KAWERAU DISTRICT COUNCIL
Asset Management Plan 2025

Stormwater

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Version History

Version	Date	Notes	Author
2015	2015	Final version: AMP - 2015	Tom McDowall
1a	26/01/2018	First revision for 2018	Hanno vd Merwe
1b	31/01/2018	Review: Technical support officer	Tina Mitchell
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2	20/03/2018	Submission to Council	Hanno vd Merwe
2a	15/10/2020	First revision for 2020	Tina Mitchell
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5a	18/3/2025	Revision following audit review	Peter Christophers
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5c	7/4/2025	A & R Committee review	

SECTION ONE

Executive Summary

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategies for the management of its stormwater assets. The Plan enables Council to meet the present and expected future needs of the Community over a ten-year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The Plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's Stormwater Activity in the most cost effective way for households and businesses.

The Asset Management Plan collates high-level management, financial, engineering and technical information from various sources and into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

An independent auditor evaluated the level of provision of asset management for the stormwater asset in 2017. The appropriate level was recommended to be raised from the Council's asset management policy of "Core" to "Intermediate" due to the higher risk to the health and well-being of the community in the event of stormwater assets failing to deliver an appropriate level of service.

The previous assessment of the asset management level and the level required for "Intermediate" showed a gap of 14 percent overall for Stormwater. Asset management improvement actions were identified in 2021 and completed by 2024 to close this gap. The remaining and newly identified improvement actions are discussed in Section 0.

ASSET DESCRIPTION

The Kawerau community is served by a Council owned and run stormwater system designed to manage rainfall run-off and mitigate surface water flooding. Stormwater is collected almost exclusively from the roading network and channelled through a network of pipes into natural waterways.

It currently consists of approximately 31.5 km of stormwater pipes and together with cesspits, manholes, stormwater outfalls, and other components are managed as part of the stormwater asset.

The table below summarises the key components of the system including additional infrastructure that were vested to Council following the residential developments of Porritt Glade and Central Cove.

Key components

Length of piping (km)	31.5
Number of cesspits	783
Number of outfalls	20
Number of manholes	538

The replacement costs and depreciated values of the stormwater asset are shown below:

Replacement and depreciated values

Asset Type	Replacement value @ 30-6- 2024	Depreciated value @ 30-6-2024
Stormwater Pipes	$19,078,695	$3,789,171
Stormwater Structures	$6,814,640	$2,180,863
Total	**$25,893,335**	**$5,970,034**

LEVELS OF SERVICE

Customer levels of service

Council monitors and reports its actual performance against measures and targets contained in the Long Term Plan.

Council targets include the number of service requests, time taken to respond and the number of dwellings flooded because of stormwater system problems. The three yearly community satisfaction survey undertaken in 2023, reports 70% resident satisfaction with the stormwater service that is above the national average (56%).

Technical levels of service

Council seeks to maintain and operate a stormwater system in a manner that is fit for purpose and does not compromise public safety. It also seeks to comply with its stormwater resource consents at all times.

As with customer level of service, Council monitors and reports its actual performance against measures and targets contained in the Long Term Plan.

Constraints to levels of service

Constraints that may impact the ability to deliver the required levels of service include issues relating to funding, capacity, reliability and environmental performance.

Resource consents

Council currently holds resource consents from the BOP Regional Council (BOPRC) for three

stormwater discharges into the Tarawera River and Ruruanga Stream.

Conditions relate to the volume and quality of discharge and require Council to maintain cesspits. A further 17 discharges are covered by existing use rights and are the subject of an application for a comprehensive consent.

Significant adverse effects

Stormwater collection and discharge has minimal effect on the environmental well-being of the community. Although stormwater carries contaminants from road surfaces, the receiving water is a large body of water, clear and fast flowing, capable of dealing with the discharges without any significant adverse effects.

FUTURE NEEDS

Due to a number of factors, Kawerau's stormwater network is generally adequate for current rainfall runoff demands and most of the network has some spare capacity. The soil is made up predominantly of Tarawera ash/pumice and is therefore exceptionally free-draining resulting in minimal instances of standing water. This has made possible to ensure that rainfall collected in the stormwater system is almost exclusively from the roadway. Almost all buildings (aside from a small number in the CBD) drain stormwater to soak hole systems on their own property.

The Kawerau District has experienced low population growth and demand for additional services, however, it has continued to experience a consistent increase in residents over the age of 65. In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite the predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

As well as increased demand from any new development, it is possible with climate changes continuing to occur, that rainfall intensities and storm durations increase, then the stormwater assets may require enhancement to cope with the increased flows.

A small number of flood prone areas were identified during significant rainfall events in recent years. Options for increasing the capacity (either installing additional drainage or increasing current drainage capacity) in these areas were considered.

For the Blundell Street area, the less invasive and more cost effective option selected was a series of detention basins to arrest any sudden volume of stormwater run-off from the Tuwharetoa Farm land. Detention Basins were constructed on the farmland at the southern end of both Valley Road and Hardie Avenue.

The River Road culverts carrying the Pumphouse Spring overflow stream were found to be a significant cause of flooding in the Fraser Street area. Designs were commissioned for replacement culverts that provided a larger free flowing structure. These new culverts were installed from November 2020 and completed in April 2021.

There is a greater emphasis on the need to ensure that streams are more proactively maintained with a regular clearing of vegetation, in particular, the overflow stream and Ruruanga Stream as it runs behind The Village on Tamarangi Drive.

Other than those addressed above, the current stormwater systems are deemed sufficient and no other upgrades of capacity in the network are planned during the life of this Plan. Any problems created by changes in land use will be dealt with on case-by-case basis.

The new proposed industrial park on SH34 will be required to manage stormwater by soakage into the ground, as there are no nearby streams for discharge into the river.

The life cycle of stormwater assets was assessed as being 80 - 100 years. The replacement of significant lengths of pipes will not occur until 2035 in all areas not affected by geothermal activity.

Concrete and glazed earthenware pipes in the geothermal zone have a shorter expected life cycle of 35 - 40 years and are actively being replaced with PE pipes and components. PE pipes are conservatively estimated to have an expected life of 40 years in this area.

LIFE CYCLE MANAGEMENT

Assets

Inlet/Outlet asset group

Included in this group are six major culverts (included in the Roading Network Asset Management Plan and not managed in this plan) and 783 cesspits.

Service connections

Stormwater service connections are rarely required in Kawerau due to its sandy volcanic soils. Only the properties located within the town centre are connected to the town stormwater network equating to no more than 12%.

Pipes

The asset register records 31.5 km of pipe in various sizes. Practically all are rubber-ring jointed centrifugally moulded steel-reinforced concrete with

the exception of glazed earthenware and PVC/PE pipes in the geothermal and CBD areas.

Manhole asset group

The asset register records 538 manholes in service, generally installed at changes in pipe direction or grade or at junctions of two or more pipes.

Critical assets

The stormwater pipes in the Town Centre are considered critical since a failure or collapse of a stormwater pipe may lead to flooding of the shops and businesses. The area is also in a geothermal zone and all the concrete pipes are being replaced with PE pipes.

New assets

A small number of new assets have been added to the network recently (2020) through the two new housing developments in Porritt Drive and Bowen Street. The new industrial park located opposite the existing mill site commenced development during the period of the last AMP and continues to expand with stormwater assets constructed to Council requirements by the developer and to be vested in Council.

Maintenance plan

All stormwater maintenance is undertaken on an 'as required' basis. The costs for maintenance of the stormwater network are included in the stormwater activity.

Renewal/Replacement

The network has been divided into six zones: the first 5 zones are based on the estimated average date at which each zone was developed. The sixth zone is geothermal areas where concrete pipe replacement with PE pipe (mostly relined) is being accelerated.

The zones are:

1. 1955-1957 (~15,420 m)
2. 1962-1970 (~3,030 m)
3. 1973 (~4,770 m)
4. 1978 (~4,530 m)
5. 1980-1996 (~ 1,970 m)
6. 2000 to present (~1 820 m)

Historically, all assets in a zone are given the same installation date and therefore will have the same replacement date. The renewal funding for each zone has been averaged over eight years due to a range of reasons for variable deterioration rates. The objective is to maximise the life of the asset without compromising service. Extending the asset life reduces the overall cost to the Community.

Due to the greater than anticipated degredation of the pipe work in the town centre brought about by the corrosive nature of SO^2 (Sulphur dioxide) a CCTV investigation project is programmed was undertaken in 2021 to follow the line from the Town Centre to the river outfall. Following this, a significant replacement programme was undertaken with all pipes in this area being renewed.

Deferred Maintenance and Disposal Plan

There is no known deferred maintenance or specific disposals identified in the Plan.

FINANCIAL SUMMARY

As noted above, Kawerau's stormwater network is generally adequate for current rainfall runoff demands. There is some question about the impact of changing rainfall patterns and future stormwater requirements. However, most of the network has some spare capacity so it is anticipated that limited, localised upgrading should cope with changes in rainfall.

Due to the network being relatively young and standard lives being used for replacement analysis rather than physically assessing the lives of the pipe from in ground inspection, there is some risk associated with the amount of funding being allocated for future replacement. Performance analysis is planned and the renewal/funding model will be modified to better reflect the true deterioration rates.

ASSET MANAGEMENT SYSTEMS AND PROCESSES

Asset management outcomes

Responsibility for asset management outcomes lies with the Group Manager, Operations and Services.

Accounting and asset management systems

Ozone software is used for accounting and billing. All formal asset management financial reporting including valuation is currently held in Excel spreadsheets. This is being migrated into the AssetFinda system.

Key information flows and processes

Key information flows and process linkages are those which relate to the incorporation of Kawerau's Community Outcomes, the preparation and adherence to Council's annual budgets, environmental monitoring and compliance and to ongoing asset management which maintains levels of service to the community.

MONITORING AND IMPROVEMENT PLANNING

Improvement items are outlined in section nine of the Plan. Key improvement activities centre on continuing to increase the accuracy of Council's information relating to the stormwater assets.

The Leadership Team will monitor and review improvement items on a six monthly basis. The improvement plan will be reviewed each year as part of the annual plan development process.

SECTION TWO

Introduction

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategies for the management of its stormwater assets. The Plan enables Council to meet the present and expected future needs of the Community over a ten year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's Stormwater Activity in the most cost effective way.

The asset management plan collects high level management, financial, engineering and technical information from various sources and combines these into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

ASSET DESCRIPTION

In the Kawerau District, there is a network of pipes which collects stormwater almost exclusively from the roading network and disposes of it into natural waterways. Aside from a small number of buildings located in the CBD, properties are not connected to the stormwater network and drain to soak holes on their property.

Council conducts the operational, maintenance, renewal and construction activities relating to the stormwater network. In addition to these physical activities, there are administration activities including:

Responding to requests from the public.

Maintaining and applying for resource consents.

Recording and costing of expenditure.

Complying with accepted standards.

Ensuring private development manages its own stormwater.

Managing the asset inventory.

This asset management plan records these activities, providing reference to policies, management decisions and programmes. At the same time it demonstrates that the activity is being conducted in a responsible and cost-effective way, sustainable over the long term.

The Stormwater Activity requires the infrastructure listed below to be operated, maintained, renewed, added to and in rare cases, dismantled or abandoned.

The table below summarises the key components of the system including additional infrastructure following the residential developments of Porritt Glade and Central Cove. These additions are included in the table:

Table 15: Key components

Length of piping (km)	31.5
Number of cesspits	783
Number of outfalls	20
Number of manholes	538

OBJECTIVES OF ASSET OWNERSHIP

The goal of the Stormwater activity is to dispose of stormwater in a manner which protects the community from flooding and minimises negative impacts to the environment.

The activity involves:

Disposal of stormwater from the roading network.

Repairing or replacing unsound pipes and other stormwater structures.

Cleaning pipes and cesspits.

Planning to meet future requirements, and improving operations.

Council's principal objectives are:

- To anticipate the time when it may be necessary to extend, upgrade or renew the existing stormwater network and to plan accordingly.
- To ensure the appropriate maintenance of the stormwater network is carried out in perpetuity, so that there is no decrease in value and to forecast the estimated future cost of doing so.
- To put in place a sound management regime for all matters relating to the stormwater network.

A number of legislative requirements relate to the collection and removal of stormwater. These include the Local Government Act 2002, the Resource Management Act 1991, the Health Act 1956 and Council's District Plan.

The vast majority of stormwater disposed of through the stormwater network comes from the roading network which is owned and operated by Council. Therefore, disposal of the stormwater needs to be managed by Council.

Stormwater can have a significant detrimental effect on a large proportion of the Community if not properly managed. A flooding event on a property

is often the culmination of events not originating on that property.

CONTRIBUTION TO COMMUNITY OUTCOMES

The Stormwater Activity contributes primarily to the Council Community Outcome that Council infrastructure and services are effective, efficient and sustainable.

LINKS TO OTHER STRATEGIC DOCUMENTS

Public infrastructure supports activity that contributes toward the economic, social, cultural and environmental wellbeing of the community. In addition to stormwater infrastructure, Council owns the water supply and wastewater (sewerage) systems, the district's roads and footpaths, and its public parks, reserves, buildings and facilities. The parts that make up those networks and structures and the tools and equipment used to manage and maintain them, are known as Council's assets.

Every three years Council develops a Long Term Plan which sets out the range and level of services it will provide to meet identified Community needs and Community Outcomes and indicates anticipated expenditure on assets for the next 10 years. Each year Council adopts an Annual Plan, which contains the budget for Council services. Council's ability to deliver services and to do so at a reasonable cost depends on the condition, performance and risk profile of its assets.

Council's asset management planning is therefore closely linked to its Annual Plan and Long Term Plan.

This Asset Management Plan was developed in conjunction with the Kawerau District Council Long Term Plan 2025-2034. It will underpin and be integrated into that document as well as the 2026/27 Annual Plan.

SECTION THREE

Levels of Service

CUSTOMER LEVELS OF SERVICE

The following customer levels of service agreed upon in the 2025 34 LTP:

Table 16: Customer Levels of Service (LOS)

LOS	Performance Measure	Target
Council provides an effective stormwater network which removes stormwater to protect dwellings from flooding (System adequacy)	The number of flood events that occur in the District.	No more than 10
Response times	The median response time to attend a flooding event, measured from the time that Council receives notification to the time that service personnel reach the site.	Less than one hour
Discharge compliance	Compliance with Council's resource consents for discharge from the system, measured by the number of: • abatement notices • infringement notices • enforcement orders, and • convictions, received by Council in relation to those resource consents.	No notices, orders or convictions

TECHNICAL LEVELS OF SERVICE

Council will continue to monitor and report its actual performance against measures and targets described in the LTP. All reporting is done through quarterly reports to the Council by the Group Manager, Operations and Services.

CONSTRAINTS TO LEVELS OF SERVICE

The constraints which impact on levels of service of the stormwater network are shown in the table below.

Table 17: Constraints to Levels of Service

Constraint	Component	Comments
Capacity	Residential Service Connections	Residential houses do not connect to the stormwater network.
	Industrial Service Connections	Some industrial properties in Manukorihi Drive have a 100mm pipe connection to the network from their underground stormwater storage tanks.
	Public Networks	There are no known capacity constraints with the current network of pipes during typical rainfall events. Extreme events have exceeded the network capacity in localised areas. Modification to the overland flow paths next to rural areas have occurred allowing roadways to act as flow paths rather than inundating homes.
	Rainfall Intensities	There are no available calculations as to the maximum capacity of the stormwater network. However, the system has managed to accommodate heavy rainfalls with minimal flooding of the roads. Flooding is typically caused by cesspit blockages rather than insufficient capacity.
	Cesspits	The cesspits block with leaves, especially in the autumn. Stormwater then flows to the next available cesspit. Cleaning of cesspit lids prior to and during rain events prevents flooding of properties.

Reliability and Security of Service	Public Networks	Asset failures occur due mainly to cesspit blockages. Pipe blockages are cleared immediately they are detected. Tree roots are a common cause. If possible, offending trees are removed to prevent repeat events.
	Catastrophic failure	Failure due to natural disaster could be extensive. However, overland flow paths will minimise inundation of buildings.
Environmental Performance	Consents	All existing discharge points to natural waterways are covered by resource consents. Because the stormwater comes from the roading network the presence of unknown contaminants in the stormwater from other sources is unlikely.
	Future requirements	A stormwater management plan has been lodged with the BOPRC which covers the long term discharge consent and any collection issues.

RESOURCE CONSENTS

Council's current resource consents are shown in the table below.

Table 18: Resource Consents

Consent No.	Name	Purpose	Expiry Date
63046	Tarawera River - Manukorihi Drive	Stormwater discharge	31 March 2025
20227	Ruruanga Stream – Valley Road 200m downstream from culvert	Stormwater discharge	1 October 2026
20757	Ruruanga Stream – Valley Road just downstream from culvert	Stormwater discharge	None

Table 19: Resource Consent Conditions

Consent No.	Conditions
63046	Maximum discharge, maximum suspended solids, free of certain substances, maintain structure.
20227	Maximum discharge, substantially free from suspended solids and certain substances, cesspits to be adequately maintained.
20757	Maximum discharge, substantially free from suspended solids and certain substances, cesspits to be adequately maintained.

SIGNIFICANT ADVERSE EFFECTS

The collection and discharge of stormwater has minimal negative effect on the environmental well-being of the community. The stormwater contains contaminants (grit, organic material, and chemicals) from the road surface. However, the receiving water (Tarawera River) is large, clear and fast flowing and capable of dealing with stormwater discharges when the conditions of the resource consents is adhered to. The road network is predominantly low volume with minimal heavy traffic which reduce chemical contamination.

SECTION FOUR

Risk Management

RISKS

Physical Risks

Physical risks are generally result from:

- The inevitable natural process of deterioration.
- Actions of other parties working or travelling in the vicinity of the assets.
- Natural disasters such as earthquakes or flooding.

Durable materials, good workmanship, and careful planning will not always be sufficient to prevent physical damage by people or natural events (severe flooding damaging outlet structures). In the last 20 years there has been no damage to the stormwater network from flooding. This indicates that the current system is at minimal risk from the more common natural disasters such as flooding.

Financial Risks

Financial risks are those which result in decreased cash flow and/or inability to afford the work that is required. They include loss of a major ratepayer (requiring the cost burden to be absorbed by the remaining ratepayers), failure to take advantage of any available subsidies and replacing assets before end of useful life, resulting in less than optimal life-cycle cost.

Health and Safety Risk

Health and safety risks arise as a result of physical actions or omissions of Council staff or contractors, or equipment failure. Health and safety risks are minimised by training staff and employing reputable contractors for maintenance and new works.

Environmental Risk

There are risks of prosecution due to failing to comply with the law. The right of the Bay of Plenty Regional Council to change consent conditions during the term of the consent represents a regulatory risk exposure to Council. The consequence of this risk could be a requirement to improve the quality of the stormwater by treatment or an upgrade of the network.

Regulatory Risk

The right of the BOP Regional Council to amend consent conditions during the term of consent represents a regulatory risk exposure to Council. However, the change normally only occurs due to failure to meet existing consent conditions. The consequence of this change would be modified treatment practices, which could have capital and operational cost consequences. BOPRC would conduct significant dialogue with Council prior to actually amending conditions and there would normally be a timeframe within which to implement changes.

The special rights and status of Tangata Whenua in the resource consent process also represents a risk to Council. Council believes it can minimise this risk by maintaining cordial relationships with local Iwi.

There is also a risk of prosecution if Council fails to comply with legislation.

RISK MITIGATION

The significant risks and the Council actions taken to mitigate these risks are set out in the table on the next page.

Insurance
Council has adequate insurance in place to cover the replacement and/or repair of pipes and other structures in this group.

Civil defence and emergency response plans
Council has staff dedicated to the recovery of Council services in the event of a civil defence emergency. Two Council buildings (Council Chamber and Firmin Lodge) have Civil Defence designations for use in the event of a disaster.

Financial

Council funds depreciation at a rate commensurate with the loss of life of the various asset components. This funding is invested until required for replacement.

Table 20: Risk Mitigation

Key Exposure	Risk Probability	Residual Exposure Consequence	Mitigation
Physical			
Seismic Event	Medium	Significant	Earthquake design Standards
			Redundancy in reticulation
			Insurance cover
Flood Event	High	Medium	Well built and maintained outfalls
			Surface flows paths defined and well maintained
			Insurance cover
Damage by Others	Low	Moderate	Staff available 24/7
			Respond to reports of damaged or missing manhole lids
			Insurance cover
Failure due to deterioration of assets	High	Low	Asset performance monitoring
			Staff available 24/7
			Renewal Programme
Financial			
Funding not available when renewals required	Low	Low	Reserves are set aside annually and only a small amount of borrowing to date.
Health and Safety			
Injury to persons or property due to operations	Moderate	Low	Employ reputable contractors/qualified staff
			Insurance cover
Damage to property, injury or death due to assets being in public places or during flood	Low	Moderate	Topography of District and soil permeability reduces risk of flooding
			Outlets well established and no failure history during previous rain events
			Insurance cover
			Staff available 24/7 to attend to blockages
Environmental			
Stormwater quality	Moderate	Moderate	Spills on road cleaned up as soon as detected
			Staff trained in handling notified spills
			Tarawera River quick flowing
Regulatory			
Failure to comply with resource consents	Low	Low	Monitoring of consent conditions to ensure compliance
Change of consent conditions	Low	Low	EBOP negotiates consent conditions before changing and allows agreed time frames to comply

SECTION FIVE

Future Needs

CURRENT CAPACITY

The capacity of the network is adequate to handle current stormwater inflows which occur from time to time. Since storm water primarily service roads, only additional roading would justify additional stormwater infrastructure. All roads are fully develop and borders need to expand before additional roading (and therefore stormwater) will be considered.

Some extreme events (high intensity and short duration) have exceeded the network's capacity in recent years in several locations. Blockages occur several times per year in various locations, temporarily reducing capacity.

FUTURE DEMAND

Kawerau District has experienced and is expected to continue to experience very moderate growth in demand for additional residential areas. The network is designed for development upstream but further extreme events occurring, may mean upgrading the existing network is required in some instances.

Any problems created by changes in land use will be dealt with on case-by-case basis. For example a new industrial park on SH34 and the residential development of Stoneham Park, will require stormwater to be managed by soakage into the ground as there are no nearby streams for discharge into the river.

TRENDS

Population growth

The Kawerau District has experienced low general population growth in demand for additional services however has continued to experience a consistent increase in residents over the age of 65. In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite the predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

As is the case with the rest of NZ, the population is aging with an increasing fraction of the population receiving state funded superannuation and employment benefits. The average income in respect to the national average is expected to continue to decrease and there will be an increased requirement for external funding to maintain the infrastructure in the future.

Existing and required capacity

Kawerau District is experiencing and is expected to continue to experience low growth in demand for stormwater capacity. A number of vacant sections in the town are being developed. The existing stormwater network will cope with the additional demand from this additional roading as the stormwater system was designed for these areas.

The boundary between Whakatane and Kawerau districts was adjusted in 2012 facilitating the creation of a new industrial park on SH34 opposite the existing mill site. Industrial development commenced in 2018 and includes additional roadway. The additional assets associated with this development will be vested to Council. The industries themselves will not impact on the stormwater network as these sites will manage their own stormwater on site.

As is the case with the rest of NZ, the population is aging with an increasing portion of the population receiving state funded superannuation and employment benefits. The average income in Kawerau when compared to the national average is expected to continue to decrease and the future funding for renewals will need to be carefully considered.

Table 21: Statistics NZ Population Projections – Kawerau District

Population Change 2006–2043 (NZ Stats)								
Projected Range	2006 *Census*	2013 *Census*	2018 *Census*	2023	2028	2033	2038	2043
High					8,410	8,650	8,830	8,970
Medium	6,921	6,363	7,460	7,820	8,000	8,020	7,970	7,860
Low					7,610	7,410	7,140	6,800

NEW CAPITAL REQUIREMENTS

There are no new significant capital requirements during the life of the Plan. Council will replace existing assets only.

New land developments in the industrial park or residential developments would require the installation their own stormwater soak holes or storm water drains that may be vested to Council at a later date.

SECTION SIX

Lifecycle Management

CRITICAL ASSETS

Asset criticality is the relative risk of high cost arising from failure of that asset. Criticality is determined by the cost and risk of potential failures and the relative importance on society and the environment. Evaluating the different failure modes of critical assets determines what maintenance, capital expenditure and conditioning monitoring needs to be planned.

In general, critical assets are maintained on risk management principles, whereas non-critical assets are maintained reactively (replace on fail).

Of the stormwater assets, only the network in the Town Centre as considered critical. The culverts in River Road is also a critical stormwater asset; however it is managed with the other structures in the Roading asset management group.

Town Centre

Stormwater pipes installed prior to 2006 were primarily concrete which degrade at accelerated rates near geothermal areas. Failure of stormwater pipes in these areas carry a significant risk of localised flooding. As the Town Centre experiences significant geothermal degradation, failures of the stormwater network in this area could cause significant economic loss. A number of the concrete pipes and manholes in the Ranfurly Court area of the Town Centre were replaced with PE pipes and structures in 2019 – 2020 and 2024.

INLET/OUTLET ASSET GROUP

Five major culverts under roads are included in the Roading Asset Management Plan.

The asset register records 783 cesspits. The majority of these are part of the roading network and are maintained under that function. All are constructed of concrete with a cast iron grate, often including an open back entry to minimise blockage from accumulated debris. Cast iron grates, in frames which permit them to be opened for cleaning, are concreted in place over the cesspit. The bottom level of the cesspit is below the outlet pipes to allow silt, stones and other debris to be trapped.

The outlet asset group includes 20 outfalls recorded on the asset register. An outfall is where a stormwater pipe discharges into a natural water course.

SERVICE CONNECTIONS

Stormwater service connections are rarely required in the District due to the sandy volcanic soils that provide adequate soakage for private discharges via soak holes.

In the town centre, roofs discharge to the public network equating to no more than 12%. The property owner is responsible for maintenance and replacement of service connections to the stormwater network.

PIPE ASSET GROUP

The asset register records 31.5 km of pipe in 1,376 lengths. The stormwater pipe network is made up of pipe from 225mm to 1,200mm in diameter. A large proportion of the pipes are less than 450mm in diameter. There are lengths of subsoil drain of 100 to 150mm in diameter.

Almost all pipes are rubber-ring jointed centrifugally-moulded steel-reinforced concrete. The pipes in the geothermal area are a mixture of High Density Poly Ethylene (PE), glazed earthenware, PVC and reinforced concrete. The subsoil drains in the Beattie and Hardie Avenue area are 100-150mm diameter slotted drain coil.

Asset Install Dates

The network has been divided into six zones: the first 5 zones are based on the estimated average date at which each zone was developed. The sixth zone is a geothermal area where concrete pipes were mostly relined with PE pipe.

The zones are:

1. 1955-1957 (~15,420 m)
2. 1962-1970 (~3,030 m)
3. 1973 (~4,770 m)
4. 1978 (~4,530 m)
5. 1980-1996 (~ 1,970 m)
6. 2000 to present (~1 820 m)

Historically, all assets in a zone are given the same installation date and therefore will have the same replacement date. To allow for the spread of installation dates and due to a range of reasons pipes will deteriorate at different rates, the renewal funding for each zone has been averaged over eight years. The objective is to maximise the life of the asset without compromising service. Extending the asset life reduces the overall cost to the Community.

Data Validation

The physical location of almost all the cesspits and manholes has been reviewed to verify that they are in the correct location.

It is estimated that the location accuracy of the cesspit and manholes is 95%.

The diameter of the pipes has been taken from the original as built plans. Several of the diameters have been checked in the field and these corresponded with the plans. It has been assumed that the balance of the diameters correspond with the original plans.

Checks have been undertaken with the AssetFinda data to verify that the pipes continue to increase in diameter as they go downstream.

It is estimated that the diameter of the pipes is 95% accurate based on these evaluations performed the previous two years.

All the pipes have been determined as being concrete except where they are known to be something else (PVC, PE). Videos taken as a result of blockages and staff observations verify this assumption.

Asset Lives

The oldest of the pipes are currently 68 years old (installed in 1957). There have been no collapses of stormwater pipe in Kawerau except in areas that are impacted by geothermal activity (Town Centre). There have been no sign of deterioration of the internals of the pipes when inspections have been undertaken for blockage reasons.

A section of concrete *sewer* pipe from Zone 1 (1957) was removed in 2015 and tested in the Opus Lab in Christchurch. The pipe was assessed as Grade 3 - Moderate Condition. The pipe was assessed as having a further 40 years of life. The section through the pipe which shows to level of cement that has leached from the pipe showed the following

External deterioration: 0.0 to 2.6mm

Internal deterioration: 0.8 to 10.3mm

The internal deterioration is in the lower section of the pipe which is what would be expected in a sewer pipe.

A stormwater pipe has no water in it for over 90% of its life and when there is water present it is a lot less aggressive than wastewater. It could reasonably be assumed that the minimum rate of deterioration occurring on the inside of the wastewater pipe would be occurring in a stormwater pipe.

This hypothesis has been confirmed by taking a number of 50mm cores through stormwater pipes and painting the edges with Phenolphthalein which shows a similar very small reduction in cement

(A phenolphthalein solution was applied to the prepared plugs of pipe, and when the phenolphthalein turns magenta in colour this indicates sound concrete. Where the phenolphthalein does not react with the concrete surface this indicates the cement has leached and the pipe wall has deteriorated.)

Based on the results of the sewer pipe testing, plug samples taken and tested, visual observations of pipe surface quality it is considered that a conservative life for concrete stormwater pipes would be at least 100 years.

Council for the purposes of this asset management, conservatively estimated the useful life of these pipes to be 80 to 100 years. The deterioration of stormwater pipes will be continuously evaluated in the future and the asset management plan along with programmed renewals will be updated with later findings.

The expected life of PE and PVC pipes are considered to exceed that of concrete, however, as these materials have not been used for long periods, a 80 - 100 year lifespan is used for these assets as well. No evaluation of glazed earthenware has been performed to date and the existing 80 year life will be used. Most glazed earthenware occurs in the geothermal Zone 6 and has subsequently been relined with PE pipes.

Table 22: Asset lives – Stormwater

	Current life	Recommended
Concrete Pipes	70	80
PVC/PE Pipes	70	80
Glazed Earthenware	80	80
PVC/PE (Geothermal area)	40	40
Manholes	70	70
Sumps/Cesspits	70	100
Outlets	70	70

The size and age distribution of the network is illustrated below.

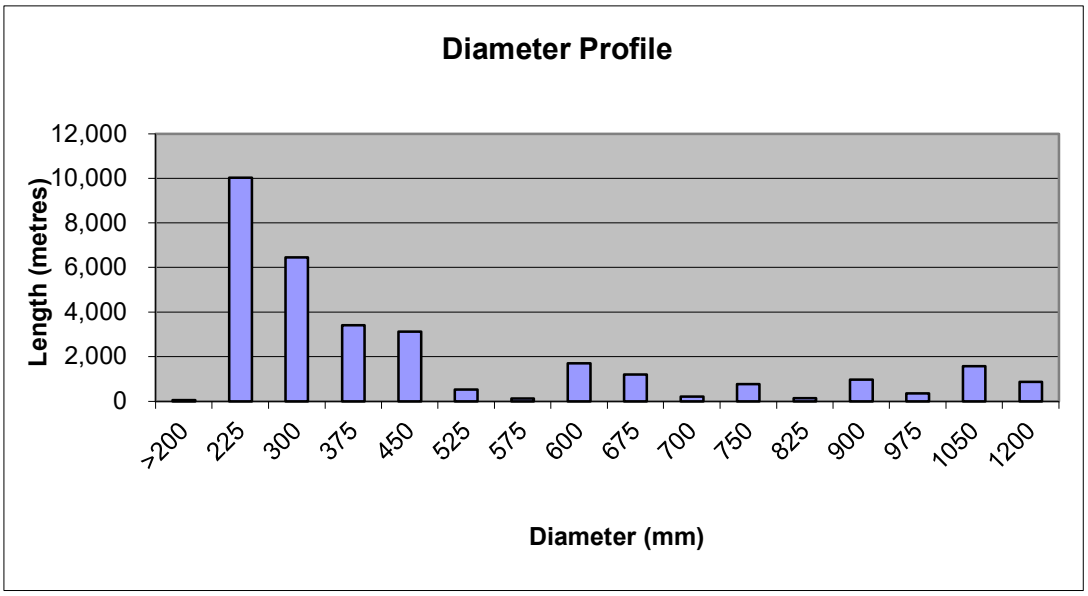

Figure 1: Diameter Profile of Stormwater Pipes

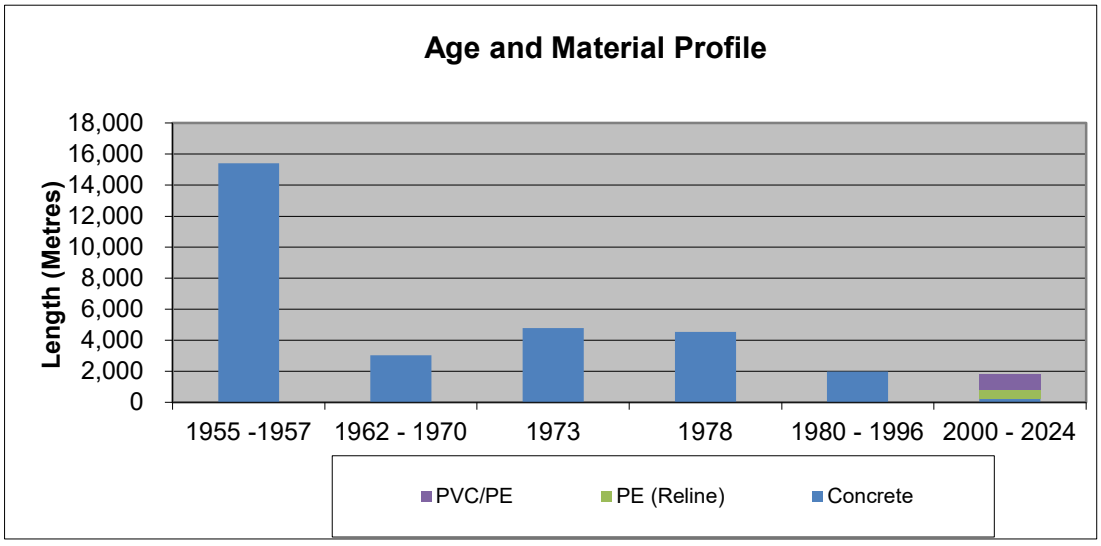

Figure 2: Age/Material Profile of Stormwater Pipes

MANHOLE ASSET GROUP

The asset register records 538 manholes in service, generally installed at changes in pipe direction or grade or at junctions of two or more pipes. Most are of standard 1,050mm diameter, made of precast reinforced concrete with cast iron lids. There are galvanised iron rungs in the sides of the manholes for access.

No formal process of manhole inspection for deterioration is in place. When maintenance activity has been undertaken, no deterioration on the inside of manholes has been detected (except in geothermal areas).

If significant deterioration is detected, the manholes will either be replaced or relined

An asset life for manholes of 70 years have been recommended except in geothermal areas.

PERFORMANCE ISSUES

As well as increased demand from any new development, it is possible that if climate change continues to occur, that rainfall intensities and storm durations may increase, and the assets may require enhancement to cope with the increased flows.

A small number of small flood prone areas had been identified during significant rainfall events during recent years. Increasing the capacity (either installing additional drainage or increasing current drainage capacity) in these areas was considered.

It was considered in the Blundell Street area, the less invasive and more cost effective option of a series of detention basins being designed in order to simply arrest any sudden volume of water that flowed from the Tuwharetoa farmland. Detention Basins were constructed in the farmland at the southern end of both Valley Road and Hardie Avenue.

The design of the River Road culverts carrying the Pumphouse Spring overflow stream were found to be a significant cause of flooding in the Fraser Street area. Designs were commissioned for replacement culverts that provided a larger free flowing structure. Installation of these new culverts commenced toward the end of 2020 and completed in April 2021.

There is a greater emphasis on the need to ensure that streams are more proactively maintained with a regular clearing of vegetation, in particular, the overflow stream and Ruruanga Stream as it runs behind The Village body corporate housing on Tamarangi Drive.

With those issues being addressed above, the current stormwater system is deemed sufficient and no other upgrades of capacity in the network are planned during the life of this Plan. Any problems created by changes in land use will be dealt with on case-by-case basis.

DATA RELIABILITY

The stormwater data has been assessed as reliable. All the data has been imported into a digital database (AssetFinda) and validated. High correlation between records and actual assets were found and the rare anomalies have being corrected.

MAINTENANCE PLAN

Most stormwater maintenance is currently undertaken on an ‘as required’ basis. The low level of public complaint about flooding is a measure of the success of maintaining the asset.

Cesspits

These are cleared of debris on a regular basis during autumn and year round prior to forecast rain events including ongoing clearing during the event.

Any complaints about surface flooding are attended to immediately to ensure the cesspits are cleared of any subsequent built up debris.

Pipes

Minimal preventative maintenance is required for stormwater pipes. Faults and blockages are repaired as reported and asset information updated as part of the operation. Investigative camera work is undertaken from time to time predominantly in and downstream of the geothermal area.

Manholes

Regular maintenance of manholes is considered unnecessary. Reactive maintenance includes clearing occasional blockages and replacing broken lids and frames. Stormwater maintenance is generally undertaken on an ‘as required’ basis. The low level of public complaint about flooding is a measure of the success of maintaining the asset.

New Assets

Stormwater capacity in the existing residential network is anticipated to be static for the duration of the planning period. Some detention basins have been constructed to protect the integrity of the stormwater system from farm run-off.

A small amount of additional asset constructed as part of the two new housing developments (Porritt Glade and Central Cove) and will be vested in Council in the near future.

The continuing development of the industrial park opposite the existing mill site will have stormwater assets constructed by the developer to Council’s requirements to then be vested in Council.

Deferred Maintenance

There is no known deferred maintenance with the stormwater network and the full service potential of the asset is being maintained.

Disposal Plan

There are no specific disposals identified in the Plan. Pipes that are no longer required or are replaced due to failure will not be retrieved as they have no value.

SECTION SEVEN

Financial Forecasts

FUTURE REQUIREMENTS

Table 23: Estimated Financial requirements (including inflation)

	2025/26	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	**2032/33**	**2033/34**
Operations	52,000	42,770	32,420	33,310	34,200	35,030	35,860	36,730	37,560
Depreciation	320,000	320,000	349,825	349,825	349,825	378,097	378,097	378,097	405,437
Overheads	17,550	14,870	10,870	11,170	11,610	11,450	11,720	12,260	11,870
	389,550	377,640	393,115	**394,305**	**395,635**	**424,577**	**425,677**	**427,087**	**454,867**
Asset Renewals	0	0	0	0	0	0	0	0	0
Total	**389,550**	**377,640**	**393,115**	**394,305**	**395,635**	**424,577**	**425,677**	**427,087**	**454,867**

FUNDING POLICY

The stormwater system provides both public and private benefits but it is not possible for Council to determine the proportion of each or to charge each group of users. For this reason Council has assessed the stormwater activity as 100 percent public good.

VALUATION

The stormwater network infrastructure is revalued by a competent valuer on a three yearly valuation cycle. Assets are valued at fair value determined on a depreciated replacement cost basis. The most recent revaluation is effective as at 30 June 2022.

Asset basis of valuation

The Optimised Depreciated Replacement Cost (ODRC) refers to today's cost of replacing the asset with another asset which provides the same level of service most efficiently and depreciated over the life of the asset to reflect its current value and remaining economic life. The optimised replacement cost assigned to each asset has been determined by suitably qualified and experienced professional persons and has been peer reviewed.

Expenses

Maintenance and operating costs are expensed in the year they are accrued.

The capitalisation threshold for stormwater assets has been set at $1,000 or the actual value of individual components where they are identified in the asset register.

Changes in asset valuation

The costs associated with renewing assets and providing new or improved asset infrastructure are capitalised and depreciated in accordance with the assessed economic life of each asset. This also applies where a developer provides infrastructure to be vested in Council.

Capitalisation Threshold

The following definitions are used for asset management purposes and the financial treatment is summarised below:

Maintenance is work done that is of an operational nature that can contribute to the asset life reaching its maximum potential but neither increases the value nor extends the remaining life of any asset.

Renewal is work done to replace an existing asset. The cost of replacement must be recorded as a capital expenditure, be greater than $1,000 and recorded in the asset register as a new asset with a unique identifier.

If the asset replaced is discarded or sold it must be removed from the asset register and any residual value must be formally written off.

An addition to the asset register is required when a new asset is created with a value exceeding $1,000. A new asset must be uniquely identified, and recorded in the asset register. The record in the asset register requires an assessment of the asset's remaining life expectancy (based on straight-line depreciation or estimated remaining life).

Where the asset register recognises an individual component worth less than $1,000, or where a length of pipe greater than 12 metres is replaced, the threshold does not apply and the additional value is capitalised.

KEY ASSUMPTIONS

The current valuation and renewal profiles are based on data currently available.

Asset condition

In the case of the stormwater network, the condition is taken as being directly related to its age unless better information is available. The keeping of samples from repairs on pipes that are approaching the end of their useful life provides additional information. While a more planned inspection would provide a more direct assessment of condition, the cost of such programmes is high with camera work generally only performed in and downstream of the geothermal area.

Replacement cost

The projected replacement costs and depreciated values shown in the table below have been derived from Council's asset register.

Further work identified in the improvement plan, will be carried out to verify the condition of the assets and the potential need for future replacement.

Table 24: Replacement Costs and Depreciated Values

Asset Type	Replacement value @ 30-6- 2024	Depreciated value @ 30-6-2024
Stormwater Pipes	$19,078,695	$3,789,171
Stormwater Structures	$6,814,640	$2,180,863
	$25,893,335	**$5,970,034**

The procedure for calculating network replacement costs is:

- Pipeline replacement will be carried out utilising HDPE pipes.
- Alternative replacement technologies such as relining existing pipes will be considered on a case by case basis.
- The construction environment for Council is brown field (replacement of existing) rather than green field construction.
- Unit rates for replacement are derived from peer review and other recent tenders and quotes.
- Replacement includes manholes and cesspits. Unusual pipes will be replaced with the next size up.
- No optimisation or efficiencies in pipe size or lengths have been allowed for in replacement costs.

Depreciated value and life expectancy

Straight line depreciation has been adopted for all above ground assets. The life expectancies used to calculate depreciated values for stormwater pipes are shown in the table on the next page.

The asset lives of the different components has been derived in section 0. The expected asset lives are considerably higher for zones 1 to 5 and the pipes and structures in zone 6 will be replaced over a shorter period.

Population

Further sustained decline in population as predicted by Statistics NZ may seriously erode the rating base of the district, placing a higher burden on the remaining residents for any infrastructure upgrades and possibly affecting capacity to fund renewal works. Population trends must therefore be reviewed as frequently as reliable data can be obtained.

Other assumptions

- All expenditure is stated in 2024 values, with allowance made for the inflation over the planning period.
- All costs are GST exclusive.
- Operational costs are generally shown to increase in relation to inflation.
- Renewal costs are based on anticipated replacement requirements.
- The costs of insurance and other risk mitigation are included in the forecasts.
- Climatic and other environmental trends are expected to continue as they have in the recent past.
- The plan provides scope for some growth in industrial/commercial demand.

Development Contributions

Section 106 of the Local Government Act 2002 requires local authorities to adopt development contributions or financial contributions policies.

Spare capacity in Council's infrastructure means it can cope with some growth. Therefore, Council does not need to extend infrastructure to cope with increasing demand.

Council's policy is to not assess development contributions but to retain the provisions of the District Plan that allow the assessment of financial contributions.

Financial Contributions

New subdivisions or developments may require the extension of Council infrastructure networks for water supply, wastewater disposal and roading.

Council's financial contributions policy provides that the cost of these extensions is the responsibility of those who create the demand. Developers may be required to make financial contributions to meet the full cost of additional infrastructure necessary to support their subdivision or development.

SECTION EIGHT

Asset Management Systems & Processes

Responsibilities for Asset Management Outcomes

The 3 Waters Manager is responsible for the development of this asset management plan, including maintaining the integrity of Council's asset information.

The 3 Waters Manager is also responsible for the identification, budget, planning, programming and undertaking of works required for the maintenance and renewal of Council's Stormwater assets.

The Group Manager, Finance & Corporate Services is responsible for providing an overview of the development of this asset management plan, for ensuring that future projects are incorporated in Council's Long Term Plans and that there is consistency between these documents.

The Group Manager, Operations and Services is responsible for delivering the community outcomes for this activity. This includes ensuring that the assets are maintained and operated to Council's requirements, and that adequate budgets are provided for the maintenance, operating and necessary improvements.

Accounting and Asset Management Systems

Billing/Accounting system

Council currently uses Ozone software for its accounting and billing systems. It does not store or determine asset management information, but does store the number of connections to council services as well as the number of properties billed.

Currently, all formal asset management financial reporting including valuation is held in Excel spreadsheets. This will be migrated into the AssetFinda system.

AssetFinda

AssetFinda is the software used to manage and produce asset inventory reports. It is integrated with 'Map Info' data tables to permit input, querying, reporting and financial modelling using the asset register data. The spatial location of the three waters assets are laid over aerial maps, property boundaries.

Attaching information such as pump performance, type etc. to assets is a desirable improvement. The addition of photographs and 'as built' drawing to the asset will improve the data.

The software has yet to have financial data added to allow financial modelling for current replacement and depreciation value reporting.

The software has functionality to enable maintenance, renewal and resource consent monitoring activity scheduling and can be integrated into Ozone software's automated service request processes.

New asset information (location, installation date, materials' construction etc.) is entered into AssetFinda as the asset is commissioned.

The default valuation process used by AssetFinda is capable of recognising asset condition, extending the life of an asset and recalculating revised depreciation value and annual depreciation.

The improvement plan proposes that the appropriate financial information be entered into AssetFinda and the maintenance scheduling functionality be initiated.

Hard copy plans

Layout details of the pipes and structures are available for most of the stormwater assets.

Key Information Flows and Processes

Key information flows and process linkages include:

Translating the Community Outcomes into detailed levels of service that can be embodied into Asset Management Plans.

Preparation of annual budgets, and ongoing reporting.

Updating asset data as information becomes available through maintenance and service repairs.

Ongoing compliance monitoring and reporting of environmental performance.

Ongoing management of the asset to ensure that service levels are maintained.

Quality management

Management is governed by the requirements of the discharge consent. The results are compiled for submission to BOPRC in accordance with consent conditions.

Maintenance

Maintenance is carried out reactively for most asset faults. The criteria which will result in renewal rather than further maintenance are:

Is the asset important for maintaining service levels and have the service levels in the current year already been compromised by failures? If yes, consider renewal.

What has been the failure history? If the current failure is part of a series, then consider renewal.

Is the cost of the maintenance comparable to the cost of renewal? Where repair costs are

high (e.g. reinstatement of road pavement) then consider renewing a logical minimum quantity of asset to prevent further expensive repair costs.

Will maintenance preserve asset life? If yes, then carry out maintenance.

Policies for renewing assets

Replacing network components with larger components to improve capacity is treated purely as renewal capital expenditure. This is because the additional cost of larger components is not material compared with the renewal cost of component of the same kind.

Renewal

Renewal of assets will occur in accordance with practice described earlier in document.

Constructing new assets

Following many years of no demand for additional capacity, recent land developments for industry and residential have resulted in the need for additional new assets.

Funding to provide additional capacity (when eventually needed) will be treated on its merits, but in most cases the funding would be sought from property developers.

Assets vested in Council

Subdivisions that include the construction of new roads include stormwater assets. These are installed at subdivider's expense to approved Council standards and then vested in Council.

'As built' new works either occur due to subdivisions, or the installation of new assets. In both instances, detailed records of new works are obtained. These new assets are added to the AssetFinda database.

Asset disposal

Most of the components are essential to continuing provision of the service. Extensive decommissioning and disposal is very unlikely.

SECTION NINE

Monitoring Improvement Planning

Asset Management Performance Measures

The broad objectives of asset management are:

- To optimise the life of the assets
- To minimise life cycle costs
- To maintain agreed levels of service

Although it is possible to measure the success or otherwise of the asset management activity over the long term against the three criteria above, it will obviously be difficult to measure success or otherwise in the short term in a way that management control can be exerted. For example, it will be impossible to determine whether the life of a facility has been "optimised" until the actual age nears the expected life and a remaining life assessment can be meaningfully carried out.

An assessment of the asset knowledge and processes currently carried out, in terms of "best practice for a NZ authority of this size" provides an indication of how well Council is likely to be meeting these long term objectives. This assessment is therefore part of the Improvement Plan. It should include evaluation of the monitoring of operations and costs to provide information on the achievement of service level (both public measures and technical standards). It should cover previously-planned improvement actions, noting whether these have been achieved and how they are contributing to current processes. It should check how the initiatives undertaken are 'rolled out' from asset management staff to those carrying out the work, and how carefully field information is recorded and returned to add to the asset knowledge case.

Improvement Actions

Table 25: Improvement Actions

Improvement Item	Comment	By When	By Whom	Cost
Expand knowledge of AssetFinda functionality	Training staff (3WM)	Ongoing improvement	GMOS	$5,000
Maintain AssetFinda database	Three Waters Engineer appointed and being trained	Annually	ACM / 3WM	$35,000
Review asset life expectancy	Test pipes and manholes for deterioration	June 2025 and triennially thereafter	3WM & operations staff	$10,000
Conduct asset revaluations	Last completed June 2022	June 2025 and annually thereafter	GMFCS	$5,000

3WM = Three Waters Manager

GMOS = Group Manager Operations and Services

GMFCS = Group Manager Finance and Corporate Services

Monitoring and Review Procedures

The Leadership Team will monitor and review improvement items on a six monthly basis. This plan will be reviewed annually as part of annual plan development.

SECTION TEN

Appendices

APPENDIX A - DETAILED ASSET DESCRIPTION

ASSET STORMWATER PIPES	DESCRIPTION	MATERIAL	QTY	YEAR
STORMWATER PIPES - ZONE 1	1050	CONCRETE	768	1956
STORMWATER PIPES - ZONE 1	900	CONCRETE	612	1956
STORMWATER PIPES - ZONE 1	750	CONCRETE	427	1956
STORMWATER PIPES - ZONE 1	700	CONCRETE	223	1956
STORMWATER PIPES - ZONE 1	675	CONCRETE	936	1956
STORMWATER PIPES - ZONE 1	600	CONCRETE	1045	1956
STORMWATER PIPES - ZONE 1	450	CONCRETE	1209	1956
STORMWATER PIPES - ZONE 1	375	CONCRETE	2136	1956
STORMWATER PIPES - ZONE 1	300	CONCRETE	2458	1956
STORMWATER PIPES - ZONE 1	225	CONCRETE	3532	1956
STORMWATER PIPES - ZONE 1	LATERAL	CONCRETE	2070	1956
STORMWATER PIPES - ZONE 2	575	CONCRETE	129	1965
STORMWATER PIPES - ZONE 2	450	CONCRETE	85	1965
STORMWATER PIPES - ZONE 2	375	CONCRETE	237	1965
STORMWATER PIPES - ZONE 2	300	CONCRETE	1288	1965
STORMWATER PIPES - ZONE 2	225	CONCRETE	753	1965
STORMWATER PIPES - ZONE 2	LATERAL	CONCRETE	540	1965
STORMWATER PIPES - ZONE 3	1200	CONCRETE	778	1973
STORMWATER PIPES - ZONE 3	825	CONCRETE	133	1973
STORMWATER PIPES - ZONE 3	675	CONCRETE	204	1973
STORMWATER PIPES - ZONE 3	450	CONCRETE	841	1973
STORMWATER PIPES - ZONE 3	375	CONCRETE	628	1973
STORMWATER PIPES - ZONE 3	300	CONCRETE	996	1973
STORMWATER PIPES - ZONE 3	225	CONCRETE	471	1973
STORMWATER PIPES - ZONE 3	LATERAL	CONCRETE	720	1973
STORMWATER PIPES - ZONE 4	1050	CONCRETE	591	1978
STORMWATER PIPES - ZONE 4	900	CONCRETE	300	1978
STORMWATER PIPES - ZONE 4	600	CONCRETE	559	1978
STORMWATER PIPES - ZONE 4	450	CONCRETE	520	1978
STORMWATER PIPES - ZONE 4	375	CONCRETE	291	1978
STORMWATER PIPES - ZONE 4	300	CONCRETE	820	1978
STORMWATER PIPES - ZONE 4	225	CONCRETE	1051	1978
STORMWATER PIPES - ZONE 4	LATERAL	CONCRETE	400	1978
STORMWATER PIPES - ZONE 5	1200	CONCRETE	85	1985
STORMWATER PIPES - ZONE 5	1050	CONCRETE	228	1985
STORMWATER PIPES - ZONE 5	975	CONCRETE	346	1985
STORMWATER PIPES - ZONE 5	675	CONCRETE	66	1985
STORMWATER PIPES - ZONE 5	600	CONCRETE	94	1985
STORMWATER PIPES - ZONE 5	525	CONCRETE	528	1985
STORMWATER PIPES - ZONE 5	450	CONCRETE	92	1985
STORMWATER PIPES - ZONE 5	375	CONCRETE	129	1985
STORMWATER PIPES - ZONE 5	300	CONCRETE	224	1985

STORMWATER PIPES - ZONE 5	LATERAL	CONCRETE	180	1985
STORMWATER PIPES - ZONE 6	675	GLAZED EARTHENWARE		1962
STORMWATER PIPES - ZONE 6	600	GLAZED EARTHENWARE		1962
STORMWATER PIPES - ZONE 6	300	CONCRETE/EARTHENWARE		1958
STORMWATER PIPES - ZONE 6	300	CONCRETE/EARTHENWARE		1962
STORMWATER PIPES - ZONE 6	750	CONCRETE	36	2011
STORMWATER PIPES - ZONE 6	750	CONCRETE	14	2012
STORMWATER PIPE RAUTAHI	300	PVC	50	2003
STORMWATER PIPE RAUTAHI	225	PVC	33	2003
STORMWATER PIPES - ZONE 6	300	CONCRETE	55	2003
STORMWATER PIPES - ZONE 1	225	CONCRETE	15	2006
STORMWATER PIPES - LANDFILL	900	CONCRETE	63	2006
STORMWATER PIPES - MANUKORIHI STREAM	450	PVC	50	2014
STORMWATER PIPES - RANFURLY COURT	300	PVC	60	2016
STORMWATER PIPES - RANFURLY COURT	300	PE (Reline)	56	2017
STORMWATER PIPES - RANFURLY COURT	750	PE	295	2019
STORMWATER PIPES - PIRIPIRI CRESCENT	450	PVC	327	2020
STORMWATER PIPES - TIWHATIWHA CRESCENT	300	PVC	45	2020
STORMWATER PIPES - RANFURLY COURT	300	PE	145	2021
STORMWATER PIPES - RANFURLY COURT	150	PE (Reline)	52	2024
STORMWATER PIPES - RANFURLY COURT	225	PE (Reline)	449	2024
STORMWATER PIPES - RANFURLY COURT	300	PE (Reline)	71	2024
ASSET **STORMWATER STRUCTURES**	**DESCRIPTION**	**MATERIAL**	**QTY**	**YEAR**
STORMWATER OUTFALL - TARAWERA RIVER	OUTLET	CONCRETE	18	1966
OUTFALL - STONEHAM WALK	STRUCTURE	CONCRETE	1	1970
OUTFALL - HILLDALE PARK	STRUCTURE	CONCRETE	1	1983
STORMWATER MANHOLES - DISTRICT WIDE	MANHOLE	CONCRETE	514	1966
STORMWATER MANHOLES - ADDITION 2016	MANHOLE	CONCRETE	1	2016
STORMWATER MANHOLES - ADDITION - Porritt	MANHOLE	CONCRETE	6	2020
STORMWATER MANHOLES - ADDITION	MANHOLE	CONCRETE	1	2023
STORMWATER MANHOLES - ADDITIONS	MANHOLE	CONCRETE	16	2024
STORMWATER SUMPS	SUMP	CONCRETE	776	1966
STORMWATER SUMPS - NEW	SUMP	CONCRETE	1	2018
STORMWATER SUMPS - NEW	SUMP	CONCRETE	3	2021
STORMWATER SUMPS - NEW	SUMP	CONCRETE	1	2022
STORMWATER SUMPS - NEW	SUMP	CONCRETE	1	2023
STORMWATER EARTHWORKS - 2017	EARTHWORKS	EARTHWORKS	1	2017
STORMWATER EARTHWORKS - 2018	EARTHWORKS	EARTHWORKS	1	2018
STORMWATER EARTHWORKS - 2019	EARTHWORKS	EARTHWORKS	1	2019
STORMWATER EARTHWORKS - 2020	EARTHWORKS	EARTHWORKS	1	2020
STORMWATER DEWATERING SYSTEM - 2024	SUMP	CONCRETE	1	2024

KAWERAU DISTRICT COUNCIL

Asset Management Plan 2025

Water Supply

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Version History

Version	Date	Notes	Author
2015	2015	Final version: AMP - 2015	Tom McDowall
1a	31/01/2018	First revision for 2018	Hanno vd Merwe
1b	5/02/2018	Review: Technical support officer	Tina Mitchell
1c	19/02/2018	Update after MOS review	Hanno vd Merwe
1d	20/02/2018	External review	Kelvin Hill (Western Bay DC)
2	20/03/2018	Submission to Council	Hanno vd Merwe
2a	29/03/2021	First revision for 2021	Tina Mitchell
2b	13/04/2021	2nd Revision for 2021	Riaan Nel
2c	14/04/2021	Management review	Hanno van der Merwe
2d	20/07/2021	Post Audit Review amendments	Tina Mitchell
3	1/08/2021	Submission to Council	Hanno vd Merwe
3a	28/04/2024	First Revision for 2024	Hanno vd Merwe
4	18/03/2025	Revision following audit review	Peter Christophers
4a	26/03/2025	Confirmation of AMP	Riaan Nell
4b	7/4/2025	A & R Committee review	

SECTION ONE
Executive Summary

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategies for the management of its water supply assets. The Plan enables Council to meet the present and expected future needs of the Community over a ten-year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The Plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's Water Supply Activity in the most cost effective way for households and businesses.

The Asset Management Plan collates high-level management, financial, engineering and technical information from various sources and into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

An independent auditor evaluated the level of provision of asset management for the water supply asset in 2017. The appropriate level was recommended to be raised from the Council's asset management policy of "Core" to "Intermediate" due to the higher risk to the health and well-being of the community in the event of water supply assets failing to deliver an appropriate level of service.

The previous assessment of the asset management level and the level required for "Intermediate" showed a gap of 11 percent overall for water supply. Asset management improvement actions were identified in 2021 and completed by 2024 to close this gap. The remaining and newly identified improvement actions are discussed in Section 0.

ASSET DESCRIPTION

The Kawerau District water supply network comprises springs, pumps, reservoirs and pipes. It distributes potable (drinkable) water to around 2,700 households, 5 large industrial plants and approximately 160 businesses.

Kawerau's water is sourced from a borefield and two springs. From source, the water is treated in an ultraviolet (UV) treatment plant, neutralised, chlorinated and fluoridated (from 1 September 2024), and then pumped to three reservoirs, from where it is delivered to consumers by gravity. Large water users have metered supplies.

The table below summarises the key components of the system.

Key components

Population served	7,820
Number of properties connected	2,910
Length of reticulation (kms) incl Riser/Grav mains	80
Number of pumping stations	2
Number of treatment plants	1
Number of water sources	3

Resource consents are held from Bay of Plenty Regional Council (BOPRC) for the extraction of all natural water that is used for public supply. These stipulate the amount of water that is allowed to be taken and a maximum extraction rate.

The replacement costs and depreciated values of the water supply asset as at 30 June 2022 are shown below:

Replacement and depreciated values

Asset Type	Gross Replacement	Depreciated Replacement
Supply & treatment	$2,173,980	$1,035,900
Storage	$13,730,980	$4,023,950
Distribution	$19,574,450	$8,036,080
TOTAL	**$35,479,410**	**$13,095,930**

LEVELS OF SERVICE

Customer levels of service

Council monitors and reports its actual performance against measures and targets contained in the Long Term Plan.

Council targets include community satisfaction, number of complaints, the consumption requests and time taken to respond as well as number of supply disruptions. The community survey in 2023 (undertaken by SIL Research) reported 40% resident satisfaction with the water supply service, which is below the national average (73%). The low community satisfaction was caused by discoloured water in the supply network. This issue has been resolved.

The reasons provided by the 40% 'Not Very Satisfied' respondents being:

- Poor quality/brown/dirty (23%)
- Too many chemicals/chlorine (8%)
- Undrinkable/buy bottled water (7%)
- Bad taste/smells (5%)

Technical levels of service

Council meets DWSNZ guidelines and monitors and reports its actual performance against the measures and targets described in the Long Term Plan. Water quality is monitored.

Council commissioned an ultraviolet (UV) treatment plant in 2007; chlorine was added to the supply in 2018 in response to Councils assessment of health risks associated with the supply of water without residual disinfection. Fluoride has been added to the water supply from 1 September 2024.

Constraints to levels of service

Constraints can arise because of capacity, reliability and security of supply, environmental performance and issues relating to the water sources, treatment, storage and reticulation. These are described fully in section 0 of the Plan.

Resource consents

Council holds one resource consent from the BOP Regional Council for the provision of a town water supply from the three bores located at Tarawera Park. An application for a combined consent to take water from the two springs as well as from the borefield was submitted in 2024.

Significant adverse effects

By providing either, an inadequate supply of water, or water of poor quality that does not meet required standards under the 2008 NZ Drinking Water Standards could have negative effects to community social and economic wellbeing.

FUTURE NEEDS

Kawerau's water supply network is generally adequate for current demand and has excess capacity that would enable it to cope with any reasonable increased demand.

The Kawerau District has experienced low general population growth in demand for additional services however has continued to experience a consistent increase in residents over the age of 65. In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite the predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

The life cycle of water supply reticulation components have been assessed as having lives between 60 to 80 years based on sampling of pipes and breakages. An assessment in 2020 of the degradation rate for pipes in Kawerau shows a slightly faster degradation than the national averages. This is primarily due to historically high acidity of water. Significant replacement of AC-pipes started in 2021 and will continue until 2029.

LIFE CYCLE MANAGEMENT

Critical assets

Borefield

There are three bores in the Tarawera Park. They are owned by Council.

Springs

There are two springs (Umukaraka/Holland and Pumphouse), which are natural resources. Umukaraka/Holland Spring is in private ownership and Pumphouse Spring is owned by Council.

Pumps

There are five pumps in total, whose use varies according to seasonal demand.

Water Treatment Equipment

Used for pH correction, UV treatment, chlorination and fluoridation.

Reservoirs

Water is stored in three concrete reservoirs. Two reservoirs are located at the Monika Lanham reserve. The third reservoir is located on a Council owned parcel of land at the top of Beattie Road.

Pipes

Pipes are used to transport water from the sources to the Pumphouse, from Pumphouse to reservoirs and from reservoirs to properties.

Other Assets

Other assets are: the Beattie road pump station, telemetry systems, valves, fire hydrants, service connections, meters, backflow preventers and the Pumphouse treatment plant with UV, lime and chlorine/fluoride buildings.

New assets

Water supply capacity in the existing residential network is anticipated to be static for the duration of the planning period. The reticulation system was extended by approximately 2 kilometres in 2018 to service the new industrial subdivision located to the north/east of town on the Putauaki block. Additional lines and points were installed to service the two new residential subdivisions at Porritt Glade and Central Cove.

Maintenance activities

Maintenance activities include daily checks of the springs, pumps, telemetry system, pipes and lime-dosing tank at the UV treatment plant. The tops of the reservoirs are inspected, back flow preventers checked, buildings inspected and network pipes are

flushed annually. Preventative maintenance is carried out on the valves, service connections and water meters. In addition, repairs are undertaken as faults are reported. The NZ Fire Service undertakes regular flow tests of fire hydrants.

Renewal/Replacement

Except for Kawerau's town centre zone, which is an area of geothermal activity, pipes are deteriorating slightly faster National Asset Management Steering Group (NAMS) guidelines.

Council's objective is to maximise asset life without compromising service. Replacement decisions are based on the condition, reliability and maintenance cost and risk profile of an asset as well as its age.

The network was previously divided into six zones. These zones have now been subdivided into smaller zones for the purposes of a prioritised replacement programme developed to replace pipes installed prior to 1996 by 2029.

Deferred Maintenance and Disposal Plan

Council policy is to avoid any deferred maintenance and currently there is no known deferred maintenance for the water supply network. Similarly, there are no specific disposals identified in the Plan.

FINANCIAL SUMMARY

As noted above, Kawerau's water supply reticulation asset maintains adequate capacity for the current and foreseen population and industrial needs.

The funding for water supply replacement is collected through rates. Any funding collected in excess of the actual replacement has been held in a depreciation reserve. Council has since used the reserve and is raising loans to fund the pipe replacement programme.

ASSET MANAGEMENT SYSTEMS AND PROCESSES

Asset management outcomes

Responsibility for asset management outcomes lies with the Manager, Operations and Services.

Accounting and asset management systems

Ozone software is used for accounting and billing. AssetFinda software is used for asset inventory reports, asset information (location, installation date, materials' construction etc.). Council in-house accounting systems are used to recalculate revised depreciation values, and annual depreciation.

Hard copy plans contain layout details of the structures and all known pipes comprising the water supply network. Over time, these will become obsolete as new information is held on AssetFinda.

Key information flows and processes

Key information flows and process linkages are those that relate to the incorporation of Kawerau's Community Outcomes, the preparation and adherence to Council's annual budgets, environmental monitoring and compliance and to ongoing asset management that maintains levels of service to the community.

MONITORING AND IMPROVEMENT PLANNING

Improvement items are outlined in section 0 of the Plan. Key improvement activities centre on continuing to increase the accuracy of Council's information relating to the water supply assets.

The Group Manager Operations and Services will monitor and review improvement items on a six monthly basis. The improvement plan will be reviewed each year as part of the annual plan development process.

SECTION TWO
Introduction

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategies for the management of its water supply assets. The Plan enables Council to meet the present and expected future needs of the Community over a ten-year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's water supply activity in the most cost effective way.

The asset management plan collects high-level management, financial, engineering and technical information from various sources and combines these into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

ASSET DESCRIPTION

The Kawerau District has one water supply network, to which 2,910 properties are connected. The network comprises springs, pumps, treatment, reservoirs and pipes. It distributes potable (drinkable) water to over 2,730 households, 4 large industrial plants and approximately 175 businesses. The network serves a resident population of 7,820 people (as recorded in the 2023 Census).

Kawerau's water is principally sourced from the Tarawera borefield and two springs: Umukaraka/Holland Spring located on the Tarawera Falls Road and the Pumphouse Spring on River Road. Water is pumped to three reservoirs, two on Monika Lanham Reserve and the third above Beattie Road.

The water supply network is split into two pressure zones. Water is then delivered to consumers by gravity. The Beattie Road reservoir supplies properties situated in the upper Valley Road area. The Monika Lanham reservoir supplies the balance of the town. Large users of water have metered supplies.

Council holds one resource consent from the BOP Regional Council for the provision of a town water supply from the three bores located at Tarawera Park. An application for a combined consent to take water from the two springs as well as from the borefield was submitted in 2024. **These stipulate the amount of water that is allowed to be taken and a maximum extraction rate.**

The key components of the supply network is listed in **Table 26** below:

Table 26: Key components

Population served	7,820
Number of properties connected	2,910
Length of reticulation (kms) – includes Grav/Riser mains	80
Number of pumping stations	2
Number of treatment plants	1
Number of water sources	3

OBJECTIVES OF ASSET OWNERSHIP

The goal of the Water Supply activity is to provide a quality water supply in sufficient quantities to meet the social, cultural, economic and environmental requirements of our community..

Council has a number of legislative responsibilities relating to the supply of water. One is the duty under the Health Act 1956 to improve, promote, and protect public health within the District. This implies that, in the case of the provision of potable water, Council has an obligation to identify where such a service is required and to provide it.

The activity involves:

Management of water supply assets and monitoring water quality.

Repairing or replacing unsound pipes, structures and plant.

Planning to meet future requirements and improving operations.

Council's principal objectives are:

- To ensure that the water supply network continues to provide a high quality water treatment and distribution service.
- To anticipate a time when it may be necessary to extend, upgrade or renew the existing water supply scheme, and to plan accordingly.
- To ensure the appropriate maintenance of the water supply network in perpetuity, to maintain its value, and to forecast the estimated future cost of maintenance.
- To put in place a sound management regime for all matters relating to the supply of potable water.

CONTRIBUTION TO COMMUNITY OUTCOMES

The Council Community outcomes to which the water supply activity primarily contributes are set out in **Table 27** below:

Table 27: Contribution to Community Outcomes

Contribution	Outcome
Provision of quality water; Maintenance of the water supply system.	Council infrastructure and services are accessible, age-friendly, effective, efficient and affordable, now and for the future.
Monitoring and compliance with drinking water standards and resource consents	Council regulates monitors and acts to protect public health and safety, to prevent harm and nuisance and to improve standards in Kawerau's home, commercial and public environments.

LINKS TO OTHER STRATEGIC DOCUMENTS

Public infrastructure supports activity that contributes toward the economic, social, cultural and environmental wellbeings of the community. In addition to water supply infrastructure, Council owns the stormwater and wastewater (sewerage) systems, the district's roads and footpaths, and its public parks, reserves, buildings and facilities. The parts that make up those networks and structures and the tools and equipment used to manage and maintain them, are Council's assets.

Council's four critical assets groups, Roading, Stormwater, Water Supply and Wastewater, 30 year planning is described in the Infrastructure Strategy.

Every three years Council develops a Long Term Plan which sets out the range and level of services it will provide to meet identified Community needs and community outcomes and indicates anticipated expenditure on assets for the next 10 years.

In the intervening years, Council adopts an Annual Plan, which contains the annual budget for Council services. Council's ability to deliver services and to do so at a reasonable cost depends on the condition, performance and risk profile of its assets.

In this way, Council's asset management planning is closely linked to its Infrastructure Strategy, Annual Plan and Long Term Plan.

This Asset Management Plan was developed in conjunction with the Kawerau District Council Long Term Plan 2025-2034. It will underpin and be integrated into the Long Term Plan, and subsequent Annual Plans.

SECTION THREE
Levels of Service

CUSTOMER LEVELS OF SERVICE

The National Research Bureau undertakes an independent survey to measure the level of customer satisfaction with the services provided by Council. The results of these surveys for the Water Supply Activity are shown below. The NRB Survey Results for 2023 is not currently available. Council's own survey in 2023 achieved a 40% Very/Fairly Satisfied result. This low result is primarily due to brown water in the water supply due to elevated manganese and iron content of the Pumphouse Spring. This issue has been resolved.

Table 28: NRB Survey Results – Water Supply

%	2008	2009	2011	2014	2017	2020	2023
Very/Fairly Satisfied	96	97	99	96	96	73	40
Not very Satisfied	4	3	1	3	4	26	60
Don't Know	-	-	-	1	0	0	0

Table 29: NRB Survey Results – Reasons Residents were not very satisfied

	2008	2009	2011	2014	2017	2020	2023
Poor quality of water/ contaminated	2	2	-	-	2	29	
Chlorine content	1	-	-	-	-	14	
Low pressure	2	2	1	2	1	0	
Having to pay for metered Water	-	-	-	1	0	0	
Bad taste	-	-	-	2	1	6	
Pipes need replacing	-	-	-	-	-	4	
Poor communication	-	-	-	-	-	2	
Water needs filtering	-	-	-	-	-	6	
Water restrictions	-	-	-	-	-	4	

TECHNICAL LEVELS OF SERVICE

Council will continue to monitor and report its actual performance against measures and targets described in the LTP. All reporting is done through quarterly reports to the Council by the Group Manager, Operations and Services.

Table 30: Technical Levels of Service (LOS)

LOS	Performance Measure
Provision of a quality water supply	>89% Community satisfaction (measured 3 yearly)
The total number of complaints received	Complaints per 1000 connections for each criteria: • Clarity - No more than 4 • Taste – No more than 2 • Odour – No more than 1 • Low Pressure – No more than 2 • Continuity of supply – No more than 2 • Council's response – Nil allowable
Safety of drinking water	Compliance with part 4 and 5 of the 2008 drinking-water standards.
Water supply and losses	Consumption <0.6 m^3 per resident per day and less than 200 litres/connection/day loss

Callout and fault response times	• Urgent call outs: 2 hrs attendance with 8 hrs resolution • Non-urgent call outs: 24 hrs attendance and 48 hrs resolution
Reliability of supply	Unplanned shutdowns: • Reticulation – No more than 12 • Pump stations – None • Water main breaks – No more than 8
Minimal environmental effects	Maintain compliance with resource consents conditions

WATER QUALITY

Water quality is ensured through the Kawerau Water Safety Plan. Drinking water supply is assessed against DWSNZ 2005(Revised 2018) and the Taumata Arowai rules. Compliance criteria 1 is for bacterial compliance criteria for water leaving the treatment plant, and criteria 6(a) is for bacterial compliance in the distribution network.

A "log 3 credit" requirement for the Kawerau UV treatment plant fed from the Tarawera Bores, Umukaraka/Holland springs source and the Pumphouse Spring source was confirmed in the 2017 by the drinking water assessor.

The P2 determinant for arsenic and cadmium were removed in 2017 and currently only lead levels is monitored.

CONSTRAINTS TO LEVELS OF SERVICE

The constraints that impact water supply network levels of service are shown in the table below.

Table 31: Constraints to Levels of Service

Constraint	Component	Comments
Capacity	Resource Consents	The maximum daily consent allowance is 12,000 m^3 per day If additional water is required, a new resource consent will need to be obtained.
	Treatment Chemical Storage	If additional water volume were required, more frequent delivery of chemicals would be required. There are no issues for current demand projections.
	Rising mains	There are no issues for current projected demand. Significant increase in water use would result in pressure drops and ultimately pipe replacement with increased capacity.
	Reservoirs	The design capacity complies with DWSNZ's 24 hours' demand storage. The capacity of reservoirs is 11,250m^3 and average daily use is currently 4110 m^3 day.
	Reticulation - normal demand	If pipe diameters are insufficient, low-pressure results. There are no low-pressure zones in the reticulation.

Constraint	Component	Comments
Reliability and Security of Supply	Sources	The main sources are from bores and springs; therefore supply from the source is unlikely to fail except during a major disruption such as seismic activity
	Treatment Plant Pumps	The treatment plant has two UV units and chlorine dosing equipment. One UV unit can treat sufficient water to meet winter and essential summer demands. There are three pumps, which supply sufficient volume to meet unrestricted community demand almost all year round. During midsummer, Council may request some restraint. A generator can be connected to pumps and the UV plant within eight hours in the event of a significant power outage.

Constraint	Component	Comments
	Rising Mains	Failure of the new 450mm Polyethylene rising main means a standby 375mm steel rising main will be used.
	Reservoirs	Failure of one of the two Monika Lanham reservoirs would reduce the storage capacity of the network by 20% - 40%. Failure of the Beattie Road reservoir means the residents in the Valley Road area would have less pressure. In addition, the storage capacity of the network would be reduced by 40%.
	Reticulation	The water supply network is typically a grid arrangement following the road layout; therefore, most consumer connections can be fed from two directions.
Environmental Performance		There are no known restraints on the water supply activity because of environmental limits.
Other Capabilities	Sources	The spring areas are fenced and head works are covered to minimise the likelihood of contamination. Treatment is undertaken to eliminate the impact of any contamination.
	Treatment	UV treatment and chlorination is critical to providing quality drinking water. The standby UV plant should eliminate instances where water is untreated.
	Reservoirs	The Beattie Road reservoir is slightly larger than required during periods of low water use. This can increase the risk of bacterial growth. This is reduced by dropping the level in the reservoir periodically during winter. Reservoirs that are not water and animal proof may allow contaminants to enter the water.
	Reticulation	Asbestos cement pipes have aged faster than expected and may fail during their expected life times. All asbestos cement pipes are being replaced in next 3 years.

RESOURCE CONSENTS

Council's current resource consent(s) are shown in the table below.

Table 32: Resource Consents

Consent No.	Source	Purpose	Daily volume able to be taken or discharged (m^3)	Expiry Date
20329	Tarawera Borefield, Cobham Drive	Providing a town water supply	12,000 m^3	30 June 2025

Under current resource consents, the maximum quantity of water that can be taken for town supply cannot exceed 12,000m^3 per day from a combination of the three sources. Council reports to the BOP Regional Council in accordance with the various conditions in the consents.

SIGNIFICANT ADVERSE EFFECTS

Council is unaware of any significant adverse effects that the water supply activity has on the social, economic, environmental or cultural well-being of the community. Current practices are not depleting the natural water resource, because the water that is used flows naturally from a spring.

By providing either an inadequate supply of water, or water of poor quality that does not meet required standards under the 2008 NZ Drinking Water Standards, could have negative effects to community social and economic wellbeing.

SECTION FOUR
Risk Management

RISKS

Physical Risks

Physical risks are generally:

As a result of the inevitable natural process of deterioration.

Because of actions of other parties working or travelling in the vicinity of the assets.

Because of natural disasters (most commonly earthquakes or flooding).

Durable materials, good workmanship, and careful planning will not always be sufficient to prevent physical damage by persons or natural disasters.

The Edgecumbe earthquake in 1987 caused minor damage to one of the reservoirs and affected the quality of the water for a period of time. However, no damage occurred to the network of pipes. This indicates that the current system has low risk from natural disasters.

Financial Risks

Financial risks are those that result in decreased cash flow and/or inability to afford the works that are required.

They include loss of a major ratepayer (requiring the fixed cost burden to be absorbed by the remaining ratepayers), failure to take advantage of any available subsidies and replacing assets before end of useful life, resulting in less than optimal life-cycle cost.

Health and Safety Risk

Health and safety risks arise as a result of physical actions or omissions of Council staff or contractors, or equipment failure. Health and safety risks are minimised by training staff and employing reputable contractors for maintenance and new works.

Environmental Risk

There are environmental risks consequential to the operation of the water supply network and/or physical actions or omissions of Council staff or contractors. These risks are managed by complying with the conditions of resource consents.

Regulatory Risk

The right of the BOP Regional Council to amend consent conditions during the term of consent represents a regulatory risk exposure to Council. However, change to a consent normally only occurs due to failure to meet existing consent conditions. The consequence of this change would be modified treatment practices, which could have capital and operational cost consequences. BOPRC would conduct significant dialogue with Council prior to actually amending conditions and there would normally be a timeframe within which to implement changes.

The special rights and status of Tangata Whenua in the resource consent process also represents a risk to Council. Council believes it can minimise this risk by maintaining cordial relationships with local Iwi.

There is also a risk of prosecution if Council fails to comply with legislation.

Security of Supply

Council does not own the land where the Umukaraka/Holland Springs water source is located.

RISK MITIGATION

Council actions taken to mitigate risks are set out in the table on the next page.

4.2.1.*Insurance*

Council has adequate insurance in place to cover the replacement and/or repair of buildings and other valuable assets in this group that are damaged due to disaster.

4.2.2.*Civil defence and emergency response plans*

Council has identified essential staff for recovering the water, wastewater and roading systems in the event of a civil defence disaster.

4.2.3.*Financial*

Council funds depreciation at a rate commensurate with the loss of life of the various asset components. This funding is invested until required for replacement.

Table 33: Risk Mitigation

Key Exposure	Class of Risk Probability	Residual Exposure Consequence	Mitigation
Physical			
Seismic Event	Medium	High	Earthquake design standards
			Spare capacity
			Special Insurance cover (LAPP scheme)
			Monitor spring water quality after EQ
			Bore fields can supply essential demands
			Water restrictions can be put in place
Flood Event	Low	Low	Storage capacity of reservoirs
			Valves can isolate breaks in pipes
Damage by Others	High	Moderate	Staff available 24/7
			Test water for contamination
			Head works and Pumphouse security fenced
Failure due to deterioration of assets	High	Low	Regular plant maintenance
			Staff available 24/7
			Water restriction will be put in place.
			Spare capacity at pump stations
			An asset replacement programme
			Standby generator available within 8 hours
			Pump maintenance programme
Firefighting demands during peak flow	Medium	Moderate	Domestic users to be alerted to quickly reduce consumption (upper Valley Road area)
Financial			
New large consumer	Moderate	Low	Regular meetings with development agency
			Not all available water used
			Developments take time, which allows negotiations to take place
			Developments require Council consent
Loss of large consumer	Moderate	Low	Regular meetings with large industries
			Plant can operate on lower flows efficiently
Loss of water source	High	High	Investigate options to secure ownership/supply
			Find another water source
Health and Safety			
Injury to persons or property due to operations	Low	Low	Health and safety practices in place
			Trained staff
			Insurance to cover costs
Sabotage	Low	Moderate	Plant security
			Robust plant
Injury to public	Low	Low	Access denied to treatment plant site
			Significant portion of asset underground

Key Exposure	Class of Risk Probability	Residual Exposure Consequence	Mitigation
Environmental			
Change of resource consent to reduce available water	Low	Moderate	No known other demand for spring water
			Close liaison with the BOP Regional Council
			Water for community supply a permitted activity under BOPRC water and land plan
Regulatory			
Regulations (changes) relating to the access and provision of drinking water	Moderate	Moderate	Awareness of DWS and best practice
			Regular monitoring
			Compliance with standards and conditions of consent
Security of Supply			
Unable to obtain water from source	High	Moderate	Negotiation with water sources not owned

SECTION FIVE
Future Needs

CURRENT CAPACITY

Sources

Current demand is within the supply capacities of the sources. Extraction from the two springs and the bore fields is limited to a maximum volume per day by resource consent and the treating capacity of the UV Treatment Plant. The maximum capacity that can be treated is 12,500 m^3 per day.

Reservoirs

Reservoir capacity is typically expressed as the number of days' supply at average or peak demand. The reservoir water levels are maintained between set points to minimise the number of times pumping is required each day to maintain pressure in the network and keep above minimum storage volumes. As demand increases, pumping for longer periods per day is required and then two pumps are used as demand increases further.

The three reservoirs provide 11,250 cubic metres of storage, which equates to 2.7 days of supply at the current average demand of 4110m^3 per day, and one day at current peak demand.

Reticulation

The existing reticulation is able to meet the demands of the community for volume except low pressure in places during summer daily peak demand times.

FUTURE DEMAND

Kawerau District has experienced and is expected to continue to experience low growth in demand for additional water supply services.

There are a number of vacant residential sections in the town. Even if these sections were occupied, the existing water supply network would cope with the additional demand.

The boundary between Whakatane and Kawerau districts was adjusted in 2012 with the subsequent development of a new industrial park on SH34 opposite the existing mill site. Industrial development commenced in 2018 with the construction of the Waiū dairy factory in June 2019. The extension of 2km of 150mm water main occurred in response to this development.

TRENDS

Population growth

In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite the predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

As is the case with the rest of NZ, the population is aging with an increasing fraction of the population receiving state funded superannuation and employment benefits. The average income is expected to remain lower than the national average and there will be an increased requirement for external funding to maintain the infrastructure in the future.

Table 34: Statistics NZ Population Projections – Kawerau District

Population Change 2006–2043 (NZ Stats)								
Projected Range	2006 *Census*	2013 *Census*	2018 *Census*	2023	2028	2033	2038	2043
High					8,410	8,650	8,830	8,970
Medium	6,921	6,363	7,460	8,420	8,000	8,020	7,970	7,860
Low					7,610	7,410	7,140	6,800

NEW CAPITAL REQUIREMENTS

Capital work has been carried out to improve water quality with the replacement of old water mains and the construction of the new pump station at the treatment plant.

The installation of the electronic controls and telemetry for the bores, the springs and all pump stations will provide additional resilience around supply volumes.

SECTION SIX
Lifecycle Management

CRITICAL ASSETS

Asset criticality is the relative risk of high cost arising from failure of that asset. Criticality is determined by the cost and risk of potential failures and the relative importance on the society and environment. Evaluating the different failure modes of critical assets determines what maintenance, capital expenditure and conditioning monitoring needs are.

In general, critical assets are maintained on risk management principles, whereas non-critical assets are maintained/renewed reactively (replace after fail).

Bores

The Tarawera bores are on Council owned land, fenced and protected in steel containers. This greatly reduces any contamination risks to the bores.

Springs

The two springs (Umukaraka/Holland and Pumphouse) are natural resources. Headworks consisting of rocks, wooden walls, plastic covers, pipes and coarse filters have been constructed to capture the water. The sites are fenced. This construction reduces the potential for contamination of the water from animals, birds and humans.

Both springs occasionally have detectable faecal coliform present. The springs are low in solids, have a low pH and are considered very pleasant to drink.

Pumps

Water from the bores and the springs are piped to the pump house treatment plant by gravity pipes. The water is then pumped to the two reservoirs in Monika Lanham Reserve from the pump house. One pump has sufficient capacity to meet normal winter demand, a second pump is used during high demand periods and a third pump is on standby.

The pumps were installed in 1968 and operated without significant problem. These 2 pumps were replaced in 2024 with a further 2 pumps being added to ensure sufficient backup.

There are also two in-line pumps (duty and standby) that transfer water from the reticulation to the Beattie Road Reservoir.

Water Treatment

Treatment of the raw water comprises:

pH correction involving caustic soda dosing to target levels of 7.0 – 8.5 pH.

UV treatment to destroy harmful micro-organisms in the source water before they enter the reticulation

Chlorination to a target level of 0.5 parts per million to safeguard the reticulation.

Reservoirs

There are three concrete reservoirs. The reservoirs store water at an elevation that gives an even pressure to users even when the flow varies. They store enough water so that faults in the pumps do not impact on water being available from the network.

Pipes

Pipes are used to transport water from the sources to the pump house, from pump house to reservoirs and from reservoirs to properties. There are approximately 7 km of pipes from the springs to the reservoirs, ranging in diameter from 250 mm to 450 mm. The reticulation comprises 73 km of pipes with diameters from 50 mm to 250 mm.

The diameters profile, age and materials of the pipes distributing water around the town is shown in *Figure 3* and *Figure 4*.

OTHER ASSETS

Telemetry

Water levels, flows, pumps operating, UV levels, chlorine, pH and other data are electronically monitored. If monitoring detects levels are outside set parameters, alarms are triggered and any problems rectified. Information can be remotely viewed by computer and is collected continuously and stored for analysis as required.

Valves

Valves are installed throughout the water supply network to enable sections of the pipe to be isolated for maintenance. The valves are predominantly gate valves and the diameter of the valve is the same as the pipe to which the valve is connected. There is an ongoing programme of refurbishing faulty valves when they are detected. Improving knowledge on the overall condition of the valves is part of the improvement plan.

Fire Hydrants

Fire hydrants are provided for firefighting purposes. Hydrant box covers are painted yellow and painted triangles are located at the road centre line. Blue reflective centre line markers have been installed as an additional indicator of hydrant position to assist with location at night.

The NZ Fire Service annually tests the hydrants for workability and flow. Remedial action is taken with non performing hydrants.

Service Connections

Each property is provided with a service connection to the water main outside the property. The connection consists of a length of pipe to the property boundary and a gate valve. Typically, the service connection is 20mm in diameter. The location of the service connection is noted by a white mark on the kerb.

Meters

There are approximately 50 properties that have water meters installed because of the potential to use above average quantities of water. The annual usage through water meters is in the region of 230,000m^3. Meters are read quarterly.

Backflow Preventers

All metered properties are fitted with backflow preventers. Low risk properties are fitted with non-testable devices. Large industries or industries with chemical or biological on-site risks are fitted with testable devices. Unmetered properties are being fitted with non-testable backflow preventers during the reticulation replacement works.

Generally speaking, all systems are in a reasonable state of repair, as they are maintained and renewed regularly. It is expected that the existing levels of service (pressure, volume) will continue for the medium to long term.

Buildings

Water supply buildings are the pump station structure, the caustic soda dosing structure and the UV and chlorine treatment plant building.

These are constructed of concrete block and are regularly maintained.

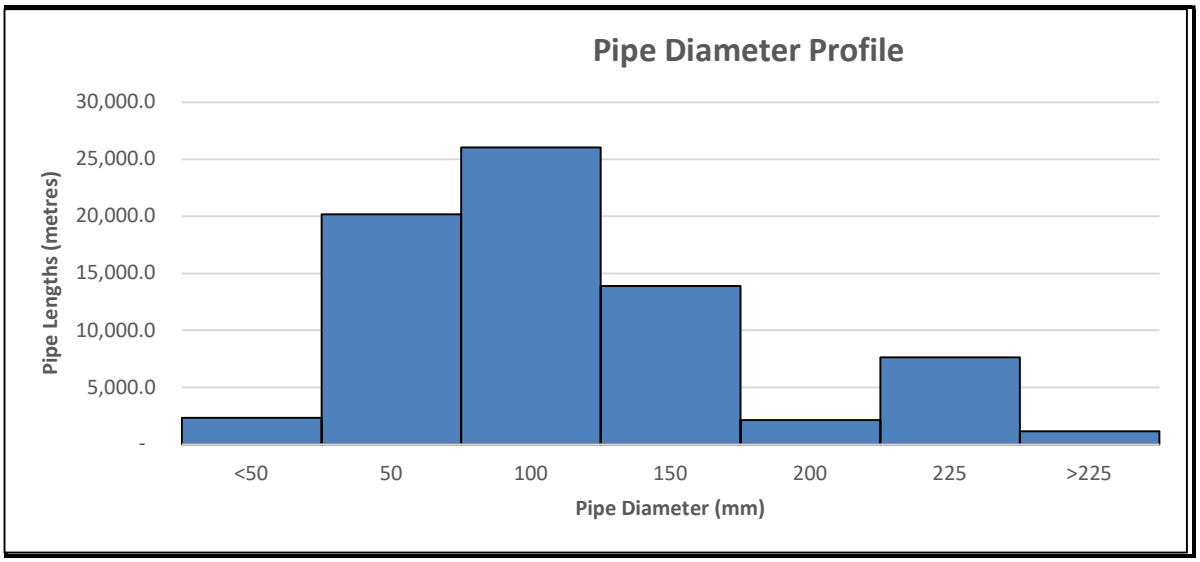

Figure 3: Diameter Profile of Water Supply Pipes

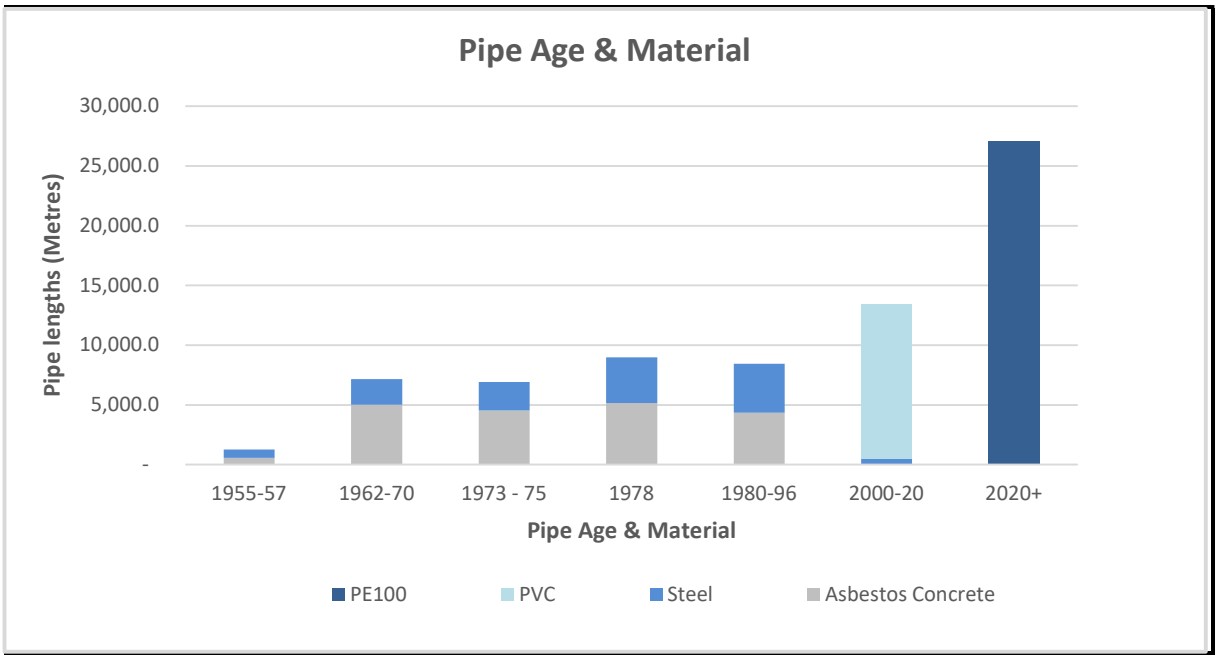

Figure 4: Age/Material Profile of Water Supply Pipes

ASSET DATA

6.3.1.*Material Type*

Pot holing of pipes in various locations around the town has been undertaken to determine the type of pipe material actually in the ground. This potholing information has been the basis for the data loaded into AssetFinda and forms the basis of the material types. While it is impossible to guarantee that every pipe has the correct material type recorded it is considered that the material type would have 98% accuracy.

Large scale water reticulation replacement is currently underway. The age material profile will be updated at the end of the programme. It is planned to replace all the asbestos concrete and the majority of steel pipes older than 1996.

6.3.2.*Pipe Diameter*

The pipe diameters in AssetFinda have been taken from the existing as built plans. Various cross checks have been undertaken to visually asses for glaring errors in the location of pipe diameters and there is considered a high level of confidence that the diameter in AssetFinda match those in the ground. It is estimated that the size of pipes in AssetFinda are in excess of 95% accurate.

6.3.3.*Asset Locations*

Data from as-built plans has been plotted in AssetFinda. This information has been visually checked to make sure there are no unusual results.

It is considered that the location and number of valves, hydrants and other features shown in AssetFinda is very accurate.

MAINTENANCE PLAN

General

Professional services that include maintaining and developing asset inventories, supervision and management of the network are generally provided by Council staff. Where necessary, specialist assistance with modelling, pipe ageing and asset planning is obtained from external consultants.

Regular activities include pipe repairs, pump maintenance, monitoring, attending customer queries, meter reading and valve maintenance.

Water quality sampling to drinking water standard DWSNZ 2008 is undertaken by an independent contractor.

Springs and Bores

Every day the springs and bores are checked to ensure site integrity has not been breached and flow rates are recorded. The coarse filters are cleaned weekly.

Pumps

The pump house pumps are inspected daily for any visible sign of malfunction. This includes looking for leaks and vibration. The pumps are greased on a weekly basis.

UV Treatment Plant

The pipe work in the UV treatment plant is inspected daily for leaks and the digital readout of the plant performance is checked daily.

UV lamps are monitored and replaced when required. Lamps are checked for cleanliness at predetermined cycle times and cleaned if necessary, to maintain performance.

Chlorine Treatment

Chlorine residual is maintained with the addition of chlorine gas. The dosing rate is setup manually to maintain a residual of 0.5 ppm for a constant flow system. The chlorine dosing system is inspected daily for any visible sign of malfunction.

pH Control

The pH of the water supply is monitored continuously. The recorded pH information is checked daily and caustic soda flow level adjustments made depending on results. The quantity of caustic soda is checked daily to ensure adequate dosing material is available. The caustic soda release valve and cylinders are checked daily.

The caustic soda system replaced the lime dosing plant in 2024 as it was seen as a better and safer method for correcting pH.

Telemetry

Telemetry is inspected periodically to ensure it is functioning properly and reviewed annually for long-term suitability and maintenance requirements.

Reservoirs

The tops of the reservoirs are inspected annually for locations where rainwater could enter the tank.

The two Monika Lanham reservoirs were identified as a potential contamination source post UV treatment. In 2016, the reservoirs were covered with tarpaulins to eliminate this risk. A decision was then made by Council to invest in a more robust form of internal and external waterproofing (Aquron 7000 sealing and crack/joint injection) than the previous asphalt roof sealing method; this was undertaken alongside the introduction of chlorine in 2018.

The two Monika Lanham reservoirs are cleaned 3-yearly to remove any lime build-up in the bottom of the reservoir. Lime has not build up in the Beattie Road reservoir.

Pipes

The network pipes are flushed annually by opening fire hydrants to increase water velocity in the pipes which flushes out settled material.

No preventative maintenance is carried out on the network pipes. Faults are repaired as reported and recorded in the Assetfinda database.

Valves

No preventative maintenance of valves is undertaken. If, during normal network shutdowns, malfunctioning valves are detected, they are refurbished (seals replaced, threads cleaned).

The negative impact of not having all valves fully operational is that some repairs may take longer than they should and more customers are impacted, as the shutdown will need to cover a larger area.

Fire Hydrants

The NZ Fire Service undertakes regular flow tests of hydrants in the network. Any that are difficult to operate or have low flows are either serviced or replaced.

Service Connections

No preventative maintenance is undertaken on service connections. Repairs are undertaken as faults are reported.

Water Meters

No preventative maintenance is undertaken. Meters are read quarterly and changes in flow are monitored. If significant changes occur, the meter is checked and repaired or replaced if found to be faulty.

Back Flow Preventers

The performance of back flow preventers is checked annually by an appropriately certified person in accordance with established national standards. Faulty equipment is renewed or replaced.

Buildings

The buildings are maintained when required and are in good condition. As they are constructed of concrete block they require minimal maintenance, and it is expected they will have a life of at least 50 years.

RENEWAL / REPLACEMENT

Except for Kawerau's town centre zone, which is an area of geothermal activity, pipes deteriorate in line with the National Asset Management Steering Group (NAMS) guidelines with some small variations in some areas where degradation was faster.

Council's objective is to maximise asset life without compromising service. Replacement decisions are based on the condition, reliability and maintenance cost and risk profile of an asset as well as its age.

Due to observed increase degradation of asbestos cement pipes and some steel pipes as well as the buildup of manganese in these pipes, it was decided in 2018 to replace all asbestos cement pipes and valves and steel pipes older than 1996.

New water reticulation zones was developed and used to replace the reticulation. Once the replacement program is completed, these new zones will replace the older reticulation zones which are also used for stormwater and wastewater reticulation.

Springs

The spring headworks have wooden retaining walls around rocks that allow water to flow from the ground and be collected. Failure will be gradual and will not interrupt the ability to use the water. The headworks for Umukaraka spring was rebuild in 2024.

Gravity main: Umukaraka Springs to Pumphouse

The pipe was installed in 1968, and testing undertaken in 2007. The pipe appeared to be deteriorating at the anticipated rate. The replacement of this pipe has been programmed to occur in 2037-39. The approximate cost of replacement is projected to be $4.2 million.

Bores

The bores are currently the main source of drinking water. The remaining life of the bore pumps is currently estimated at 25 years. The bore liners were inspected in 2016 and found to be in excellent condition. The bore headworks were rebuild in 2019 and their estimated life is t 60 years.

Rising Main: Monika Lanham Reserve Reservoirs

This is a critical asset and replacement involved laying an alternative pipe then decommissioning the existing one. While it was not expected to fail until after 2028/29, because the pipe is critical, replacement was undertaken in 2020/2021.

The existing rising main was replaced with a 450mm Polyethylene line. This new pipe can be used to supply water to the reservoir at 600m^3/hr. The 375mm Asbestos Cement line is the backup line and is capable to maintain flows of 530m^3/hr.

Reservoirs

The expected life of concrete reservoirs is 80 years. Examination of the reservoirs indicates they are in good condition and can be expected to outlive that expected life. Before altering the life in the asset register, an analysis of the concrete deterioration was required. Replacement of the three reservoirs is currently programmed to occur in 2034/35 ($2.0 million), 2058 ($2.0 million) and 2063 ($2.0 million) – at 2024 costs.

Pipes

The theoretical end of life of all pipes is based on the installation date and life expectancy. However, life expectancy can vary due to the following:

- Different lives for pipes of the same material but different diameters.
- Local ground conditions cause different deterioration rates.
- Quality of the pipe installed (different manufacturers produced different quality pipes.)
- Operating pressures etc.

Condition assessment undertaken in 2007, 2017 and 2018 determined that that overall, the deterioration rate for some pipes was faster than the National Asset Management Steering Group (NAMS) manual guidelines. Low pH weakens AC pipes by leaching cement from them. The pH value of the water was lower than the optimum level until lime dosing was commenced in 1997.

Lime dosing (replaced with caustic soda) is expected to reduce deterioration and have a detectable effect on the life of pipes installed after 1980.

A significant portion (19%) of the reticulation consist of steel or ductile iron. Sections of pipe installed in 1957 show deterioration levels that are fair and in line with National Asset Management Steering Group (NAMS) manual guidelines, while steel connections and fittings are showing significant deterioration.

Pipe replacement commenced in 2009 and it is planned to replace all the AC and steel pipes in 2021 - 2028. Pipe sizes are reviewed during renewal design. Issues such as existing flow problems and future demands

over the life of the asset are taken into account.

When pipes require replacement, it is most economical to replace the associated assets at the same time. Valves, fire hydrants and service connections are therefore renewed as part of the replacement programme.

The life expectancies used to calculate depreciated values are listed in Table 35.

Water Meters

Replacement is based on installation dates and a service life of 30 years.

Table 35: Asset Life Expectancies – Water Supply

Asset	Life Expectancy Years
AC pipes	70
PVC/PE pipes	80-100
Steel and ductile iron pipes	20-40
Concrete lined iron pipes	80
Valves	60
Telemetry	25
Meters (Bulk)	15
Pumps	25
Bores	60
Hydrants	60
Reservoirs	80
UV treatment plant - pipework	40
UV treatment plant – electronics	25

New Assets

A 2km extension to the water main was installed in 2018 along State Highway 34 for the supply of water to the Industrial/commercial development located to the north/east of town on the Putauaki block.

Additional lines and points being the result of two new residential subdivisions Porritt Glade and Central Cove are vested with Council.

Funding was subject to Council's financial contributions policy.

Deferred Maintenance

Currently there is no known deferred maintenance with the water supply network and the full service potential of the asset is being maintained. Council policy is to avoid any deferred maintenance.

Disposal Plan

There are no specific disposals identified in the Plan. Pipes that are no longer required or are replaced due to failure will not be retrieved as they have no value. Normally old pipes will be replaced by new pipes in the same location. If pipes are not replaced, they will be made safe in situ.

SECTION SEVEN
Financial Forecasts

FUTURE REQUIREMENTS

Table 36: Estimated Financial Requirements (includes inflation)

	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Expenditure									
Personnel costs	259,458	267,892	275,364	282,595	289,346	295,616	301,886	307,916	313,706
Materials	476,505	405,864	416,729	514,804	442,266	455,340	463,314	476,036	577,007
Internal charges	351,760	361,080	370,400	378,720	386,700	394,680	402,660	410,640	418,300
Overheads	323,190	311,510	310,450	348,440	331,800	330,120	336,070	349,890	370,650
Interest	455,000	585,000	715,000	845,000	910,000	910,000	910,000	910,000	910,000
Depreciation	703,195	743,093	850,874	879,344	881,508	963,403	965,337	969,252	1,045,739
	2,569,108	**2,674,439**	**2,938,817**	**3,248,903**	**3,241,620**	**3,349,159**	**3,379,267**	**3,423,734**	**3,635,402**
Asset renewals	2,228,836	3,985,552	2,798,410	2,842,120	211,490	183,110	187,950	386,120	197,170
Loan Principal	70,000	90,000	110,000	130,000	140,000	140,000	140,000	140,000	140,000
	4,867,944	**6,749,991**	**5,847,227**	**6,221,023**	**3,593,110**	**3,672,269**	**3,707,217**	**3,949,854**	**3,972,572**

Table 12: Estimated Asset Renewals (in todays $)

	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Headwork	-	8,900	-	-	56,300	-	-	17,100	-
UV Plant/Chlorine	30,836	562,750	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Pump Station	60,000	16,600	21,700	-	-	-	-	-	-
Valves & Hydrants	88,000	88,000	524,000	88,000	67,100	88,000	88,000	226,500	88,000
Laterals/Tobies	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Pipes	2,000,000	2,000,000	2,330,000	2,340,000					
	2,228,836	**2,726,250**	**2,940,700**	**2,493,000**	**188,400**	**153,000**	**153,000**	**308,600**	**153,000**

FUNDING POLICY

The Revenue and Financing Policy sets out how Council's activities are funded. This policy has been developed to meet the requirements of the Local Government Act (LGA) 2002.

Council has broken its business down to activity level. In general, Council has assessed the availability of an activity as a public benefit and the use of an activity as a private benefit.

'Availability' relates to the costs incurred to keep a service or asset in such a condition that it can become operational within a short start-up period (e.g. maintaining the water network even if it was not used, renewing assets).

'Use' relates to costs incurred as a result of the asset being used (e.g. chemicals and electricity).

Distribution of Benefits

The water supply network is a benefit to the district as a whole as well as users that are connected to the service. The costs of having the network available is a public good and recoverable from all ratepayers through the general rate. The estimated "use" cost is recovered from those connected to the network through a targeted rate.

When Benefits Accrue

Council has identified a substantial intergenerational component (i.e. benefits arise over time). The water supply infrastructure has a long life, so more than the current generation of ratepayers benefit. Therefore, Council wishes to ensure that future ratepayers meet some of the cost. This can be achieved by the funding of depreciation over the life of the assets.

Funding Sources

Water supply is 85% funded from general rates and targeted rates to properties connected to the network 15%

As the depreciation reserves grow, increased interest revenue from the investment of these reserves lowers the amount of depreciation funding that is required from General Rates. Inflation figures are provided by BERL, and used to determine the revaluation of the asset figures on a three-yearly cycle.

Distribution of Benefits

The mix of a targeted rate and the general rate is considered to reflect both the benefit to individuals that have water supply, and the community, which benefits from the water supply being publically available.

Costs and Benefits of Separate Funding

Running a Council funding system has costs involved with assessment and collection of revenue. In making funding decisions, Council must consider whether the activity should be funded from a separate source (most commonly a user charge or targeted rate).

The Local Government Act specifically mentions cost efficiency and transparency (in other words, whether or not people will be able to relate the charge to the activity that it is funding). The benefits of a transparent charge to users of the water supply outweigh the costs of having a uniform annual charge for this activity.

Funding Source

Water distribution is funded from general rates, uniform targeted rate and water by meter charges (for the high water users with water meters).

VALUATION

The water supply network infrastructure is valued by a competent valuer on a three yearly valuation cycle. Assets are valued at fair value determined on a depreciated replacement cost basis. The most recent revaluation is effective as at 30 June 2022.

Asset basis of valuation

Valuation of water assets are done on the following basis:

Table 13: Valuation Basis – Water Assets

Asset Type	Valuation Basis
Land	Market value
Buildings	DRC
Plant	ODRC
Reticulation	ODRC

The Depreciated Replacement Cost (DRC) refers to today's cost of replacing the asset with the same or a similar asset and depreciated over the life of the asset.

The Optimised Depreciated Replacement Cost (ODRC) refers to today's cost of replacing the asset with another asset that provides the same level of service most efficiently and depreciated over the life of the asset to reflect its current value and remaining economic life. The optimised replacement cost assigned to each asset has been determined by suitably qualified and experienced professional persons and has been peer reviewed.

Expenses

Maintenance costs and operating costs are expensed in the year they are accrued. The capitalisation threshold for water assets has been set at $1,000 or the actual value of individual components where they are identified by AssetFinda.

Changes in asset valuation

The costs associated with renewing assets and providing new or improved asset infrastructure are capitalised and depreciated in accordance with the assessed economic life of each asset. This applies also, where a developer provides infrastructure to be taken over as public assets by Council.

Assets are recorded at fair value determined on a depreciated replacement cost basis by an independent valuer. The most recent valuation is as at 30 June 2022.

Capitalisation Threshold

The following definitions are used for asset management purposes and the financial treatment is summarised below:

Maintenance is work done that is of an operational nature that can contribute to the asset life reaching its maximum potential but neither increases the value nor extends the remaining life of any asset.

Renewal is work done to replace an existing asset. The cost of replacement must be recorded as a capital expenditure, be greater than $1,000 and recorded in the asset register as a new asset with a unique identifier.

If the asset replaced is discarded or sold, it must be removed from the asset register and any residual value must be formally written off.

An addition to the asset register is required when a new asset is created with a value exceeding $1,000. A new asset must be uniquely identified, and recorded in the asset register. The record in the asset register requires an assessment of the asset's remaining life expectancy (based on straight-line depreciation or estimated remaining life).

Where the asset register recognises an individual component worth less than $1,000, or where a length of pipe greater than 12 metres is replaced, the threshold does not apply and the additional value is capitalised.

KEY ASSUMPTIONS

The current valuation and renewal profiles are based on data currently available.

Asset condition

In the case of water pipelines, the condition is taken as being directly related to its age unless the testing done in 2007 indicates otherwise. The testing of samples from repairs on pipes provides additional information.

Replacement cost

The projected replacement costs and depreciated values shown in the table below have been derived from Council's asset register. Further work identified in the improvement plan, will be carried out to verify the condition of the assets and the potential need for future replacement.

Table 14: Replacement Costs and Depreciated Values

Asset Type	Gross Replacement	Depreciated Replacement
Supply & treatment	$2,173,980	$1,035,900
Storage	$13,730,980	$4,023,950
Distribution	$19,574,450	$8,036,080
TOTAL	**$35,479,410**	**$13,095,930**

Council's practice for calculating pipeline replacement costs is:

- All pipeline replacement would be carried out using Polyethlene pipe.
- The construction environment is brown field (replacement of existing rather than green field construction.
- Unit rates for replacement are derived from the latest valuation of assets.
- Replacement of pipes includes valves, fittings, and house connections. Unusual pipe sizes will be replaced with the next size up.
- No optimisation or efficiencies in pipe size or lengths have been allowed for in replacement costs

Depreciated value and life expectancy

Straight-line depreciation has been adopted for all above ground assets. The life expectancies shown in Table 10 were used to calculate depreciated values.

The town centre area of Kawerau has geothermal activity. The heat and chemicals present significantly shorten the fibre cement pipe life as well as other materials in this area.

Pipes in the geothermal area have an estimated life half that of similar assets in other areas.

It is accepted that the above approach requires improvement, because for some assets, the actual need for replacement is out of step with the theoretical depreciation. The improvement plan includes steps to make the valuation and renewal projections more robust.

Population

Further sustained decline in population as predicted by Statistics NZ could seriously erode the rating base of the District, placing a higher burden on the remaining residents for any infrastructure upgrades and possibly affecting capacity to fund renewal works. Population trends must therefore be reviewed as frequently as reliable data can be obtained.

Other assumptions

All expenditure is stated in 2022 values, with allowance made for the inflation over the planning period.

All costs are GST exclusive.

Operational costs are generally shown to increase in relation to inflation.

Renewal costs are based on anticipated replacement requirements.

The costs of insurance and risk mitigation are included in the forecasts.

Climatic and other environmental trends are expected to continue as they have in the recent past.

The plan provides scope for some growth in industrial/commercial demand.

Development Contributions

Section 106 of the Local Government Act 2002 requires local authorities to adopt development contributions or financial contributions policies.

Spare capacity in Council's infrastructure means it can cope with some growth. Therefore, Council does not need to extend infrastructure to cope with increasing demand.

Council's policy is to not assess development contributions but to retain the provisions of the District Plan that allow the assessment of financial contributions.

Financial Contributions

New subdivisions or developments may require the extension of Council infrastructure networks for water supply, wastewater disposal and roading. Council's financial contributions policy provides that the cost of these extensions is the responsibility of those who create the demand. Subdividers and developers would be required to make financial contributions to meet the full cost of additional infrastructure necessary to support their subdivision or development.

SECTION EIGHT
Systems & Processes

Responsibilities for Asset Management Outcomes

The Engineering Manager is responsible for the development of this asset management plan, including maintaining the integrity of Council's asset information.

The Engineering Manager is also responsible for the identification, budget, planning, programming and undertaking of works required for the maintenance and renewal of Council's Water Supply assets.

The Group Manager, Finance & Corporate Services is responsible for providing an overview of the development of this asset management plan, for ensuring that future projects are incorporated in Council's Long Term Plan and that there is consistency between these documents.

The Group Manager, Operations and Services is responsible for delivering the outcomes for the Water Supply activity. This includes ensuring that the assets are maintained and operated to Council's requirements, that adequate budgeting for maintenance, operating and improvement costs are provided.

Accounting and Asset Management Systems

Billing/Accounting system

Council uses the Ozone software for its accounting and billing systems. It does not store or compute asset management information, but can be used to determine the number of connections to the water supply and the number of properties billed for separate water supply rates.

All formal asset management financial reporting including valuation is currently held in Excel spreadsheets.

This is being migrated into the AssetFinda system.

AssetFinda

AssetFinda is the software used to manage and produce asset inventory reports. It is integrated with 'Map Info' data tables to permit input, querying, reporting and financial modelling using the asset register data. The spatial location of the water supply assets can be laid over aerial maps, property boundaries along with wastewater and stormwater assets.

The software has yet to have financial data added to allow financial modelling for current replacement and depreciation value reporting.

New assets information (location, installation date, materials' construction etc.) is entered into AssetFinda at the time the asset is installed.

The default valuation process used by AssetFinda is capable of recognising asset condition, extending the life of an asset and recalculating revised depreciation value and annual depreciation.

The improvement plan proposes that the appropriate financial information be entered into AssetFinda.

Hard copy plans

Layout details of the pipes and structures are available for most of the water supply asset.

Attaching information like pump performance, type etc. to assets is a desirable improvement. Also linking photographs and 'as built' drawing to the asset will improve the data.

Key Information Flows and Processes

Key information flows and process linkages include:

Translating the Community Outcomes into detailed levels of service that can be embodied into Asset Management Plans

Preparation of annual budgets, and ongoing reporting

Updating asset data as information becomes available through maintenance and service repairs

Ongoing compliance monitoring and reporting of environmental performance

Ongoing management of the asset to ensure that service levels are maintained

Quality management

Quality management is governed by the requirements of DWSNZ 2005. This involves a comprehensive programme of water sampling and testing at source, treatment point and the distribution system. The testing programme provides assurance that the water quality is satisfactory.

Sampling points and frequencies are agreed with and all test results provided to Toi Te Ora Public Health. These results, information about maintenance processes and the public health risk management plan are used to determine the water supply grading.

Maintenance

Maintenance is carried out reactively for most asset faults. The criteria that will result in renewal rather than further maintenance are:

Is the asset important for maintaining service levels and have the service levels in the current year already been compromised by failures? If yes, consider renewal.

What has been the failure history? If the current failure is part of a series, then consider renewal.

Is the cost of the maintenance comparable to the cost of renewal? Where repair costs are high (e.g. reinstatement of road pavement) then consider renewing a logical minimum quantity of asset to prevent further expensive repair costs.

Will maintenance preserve asset life? If yes, then carry out maintenance.

Policies for renewing assets

Replacing network components with larger components to improve capacity is treated purely as renewal capital expenditure. This is because the additional cost of larger components is not material compared with the renewal cost of component of the same kind.

Renewal

Renewal of assets will occur in accordance with practice described in each section of this document.

Constructing new assets

Following many years of no demand for additional capacity, recent land developments for industry and residents have resulted in the need for additional new assets. Funding to provide additional capacity would be treated on its merits, but in most cases, the funding would be sought from the developers/subdividers.

Assets vested in Council

Subdivisions include water supply networks. These are installed at subdivider's expense to approved Council standards and then vested in Council.

'As built' new works occur either due to subdivisions, or the installation of new assets. In both instances, detailed records of new works are obtained. These new assets are added to the AssetFinda database.

Asset disposal

Most of the components are essential to continuing provision of the service. Extensive decommissioning and disposal is very unlikely.

SECTION NINE
Monitoring Improvement Planning

Asset Management Performance Measures

The broad objectives of asset management are:

- To optimise the life of the assets
- To minimise life cycle costs
- To maintain agreed levels of service

Although it is possible to measure the success or otherwise of the asset management activity over the long term against the three criteria above, it will obviously be difficult to measure success or otherwise in the short term in a way that management control can be exerted. For example, it will be impossible to determine whether the life of a facility has been "optimised" until the actual age nears the expected life and a remaining life assessment can be meaningfully carried out.

An assessment of the asset knowledge and processes currently carried out, in terms of "best practice for a NZ authority of this size" provides an indication of how well Council is likely to be meeting these long-term objectives. This assessment is therefore part of the Improvement Plan. It should include evaluation of the monitoring of operations and costs to provide information on the achievement of service level (both public measures and technical standards). It should cover previously planned improvement actions, noting whether these have been achieved and how they are contributing to current processes. It should check how the initiatives undertaken are 'rolled out' from asset management staff to those carrying out the work, and how carefully field information is recorded and returned to add to the asset knowledge case.

Improvement Actions

Table 15: Improvement Actions

Improvement Item	Comment	By When	By Whom	Cost
Expand knowledge of AssetFinda functionality	Training staff (EM & 3WE)	Ongoing improvement	GMOS	$5,000
Maintain AssetFinda database	Three Waters Engineer recruited and being trained	Annually	EM	$35,000
Review asset life expectancy	Test pipes and manholes for deterioration	June 2025 and triennially thereafter	EM & Ops staff	$10,000
Conduct asset revaluations	Up to date	June 2025 and annually thereafter	GMFCS	$5,000

EM = Engineering Manager

3WE = Three Waters Engineer

GMOS = Group Manager Operations and Services

GMFCS = Group Manager Finance and Corporate Services

Monitoring and Review Procedures

The Leadership Team will monitor and review improvement items on a six monthly basis. This plan will be reviewed annually as part of annual plan development.

SECTION TEN
Appendices

APPENDIX A - DETAILED ASSET DESCRIPTION

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
Reservoirs and Booster Pumps				
BOOSTER STATION (BEATTIE ROAD)	GRUNDFOS SP160-2 BOOSTER PUMP	MECHANICAL	1	2025
BOOSTER STATION (BEATTIE ROAD)	GRUNDFOS SP160-2 BOOSTER PUMP	MECHANICAL	1	2002
BOOSTER STATION (BEATTIE ROAD)	CONTROL	ELECTRICAL	1	2025
BOOSTER STATION (BEATTIE ROAD)	CONTROL CABINET	STEEL	1	2017
BOOSTER STATION (BEATTIE ROAD)	STRUCTURE	CONCRETE	1	2000
VALVES & FITTINGS	150MM REFLUX VALVES & PRESS. GAUGES	METER	4	1968
VALVES & FITTINGS	KENT 375MM DALL TUBE	METER	1	2025
VALVES & FITTINGS	250MM LEEDS METER	METER	1	2025
CONTROL	CABLING	ELECTRICAL	1	2025
BRIDGE	PIPE BRIDGE 60m	STEEL	1	2018
CONTROL	TELEMETRY	ELECTRICAL	1	2017
CONTROL	WATER LEVEL PROBES	ELECTRICAL	3	2025
CONTROL	WATER LEVEL ALARM	ELECTRICAL	1	2017
VALVES & FITTINGS	450MM ANNUBAR (PROP)	MECHANICAL	1	2017
VALVES & FITTINGS	300MM ANNUBAR (PROP)	MECHANICAL	1	2017
TRUNK MAIN - GRAVITY	450	ASBESTOS CEMENT	3,200	1968
TRUNK RISING MAIN - Backup	375	ASBESTOS CEMENT	1,220	1968
TRUNK MAIN - GRAVITY	300	ASBESTOS CEMENT	361	1968
TRUNK MAIN	250	ASBESTOS CEMENT	390	1968
TRUNK MAIN	150	ASBESTOS CEMENT	80	1968
TRUNK GRAVITY/RISING MAIN (225mm)	225	ASBESTOS CEMENT	1,670	1971
TRUNK RISING MAIN	225	PE100	1,220	2021
TRUNK MAIN - GRAVITY	300	PE100	361	2024
VALVES & FITTINGS	450MM SLUICE VALVES	VALVE	2	2021
VALVES & FITTINGS	375MM SLUICE VALVES	VALVE	2	1968
VALVES & FITTINGS	375MM SLUICE VALVES	VALVE	2	2024
VALVES & FITTINGS	375MM REFLUX VALVES	VALVE	1	2024
VALVES & FITTINGS	300MM SLUICE VALVES	VALVE	5	1968
VALVES & FITTINGS	300MM SLUICE VALVES	VALVE	5	2024
VALVES & FITTINGS	200-225MM SLUICE VALVES	VALVE	10	1968
VALVES & FITTINGS	150MM SLUICE VALVES	VALVE	12	1968
VALVES & FITTINGS	150MM REFLUX VALVES	VALVE	3	1968
VALVES & FITTINGS	100MM SLUICE VALVES	VALVE	9	1968
VALVES & FITTINGS	AIR VALVES (GRAVITY FEED MAIN)	VALVE	4	1968
VALVES & FITTINGS	100MM BACK PRESSURE RELIEF VALVE	VALVE	1	2021
VALVES & FITTINGS	300MM SINGER ALTITUDE VALVE	VALVE	1	1968
RESERVOIR	2,250,000 Litre	REINFORCED CONCRETE	1	1955
TRUNK MAIN (100mm)	100	ASBESTOS CEMENT	80	1966
RESERVOIR	4,500,000 Litre	REINFORCED CONCRETE	1	1978

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
RESERVOIR	4,500,000 Litre	REINFORCED CONCRETE	1	1983
BULK METERS AT RESERVOIR	BULK METER	BULK METER	2	2011
BULK METERS AT RESERVOIR	BULK METER	BULK METER	1	2024

ASSET	DESCRIPTION	MATERIAL	QTY (Metres)	YEAR
Pipes	**(mm)**			
WATER (ALL ZONES)	<50mm	F-STEEL	297.8	1957 -2007
WATER (ALL ZONES)	<50mm	AC	392.9	1957-2007
WATER (ALL ZONES)	<50mm	PVC	363.2	2003-20
WATER (ALL ZONES)	<50mm	PE100	1,270.0	2021-25
WATER (ALL ZONES)	50mm	F-STEEL	9,631.0	1957 -2007
WATER (ALL ZONES)	50mm	AC	617.6	1957-2007
WATER (ALL ZONES)	50mm	PVC	3,091.9	2003-20
WATER (ALL ZONES)	50mm	PE100	6,820.9	2021-25
WATER (ALL ZONES)	100mm	F-STEEL	1,054.8	1957 -2007
WATER (ALL ZONES)	100mm	AC	7,931.5	1957-2007
WATER (ALL ZONES)	100mm	PVC	6,022.6	2003-20
WATER (ALL ZONES)	100mm	PE100	11,026.3	2021-25
WATER (ALL ZONES)	150mm	F-STEEL	2168.2	1957 -2007
WATER (ALL ZONES)	150mm	AC	3,954.0	1957-2007
WATER (ALL ZONES)	150mm	PVC	2,340.3	2003-20
WATER (ALL ZONES)	150mm	PE100	5,424.9	2021-25
WATER (ALL ZONES)	200mm	F-STEEL	110.2	1957 -2007
WATER (ALL ZONES)	200mm	AC	1,319.5	1957-2007
WATER (ALL ZONES)	200mm	PVC	679.7	2003-20
WATER (ALL ZONES)	200mm	PE100	0	2021-25
WATER (ALL ZONES)	225mm	F-STEEL	191.2	1957 -2007
WATER (ALL ZONES)	225mm	AC	4,773.1	1957-2007
WATER (ALL ZONES)	225mm	PVC	384.7	2003-20
WATER (ALL ZONES)	225mm	PE100	2,290.7	2021-25
WATER (ALL ZONES)	>225mm	F-STEEL	98.3	1957 -2007
WATER (ALL ZONES)	>225mm	AC	772.6	1957-2007
WATER (ALL ZONES)	>225mm	PVC	0	2003-20
WATER (ALL ZONES)	>225mm	PE100	283.2	2021-25

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
ASSET	**DESCRIPTION**	**MATERIAL**	**QTY**	**YEAR**
Valves				
VALVES - DISTRICT WIDE	25mm Cast	CAST IRON	18	1957-2023
VALVES - DISTRICT WIDE	37mm Cast	CAST IRON	10	1957-2023
VALVES - DISTRICT WIDE	50mm Cast	CAST IRON	291	1957-2023
VALVES - DISTRICT WIDE	100mm Cast	CAST IRON	194	1957-2023
VALVES - DISTRICT WIDE	150mm Cast	CAST IRON	88	1957-2023
VALVES - DISTRICT WIDE	225mm Cast	CAST IRON	35	1957-2023
VALVES - DISTRICT WIDE	450mm Cast	CAST IRON	2	1968
VALVES - DISTRICT WIDE	100mm Brass	BRASS	13	2020
VALVES - DISTRICT WIDE	100mm PE	PE	3	2020
VALVE – TARAWERA BORES	Modulating Valve	CAST IRON	1	2024
SAMPLING & METER BOX - DISTRICT		CAST IRON	1	2024
RISER MAIN VALVES	150mm Cast	CAST IRON	2	2020
RISER MAIN VALVES	225mm Cast	CAST IRON	9	2020
RISER MAIN VALVES	300mm Cast	CAST IRON	6	2020
RISER MAIN VALVES	500mm Cast	CAST IRON	3	2020
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm – Zone 2 & 3	PE	556	2024
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm – Zone 1	PE	148	2022
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm – Bell St	PE	109	2020
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm – Zone 0	PE	386	2010
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm – River Road	PE	308	2023
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm - Districtwide	Steel/Copper/Brass	1551	1977
FIRE HYDRANT – Piripiri/Tiwhatiwha		CAST IRON	5	2020
FIRE HYDRANT – River Road		CAST IRON	33	2023
FIRE HYDRANT – Zone 00		CAST IRON	22	2010
FIRE HYDRANT – Bell St		CAST IRON	21	2021
FIRE HYDRANT - Zone 1		CAST IRON	21	2022
FIRE HYDRANT – Zone 2 & 3		CAST IRON	38	2023
FIRE HYDRANT – Zone 4		CAST IRON	23	1985
FIRE HYDRANT – Zone 5		CAST IRON	24	1963
FIRE HYDRANT – Zone 6		CAST IRON	23	1957-2006
FIRE HYDRANT – Zone 7		CAST IRON	36	1973
FIRE HYDRANT – Zone 8		CAST IRON	34	1978
Headworks				
PUMPHOUSE#1	PUMP CONTROLS	ELECTRICAL	1	2025
HOLLAND SPRINGS	COLLECTION BOX 25x 5x 9M	TIMBER	1	1965
HOLLAND SPRINGS	COLLECTION BOX 25x 5x 9M	TIMBER	1	2021
HOLLAND SPRINGS	FLOW RESTRICTOR	MECHANICAL	1	2022
HOLLAND SPRINGS	FLOW RESTRICTOR/WEIR/METER	MECHANICAL	1	2024
HOLLAND SPRINGS	SECURITY FENCING	TIMBER	60	2000
PUMPHOUSE#1	SECURITY FENCING	POST/WIRE FENCE	60	2010
PUMPHOUSE#1	GARAGE DOOR	COLOUR STEEL	1	2021

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
WATER TREATMENT (PUMP HOUSE #1)	CONTROL	ELECTRICAL	1	2024
WATER TREATMENT (PUMP HOUSE #1)	Potable water system	MECHANICAL	2	2014
WATER TREATMENT (PUMP HOUSE #1)	WATER & CHEMICAL ANALYSER	MECHANICAL	1	2023
PUMPHOUSE #1	PUMP #1 AND MOTOR HARLAND 125HP	MECHANICAL	1	2021
PUMPHOUSE #1	PUMP #2 AND MOTOR HARLAND 125HP	MECHANICAL	1	2021
PUMPHOUSE #1	PUMP #3 AND MOTOR HARLAND 125HP	MECHANICAL	1	2021
PUMPHOUSE #1	PUMP #4AND MOTOR HARLAND 125HP	MECHANICAL	1	2021
PUMPHOUSE #1	AUTO STOP/START LEVEL CONTROLS	ELECTRICAL	1	1998
PUMPHOUSE #1	CABLING	ELECTRICAL	1	2024
TARAWERA PARK BORE SITE	PLEUGER Q82-2+V6-64 (33,000 G/HR)	MECHANICAL	1	2017
TARAWERA PARK BORE SITE	PLEUGER Q82-2+V6-64 (33,000 G/HR)	MECHANICAL	1	2018
TARAWERA PARK BORE SITE	PLEUGER Q82-2+V6-64 (33,000 G/HR)	MECHANICAL	1	2018
TARAWERA PARK BORE SITE	FLOW AND PRESSURE MEASUREMENT	MECHANICAL	1	2021
TARAWERA PARK BORE SITE	CONTROL EQUIPMENT	ELECTRICAL	1	2021
TARAWERA PARK BORE SITE	TELEMETRY	ELECTRICAL	1	2023
TARAWERA PARK BORE SITE	24V UPS	ELECTRICAL	1	2021
TARAWERA PARK BORE SITE	BORE 1 7M X 150MM	WELL	1	2021
TARAWERA PARK BORE SITE	BORE 2 7M X 150MM	WELL	1	2021
TARAWERA PARK BORE SITE	BORE 3 10M X 150MM	WELL	1	2021
TARAWERA PARK BORE SITE	Reline existing bore & value - Nil additional asset	WELL	1	2023
TARAWERA PARK BORE SITE	BORE SHUTOFF VALVE	VALVE	1	2021
HOLLAND SPRINGS	WEIRS	REINFORCED CONCRETE	3	2024
PUMPHOUSE #1	WETWELL INTAKE MANIFOLD	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	WETWELL	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	COLLECTION CHAMBER 5M X 3M X .9M	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	WEIR	REINFORCED CONCRETE	1	1968
TARAWERA PARK BORE SITE	CONTROL SHED	CONC BLOCK	5	2017
WATER TREATMENT (PUMP HOUSE #1)	SEALED YARD	PAVEMENT	1	1997
PUMPHOUSE #1	UV PLANT CONTROLS	ELECTRICAL	1	2017
PUMPHOUSE #1	UV PLANT CONTROLS - 2020	ELECTRICAL	1	2020
PUMPHOUSE #1	UV PLANT CONTROLS - 2021	ELECTRICAL	1	2021
PUMPHOUSE #1	UV PLANT	MECHANICAL	1	2002
PUMPHOUSE #1	UV Plant - 2022	MECHANICAL	1	2022
PUMPHOUSE #1	UV Plant - 2024	MECHANICAL	1	2024
PUMPHOUSE #1	UV PLANT PIPEWORK	GALVANISED IRON	1	2002
WATER TREATMENT (PUMP HOUSE #1)	CHLORINE DOSING PLANT	MECHANICAL	1	2018
WATER TREATMENT (PUMP HOUSE #1)	CHLORINE DOSING - PUMP (SPARE)	MECHANICAL	1	2023

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
WATER TREATMENT (PUMP HOUSE #1)	CAUSTIC SODA DOSING SYSTEM	MECHANICAL	1	2024
WATER TREATMENT (PUMP HOUSE #1)	FLUORIDE & LIME DOSING PLANT	MECHANICAL	1	2024

APPENDIX B - WATER AND SANITARY ASSESSMENT

1 Risks to the Community relating to the absence of a water supply

All, but two houses (on farm block) and all businesses within the Kawerau District are connected to Council's water supply network.

2 Quality and adequacy of supply of drinking water available within the District

The principal issue affecting the supply of potable water is the biological cleanliness of the water.

The supply is not considered a "secure" supply as defined by the Drinking-Water Standards for New Zealand 2005 (DWSNZ 2005), due to historical detection of faecal coliforms in the source water and the inability to prove that the water has been underground for more than 12 months or is not directly affected by surface or climate influences in the environment. Contaminations, when detected, are treated with chlorine.

The reticulation is split into two pressure zones and is supplied through a network of pipes after being pumped to the three reservoirs. There is a strict treatment regime in place. The supply (source and reticulation) is monitored for microbiological and chemical indicators.

3 Current and estimated future demands for water services and issues relating to the quality and adequacy of supply of drinking water

Kawerau District has, and is expected to continue, to experience low growth in demand for additional water supply services. There are a number of vacant residential sections in the town. Even if these sections were occupied, the existing water supply network would cope with the additional demand. The boundary between Whakatane and Kawerau districts was adjusted in 2012 to create a new industrial park on SH34 opposite the existing mill site. Some industrial development has occurred there, and it is hoped more will occur.

Growth is monitored on an ongoing basis to determine any impending additional demand on water supply services.

4 Options available to meet the current and future demands and suitability for Kawerau

Capacity

Current growth predictions mean that there are no proposed new water pipes in the Long Term Plan. Any subdivision will be required to install appropriate water systems before they are handed over to Council. The Council's renewal programme for water infrastructure assets as outlined in Council's Long Term Plan will meet current and future demands.

Quality

The treatment plant meets the standards of DWSNZ 2008, provided that all monitoring requirements are met. The critical aspects of water supply treatment are:

Ensuring that water supply operation staff have appropriate training and qualifications.

Undertaking an appropriate P2 chemical monitoring programme.

Removing all ball type hydrants.

Instituting leak detection surveys.

5 Council's intended role in meeting the current and future demands

Council considers that the treatment and testing meets the DWSNZ 2005 standards.

With minimal population and demand growth expected, water demand requirements in the next ten years can be met with current capacity.

6 Council's proposals for meeting the current and future demands, including proposals for any new or replacement infrastructure.

Council has an asset replacement fund available for replacement of assets that fail in the future. The population growth figures indicate that significant new assets are unlikely to be required. Small new assets are funded from the depreciation reserves

KAWERAU DISTRICT COUNCIL
Asset Management Plan 2025

Wastewater

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Version History

Version	Date	Notes	Author
2015	2015	Final version: AMP - 2015	Tom McDowall
1a	09/02/2018	First revision for 2018	Hanno vd Merwe
1b	15/02/2018	Review: Technical support officer	Tina Mitchell
1c	23/02/2018	Update after MOS review	Hanno vd Merwe
1d	20/02/2018	External review	Kelvin Hill (Western Bay DC)
2	30/02/2018	Submission to Council	Hanno vd Merwe
2a	23/11/2020	First Revision for 2020	Tina Mitchell
2b	8/04/2021	Three Waters Review	Riaan Nel
2c	12/04/2021	Management Review	Hanno vd Merwe
2d	20/07/2021	Post Audit Review amendments	Tina Mitchell
3	1/08/2021	Submission to Council	Hanno vd Merwe
3a	7/05/2024	First Revision for 2024	Hanno vd Merwe
4	18/03/2025	Revision following audit review	Peter Christophers
4a	26/03/2025	GMOS review of AMP	Riaan Nell
4b	7/4/2025	A & R Committee review	

SECTION ONE

Executive Summary

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategy for the management of its wastewater assets. The Plan enables Council to meet the present and expected future needs of the Community over a ten year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The Plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's wastewater activity in the most cost effective way for households and businesses.

The Asset Management Plan collates high level management, financial, engineering and technical information from various sources into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

An independent auditor evaluated the level of provision of asset management for the wastewater asset in 2017. The appropriate level was recommended to be raised from the Council's asset management policy of "Core" to "Intermediate" due to the higher risk to the health and well-being of the community in the event of wastewater assets failing to deliver an appropriate level of service.

The previous assessment of the asset management level and the level required for "Intermediate" showed a gap of 10 percent overall for the wastewater activity. Asset management improvements were identified in 2021 and completed by 2024 to close this gap. The remaining and newly identified improvement actions are discussed in Section 0.

ASSET DESCRIPTION

The community is served by a wastewater system designed to manage wastewater collection, treatment and disposal. It has one reticulated wastewater network, servicing around 2,880 properties including approximately 180 businesses. Four large industrial plants use the network to dispose of domestic waste. One business, the Waiū dairy factory is consented and charged for the disposal of trade waste via the wastewater system since June 2019.

Properties connect to the public reticulation system through small pipes. Larger pipes and manholes are used in the network where changes in gradient and direction occur. There are also six pump stations. All wastewater is brought to the treatment plant. Treatment and the discharge of water to ground are carried out in accordance with resource consent requirements and to maintain a healthy environment. Septic tanks are used for the few properties in the district not connected to the network.

The table below summarises the key components of the system including additional infrastructure following the residential developments of Porritt Glade and Central Cove.

Key components

Number of properties connected – including laterals	2880
Length of reticulation (kms)	62.6
Number of pumping stations	6
Number of treatment plants	1
Manholes	772
Wastewater treated (avg m^3/d)	2,200

The 2022 replacement cost and depreciated replacement values of the wastewater asset are shown below:

Replacement and depreciated values

Asset Type	Gross Replacement	Depreciated Replacement Cost
Pipelines	$22,882,400	$6,188,090
Laterals	$881,500	$392,300
Manholes	$3,410,640	$785,570
Pumping Stations	$567,970	$424,720
Screening	$2,679,100	$1,914,880
Treatment Plant	$7,070,790	$4,059,700
TOTAL	**$37,492,400**	**$13,765,260**

LEVELS OF SERVICE

Customer levels of service

Council monitors and reports its actual performance against measures and targets contained in the Long Term Plan.

Council targets includes community satisfaction, number of complaints, the number of service requests and time taken to respond as well as number of supply disruptions and failures. The community survey undertaken in 2023 reported 82% resident satisfaction with the wastewater service, which is above the national average (74%).

Technical levels of service

Council seeks to maintain and operate a wastewater system in a manner that is fit for purpose and does not compromise public safety. It also seeks to comply with its wastewater resource consents at all the times.

Constraints to levels of service

Constraints can arise because of capacity, reliability and security of service, environmental performance and issues relating to the treatment, storage and reticulation. These constraints are described fully in section 0 of the Plan.

Resource consents

Council holds resource consents from the BOP Regional Council for the discharge of treated wastewater from the treatment plant and the breakdown of wastewater solids. Consent conditions relate to the volume, quality and rate of wastewater discharge and its effects on groundwater quality.

Significant adverse effects

Potential adverse effects are: the overflow of sewage due to pipe blockages and failure of the treatment plant - exceeding one day. This would have environmental and potential health effects for the community (i.e. impact the environmental and social wellbeings).

FUTURE NEEDS

Kawerau's wastewater network is adequate for current demands and most of the network has some spare capacity.

The Kawerau district has experienced low general population growth and therefore low demand for additional services, however the district has continued to experience a consistent increase in residents over the age of 65. In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite a predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

The existing wastewater network has excess capacity enabling it to cope with any reasonable increase in demand. A boundary adjustment was carried out in 2012 with the subsequent initial development of the new industrial park. Council constructed a new wastewater service line to the new industrial park on SH34 in response to this and the new Waiū dairy factory came online with a consent to dispose of trade waste in June 2019.

LIFE CYCLE MANAGEMENT

Assets

Service connections

Service connections connect properties and businesses wastewater lines to gravity reticulation pipes. Service connections may be Asbestos Cement (AC), glazed earthenware, Polyvinyl Chloride/Plastic (PVC), Polyethylene (PE), concrete lined steel or concrete, depending on when a property was developed.

Gravity reticulation pipes

Gravity lines connect service connections and properties and businesses wastewater lines to pump stations and eventually to the treatment plant. Depending on location and age, the pipes are asbestos cement, concrete, concrete lined steel, PVC, PE or glazed earthenware.

Rising pipes

Rising pipes are pressurised pipes that connect pumping stations (both Council and private) to receiving gravity reticulation pipes.

Pump stations

There are six pump stations, two pumps effluent from Council facilities, one pumps trade waste from the industrial block, two pump wastewater from low lying housing areas and one pumps wastewater from an out of district marae and attached dwelling.

Treatment plant

There is a single modern plant that removes solids from the wastewater. The solids are disposed of by vermiculture and the effluent is discharged to rapid infiltration basins.

Manholes

Manholes are used at changes in pipeline gradient, direction, and diameter or at multiple service connections.

Critical Assets

Most components of the wastewater asset are able to fail for a period of up to 24 hours before intervention is required. Intervention is simple and relatively inexpensive and therefore only a small number of pipes, one pump station and the treatment plant are considered critical.

New assets

The two resource consents for the wastewater treatment plant extend beyond the length of this plan so there is no requirement to improve its efficiency during the life of the plan. The proposed new industrial park is not expected to increase flows by more than five percent.

New network assets from recent land developments are vested in Council.

Maintenance activities

Beyond the geothermal area of town that requires renewal work, the wastewater network is in good condition. Council intends to operate, maintain and renew the network so that it continues to provide the level of service required in the future. Regular, ongoing maintenance including the removal of problematic street trees will allow the existing levels of service to continue indefinitely.

Renewal/Replacement

Pipes generally deteriorate in line with the National Asset Management Steering Group (NAMS) guidelines with the exception of an area of geothermal activity that includes Kawerau's town centre.

Council's objective is to maximise asset life without compromising service. Replacement decisions are based on the condition, reliability and maintenance cost and risk profile of an asset as well as its age.

The network has been divided into six zones: the first 5 zones are based on the estimated average date of development. The sixth zone is the geothermal area where concrete pipe has been replaced and relined with PE pipe.

The zones are:

1. 1955-1958 (~25,000 m)
2. 1962-1970 (~8,800 m)
3. 1973 (~9 600 m)
4. 1978 (~7 100 m)
5. 1980-1996 (~6 600 m)
6. 2000 to present (~2,900 m)

Deferred Maintenance and Disposal Plan

Council policy is to avoid any deferred maintenance and currently there is no known deferred maintenance for the wastewater network. Similarly, there are no specific disposals identified in the Plan.

FINANCIAL SUMMARY

Kawerau's wastewater asset is adequate for the current and foreseen population and industrial needs.

The funding for wastewater operation and replacement is from rates. The funding collected in excess of the actual replacement is being held in the depreciation reserve. At some stage of the replacement cycle the depreciation reserve will go into deficit and Council will raise loans to fund this deficit.

The model for replacement of wastewater pipes is reasonably accurate as the pipes lives have been verified by physical testing and pipe failures has also confirmed the deterioration rates.

ASSET MANAGEMENT SYSTEMS AND PROCESSES

Asset management outcomes

Responsibility for asset management outcomes lies with the Group Manager, Operations and Services.

Accounting and asset management systems

Ozone software is used for accounting and billing. All formal asset management financial reporting including valuation is currently held in Excel spreadsheets. This is being migrated to the AssetFinda system.

The improvement plan proposes that all appropriate financial information be inputted into AssetFinda.

Hard copy plans contain layout details of the structures and all known pipes comprising the wastewater network. Over time these will become obsolete as new information is held on AssetFinda.

Key information flows and processes

Key information flows and process linkages relate to the incorporation of Kawerau's community outcomes, the preparation and adherence to Council's annual budgets, environmental monitoring and compliance and to ongoing asset management that maintains levels of service to the community.

MONITORING AND IMPROVEMENT PLANNING

Planned improvements are outlined in section 0 of the Plan. Key improvement activities centre on continuing to increase the accuracy of Council's information relating to the wastewater assets.

The Group Manager Operations and Services will monitor and review improvement items on a six monthly basis. The improvement plan will be reviewed each year as part of the annual plan development process.

SECTION TWO

Introduction

PURPOSE OF THE PLAN

The overall purpose of this Asset Management Plan is to describe Council's strategy for the management of its wastewater assets. The Plan enables Council to meet the present and expected future needs of the community over a ten year period (according to the 10 year Long Term Plan) and into the future (according to the 30 year Infrastructure Strategy).

The plan details the assets Council owns and describes how the maintenance, renewal and replacement of these assets will be managed and funded to meet required levels of service for Council's wastewater activity in the most cost effective way.

The asset management plan collates high level management, financial, engineering and technical information from various sources and combines these into a single document. It is a tool for communicating complex asset management information and strategies with stakeholders and interested parties.

ASSET DESCRIPTION

Council's wastewater system collects, treats and dispose of wastewater (sewage) from properties in the district. Its components are a network of underground pipes, pumping stations and a treatment plant with soakage basins. Wastewater enters the network from properties connected to the system and is conveyed to the treatment plant where it is treated and then disposed of via rapid infiltration basins and by vermicomposting.

The wastewater network, serves around 2,880 properties including 180 businesses. Four large industrial plants use the network to dispose of domestic wastewater, and one factory has a trade waste consent.

Properties are connected to the public reticulation system through small pipes called service connections. These pipes are generally the responsibility of the property owner. Where a portion of connection passes outside the property boundary to connect to the wastewater network is deemed to belong to Council.

The wastewater network includes 150 – 450mm pipes and manholes where changes in gradient and direction occur. There are pump stations to lift effluent from low lying areas to the gravity network.

All wastewater is brought to the treatment plant. Here the solids are removed and the liquid soaks to ground in rapid infiltration basins where the soil removes bacteria. The discharge of water to ground and the treatment of the removed solids are carried out to meet resource consent requirements and maintain a healthy environment.

Council measures the total solids content and the quantity of the treated water going to the rapid infiltration basins. This information is provided to the BOP Regional Council as required in the resource consents.

The key components of the Kawerau wastewater system are listed in the following table:

Table 37: Key components

Number of properties connected	2880
Length of reticulation (kms)	62.6
Number of pumping stations	6
Number of treatment plants	1
Manholes	772
Wastewater treated (avg m^3/d)	2,200

Septic tanks are used for the few houses in the district not connected to the network.

OBJECTIVES OF ASSET OWNERSHIP

The goal of the wastewater activity is to provide a quality wastewater removal, treatment and disposal service to meet reasonable community needs that enhances community health and safety and the environment.

Council is obligated by the Health Act 1956 and the Building Act 2004 and is supported by the powers given to local authorities in the Local Government Act 2002 (LGA) and other legislation to provide wastewater services.

Section 23 of the Health Act 1956 imposes a general duty on Councils to improve, promote, and protect public health within their District. In particular Section 23(c) imposes a duty on Councils to cause all proper steps to be taken to secure the abatement of the nuisance or the removal of the condition. It would be virtually impossible for Council to fulfil this obligation without reticulated wastewater in the urban area.

The activity involves:

- Management and monitoring of wastewater assets and wastewater disposal.
- Repairing or replacing unsound pipes and other wastewater structures and plant.
- Operating the wastewater treatment plant.
- Planning for future requirements and improving operations.

Council's principal objectives are:

- To ensure that the wastewater network continues to provide a high quality collection, treatment and disposal service.
- To anticipate the time when it becomes necessary to extend, upgrade or renew the

existing wastewater network, and to plan accordingly.

To ensure the appropriate maintenance of the wastewater network in perpetuity, so that there is no diminution in value and to forecast the estimated future cost of doing so.

To put in place a sound management regime for all matters relating to the wastewater network.

CONTRIBUTION TO COMMUNITY OUTCOMES

The Council community outcomes to which the wastewater activity primarily contributes are set out in

Table 38 below.

LINKS TO OTHER STRATEGIC DOCUMENTS

Public infrastructure contributes toward the economic, social, cultural and environmental wellbeing of the community. In addition to wastewater infrastructure, Council owns the water supply and stormwater systems, the district's roads and footpaths, and its public parks, reserves, buildings and facilities. The parts making up those networks and structures and the tools and equipment used to manage and maintain them, are Council's assets.

The 30 year planning strategy for Council's four critical asset groups, Roading, Stormwater, Water Supply and Wastewater, is described in the Infrastructure Strategy.

Every three years Council develops a Long Term Plan setting out the range and level of services it will provide to meet identified community needs and community outcomes and indicates anticipated expenditure on assets for the next 10 years. Each year Council adopts an Annual Plan, containing the budget for council services. Council's ability to deliver services and to do so at a reasonable cost depends on the condition, performance and risk profile of its assets.

In this way, Council's asset management planning is closely linked to its Infrastructure Strategy, Long Term Plan and Annual Plans

This Asset Management Plan was developed in conjunction with the Kawerau District Council Long Term Plan 2025-2034. It will underpin and be integrated into that document, and the subsequent Annual Plans.

Table 38: Contribution to Community Outcomes

Contribution	Outcome
Continuity of sewage collection.	Council infrastructure and services are accessible, age-friendly, effective, efficient and affordable, now and for the future.
Management and monitoring of sewage disposal.	Council regulates, monitors and acts to protect public health and safety, to prevent harm and nuisance and to improve standards in Kawerau's home, commercial and public environments.

SECTION THREE

Levels of Service

CUSTOMER LEVELS OF SERVICE

Council commissions an independent survey every 3 years to measure the level of customer satisfaction with the services provided by Council. The results of these surveys for the wastewater activity are shown below.

The survey for 2023 was undertaken by SIL Research and for the years prior it was undertaken by the National Research Bureau.

Table 39: Survey Results – Wastewater Supply

%	2008	2009	2011	2014	2017	2020	2023
Very/Fairly Satisfied	96	99	96	97	91	95	70
Not very Satisfied	1	-	-	2	2	2	15
Don't Know	3	1	4	1	6	3	15

Table 40: Survey Results – Reasons Residents were not very satisfied

	2008	2009	2011	2014	2017	2020	2023
Odour				1	1		2
Blocked sewer lines				1			4
Poor toilet flushing		1			1		
Sewage overflow			1	1			
Overall system							7
Communication/Other						2	2

TECHNICAL LEVELS OF SERVICE

Council will continue to monitor and report its actual performance against measures and targets described in the LTP. Performance progress (towards achieving targets) is reported quarterly to Council by the Group Manager, Operations and Services.

Table 6: Technical Levels of Service (LOS)

Level of Service	Performance Measure
Provision of a reliable domestic wastewater collection and disposal service	Continuity of service 365 days a year No more than 50 disruptions of service per year >97% Community satisfaction (measured 3 yearly) Zero allowance for Dry Weather Overflows
The total number of complaints received	Complaints per 1000 connections for each criteria • Odour – No more than 1 • System Faults – No more than 15 • Blockages – No more than 15 • Council's response – Nil allowable
Wastewater treatment plant operation	Maintain compliance with resource consents conditions
Callout and fault response times	Sewage overflow report call outs: 1 hr attendance with 8 hrs resolution
Minimal environmental effects	Maintain compliance with resource consents conditions

CONSTRAINTS TO LEVELS OF SERVICE

The constraints impacting on levels of service of the wastewater network are shown in the table below.

Table 7: Constraints to Levels of Service

Constraint	Component	Comments
Capacity	Service Connections	There are no known constraints of capacity associated with wastewater network connections.
	Public Networks	There are no known constraints of capacity with the current network of pipes. Fat build ups and tree roots temporarily reduce capacity from time to time. Rain inflow and infiltration occurs during heavy rainfall. Investigation into where this is happening is undertaken and appropriate action instigated.
	Treatment Plant	The treatment plant has capacity to cater for a population 30% higher than current.
	Consents	The consents limit the level of treated liquid that can be disposed of to the Rapid Infiltration Basins (RIBs). The consent allows for twice the current disposal.
Reliability and Security of Service	Network blockages	Limited storage capacity is available in line. However, most storage capacity is used by the time the blockage is detected. Unused storage capacity may provide sufficient time to undertake repair or arrange pumping without significant spillage. Clearance of most blockages is attended to quickly.
	Pump Stations	The pump stations each have at least two pumps. This provides standby pumping capacity if one pump fails or requires repair. In addition, pump stations are able to be pumped out using portable pumps or sucker trucks.
	Treatment Plant	The critical mechanical and electrical pumps, fans and gearboxes are duplicated so that plant can be run at slightly below maximum performance for long periods. A stock of critical replacement parts is held on site and Kawerau is well serviced with industrial technicians. A spill basin has the capacity to hold several days of wastewater in the event of a significant plant failure. A diesel generator is on site in the event of a significant power outage.
Environmental Considerations	Consent	Obtaining ongoing resource consents could impact on disposal options. However, disposal techniques used; are current recommended practises therefore renewing resource consents is not anticipated to be a problem.
	Environmental Performance	The treatment system is robust and with the available storage capacity, breaches of the consent should only occur due to exceptional circumstances.
Extension	Other capabilities	The system has reserve capacity so additional connection to any part of the reticulation can be undertaken. When lower lying areas are developed, additional pumping stations will be required.

RESOURCE CONSENTS

Council's current resource consents are shown in the table below.

Table 8: Resource Consents

Consent No.	Source	Purpose	Conditions	Expiry Date
65081	Wastewater Treatment Plant – Discharges	Control discharge of treated wastewater from treatment plant	Quality Quantity	31-10-2032
67265	Disposal of Septage Waste	Control the process of treating septage waste	Control odour No runoff No adverse effects on environment	31-10-2032

SIGNIFICANT ADVERSE EFFECTS

Council is unaware of any significant adverse effects that the wastewater activity has on the social, economic, environmental or cultural well-being of the community. Based on groundwater test results taken from around the soakage site in accordance with consent conditions, current practices do not appear to be impacting on the natural underground water quality.

A potential negative effect of the Wastewater activity is the overflow of sewage due to pipe blockages. This would have environmental and potential health effects (i.e. environmental and social wellbeings).The adverse impact of blockages is minimised by very prompt attendance to blockages to reduce the instances and quantity of spillage, and subsequent disinfection of any contaminated area.

Potentially significant adverse effects would also occur if the treatment plant failed to operate for a period in excess of one day. This would negatively affect the community's health and the environment (social and environmental wellbeings).

SECTION FOUR

Risk Management

RISKS

Physical Risks

Physical risks are generally:

- As a result of the inevitable natural process of deterioration.
- Because of actions of other parties working or travelling in the vicinity of the assets.
- Because of natural disasters (most commonly earthquakes or flooding).

Durable materials, good workmanship, and careful planning will not always be sufficient to prevent physical damage by persons or natural disasters.

Volcanic eruption may produce ash. The ash will not affect the pipe network but may impact on the Rapid infiltration Basin soakage rates.

The Edgecumbe earthquake in 1987 caused no known damage to the wastewater network. This indicates that the current system has low risk from the more common natural disasters.

Financial Risks

Financial risks are those that result in decreased cash flow and/or inability to afford the works that are required.

They include loss of a major ratepayer (requiring the cost burden to be absorbed by the remaining ratepayers), failure to take advantage of any available subsidies and replacing assets before end of useful life, resulting in less than optimal life-cycle cost.

Depreciation for wastewater assets is being funded, therefore a depreciation reserve is available when renewals are required. Also loan(s) is available when the reserve funds are fully expended.

Health and Safety Risk

Health and safety risks arise as a result of physical actions or omissions of Council staff, contractors, or equipment failure. Health and safety risks are minimised by training staff and employing reputable contractors (SHE qualified) for maintenance and renewals.

Environmental Risk

There are environmental risks consequential to the operation of the wastewater network and/or physical actions or omissions of council staff or contractors. These risks are managed through compliance with resource consent conditions.

Regulatory Risk

The right of the BOP Regional Council to amend/update consent conditions during the term of consent represents a regulatory risk to Council. However, changes would normally only occur as a response to failure to meet existing consent conditions.

Any changes to consent conditions would usually be modified treatment practices, that could have capital and operational cost consequences. BOPRC would conduct significant dialogue with Council prior to actually amending conditions and there would normally be a timeframe within which to implement changes.

The special rights and status of Tangata Whenua in the resource consent process also represents a risk to Council. Council believes it can minimise this risk by maintaining an open and cordial relationship with local Iwi.

There is also a risk of prosecution if Council fails to comply with legislation.

RISK MITIGATION

Council actions taken to mitigate risks are set out in the table on the next page.

Insurance
Council has adequate insurance in place to cover the replacement and/or repair of buildings and other valuable assets in this group.

Civil defence and emergency response plans
Council has identified essential staff for recovering the water, wastewater and roading systems in the event of a civil defence disaster.

Table 9: Risk Table & Mitigations

Key Exposure	Class of Risk Probability	Residual Exposure Consequence	Mitigation
Physical			
Seismic Event	Medium	High	Earthquake design standards
			Spare capacity
			Special Insurance cover
Flood Event	Low	Low	Storage capacity at treatment plant
			Ongoing search for stormwater ingress
Damage by Others	High	Moderate	Staff available 24/7
Failure due to deterioration of assets	High	Low	Regular treatment plant maintenance
			Staff available 24/7
			Renewal Programme
			Spare capacity at treatment plant and pump stations
			Asset performance monitoring
Power interruption	High	Low	Standby generator available at treatment plant
			Spill basin can store incoming effluent under gravity flow for one day
			Pump stations small and alternative pumps available
Chemical non delivery	Moderate	Moderate	Material ordered before stock runs out.
			Significant storage on site
Financial			
New large consumer	Moderate	Low	Regular meetings with development agency
			Existing plant has 30% reserve capacity
			Developments take time allowing negotiations to take place
			Developments require Council consent
Loss of large consumer	Moderate	Low	Regular meetings with large industries
			Plant can operate on lower flows efficiently
Health and Safety			
Injury to persons or property due to operations	Low	Low	Health and safety practices in place
			Trained staff
			Insurance to cover costs
Sabotage	Low	Moderate	Plant security
			Robust plant
Injury to public	Low	Low	Access denied to treatment plant site
			Significant portion of asset underground
Environmental			
Overflow of wastewater due to pipe blockages or treatment plant failures	Moderate	Moderate	Staff available 24/7 to attend to blockages
			Treatment plant has storage capacity for one day's flow
			Plant has surplus capacity
			Monitoring plant performance
			Monitor blockages in pipework

SECTION FIVE

Future Needs

CURRENT CAPACITY

Network

The capacity of the network is adequate to handle general flows and any inflows from stormwater that may happen from time to time. Blockages in the network (1-2 per month) reduce capacity temporarily.

Pump Stations

All six pump stations have twin pumps (duty and standby). Each pump has capacity to handle flows even in heavy rain periods. Pump chambers have capacity to store several hours of effluent flow if both pumps are not operational.

Treatment plant

Council's wastewater treatment capacity is as follows:

- Primary screening – two screens – 10,000 population. An additional screen can be installed in the primary treatment plant to accommodate a further 5 000 population.
- Solids removal – two clarifiers – current capacity 10,000 population. An additional clarifier can be installed to handle a further 5,000 population if required.
- Solids Treatment – thickener and storage tank – both have the capacity to handle increased volumes to service a population of 15,000. The centrifuge has the capacity to run more hours, thereby having the capacity to manage a population of up to 15,000.
- Rapid Infiltration Basins – these have the capacity to process 4,000m^3 per day (estimated flow from a population of 15,000).

Consents

The worm farm can process solids generated by a population of 15,000 under existing conditions. The consent for the Waste Water Treatment plant and RIBs allows the processing of wastewater from a population of 15,000.

FUTURE DEMAND

Kawerau District has experienced and is expected to continue to experience low growth in demand for additional wastewater services.

There are a number of vacant residential sections in the town. Even if these sections were occupied, the existing wastewater network would cope with the additional demand.

The existing wastewater network has excess capacity enabling it to cope with any reasonable increased demand. A boundary adjustment was carried out in 2012 with the subsequent initial development of a new industrial park. Council constructed a service line to the new industrial park on SH34 in response to this and the new Waiū dairy factory came online with a consent to dispose of trade waste in June 2019. The trade waste consent allows Waiū dairy to discharge a total volume of 400m3/day with a concentration of 200g/m3 of solids. This is an equivalent volume usage of 1700 population from the Treatment Plant.

There remains some influence from stormwater getting into the wastewater network during very heavy rainfall. This is likely to be caused by inflow (unauthorised connections) rather than infiltration. Detecting the source and stopping the increase in flow is desirable. The treatment plant and pipes are able to manage the increased flows, but eliminating them will improve plant performance and slightly reduce costs.

Issues that have been identified as affecting capacity are:

- Removal of unauthorised stormwater connections to the wastewater network may reduce the total demand.
- Population growth or decrease will change demand; however, the current system can deal with much larger than expected population changes.
- Gradual deterioration of network due to ageing, that may increase infiltration and blockages, will require an increase in treatment volume. However, this is likely to be negligible when compared to current spare capacity.

TRENDS

Population growth

In the 2013 census, the total population of the Kawerau District was 6,363, a decrease of 8.1% or 561 people since the 2006 census. Despite the predicted further decline, the 2018 census showed a growth of general population to 7,460. The Kawerau district estimated population according to the 2023 census is 7,820 which represented a 4.8% increase in population since 2018 or around 1% population growth per annum.

Council hopes to bolster these gains with economic development initiatives, such as the development of a new industrial park and promotion of the natural environment.

As is the case with the rest of NZ, the population is aging with an increasing portion of the population receiving state funded superannuation and employment benefits. The average household income is expected to remain lower than the national average and there will be an increased requirement for external funding to renew the infrastructure in the future.

Table 10: Statistics NZ Population Projections – Kawerau District

Population Change 2006–2043 (NZ Stats)								
Projected Range	2006 *Census*	2013 *Census*	2018 *Census*	2023	2028	2033	2038	2043
High				8,110	8,410	8,650	8,830	8,970
Medium	6,921	6,363	7,460	7,910	8,000	8,020	7,970	7,860
Low				7,720	7,610	7,410	7,140	6,800

NEW CAPITAL REQUIREMENTS

There are no new significant capital requirements during the life of the plan. Council will replace existing assets only.

Any new land developments in the industrial park or any future residential development will result in additional wastewater infrastructure constructed by the developer and vested in Council or funded by the developer through Council's financial contributions policy.

SECTION SIX

Lifecycle Management

Service Connections

Service connections connect the domestic wastewater lines from residential properties and businesses to gravity reticulation pipes. Service connections may be Asbestos Cement (AC), glazed earthenware, Polyvinyl Chloride/Plastic (PVC), depending on when a property was developed. This pipe is generally the property owner's responsibility. Council's maintenance responsibility ends at the property boundary.

The service connections are typically 100mm pipes. The material is not recorded in Council's asset register, but it is assumed that those connected during the period from 1955 to 1996 are fibre cement or glazed earthenware and those connected post 2000 are PVC.

There is one trade waste connection from Waiū dairy factory with a limited consent to discharge to the Kawerau wastewater system.

Due to the minimal length of pipe that belongs to Council, having the incorrect material is not considered significant. However, as improved information becomes available the data will be updated. Currently the service connections are not recorded in AssetFinda.

Gravity Reticulation Pipes

The network pipes are typically between 100mm and 450mm in diameter. Most of the reticulation is in the range of 150mm to 200mm that collect effluent and feed them to trunk mains (300mm to 450mm).

Depending on location, the pipes are asbestos cement, concrete, concrete lined steel, PVC, PE or glazed earthenware. The asset register holds pipe material. The accuracy of the split of different material types will be improved over time as records of material types are collected during repair operations.

A large percentage of the network pipes were installed in the period 1955 to 1975. This is expected to give rise to a significant increase of renewals as the pipes reach the end of their effective lives.

Wet to dry weather flows is an indicator of the network's condition. A typical benchmark for systems in very good condition is three. The ratio is based on peak daily flows divided by the low average (monthly) flow.

An extreme wet weather event has been known to increase peak wastewater flows to 250m^3 per hour. A typical rainfall event results in an inflow of 180m^3/hour. The average daily flow is around 85m^3/hour giving a ratio of 2.7. It is believed that most of this infiltration is due to illegal stormwater connections rather than pipe failures.

This assumption has been made because the flow increase occurs during the rainfall event and drops off quickly after the rain ceases which is different to groundwater infiltration that has a slow increase and slow drop off in flow.

The diameter profile and materials of all the reticulation is illustrated in the tables below:

Figure 5: Diameter Profile of Wastewater Pipes

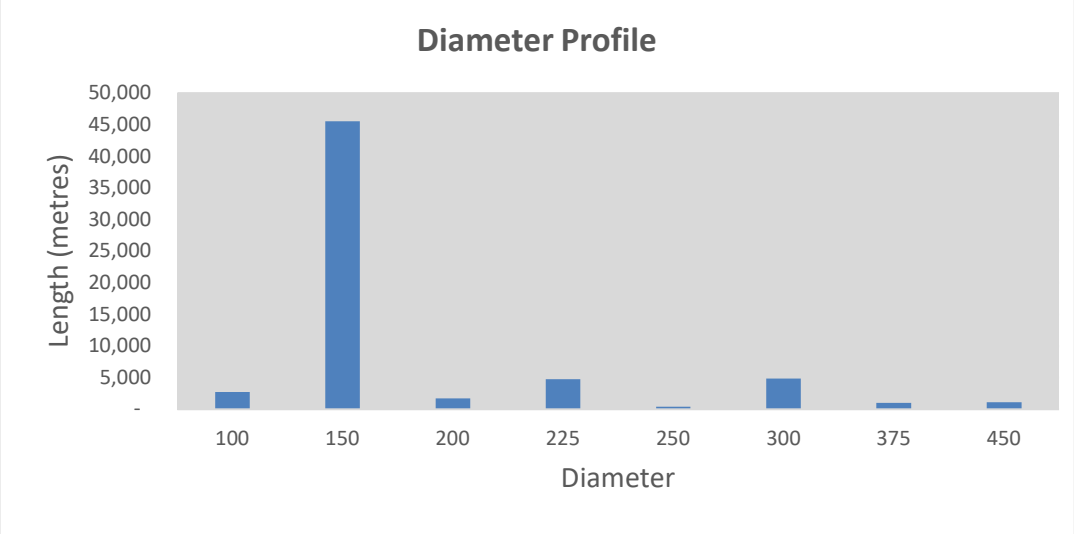
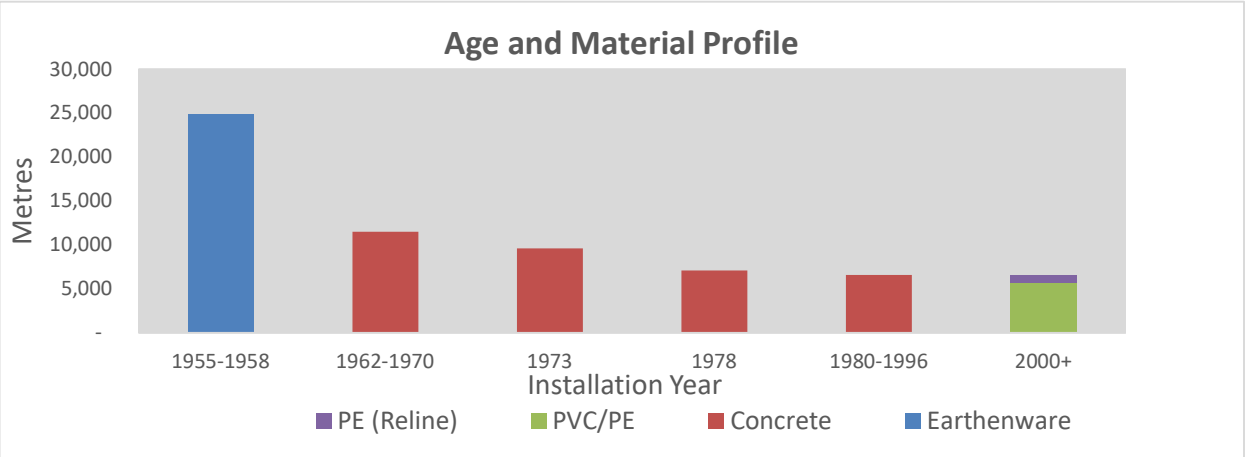


Figure 6: Age/Material Profile of Wastewater Pipes



The type of material used in the reticulation is based on the following assumptions:

Pipes installed at the time the town was constructed (1955 to 1962) were a mix of concrete and glazed earthenware

Pipes installed after 1962 and pre-1970 are concrete. This has been determined by random inspection of the pipes entering and exiting manholes.

Pipes installed from 1970 onwards were fibrolite, asbestos concrete or Supertite as manufactured in New Zealand by James Hardie & Co Ltd. Some concrete and concrete-lined steel pipes were also used in larger trunk mains.

The newer pipes (after 2000) are various types of PVC. This material has only been used in small quantities.

The installations since 2018 are PE or PE relining of pipes in the CBD.

Issues with asbestos concrete materials include softening due to age, ground conditions and to attack and corrosion by sewer gases (e.g. hydrogen sulphide). PVC is considered a long lasting material, however it is reasonably rigid, which could make it more susceptible to breakage during an earthquake.

Manholes

Manholes are used at changes in pipeline gradient, direction, diameter or at multiple service connections. They are also spaced in order to ensure easy access to the full length of the pipe. They are generally constructed of circular reinforced pre-cast concrete. The concrete bases have benching or faring from inlet pipe/s to outlet pipe to improve effluent flow.

Manhole lids, generally pre-cast reinforced concrete, span the manhole and provide support for the cast iron frames and circular cast iron access covers.

The most likely location for deterioration in manholes is at pipe entry and exits. Thus failures can be rectified or modified while the asset is in service. The system operates in an aerobic state therefore damage to the underside of the concrete manhole lids except in the geothermal area is not occurring

Pump Stations

There are six pump stations.

1. Pumps effluent from the Tarawera Park buildings to the gravity main in Cobham Drive.
2. Pumps effluent from the Firmin Field lodge to the gravity main in River Road.
3. Pump station located at Blundell Avenue and pumps the wastewater from approximately 80 houses in the Valley Road area to the gravity main in Marshall Street.
4. Pump station located at Fox's Marae which pumps wastewater from the Marae and adjoining residence. This property is currently outside the district boundary.
5. Pump station located at the new residential development off Porritt Drive.
6. Pump station located on the site of the Waiū Dairy factory in the newly developed Putauaki industrial land off SH34.

The pump stations are reinforced concrete construction and house twin pumps (duty and standby). The stations can also be pumped out using portable pumps or sucker trucks in the event of a significant failure.

Treatment Plant

The treatment plant is a single modern plant that removes solids from the wastewater. The solids (30 tonnes per week) are disposed of by vermiculture and the effluent (1,800 to 2,400 m^3 per day) discharged to the Rapid Infiltration Basins.

Council owns and operates the treatment plant that consists of several processes. The processes are as follows:

Primary Screening Process – The process uses three primary pumps, two aerators, two screened wastewater pumps, large concrete tanks and two 1 mm slot size contra sheer screens. The wastewater from the town is passed through 1 mm slot size contra sheer screens to remove the coarse litter. The screened effluent is then stored in a buffer basin and transferred to the solids removal part of the plant at a constant rate. The coarse litter is disposed of through landfilling.

Solids Removal Process – The process uses four stainless vessels, chemical mixing equipment, four peristaltic pumps, centrifuge, and monitoring equipment. The screened effluent is dosed with both alum and a polymer. On passing through the clarifiers (two of the stainless vessels) the solids coagulate and settle.

The solids are then transferred to the other stainless vessels where they thicken and surplus water is decanted. The final thickened solids are processed through a centrifuge where the water content of the solids is lowered to approximately 20%. The solids are then transported to a worm farm where they are digested over 18 months into a usable soil conditioner.

Liquid Disposal Process – The process uses two pumps, a drain tank, 2km of 300mm HDPE pipe, 100mm soaker hoses and rapid infiltration basins. The clear liquid from clarifiers is pumped to rapid infiltration basins (RIBs).

The effluent is spread over the surface of the RIBs and soaks into the porous ground. As the water percolates to the ground water table any remaining solids are removed and also any remaining bacteria are destroyed (the soil acts as a purifier as the liquid percolates through it).

The significant components of the treatment plant; concrete tanks, buildings, stainless steel vessels, stainless steel pipes are made of made of durable material and will remain operational for many years.

The pumps, electrical connections, software and centrifuge will require maintenance and replacement in accordance with standard replacement and maintenance practices.

CRITICAL ASSETS

Asset criticality is the relative risk of a high cost arising from failure of that asset. Criticality is determined by the cost and risk of potential; failures and the relative importance on society and the environment. Evaluating the different failure modes of critical assets determines what maintenance, capital expenditure and conditioning monitoring needs to be planned.

In general, critical assets are maintained on risk management principles, whereas non-critical assets are maintained reactively (replace on fail).

Of the assets described in section 6.1, the following lists those that are critical:

- The section of gravity reticulation pipes and manholes between the wastewater treatment plant and State Highway 34
- The wastewater treatment plant
- Blundell Avenue pump station.

ASSET DATA

Material Type

Field inspections have been undertaken to determine if pipes are AC or Concrete. The town has been built in phases and the earlier constructions were concrete and then AC. The later developments/renewals have used PVC and then PE. The inspection and install date data have been used to determine with a reasonable level of accuracy the types of material installed.

Getting the types of material wrong is of significance if the life of Concrete and AC are significantly different. While it is impossible to guarantee that every pipe in AssetFinda has the correct material type it is considered that the material type would have 90% accuracy.

Pipe Diameter

The pipe diameters in AssetFinda have been taken from the existing as built plans. Various cross checks have been undertaken to visually asses for glaring errors in the location of pipe diameters and there is considered to be a high level of confidence that the diameter in AssetFinda match those in the ground. It is estimated that the size of pipes in AssetFinda are in excess of 95% accurate.

Asset Locations

The physical location of the manholes has been validated by viewing the as built plans and looking to see if the location in AssetFinda appears to be correct in terms of boundaries.

Incorrect location of a manhole has very limited impact on the quantity of assets (it may impact on field staff locating the asset in the future but the physical location will be within meters of the AssetFinda location).

Significant impact only occurs where the diameter of pipes are inaccurate, thereby creating a financial impact on total asset values.

AssetFinda does not hold all the household connections information, therefore an arbitrary figure for the length of service lines has been assumed.

Overall it is considered that the accuracy of wastewater data is approximately 90% for location, quantity and materials. Management will be undertaking an exercise in the near future to improve the quality of information for wastewater assets

MAINTENANCE PLAN

General

Overall, the wastewater network is in a good state of repair. If it is maintained and renewed regularly and at the appropriate times, the existing levels of service can continue indefinitely.

Council intends to operate, maintain and renew the wastewater network on an ongoing basis so that it continues to provide the desired level of service required in the future.

Wastewater maintenance involves pump maintenance, electrical equipment servicing, videoing sewer lines and preventative clearing of sewer lines. A low level of equipment breakdown indicates that the correct level of maintenance is currently being undertaken.

A schedule of duties is performed daily, weekly, monthly or on an “as required” basis for various parts of the network. The duties include taking and recording plant performance measurements, maintenance undertaken and changes in operating practices. All maintenance, preventative maintenance and repairs are undertaken to a high standard.

Service Connections

Installation of new service connections into Council mains is undertaken to a high standard. Inspection of the connection occurs before the connection is covered. Blockages in the sewer line from the house to the main sewer can be either the responsibility of the owner or Council depending on whether the blockage is before or after the boundary of the property.

Local plumbers are familiar with who is responsible and few disputes take place. Plumbers contact Council early in the process if they believe that the blockage may be a Council responsibility.

Pipes

Maintenance is a mixture of reactive and preventative actions. Blockages and breaks are repaired when reported and a log of faults is maintained. Preventative maintenance is carried out as follows:

- Inspection of some known trouble spots using Close Circuit Television (CCTV).
- Water blasting of problem fat build-up areas.
- Removal of trees that are known to cause repeat blockages.
- Repair of pipes with poor connections that are detected during CCTV inspections.

The network averages 0.5 to 1.0 blockages per month (6 - 10 per year). They are the result of fat build-up, roots or other foreign material in the pipes, with none due to pipe failures. There are approximately 62 km of pipes giving a blockage rate of 10 to 16 per 100km per year. Other networks report blockage rates of 30 per 100km per year. The Kawerau rate is lower than average due to the network being newer and the pipes being in good condition.

Manholes

Manhole maintenance involves re-plastering the invert, replacing rungs, replacing broken lids, raising lid levels and ensuring manholes in private sections are accessible.

Pump Stations

Pump blockages and breakdowns are repaired when they occur. Pump stations are checked daily to ensure they are working and pumps are lifted and serviced when performance declines.

Treatment Plant

Plant flows, wastewater quality and quantity are monitored continuously as it enters and leaves the treatment plant. Numerous plant checks are conducted daily to monitor plant performance and regular cleaning of the plant is undertaken. Pumps, valves, controls, mechanical devices and gas protection devices are maintained in accordance with manufacturer’s recommendations. Many of

the pumps run continuously. For those areas where there are standby pumps they alternate weekly as the duty pump.

This ensures all pumps are working and because they have been replaced at various times previously, ongoing replacement is spread over a number of years.

Rapid Infiltration Basins

The basins are used on a rotation basis to ensure the ground is not saturated, which would negate the soils ability to sterilise the wastewater. Any solids in the wastewater left on the surface of the RIB are dried then removed. Mowing of some areas around the RIBs is undertaken for aesthetic reasons. Ground water is monitored to determine if there is any contamination due to the RIB operation.

Worm Farm

The solid material from the centrifuge is placed in windrows and covered immediately with wood fibre or sawdust to prevent odour. The worms eat the solids as it decomposes. The eating process removes harmful bacteria and converts the waste to a useable product: vermicompost. Once the vermicomposting has been completed, the vermicompost is taken off site for disposal or use as a soil conditioner for pasture or forests.

RENEWAL / REPLACEMENT

The network has been divided into six zones based on the estimated average date of development. Pipes and valves have a 70 - 80 year estimated life apart from the geothermal zone where the life is 40 years. Each zone is given the same installation date and the same replacement date.

Renewal/replacement funding for each zone is mostly averaged over ten years. This allows for the spread of installation dates and different rates of deterioration due to installation methods, material quality, water quality and tree roots.

Replacement decisions are based on information including the condition, reliability and maintenance cost of the asset as well as age. Council's objective is to maximise asset life without compromising service. Extending the asset life reduces the overall cost to the community and in sections of the network where the consequences of failure are minimal, the best strategy is to make sure replacement material is readily available and run the pipes to failure.

Reticulation

Concrete

The oldest of the pipes are approaching 67 years old (installed in 1957). There have been no collapses of wastewater pipe in Kawerau except in areas that are impacted by geothermal activity (Town Centre).

A section of 225mm concrete sewer pipe was removed in 2015 and tested in the Opus Lab in Christchurch. The pipe was assessed as Grade 3 - Moderate Condition. The pipe was assessed as having a further 40 years of life.

The section through the pipe that shows the level of cement that has leached from the pipe showed the following

External deterioration	0.0 to 2.6mm
Internal Deterioration	0.8 to 10.3mm

The above test result, visual observations and lack of collapses in concrete sewer pipes confirms that there is still reasonable life remaining in most of these pipes. However, the total life of the pipes has conservatively been estimated to be 70 to 80 years. But, if the pipes are still in good condition when the renewals are programmed, the remaining life will be reassessed at that time.

Visual inspections of sewer manholes that are all concrete (except those impacted by geothermal) show little sign of deterioration.

Similarly, manholes lives have conservatively been estimated to be 70 years. But, if they are still in good condition when the renewals are programmed, the remaining life will be reassessed at that time.

Asbestos Cement

Extensive testing of AC water mains has been undertaken and these show an increased level of leaching of the cement from the exterior of the pipe than that shown in the concrete sewer pipe tested. Because of the increased deterioration of the exterior of the pipe it is assumed that the sewage will have had an increased impact on the invert of the interior portion of the pipe compared to the concrete pipe as well.

There have been no collapses in the AC sewage lines. However AC was not used until around 1973 meaning that existing lines are only at most 51 years old.

Based on this information the lives for AC pipes are estimated to be 70years.

Glazed Earthenware

The Glazed Earthenware is located mostly in the geothermal area. It was installed around 1957. The pipes in the geothermal area showed signs of deterioration and have been relined with PE pipe 2017 – 2024 and those

pipes are determined to have a 40 year life due to the harsh environment.

While visual inspection of earthenware pipe in other areas shows little sign of deterioration so the life of these assets has been conservatively estimated to be 70 years.

Plastics (HDPE, PVC, UPVC)

These pipes have been installed from 2000 on so there is no local experience on expected life from deterioration.

Lives used by other Council as to the expected life varies considerably. A report received from Project Max on installing a new pipe has advised that a structural design life of 50 years But their experience suggests Council can conservatively adopt an expected life of 80 years.

Pump Stations

Pumps at the stations are rebuilt or replaced when they fail. A decision on rebuilding versus replacing is made on purely economic grounds.

Treatment Plant

The treatment plant is relatively new and built largely of stainless steel so no significant component replacement is anticipated during the life of the 10 year plan. Components (pumps, electrical sensors, etc.) will be replaced as they fail or/and in accordance with manufacturer's recommendations.

NEW ASSETS

The resource consent for the wastewater treatment plant expires in 2032. The treatment process is currently not impacting on the environment and provided legislation relating to water quality discharges doesn't change significantly between now and 2032, significant changes in the outputs from the treatment plant are not anticipated. Upgrading of the plant is therefore not anticipated during the life of the plan.

Deferred Maintenance

Currently there is no known deferred maintenance with the water supply network and the full service potential of the asset is being maintained. Council policy is to avoid any deferred maintenance.

Disposal Plan

There are no specific disposals identified in the plan. Pipes that are no longer required or are replaced due to failure will not be retrieved as they have no value. Normally, old pipes will be replaced by new pipes in the same location. If pipes are not replaced, they will be made safe in situ.

SECTION SEVEN

Financial Forecasts

FUTURE REQUIREMENTS

Table 11: Estimated Financial Requirements (Including Inflation)

	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Expenditure									
Personnel costs	260,043	268,490	275,973	283,221	289,981	296,266	302,554	308,599	314,404
Materials	424,489	445,325	465,532	485,209	506,223	520,031	534,925	547,614	559,920
Internal charges	690,910	718,050	750,740	790,850	827,450	873,850	922,710	975,460	1,041,050
Maintenance	168,730	125,570	162,780	137,840	176,050	148,510	186,300	156,710	194,430
Overheads	343,650	352,830	368,610	379,610	415,270	409,760	440,450	459,600	471,670
Depreciation	672,550	672,668	745,102	745,239	745,376	813,208	813,359	813,510	876,204
	2,560,372	**2,582,933**	**2,768,737**	**2,821,969**	**2,960,350**	**3,061,625**	**3,200,298**	**3,261,493**	**3,457,678**
Asset renewals	1,742,400	1,963,070	1,797,540	1,371,260	1,623,290	1,318,670	1,369,010	1,432,700	1,550,740
Total	**4,302,772**	**4,546,003**	**4,566,277**	**4,193,229**	**4,583,640**	**4,380,295**	**4,569,308**	**4,694,193**	**5,008,418**

Table 12: Estimated Asset Renewals (In todays $)

	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
Expenditure									
Pipes	855,957	855,957	855,957	855,957	855,957	855,957	855,957	855,957	944,719
Laterals	0	0	0	0	0	0	0	0	0
Manholes	169,360	169,360	169,360	169,360	169,360	169,360	169,360	169,360	169,360
Pumping Station	61,800	56,800	0	0	0	11,600	0	0	17,200
Treatment Plant	528,350	646,750	512,350	114,150	284,600	0	23,400	45,300	0
	1,615,467	**1,728,867**	**1,537,667**	**1,139,467**	**1,309,917**	**1,036,917**	**1,048,717**	**1,070,617**	**1,131,279**

FUNDING POLICY

The Revenue and Financing Policy sets out how Council's activities are funded. This policy has been developed to meet the requirements of the Local Government Act (LGA) 2002.

Council has broken its business down to activity level. In general, Council has assessed the availability of an activity as a public benefit and the use of an activity as a private benefit, although has not tried to determine the exact costs of availability and use.

'Availability' relates to the costs incurred to keep a service or asset in such a condition that it can become operational within a short start-up period (e.g. maintaining the water network even if it wasn't used, renewing assets).

'Use' relates to costs incurred as a result of the asset being used (e.g. chemicals and electricity).

Distribution of Benefits

The wastewater network is a benefit to the district as a whole as well as users that are connected to the service. The costs of having the network available is a public good and recoverable from all ratepayers through the general rate. The estimated "use" cost is recovered from those connected to the network through a targeted rate.

When Benefits Accrue

Council has identified a substantial intergenerational component (i.e. benefits arise over time). The wastewater infrastructure has a long life, so more than the current generation of ratepayers benefit.

Therefore, Council wishes to ensure that future ratepayers meet some of the cost. This is achieved by funding depreciation over the life of the assets.

Funding Sources

Wastewater is funded from general rates 75% and a targeted rate to properties connected to the network 25%

As the depreciation reserves grow, increased interest revenue from the investment of these reserves lowers the amount of depreciation funding that is required from rates. Inflation figures are provided by BERL, and used to determine the revaluation of the asset figures on a three-yearly cycle.

The mix of a targeted rate and the general rate is considered to reflect both the benefits to individuals that have an efficient and healthy collection and disposal system, and the community, which benefits from effluent being disposed of in a sanitary manner, with associated health benefits, by a system available for all properties to connect.

VALUATION

The wastewater network infrastructure is valued by an experienced valuer on a three yearly valuation cycle. Assets are valued at fair value determined on a depreciated replacement cost basis. The most recent valuation is effective as at 30 June 2022.

Asset basis of valuation

Valuation of wastewater assets are done on the following basis:

Table 13: Valuation Basis – Water Assets

Asset Type	Valuation Basis
Land	Market value
Buildings	DRC
Plant	ODRC
Reticulation	ODRC

The Depreciated Replacement Cost (DRC) refers to today's cost of replacing the asset with the same or a similar asset and depreciated over the life of the asset.

The Optimised Depreciated Replacement Cost (ODRC) refers to today's cost of replacing the asset with another asset that provides the same level of service most efficiently and depreciated over the life of the asset to reflect its current value and remaining economic life.

The optimised replacement cost assigned to each asset has been determined by suitably qualified and experienced professional persons and has been peer reviewed.

Expenses

Maintenance costs and operating costs are expensed in the year they are accrued. The capitalisation threshold for wastewater assets has been set at $1,000 or the actual value of individual components where they are identified by AssetFinda.

Changes in asset valuation

The costs associated with renewing assets and providing new or improved asset infrastructure are capitalised and depreciated in accordance with the assessed economic life

of each asset. This applies also where a developer provides infrastructure to be taken over as public assets by Council.

Capitalisation Threshold

The following definitions are used for asset management purposes and the financial treatment is summarised below:

Maintenance is work done that is of an operational nature that can contribute to the asset life reaching its maximum potential but neither increases the value nor extends the remaining life of any asset. However, maintenance may enable the asset to perform at a higher level of service for a longer period of time and/or ensure that the maximum life of the asset is attained.

Renewal is work done to replace an existing asset. The cost of replacement must be recorded as a capital expenditure, be greater than $1,000 and recorded in the asset register as a new asset with a unique identifier.

If the asset replaced is discarded or sold it must be removed from the asset register and any residual value must be formally written off.

An addition to the asset register is required when a new asset is created with a value exceeding $1,000. A new asset must be uniquely identified, and recorded in the asset register. The record in the asset register requires an assessment of the asset's remaining life expectancy (based on straight-line depreciation or estimated remaining life).

Where the asset register recognises an individual component worth less than $1,000, or where a length of pipe greater than 12 metres is replaced, the threshold does not apply and the additional value is capitalised.

KEY ASSUMPTIONS

The current valuation and renewal profiles are based on data currently available.

Asset condition

In the case of wastewater pipelines, the condition is taken as being directly related to age, unless better information is available. The testing of samples from repairs on pipes that are approaching the end of their useful life provides additional information. While a more planned inspection would provide a more direct assessment of condition, the cost of such programmes is high.

Replacement cost

The projected replacement costs and depreciated values shown in **Table** have been derived from Council's asset register. Further work identified in the improvement plan, will be carried out to verify the condition of the assets and the potential need for future replacement.

Council's practice for calculating pipeline replacement costs is:

- All pipeline replacement would be carried out using PE pipe.
- The construction environment is brown field (replacement of existing rather than green field construction).
- Unit rates for replacement are derived from latest valuation (with allowance for inflation) as undertaken by professional valuer.
- Replacement of pipes includes: valves, fittings, and house connections. Unusual pipe sizes will be replaced with the next size up.
- No optimisation or efficiencies in pipe size or lengths have been allowed for in replacement costs

Depreciated value and life expectancy

Straight line depreciation has been adopted for all above ground assets. The life expectancies shown in **Table** were used to calculate depreciated values.

The town centre area of Kawerau has geothermal activity. The heat and chemicals present significantly shorten the fibre cement pipe life in this area. Pipes in the geothermal area have an estimated life half that of similar assets in other areas.

It is accepted that the above approach requires improvement, because for some assets, the actual need for replacement is out of step with the theoretical depreciation. The improvement plan includes steps to make the valuation and renewal projections more robust.

Population

Further sustained decline in population as predicted by Statistics NZ may seriously erode the rating base of the district, placing a higher burden on the remaining residents for any infrastructure upgrades and possibly affecting capacity to fund renewal works. Population trends must therefore be reviewed as frequently as reliable data can be obtained.

Other assumptions

All expenditure is stated in 2022 values, with allowance made for the inflation over the planning period.

All costs are GST exclusive.

Operational costs are generally shown to increase in relation to inflation.

Renewal costs are based on anticipated replacement requirements.

The costs of insurance and risk mitigation are included in the forecasts.

Climatic and other environmental trends are expected to continue as they have in the recent past.

The plan provides scope for some growth in industrial/commercial demand.

Development Contributions

Section 106 of the Local Government Act 2002 requires local authorities to adopt development contributions or financial contributions policies.

Spare capacity in Council's infrastructure means it can cope with growth. Therefore, Council does not need to extend infrastructure to cope with increasing demand.

Council has resolved not to assess development contributions but to retain the provisions of the district plan that allow the assessment of financial contributions.

Financial Contributions

New subdivisions or developments may require the extension of council infrastructure networks for water supply, wastewater disposal, stormwater and roading. Council's financial contributions policy provides that the cost of these extensions is the responsibility of those who create the demand.

Subdividers and developers may be required to make financial contributions to meet the full cost of additional infrastructure necessary to support their subdivision or development.

Table 4: Replacement Costs and Depreciated Values (@30 June 2022)

Asset Type	Gross Replacement	Depreciated Replacement Cost
Pipelines	$22,882,400	$6,188,090
Laterals	$881,500	$392,300
Manholes	$3,410,640	$785,570
Pumping Station	$567,970	$424,720
Screening	$2,679,630	$1,914,880
Treatment Plant	$7,223,090	$4,108,400
TOTAL	**$37,644,700**	**$13,813,960**

Table 5: Asset life expectancies

Asset Type	Life Expectancy
Buildings	80 years
Pumps, controls	25 years
Pipes – PVC & PE	80 years
Pipes – Concrete, AC & Glazed Earthenware	70 years
Pipes (geothermal area)	40 years
Manholes	70 years

SECTION EIGHT

Asset Management Systems & Processes

Responsibilities for Asset Management Outcomes

The Engineering Manager is responsible for the development of this asset management plan, including maintaining the integrity of Council's asset information.

The Engineering Manager is also responsible for the identification, budgeting, planning, programming and undertaking of works required for the maintenance and renewal of Council's wastewater assets.

The Group Manager, Finance & Corporate Services is responsible for providing an overview of the development of this asset management plan, for ensuring that future projects are incorporated in Council's Long Term Plan, Infrastructure Strategy and that there is consistency between these documents.

The Group Manager, Operations and Services is responsible for delivering the outcomes for the wastewater activity. This includes ensuring that the assets are maintained and operated to Council's requirements, that adequate budgets for maintenance, operating and improvement costs are provided.

Accounting and Asset Management Systems

Billing/Accounting system

Council uses the Ozone software for its accounting and billing systems. It does not store or compute asset management information, but can be used to determine the number of connections to the wastewater and the number of properties billed for separate wastewater rates.

Currently, all formal asset management financial reporting including valuation is held in Excel spreadsheets.

This information will be migrated into the AssetFinda system in the near future.

AssetFinda

AssetFinda is the software used to manage and produce asset inventory reports. It is integrated with 'Map Info' data tables to permit input, querying, reporting and financial modelling using the asset register data. The spatial location of the wastewater assets can be laid over aerial maps, property boundaries, along with water and stormwater assets.

The software has yet to have financial data added to allow financial modelling for current replacement and depreciation value reporting.

New asset information (location, installation date, materials' construction etc.) is entered into AssetFinda at the time the asset is installed.

The default valuation process used by AssetFinda is capable of recognising asset condition, extending the life of an asset and recalculating revised depreciation value and annual depreciation.

The improvement plan proposes that the appropriate financial information be entered into AssetFinda.

Hard copy plans

Layout details of the pipes and structures are available for most of the wastewater asset.

Attaching information like pump performance, type etc. to assets is a desirable improvement. Also linking photographs and 'as built' drawing to the asset will improve the data.

Key Information Flows and Processes

Key information flows and process linkages include:

Translating the Community Outcomes into detailed levels of service that can be embodied into Asset Management Plans

Preparation of annual budgets, and ongoing reporting

Updating asset data as information becomes available through maintenance and service repairs

Ongoing compliance monitoring and reporting of environmental performance

Ongoing management of the asset to ensure that service levels are maintained

Quality management

Management is governed by the requirements of the treatment plant consent. Programmed sampling of wastewater is undertaken at the treatment plant by electronic equipment and verified by manual sampling.

Sampling of the groundwater determines if there is any impact on groundwater quality from treated wastewater being discharged to the RIBs. The testing programme provides assurance that the treatment process is satisfactory and results are submitted to the BOPRC in accordance with resource consent requirements.

Maintenance

Maintenance is carried out reactively for most asset faults. The criteria resulting in renewal rather than further maintenance are:

Is the asset important for maintaining service levels and have the service levels in the current year already been compromised by failures? If yes consider renewal.

What has been the failure history? If the current failure is part of a series, then consider renewal.

Is the cost of the maintenance comparable to the cost of renewal? Where repair costs are high then consider renewing a logical minimum quantity of asset to prevent further expensive repair costs.

Will maintenance preserve asset life? If yes, then carry out maintenance.

Policies for renewing assets

Replacing network components with larger components to improve capacity is treated purely as renewal capital expenditure. This is because the additional cost of larger components is not material compared with the renewal cost of component of the same kind. Renewal of assets will occur in accordance with practice described earlier in document.

Constructing new assets

Following many years of no demand for additional capacity, recent land developments for industry and residents have resulted in the need for additional new assets. Although this did not require the need for additional capacity, future funding to provide additional capacity would be treated on its merits. In most cases the funding would be sought from the developers/subdividers.

Assets vested in Council

Subdivisions include wastewater networks. These are installed at subdivider's expense to approved Council standards and then vested in Council.

'As built' new works either occurs due to subdivisions, or the installation of new assets. In both instances, detailed records of new works are obtained. These new assets are added to the AssetFinda database.

Asset disposal

Most of the components are essential to continuing provision of the service. Extensive decommissioning and disposal is unlikely.

SECTION NINE

Monitoring Improvement Planning

Asset Management Performance Measures

The broad objectives of asset management are:

- To optimise the life of the assets
- To minimise life cycle costs
- To maintain agreed levels of service

Although it is possible to measure the success or otherwise of the asset management activity over the long term against the three criteria above, it will obviously be difficult to measure success or otherwise in the short term in a way that management control can be exerted. For example, it will be impossible to determine whether the life of a facility has been "optimised" until the actual age nears the expected life and a remaining life assessment can be meaningfully carried out.

An assessment of the asset knowledge and processes currently carried out, in terms of "best practice for a NZ authority of this size" provides an indication of how well Council is likely to be meeting these long term objectives. This assessment is therefore part of the Improvement Plan. It should include evaluation of the monitoring of operations and costs to provide information on the achievement of service level (both public measures and technical standards). It should cover previously-planned improvement actions, noting whether these have been achieved and how they are contributing to current processes. It should check how the initiatives undertaken are 'rolled out' from asset management staff to those carrying out the work, and how carefully field information is recorded and returned to add to the asset knowledge case.

Improvement Actions

Table 16: Improvement Actions

Improvement Item	Comment	By When	By Whom	Cost
Expand knowledge of AssetFinda functionality	Training staff (EM & 3 Waters Engineer)	Ongoing improvement	GMOS	$5,000
Maintain AssetFinda database	Three Waters Engineer recruited and being trained	Annually	EM Consultants	$20,000
Review asset life expectancy	Test pipes and manholes for deterioration	June 2025 and triennially thereafter	EM	$10,000
Conduct asset revaluations	Up to date	June 2025 and annually thereafter	GMFCS	$10,000

EM = Engineering Manager

GMOS = Group Manager Operations and Services

GMFCS = Group Manager Finance and Corporate Services

Monitoring and Review Procedures

The Group Manager Operations and Services will monitor and review improvement items on a six monthly basis. This plan will be reviewed annually as part of annual plan development.

SECTION TEN
Appendices

APPENDIX A - DETAILED ASSET DESCRIPTION

ASSET Pipes	DESCRIPTION	MATERIAL	QTY	YEAR
WASTEWATER PIPES - ZONE 6	300	PVC	106	2009
WASTEWATER PIPES - ZONE 6	300	PVC	95	2018
WASTEWATER PIPES - ZONE 6	300	PVC	988	2018
WASTEWATER PIPES - ZONE 6	225	PVC	44	2019
WASTEWATER PIPES - ZONE 6	150	PVC	75	2006
WASTEWATER PIPES - ZONE 1	450	CONCRETE/EARTHENWARE	1107	1956
WASTEWATER PIPES - ZONE 1	375	CONCRETE/EARTHENWARE	1000	1956
WASTEWATER PIPES - ZONE 1	300	CONCRETE/EARTHENWARE	2726	1956
WASTEWATER PIPES - ZONE 1	225	CONCRETE/EARTHENWARE	1787	1956
WASTEWATER PIPES - ZONE 1	150	CONCRETE/EARTHENWARE	14698	1956
WASTEWATER PIPES - ZONE 1	150	PVC	86	2017
WASTEWATER PIPES - ZONE 1	150	PVC	184	2018
WASTEWATER PIPES - ZONE 1	150	PVC	14	2019
WASTEWATER PIPES - ZONE 1	150	PE	220	2021
WASTEWATER PIPES - ZONE 1	150	PE	2470	2022
WASTEWATER PIPES - ZONE 6	150	PE	353	2023
WASTEWATER PIPES - ZONE 6	225	PE	235	2023
WASTEWATER PIPES - ZONE 6	300	PE	120	2023
WASTEWATER PIPES - ZONE 6	150	PE	429	2024
WASTEWATER PIPES - ZONE 6	225	PE	236	2024
WASTEWATER PIPES - ZONE 6	300	PE	62	2024
WASTEWATER PIPES - ZONE 6	150	PVC	90	2007
WASTEWATER PIPES - ZONE 2	225	CONCRETE	420	1965
WASTEWATER PIPES - ZONE 2	150	CONCRETE	8369	1965
WASTEWATER PIPES - ZONE 3	300	CONCRETE	497	1973
WASTEWATER PIPES - ZONE 3	225	CONCRETE	1788	1973
WASTEWATER PIPES - ZONE 3	200	CONCRETE	603	1973
WASTEWATER PIPES - ZONE 3	150	CONCRETE	6706	1973
WASTEWATER PIPES - ZONE 4	200	CONCRETE	781	1978
WASTEWATER PIPES - ZONE 4	150	CONCRETE	6318	1978
WASTEWATER PIPES - ZONE 5	300	CONCRETE	295	1985
WASTEWATER PIPES - ZONE 5	250	CONCRETE	443	1985
WASTEWATER PIPES - ZONE 5	225	CONCRETE	325	1985
WASTEWATER PIPES - ZONE 5	200	CONCRETE	365	1985
WASTEWATER PIPES - ZONE 5	150	CONCRETE	5167	1985
Piripiri / Tiwhatiwha Cres	150	PE	643	2020
Laterals - District Wide	100	Concrete	2717	1966
Laterals - New	100	PE	25	2021
Manhole		Concrete	253	1957
Manhole		Concrete	95	1965
Manhole		Concrete	150	1973
Manhole		Concrete	112	1978
Manhole		Concrete	113	1985
Manhole		Concrete	3	1996
Manhole		Concrete	10	2005
Manhole		Concrete	6	2008
Manhole		Concrete	1	2016
Manhole		Concrete	1	2017
Manhole	Piripiri / Tiwhatiwha Cres	Concrete	18	2020
Manhole	CBD	PE Lined	10	2024
Flushing tank		Concrete	3	1965
Flushing tank		Concrete	1	1985
Cleaning Eye		Concrete	6	1973
Lamphole		Concrete	11	1957

ASSET Pumping Stations	DESCRIPTION	MATERIAL	QTY	YEAR
Blundell Ave	CONTROLS	ELECTRICAL	1	1975
Blundell Ave	PUMPS	SUBMERSIBLE	2	2014
Blundell Ave	TELEMETRY	ELECTRICAL	1	1998
Blundell Ave	PUMP STRUCTURE - WET WELL	REINFORCED CONCRETE	2	1975
Tarawera Park	PUMPS	SUBMERSIBLE	3	1980
Tarawera Park	PUMPS	SUBMERSIBLE	1	2012
Tarawera Park	PUMPS	SUBMERSIBLE	2	2019
Tarawera Park	CONTROLS/TELEMETERY	ELECTRICAL	1	1980
Tarawera Park	CONTROL SHED	STEEL	1	1981
Tarawera Park	WET WELL	REINFORCED CONCRETE	4	1980
Tarawera Park	WET WELL - NEW PUMPS	REINFORCED CONCRETE	1	2016
Fox's Marae	WET WELL	REINFORCED CONCRETE	1	1998
Fox's Marae	CONTROLS	ELECTRICAL	1	1998
Fox's Marae	PUMPS	SUBMERSIBLE	2	2024
Firmin Lodge	WET WELL	REINFORCED CONCRETE	1	2015
Firmin Lodge	CONTROLS/TELEMETERY	ELECTRICAL	1	2015
Firmin Lodge	PUMPS	SUBMERSIBLE	2	2015
Waiū Dairy	WET WELL	REINFORCED CONCRETE	1	2020
Waiū Dairy	CONTROLS/TELEMETERY	ELECTRICAL	1	2020
Waiū Dairy	PUMPS	SUBMERSIBLE	2	2020
Waiū Dairy	TRADEWASTE CONTROL METER	ELECTRICAL	1	2020
Piripiri Cres–Retirement Village	PUMPS	SUBMERSIBLE	2	2021
Piripiri Cres	WET WELL	REINFORCED CONCRETE	1	2021
Piripiri Cres	CONTROLS/TELEMETERY	ELECTRICAL	1	2021

ASSET Treatment Plant Spencer Ave	DESCRIPTION	MATERIAL	QTY	YEAR
WASTEWATER PROCESSING	CONTROLS	ELECTRICAL	1	1988
WASTEWATER PROCESSING	CONTROLS - ADDITIONS	ELECTRICAL	1	2018
WASTEWATER PROCESSING	PUMPEX PX3-150 VORTEX (RAW WATER)	MECHANICAL	3	2013
WASTEWATER PROCESSING	PUMPEX PX3-100 (SCREEN WATER)	MECHANICAL	2	2019
WASTEWATER PROCESSING	TSURUMI TOS - 55 BER 2 SUBMERSIBLE EJECTORS	MECHANICAL	3	2018
WASTEWATER PROCESSING	CONTRA SHEAR 15/12 MILLISCREENS	MECHANICAL	2	2000
WASTEWATER PROCESSING	MILLISCREEN CONTROLS	ELECTRICAL	2	1988
WASTEWATER PROCESSING	PIPEWORK	STEEL	1	1988
WASTEWATER PROCESSING	STRUCTURE - SEWAGE PUMP STATION SUMP	REINFORCED CONCRETE	1	1988
WASTEWATER PROCESSING	SUMP VALVE CHAMBER	REINFORCED CONCRETE	1	1988
WASTEWATER PROCESSING	MILLISCREEN BUILDING	BUILDING	1	1988

WASTEWATER PROCESSING	SCREENED SEWAGE BUFFER TANK	REINFORCED CONCRETE	1	1988
WASTEWATER PROCESSING	TRANSFER PUMP SUMP	REINFORCED CONCRETE	1	1988
WASTEWATER PROCESSING	TPS VALVE CHAMBER	REINFORCED CONCRETE	1	1988
WASTEWATER PROCESSING	RAW PIT CHAMBER	REINFORCED CONCRETE	1	2024
WASTEWATER PROCESSING	RAW PIT PUMPS	MECHANICAL	2	2024
WASTEWATER PROCESSING	SCREEN WASTE PUMP & VALVE	MECHANICAL	1	2024
WASTEWATER PROCESSING	WWTP _ CRANE	MECHANICAL	1	2024
WASTEWATER PROCESSING	EARTHWORKS/ SITE DEVELOPMENT		1	1988

ASSET **Treatment Plant Spencer Ave**	**DESCRIPTION**	**QTY**	**YEAR**
WASTEWATER TREATMENT	ELECTRICAL CONTROL BUILDING - LOCKWOOD STYLE BUILDING	1	1989
WASTEWATER TREATMENT	EXTRACTOR FANS - CENTRIFUGE BUILDING	1	2018
WASTEWATER TREATMENT	WI-FI WASTEWATER TREATMENT PLANT	1	2017
WASTEWATER TREATMENT	COMPUTER EQUIPMENT	1	2021
WASTEWATER TREATMENT	PLC CONTROLS & STAINLESS STEEL CABINET	1	2005
WASTEWATER TREATMENT	DISTRIBUTION BOARD & STAINLESS STEEL CABINET	1	2005
WASTEWATER TREATMENT	MAIN CONTROL CABINETS, SWITCHGEAR & RETICULATED SERVICES	1	1985
WASTEWATER TREATMENT	VARIABLE SPEED DRIVES - THROUGHOUT (APPROX 12)	1	2005
WASTEWATER TREATMENT	ELECTRONIC POWER FACTOR REGULATOR	1	2005
WASTEWATER TREATMENT	EMERGENCY GENERATOR - 150KVA	1	2005
WASTEWATER TREATMENT	UPS SYSTEM WITH 5 X GXT - 48V BATT BATTERY PACKS	1	2024
WASTEWATER TREATMENT	AIR CONDITIONING SYSTEM	1	2021
WASTEWATER TREATMENT	CLARIFIER A - STAINLESS STEEL CLARIFIER INCLUDING SUPPORT STRUCTURES	1	2005
WASTEWATER TREATMENT	CLARIFIER B - STAINLESS STEEL CLARIFIER INCLUDING SUPPORT STRUCTURES	1	2005
WASTEWATER TREATMENT	THICKENER - STAINLESS STEEL TANK INCLUDING SUPPORT STRUCTURES	1	2005
WASTEWATER TREATMENT	SLUDGE STORAGE TANK - STAINLESS STEEL TANK INCLUDING SUPPORT STRUCTURES	1	2005
WASTEWATER TREATMENT	BREDEL SP40 PERISTALTIC PUMP	2	2008
WASTEWATER TREATMENT	BREDEL SP50 PERISTALTIC PUMP	2	2008
WASTEWATER TREATMENT	BREDEL SP50 PERISTALTIC PUMP - SPARE	1	2023
WASTEWATER TREATMENT	RIB FEED - FIBRE GLASS TANKS	4	1990
WASTEWATER TREATMENT	TREATED EFFLUENT - FIBRE GLASS TANKS	4	1990
WASTEWATER TREATMENT	CENTRIFUGAL PUMPS WITH 3KW MOTORS	2	2019
WASTEWATER TREATMENT	CENTRIFUGAL PUMPS WITH 3KW MOTOR	1	2021
WASTEWATER TREATMENT	ENCLOSED UV STERILISER - NOT IN USE	1	2008
WASTEWATER TREATMENT	AUTOMATED SAMPLING POINT INCLUDING TIMER, VALVES & REFRIGERATED CABINET	1	2,008
WASTEWATER TREATMENT	FABRICATED STAINLESS STEEL LABYRINTHS	1	2008
WASTEWATER TREATMENT	ROYCE 7011A SUSPENDED SOLID ANALYSER	4	2008

WASTEWATER TREATMENT	ROYCE 7011A SUSPENDED SOLID ANALYSER	1	2021
WASTEWATER TREATMENT	MISCELLANEOUS FLOWMETERS & INSTRUMENTS - THROUGHOUT	1	2008
WASTEWATER TREATMENT	STAINLESS STEEL PIPEWORK & VALVES - THROUGHOUT	1	2005
WASTEWATER TREATMENT	MISCELLANEOUS STEEL WALKWAYS & PLATFORMS	1	2005
WASTEWATER TREATMENT	CONCRETE HARDSTANDING FOR PLANT & EQUIPMENT	1	2007
WASTEWATER TREATMENT	CONCRETE BLOCK CONSTRUCTION WITH LONGRUN STEEL ROOF	1	2008
WASTEWATER TREATMENT	CLARIFYING DECANTER COMPLETE WITH CONTROL PANELS, VSD'S, ETC	1	2022
WASTEWATER TREATMENT	INCLINED SCREW CONVEYOR	1	2008
WASTEWATER TREATMENT	TRANSFER SCREW CONVEYOR	1	2021
WASTEWATER TREATMENT	CATIONIC POLYMER DOSING SYSTEM INCLUDING METERING PUMP, DOSING PUMP, DILUTE TANK & ANCILLARIES	1	2021
WASTEWATER TREATMENT	POLYMER RECIRCULATING PUMP	1	2008
WASTEWATER TREATMENT	POLYMER THICKENER DOSING PUMP	1	2008
WASTEWATER TREATMENT	POLYMER CENTRIFUGE DOSING PUMP	1	2020
WASTEWATER TREATMENT	CONTROL ROOM PRESSURISATION SYSTEM	1	2008
WASTEWATER TREATMENT	ALUM TANK - CONCRETE BUND	1	1990
WASTEWATER TREATMENT	ALUM TANK - FIBRE GLASS TANK	1	1990
WASTEWATER TREATMENT	ALUM METERING PUMP	1	2021
WASTEWATER TREATMENT	STATIC MIXERS	1	2005
WASTEWATER TREATMENT	PROCESS WATER CENTRIFUGAL PUMP INCLUDING PIPEWORK & VALVES	1	1990
WASTEWATER TREATMENT	RECYCLE SUMP - UNDERGROUND TANK	1	2000
WASTEWATER TREATMENT	SUBMERSIBLE PUMPS	2	2018
WASTEWATER TREATMENT	AGITATOR	1	2005
WASTEWATER TREATMENT	AGITATOR	1	2022
WASTEWATER TREATMENT	PIPEWORK & VALVES - THROUGHOUT 1	1	2005
WASTEWATER TREATMENT	PIPEWORK & VALVES - THROUGHOUT 2	1	1996
WASTEWATER TREATMENT	PIPEWORK & VALVES - THROUGHOUT 3	1	2009
WASTEWATER TREATMENT	RIB DISCHARGE PIPE	1	2024
WASTEWATER TREATMENT	RIB DISCHARGE CHAMBERS 1	1	1990
WASTEWATER TREATMENT	RIB DISCHARGE CHAMBERS 2	1	2009
WASTEWATER TREATMENT	STORAGE SHED WITH CONCRETE FLOOR	1	2019
WASTEWATER TREATMENT	PUMP - Backup	1	2020
WASTEWATER TREATMENT	PUMP - Backup	1	2022
WASTEWATER TREATMENT	OFFICE/LABORATORY - WEATHERBOARD CONSTRUCTION WITH LONGRUN IRON ROOF	1	1985
WASTEWATER TREATMENT	SEPTIC HOLDING TANK - 25,000 LITRE	1	1988
WASTEWATER TREATMENT	SECURITY FENCING	1	1986

WASTEWATER TREATMENT	SECURITY FENCING - ADDITION 2017	1	2017
WASTEWATER TREATMENT	WWTP _ OVERFLOW STORAGE TANK	1	2021
WASTEWATER TREATMENT	WWTP _ REPEATER (MONIKA LANHAM)	1	2021