater are reported through the Triannual Performance Report, Annual Report and reports to the Infrastructure Services Committee.

5.2.1.2. Historical performance

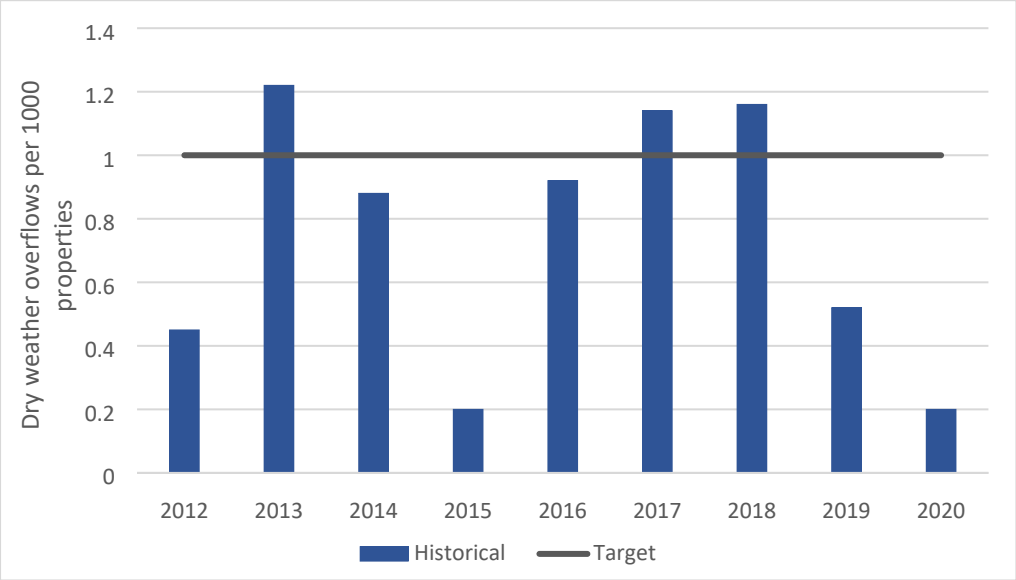


Figure 1: System and adequacy – Dry weather overflow incidents per 1000 connections

Dry weather overflow incidents are generally near or below the performance measure target.

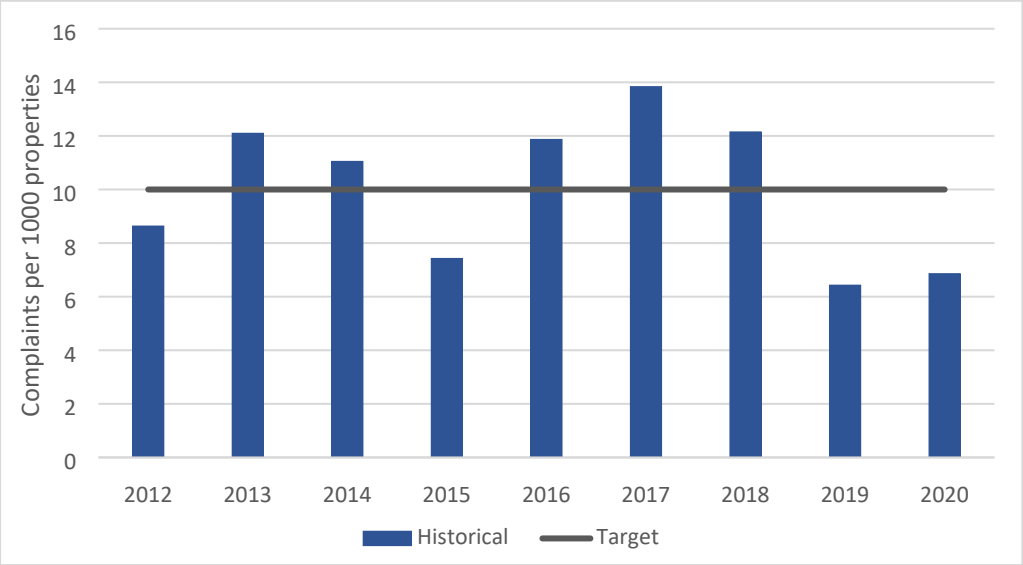


Figure 2: Customer satisfaction – complaints per 1000 connections

Customer complaints are generally above the performance measure target. A proportion of these complaints are due to blockages associated with wet weather events.

6. Management of activity for Wastewater

6.1. General

6.1.1. Operation and maintenance

The Council intends to continue to own, control and manage all of the public systems, but the work of actually operating and maintaining them is contracted out. However, should Council sign up to the larger three waters reform process this may result in the assets and their management transferring to another entity.

The operation and maintenance of drinking water assets is contracted out to Ashburton Contracting Ltd (ACL). ACL is required to operate and maintain the assets to achieve specified outcomes and ensure they provide the required levels of service.

The contract is performance based with a focus on forward programming, preventative maintenance and reporting, however, there are certain minimum standards. Contract works must be carried out to an acceptable standard, at the least cost, with minimum disruption to the community and the environment.

In accordance with Section 17A of the LGA 2002 a review of the cost-effectiveness of current arrangements was completed. One of the difficulties identified during the review was that a negotiated contract with one party made it difficult to demonstrate cost-effectiveness. The current contract, which commenced in July 2020, was competitively tendered and was won by ACL.

6.1.2. System control and monitoring

Council operates a SCADA (Supervisory Control and Data Acquisition) system, providing surveillance of the treatment plants and reservoirs in the water system and providing alarms when equipment fails or when operating parameters are exceeded. The SCADA system also records operational data. 18 water supply sites are presently monitored. There are also a small number of data loggers in use for pressure and flow monitoring, which are used where sites do not have access to mains power.

The overall SCADA system has evolved from its original purpose as an operational and alarming tool to a business information, asset management and compliance system, critical to maintaining the existing levels of service. SCADA provides the ability for Council to ascertain faults and instigate repairs without affecting the service to the consumer and plays a significant role in maintaining the efficiency and reliability of the utility schemes.

Given this increased criticality, investment has been made already and more is needed in this LTP period to improve capability, resilience and trustworthiness.

The approach is in four parts:

- Preparation of a telemetry AMP, a document which outlines the purpose of the system, identifies stakeholders, risks and issues, and sets out a future direction and long term strategy. This will also include standard procedures and start the process of designing a good QA system.
- Progressive renewal of older remote telemetry units (RTUs) and data loggers with newer units with improved capability. The oldest RTUs which did not support data logging have been replaced already, but a further 18 sites are approaching 20 years old, are no longer supported by the manufacturer and are in need of renewal.
  On the data logger side, we have selected a modern replacement logger range which is cellular, can be externally-powered and has larger memory and more advanced capabilities. Expanding

the use of modern loggers will allow maintenance on remote sites to be reduced and can minimise site visits.

- Upgrading the communication equipment to provide higher data rates and communications redundancy. A new radio network has been established with new digital radios. For the most critical signals an out-of-band alarm system could be used; for example an alarm for water treatment failure, sent by SMS using a different cellular provider.
- Development and implementation of a QC process for telemetry and signals, the cornerstone of this being an end to end testing programme. This does not replace a good QA system but will allow earlier proactive rather than reactive fault identification.

6.1.3. Trade wastes

The nature of the wastewater collected in the schemes is largely derived from domestic sewage, with only small quantities of industrial and commercial discharges. However, the commercial discharges, particularly food premises, impact negatively on the performance of the network through poor performing fat and grease traps.

A Trade Waste Bylaw was first adopted by Council in June 2012. Prior to that, requests for discharges that can be classified as trade waste, were dealt with on an individual basis as per the New Zealand Trade Waste Bylaw Standard.

Council now records and monitors trade waste as per the new bylaw and will be progressively targeting food premises to ensure fat and grease traps are being maintained appropriately.

6.1.4. Forecasting assumptions

The broad underlying assumptions that form the basis for the Wastewater AMP development are presented below.

Table 3: Wastewater forecasting assumptions

	Management area	Assumption	Comment
1	Major project & capital works	Procurement will be provided that delivers the defined Level of Service within budget, at a similar cost to that presently incurred.	Construction Projects costs estimated using the following: Tendered +/-5% Designed +/-10% Estimate +/- 30%
2	Demand management	Reduction in I & I will occur in response to Councils I & I and renewal programmes.	Efficiencies in scheme use may not be achieved; e.g. sufficient reduction in stormwater inflow and groundwater infiltration to sewer mains may not be possible.
3	Asset lives and depreciation	Assets will not wear out more quickly than forecast and require replacement earlier than planned.	If assets require replacement more quickly than forecast, renewal projects may need to be brought forward.
4	Population forecasts	The level of population growth will be as forecasted.	-
5	Assets aging	No attempt has yet been made to predict increases in maintenance	-

	Management area	Assumption	Comment
		costs that might occur.	
6	Method of service delivery	A new contract having been issued, O&M will not change until 2025. Management, funding and governance will not change significantly.	While there is the prospect of significant change in the next 3 years, ADC has not committed to anything and thus status quo has been assumed.
7	Renewal forecasts	Based on current knowledge of asset condition and performance, and levels of service identified in this AMP.	Analysis of asset renewal requirements will increasingly be undertaken using predictive modelling. Some increases and decreases in expenditure may result.
8	Land use change	There will be no sudden changes in network demand caused by sudden changes in land use.	-
9	Schemes	No additional schemes will be created and none will be removed or shut down.	There is a possibility that smaller townships such as Hinds may get reticulated wastewater in the future, but there is no requirement or plan at this time.

6.1.5. Renewal strategy

Renewal expenditure is major work that does not increase the asset's design capacity or increase its planned level of service, but restores, rehabilitates, replaces or renews an existing asset to its original capacity or service level. Work over and above restoring an asset to original capacity involves new works expenditure.

The purpose of the Renewal Strategy is to insure that:

- Replacement of assets are carried out at the most appropriate time
- Most effective benefit received from any asset renewal
- Assist in the compliance of wastewater's Levels of Service

The major drivers for the Council's sewer main Renewal Strategy are presented below:

Table 4: Major drivers for the Sewer Main Renewal Strategy

Driver	Effects	Comment
Elevated levels of infiltration in Ashburton and Tinwald areas	Future capacity from reduction in I & I. Sewer main sizing for new infrastructure.	23km of earthenware sewer in the Ashburton area installed in 1920 – 1940 period. Tinwald – targeted repairs and investigations of AC sewer mains.
Sewer main failure	Levels of Service compliance	No excessive blockages presently occurring but increased risk in future of increased sewer main failures as the network gets "older". For rear sewers, major failure may prevent relining, and thus significantly increase the cost and disruption of renewals.

Risk aversion for critical assets	High consequence if failure occurs.	Complete new river crossing as soon as possible.
Projected demand	Development constrained.	Complete grit chamber pipeline renewal and pump station and service mains in Allens Road & Carters Road.
Construction occurring in Roading network (renewals, sealing, stormwater upgrade)	Digging up new formed or sealed roads.	Loss of community confidence in Council. Need to coordinate programmes where possible.
Cost effective means of providing the service.	Increased costs	Sewer main replacement uses the most cost efficient method(s) for programming renewal programme.

7. Changes made for Wastewater

- River Crossing and Pump Station
- CBD renewals
- Trial filter

8. Key projects for Wastewater

- North-west Ashburton Wastewater Servicing - $1.8M, Y1
- Ashburton Relief Sewer Project - $1.6M, Y1 (Council share only)
- Grit Chamber Pipeline Renewal - $3.0M, Y2
- Tuarangi Rd (block) Wastewater Service - $0.9M, Y7

9. Proposed programme

9.1. Ashburton and district wide

There are three major projects to extend reticulation or build new infrastructure: extensions into the NW Ashburton area of Allenton, and to the Residential C zone around Tuarangi Road, and the remainder of the Ashburton Relief Sewer.

The ongoing pipeline renewal programme continues, with a mixture of relining and conventional renewals as appropriate. Relining has been expanded and combined during this LTP period, in order to realise efficiency gains from bigger projects and to minimise repeat visits to private property.

In the facility upgrades area, Ocean Farm sees upgrades to improve the monitoring and reporting of irrigation flows, and Wilkins road will have new dissolved oxygen monitoring and control installed. On the renewal side, there will be replacements of the septage receiving equipment to improve reliability and given a better understanding of the septage being received, renewal of the aging aerators, upgrades to some telemetry equipment at pump stations and fencing replacement to improve security. There is also a budget over a number of years to renew the wetland cells to help increase through-flow and treatment quality.

9.2. Methven

As with Ashburton, Methven has a pipeline renewal programme. In Methven this is mainly relining due to the proliferation of on-property sewers.

Other key renewals are the infiltration basins control panel and receiving screen at the wastewater treatment plant.

9.3. Rakaia

Rakaia does not have an active pipeline renewal programme due to the relatively young network.

The addition of a caravan dump station is proposed for Year 1, to replace the old one that was removed as part of the upgrade of the public toilets.

The wastewater treatment plant has a few projects planned: refurbishment of the secondary clarifier to match the primary clarifier, the extension of sludge disposal to the second tree area, replacement of the receiving screen and renewal of the centre-pivot irrigator.

9.4. Renewals and depreciation

Generally speaking, we aim to target renewal expenditure in line with depreciation, unless an increased rate of expenditure might be indicated by an increased rate of failures or repairs.

At this stage of their lives, most of the major plant and equipment at the water treatment plants is not reaching the end of its useful life, although this is likely to change towards the end of the LTP period. As a result renewal spending is slanted towards reticulation renewals. As we approach the end of the 2020s the plant upgrades in Ashburton which were completed in 2006-07 will be approaching 25 years old and so the next few LTPs will refocus renewal spending towards renewal of the major plant items.

Combining the schemes for funding purposes has allowed a greater quantity of work to be completed in Methven in each year, which makes the work more cost-effective and less intrusive to property owners as establishment need only be completed once, rather than returning to a given section in subsequent years.

9.5. Renewal profiles

9.5.1. Reticulation renewal profile

The overall wastewater sewer main renewal profile for 2018 to 2068 is presented below. This indicates the expenditure required based purely on projected useful life. The extended time frame provides confidence that the renewals expenditure will in long term drop below the depreciation as the older mains are replaced. For practical reasons this expenditure will be spread across a number of years to provide a more constant level of work.

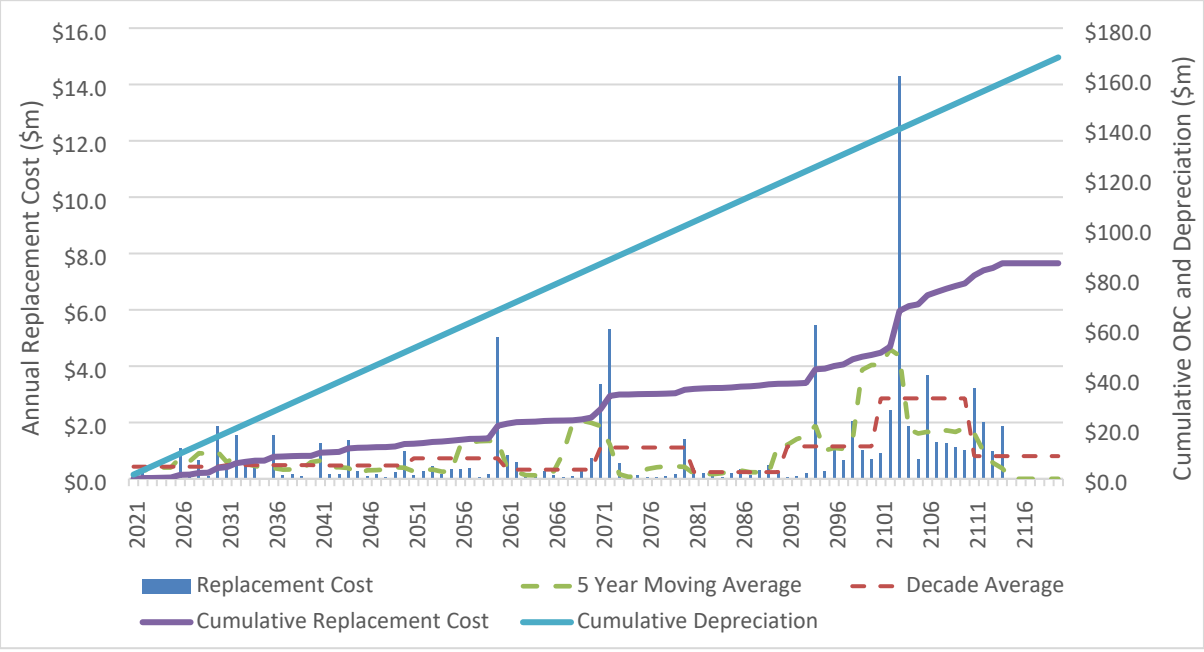


Figure 3: 50 year sewer mains ORC profile

For Ashburton a renewal programme of approximately $1.65m per year (slightly outside the current total wastewater deprecation level, with a focus on improving the condition and performance of the network and prolonging the life of the facility assets) is sufficient to replace all the earthenware sewer mains by approximately 2045.

Over the next three years a better understanding of the AC life will be obtained to provide a renewal programme with a high level of confidence in the future.

The renewal profile for Methven to replace the earthenware sewer mains is about $100,000 over the next 10 years. It is proposed to continue at this level to enable the replacement of the earthenware sewer mains by 2040.

9.5.2. Facilities renewal profile

The overall facilities renewal profile for 2018 to 2068 is presented below.

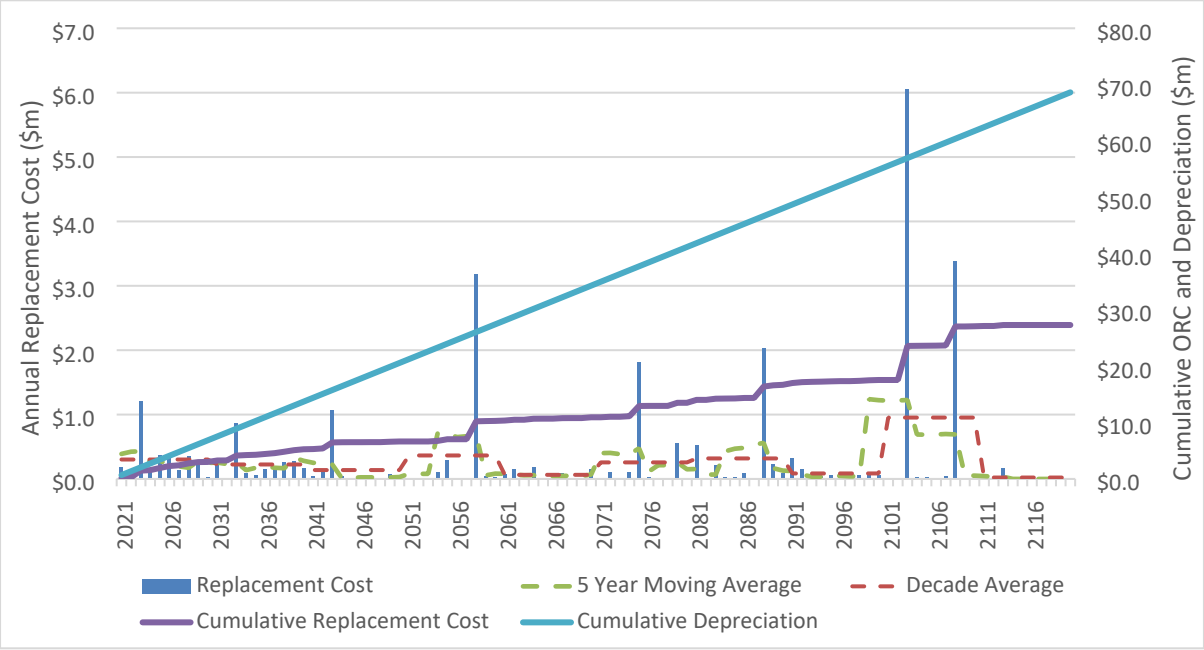


Figure 4: 50 year facilities ORC profile

It is considered that an annual fund of $100,000 is necessary to provide funding for essential facilities plant replacement. To facilitate the funding a Management Policy for facility plant replacement for maintenance staff will be instigated.

This is less than the 10-year averages indicated above and reflects both a strong focus on the need to address significant I & I in the reticulation network, as well as the understanding that the large peaks in the profile are artefacts of the limited componentisation, and that we anticipate that most assets will last longer than these coarse class-based estimates would suggest with appropriate maintenance interventions.

10. Costs for Wastewater

10.1. Operations and maintenance expenditure

The estimated operations and maintenance costs for wastewater activities is summarised below. The figures from year 2 (2022/23) include the application of a forecast cost indexation (BERL 2020) to current expenditure, bearing in mind the assumptions that there will be no significant new capital expenditure.

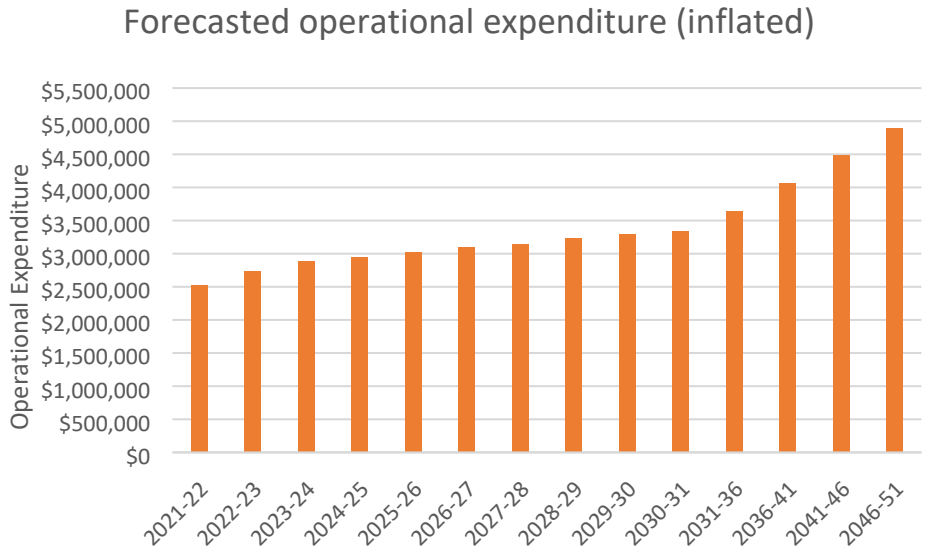


Figure 5: Forecast operations and maintenance expenditure (inflated)

The primary operational and maintenance issues associated with the wastewater schemes are:

- A need to ensure that preventative maintenance is being carried out regularly and robustly. This is an area of focus.
- A need to revisit the quantity, quality and medium of asset information being captured by the contractor and reported back to council during the course of operating the network.

The new O&M contract is being integrated with the asset management and information system. This includes electronic data records on work orders, related back to unique assets.

10.2. Renewal programme funding

10.2.1. Ashburton

The funding of the Ashburton sewer main renewal is presented in the following chart and indicates that over the period 2021 to 2031 the average expenditure is $2.02m, including $100k per year for unspecified facility asset renewals.

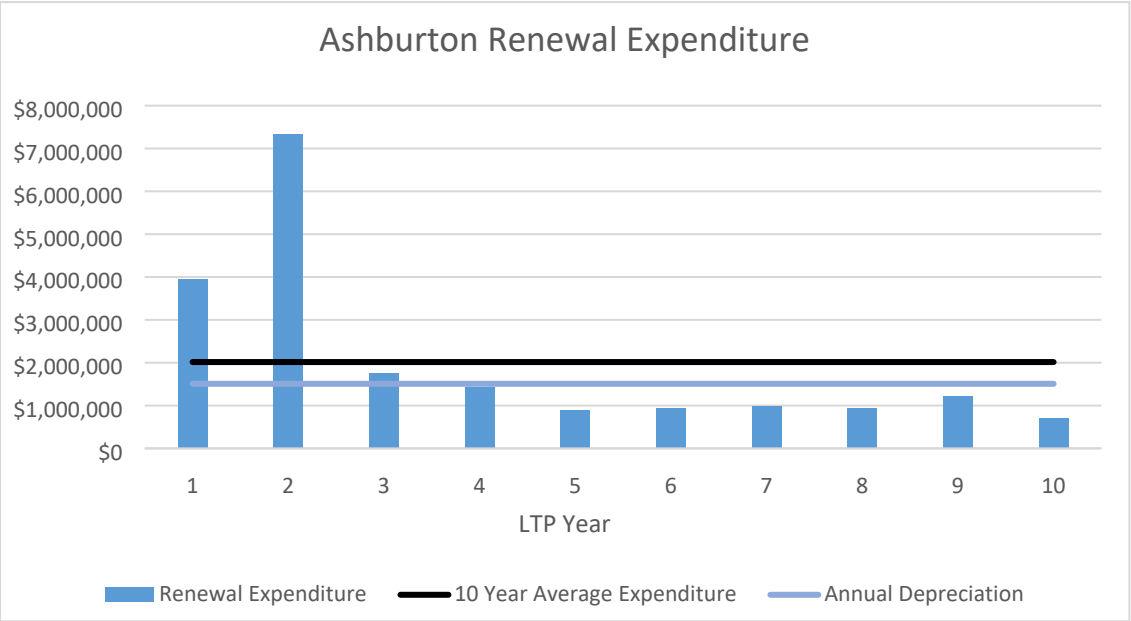


Figure 6: Ashburton wastewater renewal programme and funding

This reflects large renewals in the first two years (Grit Chamber pipeline and a backlog from the current LTP which was delayed due to competing priorities in the ARS and CBD, and then a small underspend in the remaining years to compensate. Wastewater has seen some very considerable pipeline renewals in the last few years, a programme which is approaching a conclusion and return to more like business as usual.

Overall Ashburton spends over its depreciation, with the difference made up from not spending Rakaia's depreciation. In future years, Rakaia will need replacing, while Ashburton and Methven should be in a relatively quiet phase of their life cycle. District-wide there is a slight underspend (around 5%) when wastewater capital expenditure is compared to depreciation.

10.2.2. Methven

The funding of the Methven sewer main renewal is presented in the following chart and indicates that over the period 2021 to 2031 the average expenditure is $236,000 per year.

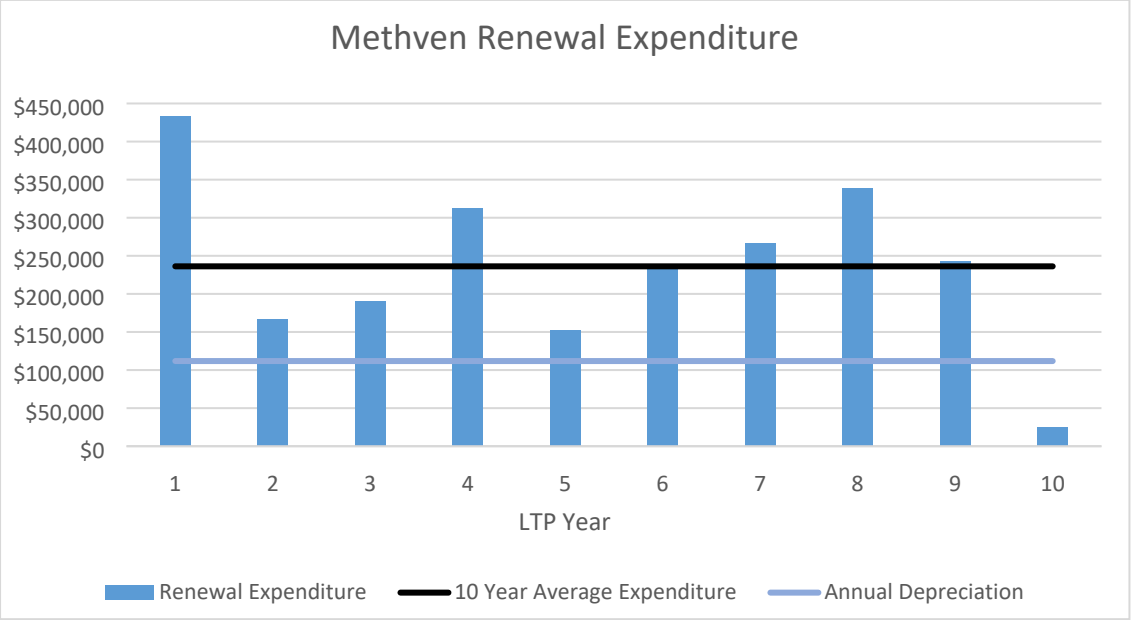


Figure 7: Methven wastewater renewal programme and funding

As with Ashburton, Methven spends over its depreciation, with the difference made up from not spending Rakaia's depreciation. In future years, Rakaia will need replacing, while Ashburton and Methven should be in a relatively quiet phase of their life cycle. District-wide there is a slight underspend (around 5%) when wastewater capital expenditure is compared to depreciation.

10.3. New capital programme funding

The new capital asset additions programme is funded typically through loan borrowing over 25 years. The funding timing of any significant project can impact on Council's wider borrowing limits. As detailed in Council's Financial Strategy, these limits include:

- Interest payments to service external debt are to be less than 20% of total Council revenue
- Interest payments to service external debt are to be less than 25% of total rates for the year
- Net debt shall not exceed 175% of total revenue.

10.4. Funding requirements

10.4.1. General approach to funding

Council's approach to funding its activities is detailed in its revenue and financing policy.

Owners of all residential properties that are connected to a public wastewater system pay a fixed rate per separately used or inhabited part of a rating unit and others whose properties are capable of being connected but which are not connected, pay one half of the fixed rate in recognition of the benefits of being able to connect when they wish. Non-residential properties are charged a separate fixed charge on water closets (pans) or urinals connected.

There is an additional loan rate in the Rakaia township: the Rakaia Loan Rate applies to those rating units that have not paid the Rakaia wastewater lump sum contribution.

10.4.2. Combination of funding

Previously the three wastewater schemes were treated separately for rating and funding purposes. From 2021-22, Y1 of this LTP, the three schemes are combined and there will be a single targeted rate for wastewater disposal and pan charge.

The exception is the Rakaia Loan Rate, which still applies to those rating units that have not paid the Rakaia wastewater lump sum contribution.

This follows a similar combining of the household water supplies into a single rate and funding pool in 2018. The advantage of this is that it allows for more flexibility in directing funds to where they are most effective and allows Council to respond better to changing demands and circumstances, wherever they arise.

The change to drinking water also delivered efficiencies in terms of reduced administration and improved asset management practice, and this will also apply to wastewater.

10.5. Funding requirements

For Wastewater

	Annual Plan 2020/21 $000	Year 1 2021/22 $000	Year 2 2022/23 $000	Year 3 2023/24 $000	Year 4 2024/25 $000	Year 5 2025/26 $000	Year 6 2026/27 $000	Year 7 2027/28 $000	Year 8 2028/29 $000	Year 9 2029/30 $000	Year 10 2030/31 $000
Operating Funding											
Sources of operating funding											
General rate, UAGC*, rates penalties	0	0	0	0	0	0	0	0	0	0	0
Targeted rates	4,016	4,405	4,669	4,870	5,031	5,010	5,197	5,281	5,382	5,697	5,548
Subsidies and grants for operating purposes	0	0	0	0	0	0	0	0	0	0	0
Fees and charges	71	78	81	83	85	87	89	91	94	96	99
Internal charges and overheads recovered	49	0	0	0	0	0	0	0	0	0	0
Local authorities fuel tax, fines, infringement fees and other receipts	341	275	283	290	297	304	312	320	329	338	346
Total sources of operating funding	4,478	4,758	5,033	5,242	5,413	5,401	5,598	5,692	5,804	6,131	5,993
Applications of operating funding											
Payments to staff and suppliers	1,508	1,490	1,544	1,591	1,626	1,658	1,706	1,757	1,793	1,849	1,902
Finance costs	563	459	571	657	666	671	664	644	650	632	597
Internal charges and overheads	621	577	613	633	644	665	696	709	731	762	782
Other operating funding applications	0	0	0	0	0	0	0	0	0	0	0
Total applications of operating funding	2,692	2,526	2,728	2,881	2,936	2,993	3,066	3,111	3,174	3,243	3,281
Surplus/(deficit) of operating funding	1,785	2,232	2,305	2,361	2,477	2,408	2,533	2,582	2,630	2,888	2,711

* Uniform Annual General Charges

	Annual Plan 2020/21 $000	Year 1 2021/22 $000	Year 2 2022/23 $000	Year 3 2023/24 $000	Year 4 2024/25 $000	Year 5 2025/26 $000	Year 6 2026/27 $000	Year 7 2027/28 $000	Year 8 2028/29 $000	Year 9 2029/30 $000	Year 10 2030/31 $000
Capital Funding											
Sources of capital funding											
Subsidies and grants for capital expenditure	0	4,000	0	0	0	0	0	0	0	0	0
Development and financial contributions	317	330	340	348	357	366	375	385	395	406	416
Increase/(decrease) in debt	3,007	4,992	3,813	338	175	(367)	(945)	188	(931)	(1,679)	(1,485)
Gross proceeds from sale of assets	0	0	0	0	0	0	0	0	0	0	0
Lump sum contributions	0	0	0	0	0	0	0	0	0	0	0
Other dedicated capital funding	0	0	0	0	0	0	0	0	0	0	0
Total sources of capital funding	3,324	9,322	4,152	686	532	(2)	(570)	573	(536)	(1,273)	(1,069)
Application of capital funding											
Capital expenditure											
- to meet additional demand	875	6,202	66	0	0	0	51	1,098	0	0	0
- to improve the level of service	3,036	1,945	226	232	237	244	253	260	267	276	285
- to replace existing assets	1,151	3,439	6,186	2,847	2,677	2,068	1,685	1,694	1,719	934	1,131
Increase/(decrease) in reserves	48	(32)	(21)	(31)	95	94	(27)	103	109	405	227
Increase/(decrease) in investments	0	0	0	0	0	0	0	0	0	0	0
Total applications of capital funding	5,110	11,554	6,458	3,048	3,010	2,407	1,962	3,155	2,095	1,615	1,642
Surplus/(deficit) of capital funding	(1,785)	(2,232)	(2,305)	(2,361)	(2,477)	(2,408)	(2,533)	(2,582)	(2,630)	(2,888)	(2,711)
Funding Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Expenditure by wastewater scheme

	Annual Plan 2020/21 $000	Year 1 2021/22 $000	Year 2 2022/23 $000	Year 3 2023/24 $000	Year 4 2024/25 $000	Year 5 2025/26 $000	Year 6 2026/27 $000	Year 7 2027/28 $000	Year 8 2028/29 $000	Year 9 2029/30 $000	Year 10 2030/31 $000
Ashburton	3,921	4,060	4,364	4,578	4,756	4,752	4,931	5,033	5,147	5,249	5,346
Methven	285	393	400	414	428	444	471	490	505	530	534
Rakaia	300	339	330	337	342	345	355	365	374	385	395
Total operating expenditure	4,506	4,791	5,094	5,329	5,526	5,541	5,757	5,888	6,027	6,164	6,276
less depreciation	1,814	2,265	2,366	2,448	2,590	2,548	2,692	2,777	2,853	2,921	2,995
Total applications of operating funding	2,692	2,526	2,728	2,881	2,936	2,993	3,066	3,111	3,174	3,243	3,281

Capital by wastewater scheme

	Annual Plan 2020/21 $000	Year 1 2021/22 $000	Year 2 2022/23 $000	Year 3 2023/24 $000	Year 4 2024/25 $000	Year 5 2025/26 $000	Year 6 2026/27 $000	Year 7 2027/28 $000	Year 8 2028/29 $000	Year 9 2029/30 $000	Year 10 2030/31 $000
Ashburton	5,695	11,261	6,514	2,878	2,888	2,200	2,069	2,934	2,089	1,133	1,920
Methven	917	639	494	430	518	644	621	678	776	671	424
Rakaia	0	166	83	97	19	19	151	20	21	22	22
Total capital expenditure	6,612	12,066	7,091	3,405	3,424	2,864	2,841	3,633	2,886	1,825	2,366
less vested assets	1,551	480	613	327	510	551	851	581	900	615	951
Council funded capital expenditure	5,062	11,586	6,478	3,079	2,915	2,313	1,989	3,052	1,986	1,210	1,416

10.6. Development Contributions

10.6.1. Wastewater contributions

The Development and Financial Contributions Policy can be found on the Council's website or at the Council offices. The policy outlines the approach to be used by Ashburton District Council to implement development or financial contributions to fund growth related investment in network infrastructure and community facilities.

Schemes with additional demand capacity available for development growth and for which council has, or plans to, incur capital expenditure specifically to cater for growth will attract development contributions from developments which are able to connect to the scheme. A development contribution for wastewater will normally be levied at the time of building consent, but in some cases can be taken at time of application for new connections.

10.6.2. Benefit analysis

The benefit in having a community wastewater scheme is considered a group benefit, therefore development contributions will be levied only where connection to a wastewater scheme is possible. There is considered to be no factors in a community well-being analysis which would alter the benefit analysis.

10.6.3. Development contribution methodology

- The amount of development contribution levied for wastewater varies from scheme to scheme depending on:
- The current level of excess capacity within each scheme.
- The residents per household figure for each scheme.
- The level of past and planned future capital expenditure for each scheme which is related to provision of demand capacity for growth.

The detailed calculations used to determine the rate of development contributions for each of the wastewater schemes are included in the Development Contributions Policy.

11. Key legislation / industry standards and relationship with other planning / policy documents for Wastewater

11.1. Legislative and other drivers

Commentary related to the key legislation and regulations affecting the wastewater activity is provided below.

11.1.1. Civil Defence Emergency Management Act 2002

The expectations under the CDEM Act 2002 are that Council's services will function at the fullest possible extent during and after an emergency, even though this may be at a reduced level. In addition, Council has established planning and operational relationships with regional CDEM groups to deliver emergency management within our boundaries.

Wastewater is regarded as a critical service and is given special consideration within Council's emergency management procedures. Every effort will be given to restore services immediately after an event.

11.1.2. Health Act 1956

Places an obligation on Council to improve, promote and protect public health within the District. The provision of wastewater services conserves public health and helps to protect land and waterways from contamination.

11.1.3. Health and Safety at Work Act 2015

Requires Council to ensure the health and safety of workers while at work by providing: a working environment that is without risks to health and safety; safe plant and structures; safe systems of work; and information, training and supervision that is necessary.

Council must ensure the safety of the public and all workers (including contractors) when undertaking the activity. This requirement extends to the design and supply of new plant and structures.

11.1.4. Local Government Act 2002

Provides for democratic and effective local government that recognises the diversity of New Zealand communities. It states the purpose of local government, provides a framework and powers for local authorities to decide which activities they undertake and the manner in which they will undertake them, promotes the accountability of local authorities to their communities; and provides for local authorities to play a broad role in meeting the current and future needs of their communities for good-quality local infrastructure, local public services, and performance of regulatory functions.

11.1.5. Resource Management Act 1991

Provides an environmentally conscious framework for Local and Regional Authorities to administer powers with regard to development and the management of natural resources. The RMA 1991 focuses on the effects of activities rather than on the activities themselves. Council has 20 resource consents for wastewater treatment and disposal associated with Ashburton, Methven and Rakaia communities.

11.2. Related documents

11.2.1. Infrastructure Strategy

The infrastructure strategy provides a look forward for 30 financial years at current and upcoming key infrastructure issues for the core activities (water, wastewater, stormwater and transportation) and stockwater, and the significant projects and expenditure required to address them.

The AMP provides the context and support for the infrastructure strategy.

11.2.2. Long-Term Plan

The Long-Term Plan explains what Council proposes over the next ten years with an infrastructure strategy and financial strategy looking at a thirty year horizon.

11.2.3. Ashburton District Plan

The Ashburton District Plan sets a framework for development and the management of resources in the District. It establishes objectives and policies for managing the environmental effects of development, it defines the various zones (residential, rural, business, open space, etc), and the rules for what activities are permitted to occur in each zone.

Future expansions of the serviced area will be aligned with the growth directions signalled in the District Plan.

12. Risk management for Wastewater

12.1. Council risk register

The Council has developed a district wide risk register in 2013. This includes a high level consideration of the risk around "failure of sewerage system, overflows, resource consent breaches, odour, stormwater infiltration, usage in excess of scheme capacity".

The impact of this risk was assessed from a Health and Safety, Operational, Political, Financial, and Environmental perspective. The risk register was reviewed and updated in 2015.

The risk register indicates the risk profile for the wastewater service is classed as **medium** and the controls in place effectiveness are classed as "Good – Majority of risks are managed but there is potential for failure." Further controls were required and these are presented below.

Table 5: Additional controls for the Wastewater service risk register

Controls	Priority	Comment
Private property inspection programme – identification of low lying gully traps and illegal stormwater discharges.	Medium	Implementation and continuation of the Right Pipe Project.
Identify properties affected by wastewater infiltration and add information to LIMs.	Medium	LIMs will identify properties shown to be non-complying in the "Right Pipe" Project.
Asset Management Information System developed.	High	AMIS implementation during period 2015-2018.

12.2. Wastewater risk register

A risk management framework based on ISO AS/NZS 30001 was developed in 2011 and used to establish a more detailed wastewater risk register. The risk register identifies risk management strategies to minimise the risks associated with the provision of wastewater. The risks are categorised as extreme, high, medium or low.

The risk register was reviewed in 2017 and indicates there is one extreme and seven high risks. The extreme and high risks have existing controls (mitigation) that have been or are being developed that reduces all the risks to moderate as presented below.

Table 6: Wastewater risk register – extreme and high risk risks

Risk severity	Risk category	Potential impact	Controls
Extreme	Condition failure – Ashburton Specific	Ashburton Siphon	An emergency response plan is currently in development for such events. The siphon will become redundant as soon as the new Ashburton River Crossing pipeline project has been completed (2019).
High	Events	Significant rainfall events	Infiltration investigation and remediation work. Right pipe project targeting non-compliant or low lying gully traps.
High	Condition failure – Ashburton Specific	Failure of above ground sewermain upstream of grit chamber.	Ashburton Borough Catchment sewermain renewed 2015.
High	Infrastructure	Pipeline failure due to age or condition	Ensure condition assessment of critical assets is up to date.
High	Infrastructure	Asset failure due to poor construction	QA of construction process and compliance testing before acceptance of asset.
High	Institutional	Poor investment decision-making etc.	Transition to "Better Business Case" approaches.
High	Condition failure – Ashburton Specific	Failure of large diameter sewermains e.g. Trevors Road(ARS)	Assess condition of old pipes and prioritise replacement.
High	Pump station failure – Ashburton Specific	Failure of Lake Hood pump station	Emergency storage capacity in place with monitored alarm.

The risk profile will in the future be extended to encompass all assets in a Risk Management Plan.

12.3. Climate change risk

As with the rest of the Canterbury region, the Ashburton area will likely be affected by climate change. The District has experienced extremes of drought and flood in the past and these may occur with greater frequency and severity.

The Climate Change Effects and Impacts Assessment report (Ministry for the Environment, 2008) details projections for climate trends in the Canterbury Region. Possible climate change trends that may impact on wastewater schemes in Ashburton District include:

- Increase in mean annual temperature.
- More frequent extreme rainfall events as a result of increased moisture holding capacity of warm air.
- Reduced annual mean precipitation and increased drought conditions.
- Sea level rise.

The projected increased frequency of extreme rainfall events (or the increase in rainfall intensities) might cause more frequent rainwater entry into sewer systems that could result in more frequent sewer overflows.

12.4. Resilience

Council has contributed to the resilience of the wastewater system (network, treatment and disposal) by:

- Provision of duty and standby pumps at pump stations
- Monitoring and increasing maintenance requirements and standards
- Provision of connections at pump stations and WWTP for standby generators
- Applying appropriate design and construction standards (including materials)

13. Stakeholders and consultation for Wastewater

- ACL as contractor for the daily provision of the service
- Residents connected to the respective wastewater schemes
- Iwi
- Environment Canterbury
- Ministry of Health
- Ministry for the Environment
- Audit NZ
- Community and Public Health (CDHB)
- Taumata Arowai – The Water Services Regulator, when this is fully established

14. Improvement programme for Wastewater

14.1. Asset management

Council has undertaken a structured assessment of the appropriate level of asset management practice for the wastewater assets in October 2010. This structured assessment follows the guidance provided in Section 2.2.4 of the International Infrastructure Management Manual (IIMM) 2006. The results of this assessment were that the wastewater was considered **Core Plus**.

14.1.1. Asset Management Information System Implementation

In the 2019-20 financial year we completed the first phase of our transition to a best-of-breed asset management data system. We are using Infor Public Sector (formerly Hansen).

Following this first implementation phase, the system is now being used for asset registers and asset valuations, and the old spreadsheets have been retired. This means the data are stored in a much more robust and structured way. It also means that asset valuations can be carried out much more quickly and reliably, with a much-reduced chance of human error.

The asset information is also synced with the new GIS system to provide a single source of truth for asset information. Importantly, this eliminates double-handling of data and speeds up data updates.

Future development will include bringing together more lifecycle information about the assets, such as intervention costs (e.g. repairs and servicing), inspection records, condition assessments, and general documentation, drawings and photographs. In the longer-term, it is hoped that this will lead to more advanced asset management and refined renewals forecasting being possible.

14.1.2. ISO 55000 Asset Management 2014

This international standard was released in January 2014 and outlines the requirements for an asset management system for achieving a balance between cost, risk and performance in asset management to help guide asset related decision making and activities.

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

14.1.3. Asset management data quality

The quantity and quality of the asset data held was reviewed in August 2011 by Opus International Consultants Ltd. These grades have been periodically reviewed since that time and no changes are warranted at this point.

In preparation for the AMIS implementation a major programme of data cleansing has been carried out, which has dramatically improved the quality and quantity of wastewater asset data. This involved going back to original plans and aerial imagery. To go further, and to lift the data quality from a B to an A grade would require site investigation, including excavating to locate and inspect infrastructure, which would be a significant and unjustifiable expenditure.

However, changes in requirements for as-built drawings and improvements in managing projects has increased the confidence level for data for new assets level A.

Asset group	Asset	Quantity	Replacement cost	Life expectancy	ODRC
Utilities assets	Drinking Water assets	B	B	B-C	B
	Wastewater assets	B	B	B-C	B
	Stormwater assets	B	B	B-C	B
	Stockwater assets	B	B	B-C	B

Grade	Label	Description	Accuracy
A	Accurate	Data based on reliable documents	±5%
B	Minor inaccuracies	Data based on some supporting documentation	±15%
C	Significant data estimated	Data based on local knowledge	±30%
D	All data estimated	Data based on best guess of experienced person	±40%

14.2. Training

No specific training has been identified, however through the re-write of the Utilities Operations and Maintenance contract, emphasis will be placed on a requirement for Contractor staff to have appropriate industry recognised qualification(s).

14.3. Improvement actions

Ashburton District Council is committed to on-going improvement in the quality of its wastewater services management practices. This is reflected in the implementation of asset management systems and associated data collection and maintenance requirements.

The Improvement Plan is integral to that approach, quantifying current business practice and measuring progress toward an identified future position. Improvement Plan is focused on the key areas of:

- **Information Management**: Implementation completed. The next stage is to build on the AMIS and extend its use to increase the range of data captured.
- **Scheme Knowledge**: Expand our monitoring of asset condition and performance, in particular for assets identified as critical

- **AM Policy**: To provide the principles by which Council intends to apply asset management to achieve Councils objectives
- **AM Improvement Programme**: To achieve the Asset Management level of Core Plus
- **Criticality Assessment:** Now complete. This may be reviewed periodically.
- **Renewal Strategy**: To insure that replacement of assets are carried out at the most appropriate time and the most effective benefit is received

Additional resources will be required to enable the achievement of the above improvement programme.

15. Appendices

15.1. Appendix A - Current valuation by scheme

Table 7: Scheme financial summary

Scheme	Asset group	ORC June 2020	Annual Depreciation
Ashburton	Reticulation	$111,237,197	$1,245,865
	Facilities	$26,854,941	$567,496
	Sub Total	**$138,092,138**	**$1,813,361**
Methven	Reticulation	$11,541,587	$147,446
	Facilities	$1,260,753	$24,582
	Sub Total	**$12,802,340**	**$172,028**
Rakaia	Reticulation	$9,092,087	$97,875
	Facilities	$1,812,814	$59,299
	Sub Total	**$10,904,901**	**$157,174**
	Total	**$161,799,378**	**$2,142,563**

15.2. Appendix B - Wastewater schemes details

15.2.1. District

The pipe stock in the district is quite varied, with the choice of material changing over time. Early pipes were predominantly glazed earthenware (GEW) with some concrete taking over as the material of choice in the 1940s. A small amount of AC pipe was installed in the 60s, 70s and 80s, being replaced by PVC since the 1990s.

It is the older GEW pipe which is being prioritised for renewal at the moment.

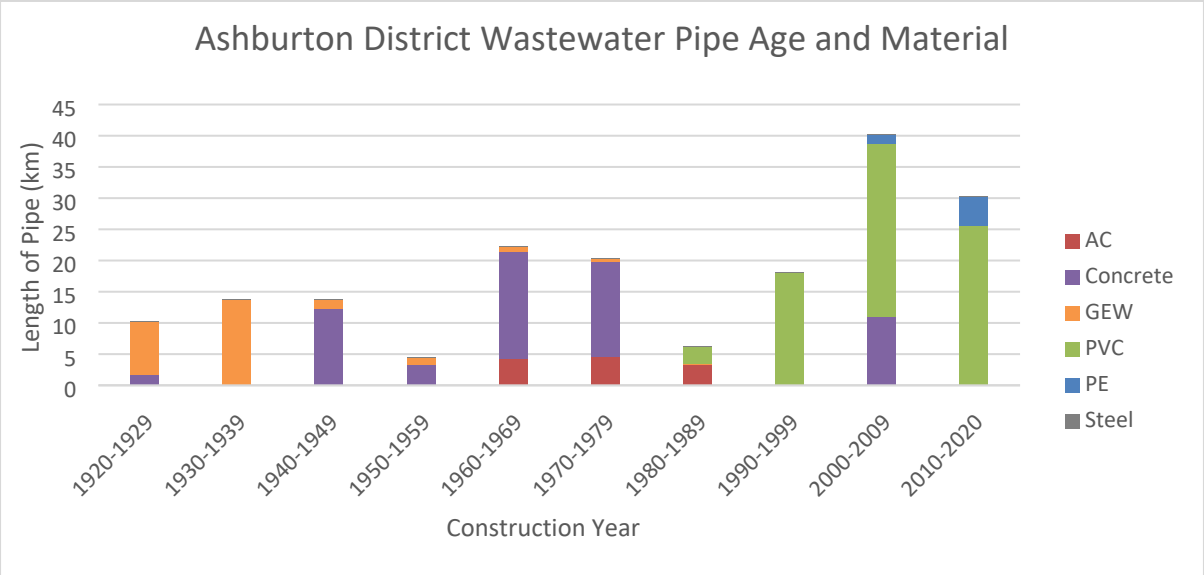


Figure 8 - Ashburton District Wastewater Pipe Age and Material

15.2.2. Ashburton

The wastewater treatment system has been the subject of a major upgrade in 2007, at a cost of $16m. Wetlands and plantings operations issues have resulted in periodic non-compliances in resource consents and increased maintenance of the irrigation system.

Ashburton wastewater scheme was first installed in 1921 for the Borough using earthenware pipes. The sewer network has been progressively expanded with major expansion in the 1960s and 2000s.

From analysis of wastewater flow monitoring data, Tinwald shows a more direct response to rainfall than Ashburton with large spikes in flow on the days when rainfall events occur and flows are higher than normal following the rainfall event, the latter being more pronounced if groundwater levels are elevated.

Ashburton wastewater flows appear to be influenced by groundwater as base flows follow a similar pattern to groundwater levels. The response to rainfall is not as large as Tinwald, possibly because capacity in the sewer mainline is taken up by infiltration of groundwater and the direct response could not be observed.

To address this problem Council has undertaken a significant amount of modelling of the reticulation network, improved processes and data quality and has a more robust basis for prioritising infrastructure renewals. An infiltration and inflow (I & I) reduction programme has commenced and is an ongoing process of observation and of awareness-raising.

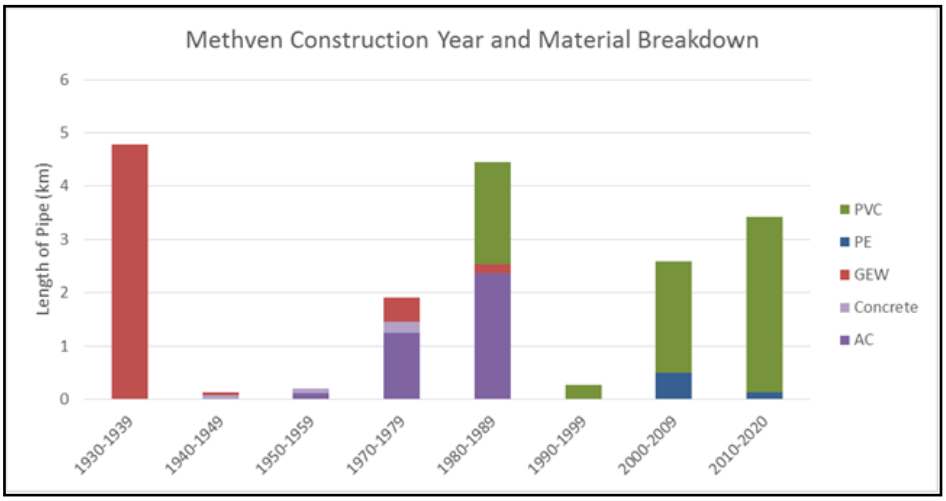
Network modelling undertaken in 2008, highlighted capacity issues with the Tinwald trunk main and the Ashburton relief sewer (ARS). To address the Tinwald trunkmain capacity, a new trunkmain has been constructed in Wilkins Rd. The ARS upgrade (due for completion in 2020) will also cater for future flows from the Ashburton Business Estate, and the new residential zones around the south-east of Ashburton.

The Ashburton River siphon has been identified as a critical (and vulnerable) asset. Due to its location below the bed of the Ashburton River, condition of the siphon cannot be accurately determined. However modelling carried out for key pipeline projects (Ashburton Relief and Borough Catchment sewermains) indicates it has reached its capacity limit.

A new pipeline under the Ashburton River is scheduled for construction in 2018. This will be a gravity pipeline and will necessitate the construction of a new pumping station on the true right bank of the Ashburton River near the Wilkins Road Treatment Plant. Design of the river crossing pipeline and pump station commenced in 2016/17.

15.2.3. Methven

Methven wastewater scheme was first installed in 1936 using earthenware pipes. The sewer network had major expansion in the 1970s and 2010s.



The wastewater treatment plant (WWTP) was upgraded in 2000. The treatment facility comprises a rotary screen, aerated lagoons and disposal to ground via rapid infiltration basins.

15.2.4. Rakaia

The Rakaia scheme was constructed in 1999. The reticulation is a mixture of PVC and mPVC sewer mains. The treatment facility comprises a rotary screen, primary clarification, trickle filter, secondary clarification and ultra-violet disinfection. The treated effluent is irrigated onto pasture and managed as a cut-and-carry operation to offset both nitrogen loading and (to a lesser degree) operating cost.

The sludge disposal system formerly discharged sludge from the clarifiers onto land plant in trees. With this configuration it was impossible to meet the nitrogen loading limits in the resource consent, and in 2012 revised resource consent was granted which allowed sludge disposal to pasture.

A project to convert one of the former forest blocks into pasture and to upgrade the sludge pump and irrigation infrastructure took place in mid-2014.

15.3. Appendix C - Operation and maintenance strategies

Table 8: Operation and maintenance strategies

Strategy	Objective / description
Routine maintenance	Routine Maintenance is carried out by ACL an supervised and monitored by Council staff to an agreed programme.
Repairs	The detection and repair of faults causing failure will be undertaken as quickly as practically possible. The fault will be isolated and components repaired or replaced as appropriate with the main aim to restore service as quickly as possible.
Corrective maintenance	Remedial maintenance will be undertaken to restore an asset to a satisfactory condition after a repair or following routine maintenance has identified additional work is required to avoid a likely future problem.
Redesign and modification	Redesign may be necessary if an asset or system does not meet its operational objective. Similarly, modifications may be necessary to improve the operating characteristics. Alternative options are considered and can coincide with Corrective Maintenance.
Operations	Operational activities will be undertaken by ACL unless specialised advice is required. Council staff are responsible for the determination and optimisation of planned and unplanned works, work methods and maintenance scheduling to achieve the target service standards. Council supervise and monitor ACL work with Council staff defining the required standards.
Physical works monitoring	Council audits work carried out ACL and any other contractor to verify compliance with standards.
	Audits are carried out of approximately 5% of maintenance work to confirm compliance with contractual requirements.
Operation of utilities	Utilities such as treatment plants are pump stations are operated in terms of defined parameters and standards set out in quality system manuals.
	Wastewater services utilities will be operated in terms of these quality manuals.
Incident management	Councils approach is an escalation process from minor to major, minor incidences are managed by the contractor, and medium to major issues by Council staff. Involvement is also judged by the potential consequences or asset criticality.

15.4. Appendix D – Key consents

Consent	Scheme	Expiry	Activity	Comment
CRC980563	Rakaia	26/11/2032	Take Groundwater	Washdown/ablution block bore
CRC980564.1	Rakaia	11/03/2033	Discharge Contaminant to Land	Rakaia WWTP - Main effluent/sludge discharge consent
CRC980565	Rakaia	23/03/2033	Discharge	Rakaia WWTP

Consent	Scheme	Expiry	Activity	Comment
			Contaminant to Air	
CRC991241	Methven	08/07/2034	Discharge Contaminant to Land	Methven WWTP – Main effluent discharge consent
CRC200198	Ashburton	03/06/2039	Take Groundwater	Ocean Farm irrigation bore
CRC031006	Ashburton	03/06/2039	Discharge Contaminant to Water	Wheatstone Drain diversion
CRC031005	Ashburton	03/06/2039	Divert & Take Surface Water	Wheatstone Drain diversion
CRC031007	Ashburton	03/06/2039	Disturb Bed of Waterway	Wheatstone Drain diversion
CRC031002	Ashburton	03/06/2039	Discharge Contaminant to Land	Wilkins Road WWTP – Seepage from aeration pond
CRC031003	Ashburton	03/06/2039	Discharge Contaminant to Air	Wilkins Road WWTP
CRC030474	Ashburton	03/06/2039	Discharge Contaminant to Land	Wilkins Road WWTP – Seepage from oxidation pond
CRC031148	Ashburton	03/06/2039	Discharge Contaminant to Air	Ocean Farm WWTP
CRC093639	Ashburton	03/06/2039	Discharge Contaminant to Land	Ocean Farm – Storage pond overflow
CRC031000.1	Ashburton	03/06/2039	Discharge Contaminant to Land	Ocean Farm - Labyrinth weir overflow
CRC031001.1	Ashburton	03/06/2039	Discharge Contaminant to Land	Ocean Farm – Seepage from wetland
CRC030999.1	Ashburton	13/06/2039	Discharge Contaminant to Land	Ocean Farm – Main discharge consent