KAWERAU DISTRICT COUNCIL
Asset Management Plan 2021

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

SECTION ONE
Executive Summary

1.1. 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.

The level of provision of asset management for the wastewater asset was evaluated in 2017 by an independent auditor. 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 latest assessment of the current asset management level and the level required for "Intermediate" showed a gap of 11 percent overall for Water Supply. The asset management improvement actions include actions to close this gap.

1.2. 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 175 businesses.

Kawerau's water is principally sourced from two springs. On the rare occasions when demand is high and spring flows are low, Council can obtain additional water from a bore field. From source, the water is treated in an ultraviolet (UV) treatment plant, chlorinated 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	7460
Number of properties connected	2,845
Number of properties not connected (includes vacant sections)	88
Length of reticulation (kms)	78
Number of pumping stations	2

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 are shown below:

Replacement and depreciated values

Asset Type	**Gross Replacement Cost @30-6-2019**	**Depreciated Replacement Cost @30-6-2020**
Supply & treatment	$1,591,520	$1,496,500
Storage	$10,955,900	$2,913,380
Distribution	$16,241,600	$4,612,693
TOTAL	**$28,736,290**	**$9,022,573**

1.3. 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 Communitrack Survey in 2020 reports 73% resident satisfaction with the water supply service, which is for the first time, below both the peer group (79%) and national averages (75%).

The reasons provided by the 26% 'Not Very Satisfied' respondents being:

- Poor quality/brown/dirty (13%)
- Too many chemicals/chlorine (12%)
- Undrinkable/buy bottled water (9%)
- 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. No fluoride is added to the water supply.

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 3.3 of the Plan.

Resource consents

Council holds one resource consent from the BOP Regional Council for the provision of a town water supply to cover the two primary supply sources and reports to that organisation in accordance with the various conditions. Council holds a second resource consent that provides for the use of three bores located at Tarawera Park. These bores were effectively decommissioned however have recently been refurbished and tested with new pumps to enable their use if required.

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.

1.4. FUTURE NEEDS

Kawerau's water supply network is generally adequate for current demands 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.

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 24% faster degradation than the national averages. This is primarily due to historically high acidity of water. Significant replacement of AC-pipes are planned in the next 10 years.

1.5. LIFE CYCLE MANAGEMENT

Critical assets

Springs

There are two springs (Umukaraka/Holland and Pumphouse), which are natural resources.

Pumps

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

Water Treatment Equipment

Used for pH correction, UV treatment and chlorination.

Reservoirs

Water is stored in three concrete reservoirs.

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 two bores with pumps, telemetry system, valves, fire hydrants, service connections, meters, backflow preventers and Pumphouse with UV, lime and chlorine 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 kilometers in 2018 to service the new industrial subdivision 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.

Maintenance activities

Maintenance activities include daily checks of the springs, pumps, telemetry system and the 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 broadly deteriorating about 24% 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 is 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 PVC pipe is being accelerated.

The zones are:

1. 1955-1957 (~22 550 m)
2. 1962-1970 (~14 900 m)
3. 1973 (~10 300 m)
4. 1978 (~8 900 m)
5. 1980-1996 (~ 8 200 m)
6. 2000 to present (~11 600 m)

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 within the next 6 years.

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.

1.6. 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. The funding collected in excess of the actual replacement is being held in the depreciation reserve. At some stage of the replacement cycle, the account will go into deficit and Council will raise a loan to fund this deficit. Initially the loan will probably be internal and against the other depreciation reserves.

The replacement of the existing AC pipes to date has very closely followed the theoretical life of the assets. The model for replacement of water pipes based on remaining life is reasonably accurate as the pipes lives have been verified by physical testing and pipe failures has also confirmed the deterioration rates.

1.7. 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.), recalculating revised depreciation value, 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.

1.8. MONITORING AND IMPROVEMENT PLANNING

Improvement items are outlined in section 10 of the Plan. Key improvement activities centre on continuing to increase the accuracy of Council's information relating to the water supply 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

2.1. 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.

2.2. ASSET DESCRIPTION

The Kawerau District has one water supply network, to which 2,932 properties are connected. The network comprises springs, pumps, reservoirs and pipes. It distributes potable (drinkable) water to over 2,700 households, 5 large industrial plants and approximately 175 businesses. The network serves a resident population of 7,460 people (as recorded in the 2018 Census).

Kawerau's water is principally sourced from two springs: Umukaraka/Holland Spring located on the Tarawera Falls Road and the Pumphouse Spring on River Road. When demand is high, Council can also obtain water from a bore field in Tarawera Park extensively refurbished during the 2021 financial year. 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.

A resource consent is held from Bay of Plenty Regional Council (BOPRC) for the extraction of natural water that is used for public supply from the two springs. There is a second resource consent relating to the use of the Borefield source. 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 1 below:

Table 1: Key components

Number of properties connected	2845
Number of pumping stations	2
Length of reticulation (km)	78
Maximum supply (m^3/day)	12,500

2.3. OBJECTIVES OF ASSET OWNERSHIP

The goal of the Water Supply activity is to provide a quality water supply in sufficient quantities to meet reasonable community needs.

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.

2.4. CONTRIBUTION TO COMMUNITY OUTCOMES

The Council Community outcomes to which the Water Supply Activity primarily contributes are set out in Table 2 below:

Table 2: 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.

2.5. 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 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 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.

In this way, 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 2021-2031. It will underpin and be integrated into both that document, and the Annual Plans made over the next ten years.

SECTION THREE
Levels of Service

3.1. 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.

Table 3: NRB Survey Results – Water Supply

%	2007	2008	2009	2011	2014	2017	2020
Very/Fairly Satisfied	95	96	97	99	96	96	73
Not very Satisfied	4	4	3	1	3	4	26
Don't Know	1	-	-	-	1	0	0

Table 4: NRB Survey Results – Reasons Residents were not very satisfied

	2007	2008	2009	2011	2014	2017	2020
Poor quality of water/ contaminated	2	2	2	-	-	2	29
Chlorine content	1	1	-	-	-	-	14
Low pressure	1	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

One of the measures for Customer Satisfaction includes reports of instances of low water pressure.

- There had been reports in recent times of low water pressure coming from the Doug Wilson Crescent end of Beattie Road; located between the Pump House facility and the Beattie Road Reservoir. This issue was due to the supply feed line for Doug Wilson Crescent being located directly below the pumps (the low-pressure side) that feed the Beattie Rd Reservoir, low pressure was experienced in this area during the times when these pumps were operational. Immediate resolution was achieved following the installation of a separate line to feed the affected area from the Beattie Road Reservoir. These works were undertaken in 2020 with no further reports of low pressure received.
- Historically, it is known by staff that there were low pressure issues reported in Ion Road, however no reports have been received from this area in some years. These may present again if a proposed residential development is undertaken in Stoneham Park, therefore staff may need to take this information into consideration during the planning phase should this project be progressed.

3.2. 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 Manager, Operations and Services.

Table 5: Technical Levels of Service (LOS)

LOS	Performance Measure
Provision of a quality water supply	97% 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	Part 4 and 5 of the 2008 drinking-water standards compliance
Water supply and losses	Supplying 0.6 m^3 per resident per day and less than 200 l/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

3.3. WATER QUALITY

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

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

The P2 determinants arsenic and cadmium were removed in 2017 and currently only lead is monitored.

3.4. CONSTRAINTS TO LEVELS OF SERVICE

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

Table 6: Constraints to Levels of Service

Constraint	Component	Comments
Capacity	Resource Consents	The maximum record daily use was 12,000 m^3 per day and the minimum combined spring flow 11,500 m^3 per day. If the two coincide, supply can be augmented from the bore fields, which can provide an additional 6,720 m^3 per day. If additional water is required, a new source of water will have to be found. If resource consents are not renewed, new water sources will have to be found.
	Treatment Chemical Storage	If additional water volume were required, more frequent delivery of chemicals would occur. 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.

Constraint	Component	Comments
		The capacity of reservoirs is 11,250m^3 and average daily use is currently 4110m per day.
	Reticulation - normal demand	If pipe diameters are insufficient, low-pressure results. There are no low-pressure zones when flow is less than 10,000m^3 per day. During peak flow of over 12,000m^3 per day, low pressure can be experienced by some residents. This has occurred up to five times in a year however, this is only during very dry years. Public announcements are made about reducing usage consumption so pressure is restored.
Reliability and Security of Supply	Sources	The main sources are springs; therefore supply from the source is unlikely to fail except during 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 Asbestos Cement rising main will be used.
	Rising Mains	Failure of the new 450mm Polyethylene rising main means a standby 375mm Asbestos Cement rising main will be used.
	Reservoirs	Failure of one of the two Monika Lanham reservoirs would reduce the storage capacity of the network by 30%. 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 30%.
	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	Unlined cast iron or galvanised pipes are likely to affect water quality by adding by-products. Concrete and fibre cement pipes may increase the alkalinity of the water. In Kawerau, because the pH of the water was raised in 1995, leaching of cement from the AC pipe walls has reduced.

3.5. RESOURCE CONSENTS

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

Table 7: Resource Consents

Consent No.	Source	Purpose	Daily volume able to be taken or discharged (m^3)	Expiry Date
61344	Umukaraka (Holland) Spring, Tarawera Forest	Providing a town water supply	14, 400m^3	30 April 2012 Final stages of renewal
61344	Pumphouse Spring, River Road		5,184 m^3	
20329	Tarawera Borefield, Cobham Drive	Providing a town water supply	12,000 m^3	No Expiry

Under current resource consents, the maximum quantity of water that can be taken for town supply cannot exceed 16,440m3 per day from a combination of the three sources. This volume exceeds the maximum capacity of the pumps, which is 12,500m^3 per day. Council reports to the BOP Regional Council in accordance with the various conditions in the consents.

3.6. 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.

The water taken from the two springs for Kawerau's water supply would otherwise flow into the Tarawera River through tributary streams. Although taking the water for the town water supply only reduces the flow of the river by 0.2 to 0.7 percent, this reduces the volume of water available for other uses, primarily recreational or commercial. This could be regarded, as a negative effect to social, environmental and economic wellbeing however of it is an extremely small impact.

SECTION FOUR
Risk Management

4.1. RISKS

4.1.1. *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 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.

4.1.2. *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.

4.1.3. *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.

4.1.4. *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.

4.1.5. *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 time frame 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.

4.1.6. *Security of Supply*

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

4.1.7. *Covid-19 related procurement risk*

The COVID-19 pandemic has brought fast-moving and unexpected challenges for all individuals and organisations throughout the country. Like many companies, Kawerau District Council has developed and implemented management plans and policies specific to this crisis based upon the best practice guidelines from central Government.

An area of risk Council has limited influence over is supply chains, contractor labour shortages and therefore the ability to do the work required. Rapidly depleting stock and reliance on products from overseas alongside a high growth residential building environment are all contributing to a significant risk to infrastructure renewals programmes.

Three procurement strategies identified for consideration in order to attempt mitigation of the risks outlined above:

- Consider moving to Target Price contracts rather than the usual Lowest Price Conforming.
- Consider holding a 3 Waters Contract Procurement Planning event for interested contractors in order to present Council's longer-term project programme. Enabling contractors to successfully plan ahead for upcoming tendering opportunities.
- Consider tendering a single longer-term contract that includes packages of projects to provide certainty and to take advantage of optimal pricing opportunities.

4.2. 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 that are damaged due to disaster.

Civil defence and emergency response plans

Council has separated essential staff for recovering the water supply system in the event of a disaster from the civil defence recovery. The key areas have been identified and responses proposed.

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 8: 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

5.1. CURRENT CAPACITY

5.1.1. *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.

5.1.2. *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.

5.1.3. *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.

5.2. FUTURE DEMAND

Kawerau District has experienced and is expected to continue to experience low growth in demand for additional water supply 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 modest growth of general population to 7,460.

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.

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 initial development of a new industrial park on SH34 opposite the existing mill site. Industrial development commenced in 2018 with the commissioning of the Waiu dairy factory in June 2019. The construction of 2km of 150mm water main occurred in response to this development.

5.3. TRENDS

Population growth

The Kawerau population had fallen between the 2006 and 2013 census, however the 2018 census found growth of 17.2% in 5 years against all projections for the district. Into the future, it is projected to rise with medium projections indicating a population of 8,000 by 2028.

Council is engaging in economic development initiatives to attempt to bolster this trend, and indeed the latest 2018 census for Kawerau was 7,460 that may indicate resurgence in the town.

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.

Table 9: 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

5.4. NEW CAPITAL REQUIREMENTS

Capital work has been carried out to improve water quality with construction of the ultraviolet treatment plant. Failure to achieve drinking water standards compliance in the future may require consideration of additional capital works, such as chlorine dosing equipment.

The connection of the UV plant to the 225mm rising main will provide additional security for the supply.

The installation of the electronic controls for the bores will provide additional resilience around supply volumes.

SECTION SIX
Lifecycle Management

6.1. 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 to be planned.

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

6.1.1. *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. The construction reduces the potential for contamination of the water from animals, birds and humans.

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

6.1.2. *Pumps*

Water from the two springs (and bores as required) is piped to the pump house. 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 operate without significant problem.

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

6.1.3. *Water Treatment*

Treatment of the raw water comprises:

- pH correction involving lime 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.

6.1.4. *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.

6.1.5. *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 62 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 1* and *Figure 2*.

6.2. OTHER ASSETS

6.2.1. *Bores*

The two bores in Tarawera Park are used to supplement the spring supply when they do not meet demand. This is not a common event. The bores consist of ‘down the hole’ pumps and the water is fed into the gravity line linking Umukaraka Springs to the Pumphouse. The bore water microbiological quality is lower than the springs. The UV and chlorine treatment is able to fully eliminate the risk therefore NZDWS 2008 is complied with.

6.2.2. *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.

6.2.3. *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.

6.2.4. *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.

6.2.5. *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.

6.2.6. *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.

6.2.7. *Backflow Preventers*

Only properties that included activities that used chemicals, has boosted water pressure or use animal drinking troughs were fitted with backflow preventers to stop contamination of the water supply. The backflow preventers are serviced in accordance with recommended practice.

Generally speaking, all systems are in a reasonable state of repair. If they are maintained and renewed regularly and at the appropriate times, it is expected that the existing levels of service (pressure, volume) will continue indefinitely.

6.2.8. *Buildings*

Water supply buildings are the pump station structure, the lime dosing structure and the UV and chlorine treatment plant building. These are constructed of concrete block and are regularly maintained.

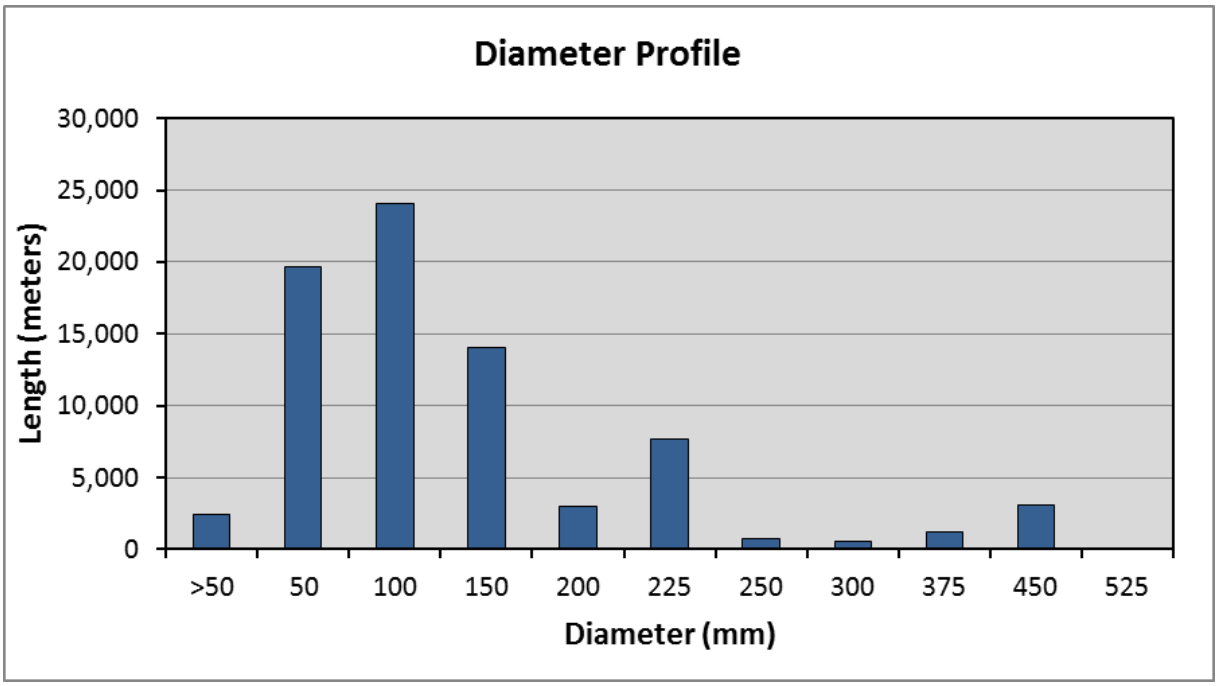

Figure 1: Diameter Profile of Water Supply Pipes

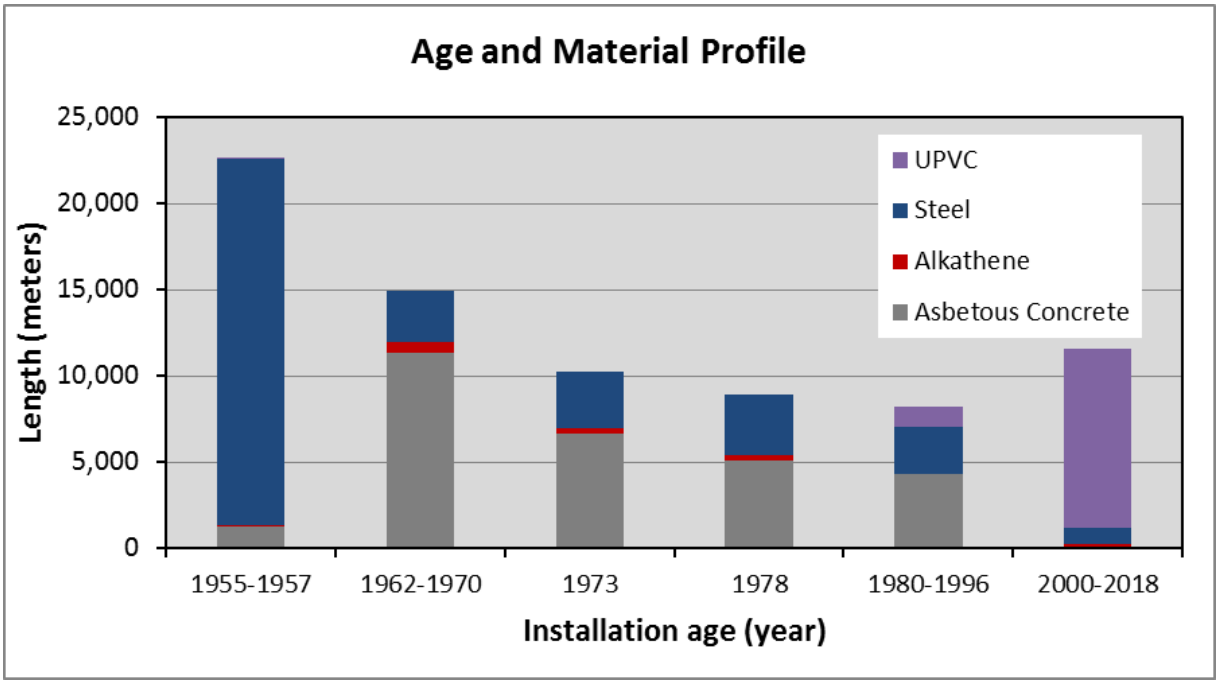

Figure 2: Age/Material Profile of Water Supply Pipes

6.3. ASSET DATA

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 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 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

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.

6.4. MAINTENANCE PLAN

6.4.1. *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.

6.4.2. *Springs*

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

6.4.3. *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.

6.4.4. *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.

6.4.5. *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.

6.4.6. *pH Control*

The pH of the water supply is monitored continuously. The recorded pH information is checked daily and lime pump flow adjustments made depending on results. The lime-dosing tank is checked daily to ensure adequate dosing material is available. The quantity of lime in stock is monitored weekly. The lime-dosing pump is checked daily.

6.4.7. *Telemetry*

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

6.4.8. *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 the risk. This was deemed to have been successful. The 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 does not build up in the Beattie Road reservoir.

6.4.9. *Pipes*

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

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

6.4.10. *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 additional customers are impacted, as the shutdown will cover a larger area.

6.4.11. *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.

6.4.12. *Service Connections*

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

6.4.13. *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.

6.4.14. *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.

6.4.15. *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 expect they will have a life of at least 50 years.

6.5. 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 up to 24% 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.

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 PVC pipe is being accelerated.

The zones are:

1. 1955-1957 (~22 550 m)
2. 1962-1970 (~14 900 m)
3. 1973 (~10 300 m)
4. 1978 (~8 900 m)
5. 1980-1996 (~ 8 200 m)
6. 2000 to present (~11 600 m)

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 within the next 6 years. The assets are to be renewed in a phased approach per zone according to known asset condition at an estimated investment of $13-15m over 6 years.

- Zone 1 (Town Centre & Geothermal areas) – 2021/22
- River Road – 2021/22
- Zone 2 & 3 – 2022/23
- Zone 4 & 5 – 2023/24
- Zone 6, Tamarangi Dr & Spencer Ave – 2024/25
- Zone 7 & 8 – 2025-27

Major considerations driving the renewal programme:

- Address discoloured water
  - Manganese and Iron buildup
- Polyethylene piping Vs Iron & AC
  - Life expenctancy
  - Performance in field (buildup of Iron & Manganese
- Restore pipeline integrity
  - Reduce downtime & service interruptions
- Address impact on resources
  - 44 failures per year
- Zone 7 has exceeded the recommended replacement date
- Zones 2, 4 & River Rd will reach retirement within 5 years
- Annual survey complaints
  - Poor quality water complaints

Council considered and rejected a further three renewal programme options:

- (Status quo) Replace lines as failures occur at a greater level of investment over an undetermined period of time. This option would see approximately 40% renewal of the network over the next 10 years.
- Expand the condition assessment extensively and replace accordingly with a further 23 samples required across the 8 zones. This assessment period estimated to cost $100,000 over a 3 month period.
- Replace all AC lines only, leaving steel lines and replace fittings to mitigate additional sampling costs, with primary concern given to the effects of manganese and iron.

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

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. This reduces the overall cost to the Community.

Various pipes in the network were tested in 2007, 2017 and 2018 to help determine the rate of deterioration. The results indicated that overall, the deterioration rate was 24% faster than the National Asset Management Steering Group (NAMS) manual guidelines. This is especially true for Kawerau's town centre zone, which is an area of geothermal activity. The heat and chemicals present mean a significant shortening of AC pipe life. Pipes in this zone have been given half the life of similar assets in other parts of Kawerau. The life expectancies used to calculate depreciated values are listed in Table 10.

6.5.1. *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. Replacement of the spring headworks will be undertaken in a timely manner. The replacement cost of the structures is approximately $50,000.

6.5.2. *Gravity main: Umukaraka Springs to Pumphouse*

The pipe was installed in 1968. Testing undertaken in 2007 suggested that the first failures would occur around 2028. Since these

are critical assets pipe replacement has been programmed to occur in 2026/27. The approximate cost of replacement projected to be $2.4 million.

6.5.3. *Bores*

The bores are rarely used. 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 life is estimated at 60 years.

6.5.4. *Rising Main: Monika Lanham Reserve Reservoirs*

This is a critical asset and replacement will involve laying an alternative pipe then decommissioning the existing one. While not expected to fail until 2028/29, because the pipe is critical, replacement was undertaken in 2020/2021. The rising main replacement contract is valued at $750 thousand.

The 225mm backup steel rising main has been replaced with a 450mm Polyethylene line. This new pipe can be used to supply water to the reservoir at 600m^3/hr. The existing 375mm Asbestos Cement line will be the backup line and is capable to maintain flows of 530m^3/hr.

6.5.5. *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 2027/28 ($0.7 million), 2058 ($1.4 million) and 2063 ($1.5 million) – at 2020 costs.

6.5.6. *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 was 24% 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 is expected to reduce deterioration and have a detectable effect on the life of pipes installed after 1980.

A significant portion (44%) 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 2021 - 2027. 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.

6.5.7. *Water Meters*

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

Table 10: Asset Life Expectancies – Water Supply

Asset	Life Expectancy Years
AC pipes	70
PVC/PE pipes	100
Steel and ductile iron pipes	20-40
Concrete lined iron pipes	80
Valves	60
Telemetry	25

Meters	40
Pumps	25
Bores	60
Hydrants	60
Reservoirs	80
UV treatment plant - pipework	40
UV treatment plant – electronics	25

6.6. 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.

6.7. 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.

6.8. 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

7.1. FUTURE REQUIREMENTS

Table 11: Estimated Financial Requirements

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
Expenditure										
Personnel costs	183,149	187,545	190,351	193,587	197,463	201,808	206,444	211,401	216,887	222,742
Materials	286,231	313,518	299,062	305,083	311,276	340,027	323,955	330,980	338,184	368,182
Internal charges	155,400	158,510	161,680	164,750	167,720	170,740	173,650	176,610	179,610	182,490
Overheads	227,110	239,400	242,430	242,060	248,170	262,710	257,120	263,860	274,470	282,760
Interest	25,000	75,000	125,000	175,000	225,000	275,000	305,950	303,200	300,120	300,000
Depreciation	551,569	577,377	604,674	722,959	755,133	811,651	939,007	939,310	951,688	1,079,876
	1,431,699	**1,557,240**	**1,629,697**	**1,809,689**	**1,911,262**	**2,069,286**	**2,212,936**	**2,232,381**	**2,268,639**	**2,443,700**
Asset renewals	2,213,000	2,580,779	2,729,718	2,575,140	3,217,370	5,651,876	1,291,064	30,334	1,237,777	19,411
Loan Principal	6,076	12,304	18,668	25,231	31,938	38,813	39,783	40,778	41,797	42,842
	3,650,775	**4,150,323**	**4,378,083**	**4,410,060**	**5,160,570**	**7,759,975**	**3,543,783**	**2,303,493**	**3,548,213**	**2,505,953**

7.2. 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 some cases, it has looked at activities from two points of view – availability of the service and use of the service. Activities have been broken into availability and use where they benefit different groups in the Community. 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).

7.2.1. *Availability*

Distribution of Benefits

The availability of water is a benefit to the District as a whole. Council considers that there is 100% public good for the area of availability.

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 100% funded from general rates.

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 is catered for though the revaluation of the assets is a three-yearly cycle.

7.2.2. *Use*

Distribution of Benefits

Use of the water supply meets the test of a private good. Council considers the use of this activity as being 100% private benefit.

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 annual charges and fees and charges (e.g. charges on extraordinary usage by meter).

7.3. 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 2019.

7.3.1. *Asset basis of valuation*

Valuation of water assets are done on the following basis:

Table 12: 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.

7.3.2. *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.

7.3.3. *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 2019.

7.3.4. *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.

7.4. KEY ASSUMPTIONS

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

7.4.1. *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.

7.4.2. *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 13: Replacement Costs and Depreciated Values

Asset Type	Gross Replacement Cost @30-6-2020	Depreciated Replacement Cost @30-6-2020
Supply & treatment	$1,591,520	$1,496,500
Storage	$10,955,900	$2,913,380
Distribution	$16,241,600	$4,612,693
TOTAL	**$28,736,290**	**$9,022,573**

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 peer review.
- Replacement includes valves, fittings, and house connections. 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

7.4.3. *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 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.

7.4.4. *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.

7.4.5. *Other assumptions*

- All expenditure is stated in 2020 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.

7.4.6. *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.

7.4.7. *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

Asset Management Systems & Processes

9.1. Responsibilities for Asset Management Outcomes

The Asset & Contract manager is responsible for the development of this asset management plan, including maintaining the integrity of Council's asset information.

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

The 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 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.

9.2. Accounting and Asset Management Systems

9.2.1. *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.

9.2.2. *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 and 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.

9.2.3. *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.

9.3. 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

9.4. 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.

9.5. 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.

9.6. 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.

9.6.1. *Renewal*

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

9.6.2. *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 would be treated on its merits, but in most cases, the funding would be sought from the developers/subdividers.

9.6.3. *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.

9.6.4. *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

10.1. 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.

10.2. Improvement Actions

Table 14: Improvement Actions

Improvement Item	Comment	By When	By Whom	Cost
Review population projections	Information will be provided by Statistics NZ	Census 2020	AMC	$0
Improve knowledge of AssetFinda which makes reporting of asset life condition values simple and repeatable	Training staff (ACM & 3WM)	Ongoing	MOS	$3,000
Add as built plan information to AssetFinda	Resource	Annually	ACM / 3WM	$2,000
Conduct asset revaluations	Resource	June 2018 and yearly thereafter	MFCS	$5,000
Setup Maintenance schedules within AssetFinda to track and support all periodic activities.	Resource	Ongoing	3WM	$15,000

ACM = Asset and Contract manager

3WM = Three Waters manager

MOS = Manager Operations and Services

MFCS = Manager Finance and Corporate Services

10.3. 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

11.1. 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	2000
BOOSTER STATION (BEATTIE ROAD)	GRUNDFOS SP160-2 BOOSTER PUMP	MECHANICAL	1	2017
BOOSTER STATION (BEATTIE ROAD)	CONTROL	ELECTRICAL	1	2000
VALVES & FITTINGS	150MM REFLUX VALVES & PRESS. GAUGES	METER	4	1968
VALVES & FITTINGS	KENT 375MM DALL TUBE	METER	1	1968
VALVES & FITTINGS	250MM LEEDS METER	METER	1	1968
CONTROL	CABLING	ELECTRICAL	1	1990
BRIDGE	PIPE BRIDGE 60m	STEEL	1	2017
CONTROL	TELEMETRY	ELECTRICAL	1	2005
CONTROL	WATER LEVEL PROBES	ELECTRICAL	3	2005
CONTROL	WATER LEVEL ALARM	ELECTRICAL	1	2005
VALVES & FITTINGS	450MM ANNUBAR (PROP)	MECHANICAL	1	1968
VALVES & FITTINGS	300MM ANNUBAR (PROP)	MECHANICAL	1	1968
TRUNK MAIN - GRAVITY	450	ASBESTOS CEMENT	3,200	1968
TRUNK RISING MAIN	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
VALVES & FITTINGS	450MM SLUICE VALVES	VALVE	4	1968
VALVES & FITTINGS	375MM SLUICE VALVES	VALVE	2	1968
VALVES & FITTINGS	375MM REFLUX VALVES	VALVE	1	1968
VALVES & FITTINGS	300MM SLUICE VALVES	VALVE	10	1968
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	1968
VALVES & FITTINGS	300MM SINGER ALTITUDE VALVE	VALVE	1	1968
BOOSTER STATION (BEATTIE ROAD)	CONTROL SHED	STEEL	1	1978
TRUNK GRAVITY/RISING MAIN (225mm)	225	ASBESTOS CEMENT	1,670	1971
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
BOOSTER STATION (BEATTIE ROAD)	STRUCTURE	REINFORCED CONCRETE	1	1978
RESERVOIR	4,500,000 Litre	REINFORCED CONCRETE	1	1983
BULK METERS AT RESERVOIR	BULK METER	BULK METER	2	2012
BULK METERS AT RESERVOIR	BULK METER	BULK METER	1	2013

ASSET	DESCRIPTION	MATERIAL	QTY	YEAR
Pipes	**(mm)**			
WATER SUPPLY PIPELINES - Piripiri & Tiwhatiwha Crescent	100	PVC	420	2019
WATER SUPPLY PIPELINES - Tamarangi Drive	100	PVC	112	2017
WATER SUPPLY PIPELINES - Tamarangi Drive	100	PVC	281	2018
WATER SUPPLY PIPELINES - Tamarangi Drive	100	PVC	8	2019
WATER SUPPLY PIPELINES - Tarawera River	100	PVC	150	2014
WATER SUPPLY PIPELINES - Tarawera River	100	PVC	16	2016
WATER SUPPLY PIPELINES- ZONE 1	150	ASBESTOS CEMENT	1867	1957
WATER SUPPLY PIPELINES- ZONE 1	150	ASBESTOS CEMENT	810	2009
WATER SUPPLY PIPELINES- ZONE 1	225	ASBESTOS CEMENT	1629	1957
WATER SUPPLY PIPELINES- ZONE 1	<=100	ASBESTOS CEMENT	9235.4	1957
WATER SUPPLY PIPELINES- ZONE 1	150	CONCRETE LINED IRON	962	1957
WATER SUPPLY PIPELINES- ZONE 1	225	CONCRETE LINED IRON	26	1957
WATER SUPPLY PIPELINES- ZONE 1	<=100	CONCRETE LINED IRON	2126	1957
WATER SUPPLY PIPELINES- ZONE 1	<=100	CONCRETE LINED IRON	406	1957
WATER SUPPLY PIPELINES- ZONE 1	<=100	GALVANISED IRON	1163	1957
WATER SUPPLY PIPELINES- ZONE 1	200	PVC	79	2012
WATER SUPPLY PIPELINES- ZONE 1	225	PVC	138	2019
WATER SUPPLY PIPELINES- ZONE 1	250	PVC	5	2012
WATER SUPPLY PIPELINES- ZONE 1	<=100	PVC	18	2003
WATER SUPPLY PIPELINES- ZONE 1	<=100	PVC	2582	2009
WATER SUPPLY PIPELINES- ZONE 1	<=100	PVC	6092	2009
WATER SUPPLY PIPELINES- ZONE 1	<=100	PVC	4150	2011
WATER SUPPLY PIPELINES- ZONE 1	<=100	PVC	82.6	2017
WATER SUPPLY PIPELINES- ZONE 2	150	ASBESTOS CEMENT	522	1965
WATER SUPPLY PIPELINES- ZONE 2	<=100	ASBESTOS CEMENT	4673	1965
WATER SUPPLY PIPELINES- ZONE 2	<=100	CONCRETE LINED IRON	90	1965
WATER SUPPLY PIPELINES- ZONE 2	<=100	GALVANISED IRON	1380	1965
WATER SUPPLY PIPELINES- ZONE 2	<=100	PVC	5	2003
WATER SUPPLY PIPELINES- ZONE 3	225	ASBESTOS CEMENT	980	1973
WATER SUPPLY PIPELINES- ZONE 3	<=100	ASBESTOS CEMENT	2076	1973
WATER SUPPLY PIPELINES- ZONE 3	<=100	ASBESTOS CEMENT	5842	1973
WATER SUPPLY PIPELINES- ZONE 3	225	CONCRETE LINED IRON	60	1973
WATER SUPPLY PIPELINES- ZONE 4	150	ASBESTOS CEMENT	700	1978
WATER SUPPLY PIPELINES- ZONE 4	225	ASBESTOS CEMENT	2206	1978

WATER SUPPLY PIPELINES- ZONE 4	<=100	ASBESTOS CEMENT	5863	1978
WATER SUPPLY PIPELINES- ZONE 5	150	ASBESTOS CEMENT	1248	1985
WATER SUPPLY PIPELINES- ZONE 5	200	ASBESTOS CEMENT	891	1985
WATER SUPPLY PIPELINES- ZONE 5	<=100	ASBESTOS CEMENT	3038	1985
WATER SUPPLY PIPELINES- ZONE 6	225	ASBESTOS CEMENT	40	1955
WATER SUPPLY PIPELINES- ZONE 6	225	ASBESTOS CEMENT	184	1965
WATER SUPPLY PIPELINES- ZONE 6	<=100	ASBESTOS CEMENT	39	1962
WATER SUPPLY PIPELINES- ZONE 6	<=100	GALVANISED IRON	75	1995
WATER SUPPLY PIPELINES- ZONE 6	225	PVC	20	2003
WATER SUPPLY PIPELINES- ZONE 6	<=100	PVC	5	2003
WATER SUPPLY PIPELINES- ZONE 6	<=100	PVC	39	2011
ASSET	**DESCRIPTION**	**MATERIAL**	**QTY**	**YEAR**
Valves				
VALVES - ZONE 6	50mm Brass	BRASS	44	2003
VALVES - ZONE 2	0-37.5mm Brass	BRASS	6	2003
VALVES - DISTRICT WIDE	0-37.5mm Brass	BRASS	10	1958
VALVES - DISTRICT WIDE	100mm Cast Iron	VALVE	151	1961
VALVES - DISTRICT WIDE	100mm Cast Iron	VALVE	1	2002
VALVES - DISTRICT WIDE	100mm Cast Iron	VALVE	9	2009
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	27	1966
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	8	2009
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	23	2011
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	6	2016
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	3	2017
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	10	2018
VALVES - DISTRICT WIDE	150mm Cast Iron	VALVE	5	2019
VALVES - DISTRICT WIDE	200-225mm Cast Iron	VALVE	60	1975
VALVES - DISTRICT WIDE	200-225mm Cast Iron	VALVE	7	2014
VALVES - DISTRICT WIDE	50mm Brass	BRASS	240	1969
VALVES - DISTRICT WIDE	50mm Brass	BRASS	24	2002
VALVES - DISTRICT WIDE	50mm Brass	BRASS	37	2009
VALVES - DISTRICT WIDE	50mm Brass	BRASS	8	2014
VALVES - DISTRICT WIDE	75mm Brass	BRASS	2	1974
LATERALS (incl. TALBOT, TOBY, PIPE)	100mm	ASBESTOS CEMENT	883	1961
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	ASBESTOS CEMENT	8	1966
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	26	2011
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	26	2012
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	39	2016
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	44	2017
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	27	2018
LATERALS (incl. TALBOT, TOBY, PIPE)	150mm	PVC	130	2019
LATERALS (incl. TALBOT, TOBY, PIPE)	75mm	ASBESTOS CEMENT	2	1974
LATERALS (incl. TALBOT, TOBY, PIPE)	15-50mm	COPPER	1358	1969
LATERALS (incl. TALBOT, TOBY, PIPE)	200-225mm	ASBESTOS CEMENT	193	1975
FIRE HYDRANT ZONE 2			2	2003

FIRE HYDRANT			833	1961
FIRE HYDRANT			8	2002
FIRE HYDRANT			17	2009
FIRE HYDRANT			13	2011
FIRE HYDRANT			3	2014
FIRE HYDRANT			10	2019
ASSET	**DESCRIPTION**	**MATERIAL**	**QTY**	**YEAR**
Headworks				
HOLLAND (Umukaraka) SPRING	WEIRS	REINFORCED CONCRETE	3	1965
HOLLAND (Umukaraka) SPRING	COLLECTION BOX 25x 5x 9M	TIMBER	1	1965
HOLLAND (Umukaraka) SPRING	SECURITY FENCING	TIMBER	60	1965
PUMPHOUSE - SPRING	AUTO DIALLER FOR LOW PUMP CUTOUT	RECORDER	1	2002
PUMPHOUSE - SPRING	DATALOGGER	RECORDER	1	2002
PUMPHOUSE #1	AUTO STOP/START LEVEL CONTROLS	ELECTRICAL	1	1998
PUMPHOUSE #1	CABLING	ELECTRICAL	1	1968
PUMPHOUSE #1	PUMP CONTROLS	ELECTRICAL	1	1980
PUMPHOUSE #1	UV PLANT CONTROLS	ELECTRICAL	1	2017
PUMPHOUSE #1	VARIABLE SPEED DRIVE	ELECTRICAL	3	2012
PUMPHOUSE #1	UV PLANT PIPEWORK	GALVANISED IRON	1	2002
PUMPHOUSE #1	PUMP #1 AND MOTOR HARLAND 125HP	MECHANICAL	1	1972
PUMPHOUSE #1	PUMP #2 AND MOTOR HARLAND 125HP	MECHANICAL	1	1972
PUMPHOUSE #1	PUMP #3 AND MOTOR HARLAND 125HP	MECHANICAL	1	1972
PUMPHOUSE #1	UV PLANT	MECHANICAL	1	2002
PUMPHOUSE #1	DELIVERY MAIN PRESSURE GAUGES	METER	4	1968
PUMPHOUSE #1	KENT FLOW RECORDER AND INTEGRATOR	METER	1	1968
PUMPHOUSE #1	SECURITY FENCING	POST/WIRE FENCE	60	1968
PUMPHOUSE #1	COLLECTION CHAMBER 5M X 3M X .9M	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	WEIR	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	WETWELL	REINFORCED CONCRETE	1	1968
PUMPHOUSE #1	WETWELL INTAKE MANIFOLD	REINFORCED CONCRETE	1	1968
STEAMLINE BORE TO PUMPHOUSE	STEAMLINE BORE TO PUMPHOUSE	WELL	1	2001
STEAMLINE BORE TO PUMPHOUSE	STEAMLINE BORE TO PUMPHOUSE	WELL	1	2002
TARAWERA PARK BORE SITE	CONTROL SHED	CONC BLOCK	5	2017

TARAWERA PARK BORE SITE	CONTROL EQUIPMENT	ELECTRICAL	1	1968
TARAWERA PARK BORE SITE	TELEMETRY	ELECTRICAL	1	1968
TARAWERA PARK BORE SITE	FLOW AND PRESSURE MEASUREMENT	MECHANICAL	1	1968
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	SECURITY FENCING	POST/WIRE FENCE	80	1968
TARAWERA PARK BORE SITE	BORE 1 7M X 150MM	WELL	1	1965
TARAWERA PARK BORE SITE	BORE 2 7M X 150MM	WELL	1	1965
TARAWERA PARK BORE SITE	BORE 3 10M X 150MM	WELL	1	1965
WATER TREATMENT (PUMP HOUSE #1)	CONTROL	ELECTRICAL	1	1997
WATER TREATMENT (PUMP HOUSE #1)	CHLORINE DOSING PLANT	MECHANICAL	1	2018
WATER TREATMENT (PUMP HOUSE #1)	DOSER	MECHANICAL	1	2018
WATER TREATMENT (PUMP HOUSE #1)	FLUSHING PUMP	MECHANICAL	1	2014
WATER TREATMENT (PUMP HOUSE #1)	MIXER	MECHANICAL	1	1997
WATER TREATMENT (PUMP HOUSE #1)	VENTILATION	MECHANICAL	1	1997
WATER TREATMENT (PUMP HOUSE #1)	SEALED YARD	PAVEMENT	1	1997
WATER TREATMENT (PUMP HOUSE #1)	VAT	STEEL	1	1997

11.2. 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. It is hoped that some industrial development may occur there.

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.